Institute for Fiscal Studies

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Nuffield Foundation

The IFS Green Budget

In association with ICAEW and funded by the Nuffield Foundation

February 2016

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Carl Emmerson
Paul Johnson
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With additional analysis from
ICAEW and Oxford Economics

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The IFS Green Budget

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Foreword from ICAEW

ICAEW is once again very pleased to be associated with the IFS Green Budget.

This 2016 report comes at a crucial juncture at the beginning of a new parliament where the political debate is as polarised as it has been for some time. By providing an independent, evidence-based commentary on the economic choices and challenges that we face, it offers much-needed perspective for policymakers as well as the wider electorate.

The UK government is committed to delivering a budget surplus by 2019–20. It is also committed to funding a range of major infrastructure projects to help unlock long-term economic prosperity. These competing policy priorities will require deft financial management over the course of this parliament, together with a realistic assessment of what is affordable and how these projects can be funded. As the Chancellor pointed out in January, the economic outlook going into 2016 remains uncertain. Balancing the books while having enough in the bank to invest for the future will require tenacity as well as realism about what is achievable.

This year, we have produced two chapters for the report. The first provides an analysis of the government balance sheet. The second explores the policy options for infrastructure spending.

ICAEW is a world-leading professional accountancy body with 146,000 members in over 160 countries. As an organisation and a profession, we stand for high-quality financial information that can be used to inform good decision-making. We hope the Green Budget will be widely used to that end.

Michael Izza
Chief Executive Officer of ICAEW

Foreword from the Nuffield Foundation

On 16 March, the Chancellor will make his Budget Statement to the House of Commons, setting out the government's assessment of the state of the economy and proposals for tax and spending policy. It is one of the most important annual events for any government, and consequently for all UK citizens. But it shouldn't be the *only* opportunity to present and discuss analysis of our public finances, and both public debate and policymaking are better informed by the availability of additional, non-partisan analysis.

This is where the IFS Green Budget comes in. It offers a detailed, independent and rigorous analysis of our economy, tax policy and public finances, and considers the various options available to the Chancellor. It is valued enormously by policymakers, journalists, analysts and all those seeking to engage with the debate about our public finances, something that is evident by the growing number of people who attend the launch event each year. In 2015, this was over 400 people; this year, we expect it to be higher still. In many ways, it has become almost as important a part of the fiscal calendar as the Budget itself.

The Nuffield Foundation is proud to be funding the Green Budget again in 2016, and pleased that it will be produced in association with, and co-funded by, ICAEW for the second year running. It is also important to acknowledge the contribution of the Economic and Social Research Council (ESRC), which funds the IFS Centre for the Microeconomic Analysis of Public Policy, the work of which underpins all IFS analysis.

Professor David Rhind CBE FRS Hon FBA
Chairman of the Trustees of the Nuffield Foundation

The Nuffield Foundation is an endowed charitable trust that aims to improve social well-being in the widest sense. It funds research and innovation in education and social policy and also works to build capacity in education, science and social science research. The Nuffield Foundation has funded this project, but the views expressed are those of the authors and not necessarily those of the Foundation. More information is available at http://www.nuffieldfoundation.org.

Preface

Welcome to the Institute for Fiscal Studies (IFS)'s 2016 Green Budget. In the following pages, we discuss some of the issues confronting the Chancellor as he prepares his eighth Budget, and the second of this parliament.

In this book, we examine the new framework of fiscal rules that the Chancellor has set for himself, and the risks to the public finances that may throw him off course as he tries to comply with those rules – both on the tax and the spending side. We analyse the design of taxes on motoring, alcohol and tobacco and the possibility of a 'sugar tax'. We consider the options on the table to reduce corporate tax avoidance by multinational companies. And we set out in detail the effects of the current plans for universal credit – the largest overhaul to the working-age benefits system for decades, the plans for which have changed substantially since it was first announced, and indeed since the general election.

As ever, we collaborate with others to write the macroeconomic chapters. We are grateful to Oxford Economics, and in particular to Andrew Goodwin, Martin Beck and Adam Slater, for their chapters on the outlook for the UK economy and the global economy.

We are delighted to work again with ICAEW. In addition to providing financial support for the Green Budget, they have contributed two valuable complements to our own detailed analysis of the public finances – a chapter on the Whole of Government Accounts and a chapter on the funding of infrastructure investment.

We are also very grateful to the Nuffield Foundation for the funding it has provided to support the Green Budget. Our most important aim for the Green Budget is to influence policy and inform the public debate. It is particularly appropriate, then, that it should be supported by the Nuffield Foundation, for which these are also central aims.

The continuing support that the Economic and Social Research Council (ESRC) provides for our ongoing research work via the Centre for the Microeconomic Analysis of Public Policy at IFS underpins all our analysis in this volume and is gratefully acknowledged.

 We gratefully acknowledge financial support from the European Research Council in allowing us to access the Worldpanel. The LFS and the LCF and its predecessors are available from the UK Data Service (http://www.ukdataservice.ac.uk). The analysis and interpretation of all data are the responsibility of the authors.

As with all IFS publications, the views expressed are those of the named chapter authors and not of the institute – which has no corporate views – or of the funders of the research.

Paul Johnson
Director, Institute for Fiscal Studies

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- World growth will therefore remain relatively modest for a recovery period and below the long-term average of the last 30 years of 2.8% per year.
- US growth is forecast at 2.4% in 2016, the same as in 2015. Growth will be supported by solid growth in consumer spending and a robust labour market, while a strong dollar and weakness in the energy sector will be drags.
- Eurozone growth is expected to firm to 1.8% in 2016 from 1.5% in 2015 helped by expansionary monetary policy by the ECB and a competitive exchange rate. Germany will lead the eurozone, with growth of 2.1%.
- Emerging market growth is expected to remain subdued in 2016 at 3.8% (2.2% excluding China and India). Recessions will continue in Brazil and Russia, with a further slowdown in China. India will be the best-performing large emerging country, with growth above 7%.
- Headwinds to growth for emerging markets include tightening monetary policy in the US, lower capital inflows and (for commodity exporters) unfavourable terms of trade.
- For the UK, the relative resilience that we forecast for key advanced economies such as the US and the eurozone is a positive given its particular trade orientation. The UK's trade exposure to a slowing China and to the more troubled parts of the emerging market world such as Brazil and Russia is relatively limited.
- A key downside risk to our forecast is a faster-than-expected slowdown in China, which would hit world growth through a variety of real and financial market channels. A plausible upside scenario is a supply-driven further slump in oil prices, which would boost private sector activity in the advanced economies, more than offsetting the hit to oil producers.

Chapter 2
The UK economic outlook

- Despite a number of tailwinds, including 'noflation' and strong growth in real incomes, drags from net trade and inventories meant that the UK economy put in a disappointing performance in 2015, with growth coming in at a sub-par 2.2%. Prospects for 2016 look similar, with GDP set to grow by 2.2% again. The forces fuelling buoyant consumer spending growth last year are still present and the environment for business investment remains favourable. Moreover, UK exporters' focus on traditional markets will offer some insulation from problems in emerging economies.

- We estimate that the UK has a relatively large output gap of around 2¾% of potential output. The prospects for potential output growth are favourable, with labour supply set to be boosted by sustained strength in inward migration and further increases in the state pension age, while robust growth in business investment will deepen the capital stock. This will provide the conditions for firm growth and low inflation over the medium term, with GDP growth expected to average 2.3% a year from 2016 to 2020. Our forecasts for growth are similar to those of the Office for Budget Responsibility, but while the OBR expects the output gap to close relatively quickly, we believe that a sizeable amount of spare capacity will remain in the economy in 2020.
- The risks around our forecast are heavily skewed to the downside. Domestically, the upcoming referendum on the UK's membership of the EU has the potential to generate the greatest degree of uncertainty, should there be a vote in favour of leaving, while there are also longer-term question marks surrounding household indebtedness and productivity growth. But external events provide the most potential to alter the short-term UK outlook. The most likely upside scenario would involve a further, supply-driven, fall in the oil price, which would drive stronger UK GDP growth by boosting household spending power and strengthening world trade growth. On the downside, the scenario with the highest probability shows the Fed raising US interest rates more quickly than the market anticipates, triggering equity price falls and damaging sentiment. The UK's large financial sector means that it would be particularly exposed.

Chapter 3
Fiscal targets: committing to a path of budget responsibility?

- At 80% of national income, the UK's public sector net debt is high by recent standards and relative to most advanced economies, although not particularly high in a longer-term historical context or relative to most of the largest economies.
- The Chancellor's new fiscal mandate requires a budget surplus to be achieved in all years from 2019–20 unless growth drops below 1%. Running a surplus is not necessary to bring debt down as a share of national income – that can be achieved so long as cash debt grows less quickly than national income. But, all else equal, a bigger surplus would reduce debt as a share of national income more quickly. This might provide more fiscal flexibility in the face of another recession and therefore could reduce the (perhaps remote) risk that the UK could suffer the dire consequences attendant on losing access to international capital markets.
- The first official figures showing whether or not Mr Osborne has met his target of running a surplus in 2019–20 should be published days ahead of the 2020 general election. Achieving and maintaining a consistent surplus is challenging. The UK has not had more than three years of consecutive budget surpluses since 1952. Surpluses have not been common in other large advanced economies.
- Flexibility comes from the provision to suspend the mandate if growth drops below 1%. This should be enough to accommodate most negative shocks to output. The mandate also has the advantages of being simple and transparent.

- But this simplicity comes at a significant potential cost. It can be sensible to borrow to finance beneficial investment projects that would otherwise not be undertaken; this will be especially true when interest rates are lower. Because it applies to a relatively narrow measure of borrowing, the rule may also lead politicians inappropriately to favour policies that temporarily flatter headline measures of the public finances.
- Unless a large surplus is planned, small forecasting changes could require sudden in-year tax rises or spending cuts to ensure the mandate is met. Even if we start 2019–20 with an expectation of a £10 billion surplus, previous experience suggests there would be a more than one-in-four chance that in-year tax rises or spending cuts would be needed to ensure an out-turn of any surplus at all.
- The Chancellor has also set a requirement for debt to fall as a share of national income in every year through to 2019–20, but is meeting it through selling assets. These asset sales might be sensible, but meeting the rule in this way would be contrary to its underlying principle.
- The welfare cap was intended to constrain the bulk of spending on benefits and tax credits but, less than two years after its introduction, it is already being breached. This brings into question whether it is really any constraint on policy.

Chapter 4
Whole of Government Accounts: an ICAEW assessment

- The Whole of Government Accounts (WGA) are financial accounts for the public sector, prepared on a similar basis to those of millions of companies and other organisations around the world.
- The first five years of WGA have covered a dramatic period in Britain's fiscal history following the global financial crisis. They provide a more comprehensive picture of the public sector's financial performance over that time than that available from traditional National Accounts reporting by capturing a wider range of financial transactions.
- The reduction in the deficit on a National Accounts basis of 35% from £153 billion to £100 billion between 2009–10 and 2013–14 contrasts with a reduction of only 20% in the size of the annual accounting deficit to £149 billion over that same period.
- There has been a significant deterioration in the government's financial position, with net liabilities in the WGA more than doubling in five years, from £0.8 trillion at 31 March 2009 to £1.85 trillion at 31 March 2014. This reflects an increase in public sector pension obligations to £1.3 trillion in addition to the near-doubling of public sector net debt in the National Accounts from £0.7 trillion to £1.4 trillion.
- Effective financial management for the longer term involves addressing the balance sheet as well as revenue, expenditure and cash flows reported in the WGA but not in the National Accounts. A relatively high level of asset write-downs, growing pension obligations and increasing charges to cover nuclear decommissioning and clinical negligence exposures are areas of particular concern.

- The WGA also provide further insight when considering the vulnerability of the public finances to future economic shocks, with total liabilities at 31 March 2014 of £3.2 trillion, or 177% of GDP. This is substantially higher than public sector net debt, the National Accounts measure typically referred to in this context, which stood at £1.4 trillion, or 78% of GDP, at that date. The former may matter more when thinking about the government's ability to cope in the event of a future downturn.
- Improving financial management within government will become more challenging as further devolution increases the complexity of the public sector in the UK. A necessary first step must be to replace the current complex web of internal financial reporting data collection processes with a modern standardised financial consolidation system for all public sector entities, which should enable the government to obtain and utilise accurate comprehensive financial performance data from across the public sector within days rather than months.

Chapter 5
Risks to the rules: tax revenues

- The government's plan to reach a fiscal surplus is predicated on tax receipts increasing by 1.1% of national income (£21 billion per year in today's terms) between 2015–16 and 2019–20.
- Lower- (higher-)than-expected growth would hit (boost) cash tax receipts and, since cash spending is unlikely to be affected to the same degree, this would feed through into higher (lower) borrowing. Changes in average earnings levels of just 1% can change income tax and National Insurance revenues by around £5 billion.
- Capital taxes are dependent on the prices of, or transactions in, particular assets, which can be very volatile even if the economy grows as forecast. For example, the Office for Budget Responsibility (OBR) downgraded its underlying forecast for receipts from stamp duty on residential properties in 2020–21 by one-sixth between July and November 2015.
- Between the November 2015 Autumn Statement and the end of January 2016, equity prices fell by 7½%. If they were to remain 7½% below the OBR's latest forecast, this could reduce capital tax receipts in 2020–21 by around £2 billion.
- Revenues from North Sea oil and gas production are currently £12 billion below their 2008–09 level, largely as a result of lower oil prices. The overall impact of a decline in oil prices, though, is to strengthen the public finances slightly, as a fall in the price of oil boosts economic activity and hence other tax receipts.
- One particular risk to tax receipts is future policy change. The government has commitments to increase the income tax personal allowance and the higher-rate threshold by the end of the parliament, at an estimated cost of £8 billion per year. All else equal, government will presumably need to find tax increases, or additional spending cuts, of a similar scale elsewhere to fund these tax cuts.
- With no increase in the £150,000 threshold at which the additional rate of income tax kicks in, numbers affected have already risen by 40% since it was introduced in 2010. Current policy also fixes the £50,000 point at which child benefit starts to be taxed away in nominal terms. The number losing child benefit might rise by 50% within five years. This may prove sustainable but is not a good way of making policy.

- History suggests the government might not increase fuel duties in line with RPI inflation as is assumed in the OBR's forecasts – since 2011, all increases that had been pencilled in have been cancelled. Freezing fuel duties for a further five years would cost around £3 billion per year by 2020–21.
- The government might raise revenue through changes to the pensions tax regime. However, it will need to be careful to distinguish between what is genuinely a permanent increase in revenues and what is only a temporary windfall. Relying on temporary revenues to achieve a budget surplus in 2019–20 would not be in keeping with the rationale underpinning the Chancellor's stated fiscal objectives.

Chapter 6
Risks to the rules: public spending

- The government's objective of having a budget surplus in 2019–20 is set to be achieved with a level of public spending that will be the lowest as a share of national income for over 60 years with the exception of 1999–2000 and 2000–01. Spending on public services in 2019–20 is set to fall to its lowest level as a share of national income since the early 2000s. Spending on services outside of health will be at its lowest level since at least 1948–49.
- Public service spending by central government and local authorities is forecast to be cut by 1.0% between 2015–16 and 2019–20, compared with 8.3% between 2010–11 and 2015–16.
- A growing and ageing population will increase demands for many public services. Public service spending per person by central government and local authorities is forecast to fall by 3.7% over this parliament and by 14.9% between 2010–11 and 2019–20. While NHS spending is expected to grow by 6.1% in real terms over the parliament, over three-quarters of this real increase will be needed just to keep pace with the changing size and demographic structure of the population.
- In addition, changes to National Insurance contributions will cost public sector employers an additional £3.3 billion a year, while Resolution Foundation estimates suggest that the new National Living Wage could cost more than £1 billion a year.
- The government's spending plans imply that public sector pay will fall to much its lowest level relative to the private sector since at least the mid 1990s, when comparable data are available. This could result in difficulties for public sector employers trying to recruit and retain high-quality, motivated workers and raises the possibility of (further) industrial relations issues.
- The Chancellor has set out £12 billion of cuts to annual spending on working-age benefits and tax credits by 2019–20. This is the same magnitude, but two years later, than pledged in the Conservative Party manifesto. Benefit levels for some groups will reach very low levels relative to earnings by comparison with historical rates. One risk to the public finances is that the latest disability benefit reforms might not deliver as large or swift a cut to spending as forecasts assume.

- Lower expected interest rates or further delay to the expected date at which the Bank of England begins to unwind quantitative easing would reduce expected debt interest spending. But both of these would likely indicate a weaker, not stronger, economy. So, while they would reduce debt interest spending, they would likely signal bad news overall for the UK's public finances.
- Together, the risks to revenues and to spending, combined with the OBR's central estimate of a surplus of (only) 0.5% of national income in 2019–20, suggest that there is a significant chance that the government's current fiscal plans will not deliver the targeted surplus in that year without further tax rises or spending cuts.

Chapter 7
Infrastructure funding: an ICAEW assessment

- Addressing the weak state of the public finances presents a dilemma for the Chancellor if he wants to increase investment in infrastructure at the same time.
- By committing to achieve a public finance surplus every year in 'normal' economic times, the government has ruled out borrowing to fund public infrastructure. The exception is investments through the Private Finance Initiative (PFI), which do not affect the headline public finance numbers.
- Since the financial crisis, there has been less private finance available to invest in either public–private or private infrastructure projects. At the same time, direct public investment has also decreased.
- One of the concerns of investors is political risk arising from potential changes in government policies. Significant private sector investment in electricity, gas and water supply networks is based on long-term regulatory arrangements where investors have confidence around future revenues. While market incentives have also been used successfully to encourage investment in renewable electricity generation, recent changes in policy have called into question whether there is sufficient stability to encourage long-term investment in the UK.
- Government efforts to encourage private investment have been disappointing, with the coalition government's Pensions Infrastructure Platform sourcing less than £1 billion in total over its first four years of operation, against a target of £2 billion every year. Similarly, only £1.7 billion of guarantees were issued in the first two years of the £40 billion UK Guarantees scheme designed to support private sector infrastructure investment.
- Public sector pension funds, principally in local authority schemes, have longer time horizons than private sector schemes and so should in theory have more of an appetite for investing in infrastructure. But they were effectively prevented from investing in infrastructure projects until 2013. Even so, up to £3 billion a year could potentially be made available, assuming the proposed aggregation of local authority portfolios into collective investment vehicles goes ahead.
- There is a strong economic case for bringing PFI contracts on balance sheet, and doing so now may be politically easier than in the past, as the proportional effect on public sector net debt would now be small.

- A more commercially sustainable approach would also permit new borrowing for public infrastructure projects that are expected to generate positive financial returns (either directly or through higher tax receipts) – for example, qualifying housing and transport developments. This would allow the government to retain the flexibility to make targeted investments that pay for themselves.

Chapter 8
Corporate tax avoidance: tackling Base Erosion and Profit Shifting

- The OECD Base Erosion and Profit Shifting (BEPS) project aims to foster consensus on how to modify corporate tax rules to prevent multinational tax avoidance. How the proposals are implemented, in the UK and elsewhere, will depend in part on how tensions between maintaining a competitive tax regime and minimising avoidance are traded off against one another.
- The UK has already introduced a new 'hybrid' rule to prevent multinationals from taking advantage of cases where an income stream is taxed differently in different jurisdictions. This is a good move. Other countries may follow, but some may continue to allow some hybrid structures because they can advantage domestic multinationals.
- Preferential intellectual property regimes, including the UK patent box (a reduced rate of tax on income from patents), need to be modified in 2016 to install a link between the tax break and the underlying research and development (R&D). This will limit some tax competition and will likely raise UK revenues. However, the UK's patent box will remain poorly targeted at incentivising additional R&D.
- All countries have committed to aligning taxation rights with real economic substance better by changing the rules on how transfers within companies across borders are priced and the definition of what constitutes a taxable presence. While preventing some avoidance, aligning tax with real activities will sometimes conflict with the principle that the returns to intangible assets are taxed based on the owner's location.
- The UK (like most countries) does not meet a BEPS best-practice recommendation for the rules that limit interest deductions of multinationals. The UK government has consulted on possible moves to restrict interest deductibility. The decision involves a trade-off: a more stringent rule would prevent some forms of avoidance but also distort genuine commercial decisions of high-debt firms and make the UK less attractive to multinationals.
- All countries have agreed to require multinational companies to produce 'country-by-country' reports that provide tax authorities with more information on the location of firms' activities. This, and other information-sharing moves, will assist authorities in indentifying BEPS risks.
- The BEPS process will result in some important improvements, but is not a silver bullet. Allocating profits across countries and preventing avoidance will always be difficult. A more fundamental change to the system deserves consideration.

Chapter 9
Excise duties

- Excise taxes on tobacco, fuel and alcohol comprise 7.2% of total receipts, which is a large share by international standards. However, revenues from these duties have already fallen from 10.3% of receipts in 1978–79 and are forecast to fall to 6.0% of receipts by 2020–21. Had these duties maintained their 1978–79 share of national income, they would be raising £26 billion more than they currently raise.
- Specific taxes on these goods are justified by the costs their consumption imposes on others (externalities) and/or costs on the consumer themselves that they may not fully take into account when making their consumption decision (internalities). Taxes should seek to target the externality- or internality-generating activity and should be set based on the incremental social harm associated with consumption.
- Real cuts to rates of fuel duties, combined with recent falls in oil prices and improving vehicle fuel efficiency, have pushed the average cost of driving a new vehicle a kilometre to its lowest level since at least 1997. The main social cost from motoring is congestion and this is rising. This suggests the price of motoring has not been tracking its social cost. Petrol and diesel duty increases of 41% and 31% respectively would return the average cost of driving a new vehicle to its 1997 level and raise £9 billion a year. However, fuel duties are poorly targeted at congestion; the government should move towards a system of road pricing.
- The current structure of alcohol duties is not well targeted at harmful alcohol consumption. As heavy drinkers tend to consume stronger alcoholic drinks, reversing the long-run trend towards lower spirits duties would target the system better at them. Action to tackle the very low levels of duty charged on strong cider would also make sense: a litre of 7.5% ABV beer is liable for duty of 138p, while a litre of 7.5% ABV cider attracts duty of only 39p. Changes of this nature should take precedence over imposing minimum prices, which has legal obstacles and which would likely result in windfall profits for drinks companies.
- There is also potentially a case for higher taxes on particular foods associated with diet-related disease. There have been calls for a tax on sugar, and sugar-sweetened soft drinks in particular. But the issues are more complex than may initially appear.
- A sugary soft drinks tax is likely to lead consumers to switch away from taxed products, but the efficacy of the policy will depend on what products they switch to and how firms change their prices. Some consumers might switch to chocolate, for example, which is also high in sugar and contains saturated fat to boot. Some manufacturers and/or retailers might respond to the tax by increasing the prices of diet drinks, dampening the extent of any consumer switching to these products.
- An alternative policy would be to levy a broad-based sugar tax. This would have the advantage of targeting all sources of dietary sugar. However, the effect of such a tax on consumption of other nutrients, and hence overall diet, is highly uncertain.

Chapter 10
The (changing) effects of universal credit

- The government is in the process of integrating six means-tested benefits and tax credits for working-age families into a single payment called universal credit (UC). This is the most radical reform to the working-age benefits system for decades.
- Since it was first proposed, the design of UC has been significantly changed. The amounts recipients can earn before their benefits start to be withdrawn have been cut, shaving almost £5 billion per year off its long-run cost. As a result, 2.1 million working households will get less in benefits due to the introduction of UC (average loss of £1,600 a year) and 1.8 million will get more (average gain of £1,500 a year).
- Overall, UC will cut benefit spending by £2.7 billion a year in the long run. Taking working and non-working households together, 3.2 million will see lower benefit entitlements (average loss of £1,800 a year) while 2.2 million will see higher benefit entitlements (average gain of £1,400 a year). Those relatively likely to gain include low-earning households in rented accommodation and one-earner couples with children. Working lone parents, those with assets or unearned income, and two-earner couples are more likely to lose.
- The increase in support for one-earner couples with children strengthens the incentive for couples with children to have one adult in work rather than none, but weakens the incentive for both parents to work rather than just one.
- By increasing entitlements for renters while reducing them for owner-occupiers, and reducing support for those with substantial savings or unearned income, UC will likely focus support more on those with long-term rather than temporary low incomes than the current system, but will impose very high effective tax rates on saving for some claimants.
- Despite cuts to work allowances, UC will still strengthen work incentives overall. Importantly, UC will have the welcome effect of strengthening work incentives for groups who face the weakest incentives now: the number of people who keep less than 30% of what they earn when they move into work (due to the combination of withdrawn benefits and taxes) will fall from 2.1 million to 0.7 million. UC will also reduce the numbers facing very high effective *marginal* tax rates: 800,000 people who would currently keep less than 20 pence, and in many cases less than 10 pence, of an additional pound earned would keep at least 23 pence under UC.
- Expanding job-search conditions to recipients in working families is an unprecedented step. Some recipients may work more, though it could discourage some from claiming. Integration of benefits will likely boost take-up, make the system easier to understand, and ensure easier transitions into and out of work. Making UC a single monthly payment to one person in the household and removing direct payments to landlords may be riskier.

1. The global economy

Adam Slater (Oxford Economics)

Summary

- The global economy in 2016 is expected to grow by 2.6%, only slightly faster than the 2.5% estimated growth in 2015.
- World growth will therefore remain relatively modest for a recovery period and below the long-term average of the last 30 years of 2.8% per year.
- US growth is forecast at 2.4% in 2016, the same as in 2015. Growth will be supported by solid growth in consumer spending and a robust labour market, while a strong dollar and weakness in the energy sector will be drags.
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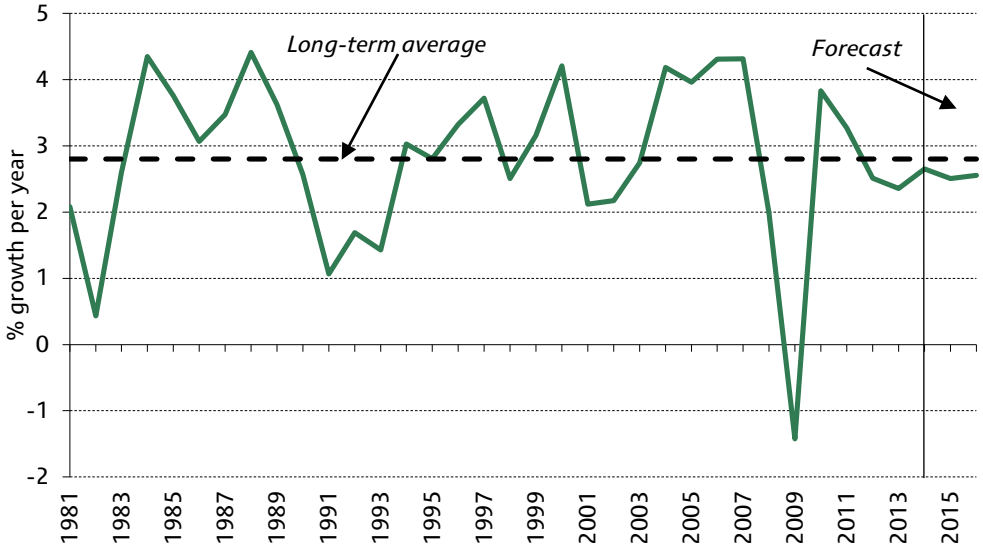
1.1 Introduction

World growth in 2015 was relatively sluggish at just 2.5%, with momentum ebbing in the final months of the year. This was below the 2.9% forecast for world growth at the time of the 2015 Green Budget. The main sources of this forecast undershoot were slower-than-expected growth in the US and in a number of emerging markets. Weakness in the emerging markets reflected in part an unexpectedly large slump in commodity prices. In the US, robust consumer spending was offset by sluggish exports and investment, with the sharp dollar strengthening and weak world trade growth being key factors here.

With financial market volatility also picking up at the start of 2016, the chances of this year proving a 'take-off' year for the global recovery have receded. This year's global GDP growth forecast is 2.6%, only marginally stronger than in 2015 and below the average of

Figure 1.1. World growth



Source: Oxford Economics.

the last 30 years, which stands at 2.8%. So the world looks set to remain stuck in the sub-par growth phase that began in 2011 (see Figure 1.1).

The main weak points of the global economy in 2015 were trade and industrial activity. World trade grew by an estimated 1%, well below the long-term average pace of around 5% per year. A key factor behind this was declining import volumes in the 'BRIC' economies, including China. Meanwhile, world industrial output rose just 1.8% in 2015 with G7 industrial output rising a meagre 0.7%.

Services activity was generally more buoyant, helped by the boost to real incomes in oil-importing countries of falling energy prices and by rising employment and signs of improved wage trends in some of the advanced economies.

A key issue for 2016 is whether services growth can remain robust in the face of the negative trend in industry, the beginning of monetary policy tightening in the US and weakening stock markets.

On balance, we believe it can: labour markets should tighten further in the major economies this year, boosting wage growth, and real incomes will get a further boost from the recent additional decline in oil prices. Monetary policy settings are expansionary in the eurozone, Japan and China. Property prices are also still rising, and expected to continue rising, in most advanced economies – and these are arguably a more important source of 'wealth effects' than stock prices for consumers in the advanced economies, including the UK.

There are nevertheless considerable downside risks to our baseline forecast for world growth in 2016. One critical uncertainty relates to how global growth will hold up as US interest rates rise, following the initial Federal Reserve rate hike in December 2015.

Arguably, global financial conditions have already tightened somewhat since mid 2015, with world stock markets showing double-digit declines and widening junk bond spreads. Surveys of bank credit conditions have also shown tightening conditions in emerging markets and also a modest tightening in the US. In addition, our forecast is for only two US rate hikes this year, which we think the global economy can absorb. But notably the Federal Reserve's own projections look somewhat more aggressive.

Emerging markets are another locus of risk. Emerging market growth slowed significantly in 2015 and remains under pressure from factors including economic deceleration in China and weak commodity prices. With emerging markets now accounting for 35% of world GDP (up 10 percentage points on a decade ago), slow growth among them has the potential to be a major drag on the wider world.

Our forecast for the global economy is set out in Section 1.2, while Section 1.3 describes the key risks to this forecast. Section 1.4 concludes.

1.2 Global outlook

Eurozone

Eurozone growth picked up to an estimated 1.5% in 2015 from 0.9% the year before. This improvement was the result of several factors: a reduced pace of fiscal tightening; expansionary monetary policy by the European Central Bank (ECB) including quantitative easing and negative interest rates; and further signs of 'healing' in the financial sector, resulting in a modest recovery in credit supply.

Set against this, external demand conditions were unfavourable, with the eurozone's export markets (weighted by shares in eurozone exports) growing only around 0.5% on the year, down from 3.4% the year before. But the competitive euro, the trade-weighted exchange rate of which declined 7% in 2015, nevertheless allowed goods export volumes to rise by a respectable 2.3% last year.

Consumer spending in the eurozone has benefited from the collapse in global oil prices and the related boost to real incomes, a factor which should continue to underpin spending in 2016. Consumer spending is also benefiting from improved labour market conditions. In the six months to last November, there was a reduction in unemployment of almost 800,000 (taking the unemployment rate down from 11% to 10.5%). Survey-based measures of firms' employment intentions suggest an improving picture across all the main sectors in Q4 too.

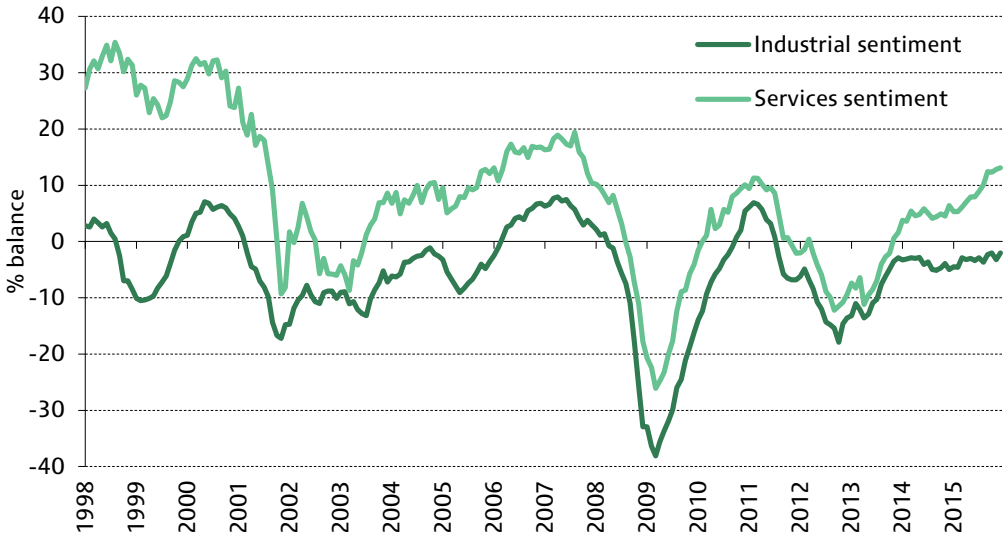
The strengthening labour market means that, this year, we expect households' real disposable incomes to grow at their fastest pace since 2001. This will be helped by very subdued inflation. We expect headline CPI inflation at just 0.7% this year after 0% in 2015.

The improvement in consumer fortunes is being mirrored in an improved outlook for services, with service sector sentiment rising to its highest levels since 2007 towards the end of 2015 (see Figure 1.2). But the picture looks much less rosy in industry, where activity is more tied to international conditions. Industrial output probably contracted for the second straight quarter in 2015Q4.

International developments mean we are relatively cautious about the outlook for investment in 2016. Strong business sentiment, increased capacity utilisation and the profits boost from the weak euro should be supportive factors for capital spending but uncertainty about final demand will tend to discourage it. Overall, we expect another year with investment growth around 2% – much better than the stagnant period from 2010 to 2014 but well below pre-crisis rates of growth.

On the policy front, the ECB's efforts at monetary stimulus have, in our view, borne considerable fruit. Apart from weakening the euro, eurozone broad money growth has

Figure 1.2. Eurozone business sentiment



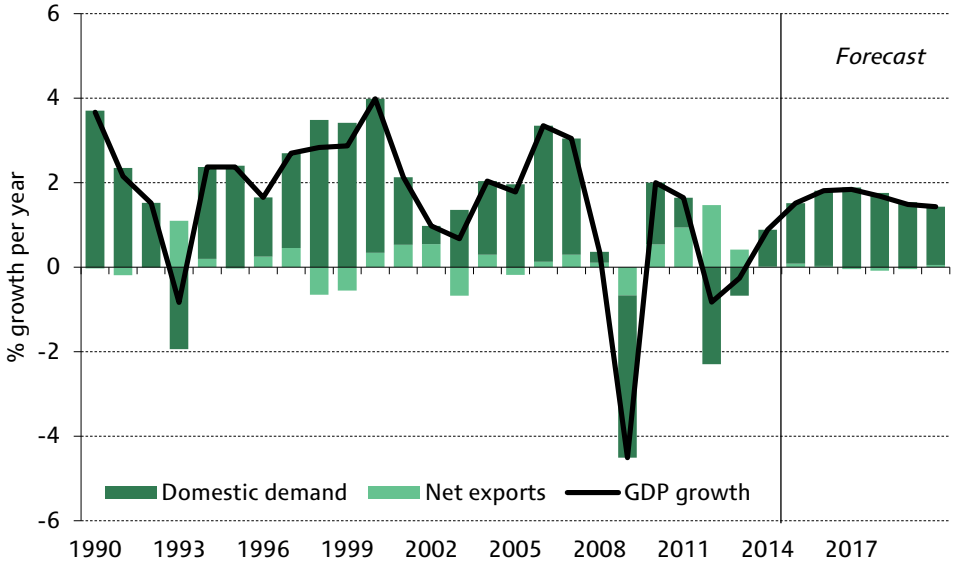
Source: Haver Analytics, Oxford Economics.

recovered from the anaemic pace of growth of 2011–14 to around 6% currently. Credit growth has also turned moderately positive having been negative in 2012–14.

That said, inflation this year is set to remain below 1% for the third year running, and long-term inflation expectations are hovering close to their lows of 2015. As a result, some further monetary action by the ECB (probably a move to more negative interest rates) this year remains a possibility, especially if recent stock market turbulence continues. But our baseline forecast remains that the ECB will not extend the asset purchase programme beyond the initial planned termination date nor increase the size of monthly asset purchases.

Overall, the eurozone is forecast to grow by 1.8% in 2016, the best performance since 2010 (see Figure 1.3). This will be a positive development for the UK, given that the UK

Figure 1.3. Contributions to eurozone GDP growth



Source: Haver Analytics, Oxford Economics.

sends 44% of goods exports to the eurozone (while deriving around 37% of its current account credits from the eurozone). Progress will be led by Germany, which is forecast to grow by 2.1% helped by solid consumer spending. We also expect another strong year of growth in Spain, with GDP up 2.9% after 3.2% growth in 2015. Less impressive performances are expected in Italy and France, although their forecast growth rates of 1.4% and 1.5% respectively represent considerable improvements from 2015.

Emerging economies

Emerging market aggregate growth slumped to 3.4% in 2015, the slowest pace since 2009 and well below the average pace of 6% from 2000 to 2014. Performance among the 'BRIC' economies (Brazil, Russia, India and China) was very uneven but overall poor. Russia and Brazil saw deep recessions, with GDP dropping around 4% in both countries. Chinese growth decelerated to the slowest pace in 25 years, with particular weakness in heavy industry and the real estate sector. The best performance was in India, where GDP rose 7.4%, although this figure may flatter the underlying picture.

The external environment for emerging markets was very unfavourable in 2015 and remains so at the start of 2016. China's deceleration has contributed to sharp drops in key commodity prices including for metals and coal (due to China's dominant position as a consumer in many commodity markets), undermining export revenues and budget positions for commodity exporters. The collapse in oil prices has also hit oil producers.

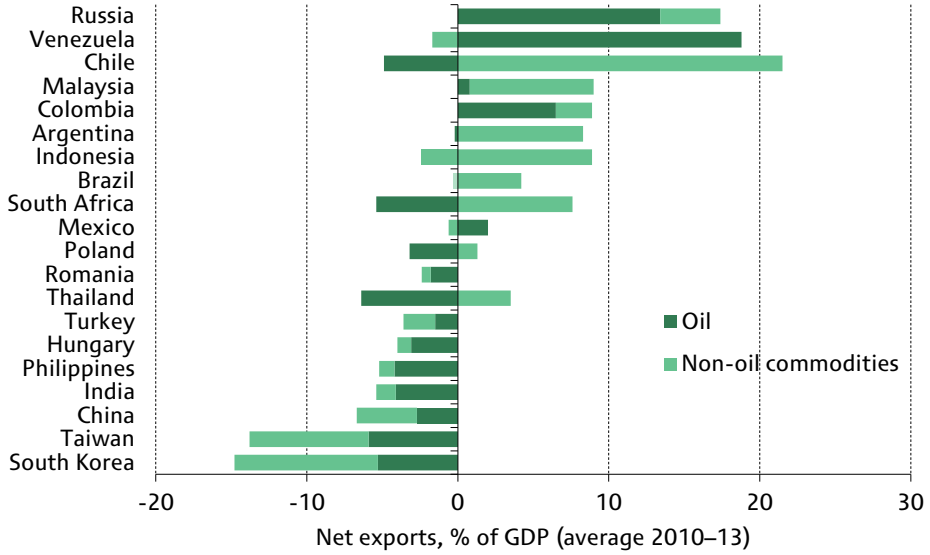
Financial conditions have also deteriorated. Survey evidence suggests banks have been tightening credit standards in many emerging countries, and portfolio capital inflows have slumped. The MSCI emerging market stock market index has collapsed by 35% from its peak of May 2015. Finally, the end of quantitative easing in the US and the start of rate increases there have pushed up the costs of external financing and put downward pressure on local currencies – and in some cases upward pressure on domestic interest rates.

For 2016, we expect another year of recession in Brazil. The upward pressure on inflation from rapid currency depreciation is likely to lead to further increases in interest rates in the coming months from their already-high levels. With commodity export prices also likely to remain under pressure, we forecast a further contraction in GDP of 2.6% this year after a 3.7% fall in 2015. Elsewhere in Latin America, we expect some improvement in Mexico and Chile in 2016 but continued weakness in Argentina and Venezuela.

In Russia, the growth outlook also remains bleak, with our forecast being for a 1% decline in GDP in 2016 after a 3.8% decline in 2015. The balance of payments position remains fragile thanks to the collapse in world oil prices, ongoing capital flight and the lingering impact of financial sanctions. Weak oil prices are also undermining the fiscal position and the currency. Currency weakness is likely to limit the scope for the central bank to reduce interest rates to support growth.

We forecast a further deceleration in Chinese growth from 6.9% in 2015 to 6.3% in 2016, as the authorities attempt to manage the economy towards a more moderate but more sustainable path of growth. The slowdown so far has been particularly concentrated in the real estate and heavy industry sectors, resulting in quite substantial spillovers to the rest of the world given the import- and commodity-intensive nature of these sectors. Policymakers continue to face a dilemma, with monetary easing aimed at cushioning the slowdown putting downward pressure on the exchange rate. There have been two mini-

Figure 1.4. Emerging market commodity dependence



Source: Oxford Economics, UNCTAD.

devaluations since August and we expect some further moderate currency depreciation in 2016, taking the CNY/US$ rate to 6.8 by mid 2016.

In India and China, the fall in global oil prices is a positive, with both being net importers (see Figure 1.4). India's current account deficit has narrowed, to just 0.9% of GDP last year, helping shield it a little from less favourable investor sentiment towards emerging markets, and inflation has also declined allowing interest rates to fall. GDP growth is forecast at 7.4% in 2016, the same pace as in 2015, though the new system of national accounts (which has produced figures sometimes hard to square with other indicators) may flatter these figures a little.

Overall, emerging market growth is forecast to pick up slightly in 2016, to 3.8% from 3.4% in 2015. But the two years together will still be the slowest period of emerging market growth since 1998 and 1999. Moreover, if we strip out China and India, we expect growth in the remaining emerging markets to total just 2.2% in 2016, after 1.4% growth in 2015 and average growth of 4.3% in 2000–14.

This very weak performance in large part reflects the problems of commodity exporters and risks to growth in this group of countries remain, in our view, skewed to the downside. This is especially the case given that the commodity downturn seen so far still looks relatively modest compared with previous historical episodes. From a UK perspective, some comfort may be taken from the fact that the UK has relatively modest exposures to the more troubled parts of the emerging market world. UK exports to Russia and Brazil account for only around 2% of UK exports. Exposure to the slowdown in China is higher, with UK goods exports to China around 5% of the total (and around 7% if Hong Kong is included), but is still relatively modest.

Japan

Japan's economy lost momentum in the second half of 2015 and grew by an estimated 0.7% in the whole of 2015. This reflected a number of factors including the decline in the stock market and the depressing effect on exports of slower growth in Japan's key trading

partners – export volumes to China and to Asia more broadly were down 4% on the year in November.

For 2016, we expect some improvement, with a forecast expansion of 1.2%. The economy continues to face headwinds including the decline in the stock market since mid 2015 and the recent strengthening of the yen (the result, in our view, of 'flight to safety' capital flows). But set against this, we expect exports to improve as world trade growth picks up from 2015's very weak pace. In addition, we expect a further round of quantitative easing by the Bank of Japan in July.

We are also relatively positive on the consumer outlook. Real wages showed a modest upswing in 2015, helped by continued low inflation, and the labour market shows signs of tightening. Consumer confidence is also above its long-term average.

Business investment increased by around 2% in 2015, helped by the boost to profits from yen weakening (on average, the effective exchange rate dropped 6% in 2015). This pace of growth remains a little disappointing, however, and may in part reflect companies reining in spending in response to uncertainty about the global economy and emerging markets in particular. There have been some positive signals from indicators such as machinery orders of late, though, so we expect investment to firm a little more in 2016.

The two main downside risks to growth are a faster-than-expected slowdown in China (which takes 20% of Japanese exports) and an insufficient level of policy stimulus by the authorities, such as a failure to expand quantitative easing as we expect. With Japan only accounting for 1.5% of UK goods exports, however (and 2% of total current account credits), these downside risks are of relatively limited importance for the UK.

US

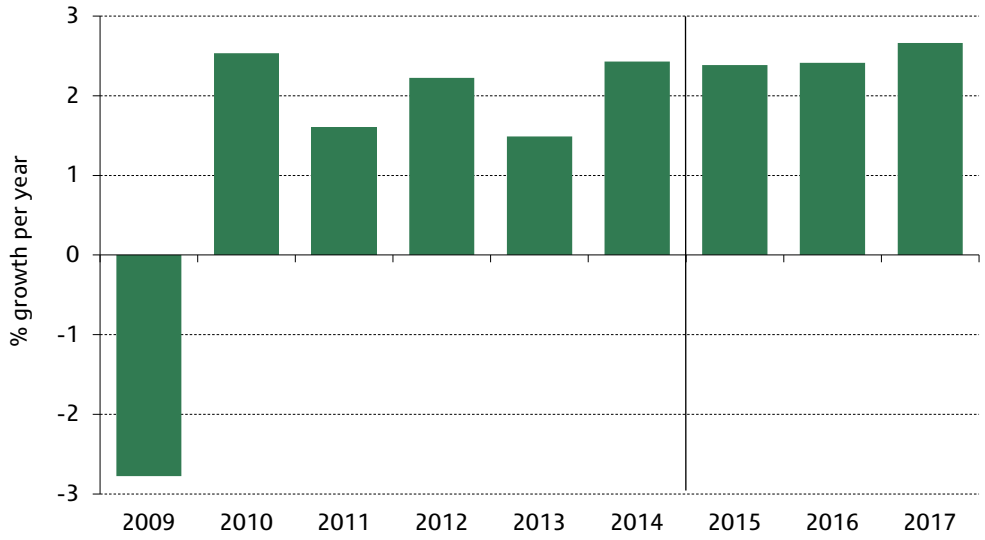
US economic growth is estimated at 2.4% for 2015, the same as in the previous year. Growth was supported by consumer spending, which rose an estimated 3.1% during the year, but held back by slowing export growth and some moderation in investment growth in the second half of the year. These negative factors can be traced to the impact of a significant strengthening in the dollar, of around 13% on a trade-weighted basis, sluggish growth in some of the US's key export markets and a downturn in the energy sector.

For 2016, we expect a broadly similar pattern. Net exports are likely to remain a drag on growth, albeit less so than in 2015. But we expect the labour market to continue tightening, supporting consumer spending. Employment growth has been running at a healthy 200,000 or so per month and we expect it to remain robust in 2016. We also expect wage growth to provide more of an impetus to incomes this year. Overall, we expect consumer spending growth to come in at around 2.8% for 2016.

Business investment has been constrained by strong headwinds facing the energy-related and export-oriented sectors in recent quarters. These factors will continue to act as a check to investment in 2016, dissipating only gradually, so that capital spending will advance at a modest pace. Residential investment was more buoyant last year, rising around 8%, and will be supported by low mortgage rates and firming housing demand. Overall, we expect investment growth to pick up to 4.2% this year from 3.8% in 2015.

Taking all these factors into account, we expect US GDP growth in 2016 at 2.4%, unchanged from the previous year (see Figure 1.5). Continued solid growth in the US should be good news for the UK, given the importance of the US as a trading partner. Around 13% of the UK's goods exports go to the US, and the fractions of services and

Figure 1.5. US GDP



Note: Data points to the right of the vertical line are forecasts.
Source: Oxford Economics.

foreign income receipts that the UK derives from the US are even higher. A stronger US should also have positive knock-on effects for other important UK trading partners, including the eurozone.

The main risk areas for the US are in financial markets. Despite some sell-off over recent months, US equity valuations remain stretched according to many key measures. A sharp stock market sell-off could hit business and consumer confidence. Lower oil prices are also not an unambiguous positive for the US as they will mean slower growth in the shale oil sector.

A related area of risk is the extent of monetary tightening by the Federal Reserve. Our forecast is for a very cautious pace of rate increases by the Fed in 2016, with just two 0.25 percentage point increases on top of last December's initial move. But this forecast is well below the central projections published by the Fed itself, reflecting our concerns that the US economy might react adversely to a faster pace of monetary tightening. More aggressive Fed tightening could prompt a very negative financial market reaction, feeding back into weaker growth.

Global outlook

This year's world growth forecast of 2.6% represents only a marginal improvement on 2015 and implies a fifth straight year of subdued global growth (see Table 1.1). Not only is the forecast pace of growth below the long-term average, it is also well below the 4% rates seen in the pre-crisis period of 2004–07.

Growth will improve in the advanced economies this year, with G7 GDP growth rising to 2% from 1.7% in 2015. This will be the fastest pace of G7 growth since 2010. Emerging market growth will also strengthen, to 3.8% from 3.4% last year. But this will remain a weak pace of growth compared with the average of 6% per year recorded in 2000–14. Excluding China and India, emerging growth will look weaker still, at just 2.2%. Taken together, 2015 and 2016 will be the worst two-year period for emerging market growth since 1998 and 1999.

Table 1.1. Summary of international forecasts

Real GDP	2014	2015	2016	2017	2018	2019
North America						
United States	2.4	2.4	2.4	2.7	2.4	2.3
Canada	2.5	1.2	1.7	2.2	2.5	2.5
Europe						
Eurozone	0.9	1.5	1.8	1.8	1.7	1.5
Germany	1.6	1.5	2.1	2.0	1.6	1.1
France	0.2	1.1	1.5	1.7	1.7	1.7
Italy	-0.4	0.7	1.4	1.2	1.1	0.9
UK	2.9	2.2	2.2	2.5	2.2	2.2
EU27	1.4	1.8	2.0	2.1	1.9	1.7
Asia						
Japan	-0.1	0.7	1.2	1.2	1.0	1.1
China	7.3	6.9	6.3	6.0	5.9	5.7
India	7.1	7.4	7.4	7.2	7.0	6.8
World	2.7	2.5	2.6	3.0	3.0	3.0

Source: Oxford Economics.

For the UK, the relative resilience that we forecast for key advanced economies such as the US and the eurozone is a positive given its particular trade orientation. The UK's trade exposure to the more troubled parts of the emerging market world such as Brazil and Russia is also quite limited. Goods trade exposures to China are also modest, though adding in services and financial exposures increases the risks to the UK from a faster-than-expected Chinese downturn.

In terms of policy settings, monetary policy is set to remain expansionary in the eurozone and Japan next year. Meanwhile, although the US is forecast to raise rates further, we expect it to do so at a very modest pace by historical standards. Moreover, the Federal Reserve will not start to shrink its balance sheet this year, so the overall monetary stance in the US will tighten only gradually.

Divergent monetary policy in the US, Japan and the eurozone will contribute to significant exchange rate movements. We expect the US dollar trade-weighted index to strengthen by an average of around 10% in 2016 versus 2015. The euro/US$ rate is forecast to decline to 1.05 by end 2016 from 1.09 a year earlier and the yen/US$ rate to move to 126 from 121 at end 2015.

Global inflationary pressures are expected to remain subdued in 2016. In the US, eurozone and UK, headline inflation is forecast at around 1%, while Chinese inflation is expected at 1.6%. Inflation will be higher in some other emerging markets, especially those suffering from strong currency depreciation such as Russia and Brazil. But world inflation is expected at 2.6%, the same rate as in 2015.

1.3 Risks to the global economy

Some significant downside risks remain to our global forecasts for 2016 and beyond. But there are a number of possible alternative scenarios, in which global growth could

diverge significantly from our baseline. We cover two key scenarios for the global economy below.

China hard landing

Concerns about Chinese growth have been to the fore throughout 2015, including fears about a possible 'hard landing'. A possible hard landing scenario centres on the possibility of a drying-up of Chinese domestic demand, especially investment.

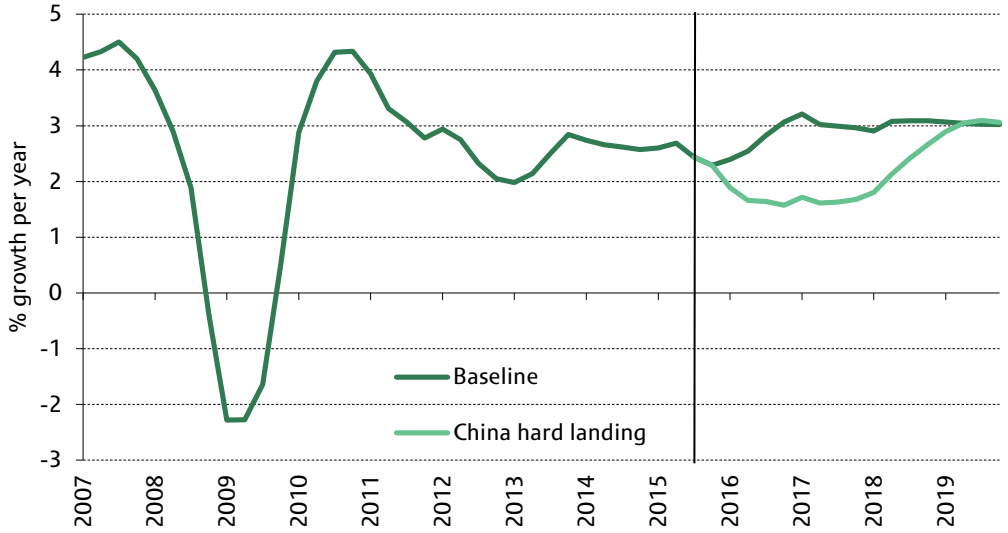
In this scenario, Chinese investment is hit through a variety of channels. Residential investment is dragged lower on the back of sharp drops in new housing construction – by as much as 50% from its 2013 peak – as developers run down housing inventories and the outlook for the sector deteriorates amid renewed declines in prices and sales volumes. Other private investment expenditure is also scaled back, hindered by slowing domestic demand and strained balance sheets. And, amid worries over a loss of confidence in the economy's prospects, foreign direct investment (FDI) inflows drop significantly and the stock market sell-off already incorporated in the baseline forecast gathers pace.

Overall, GDP growth in China slows to 2.9% in 2016 and 2.4% in 2017, and only returns to 5% by 2019. Investment growth contracts in 2016 and 2017 and remains 15% below baseline by the end of the decade.

The shock to Chinese growth spills over to countries across the globe. While policymakers respond where feasible, many are constrained – by proximity to the zero lower bound on interest rates, for some central banks, and by a need to defend rapidly-depreciating currencies, for others. Out of a sample of 46 economies, only around half (representing a third of global GDP) are able to mitigate the transmission of the shock to their domestic economy through conventional monetary policy measures.

As a result, world growth slows sharply, to just 1.7% in 2016 compared with 2.6% in the baseline (see Figure 1.6). Advanced economies are affected, but the impact on emerging markets is far greater, in particular because commodity markets are badly hit, including the oil market. By the end of the forecast period, emerging market GDP is more than 5% down relative to our central forecast.

Figure 1.6. World GDP under 'China hard landing' scenario



Note: Data points to the right of the vertical line are forecasts.
Source: Oxford Economics.

Oil prices plunge as global growth surges

As well as the downside scenario outlined above, there are also possible upside risks to our central forecast. Our baseline forecast takes a cautious view about a number of unfolding developments in the global economy and this could prove too conservative.

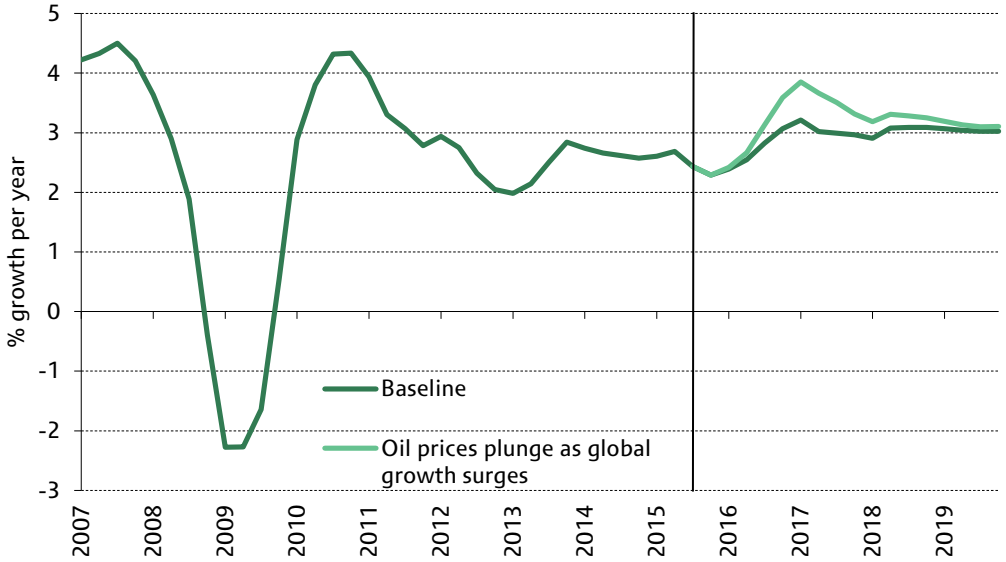
One plausible upside scenario relates to a further substantial drop in world oil prices, driven by a supply surge. In such a scenario, US and OPEC oil production is assumed to rise relative to the baseline, driving oil prices down around 25% below our baseline forecast by end-2017 (to US$36 per barrel versus US$49 per barrel in the baseline). The decline in oil prices acts as an effective tax cut for oil importers, amplifying strengthening private sector activity in the US and the eurozone, and more than offsetting the adverse impact on oil exporters from lower oil revenues.

In this scenario, US GDP growth would accelerate towards 3% in 2016 and 2017. Inflation would initially fall below baseline but then accelerate into 2018 on stronger demand. The Federal Reserve would also raise rates faster than in the baseline. In the eurozone, growth would move above 2% with inflation remaining fairly subdued.

China would also see stronger growth than in our baseline forecast, thanks to lower oil prices and faster export growth. More broadly, emerging market growth would improve to around 4.5% per year by 2017, though there would be some weak spots including Russia (which would suffer a deeper and more protracted recession) and other large oil producers.

Overall, world GDP growth would accelerate to around 3.5% by 2017, the best performance since 2010 (when world growth was 3.8%), with global inflation remaining below baseline thanks to the sharp drop in energy costs (see Figure 1.7).

Figure 1.7. World GDP under oil decline / growth surge scenario



Note: Data points to the right of the vertical line are forecasts.
Source: Oxford Economics.

1.4 Conclusion

A 'dual economy' pattern has developed during 2015, including in the UK, featuring solid growth in services and consumer spending but subdued or flagging activity in tradable sectors in the face of weak global demand growth.

For 2016, the international backdrop looks likely to be broadly similar to that in 2015. We expect a pick-up in growth in the G7 economies, including in the eurozone, which will support external demand for UK goods and services. But activity will remain weak in much of the emerging market world, with continued recessions in Brazil and Russia and the purchasing power of commodity producers more broadly sapped by unfavourable terms of trade.

The further recent drop in oil prices will also be a bonus for the UK and many of its key trading partners. Although there are also major losers from this development, the UK's economic exposure to these countries is relatively limited. Lower oil prices will support income growth along with a tightening labour market.

Some downside risks to global growth still exist. A sustained sharp drop in world equity prices – for example, in response to rising US interest rates – could hit world growth. There is also the danger of a faster-than-expected deceleration in growth in China as the authorities there engage in the difficult process of rebalancing the Chinese economy away from exports and investment to a more consumer-driven model.

There are also upside risks to world growth. A sustained further big drop in world energy prices could help world growth rise to around 3.5% by 2017, by boosting consumer and business confidence and equity prices and generating a faster upturn in investment and world trade growth.

2. The UK economic outlook

Andrew Goodwin and Martin Beck (Oxford Economics)

Summary

- Despite a number of tailwinds, including 'noflation' and strong growth in real incomes, drags from net trade and inventories meant that the UK economy put in a disappointing performance in 2015, with growth coming in at a sub-par 2.2%. Prospects for 2016 look similar, with GDP set to grow by 2.2% again. The forces fuelling buoyant consumer spending growth last year are still present and the environment for business investment remains favourable. Moreover, UK exporters' focus on traditional markets will offer some insulation from problems in emerging economies.
- We estimate that the UK has a relatively large output gap of around 2¾% of potential output. The prospects for potential output growth are favourable, with labour supply set to be boosted by sustained strength in inward migration and further increases in the state pension age, while robust growth in business investment will deepen the capital stock. This will provide the conditions for firm growth and low inflation over the medium term, with GDP growth expected to average 2.3% a year from 2016 to 2020. Our forecasts for growth are similar to those of the Office for Budget Responsibility, but while the OBR expects the output gap to close relatively quickly, we believe that a sizeable amount of spare capacity will remain in the economy in 2020.
- The risks around our forecast are heavily skewed to the downside. Domestically, the upcoming referendum on the UK's membership of the EU has the potential to generate the greatest degree of uncertainty, should there be a vote in favour of leaving, while there are also longer-term question marks surrounding household indebtedness and productivity growth. But external events provide the most potential to alter the short-term UK outlook. The most likely upside scenario would involve a further, supply-driven, fall in the oil price, which would drive stronger UK GDP growth by boosting household spending power and strengthening world trade growth. On the downside, the scenario with the highest probability shows the Fed raising US interest rates more quickly than the market anticipates, triggering equity price falls and damaging sentiment. The UK's large financial sector means that it would be particularly exposed.

2.1 Introduction

In this chapter, we discuss the outlook for the UK economy, beginning in Section 2.2 with short-term prospects, where we assess whether an underwhelming economic performance in 2015 augurs another year of sub-par growth in 2016.

Moving our focus beyond the short term, we consider prospects for the 2016–20 period as a whole. As part of this, we look at our estimates of the output gap, before moving on to discuss the prospects for potential output growth over the next five years (Section 2.3). Having set out our baseline forecast, we then assess how this compares with the most recent forecast from the Office for Budget Responsibility (OBR) and those of other independent forecasters (Section 2.4).

Section 2.5 analyses the risks around the baseline forecast and looks in detail at the potential impact of alternative global scenarios on the UK economy, including an upside scenario 'Oil prices plunge as global growth surges' and a downside scenario 'The Fed tightens amid global headwinds'. Section 2.6 concludes.

2.2 Short-term outlook

Growth disappointed in 2015

On the face of it, the tailwinds to economic activity in 2015 – 'noflation', cheap oil, high levels of consumer confidence and strong growth in real incomes – might have been expected to deliver a golden year for the UK economy. Indeed, at the beginning of last year, we expected GDP to expand by 3% for 2015 as a whole, above the economy's long-run average and implying that output would make up some of the ground lost relative to the pre-crisis trend.[1]

So that growth came in at a modest 2.2% has to be classed as a disappointment. Granted, there seems a reasonable possibility that the Office for National Statistics (ONS) will revise up this figure in the future. But as things stand, 2015's rate of expansion was both a sharp slowdown on the 2.9% rise in GDP recorded in 2014 and below the 2.5% average annual growth rate achieved over the post-war period. Moreover, 2015's soft performance represented the first time since 2009 that growth had come in below the average economists' forecasts surveyed by the Treasury at the beginning of the year.[2] And there was an even more noticeable fall-off in the performance of nominal GDP – which is of particular importance for tax revenues – with growth slowing from 4.7% in 2014 to 2.7% in 2015. Only 2008 and 2009 have seen a weaker year-on-year rise in the cash measure of output since official records began in1956.

That said, while the headline rise in GDP pointed to an economy still failing to replicate the sustained bursts of above-trend growth seen in past expansions, the details of 2015's performance showed at least some components of demand in a healthy light. Notably, consumer spending put in a strong performance, rising by 3.0% for the year as a whole, the strongest rate since 2007. Contrary to the perceptions of some that the expansion since 2009 has been overwhelmingly driven by the consumer, 2015's performance was unusual; last year was the first since 2012 to see growth in consumer spending outstrip overall GDP growth.

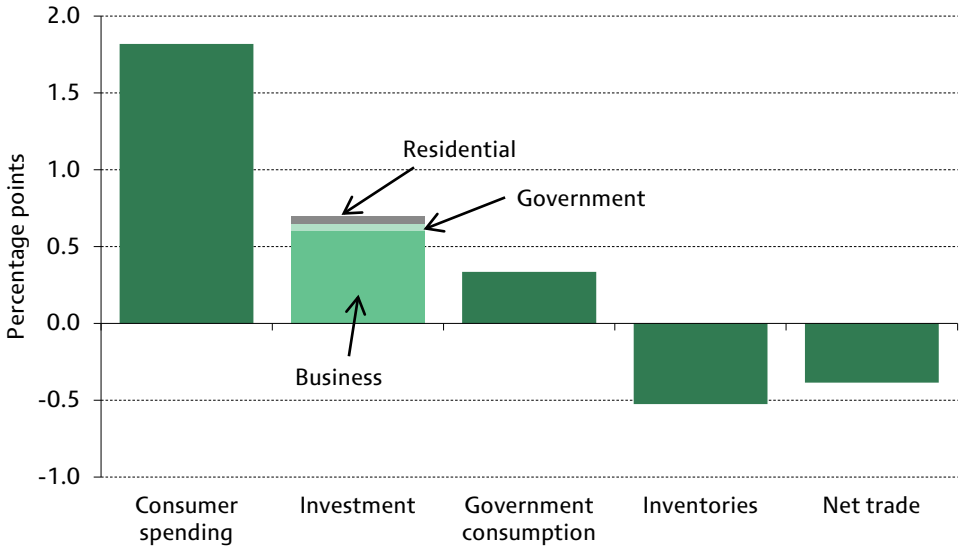
Alongside consumer spending, investment, particularly business investment, was another component of GDP that punched above its weight in driving output. Overall investment was up by 4.5% on 2014's level and the business component grew by 6.4%. This rise took business investment's share of GDP to 10% in 2015, the highest ratio in 14 years.

However, the strength of domestic demand was negated in part by a drag from net trade, as Figure 2.1 illustrates. Although export volumes increased at a robust rate, imports rose even faster, assisted by the strength of sterling (particularly against the euro) and the appetite of UK consumers to spend on imported goods and services. Output growth also

[1] See A. Goodwin and M. Beck, 'The UK economic outlook', in C. Emmerson, P. Johnson and R. Joyce (eds), *The IFS Green Budget: February 2015*, http://www.ifs.org.uk/publications/7530.

[2] HM Treasury, 'Forecasts for the UK economy: a comparison of independent forecasts', January 2015, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/396864/forecomp_201501.pdf.

Figure 2.1. Contributions to UK GDP growth in 2015



Source: Haver Analytics, Oxford Economics.

suffered from a sharp fall in inventories, with stockbuilding running at 0.4% of GDP in 2015 compared with 1% in the previous year.

Props to consumer spending set to continue …

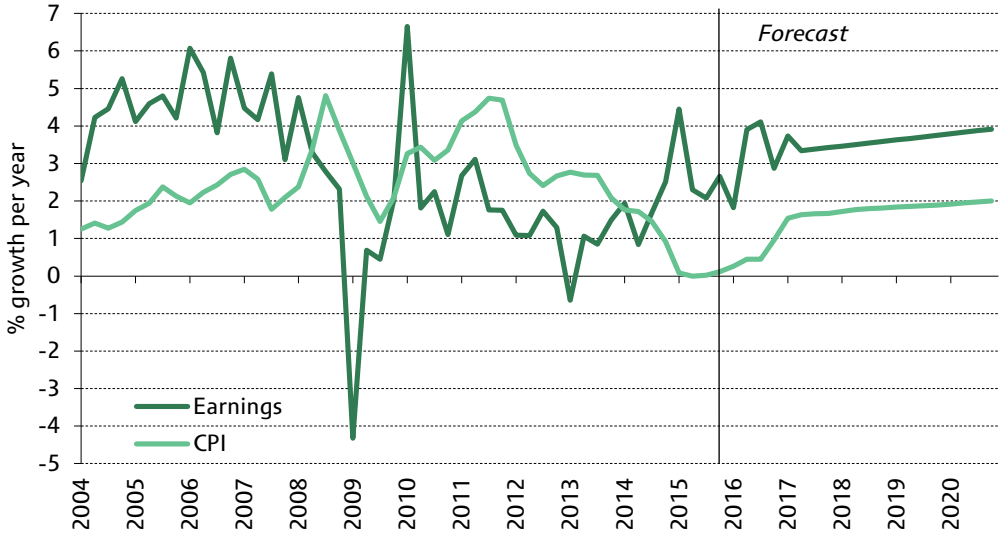
The factors that fuelled strong growth in consumer spending in 2015 – healthy rises in real incomes, easier credit availability and high levels of consumer confidence – are likely to remain supportive this year.

Recent falls in the price of oil (down by a quarter in sterling terms in the three months to the middle of January) and other commodities will mean that inflation rises more slowly than was previously expected, even as the effect of the collapse in energy prices at the end of 2014 ceases to affect the annual comparison. As of the middle of January 2016, the average price of a litre of petrol was 13% down on the recent peak reached last July and close to falling below the £1 per litre level for the first time since 2009.

Reflecting cheaper fuel and disinflation across much of the consumer spending basket, the annual Consumer Prices Index (CPI) measure is forecast to reach only 0.5% by the middle of 2016, and end the year at 1%, still only halfway to the Monetary Policy Committee's (MPC's) 2% inflation target (see Figure 2.2). This in turn will lessen the drag on real incomes from rising prices. At the same time, a tighter labour market should support pay growth. Labour force data for the three months to November showed the International Labour Organisation (ILO) unemployment rate falling to 5.1%, the lowest in a decade, and the *em*ployment rate rising to a record high of 74.0%. And the number of unemployed people per job vacancy fell to 2.2, below the 2003–07 average.

That said, the spur to pay growth from falling unemployment may prove to be less than some expect. This is because the 'Phillips curve', which captures the association between joblessness and pay growth, seems to have shifted down. For example, a jobless rate of 5.1% in the three months to November 2015 was equal to the rate averaged from 2003 to 2007. But annual average earnings growth of 1.9% (in cash terms and excluding bonus-related distortions) was only half the rate averaged over the same pre-crisis period.

Figure 2.2. Inflation and earnings growth



Source: Haver Analytics, Oxford Economics.

We expect the unemployment rate to drop to around 5% by the end of 2016, with the relatively modest fall from end-2015 levels reflecting a further recovery in labour productivity, the incentive provided by cheaper energy to invest in labour-saving capital equipment and another year of strong growth in the supply of workers. But while this fall will be sufficient to take the jobless rate down to around the MPC's estimate of the long-term equilibrium unemployment rate, annual growth in nominal average earnings (including bonuses) is forecast to run at 3.2% this year, only modestly up on the 2.9% seen in 2015 as a whole and still some way below the pre-crisis norm.

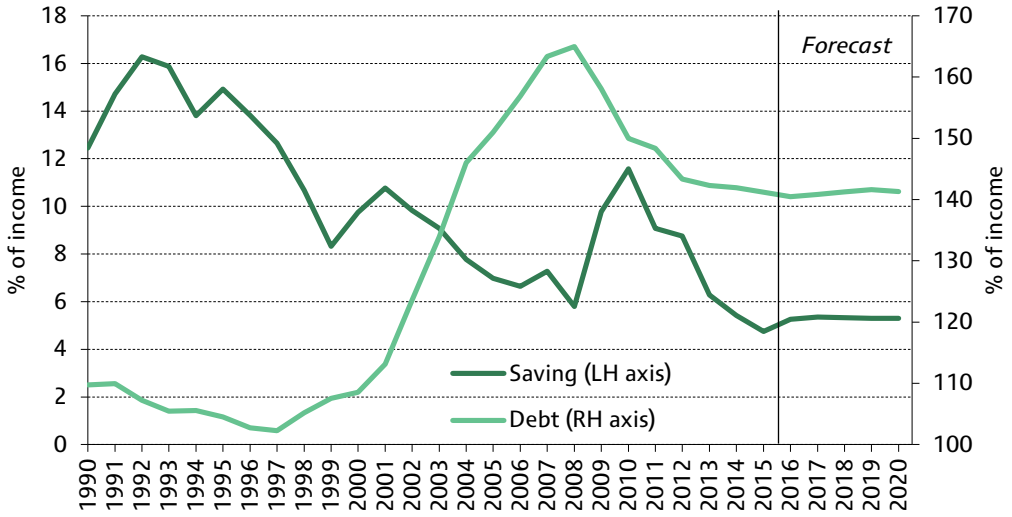
… with the 'National Living Wage' supporting pay growth

That said, the drag on incomes from an environment where pay is less responsive to unemployment will be partly compensated for by two policy measures. In July 2015, the government announced a 'National Living Wage' (NLW) for workers aged 25 and above. The NLW will initially be set at £7.20 when it is introduced in April 2016, with a target of it reaching 60% of median hourly earnings by 2020. The Office for Budget Responsibility (OBR) estimates that around ¾ million employees otherwise earning the NMW and around 2 million people moving from above the NMW to at least the NLW will gain from the NLW. The OBR also anticipates a wage 'spillover' for employees, as firms seek to maintain pay differentials, affecting 3¼ million people. That said, the NLW will also have a dampening effect on pay growth to the extent that it raises unemployment. Modelling by the OBR suggests that joblessness will ultimately be around 60,000 higher and real GDP lower by 0.1% than in the absence of the NLW.

Second, alongside the NLW, some UK workers will also benefit from an above-inflation increase in the income tax personal allowance in April. The allowance is set to rise from £10,600 to £11,000, providing an additional boost to net incomes. Meanwhile, the higher-rate threshold will see an increase from £42,385 to £43,000. Overall, these two measures will boost household incomes by around £2.9 billion per year.

Under the plans set out by the government in the Budget of July 2015, part of the boost to incomes from the NLW and more generous tax allowances would have been offset by cuts to tax credits that were due to take effect this April. But last November's Autumn

Figure 2.3. Personal debt and saving ratio



Source: Haver Analytics, Oxford Economics.

Statement saw the Chancellor choose to delay what would have been a £3.4 billion reduction in payments to affected lower-income households. So household incomes will see a stay of execution from what would have been a sizeable drag for affected families. However, the cuts will still apply to universal credit, so as the new benefit is rolled out across the country an increasing proportion of households in receipt of working-age benefits will ultimately receive less than they would have received under the old system (see Chapter 10).

Overall, an assessment of the various forces acting on household income growth leads us to expect a rise in real terms of 3.0% in 2016. While this would be slower than the 3.3% increase achieved last year, 2015's rise was exceptional (the strongest since 2001). Moreover, growth of 3% would be well above the 2.1% averaged from 2003 to 2007, implying that, at least on this metric, the economy is making up lost ground.

With consumer confidence at a high level and interest rates unlikely to rise until the end of the year, households might be inclined to spend predicted real income gains. However, 2015 saw the household saving ratio fall to only 4.8%, the lowest since records began in 1963. Granted, a measure of savings excluding households' net equity in pension funds shows less of a deviation from the historical norm. But with memories of the financial crisis still fresh and some households suffering a loss of wealth from recent falls in equity prices, we think that households are likely to exercise more prudence than may have been the case before 2008. The same factor also implies a slowdown in the rapid growth in consumer credit seen in the second half of 2015. As a result, growth in consumer spending of 2.9% in 2016 is set to fall slightly short of rises in incomes, implying a modest increase in the saving ratio (see Figure 2.3).

No change in rates likely until the end of the year ...

With CPI inflation forecast to end 2016 at only 1%, the global economic outlook clouded with uncertainty and the UK economy set to grow broadly in line with its trend rate this year, a majority of MPC members are unlikely to favour a rise in Bank Rate until the end of 2016 at the earliest. Certainly, the recent mood music of the MPC has been firmly dovish. For example, having signalled in mid 2015 that he expected to be considering

raising interest rates around the turn of this year, the Governor of the Bank of England, Mark Carney, has said that this timetable will slip because of weaker world growth and a slowdown in the UK's expansion.[3] And other Committee members have highlighted the absence of sustained stronger wage growth as a reason to hold back on a rate hike.[4]

Meanwhile, the slowdown in the economy in both real and nominal terms seen during 2015 is another reason to expect a further period of unchanged interest rates. Downward revisions to recent GDP growth estimates mean that the economy remains a long way from one of the Governor's three publicly-stated criteria for considering a rate hike – sustained growth of above 0.6% per quarter.[5] And the two other conditions stated by Governor Carney – stronger growth in unit labour costs and a sustained rise in core inflation – are also presently lacking.

Granted, some of the more hawkish members of the MPC have argued in favour of an immediate rate rise or a hike 'sooner rather than later' in order to head off nascent inflationary pressures.[6] But with the Bank's own November *Inflation Report* forecast predicting CPI inflation will not breach 1% until the second half of the year – a forecast which predated the latest collapse in the oil price – an urgent need for a pre-emptive monetary strike is lacking.

Consequently, we do not expect the first post-crisis hike in Bank Rate until the last quarter of 2016, with the risks, both domestic and global, suggesting that an even more prolonged period of record low rates is not out of the question. As stressed by the MPC, subsequent rises in interest rates are set to be slow and gradual. As such, we expect Bank Rate to only reach 1% by the middle of 2017 and end next year at 1¼%.

… supporting further growth in house prices

Continued low borrowing costs no doubt played a role in a gradual pick-up in housing market activity in the latter part of 2015. Monthly mortgage approvals for house purchases rose to 70,410 in November, only just shy of August's 18-month high, while net mortgage lending of £3.9 billion was the highest since April 2008. That said, these numbers were still well below the 2000–07 average of 107,000 approvals and £7 billion of monthly net mortgage lending.

The recent data on house prices have been harder to read but, by and large, they suggest that stronger activity has not yet had a marked effect on house price growth. Both the Nationwide and Halifax report prices ended 2015 up by a little over 1% on a three-month-on-three-month basis, broadly in line with nominal income growth, although the ONS series was running at roughly twice that pace. Admittedly, on an annual basis, the

[3] 'The turn of the year', speech given by Mark Carney, Governor of the Bank of England, Peston Lecture, Queen Mary University of London, 19 January 2016, http://www.bankofengland.co.uk/publications/Documents/speeches/2016/speech873.pdf.

[4] 'Treading carefully', speech given by Minouche Shafik, Deputy Governor, Markets & Banking, Institute of Directors, 14 December 2015, http://www.bankofengland.co.uk/publications/Documents/speeches/2015/speech870.pdf.

[5] 'From Lincoln to Lothbury: Magna Carta and the Bank of England', speech given by Mark Carney, Governor of the Bank of England, Lincoln Cathedral, 16 July 2015, http://www.bankofengland.co.uk/publications/Documents/speeches/2015/speech832.pdf.

[6] For example, see 'Growing your business in the global economy: not all doom and gloom', speech given by Kristin Forbes, External MPC member, Brighton, 16 October 2015, http://www.bankofengland.co.uk/publications/Documents/speeches/2015/speech848.pdf.

different measures have generally told a more heated story, with the Nationwide and Halifax measures in December up by 4.4% and 9.9% respectively.

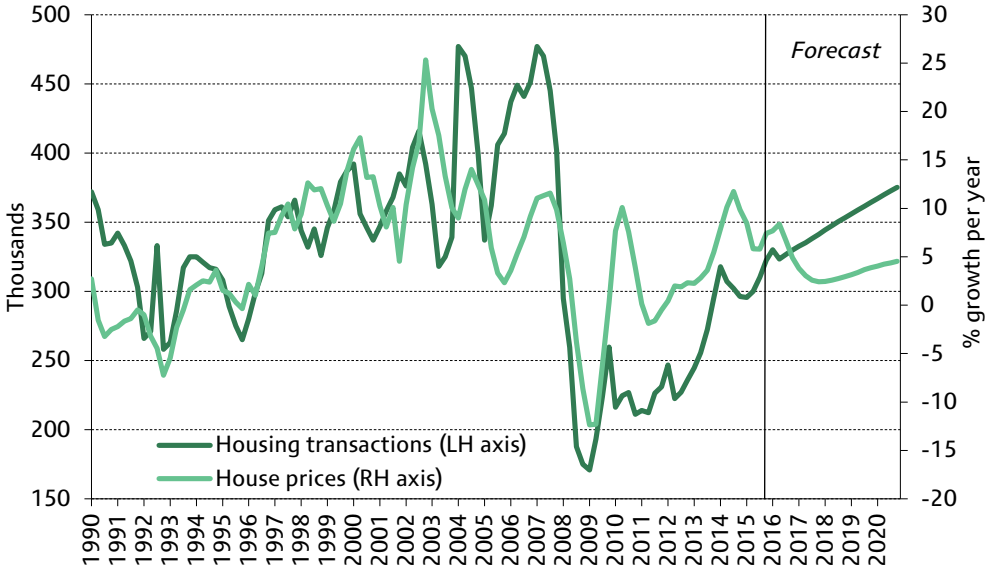
But there have been some tentative signs of late that demand may be starting to level off. In particular, the balance for new buyer enquiries from the Royal Institution of Chartered Surveyors (RICS) survey fell in November 2015 for the fourth successive month, signalling only modest increases in demand. This was consistent with the Bank of England's Credit Conditions Survey for Q4, which reported that while households' appetite for unsecured loans had risen, the increase was much smaller than the previous two quarters.

However, with household incomes set to continue to grow strongly and interest rates likely to be on hold for some time yet, the chances of demand for housing falling back to any great extent look remote. In particular, demand is likely to remain buoyant during the first quarter of 2016 as buy-to-let landlords anticipate the additional rate of stamp duty that they will face in April. But, combined with a phasing-out of mortgage interest tax relief, this is then likely to slow the buy-to-let market (which accounted for around 16% of the overall mortgage stock in 2015Q3, a 9 percentage point (ppt) rise on the share five years earlier).

Meanwhile, the RICS survey suggests that the number of new sellers has continued to shrink. Indeed, as of November 2015, the survey's new instructions balance had remained in negative territory for 10 consecutive months, the longest sustained run of negative readings since 2008–09. And levels of housebuilding remain well short of what would be needed to keep up with demographic changes, let alone what would be required to compensate for the persistent shortfalls since the financial crisis. New housing starts in England in the year to 2015Q3 amounted to 136,830, a fall on the 138,000 recorded a year earlier and a quarter below the immediate pre-crisis peak of 183,000 seen at the end of 2007. So supply remains very constrained, particularly in London and parts of southern England.

This fundamental imbalance between supply and demand should ensure that house prices continue to rise. However, we expect that the high current price of property

Figure 2.4. House prices and transactions



Source: Haver Analytics, Oxford Economics.

relative to incomes – the Halifax reported that the price-to-income ratio was 5.6 in December, the highest since early 2008 – will prevent house price growth accelerating. As Figure 2.4 shows, our forecast sees house price growth running at 6.9% in 2016, broadly unchanged from the rate of growth recorded last year. However, weaker household income growth, reflecting rising inflation, welfare cuts and a levelling-off in the jobless rate, is then forecast to cause a substantial slowdown to average below 3% a year in 2017–18.

Investment should continue to punch above its weight …

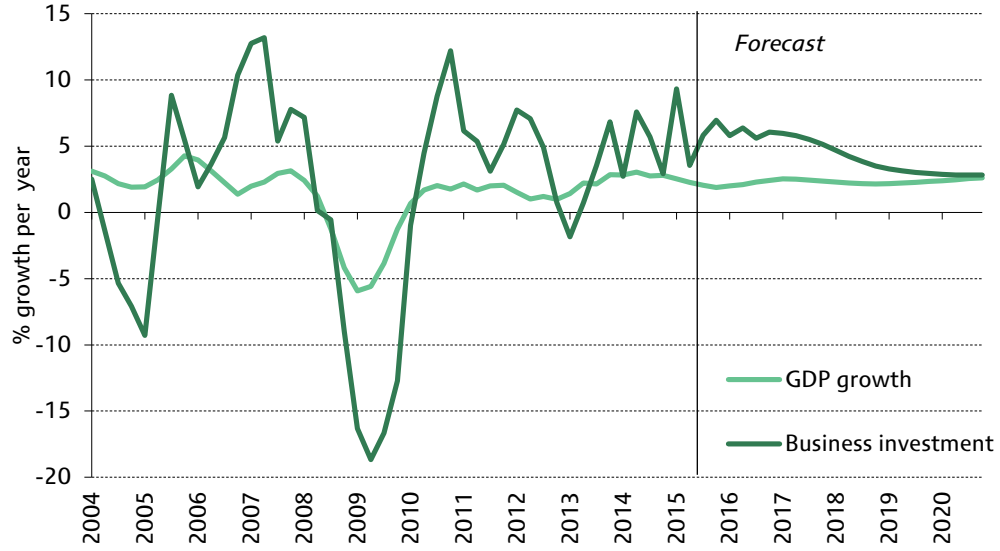
For those advocating a more balanced expansion, 2015 offered some hope in the form of growth in domestic demand being far from solely a consumer-driven affair. The rise in business investment significantly outpaced growth in overall GDP last year. And a generally benign investment climate augurs for 2016 being another year where spending by firms punches above its weight in driving the expansion.

2015 saw real business investment rise by 6.4%, the fastest rate since 2007. As a result, the share of GDP accounted for by this component of expenditure reached 10%, the first time this threshold had been breached since 2001 (excluding the effect of data reclassifications).

Continued robust growth in consumer spending should support a healthy environment for business investment in 2016. Indeed, surveys of investment intentions remain firm and the CBI's Industrial Trends Survey points to traditional constraints on investment, including access to external finance and uncertainty over the level of demand, remaining modest.

Moreover, firms have the resources to fund more capital spending. The ratio of profits to GDP for the private non-financial corporate sector rose from 18.3% in 2015Q2 to 18.9% in Q3, a ratio exceeded only three times in the previous 10 years. And the availability of external finance also looks more positive. The second half of 2015 saw growth in lending to companies by UK banks turn consistently positive on an annual basis for the first time since 2009. That said, firms in net terms are still in saving mode. UK corporations ran a

Figure 2.5. Business investment and GDP growth



Source: Haver Analytics.

financial surplus of 2.9% of GDP in 2015Q3, the largest in more than three years. So companies are still displaying some risk aversion, which may be exacerbated by uncertainty generated by a 'Brexit' referendum in 2016 or 2017.

Meanwhile, resources for investment will face competition from other demands. The NLW and its upward effect on pay bills will come into effect in April and, for large companies, the Apprenticeship Levy, due to be introduced in April 2017, represents another additional burden. Moreover, the recent further fall in oil prices may further undermine investment in the North Sea sector. That said, rising labour costs should encourage firms to invest in labour-saving technology. This, and the influence of other factors supporting spending by firms, leads us to forecast that business investment will grow by 6% in 2016, followed by 5.6% next year. So, as Figure 2.5 illustrates, companies should continue to contribute more than their fair share in driving GDP growth.

… while focus on traditional markets will support exports

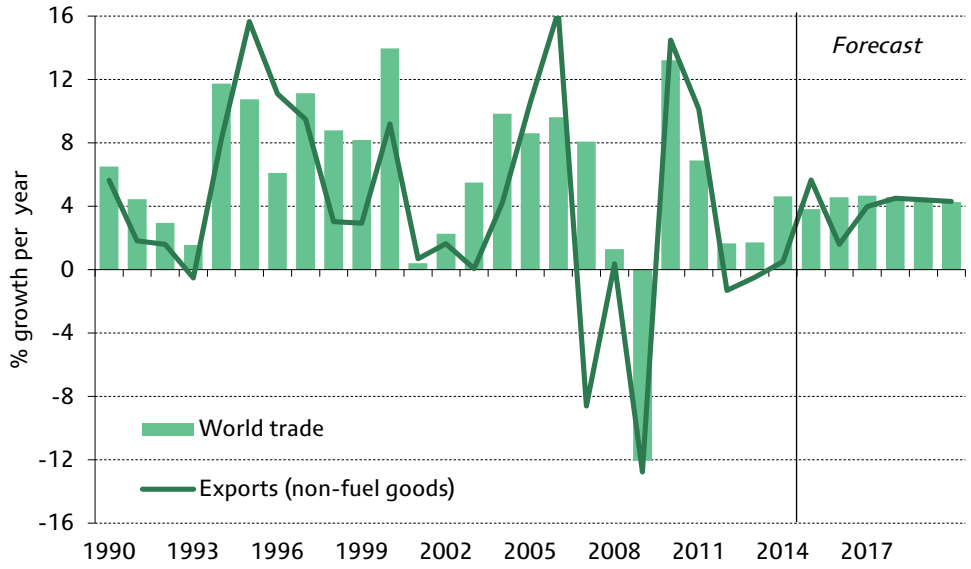
The sources of demand in the world economy have seen something of a shift over the last year. Having compensated for weak activity in advanced economies during and in the immediate aftermath of the financial crisis, rapid growth in emerging economies has recently seen a slowdown at the same time as the pace of expansion in the major advanced economies has modestly picked up. The good news, relatively speaking, is that given the focus of the UK's exports on traditional markets in Europe and North America, the UK is likely to be less impacted by global economic instability than other advanced economies with more exposure to emerging economies such as China.

Granted, net trade looks to have exerted a small drag on GDP last year, a reversal of the modest boost provided in 2014. But the drag in 2015 disguised a surprisingly strong 5.4% rise in export volumes, up from growth of only 1.2% in the previous year. While some rise was likely given a reasonable performance from the US economy and a pick-up in eurozone activity (the two economies collectively account for almost 60% of UK exports), the strength of the rise was somewhat at odds with the weakness of the business surveys and raises some doubts around the robustness of the trade data (note that the ONS's trade numbers had their status as a National Statistic suspended in November 2014, a suspension which has yet to be lifted). But against a background of strong rises in (import-intensive) consumption and capital spending, growth in overseas sales was more than offset by an even stronger rise in import volumes of 6.1%.

The international environment for UK exporters offers some cause for positivity in 2016. One reason is a cheaper currency. Having strengthened by close to 10% over the course of 2014 and 2015, sterling's trade-weighted value has recently fallen back, helped by an MPC in no hurry to raise interest rates, the onset of rising borrowing costs in the US and a less-dovish-than-expected European Central Bank. Against the dollar, January saw the pound drop to $1.41, the lowest since 2009. And having reached an eight-year high against the euro in November, sterling fell by over 6% against the common currency in the space of only two months. Looking forward, the hawkishness of the US Fed vis-à-vis the MPC is likely to mean that sterling's relative weakness against the US currency persists. Meanwhile, a period of stability against the euro is forecast for most of 2016, with the pound expected to strengthen towards the end of the year as attention focuses on a possible UK rate rise.

The effect of a cheaper pound will add to the support to UK exports from a continuation of reasonable growth in activity in the US and eurozone economies, supported by the

Figure 2.6. Exports and world trade growth



Source: Haver Analytics, Oxford Economics.

boost from the renewed drop in oil prices. GDP growth in the US is forecast to come in at 2.4% this year, similar to the 2015 out-turn, while eurozone growth is expected to strengthen from 1.5% in 2015 to 1.8%. Admittedly, weakness in emerging economies, particularly China, will hinder overseas sales. But while UK exports to these markets have been fast-growing, emergers still represent a relatively small market. For example, in 2014, the value of UK exports to the Republic of Ireland (population: 4.6 million) was nearly 50% higher than the value of exports to China (population: 1.4 billion). As such, growth in world trade (weighted by UK export shares) is forecast to accelerate from 3.8% in 2015 to 4.6% this year and 4.7% in 2017 (see Figure 2.6).

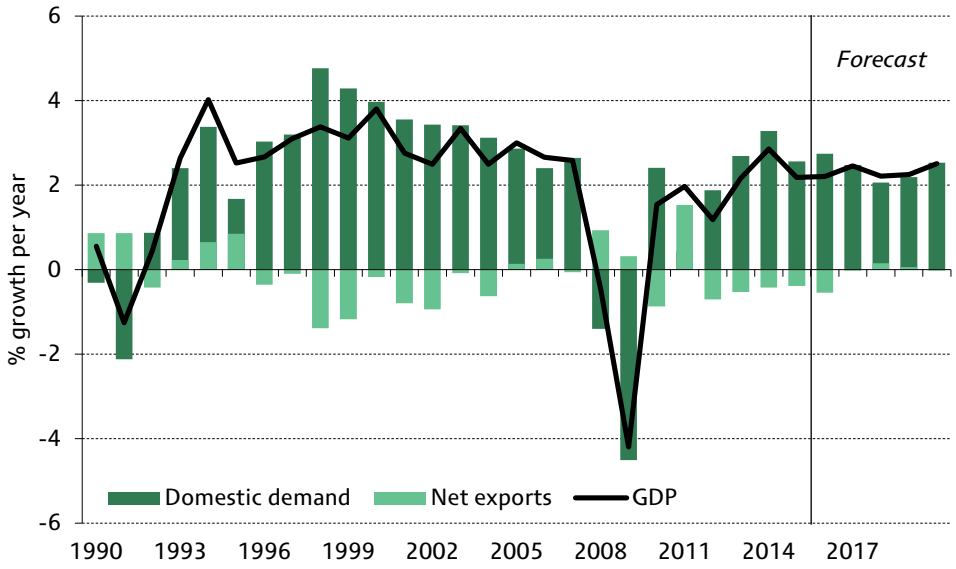
But despite some reasons for optimism, net trade is still set to remain the bridesmaid of the UK economy rather than the bride. With the lagged effect of the pound's previous strength still in play, we expect export volumes to rise by 2.6% this year. But in light of consumers' appetite to spend remaining undiminished, import growth of 4% will outstrip the rise in exports. That said, while this will, all else equal, push up the UK's current account deficit, which ran at just over 4% of GDP in 2015, improvements in other elements of the UK's overseas accounts, particularly net investment income from abroad, lead us to expect the current account deficit to narrow to 3.7% of GDP this year.

Some pick-up in growth, but expansion to remain unspectacular

Given the extent to which the economy has fallen behind the level of GDP implied by the pre-financial crisis trend (an issue explored in detail in Section 2.3) and the putative boost to activity from 'noflation', falling unemployment and rising real incomes, the modest growth of 2.2% recorded in 2015 was underwhelming.

But other metrics, not least the performance of the labour market, point to an economy that is in relatively good shape. With the tailwinds to consumer spending remaining plentiful, a healthy environment for business investment and some improvement in the UK's key overseas markets, 2016 should see GDP again growing by 2.2%, before a modest

Figure 2.7. Contributions to GDP growth



Source: Haver Analytics, Oxford Economics.

pickup to 2.5% in 2017 (see Figure 2.7). But the norm of past expansions – a burst of sustained above-trend growth – looks like it will remain elusive.

2.3 Medium-term outlook – steady but unspectacular growth

Over the medium term, we expect a steady, but unspectacular, pace of economic growth to continue. The combination of estimates of the current output gap and of potential growth going forwards drives our forecast for medium-term GDP growth.

How large is the output gap?

The question of the size of the output gap and forecasts for growth in potential output are crucially important to both fiscal and monetary policy. In terms of fiscal policy, though the Chancellor has now moved away from a cyclically-adjusted target for borrowing in favour of an absolute one, the projections for potential output are central to all of the OBR's forecasts for the economy and the public finances. With regards to monetary policy, the MPC has been content to leave interest rates at their current very low level partly because of its belief that there is still some 'slack' in the economy, which can be used up before there is a risk of inflationary pressures building.

Estimating the size of the output gap requires a high degree of judgement

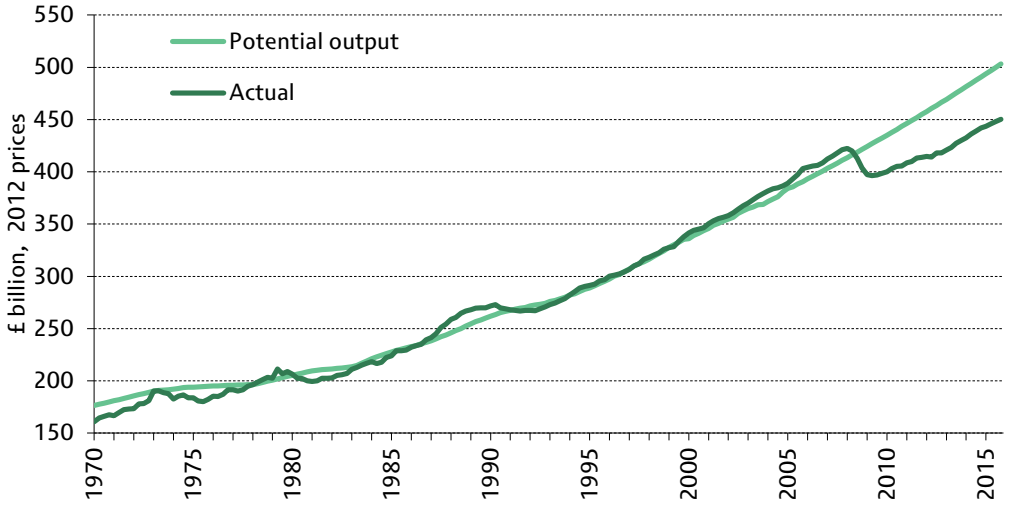
However, the size of the output gap and the strength of potential output growth cannot be measured directly. As such, most commentators agree that the best approach is to use a range of different indicators to try to proxy the level of spare capacity, although with these indicators not always corroborating one another, a high degree of judgement is often required on behalf of the forecaster. Furthermore, economic data can often be subject to revision for many years after the event, which makes 'real-time' estimates of the output gap particularly difficult. Indeed, a working paper from the External MPC Unit of the Bank of England found that estimates of the output gap have become progressively

more prone to revision and 'unreliable' over time, with the authors citing the difficulty of separating the trend from the cycle in economic data as being the main cause of this.[7] This presents a significant challenge for policymakers.

Estimation of the output gap has proven particularly problematic since the financial crisis for two reasons. First, the depth of the recession and the relatively slow pace of the subsequent recovery have left the level of actual output well below where it would have been had pre-crisis trends continued. GDP fell by just over 6% from peak to trough during the recession and, eight years on, it is around 6¾% above the early-2008 level. Were we to assume that potential output had continued to grow at historic rates since 2007, it would suggest an output gap of around 11% (see Figure 2.8). Such a divergence between actual output and the level of output implied by long-run trends is by no means uncommon – a number of advanced economies are estimated to have double-digit output gaps if this approach is applied. However, most commentators agree that the financial crisis inflicted structural damage to potential output which will never be reversed, implying much smaller output gaps. But the extent is widely disputed.

Second, the degree to which the National Accounts data have been revised. In 2014, the ONS overhauled the UK National Accounts with the implementation of European System of Accounts 2010 (ESA10), which resulted in substantial revisions to the profile for GDP, particularly for the period since the financial crisis. This was followed in September 2015 by the revisions associated with the 2015 Blue Book. While the methodological improvements were not as fundamental as in the previous year, the impact of the methodological changes, the supply and use balancing,[8] and the annual benchmarking to

Figure 2.8. Quarterly GDP relative to potential output estimated by extrapolating the pre-crisis trend in output



Note: Potential output series shows Oxford Economics estimates from 1970 to 2006. Potential output is then grown in line with the long-term average (2.5% a year) from 2007 to 2015.
Source: Haver Analytics, Oxford Economics.

[7] A. Chiu and T. Wieladek, 'Did output gap measurement improve over time?', Bank of England, External MPC Unit, Discussion Paper 36, 2012, http://www.bankofengland.co.uk/monetarypolicy/Documents/externalmpc/extmpcpaper0036.pdf.

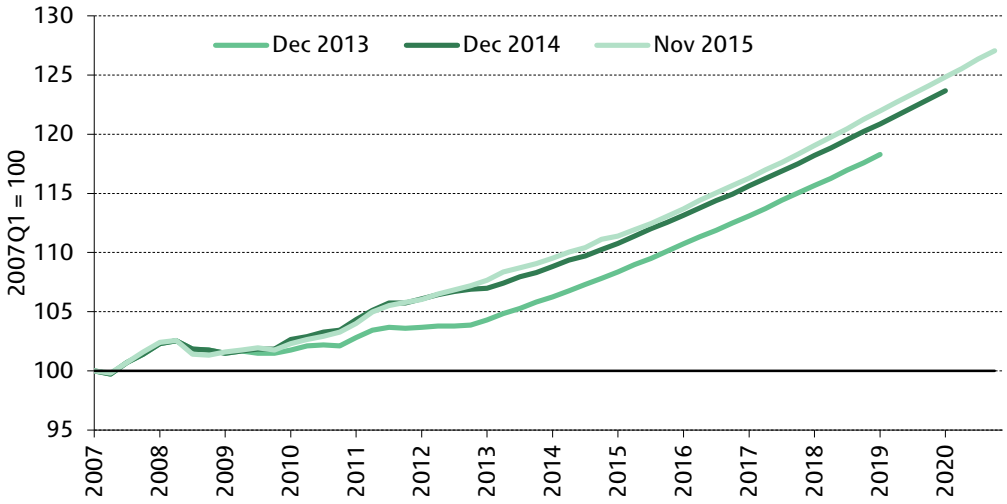
[8] The supply and use balancing process enables the ONS to achieve consistency across the income, production and expenditure measures of GDP. This is achieved by balancing the supply and demand for goods and services and reconciling them with the corresponding value-added estimates.

other sources resulted in further upward revisions to both the level and year-on-year growth rates for GDP in the period since the crisis.

The OBR's efforts have been compromised by sizeable data revisions

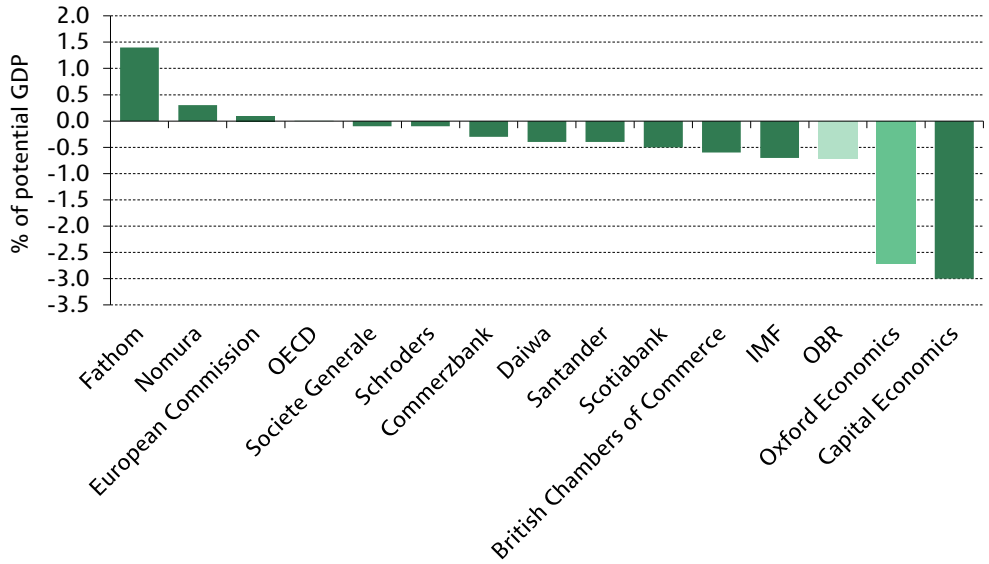
These data revisions have caused substantial problems for the OBR. It makes a judgement on the historical size of the output gap with reference to a number of different techniques. Combining these estimates of the output gap with the National Accounts data for GDP derives estimates of potential output. The OBR then uses a 'bottom-up' approach to forecast potential output out to 2020. However, because the GDP data have been so heavily revised, this means that the OBR's estimates of potential output have also been subject to substantial revision. The OBR's estimate of the level of potential output at the end of 2013 is now more than 3% higher than it was at the time of the 2013 Autumn Statement (see Figure 2.9).

Figure 2.9. OBR estimates for potential output



Source: Oxford Economics calculations using data and forecasts from the OBR.

Figure 2.10. Estimates of the output gap in 2015



Note: These estimates are taken from the January 2016 edition, apart from where institutions are missing in which case data from the December 2015 edition are quoted.
Source: HM Treasury, 'Forecasts for the UK economy', December 2015 and January 2016.

There is a wide spread of views amongst economists

These two factors make it very difficult to calibrate the estimates of potential output and are important in explaining why there is such a spread of views amongst forecasters about the size of the output gap. In the latest HM Treasury survey of independent forecasts, the estimates of the output gap in 2015 ranged from +1.4% of potential GDP to –3.0% of potential GDP (see Figure 2.10).

Our approach: estimating potential output via a production function approach

We prefer to estimate the level of potential output and then combine this with the actual GDP data to derive an estimate of the output gap. We use a production function approach to estimating potential output,[9] which provides a framework that relates the level of potential output to contributions from factor inputs – labour and capital – and the efficiency with which those inputs are used (so-called 'total factor productivity'). It also provides a consistent method for forecasting future growth in potential output, taking into account important changes such as demographic trends.

Capital stock: We use ONS data on the capital stock and labour supply to derive estimates of the contributions from factor inputs. The data on the capital stock, which now run to 2014, suggest that its contribution to potential output growth has been much weaker since the financial crisis than it was before. However, robust growth in capital spending in the period since 2014 – we estimate that last year saw business investment increase by 6.4%, the strongest out-turn since 2007 – suggests that its contribution has increased more recently.

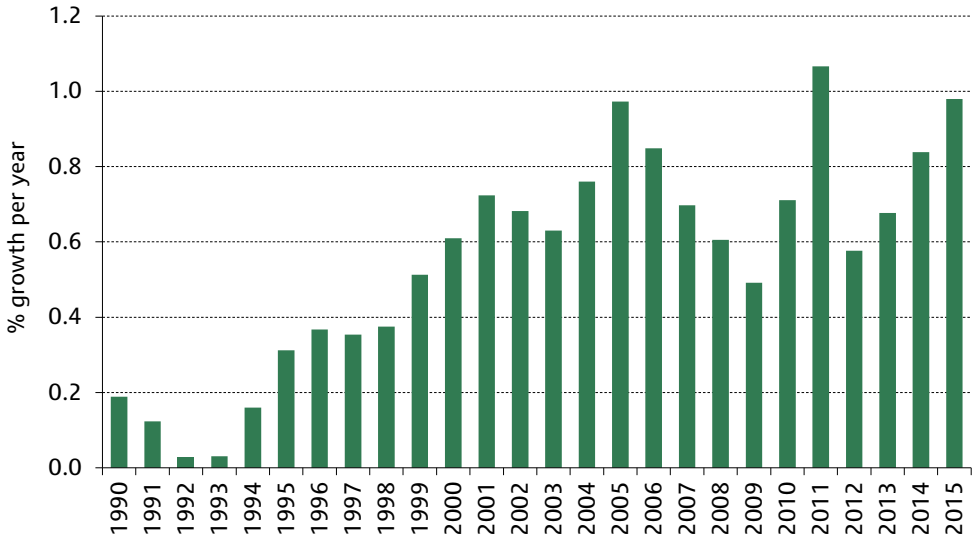
Labour supply: The news on the labour supply has been consistently firmer. In particular, labour supply has been boosted by very high levels of inward migration. The latest data reported that net long-term inward migration totalled 336,000 over the year to June 2015, equalling the record high of the previous quarter. This was the latest in a run of very strong figures for migration and since the financial crisis net inward migration has averaged around 230,000 a year, more than 20,000 higher than the decade prior to the 2008 financial crisis. Indeed, it is possible that these figures may understate the level of inward migration in recent years. The official long-term migration statistics are derived from the International Passenger Survey (IPS) and count those people who are intending to move for more than 12 months. However, other sources suggest that inflows could be much higher. For example, while the IPS suggested that 294,000 people immigrated for work in the year to June 2015, statistics from the Department for Work and Pensions reported that 917,000 new National Insurance numbers were allocated to overseas nationals over the same period.

The supply of workers has also been boosted by the steady increase in the female state pension age (SPA), which has risen from 60 at the beginning of the decade to reach nearly 63 at the end of 2015.

As a result of these two factors, we estimate that the population of working age has risen by 0.7% a year since the financial crisis, with growth reaching 1% in 2015; since 1990, it has risen this rapidly on an annual basis only twice before (see Figure 2.11). With participation rates also having risen in recent years, we estimate that growth in labour

[9] In the Oxford Economics UK Model, we use a Cobb–Douglas production function, $Y^* = A + L^{\alpha} + K^{(1-\alpha)}$, where: Y^* is potential output; L is potential labour supply, which is equal to the labour supply at the NAIRU (non-accelerating inflation rate of unemployment); K is the capital stock; and A is total factor productivity (TFP). This is rewritten in natural logs, with α equal to 0.65: $\ln(Y^*) = \ln(A) + 0.65\ln(L) + 0.35\ln(K)$.

Figure 2.11. Working-age population growth



Source: Haver Analytics, Oxford Economics.

supply has continued to make solid contributions to potential output growth since the financial crisis, with the performance over the past few years having been particularly strong. Indeed, given that our estimates are based upon the IPS data on migration, it is possible that growth in labour supply may have been even stronger, if the IPS has been understating the degree of immigration.

Potential output growth: A key judgement call underpinning these estimates is the degree to which potential output was permanently damaged by the financial crisis. In previous Green Budgets, we studied this subject in detail,[10] including a review of the literature on previous crises, and concluded that, as a result of factors related to the financial crisis, potential output is likely to remain permanently around 7–8% below where it would have been had the pre-crisis trend continued. This is towards the top of the range of estimates contained in the literature on previous crises. Given their estimates of the output gap, we believe that many other forecasters, including the OBR, have assumed that the permanent damage has been somewhat greater.

The literature tells us that a large proportion of the damage to potential output comes through weaker total factor productivity and that the full effects tend to be felt within five years. Our forecasts make fairly conservative assumptions for total factor productivity which are consistent with the literature. This leads us to conclude that potential output has grown by around 1.8% a year between 2012 and 2015.

Based upon the ONS's current estimate of actual GDP, this would suggest that the output gap narrowed from a peak of just over 5% of potential output at the end of 2012 to 2¾% in 2015Q4. However, the output gap could be wider if the IPS has been understating the degree of inward migration and the reality is closer to the picture painted by the data on the new National Insurance numbers, thus meaning that potential output growth has been stronger than our estimates would indicate. Conversely, as in previous years, we believe that there is a good chance that the ONS will revise up its estimates for GDP growth over the past few years, once the data have been through the Blue Book balancing

[10] See pages 72–81 of A. Goodwin and O. Salmon, 'The UK economic outlook', in C. Emmerson, P. Johnson and H. Miller (eds), *The IFS Green Budget: February 2014*, http://www.ifs.org.uk/budgets/gb2014/gb2014.pdf.

process. Were it to do this, it would reduce our estimate of the output gap and, other things being equal, bring it closer to the OBR's estimate.

Potential output growth to remain firm over the next five years

Having estimated how much spare capacity we believe there is in the UK economy at present, we must make a judgement on how potential output will evolve, in order to determine the scope for actual GDP growth to recover. To do this, we again use the production function approach to consider how the contributions of the various factor inputs are likely to evolve.

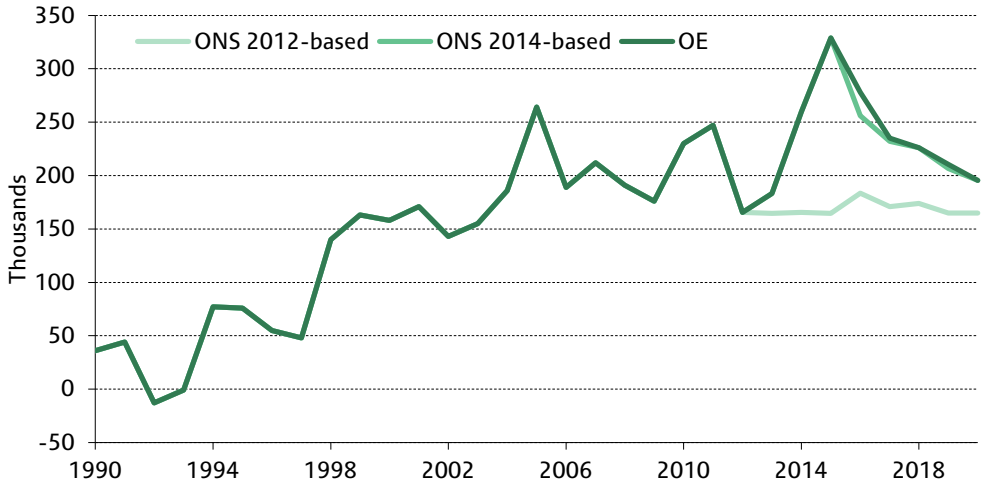
Capital stock

Our forecast shows continued strong growth in business investment. The financial position of the corporate sector remains very strong, with profitability above historical norms, cash holdings near to record highs and credit availability much improved. Rates of return on investment are at a record high in the services sector and relatively strong across the economy as a whole, suggesting that firms' appetite to spend should remain strong, and the prospect of rising labour costs, due to the introduction of the NLW, will provide further motivation. Furthermore, firm rates of economic growth will mean that firms also increasingly need to invest to expand capacity. This means that the contribution of the capital stock to potential output growth is expected to accelerate through the forecast period. Over the 2016–20 period as a whole, we expect it to contribute 0.9ppts per year to potential output growth, which is comparable to the performance in the 10 years prior to the financial crisis.

Labour supply

Prospects for growth in the labour supply will be heavily affected by demographic developments. The recent very high levels of net inward migration have surprised on the upside, which has led to the ONS raising its assumptions for migration in the principal population projections, which the OBR adopts for its forecast. The latest (2014-based) ONS projections show net inward migration slowing gradually from 329,000 in the year to mid 2015 to 196,000 in the year to mid 2020; the previous, 2012-based vintage assumed figures of 165,000 for both periods (see Figure 2.12).

Figure 2.12. Net inward migration assumptions



Source: ONS, Oxford Economics.

There are good reasons to expect the level of net inward migration to slow over the coming five years. As economic conditions in the eurozone continue to improve, unemployment there should fall back further, which will reduce the motivation for potential migrants to move to the UK. Alongside this, income differentials are steadily closing between countries in western Europe, such as the UK, and economies in central and eastern Europe, such as Poland. Though the introduction of the NLW will mitigate this to some extent, we expect the net effect to be to lessen the incentives for workers in central and eastern European economies to move to the UK and also to make it more attractive for those who have migrated from those countries over the past decade to return home. The government has also suggested that it would like to reduce the levels of inward migration into the UK over the next five years, although given that the bulk of migrants come from EU countries – total net inward migration was 336,000 in the year to June 2015, while net inflows from the EU were 180,000 – the government's ability to reduce migration levels (while remaining in the EU) is somewhat limited. As such, in the short term we think that net inward migration is likely to slow less than it does under the ONS's projections.

The population of working age will also be boosted by further increases in the SPA. By October 2020, the SPA will have reached 66 for both men and women, compared with the current levels of 65 for males and just under 63 for females. Overall, we expect the population of working age to grow by 1% a year from 2016 to 2020.

However, while we expect the population of working age to continue to grow strongly, a decline in the participation rate is likely to mean that the size of the workforce grows a little more slowly. The likely decline in participation is largely because the population is ageing and labour market participation is still substantially lower amongst those close to the SPA than amongst younger individuals. However, the downward pressures from this source should be partially offset by higher participation amongst 'frustrated' workers. In addition to the unemployed, there is a sizeable body of people who are either working part time but report wanting a full-time job or who are economically inactive but report wishing to work. Data from the ONS suggest that the number of people falling into these two categories currently totals around 3.5 million, which compares with a total of 2.9 million in 2007, the year before the financial crisis hit (see Figure 2.13). As the labour market continues to tighten, we would expect participation amongst this group to increase, echoing the experience of the past couple of years. This would take the form of part-timers working more hours and some of those who are currently inactive re-entering the labour market.

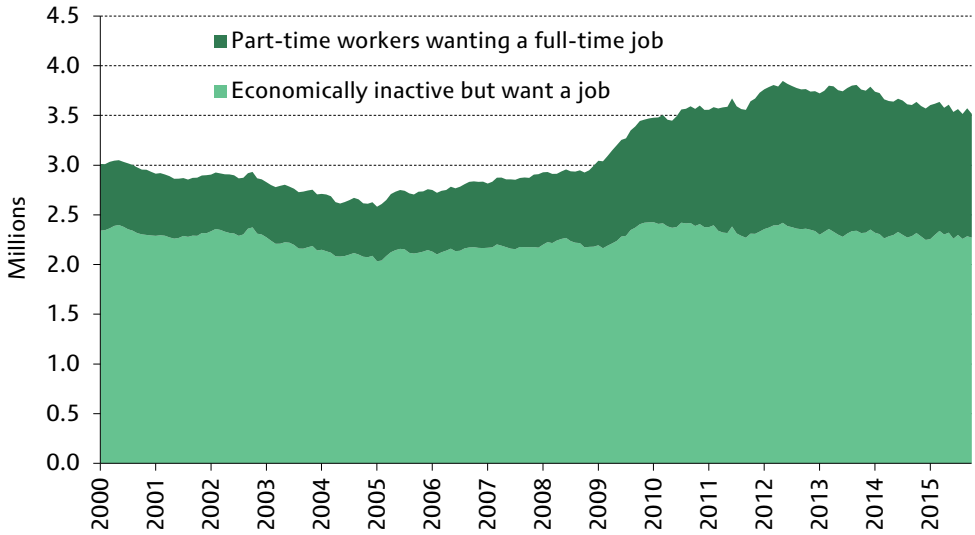
The other factor to affect the contribution of the labour supply to potential output growth is the level of the NAIRU.[11] Our forecasts assume that the NAIRU increased from 5% to 5¾% in the aftermath of the financial crisis, which is based upon empirical evidence – notably Blanchard and Summers (1986)[12] and Ball (2009)[13] – which suggests that significant shifts in aggregate demand can lead to changes in the NAIRU through hysteresis. This is because those out of work for a prolonged period see the value of their

[11] NAIRU – non-accelerating inflation rate of unemployment. Even when the economy is operating at its long-run potential, there will still be some level of frictional unemployment – this is known as the NAIRU.

[12] O.J. Blanchard and L.H. Summers, 'Hysteresis and the European unemployment problem', in S. Fischer (ed.), *NBER Macroeconomics Annual*, volume 1, 1986, http://www.nber.org/chapters/c4245.pdf.

[13] L.M. Ball, 'Hysteresis in unemployment: old and new evidence', National Bureau of Economic Research (NBER), Working Paper 14818, 2009, http://www.nber.org/papers/w14818.

Figure 2.13. Number of 'frustrated' workers

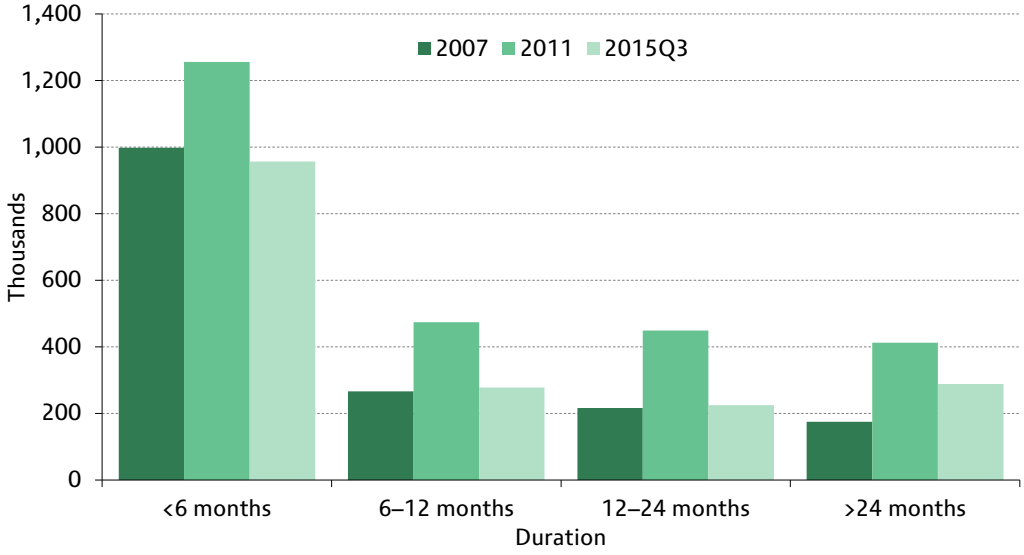


Source: Oxford Economics calculations using data from Haver Analytics.

skills eroded and become detached from the labour market, so the pool of available and suitably-skilled workers is reduced.

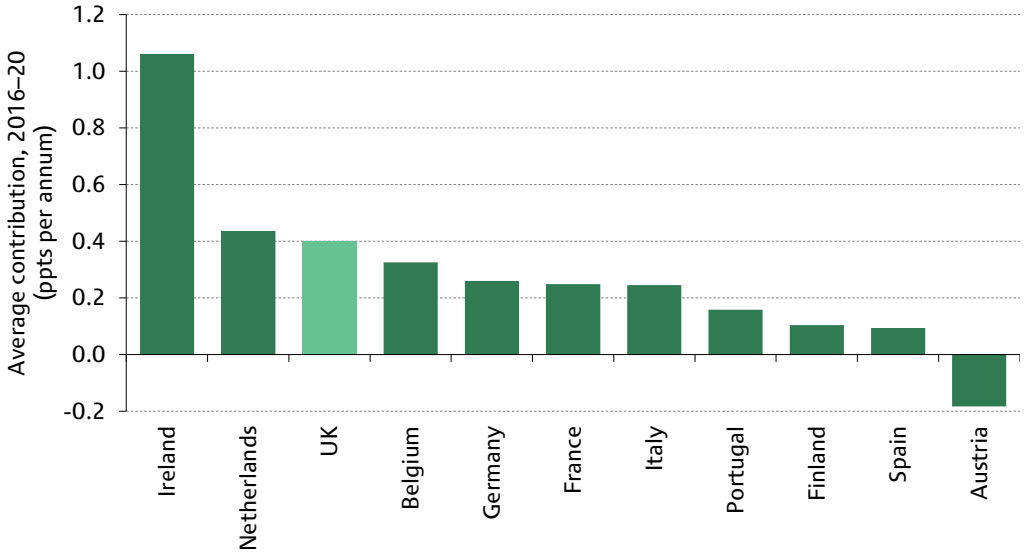
However, the rapid strengthening of the labour market over recent years would appear to suggest that the NAIRU has fallen back once more. In particular, there appears to have been a greater degree of success in reintegrating the long-term unemployed than had previously been feared. In Figure 2.14, we compare the levels of unemployment for various durations in 2007 (the year prior to the financial crisis), 2011 (the peak year of unemployment) and 2015Q3 (the latest data point). This shows that the number of people unemployed for 12–24 months is almost back at its pre-crisis level. And though the number unemployed for more than 24 months remains above its 2007 level, it has still fallen by 30% since 2011.

Figure 2.14. ILO unemployment by duration



Source: Haver Analytics.

Figure 2.15. Forecasts for the contribution of the labour supply to potential output growth in selected European countries, 2016–20



Source: Oxford Economics.

Further progress in reducing the NAIRU may be complicated by the shift in employment from the public to the private sector. This is because it could lead to a mismatch between skills and opportunities as the likelihood is that the regional pattern of public sector job losses – and private sector opportunities – will be uneven. However, on the other hand, the fact that increases in unemployment were more highly concentrated on the young than in past cycles might be reason to expect the NAIRU to fall back. This is because we would expect that the younger unemployed would be better placed to retrain and re-enter the workforce than those from older age groups. In addition, the fact that wage pressures have remained so muted, despite the unemployment rate having moved back to pre-crisis levels, also suggests that the NAIRU has dropped back. On balance, we think it reasonable to assume that the NAIRU steadily declines back to its original level of 5% by the end of the forecast horizon. This represents a point of difference with the OBR, whose forecast shows unemployment drifting upwards over the latter part of the forecast horizon, implying that it estimates the NAIRU to be a little higher.

Bringing together our forecasts for population growth, participation and the NAIRU, we find that the contribution of the labour supply to potential output growth is expected to be 0.4ppts a year over the period 2016–20. This is a little weaker than the average from 2007–15 (0.5ppts a year) and well down on the average contribution of 0.8ppts a year over 1996–2006. This reflects the assumption that inward migration will steadily slow and, as such, provide less of an offset to the impact of an ageing population.

Nevertheless, our forecast for the UK is still much stronger than those for most other European countries (see Figure 2.15), reflecting the much poorer demographics and much higher levels of long-term unemployment in many of these countries.

Total factor productivity

As we have established, the literature suggests that we should already have seen the bulk of any permanent damage to total factor productivity caused by the financial crisis. As such, we assume that the contribution of total factor productivity to potential output growth continues to move steadily back towards historical norms through the forecast

horizon. Over the 2016–20 period as a whole, we assume that total factor productivity contributes 0.9ppts per year to potential output growth.

A forecast of potential output and the output gap

Bringing these factors together, we expect growth in potential output to average 2.1% a year between 2016 and 2020 (Table 2.1). This is some way below the average of the decade prior to the financial crisis (2.8%) but it represents a clear step up on the average growth rate of 1.6% a year that we estimate was achieved between 2007 and 2015.

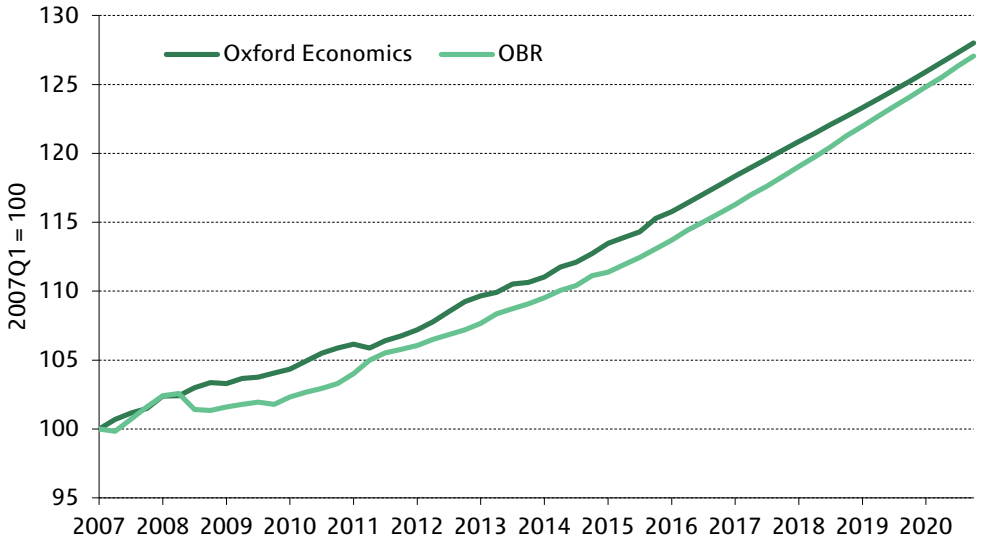
We expect GDP growth to average 2.3% a year over the 2016–20 period. Ordinarily, such a large output gap would be expected to foster stronger GDP growth, partly via more accommodative macroeconomic policy. However, the fiscal consolidation will weigh on GDP growth throughout the forecast horizon, with the OBR's latest forecasts implying that it will exert an average drag of 0.9% a year until 2019–20. And the Bank of England appears to be taking a more pessimistic view of the economy's ability to enjoy non-inflationary growth than we think is justified. So monetary policy may not be as supportive to the economy as circumstances suggest is appropriate. These factors, in turn, mean that it will take longer for the output gap to close. In our view, there is no

Table 2.1. Contributions to potential output growth (percentage points per annum)

	1996–2006	2007–15	2016–20
Labour supply	0.8	0.5	0.4
Capital stock	0.9	0.5	0.9
Total factor productivity	1.2	0.7	0.9
Potential output	**2.8**	**1.6**	**2.1**
Actual GDP	**3.0**	**1.1**	**2.3**

Note: Columns may not sum exactly due to rounding.
Source: Oxford Economics.

Figure 2.16. Forecasts of potential output



Source: Oxford Economics, OBR.

reason why an output gap should have to close within a particular time frame, and in this case the headwinds to growth from the fiscal consolidation provide good reason to expect it to close at a slower pace than in previous cycles (when the deficit, and therefore fiscal tightening, was smaller).

Our forecast for potential output growth is a little weaker than that of the OBR over the 2016–20 period (2.1% a year versus 2.3% a year), which reflects our more conservative expectations for growth in business investment. However, because we estimate that the permanent damage to potential output during the financial crisis was smaller (we estimate that potential output grew by 1.6% a year from 2007 to 2015, compared with the OBR's forecast of 1.4% a year), our forecast starts from a point where the level of potential output is higher than that of the OBR. As such, by the end of 2020, our estimate of the level of potential output is around 0.8ppts higher than that of the OBR (see Figure 2.16).

Recovery to remain firm over medium term but still weaker than previous upturns

The existence of a sizeable output gap should keep inflation low and create the conditions for growth to remain firm over the medium term. GDP growth is expected to average 2.3% a year over 2016–20 (see Table 2.2). Once the initial boost to consumer spending from very low inflation has fizzled out, growth slows as the welfare cuts, cuts to government spending and higher interest rates take effect. However, with fiscal consolidation due to be completed by fiscal year 2019–20, we expect growth to recover again in the last year of the forecast horizon.

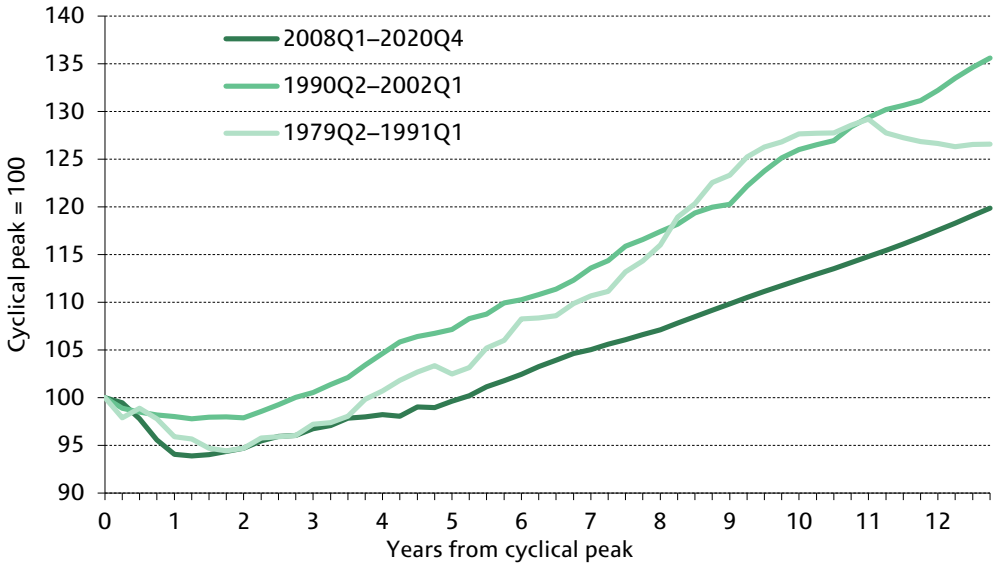
Our expectations for the current cycle are significantly weaker than for periods following other recent recessions, although this largely reflects the severity of the recession as well

Table 2.2. Oxford Economics UK forecast (annual % change unless stated)

	2014	2015	2016	2017	2018	2019	2020
Domestic demand	3.2	2.5	2.6	2.4	2.0	2.1	2.5
Private consumption	2.6	3.0	2.9	2.1	1.8	1.9	2.3
Fixed investment	7.3	4.5	4.9	5.1	3.9	3.6	3.0
Stockbuilding (% of GDP)	1.0	0.4	0.3	0.3	0.3	0.3	0.3
Government consumption	2.5	1.7	0.9	0.7	0.6	1.3	2.4
Exports of goods and services	1.2	5.4	2.6	4.1	4.4	4.1	4.0
Imports of goods and services	2.4	6.1	4.0	3.8	3.5	3.6	3.7
GDP	2.9	2.2	2.2	2.5	2.2	2.2	2.5
Industrial production	1.3	1.2	0.8	1.3	1.0	0.9	1.2
CPI	1.5	0.0	0.5	1.7	1.8	1.8	1.9
Current balance (% of GDP)	–5.1	–4.1	–3.7	–3.0	–2.7	–2.4	–2.3
Short-term interest rates (%)	0.54	0.55	0.61	1.05	1.57	2.10	2.63
Long-term interest rates (%)	2.57	1.90	2.14	2.63	3.08	3.48	3.88
Exchange rate (US$ per £)	1.65	1.53	1.42	1.46	1.48	1.49	1.51
Exchange rate (euro per £)	1.24	1.38	1.34	1.37	1.36	1.34	1.33

Source: Oxford Economics.

Figure 2.17. Comparison of UK economic cycles

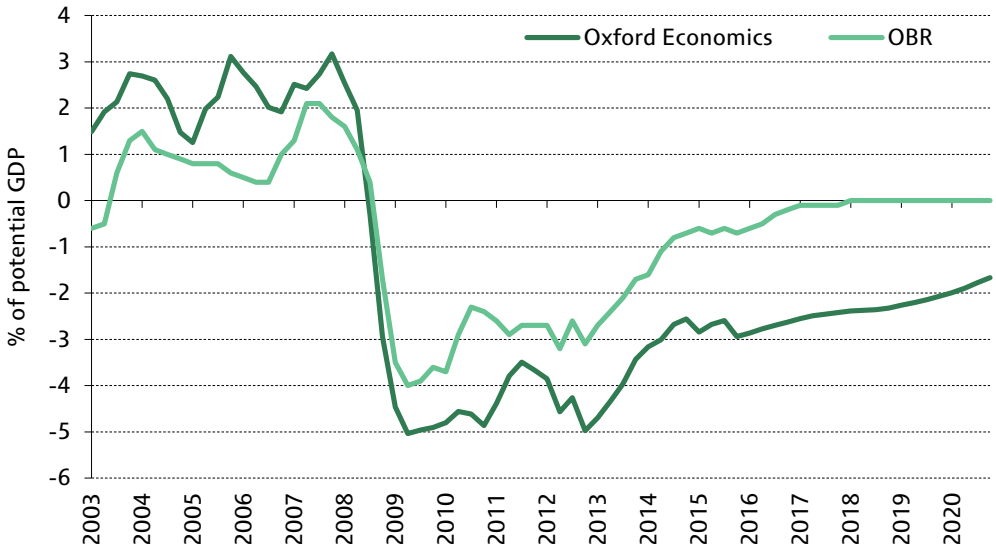


Source: Haver Analytics, Oxford Economics.

as the subdued nature of the subsequent recovery. As of end-2015, GDP was 6¾% above its 2008Q1 peak, which means that it is a long way behind where it was at the corresponding point of either of the previous two cycles (see Figure 2.17). Following the recession of the early 1990s, GDP was 16½% above its previous peak by this stage, while the recovery of the early 1980s saw GDP around 14¼% above its previous peak by the same point.

As we have already established, the output gap is estimated to have been 2¾% of potential output in 2015Q4. With the economy set to grow slightly faster than potential output over the next few years, the output gap should steadily narrow and by the end of 2020 we expect it to have fallen to around 1½% of potential GDP (see Figure 2.18). This forecast points to subdued inflationary pressures over the next few years, meaning that the Bank of England will have scope to keep Bank Rate at 0.5% until at least the latter part of this year and will subsequently be able to tighten policy at a very measured pace.

Figure 2.18. UK output gap



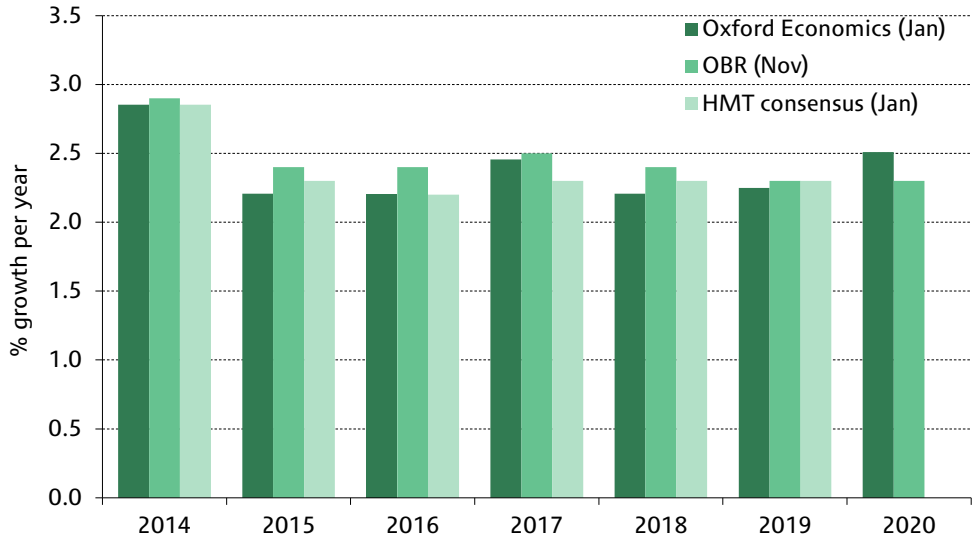
Source: Oxford Economics, OBR.

Our forecast shows a larger output gap than that of the OBR in 2015, to the tune of around 2ppts. This gap narrows through the forecast horizon because of the OBR's slightly stronger forecast for business investment and, therefore, potential output growth. However, the gap is still 1½ppts by the end of 2020. That our estimate for the size of the output gap is larger than the OBR's implies that there is scope for stronger economic growth to play a greater role in achieving the government's desired budget surplus. This stronger economic growth could be achieved if the government relaxed the pace of fiscal consolidation.

2.4 Comparison with other forecasts

Despite minor differences from year to year, for the period 2016–20 as a whole there is little difference between the GDP growth forecasts of ourselves (2.3% a year), the OBR (2.4% a year) and the market consensus (2.3% a year) – see Figure 2.19.

Figure 2.19. Comparison of GDP forecasts



Source: Oxford Economics, OBR, HM Treasury.

However, were the OBR or market consensus forecasts to run beyond 2020, then it is likely that they would show weaker growth than our forecast. This is because our forecast shows a modest negative output gap at the end of 2020 in the region of 1½% of potential GDP. This spare capacity would allow the economy to grow more strongly without causing inflationary pressures to build. Alternatively, if the government were to reassess its plan to move the budget into surplus and relax the planned fiscal consolidation, then this would allow the economy to achieve stronger economic growth during the 2016–20 period which, in turn, would allow the spare capacity to be used up more rapidly.

2.5 Risks heavily skewed to the downside: alternative scenarios for the UK economy

As we established in Chapter 1, the economy remains in a situation where the risks to economic growth are heavily skewed to the downside, with the most imminent threats being global in nature. Our baseline forecast is our view of the most likely – or modal –

outcome and we attach a probability of around 60% to an outcome similar to this baseline. We estimate there is a 10% probability of a better outcome, while the likelihood of one of the sources of downside risk playing out is put at 30%. Therefore, a risk-weighted – or mean – forecast would show a weaker profile for economic growth than our baseline forecast.

Domestic risks

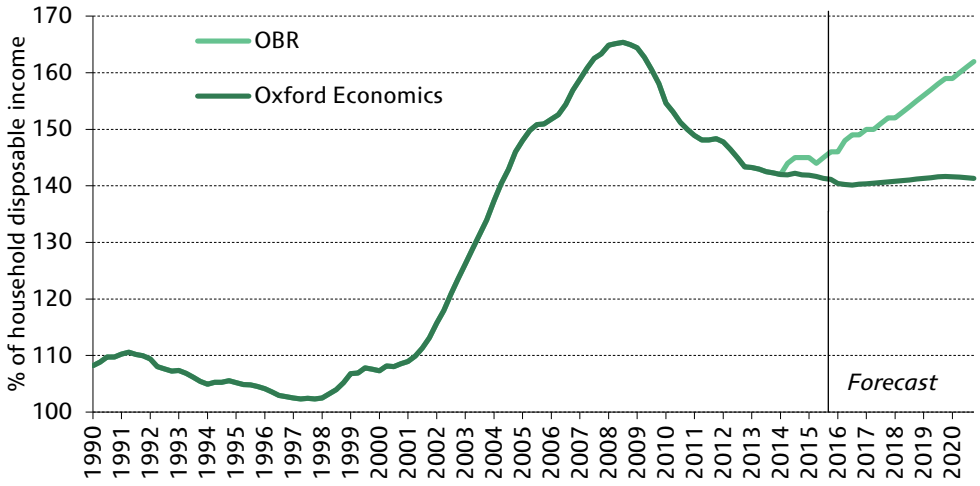
Domestically, a key uncertainty surrounds the upcoming referendum on the UK's membership of the EU. At the time of writing, the timing of the referendum was still to be announced, although there appeared to be a good chance that it would take place in the summer of 2016. Our baseline forecast is produced on the basis of current policy and therefore assumes that the UK remains a member of the EU. If the referendum were to result in a vote to leave the EU, the impact on the UK economy would be particularly uncertain. The UK may only have two years to complete the process of withdrawal and, during this period, uncertainty over the UK's future relationship with Europe could damage investment prospects. Beyond that, much would depend upon what kind of trade deal the government is able to agree. Our modelling work suggests that in scenarios where the government adopts a more liberal and pro-business approach – i.e. limited restrictions on free movement of labour and more aggressive deregulation – there is less damage to UK growth prospects.

There remains a high degree of uncertainty surrounding the household sector. Having deleveraged consistently since the beginning of the financial crisis, household debt levels remained broadly stable as a proportion of disposable incomes in 2015. While mortgage activity rose, it did so at a slower pace than household incomes, but unsecured lending rose sharply. Our forecast assumes that the level of household debt continues to increase broadly in line with household incomes, with the prospect of interest rate rises discouraging consumers from releveraging, but this outcome is far from certain. Indeed, the OBR's forecast assumes that consumers releverage to the extent that the debt-to-income ratio almost returns to its pre-crisis peak by the end of the forecast horizon (see Figure 2.20). However, the Bank of England has been taking a greater interest in several areas of lending growth of late, most notably unsecured lending and buy-to-let mortgages. Were either to continue to grow as strongly, there is a good chance that the Financial Policy Committee (FPC) would intervene, along the lines of its moves to limit high loan-to-income mortgage lending in 2014, which could cause lending growth to slow abruptly.

Which path the economy takes will have significant implications for the forecast. A debt build-up such as the one forecast by the OBR could generate faster growth in the short term and hasten more rapid progress towards budget surplus. However, it would also threaten an abrupt slowdown if interest rates rose and households struggled to manage the higher debt levels which, in turn, would threaten financial stability. In contrast, FPC intervention in 2016 could result in weaker growth in the short term, although it would leave consumers better placed to support growth further out.

There is also considerable uncertainty surrounding future trends in productivity and, by extension, employment. The productivity performance since the financial crisis has been dismal, with output per hour now around 14% below where it would have been had the pre-recession trend continued. During 2015, there were tentative signs that the situation might be starting to improve, and our forecast assumes that the economy will revert to achieving similar rates of productivity growth to those seen prior to the crisis, but that

Figure 2.20. Household debt-to-income ratio



Source: Haver Analytics, Oxford Economics.

the level of productivity remains well short of where it should be. However, some economists believe that not just the level of, but also the potential for growth in, productivity have been permanently damaged. If this is the case, then the scope for job creation in the short term may be higher as demand for labour remains strong, providing some upside for consumer spending. But on the flip side, if 2015 proves to be a false dawn and productivity growth regresses to the very slow pace seen since the financial crisis, this would imply weaker potential output growth and, as such, poorer medium-term growth prospects.

External risks

As we established in Chapter 1, the risks to the global outlook are skewed to the downside. The global financial market turbulence of recent weeks would represent a serious threat to growth prospects, if it were to continue for a prolonged period. But in the rest of this section, we look at the two alternative scenarios for the global economy set out in Chapter 1 and consider how they might affect the UK.

Oil prices plunge as global growth surges

Oil prices can be depressed even during a cyclical upturn in the global economy. That is the case in our upside scenario, where US and OPEC oil production is assumed to rise relative to the baseline, driving oil prices down further. The decline in oil prices acts as a tax cut for oil importers, amplifying strengthening private sector activity in the US and eurozone, and more than offsetting the adverse impact on oil exporters from lower oil revenues. Global growth surges forward as a result, although prospects diverge markedly across the world.

The UK would benefit from this scenario through two channels. First, lower inflation would boost the spending power of domestic consumers, supporting stronger growth in household consumption. Second, these conditions would generate stronger growth in world trade, with the UK's main trading partners, the US and the eurozone, at the forefront.

Under this scenario, we would expect the UK economy to grow by 2.7% this year and by 3.5% in 2017. We would attach a probability of around 10% to a scenario where oil prices fall further and stimulate stronger growth in advanced economies.

The Fed tightens amid global headwinds

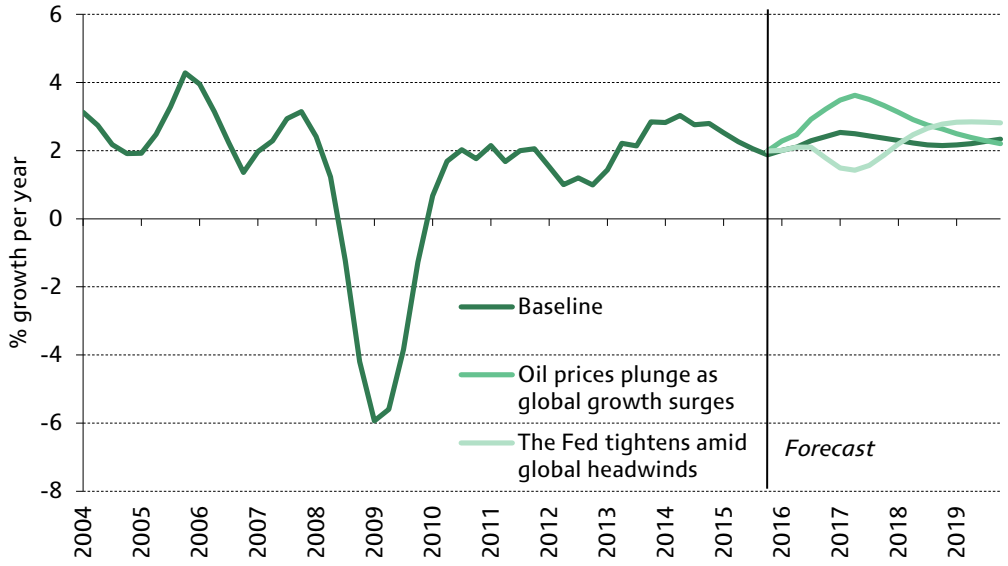
For some time, markets have appeared to anticipate a much lower path for future US monetary policy rates than that projected by Federal Open Market Committee (FOMC) members themselves. In this scenario, which we consider to be the most damaging of our global downside scenarios for the UK, we explore the possibility that the Fed is proved right and global financial markets must adjust accordingly.

In the US, the recent strength of the domestic economy persists and continues to offset global headwinds. Labour market conditions tighten and wage pressures increase. Growth and inflation out-turns in 2016 broadly match those currently anticipated by the Fed and, against this backdrop, the Fed tightens policy in line with its own projections (the so-called 'Dot Plot'). The tightening profile is a little more rapid than in the baseline – and a lot more rapid than anticipated by investors. This prompts a severe market reaction during 2016 as markets reassess the likely pace of future Fed tightening. Bond yields spike upwards and equity prices fall globally. Capital begins to flow out of emerging markets and risk premiums on emerging market debt increase. Confidence is shaken.

The Fed pauses its tightening cycle and takes stock of the impact of the market shake-out. It finds that, despite the turmoil, the shock to the US economy proves contained. Equity price falls, which reflect increased risk premiums rather than expectations of a weakening in future income flows, have a relatively limited impact and the knock to domestic consumer and business sentiment proves short-lived. With domestic activity recovering in 2018, and wage and inflationary pressures still evident, the Fed resumes its tightening policy. By contrast, the outlook for emerging markets deteriorates significantly. The market disruption is associated with significant exchange rate depreciations, prompting many central banks to raise policy rates in an attempt to staunch capital outflows and defend their currencies. Equity prices fall further and the shock to confidence proves far more persistent than amongst advanced economies.

The UK would be hit relatively hard by such a scenario. Falling equity prices would weigh on wealth, while business and consumer sentiment would also be adversely affected. Alongside this, a slowdown in world trade would weigh on export growth. The importance of the financial sector to the UK also makes it vulnerable under such a

Figure 2.21. GDP forecasts for alternative scenarios for the UK economy



Source: Oxford Economics.

scenario. GDP growth would be 2.1% this year, slowing to just 1.6% in 2017. With the Bank of England keeping interest rates at 0.5% for longer, and energy prices falling further, growth bottoms out in the first half of 2017 and subsequently recovers, with the economy enjoying above-average growth rates over the latter part of the forecast horizon. We would attach a probability of around 10% to this downside scenario.

Figure 2.21 shows GDP forecasts for the UK economy, based upon these alternative scenarios.

2.6 Conclusion

2015 appears to have been an underwhelming year for the UK economy, with the latest out-turn for GDP growth of just 2.2% disappointing in the context of the scale of the support offered by very low inflation. However, it should be noted that early estimates of GDP growth have been subject to sizeable revisions of late, mostly upward in nature, so we would not be surprised to see the out-turn upgraded over time.

We think that there is currently a significant amount of spare capacity in the economy, with the output gap estimated to have been around 2¾% of potential output at the end of 2015. Our forecast shows potential output growth averaging 2.1% a year over the period from 2016 to 2020, underpinned by further strong growth in the labour supply and robust levels of business investment. This will provide the conditions for firm growth over the medium term, with GDP growth expected to average 2.3% a year from 2016 to 2020, as well as low inflation. Faster growth rates would be possible, were it not for the significant headwinds coming from fiscal consolidation.

The risks around our forecast are heavily skewed to the downside. Domestically, the upcoming referendum on the UK's membership of the EU provides the most immediate source of uncertainty. A vote to leave the EU would generate significant uncertainty while exit negotiations were ongoing, with the outlook thereafter dependent upon what kind of trade deal the government is able to agree. Future developments around household balance sheets and the potential for productivity to recover are also key sources of uncertainty. Externally, there are several sources of downside risk. In our view, the most damaging to the UK outlook would be the Fed increasing interest rates at a pace consistent with its 'Dot Plot', an outcome that could provoke a severe reaction in financial markets and cause global growth to weaken. However, a further supply-driven fall in the oil price is also a plausible alternative, a scenario that would be particularly beneficial to the UK given its status as a net oil importer and its strong trading links to other oil-importing advanced economies.

3. Fiscal targets: committing to a path of budget responsibility?

Rowena Crawford, Carl Emmerson, Thomas Pope and Gemma Tetlow (IFS)

Summary

- At 80% of national income, the UK's public sector net debt is high by recent standards and relative to most advanced economies, although not particularly high in a longer-term historical context or relative to most of the largest economies.
- The Chancellor's new fiscal mandate requires a budget surplus to be achieved in all years from 2019–20 unless growth drops below 1%. Running a surplus is not necessary to bring debt down as a share of national income – that can be achieved so long as cash debt grows less quickly than national income. But, all else equal, a bigger surplus would reduce debt as a share of national income more quickly. This might provide more fiscal flexibility in the face of another recession and therefore could reduce the (perhaps remote) risk that the UK could suffer the dire consequences attendant on losing access to international capital markets.
- The first official figures showing whether or not Mr Osborne has met his target of running a surplus in 2019–20 should be published days ahead of the 2020 general election. Achieving and maintaining a consistent surplus is challenging. The UK has not had more than three years of consecutive budget surpluses since 1952. Surpluses have not been common in other large advanced economies.
- Flexibility comes from the provision to suspend the mandate if growth drops below 1%. This should be enough to accommodate most negative shocks to output. The mandate also has the advantages of being simple and transparent.
- But this simplicity comes at a significant potential cost. It can be sensible to borrow to finance beneficial investment projects that would otherwise not be undertaken; this will be especially true when interest rates are lower. Because it applies to a relatively narrow measure of borrowing, the rule may also lead politicians inappropriately to favour policies that temporarily flatter headline measures of the public finances.
- Unless a large surplus is planned, small forecasting changes could require sudden in-year tax rises or spending cuts to ensure the mandate is met. Even if we start 2019–20 with an expectation of a £10 billion surplus, previous experience suggests there would be a more than one-in-four chance that in-year tax rises or spending cuts would be needed to ensure an out-turn of any surplus at all.
- The Chancellor has also set a requirement for debt to fall as a share of national income in every year through to 2019–20, but is meeting it through selling assets. These asset sales might be sensible, but meeting the rule in this way would be contrary to its underlying principle.
- The welfare cap was intended to constrain the bulk of spending on benefits and tax credits but, less than two years after its introduction, it is already being breached. This brings into question whether it is really any constraint on policy.

3.1 Introduction

In 2010, the Labour government introduced a bill to legislate for rules to constrain the level of government borrowing and the path of debt. At the time, the then Conservative shadow Chancellor George Osborne was scathing of the idea that any government should need to tie its own hands by legislating targets for fiscal prudence:[1]

> We have to debate this vacuous and irrelevant legislation, but why did the Chancellor feel the compelling need to introduce it? Why is he the first Chancellor in history to feel that he needs an Act of Parliament on top of a Budget statement? There can be only two explanations: either he does not trust himself to secure sound public finances, or he knows that the public do not trust him to secure them.

But five years is a long time in politics and one of Mr Osborne's first acts as Chancellor of the first Conservative government in 18 years was to pass his own Fiscal Charter in July 2015. In presenting this to parliament, he commented:[2]

> We should always fix the roof while the sun is shining. Today I publish the new Fiscal Charter that commits our country to that path of budget responsibility. … It is sensible, pragmatic and it keeps Britain secure.

In this chapter, we describe the three rules that – in theory, at least – will now constrain Mr Osborne's fiscal plans. These are: the fiscal mandate, which governs the level of public borrowing; the supplementary debt rule, which governs the path of public debt over the next few years; and the welfare cap, which is designed to limit the level of spending on most spending on social security benefits and tax credits over the next five years. The supplementary debt rule and the welfare cap were both introduced in the last parliament and were discussed in the IFS Green Budgets of 2013 and 2015, respectively. We therefore devote most attention in this chapter to the newly-implemented fiscal mandate.

The fiscal mandate requires that in 'normal times' the government should always run a budget surplus. Section 3.2 discusses possible motivations for such a rule and also outlines why, in principle, a government might want to run looser fiscal policy. Section 3.3 then examines the details of the fiscal mandate more closely and considers whether it provides the flexibility to deal with the circumstances described in Section 3.2. Section 3.4 discusses the supplementary debt rule and the welfare cap. Section 3.5 concludes.

3.2 Fiscal policy principles

The Chancellor George Osborne has clearly stated that he considers public sector debt too high and that it should be reduced. In his most recent Mansion House speech, in June 2015,[3] he said:

[1] Source: Hansard, 5 January 2010, column 75, http://www.publications.parliament.uk/pa/cm200910/cmhansrd/cm100105/debtext/100105-0012.htm.

[2] Chancellor George Osborne's July 2015 Budget Speech, https://www.gov.uk/government/speeches/chancellor-george-osbornes-summer-budget-2015-speech.

[3] Mansion House Speech, 10 June 2015, https://www.gov.uk/government/speeches/mansion-house-2015-speech-by-the-chancellor-of-the-exchequer.

> With our national debt unsustainably high, and with the uncertainty about what the world economy will throw at us in the coming years, we must act now to fix the roof while the sun is shining.

Rather than the cash level of public sector debt, what matters for the sustainability of the public finances is the size of debt relative to national income. This certainly cannot be allowed to increase indefinitely. But it is important to remember that it will fall as long as the cash level of debt held increases less quickly than national income: in other words, as long as the economy is growing, continuing to run deficits – and therefore continuing to add to the stock of debt in cash terms – can still be consistent with a sustainable fiscal position.

The Chancellor is, however, aiming to run overall budget surpluses, implying that he believes public sector net debt relative to the size of the economy should be reduced more quickly than would be the case if deficits were still being run. This section first asks whether the UK should be aiming to reduce public sector net debt as a share of national income and then goes on to consider whether this should be done through aiming to run overall budget surpluses.

Should the UK aim to reduce public sector net debt?

Public sector net debt is the total debt of central government and local authorities plus that of organisations deemed to be under public sector control, such as the BBC and Network Rail. It is measured net of any short-term financial assets. This means that it does not take into account the value of physical assets held by the public sector – such as buildings and the UK road network – nor does it take into account any long-term financial assets that the public sector may hold – such as repayments due on books of student loans still held by the public sector.

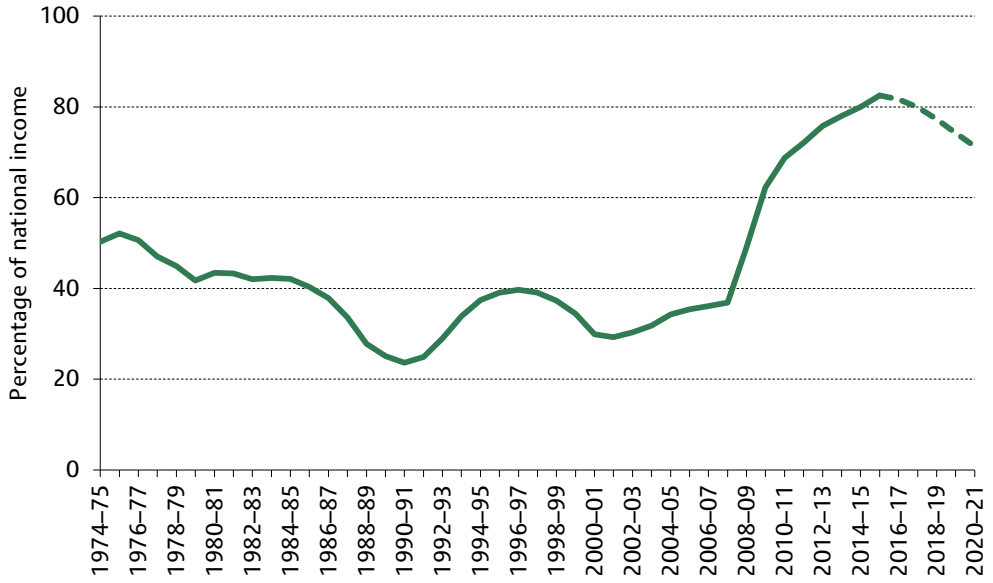
When thinking about the right level of 'debt' (or, related, the deficit), one should consider what a particular measure includes or excludes. Concern with the indebtedness of the public sector would ideally focus on as broad a measure of debt as possible. In practice, there is no well-defined concept of the correct broad measure of debt. However, focusing on a specific narrow definition of debt runs the risk that it might encourage the government to engage in questionable strategies that reduce the target measure of debt without actually reducing the country's underlying indebtedness. For example, a strategy of selling off physical assets or long-term financial assets would reduce the measure of debt that the UK government typically focuses on (i.e. public sector net debt) but might not deliver the best set of outcomes for society because it would not necessarily be driven by consideration of whether public or private ownership of the assets was more desirable.

For now we focus on the official measure of public sector net debt, but Section 3.4 looks at the impact of recent and planned asset sales for the path of public sector net debt in this parliament and Chapter 4 provides a discussion of the Whole of Government Accounts, which include the public sector's balance sheet.

Context: historical UK practice

At the end of 2014–15, public sector net debt stood at 80.0% of national income. It is forecast by the OBR to rise to 82.5% of national income by the end of 2015–16 before starting to decline so that at the end of 2019–20 it is forecast to be 74.3% of national income. As shown in Figure 3.1, this is a high level of public

Figure 3.1. Public sector net debt high by recent historical standards

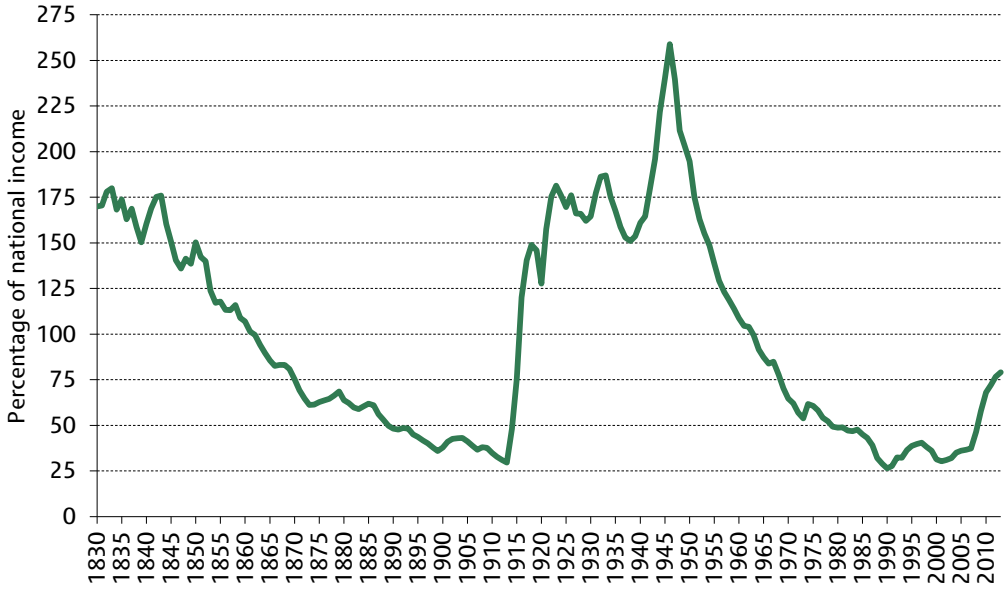


Source: Office for Budget Responsibility, 'Public finances databank', 15 January 2016, http://budgetresponsibility.org.uk/data/.

sector net debt relative to recent UK historical standards. The Labour governments between 1997 and 2010 had a limit on public sector net debt of 40% of national income, which they complied with until the end of 2007–08. However, the recent financial crisis and its aftermath approximately doubled debt as a share of national income, leading to this ceiling being shattered and public sector net debt in 2010 reaching its highest level for over 35 years.

However, this is not by any means the highest level of debt that the UK public sector has held. As Figure 3.2 shows (for a very slightly different measure of

Figure 3.2. Public sector net debt not that high by historical standards



Source: Figure 9 of A. Jowett and M. Hardie, 'Longer-term trends: public sector finance', November 2014, http://www.ons.gov.uk/ons/dcp171766_386187.pdf.

public sector net debt as a share of national income to enable consistent historical comparisons), debt was above 80% of national income throughout the period from 1916 to 1967, and also for all years from (at least) 1830 to 1869. Over the whole period from 1830 to 2013, UK public sector net debt has been above 80% of national income half of the time.

There are good reasons for governments to hold a positive stock of debt – for example, the borrowing may have financed productive investment projects – and a government being in debt is not in itself a cause for concern. Nonetheless, there are reasons why governments may want to limit how much debt they hold.

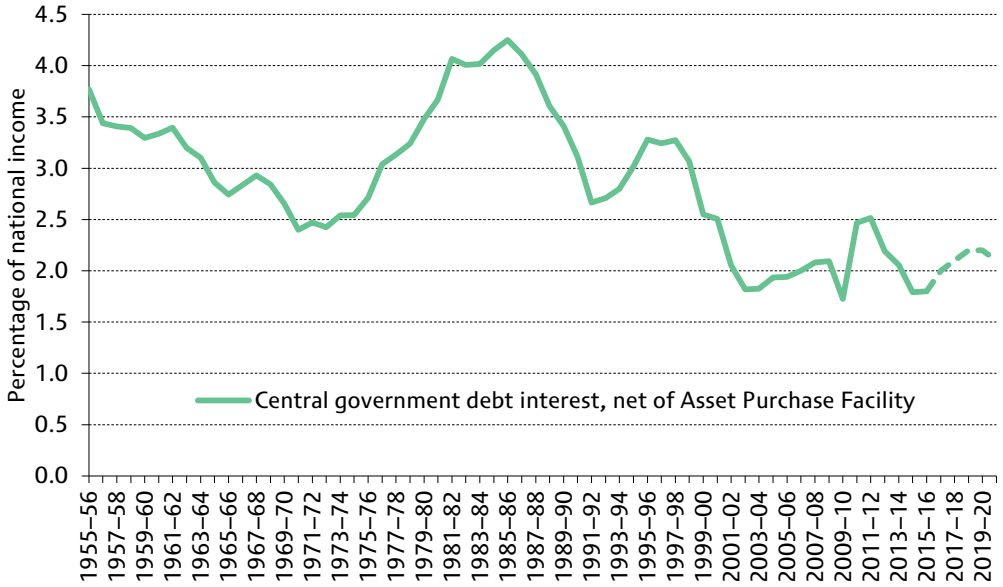
The costs of high debt

All else equal, there are two main costs of having a higher level of public sector debt. First, a higher stock of debt means that more government spending must be devoted to debt interest spending rather than spending that benefits current or future generations. How onerous this is depends on the rate of debt interest that the government must pay.

As shown in Figure 3.3, central government spending on debt interest payments has run at around 2% of national income throughout the period since 2001–02 and this is forecast to continue to be the case over the next few years, despite the high level of debt. This is a relatively low level of debt interest payments by historical standards and reflects the fact that the average interest rate being paid by the UK government has fallen over time.

The rate of debt interest payable changes over time and can be volatile. Therefore, a highly indebted country may face greater uncertainty than a less indebted country in its public finance forecasts because of potential movements in its debt interest payments. Rising interest rates and the unwinding of the Bank of England's quantitative easing programme will increase both the cost of new borrowing and the rollover of existing government debt. To give a sense of scale of the impact of higher interest rates, a ready reckoner published by the OBR suggests that a 1 percentage point increase in gilt and short rates from April 2016 would increase debt interest spending in 2019–20 by about

Figure 3.3. UK central government debt interest payments



Source: Office for Budget Responsibility, 'Public finances databank', 15 January 2016, http://budgetresponsibility.org.uk/data/.

£8 billion.[4] This is about 0.4% of national income or the same as is estimated to be raised by a 1.4p increase in the basic and higher rates of income tax.[5]

The second cost of a higher level of debt is that it may give governments less 'fiscal headroom' to adjust appropriately to shocks. If debt as a proportion of national income becomes too high, a government could lose credibility with investors and be unable to access finance. At that point, the government would be unable to respond to negative shocks with an expansionary fiscal policy, and it would be at risk of default (either through being unable to issue new borrowing to replace maturing debt or by being unable to meet debt interest payments out of tax revenues given other aspects of government spending). Even if the likelihood of this occurring is considered low, the costs would be huge.

The experience of the financial crisis and associated recession was that the UK government was able to respond by allowing public sector net debt to increase by 40% of national income (from about 40% of national income to about 80% of national income). We might worry that, if a shock of a similar magnitude struck again, the government might currently not have the option of increasing public sector net debt by as much again.

What is a desirable level of debt?

While it is relatively simple to describe the disadvantages of higher levels of debt, there is considerable uncertainty as to what constitutes a debt level that is *too high*. At what debt level would debt interest payments become too onerous or the government lose its ability to borrow any more? Unfortunately, the economic literature does not yet (though not for lack of interest or effort) provide an answer to this important question. Some models suggest that there is no need to reduce debt at all or perhaps only to do it very slowly (even if it starts at a high level), while other models suggest that – in the very long run – the government should aim to hold net assets rather than net debts.[6]

The lack of a good guide from theory means we – and indeed policymakers – can only focus on what has happened in practice. We have already shown that, at 80% of national income, the UK's public sector net debt is very high by recent historical standards but is below average if we look much further back in time.

It is also possible to see how the UK's debt compares with that of other similar types of countries. Table 3.1 shows data from the International Monetary Fund (IMF) for general government net debt (i.e. a narrower measure of debt than that presented above as it excludes any net debt held by the public sector outside of general government[7]) of the UK and 24 other advanced economies in 2015. The countries are listed from the largest to the smallest in terms of the size of their economy. Looking across all these countries, the UK's current level of debt is the 7th highest out of the 25 countries. However, among the larger economies, which are arguably more comparable to the UK, the UK position does not look out of place: Germany and Canada do have considerably lower debt, but the US, Japan, France and Italy all have debt to national income ratios similar to, or higher than, that of the UK.

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[4] Fiscal supplementary table 2.28 of OBR's November 2015 Economic and Fiscal Outlook.

[5] See HMRC Collection, 'Tax expenditures, reliefs and ready reckoners statistics', https://www.gov.uk/government/collections/tax-expenditures-and-ready-reckoners.

[6] See, for example, J. Portes and S. Wren-Lewis, 'Issues in the design of fiscal policy rules', University of Oxford, Department of Economics, Discussion Paper 704, May 2014, http://www.economics.ox.ac.uk/materials/papers/13342/paper704.pdf.

[7] In the UK, general government comprises central government and local authorities.

Table 3.1. General government net debt across 25 advanced economies, 2015

	% GDP	Ranking (lowest to highest)
United States	79.9	8th
Japan	126.0	2nd
Germany	48.4	14th
United Kingdom	80.3	7th
France	89.4	5th
Italy	113.5	4th
Canada	37.8	15th
Australia	17.5	20th
South Korea	37.7	16th
Spain	64.8	10th
Netherlands	34.8	18th
Switzerland	24.9	19th
Sweden	–18.4	23rd
Belgium	65.8	9th
Norway	–261.7	25th
Austria	48.7	13th
Denmark	6.3	22nd
Israel	63.7	11th
Finland	–46.5	24th
Ireland	82.4	6th
Greece	194.1	1st
Portugal	120.6	3rd
New Zealand	8.8	21st
Latvia	34.9	17th
Iceland	50.8	12th

Note: Countries ordered by 2014 GDP.
Source: International Monetary Fund, 'World Economic Outlook Database', October 2015, https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/index.aspx.

Of course, many of these countries have, like the UK, experienced a sharp increase in government debt in recent years. So the current level of debt is, for many, in part caused by the shock of the global financial crisis. Out of 25 countries, only Norway, Switzerland and Sweden reduced debt as a percentage of national income between 2007 and 2015. The others all increased debt, in some cases considerably. So the UK's current debt level would look higher relative to the debt levels held in many economies prior to the crisis unfolding.

The problem for policymakers is that it is not possible to say with any precision either what is an optimal or what is a 'safe' level of debt when it comes to financing risk. What we do know is that the consequences of losing investor confidence and access to international markets are extremely severe. Given the uncertainty and the, even remote, possibility of dire consequences, it is perhaps not surprising that governments are looking to reduce current high levels of debt. There is little guidance, either theoretical or empirical, as to how fast they should be doing that. The costs of doing so in terms of lower public spending or higher taxes may be relatively clear. The benefits in terms of lower risk are uncertain and possibly not measurable at all.

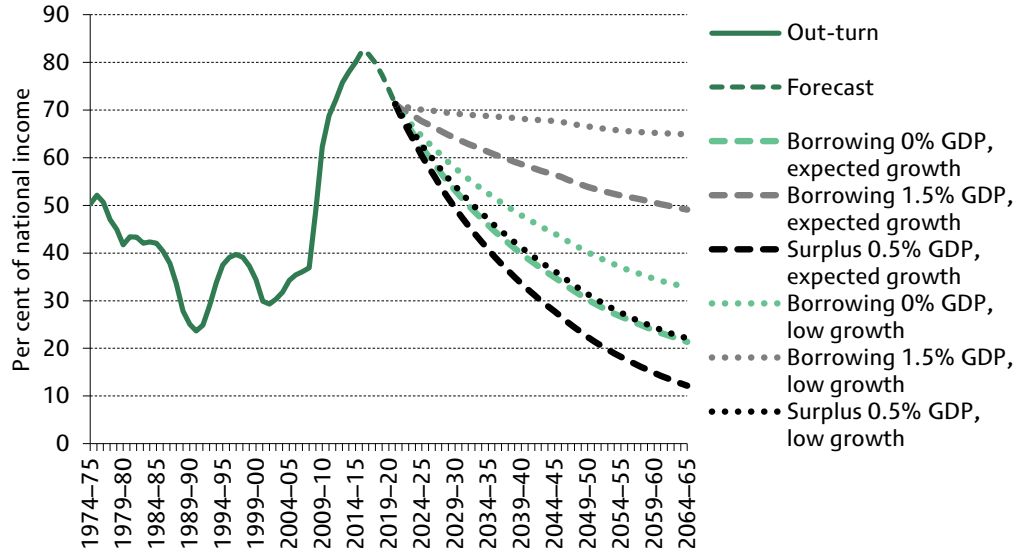
The implications of borrowing levels for debt

If having lower borrowing or achieving a surplus did not lead to weaker economic growth, debt would fall more quickly as a share of national income than if borrowing were higher. Figure 3.4 presents projections for public sector net debt under three different scenarios for annual borrowing and two different scenarios ('expected' and 'low') for growth. Assuming that the path of national income develops as the OBR expects – where the economy grows by 2½% a year – and assuming that this is unaffected by the level of government borrowing, running a balanced budget from 2021–22 onwards would return debt to below 40% of national income in 2040 (the dashed light green line). If instead the government pursued a less austere policy path – for example, choosing to borrow to invest (around 1½% of national income, say) – and growth was unchanged, debt would only be just below 60% of national income by this date (the dashed grey line), while a more austere 0.5% of national income surplus would reduce debt to below 35% of national income (the dashed black line).

As set out above, one rationale for striving to reduce debt is to allow greater headroom to accommodate the possibility of a less favourable economic environment. The alternative, 'low growth', scenarios have higher levels of debt persisting for longer. These assume that the economy grows at 1½% per year (as opposed to 2½% a year under the 'expected growth' scenario). This scenario, combined with a balanced budget, would lead to debt being projected to remain above 40% of national income until 2050. But under this low-growth scenario combined with deficits of 1.5% of national income, debt would still be above 65% of national income in 2050.

History suggests that, rather than experiencing decades of uninterrupted economic growth (as the lines in Figure 3.4 assume), the UK economy instead periodically experiences adverse shocks that lead to sudden increases in debt as a share of national

Figure 3.4. Projections of public sector net debt under different illustrative scenarios for borrowing and growth



Note: 'Expected growth' scenario based on OBR growth projection; 'low growth' scenario based on 1.5% real GDP growth a year. Addition to debt each year calculated as Public sector net borrowing (PSNB) + OBR forecast of non-PSNB changes to public sector net debt.
Source: OBR Fiscal Sustainability Report 2015, Economic and Fiscal Outlook November 2015, financial transactions series December 2015, Public Finances Databank (15 January 2016) and authors' calculations.

income. The recent financial crisis was a particularly dramatic – but perhaps rare – example of this. However, other shocks from the not too distant past have also added significantly to public sector net debt: for example, the recession of the early 1990s saw public sector net debt increase by roughly 15% of national income (it had fallen to 23.6% of national income in 1990–91 but increased to 39.1% of national income by 1995–96).

The Treasury has attempted to illustrate the potential impact of negative shocks of this sort by projecting public sector net debt in 2035, under different scenarios for the budget surplus/deficit, with and without a negative shock that adds 10% of national income to public sector net debt every eight years.[8] Under its modelling, running deficits of 1.4% of national income, when combined with these shocks, would leave debt above 70% of national income in 2035.

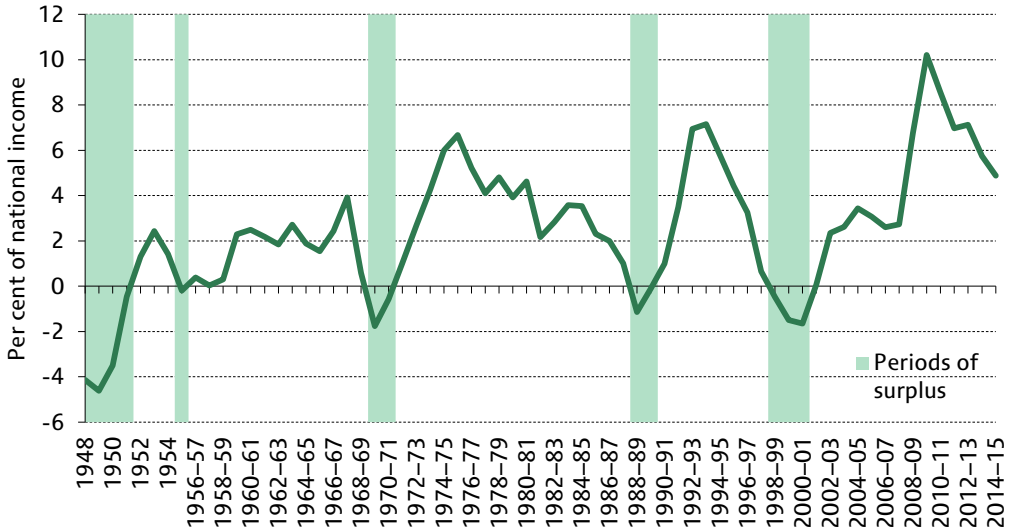
Should the UK aim to run budget surpluses?

The previous section has discussed why the government is concerned with reducing public sector net debt. In this section, we consider the desirability and suitability (or otherwise) of constraining a government to achieve a budget surplus in every year.

Context: historical UK practice

Aiming to achieve overall budget surpluses represents a departure from the rules of the previous coalition government and the Labour governments that preceded it, in that it requires total receipts to be greater than *total* spending rather than just *non-investment* (or 'current') spending.[9] At a time when public sector investment spending is around 1½% of national income – around £30 billion per year – this constrains borrowing to be around £30 billion lower than a similar target applied to the current budget.

Figure 3.5. Public sector net borrowing



Source: OBR, 'Public finances databank', 15 January 2016, http://budgetresponsibility.org.uk/data/.

[8] See chart 1.7 of HM Treasury, *Summer Budget 2015*, July 2015, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/443232/50325_Summer_Budget_15_Web_Accessible.pdf.

[9] Operationally, Gordon Brown's golden rule (which aimed to balance the current budget over the ups and downs of the economic cycle) and the coalition government's fiscal mandate (which involved setting fiscal policy such that a cyclically-adjusted budget balance or surplus was forecast by the end of the forecast horizon) were different. But the underlying principle, that borrowing should be only due to investment spending or temporary weakness in the economy, was the same.

Achieving budget surpluses on a sustained basis would also represent a change from standard UK practice. As shown in Figure 3.5, budget surpluses are rare events. Ignoring the immediate post-war period, when large surpluses were run, since 1952 there have only been 8 out of 63 years in which the UK government has spent less than it has received in revenues, and it has never done so for more than three consecutive years.

Potential justifications for running a deficit

It is clear the UK has not often delivered a fiscal position where total tax and non-tax receipts are greater than total public spending. In previous Green Budgets, we have identified five broad reasons why running a deficit (or at least relatively looser fiscal policy) might be justified:

Investment spending: Governments should invest in a project if the expected net return (i.e. after taking into account the cost of financing) is positive. Investment spending often benefits future generations as much as, if not more than, the current generation. This is both because investment can generate economic growth and because it often takes a long time to receive all the benefits. Governments that are unable to borrow must finance all investment out of current receipts, whereas borrowing shares the cost across generations. If the benefit to the current generation does not outweigh the initial cost, highly beneficial investment projects may be refused when governments are unable to borrow.

The expected net return of an investment project depends on the cost of financing. When the cost of financing is low, it may be beneficial to pursue more investment projects. If, for example, long-term interest rates were very low (as they currently are), more projects would have a positive expected net return. In some cases, this could even be a net positive *financial* return, and it would seem particularly odd not to invest in such projects if the motivation is to improve the financial health of the nation (see Chapter 7 for a discussion of financing infrastructure spending). If governments are unable to borrow (because they are constrained to run surpluses), investment spending will not adjust to take advantage of a lower cost of debt (except in as far as debt interest payments fall as a result). Spending must instead be financed by current receipts and so governments may borrow less than is optimal. More generally, the optimal amount of borrowing depends on the price of that borrowing.[10]

These arguments imply that – if the cost of borrowing from the markets is lower than the cost of raising additional tax revenues – allowing more deficit spending should facilitate higher investment. That said, the actual correlation between the headline deficit (or surplus) and public sector net investment spending (both measured as a share of national income in the UK) over the last 60 years (1955–56 to 2014–15) is very low, at just +0.02, suggesting that periods with more borrowing have not particularly been periods with more investment spending.

In large part, this is because the period between the mid 1950s and the mid 1970s had relatively high levels of public sector net investment and not particularly high levels of borrowing. Restricting the data to the most recent 41 years (1974–75 to 2014–15) reveals a much stronger positive correlation of +0.60. Moreover, over this period, the correlation between the size of the estimated structural deficit (or surplus) and the level of public sector net investment is even stronger (at +0.71), suggesting that, after

[10] Putting such a principle into practice may be hard. The 2013 IFS Green Budget discussed one way in which a government might target the future flow of committed funds, rather than targeting borrowing or debt.

accounting for the estimated impact of ups and downs of the economic cycle, greater borrowing has indeed been associated with higher investment spending.

Overall, the picture painted by these historical correlations is mixed and, in any case, may not provide a good guide to what would happen in future. Higher borrowing need not necessarily deliver higher investment spending. There would be no guarantee that a government might not borrow instead to deliver more current spending and/or lower taxes.

Output stabilisation: When shocks hit the economy, there are temporary reductions in tax revenues and additional demands on spending. On these occasions, the government should have flexibility in its borrowing level to respond to these shocks and help stabilise the macroeconomy. During a recession, for example, it is likely that it would be appropriate for a government to allow borrowing to rise or any surplus to fall. Attempting to maintain borrowing at its previous level, through a combination of tax rises and spending cuts, would risk worsening the recession. This is especially true when the role of monetary policy is limited, which could occur either because interest rates are near zero or if exchange rates are fixed. The converse potentially also holds in temporary booms, when it may be appropriate for the government to allow borrowing to fall or any surplus to rise.

Adjusting gradually to shocks: When fiscal adjustments need to be made – for example, due to a revised outlook for growth or to accommodate the exploitation of a newly-discovered natural resource – it makes sense to adjust taxes and spending slowly rather than to make changes immediately. Rapid adjustments could have unwanted impacts on aggregate demand in the economy, which monetary policy would be unable to offset. Making changes too quickly would also likely mean less efficient changes being made than would be possible over a longer timescale.

Forecast errors: Even in the short run, forecasts for total public spending and total taxes are highly uncertain. On average, forecasts for the deficit one year after that forecast was made have been out by over 1% of national income.[11] In years when a forecast is overly optimistic and the balance turns out worse, governments should have the flexibility to run a deficit rather than have to make in-year adjustments which may well be suboptimal. Conversely, of course, a good out-turn should mean the government runs a larger surplus (or smaller deficit) than originally planned.

Tax rate smoothing: Economic theory suggests that smoothing tax rates over time is preferable to having variable tax rates, even if this means having varying levels of revenues over time. Reducing variation in tax rates over time might also help individuals making (in particular) savings and investment decisions. If it were apparent that the public finances would strengthen considerably in future – for example, because of a known downwards pressure on spending or a forthcoming revenue stream – it might be better to run looser fiscal policy now with the intention of running tighter fiscal policy when the strengthening is realised. In fact, there are good reasons to think that the UK's public finances will deteriorate in future. For example, the OBR's latest Fiscal Sustainability Report suggests that the pressures of an ageing population will push up spending on, particularly, health care and pensions, contributing to a deterioration in the public finances from a small surplus in 2019–20 to a deficit of 1.8% by 2033–34. If this

[11] The mean absolute error since 1978–79 is 1.07% of national income, based on the Budget forecast for the preceding financial year.

outlook proves correct, there would be an argument for the government to increase tax rates and run larger surpluses now in order to smooth out the funding of these future spending pressures.

These reasons imply that we would not want to constrain a government to running a budget surplus in each and every year. There are entirely appropriate reasons why the balance could vary from year to year. These arguments also suggest that there is nothing particularly special about a small surplus or balanced budget compared with, say, a small deficit. The long-run health of the public finances, and the flexibility for the government to adjust appropriately to various changes, opportunities and shocks, are more important than whether total revenues cover total spending in any particular year.

Are surpluses common elsewhere?

Table 3.2 examines how common it has been for 24 other advanced economies to deliver overall budget surpluses, using data from the IMF and ordering economies from largest to smallest in terms of GDP. Where possible, we take data from 1980 to 2015, but often

Table 3.2. Central government budget surpluses since 1980 in 25 advanced economies

	Years covered (1980 to 2015 unless otherwise stated)	Years in surplus	
		%	Ranking (highest to lowest)
United States	2001 onwards	0%	23rd
Japan		14%	13th
Germany	1991 onwards	21%	12th
United Kingdom		14%	14th
France		0%	22nd
Italy	1988 onwards	0%	21st
Canada		31%	9th
Australia	1988 onwards	48%	4th
South Korea	1995 onwards (data for central government only)	100%	1st
Spain		9%	18th
Netherlands		14%	15th
Switzerland	1983 onwards	38%	7th
Sweden		46%	5th
Belgium		11%	17th
Norway		91%	2nd
Austria	1988 onwards	0%	25th
Denmark		34%	8th
Israel	2000 onwards	0%	24th
Finland		66%	3rd
Ireland		29%	10th
Greece		0%	19th
Portugal	1986 onwards	0%	20th
New Zealand	1985 onwards	40%	6th
Latvia	1998 onwards	12%	16th
Iceland		26%	11th

Note: Countries ordered by 2014 GDP.
Source: International Monetary Fund, 'World Economic Outlook Database', October 2015, https://www.imf.org/external/pubs/ft/weo/2015/02/weodata/index.aspx.

consistent data do not extend that far back. We present for each country the percentage of years in which a budget surplus is observed. Across all 25 countries, an annual budget surplus has occurred 26% of the time, while (on these data) the UK achieved a surplus 14% of the time.

For some countries, such as Norway and Finland, running surpluses has been the norm. However, countries with GDP levels comparable to or larger than the UK are far less likely to run surpluses. Among the G7 set of countries (US, Japan, Germany, UK, France, Italy and Canada), a budget surplus has been seen 13% of the time. At no point in the available data has the US (back to 2001), France (back to 1980) or Italy (back to 1988) achieved an overall budget surplus.

Summary

At 80% of national income, the UK's public sector net debt is high by recent historical standards, although there have been long periods in the past when debt has been above this level. The UK's debt level is also high relative to those of most other advanced economies, although it is also noticeable that most of the other very large economies currently have debt levels similar to or higher than the UK's.

There are two reasons why high debt might be a concern. First, higher debt will mean a greater share of national income will have to be devoted to servicing that debt. Second, the higher the level of debt, the less fiscal headroom the UK may have to respond to any future negative shock.

So there are reasons why we might wish to reduce debt as a share of national income. But this does not necessarily require an overall budget surplus: as long as the stock of debt grows less quickly than the economy, the UK's fiscal position will become more sustainable. In that sense, there is nothing particularly special about running a headline surplus as opposed to a relatively small deficit. There is a trade-off between the (reasonably clear) costs of swift debt reduction and the, perhaps remote, possibility that slower debt reduction might one day lead to the huge costs associated with a loss of access to international capital markets following a further adverse fiscal shock.

If the UK did achieve and maintain a headline surplus, this would be a significant break from the past: the UK has not achieved more than three years of consecutive budget surpluses since 1951. Overall surpluses have also not been particularly common among many other advanced economies, especially the largest ones.

There are also good reasons why, in at least some periods, the government might want to borrow. It would seem odd for the optimal level of government investment and borrowing not to depend on the interest rate: in periods when the government can borrow cheaply, it would seem natural to choose to borrow more. And in the face of shocks to the public finances, it may well be better to adjust taxes and spending slowly and, where the deterioration is expected to be temporary, not to adjust them at all – even if that means temporarily running looser-than-normal fiscal policy and possibly spending more than is raised in revenues.

3.3 The new mandate for fiscal policy

With all fiscal rules, there is an inevitable trade-off between allowing flexibility to deal appropriately with the kinds of pressures discussed in the previous section and

maintaining simplicity, which helps ensure that the rule is easy to monitor and the government can be held to account. The current government's principal fiscal rule, which governs the level of borrowing and – to a large extent – debt, is the fiscal mandate. In this section, we describe the fiscal mandate and assess how well it trades off these objectives.

The Treasury describes the new mandate for fiscal policy as follows:[12]

- *In normal times, once a headline surplus has been achieved …:* a target for a surplus on public sector net borrowing in each subsequent year.
- *For the period outside normal times from 2015–16 [until a headline surplus is achieved] …:* a target for a surplus on public sector net borrowing by the end of 2019–20.

These targets apply unless and until the OBR assesses that GDP growth (on a rolling four-quarter-on-four-quarter basis): (i) has fallen below 1% in the most recent four-quarter period; (ii) is currently below 1%; or (iii) is forecast to fall below 1% during the forecast period. This is judged to indicate a significant negative shock to the UK economy.

If such a shock occurs before 2019–20, the Treasury will review the appropriateness of the target to have a surplus by the end of 2019–20. Any resulting change to the target, however, would need to be approved by a vote in parliament.

If such a negative shock occurs after 2019–20, the mandate to have a surplus each year would be suspended. The Treasury would have to set out a plan to return to surplus, with appropriate fiscal targets to accompany that new plan, and both the plan and the new targets would have to be approved by a vote in parliament.

Simplicity and transparency

The fiscal mandate is undoubtedly simple and transparent, particularly beyond 2019–20. The Chancellor must achieve (not merely forecast) an overall budget surplus. Public sector net borrowing is clearly defined and measured in a timely manner. The new fiscal mandate is much simpler than either the coalition government's old fiscal mandate or the golden rule operated by Gordon Brown in that it targets a measure that does not explicitly incorporate an adjustment for the ups and downs of the economic cycle. The old fiscal mandate targeted a cyclically-adjusted measure of current budget balance; this was therefore sensitive to what the OBR estimated the output gap to be, which was inherently subjective. Meanwhile, the golden rule was judged over the course of an economic cycle; judging the start and end dates of the cycle was difficult to do with any precision, necessarily subjective and consequently highly contentious.

With the new fiscal mandate, the public will find it easy to judge whether the Chancellor has met his target and, if not, hold him to account. Within a month of fiscal year 2019–20 ending (and, perhaps equally importantly, days before the planned date of the next UK general election), the Office for National Statistics will (at least if the current timetable is maintained) publish its first estimate of government borrowing for the previous year. This means that the Chancellor will quickly be held to account for his fiscal pledges. This simplicity and transparency does come at the cost of other weaknesses – discussed below – but the increased accountability that derives from simplicity has some value.

[12] HM Treasury, 'Charter for Budget Responsibility: Summer Budget 2015 update', July 2015, https://www.gov.uk/government/publications/charter-for-budget-responsibility-summer-budget-2015-update.

Reducing government indebtedness and smoothing tax rates?

A significant motivation behind the government's desire to run budget surpluses is a desire to reduce government indebtedness in order to buy additional fiscal headroom. However, one potential weakness of the fiscal mandate is that it applies to a specific measure of borrowing, which does not capture all the ways in which the current government might be increasing public sector liabilities. For example, if the current government makes a promise to pay money in the future but not today, this would reduce future fiscal headroom but would not be constrained by the fiscal mandate. An example of this type of behaviour could be increasing pension promises to public sector workers or making the indexation of certain benefits more generous (such as the 'triple lock' on the state pension), the cost of which cumulates over time.

This concern shows that it will be crucial for the OBR to continue to monitor the UK's long-run fiscal position and draw attention to any imbalances. Current practice could be enhanced through systematically publishing long-run costings for any policy measure where the long-run costing is thought to deviate significantly from the medium-term costing. This transparency would serve to make it harder for the government to implement reforms that weaken the long-run fiscal position and encourage it to put in place policies that will allow a gradual adjustment to known future increases in spending needs (such as from an ageing population) – that is, by smoothing tax rates over time, such that future spending pressures are partially pre-funded.

Allowing for output stabilisation?

The new fiscal mandate allows the government some flexibility to accommodate negative output shocks in that it will be suspended if growth drops (or is forecast to drop) below 1% a year. This is a different approach to adjusting for the economic cycle from the one taken under the old fiscal mandate or under Gordon Brown's golden rule. The old fiscal mandate instead targeted a measure of borrowing that explicitly adjusted for the ups and downs of the economic cycle, while the golden rule was judged over the course of an economic cycle.

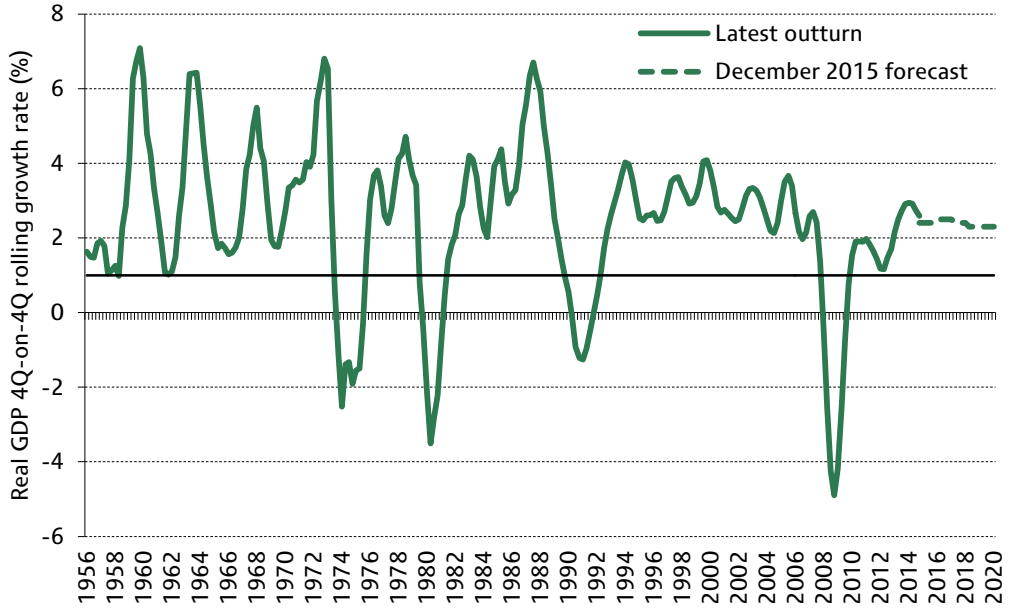
We do not know how often growth will drop below 1% in future. However, we can look at recent UK history to see how often the conditions defining a significant negative economic shock have occurred in the past. Because the mandate defines a significant negative shock as either actual growth dropping below 1% a year or growth being forecast to fall below this level, in this section we look both at the out-turns for growth historically and at the forecasts that were made contemporaneously.

Figure 3.6 plots GDP growth over the previous four quarters for each quarter between 1956Q4 and 2015Q3 based on the latest data. It also shows the OBR forecasts up to 2021Q1 from the 2015 Autumn Statement. These data show four broad periods when growth dipped below 1%: the mid 1970s, the early 1980s, the early 1990s and the late 2000s. In other words, in the last 50 years at least, there were no periods of growth below 1% other than periods of outright recession. The economy appears to grow strongly or to shrink. It does not appear to go through periods of growth between 0% and 1%.

However, GDP data are revised, often substantially, after initial estimates. To understand whether the rule (had it been in place) would actually have been suspended on the basis of earlier estimates of out-turn data, we must look at the estimates of GDP growth that were produced at the time; these data are only easily available from 1976. Figure 3.7 shows the same latest out-turn data as Figure 3.6 from 1976. The shaded areas indicate

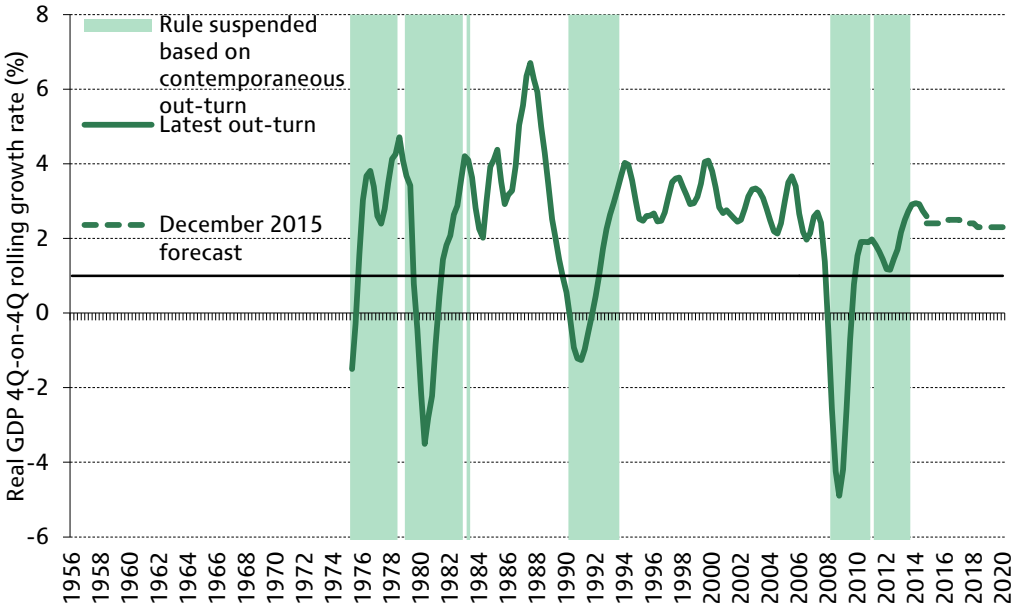
all the periods in which the conditions for the rule to have been suspended on the basis of out-turn data (i.e. that one of the last four quarters had four-quarter-on-four-quarter growth below 1%) were met. Contemporaneous out-turn data have differed from the latest out-turn quite considerably at times: for example, concerning 2011 and 2012, we are much more optimistic now than we were at the time. However, the rule (had it been in place) would have been suspended for the same broad periods on the basis of initial

Figure 3.6. UK GDP growth since 1956



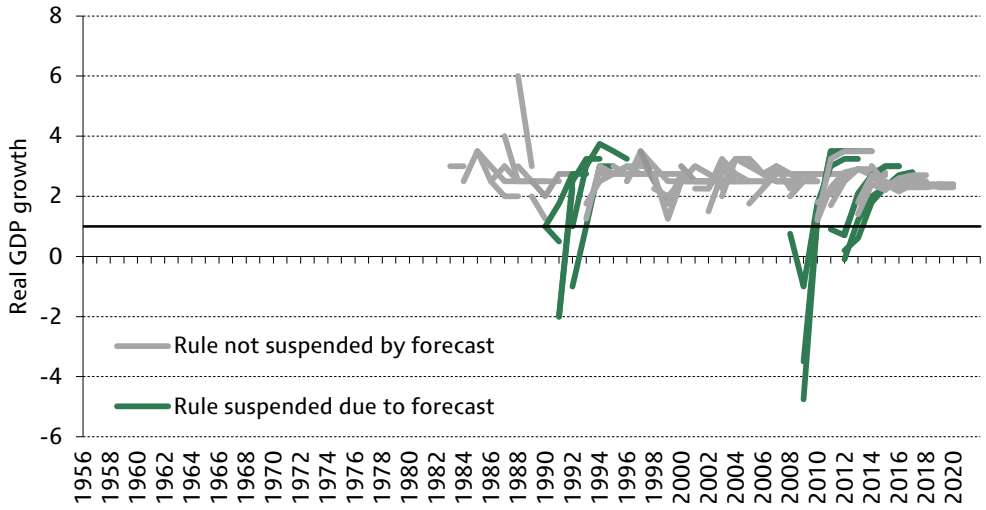
Note: GDP latest out-turn is the November 2015 release of ONS series ABMI, rolling four-quarter-on-four-quarter growth.
Source: ONS series ABMI.

Figure 3.7. Occurrences of 'significant negative shocks'



Note: GDP latest out-turn is the November 2015 release of ONS series ABMI. The rule is suspended if rolling four-quarter-on-four-quarter growth is judged to have been below 1% in one of the most recent four quarters.
Source: ONS series ABMI; Bank of England GDP database.

Figure 3.8. Historical forecasts for real GDP growth



Source: OBR, 'Historical official forecasts database', http://budgetresponsibility.org.uk/data/.

estimates of GDP growth (the mid 1970s, the early 1980s, the early 1990s and the late 2000s) as our most recent out-turn data would suggest.

The mandate could also be suspended if growth is forecast to be below 1%. Figure 3.8 shows successive historical official forecasts for economic growth, taken from Budgets, Autumn Statements and Pre-Budget Reports since the Autumn Statement of 1983. The grey lines show forecasts that would not have led to the mandate being suspended (had it been in place), while the green lines show forecasts that would have resulted in suspension of the mandate.

Our analysis of Figures 3.7 and 3.8 reveals two key facts. First, the same broad two periods between 1984 and 2021 would be identified as negative output shocks using the contemporaneous out-turn data (Figure 3.7) as using the contemporaneous forecasts (Figure 3.8) – that is, the early 1990s and the recent recession starting in 2008. Second, in both cases, the suspension would have been prompted first by the forecast data, rather than by out-turn data. Figure 3.8 shows that the November 2008 Pre-Budget Report first forecast that annual growth would drop below 1% in 2008, whereas this did not show up in the out-turn data until 2008Q4 (as shown in Figure 3.7). In the early 1990s, the forecasts would have triggered suspension of the rule in November 1990, whereas the downturn was not reflected in out-turn data until March of the following year.

This analysis of past forecasts and out-turns for GDP growth suggests that the mandate – had it been in place – would have been suspended on perhaps four occasions over the last 40 years. With the benefit of hindsight, these are probably the only four periods that we would now identify as negative output shocks in the UK: the mid 1970s, the early 1980s, the early 1990s and the late 2000s. This suggests that the fiscal mandate would have allowed sufficient flexibility to accommodate the output shocks that we have seen in the UK over the last 40 years. We noted earlier that the UK has achieved a surplus in 8 out of 63 years since 1952. This would improve to 8 out of (at most) 46 years if we ignore the years in which the rule would have been suspended.[13]

[13] We only have data on contemporaneous out-turns from 1976 and forecasts from 1983. To calculate whether the rule would have been suspended before 1976, we use the most recent out-turn data.

The 1% threshold is, of course, somewhat arbitrary. It is certainly not optimal that, with growth only just above this level, the government would be constrained to running a surplus while, with growth just below 1%, it could potentially borrow an unlimited amount. One way to assess the importance of the threshold in practice is to ask whether, historically, the suspension of the rule would have been different if a slightly different threshold were used. We have looked at past data to see whether slightly different thresholds (0.7% and 1.3%) would have led to big changes in whether or not the rule would have been suspended. The answer is that, over the period since the mid 1970s, they would not have done. The only exception is the late 1990s, when a threshold of 1.3% would have meant the November 1998 Pre-Budget Report forecast of growth in the range 1–1½% (as the dot-com bubble burst) could have led to the rule being suspended. (With hindsight, loosening fiscal policy significantly at that point might not have been justified, since the UK, unlike the US, avoided a recession.) This may suggest that, in practice, the arbitrary nature of the 1.0% threshold may not be hugely important in practice. However, as Figure 3.6 shows, growth often hovered around 1–2% in the 1950s. And, of course, we do not know that the pattern of growth rates in the future will mimic that of the recent past: it is possible that growth will be more likely to be just below or just above 1% than it has been historically.

The analysis above does, though, suggest that forecasts can matter because they may well be the first trigger for suspending the rules. One potential adverse implication of this, coupled with the sharp threshold at 1% growth, is that it increases the politicisation of the forecasting decisions of the OBR. For example, if it forecast GDP growth of 0.9% then the government would be allowed to borrow, while if it forecast GDP growth of 1.0% then the government would not be able to borrow without breaking its rule. This may seem like a purely theoretical conundrum, but a forecast around this level of growth is not unprecedented. In March 1990, growth was forecast to be 1% exactly in that year, before increasing thereafter. If the rule had been in place, therefore, it could not have been suspended, though a slightly lower forecast would have allowed the government free rein. The OBR will be aware of this implication, and even if it legitimately forecasts GDP growth of 0.9%, this could lead to questions about its independence.

This politicisation would be more acute if growth were often expected to be close to the 1% threshold. It is difficult to know, going forwards, whether UK economic growth is likely to be forecast to fluctuate around 1% or whether (as appears to have been the case for over 85% of the years since 1700[14]) it will most often be thought to be clearly above or clearly below the threshold.

Adjusting gradually to shocks?

The discussion above suggests that the ability to suspend the fiscal mandate when economic growth drops below 1% is likely to allow the government to accommodate most negative output shocks. The fact that, once suspended, the government then has flexibility about how and when the mandate is reinstated also suggests that the rule allows flexibility to adjust gradually if the negative output shocks turn out to be structural, rather than purely cyclical.

[14] Data from the Bank of England suggest that annual real GDP growth in the UK was either above 1.5% or below 0% for 272 out of the 314 years between 1701 and 2014 (inclusive). Source: Bank of England, 'Three centuries of macroeconomic data', http://www.bankofengland.co.uk/research/pages/onebank/threecenturies.aspx.

The financial crisis of 2008 is a clear recent example of a large shock to the UK economy, which pushed economic growth below 1%, that is judged to have caused structural damage and which the previous and current governments have chosen to take many years to adjust to. On current forecasts, it will take until 2016–17 for borrowing to fall back to the level it was at as a share of national income in 2007–08 and a further three years to reach the Chancellor's desired 'new normal' of running an overall budget surplus. The fiscal mandate requires that the government complete this adjustment by 2019–20. Provided a future structural shock were accompanied by sufficiently low growth in the short term (i.e. below 1%), the fiscal mandate would provide flexibility to adjust gradually to that shock too, since the rule would be suspended and the government could set out a new plan for returning to surplus. How much scope a future government would have to adjust to such a structural shock would depend in part on how much fiscal headroom had been bought by that time and what investors' appetite was for buying more UK government debt.

Accommodating forecasting errors?

Table 3.3 provides an indication of the errors surrounding the current central forecast for the UK's public sector net borrowing, on the assumption that the current forecast is as accurate as past forecasts made by the Treasury and the OBR. This suggests that forecast errors even just one year out can be sizeable. For example, in 13 out of the 37 years since 1978–79 for which data are available, the deficit ultimately exceeded the forecast made just before the start of the financial year by at least 0.5% of national income (or £10 billion in today's terms). In other words, if the past is any guide to the future and the Chancellor continues up to March 2019 to plan for a surplus of 0.5% of national income in 2019–20, there is a 35.1% chance that this surplus would not materialise.

However, this figure somewhat overstates the chance that the mandate would be breached since the historical data include years when the deficit was higher than expected but this was also associated with growth falling below 1%. If we exclude these years from the analysis, then there were 8 years out of 30 in which the deficit ultimately exceeded the forecast made just before the start of the financial year by at least 0.5% of national income (or 26.7% of the time).

The fiscal mandate requires that, from 2019–20 onwards, the government must *achieve* a budget surplus (provided growth remains at or above 1%). This is in sharp contrast to the previous fiscal mandate, which required that a surplus (on the cyclically-adjusted

Table 3.3. Average errors in forecasting public sector net borrowing

Time period	Average absolute error (% of national income)	% of occasions deficit underestimated by more than 0.5% of national income
One year ahead	1.07	35.1
Two years ahead	2.28	65.5
Three years ahead	2.93	68.0
Four years ahead	3.31	81.3
One year ahead when growth>1%	0.79	26.7

Note: Based on Budget forecasts only, starting from the fiscal year 1978–79.
Source: OBR, 'Historical official forecasts database' and 'Public finances databank', http://budgetresponsibility.org.uk/data/.

current budget) be forecast at the end of the rolling five-year forecast horizon but not that a surplus ever actually be achieved. The requirement to achieve a budget surplus makes the Chancellor's new fiscal mandate much more constraining than the old mandate in relation to the types of forecasting errors shown in Table 3.3. This inflexibility could result in two important differences in behaviour compared with the old rule:

- The Chancellor may want to build additional caution into his plans to help ensure that they are robust to forecasting errors (which, as Table 3.3 shows, can be significant). In other words, he may wish to run fiscal policy that was – in expectation – significantly tighter than simply running a small budget surplus, particularly if the costs of failing to adhere to the mandate were perceived to be large.
- The Chancellor may be required to take sudden action in-year if forecasts are downgraded. If, after 2019–20, forecasts were to prove inaccurate and tax revenues came in less strongly and/or spending grew more strongly than anticipated, the Chancellor may have to take very quick action – immediately cutting spending or raising taxes – to help ensure the rule would not be breached (action which may only need to be temporary). It is unlikely that any such quick adjustments would represent optimal fiscal policy. In particular, some types of changes will be much easier to implement in-year than others. For example, the last government and the current government have both shown that it is possible to cut central government departments' budgets in-year, whereas changes to many taxes are much harder to make immediately and the recent reversal of planned reforms to tax credits demonstrates the difficulty of imposing nominal cuts to the level of existing claimants' benefits. Alternatively, of course, faced with these unpalatable options, the Chancellor could simply breach the rule (as he chose to do with the welfare cap in November; see Section 3.4) and run a deficit in that year.

Optimal investment decisions

The fiscal mandate requires that (during 'normal' times) current revenues should cover all spending done in the current year, including investment spending. As a result, the government's decisions about whether or not to carry out an investment project will be governed by an assessment of the benefits of the project against the cost of raising the necessary money through levying additional taxes. In contrast, under the old fiscal mandate and the Labour government's golden rule, the government was able to borrow to pay for investment spending and so (in principle, at least) the cost–benefit analysis of investment projects depended on the cost of raising additional funds from the gilt markets. In other words, under the old fiscal mandate, if the government's borrowing costs fell, more investment projects would become profitable; in contrast, the cost–benefit analysis would be unchanged under the new fiscal mandate. This suggests that the new fiscal mandate may prevent the government from investing in some projects where the benefit to future generations outweighs the debt interest costs that would be incurred because the cost of raising revenue from taxes in the short term is too high. Certainly it seems odd for the price of additional borrowing (the interest rate) not, at least in some circumstances, to affect how much we choose to do.

In practice, the existence of a fiscal mandate that allowed the government to borrow to invest did not prevent the previous coalition government from cutting investment spending significantly during the last parliament. In part this was because, even though the fiscal mandate did not constrain borrowing for investment, the supplementary debt rule did impose a limit on how much could be borrowed overall. In other words, allowing

a government to borrow for investment is not a sufficient condition to ensure that all investment projects of sufficiently high value are carried out, but it is a necessary condition for public investment plans to be responsive to the government's borrowing costs.

Summary

The fiscal mandate provides flexibility to accommodate some of the occasions on which a government might be well advised to borrow (or at least to run looser-than-normal fiscal policy). In particular, the fact that the rule will be suspended if growth drops below 1% should provide the flexibility to accommodate most negative output shocks, if in future they take a similar form to what they have over the last 300 years. The suspension of the rule in those same circumstances also provides scope to adjust gradually to large shocks. The simplicity of the rule also means that it is transparent and so it will be relatively easy for the public to hold the Chancellor to account for his promises.

However, the fiscal mandate also suffers from some severe limitations. First, the requirement to achieve (and not merely forecast) a budget surplus means that either the Chancellor will need to run fiscal policy that is in expectation significantly tighter than simply running a budget surplus or he may be forced into making sharp adjustments to policy in-year if forecasting errors go against him. It is unlikely that any such quick adjustments would represent optimal fiscal policy. Second, on the face of it, the sharp threshold at 1% growth is suboptimal, particularly given the risk that it might make the OBR's growth forecasts highly politicised. In practice, historical data suggest that economic growth in the UK rarely hovers around 1%. If the future resembles the past, then the fact that there is a sharp threshold at that point may not be so important, but it is impossible to know for sure how GDP growth will evolve in future. Third, the requirement that the government run a surplus prevents the government from responding to lower interest rates with more investment spending, even though the optimal level of borrowing will almost certainly depend, at least in part, on the interest rate.

3.4 The supplementary targets

In addition to the mandate for fiscal policy, the Charter for Budget Responsibility includes two supplementary targets:

- *For the period until 2019–20:* a target for public sector net debt as a percentage of GDP to be falling each year.
- A cap on welfare spending, at a level set by the Treasury in the most recently published Budget report, for each year of the rolling five-year forecast period.

The debt rule

The current target, that debt should be falling as a share of national income each year between 2015–16 and 2019–20, replaced the previous rule that debt should be falling at a fixed date in 2016–17. Like the new fiscal mandate, if growth drops below 1%, the Treasury will review its appropriateness, with any resulting change to the target requiring the approval of parliament.

The measure of debt the UK government focuses on – public sector net debt – is the total debt of central government, local authorities and organisations deemed to be under public sector control, net of any short-term financial assets (i.e. it does not net off the value of any physical assets or of any long-term financial assets held by the public sector). The government is currently forecast to be complying with this supplementary rule: the Autumn Statement forecast was for public sector net debt to fall by 0.6% of national income in 2015–16, by 0.8% of national income in 2016–17, by 1.8% of national income in 2017–18, by 2.6% of national income in 2018–19 and by 3.0% of national income in each of 2019–20 and 2020–21.

Is a supplementary debt rule required?

On the face of it, the fiscal mandate described above – which requires that the government run surpluses in 'normal times' from 2019–20 – also heavily constrains public sector indebtedness. However, there are potentially three reasons why a government might want to have a debt rule to constrain public indebtedness in addition to this mandate:

- The fiscal mandate allows the government to run deficits in any of the years prior to 2019–20, meaning that public debt could (theoretically) accumulate substantially over this period.
- The measure of borrowing targeted by the fiscal mandate excludes loans and repayments made and received by the government and other financial transactions (such as buying and selling financial assets), while these may affect public debt in the short or long run. This means that simply measuring headline borrowing does not provide a full picture of how the government's balance sheet is evolving.
- The fiscal mandate does not capture (and therefore does not constrain) promises made by governments to increase future (but not current) spending. Similarly, it does not constrain a government from making a commitment to reduce future, but not current, taxes.

The key question, therefore, is whether the supplementary debt rule addresses any of these concerns.

Assessing the supplementary debt rule

The supplementary debt rule partly addresses the first point mentioned above – that is, providing a constraint on the accumulation of public sector net debt between now and 2019–20. However, this is the least important of the three arguments for a debt rule set out above. If the government is implementing a credible plan for achieving a budget surplus by 2019–20, it seems unlikely that such a plan would be consistent with spiralling debt levels. If the government were concerned about excessively loose fiscal policy over the next few years, it could simply impose limits on the deficits in 2016–17, 2017–18 and 2018–19.

The supplementary debt rule also partly addresses the second concern, in that by targeting debt rather than borrowing it assesses a broader picture of how the government's balance sheet is evolving – which, as discussed in Section 3.2, is what the government is ultimately concerned with. However, its usefulness in this regard is hampered by the definition of debt on which the government focuses. Public sector net debt is measured net of short-term financial assets only, and so financial transactions can appear to have misleading impacts on the public finances. For example, selling assets appears to strengthen the public finances by reducing public sector net debt, when in fact

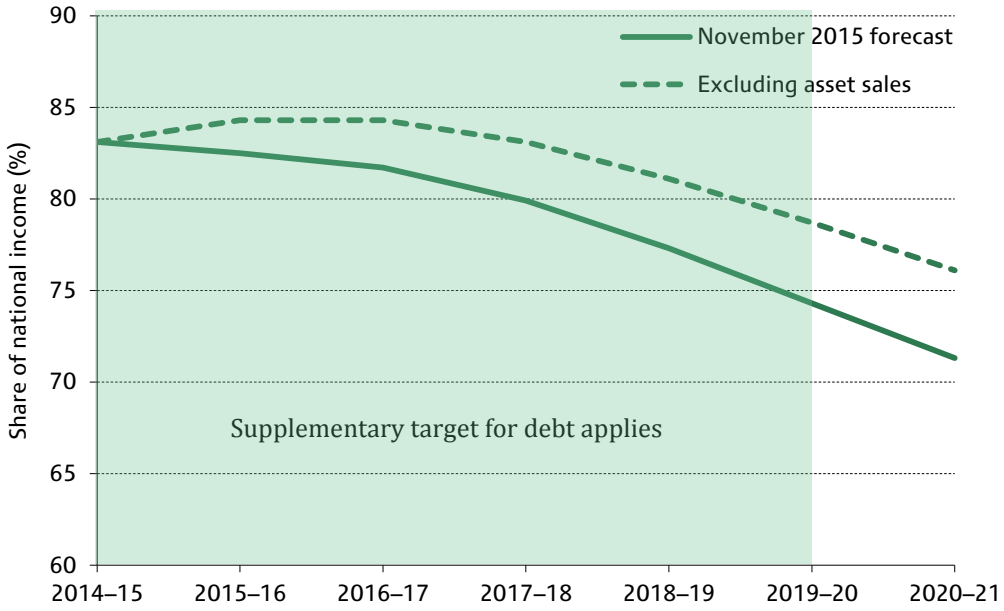
selling a state-owned asset for what it is worth has no impact on the true public finance position. Similarly, increased spending on student loans appears to significantly weaken the public finances by increasing public sector net debt, but in large part that is because the asset owned by the government in exchange (the promise of future repayments by graduates) is not netted off.

The focus of the supplementary debt rule on the relatively narrow measure of public sector net debt also makes the rule vulnerable to manipulation. The government can easily affect the profile of debt by selling government assets in particular years. Figure 3.9 shows the forecast for the path of debt over the parliament both with and without asset sales. The government is currently on course to have debt falling each year, but absent asset sales the government would be on course to breach the debt rule in 2015–16 and 2016–17. It is possible that these asset sales are desirable and would have been undertaken by the government even if no rule were in place, but the fact that asset sales can be used to meet the supplementary debt target means that in reality the rule may do little to constrain the fiscal prudence of the government. Furthermore, hasty asset sales in order to meet the debt rule might be achieved at a lower-than-possible price, which would actually serve to weaken the underlying public finances.

Finally, the supplementary debt target does little to address the concern that the government is not constrained from introducing policy changes with unattractive long-run implications for the public finances. To help address this concern, a debt rule would need to target a much broader definition of debt, which included contingent liabilities accrued by the government. Such 'Whole of Government Accounts' measures of the public sector finances are discussed in Chapter 4.

Overall, therefore, there seems to be little benefit to having the supplementary debt target in addition to the fiscal mandate. Focusing on whether a broad measure of debt is falling as a percentage of national income between some specific dates in the near term

Figure 3.9. Impact of asset sales on the path of public sector net debt



Note: The 'Excluding asset sales' series excludes only the direct effect of asset sales on the level of public sector net debt and does not assume any knock-on effects from changing net debt interest spending.
Source: Chart 5.2 of Office for Budget Responsibility, *Economic and Fiscal Outlook November 2015*.

gives little indication of the long-run sustainability of the public finances. Because the target can be met through asset sales, without any underlying change in the strength of the public finances, the rule is unlikely to constrain government policy or enforce austere fiscal policies over the next four years. This is not especially problematic – the task of navigating the public finances towards a budget surplus in 2019–20 in reality constrains policy over the next four years as well. However, this means that at best the debt rule is somewhat superfluous, while at worst it may lead to hasty and suboptimal asset sales to ensure the target is met.

The welfare cap

The cap on welfare spending places a limit in each year of the forecast horizon on spending on 'welfare in scope'. This essentially covers spending on all social security benefits and tax credits that are set by central government apart from the state pension and the most cyclical benefits.

In each Autumn Statement, the OBR assesses whether the government is meeting its cap. The government may exceed the cap by up to 2% if this is due to forecasting changes rather than policy changes, but the cap is deemed to be breached if either (i) spending rises above the cap by more than 2% as a result of forecasting changes or (ii) the government makes policy decisions that would increase welfare spending above the cap.

If the cap is deemed by the OBR to have been breached, the government must hold a debate on a votable motion in the House of Commons, normally within 28 sitting days, giving an assessment of the reasons for the breach and following one of three possible courses of action:

- Propose policy measures to reduce welfare spending below the cap.
- Seek the approval of parliament for the cap to be lifted.
- Explain to parliament why the breach is justified.

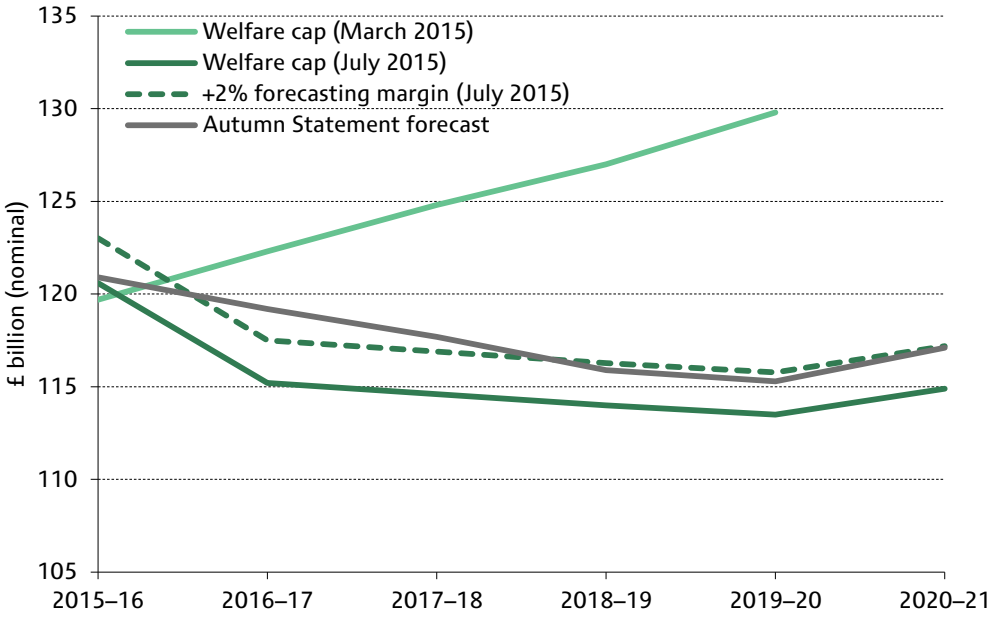
The last of these means that the welfare cap could, in practice, be a weak constraint and essentially allows the government to take no action at all if it deems that the breach is 'justified'.

The rationale behind the cap on welfare spending is the perception that governments find it difficult to curb unexpected and unplanned increases in benefit spending since this requires unpopular decisions about how to make the benefit system less generous. By introducing a cap, governments will be forced to make active decisions about a desirable level of welfare spending, rather than allowing it passively to drift upwards.

The level of the cap was originally set by the coalition government in March 2014, and it remained unchanged in the March 2015 Budget. However, in the July 2015 Budget, when the new Conservative government announced a number of policy changes intended to reduce benefit spending, the Chancellor chose to lower the level of the welfare cap to match the new, lower forecast for spending on welfare in scope. This change is shown by the movement from the pale green line to the solid dark green line in Figure 3.10.

In November 2015, the OBR issued its second judgement on the government's compliance with the cap. This proved to be the first test of how constraining the cap really is and how the government would respond.

Figure 3.10. Welfare cap



Source: Office for Budget Responsibility, Economic and Fiscal Outlooks, March 2015, July 2015 and November 2015.

As a result of reversing planned cuts to tax credits (which had been announced in the July 2015 Budget and were due to be implemented from 2016–17), the new OBR forecast (shown by the grey line in Figure 3.10) suggested that the welfare cap would be breached in 2016–17, 2017–18 and 2018–19.[15] In response, the Chancellor decided to take the third course of action mentioned above – to explain to parliament why the breach was justified. He did not attempt to take action to reduce spending elsewhere, nor did he seek permission to increase the cap.

The Chancellor did not choose to attend Parliament himself to explain the breach; the motion was instead proposed by Shailesh Vara, a junior minister from the Department for Work and Pensions (DWP). This was a direct contradiction of what George Osborne said in March 2014, when introducing the welfare cap:[16]

> The charter makes clear what will happen if the welfare cap is breached. The Chancellor must come to Parliament, account for the failure of public expenditure control, and set out the action that will be taken to address the breach.

Curiously, the requirement that the Chancellor must account for the breach of the rule was never, despite Mr Osborne's claims, a part of the fiscal charter. For a DWP minister to propose the motion was entirely in accord with the wording of the charter. This does

[15] The reversal of the planned tax credit cuts was precipitated by a successful House of Lords motion in October 2015, which required the government to 'delay consideration of the regulations until a report has been produced addressing the Institute for Fiscal Studies' analysis of the regulations and their impact' and 'until consultation and a report to Parliament on the provision of full transitional protection for a minimum of three years for all low-income families and individuals currently receiving tax credits before 5 April 2016 has been completed' (http://www.parliament.uk/business/news/2015/october/lords-tax-credits-si/; this actually refers to 'transactional protection', but from the context it seems clear that 'transitional protection' is intended).

[16] Hansard, 26 March 2014, volume 578, column 380, http://www.publications.parliament.uk/pa/cm201314/cmhansrd/cm140326/debtext/140326-0002.htm.

leave the question of why the Chancellor stated something to the contrary to parliament in 2014.

Has the cap lost credibility already?

The welfare cap was breached on just its second outing in November, and welfare spending is now forecast to be above the level permitted by the cap until 2019–20. The ease with which this happened and the government's ability simply to 'justify' this without taking remedial action call into question the power of the welfare cap really to constrain spending in this area.

Another detail of the November 2015 assessment of the welfare cap further harmed the credibility of the cap. While it was deemed to be breached for the next three years, the OBR judged the welfare cap met for 2019–20 and 2020–21. However, this was only achieved because the government reclassified an element of housing benefit spending such that it was incorporated into central government grants to local authorities rather than being a separate payment.[17] The charter specifies that the government cannot reclassify which welfare spending is in the scope of the cap; welfare spending can only be affected by policy change. However, because the mere fact of reallocating this spending from central to local government may put downward pressure on this element of spending, this transfer has been treated as a policy change and the entire cost of the grants has been taken out of scope.[18] It is highly doubtful that this stream of spending will be reduced to zero as a result of the policy change, so at the very least the government's performance relative to the cap is flattered by the reclassification of this spending item. This somewhat opaque method of meeting the cap does little to enhance what was left of its credibility.

Verdict on the welfare cap

If your aim is to constrain (working-age) welfare spending, on the face of it the welfare cap looks like a reasonable fiscal rule. The 2% buffer for forecasting errors provides sensible flexibility where the deficit rule does not, avoiding suboptimal in-year changes. At the same time, in theory at least, 'welfare in scope' should be a fixed and well-defined target that is difficult to manipulate, which is a clear improvement on the supplementary debt target.

In reality, however, it has proved relatively easy to abandon the cap. Furthermore, the definition of 'welfare in scope' has proved somewhat more fluid than intended, enabling the government to meet the cap in the last two years of this parliament only due to a reclassification of an element of spending. The welfare cap has not, at least up to this point, acted as a credible constraint on welfare spending. Whether or not this condemns the cap to irrelevance and failure in the longer term remains to be seen.

3.5 Conclusion

In July 2015, the government introduced a new fiscal mandate that requires it to achieve a budget surplus by 2019–20, and to maintain a surplus thereafter so long as economic growth does not fall below 1%. The government's motivation for introducing such a target is the desire to reduce public sector debt as a share of national income more

[17] The spending item in question is funding for temporary accommodation.

[18] The Treasury argues that the reallocation to local authorities will tend to put downward pressure on spending in this area because overall local government grants are being cut considerably – see Chapter 6.

quickly than would be the case with higher levels of government borrowing. The latest forecasts suggest that the government is currently aiming for a small budget surplus (0.5% of national income) in 2019–20.

Public sector net debt in the UK is high by recent historical standards. Debt as a share of national income is forecast to be 82.5% by the end of 2015–16 – the highest level it has been since the 1960s (when debt was high but falling in the wake of the First and Second World Wars). The government's desire to reduce debt is therefore understandable. Doing so would reduce the amount of public spending that needs to be devoted to debt interest payments and it might leave the public finances better placed to respond to future adverse economic shocks through increased borrowing and rising debt (if that were deemed appropriate by the government, as it was with the response to the recent financial crisis).

It is worth pointing out, though, that there is nothing particularly significant about a surplus from the point of view of debt reduction. As long as the economy were growing, a small deficit would also lead to debt falling as a share of national income over time, just not as quickly as would be the case with a budget balance (and even less quickly than would be the case with a larger surplus).

There can also be good economic reasons for government borrowing. For example, investment projects that benefit future generations might not be undertaken if they have to be funded through taxes on current generations but they might be judged profitable if the funding could instead be raised more cheaply through borrowing. Borrowing to finance such investment would allow the costs to be passed on to the future generations who benefit, and so might enable these projects to be undertaken.

More generally, it is important that the government has some flexibility in its borrowing level. This allows the government to smooth tax rates over time, to engage in output stabilisation, to adjust gradually to economic shocks, and to respond flexibly to forecast errors. This could be achieved whilst always running a surplus, but this would require a surplus large enough in ordinary times that the surplus could be allowed to fall when shocks or forecast errors occur without resulting in borrowing. If the government only runs a small surplus in ordinary times, there would be less scope for such reactions if the government were wedded to achieving a surplus.

The government's new fiscal mandate does allow some flexibility. The requirement for surpluses will be suspended if economic growth falls, or is forecast to fall, below 1%. This means the government will be able to borrow to respond to most large economic shocks and stabilise output.

However, shocks to the public finances can occur without economic growth falling below 1%. If the government ordinarily only runs a small surplus (such as the 0.5% of national income surplus currently forecast for 2019–20), its ability to respond flexibly in these circumstances will be limited. For example, since 1978, there have been 30 years when forecasts for borrowing have been made at the beginning of the fiscal year and when economic growth turned out to be above 1% in that year. In 8 out of these 30 years (i.e. 26.7%), the out-turn for borrowing (the surplus) in the year ended up being at least 0.5% of national income higher (lower) than had been forecast at the start of the year. In other words, if the past is any guide to the future, this suggests that, even if the government sets out a plan in March 2019 to run a surplus of 0.5% of national income in 2019–20 (as the latest plans suggest), there might be around a one-in-four chance that the planned

surplus would not materialise due to forecasting errors, potentially leading to suboptimal in-year policy changes in response.

Once we have reached 'normal' times, the new fiscal mandate therefore suffers from two main drawbacks: it affords the government only limited flexibility to respond to shocks, and it does not allow the government to pass on the costs of investment projects directly to future generations (even if those future generations would benefit from them). However, in exchange for these problems, as well as mapping out a path to lower debt, the mandate is simple, clear and transparent. This should enhance the credibility of the rule for constraining government behaviour. It will be easy for the OBR, and independent observers outside of government, to assess whether the government has complied with the letter of the rule. Within a month of fiscal year 2019–20 ending (and, perhaps equally importantly, days before the planned date of the next UK general election), the Office for National Statistics will (at least if the current timetable is maintained) publish its first estimate of government borrowing for the previous year.

Unfortunately, simplicity and transparency are not sufficient to ensure a fiscal rule has a credible impact on government behaviour. The supplementary fiscal targets are also relatively clear but their ability to constrain the government has already been called into question. The welfare cap was breached in the November 2015 Autumn Statement, less than two years after its introduction, with little apparent political consequence and no constructive action from the government to mitigate the breach. The supplementary target for debt as a share of national income to be falling every year is currently forecast to be met, but only as a result of the government's planned asset sales in 2015–16. Selling an asset for what it is worth does not make the public finances any stronger. The fact that asset sales affect debt (and, therefore, whether or not the government is compliant with its debt target) is the consequence of the government focusing on a particular measure of public sector net debt which excludes non-liquid assets.

The fiscal mandate could fall foul of the same type of gaming: the government could meet the letter of the rule without adhering to its spirit. There are two obvious methods for gaming the fiscal mandate. First, the evolution of debt over time depends not just on public sector net borrowing but also on financial transactions undertaken by the government, yet only the former is targeted by the fiscal mandate. Policies that replace government spending with government loans would reduce borrowing but – unless all of those loans were expected to be repaid and the interest rate charged covered the government's cost of borrowing – the positive impact on debt in the long run would be smaller than the reduction in borrowing would imply. The last and the current governments have already made use of policies of this sort: in particular, they have traded direct government support for higher education for private payment of fees covered by loans made from the government to students. Second, the government could meet the fiscal mandate over the current forecast horizon by introducing policies that improve the public finances in the short term but either do so temporarily (for example, by simply bringing forward future revenue) or perhaps even worsen the public finances in the long run. A recent example of the former type of policy is the accelerated payment schemes introduced for some corporates in the December 2014 Autumn Statement. These schemes require companies to pay the tax they owe earlier than they previously had to – this obviously had the effect of boosting tax revenues in the short term but largely at the expense of lower revenues expected in later years.

This all suggests that there is a continued role for the OBR, and other independent commentators, to assess the government's compliance with both the letter and the spirit

of its fiscal rules. Chapters 5 and 6 outline the main risks to the public finances over this parliament on the revenue and spending sides. There is a high degree of uncertainty going forwards, which means it is likely that the fiscal rules will bite at some point and force the government to change its plans. At that point, we will discover whether the rules really are credible and binding on the government or if, like the welfare cap, the other rules prove relatively easy to ignore.

4. Whole of Government Accounts: an ICAEW assessment

Ross Campbell (ICAEW), Robert Hodgkinson (ICAEW) and Martin Wheatcroft (on behalf of ICAEW)

Summary

- The Whole of Government Accounts (WGA) are financial accounts for the public sector, prepared on a similar basis to those of millions of companies and other organisations around the world.
- The first five years of WGA have covered a dramatic period in Britain's fiscal history following the global financial crisis. They provide a more comprehensive picture of the public sector's financial performance over that time than that available from traditional National Accounts reporting by capturing a wider range of financial transactions.
- The reduction in the deficit on a National Accounts basis of 35% from £153 billion to £100 billion between 2009–10 and 2013–14 contrasts with a reduction of only 20% in the size of the annual accounting deficit to £149 billion over that same period.
- There has been a significant deterioration in the government's financial position, with net liabilities in the WGA more than doubling in five years, from £0.8 trillion at 31 March 2009 to £1.85 trillion at 31 March 2014. This reflects an increase in public sector pension obligations to £1.3 trillion in addition to the near-doubling of public sector net debt in the National Accounts from £0.7 trillion to £1.4 trillion.
- Effective financial management for the longer term involves addressing the balance sheet as well as revenue, expenditure and cash flows reported in the WGA but not in the National Accounts. A relatively high level of asset write-downs, growing pension obligations and increasing charges to cover nuclear decommissioning and clinical negligence exposures are areas of particular concern.
- The WGA also provide further insight when considering the vulnerability of the public finances to future economic shocks, with total liabilities at 31 March 2014 of £3.2 trillion, or 177% of GDP. This is substantially higher than public sector net debt, the National Accounts measure typically referred to in this context, which stood at £1.4 trillion, or 78% of GDP, at that date. The former may matter more when thinking about the government's ability to cope in the event of a future downturn.
- Improving financial management within government will become more challenging as further devolution increases the complexity of the public sector in the UK. A necessary first step must be to replace the current complex web of internal financial reporting data collection processes with a modern standardised financial consolidation system for all public sector entities, which should enable the government to obtain and utilise accurate comprehensive financial performance data from across the public sector within days rather than months.

4.1 Introduction

On 26 March 2015, the Treasury published its fifth set of Whole of Government Accounts (WGA), reporting the government's financial results for the year ended 31 March 2014 in accordance with International Financial Reporting Standards (IFRS).

These financial accounts, prepared on a basis similar to those that the government has required businesses, charities and other organisations in the UK to comply with for many decades, consolidate the activities of over 5,500 public sector bodies across central government, devolved administrations and local government in the UK.

Together with an associated commentary and explanatory notes, they provide a more comprehensive picture of the government's financial performance than that available through traditional fiscal reporting in the National Accounts. This is because the WGA capture a wider range of financial transactions than are reflected in the National Accounts, including charges for obligations incurred today that will result in cash outflows in the future, as well as integrating revenue and expenditure with a balance sheet and statement of cash flows. This is illustrated by Table 4.1.

The income statement records revenue and expenditure incurred, culminating in an accounting deficit of £149 billion for 2013–14. This is accompanied by a cash-flow statement that reconciles the operating loss of £70 billion with the net change in cash balances, and a statement of financial position, commonly known as a balance sheet, reflecting assets of £1,337 billion and liabilities of £3,189 billion at the end of that year. The statement of comprehensive gains and losses and the reconciliation of equity movements are combined in the table to provide a bridge between revenue and

Table 4.1. Summarised WGA 2013–14

Revenue and expenditure		***Balance sheet***	
Year ended 31 March 2014	**£bn**	**As at 31 March 2014**	**£bn**
Revenue	648	Property, plant and equipment	763
Operating expenditure	(718)	Other assets and investments	574
Operating loss	(70)	Debt and bank deposits	(1,451)
Net finance costs	(79)	Public sector pension obligations	(1,302)
Net loss on disposal of assets	0	Other liabilities	(436)
Accounting deficit for the year	**(149)**	**Net liabilities**	**(1,852)**
Cash flows		***Change in financial position***	
Operating loss	(70)	**Accounting deficit for the year**	**(149)**
Add back: non-cash transactions	42	Property revaluations	11
Changes in working capital	(11)	Financial revaluations	9
Operating cash outflow	**(39)**	Actuarial revaluations	(84)
Investing cash outflow	**(55)**	**Comprehensive loss for the year**	**(213)**
Cash outflow before financing	(94)	Other movements	(11)
Net financing cash inflow	**125**	**Change in financial position**	**(224)**
Net interest and similar outflows	**(30)**	Opening net liabilities	(1,628)
Net change in cash for the year	1	**Closing net liabilities**	**(1,852)**

Note: In this and subsequent tables in this chapter, positive numbers are used for revenue and assets, while (bracketed) negative numbers are used for expenditure and liabilities.
Source: Whole of Government Accounts 2013–14. These, and those for earlier years, can be downloaded from http://www.gov.uk/government/collections/whole-of-government-accounts.

Box 4.1. Key terms used in this chapter

Accounting deficit	The shortfall when revenue is less than expenditure in the WGA. Equivalent to the loss for the year in commercial financial statements.
Asset	A current resource from which economic benefits are expected to flow in the future.
Contingencies	Financial risks that could result in additional costs being incurred in addition to the liabilities already recorded in the balance sheet – for example, guarantees and indemnities that might be called on. Classified between contingent liabilities and remote contingencies, depending on likelihood.
Expenditure	Costs incurred, calculated in accordance with accounting standards. Excludes capital expenditure, but includes charges that are not captured by the National Accounts such as long-term pension costs. In financial statements, it is split into two components: operating expenditure and finance costs (the latter presented net of interest and similar income).
Financial accounting	A method of accounting in accordance with accounting standards, culminating in financial statements integrating revenue, expenditure, other gains & losses and cash flows with a balance sheet.
IFRS	International Financial Reporting Standards, a particular type of financial accounting based on accounting standards issued by the International Accounting Standards Board (IASB). In the UK, the government's Financial Reporting Advisory Board (FRAB) has made some specific adaptations for public sector use.
Liability	An obligation in the form of a legal or similar requirement to make a payment in the future that arises as a consequence of a current or past event. This includes obligations to pay pensions to public sector employees arising from their past service, but does not include political promises or commitments to pay for future spending – for example, the state pension or other welfare benefits.
National Accounts	The framework used by the Office for National Statistics (ONS) for the presentation and measurement of economic activities, including rules on reporting public sector finances. Based on the European System of National and Regional Accounts (ESA), it is similar but not identical to the UN System of National Accounts. The current version, ESA10, was implemented in the UK in 2014, replacing ESA95.
Provisions	Liabilities of uncertain timing or amount, recorded at the best estimate of the likely payments to be made, discounted to current values.
Public finance deficit	The National Accounts measure for the shortfall between the totals for taxes and other income and for spending; equal to public sector net borrowing.
Public sector bodies	The UK central government, the Scottish, Welsh and Northern Ireland governments, local authorities, police & crime commissioners and the organisations that they control (except for nationalised banks).
Revenue	Taxes and other income calculated in accordance with accounting standards (but excluding interest and similar income).

expenditure and the £224 billion deterioration in the balance sheet over the course of 2013–14.

The revenue reported in the WGA for 2013–14 was equivalent to approximately £10,000 per person when divided across the 64.5 million people living in the UK at the time.[1] This was exceeded by operating expenditure of £11,100 and net finance costs of £1,200 to reach an accounting deficit of approximately £2,300 each. Assets and liabilities, measured under accounting standards, were around £20,700 and £49,400 each respectively, resulting in a net liability position at 31 March 2014 in the order of £28,700 per person.

It is important to note that the financial accounts do not fully represent the economic and social costs and benefits to British citizens from government activity. However, the amount by which liabilities exceed assets in the balance sheet provides a measure of the scale of the challenge faced by the government as it attempts to strengthen the public finances.

If used properly, financial analysis based on WGA can enable more comprehensive scrutiny around how the government plans to deal with its longer-term financial challenges than the narrower focus of the National Accounts allows, using the common financial language employed widely outside of government. Holding governments to account using the WGA therefore has the potential to improve the quality of policymaking and wider public debate.

Section 4.2 provides a high-level summary of the government's financial performance and position as set out in the revenue and expenditure statement and balance sheet in the WGA for the five years ended 31 March 2014, and how they differ from the National Accounts. This is followed by Section 4.3, which explores other insights provided by the WGA, including the cash-flow statement, changes in financial position and financial risk exposures. Section 4.4 discusses the need for improved financial accounting and reporting in an era of change and Section 4.5 concludes.

Box 4.1 sets out key terms used in this chapter that are useful in understanding financial accounting and the WGA.

4.2 Five years of WGA

> On arrival in office in 1997 the Government was faced with a large structural fiscal deficit, low net investment, rising public debt and falling public sector net worth. Urgent action was needed. This situation had come about in part as a result of a lack of clear and transparent fiscal objectives, together with fiscal reporting that did not permit full and effective public and Parliamentary scrutiny.
>
> *HM Treasury,* Analysing UK Fiscal Policy, *November 1999*[2]

It was HM Treasury's analysis of fiscal policy in 1999 that resulted in legislation for the WGA,[3] but it was only in 2008 that the then Labour government finalised the scope and timetable for preparing WGA. It was therefore not until after the arrival of the coalition

[1] Office for National Statistics, 'Mid-year 2014 population estimate' (extrapolated back one quarter).

[2] http://webarchive.nationalarchives.gov.uk/20130129110402/http://www.hm-treasury.gov.uk/d/90.pdf.

[3] Section 11 of the Government Resources and Accounts Act 2000.

government, during a period of much greater economic turmoil, that the first set of modern financial statements in the form of the WGA were published.

As a consequence, the public, parliament and the government itself have the potential to be in a much better position to judge progress against the government's objective of turning around the state of the public finances following the financial crisis – provided, of course, that the WGA become a central part of the dialogue on fiscal matters.

Revenue – Expenditure = Accounting deficit

Figure 4.1 illustrates how the accounting deficit[4] was on average £55 billion higher than the public finance deficit each year from 2009–10 to 2013–14.

The reduction in the deficit on a National Accounts basis of 35% from £153 billion to £100 billion between 2009–10 and 2013–14 contrasts with a reduction of only 20% in the size of the annual accounting deficit to £149 billion over that same period.

This can be seen from Table 4.2, which sets out the revenue and expenditure statement for the five years and also summarises the differences between the public finance deficit and the accounting deficit. These principally arise from the long-term costs of public sector pension schemes, asset write-downs and increases in provisions for nuclear decommissioning and clinical negligence claims, which are incorporated in the WGA but not the National Accounts. These differences are discussed in more detail later in this section.

The accounting deficits incurred over the five financial years ended 31 March 2014 added together were equal to 25% of revenues over the period. This is substantial, even for an organisation of the scale of the UK government.

Table 4.3 illustrates how revenue, operating expenditure and operating loss developed between 2009–10 and 2013–14.

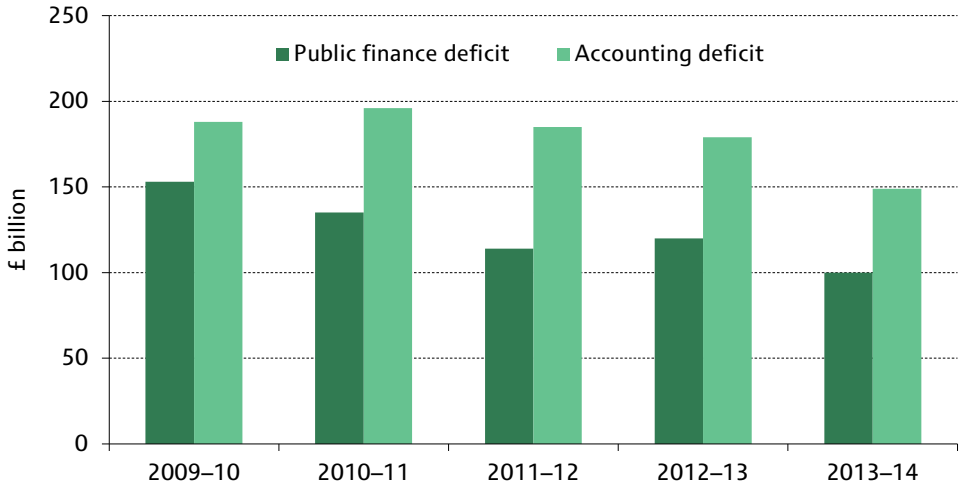
Revenue in 2013–14 was £65 billion higher than in 2009–10, but £51 billion of this increase was from inflation, so the real-terms increase was only £14 billion. This reflected real-terms declines in revenue in 2011–12 and 2012–13, despite economic growth in both those years. This contrasted with operating expenditure, where the expressed intention of the coalition government to cut spending translated into operating expenditure being £35 billion lower in real terms in 2013–14 than in 2009–10.

When combined, operating losses reduced from £109 billion in 2009–10 to £70 billion in 2013–14, comprising a net increase of £10 billion from inflation and a real-terms improvement of £49 billion.

The reduction in the level of operating losses over the period was not offset by increases in net finance costs, despite the substantial growth in debt over the period. As shown in Table 4.2, net finance costs did initially increase as debt grew, but declining interest rates subsequently had the effect of bringing net finance costs in 2013–14 back to the same level as five years previously.

[4] Adjusted to exclude one-off items in 2009–10 and 2010–11 (see Table 4.2).

Figure 4.1. National Accounts versus WGA



Source: Office for National Statistics, Public Sector Finances October 2015, and Whole of Government Accounts 2013–14, adjusted for one-off items in 2009–10 and 2010–11.

Table 4.2. Revenue and expenditure for the five years to 2013–14

Fiscal year **Revenue and expenditure**	**2009–10** **£bn**	**2010–11** **£bn**	**2011–12** **£bn**	**2012–13** **£bn**	**2013–14** **£bn**
Revenue	583	614	617	620	648
Operating expenditure[a]	(692)	(727)	(715)	(717)	(718)
One-off items[b]	25	102	-	-	-
Net finance costs	(79)	(83)	(87)	(82)	(79)
Accounting deficit	**(163)**	**(94)**	**(185)**	**(179)**	**(149)**
Accounting deficit excluding one-off items	**(188)**	**(196)**	**(185)**	**(179)**	**(149)**
Accounting deficit[c] / revenue	*32.2%*	*31.9%*	*30.0%*	*28.9%*	*23.0%*
Accounting deficit[c] / GDP	*12.5%*	*12.4%*	*11.4%*	*10.7%*	*8.5%*
Public finance deficit[c]	**(153)**	**(135)**	**(114)**	**(120)**	**(100)**
Add back: public sector net investment[c]	49	40	30	35	26
Public finance current deficit[c]	**(104)**	**(95)**	**(84)**	**(85)**	**(74)**
Asset-related differences	(46)	(58)	(60)	(31)	(25)
Public sector pensions	(52)	(57)	(52)	(48)	(49)
Provisions	3	(6)	(5)	(16)	(10)
Other differences	11	20	16	1	9
One-off items[b]	25	102	-	-	-
Accounting deficit	**(163)**	**(94)**	**(185)**	**(179)**	**(149)**

[a] Adjusted to exclude one-off items in 2009–10 and 2010–11.
[b] One-off items comprise a gain of £25 billion in 2009–10 relating to the Asset Protection Scheme, a gain of £126 billion in 2010–11 arising from changes in public sector pension entitlements, and a loss of £24 billion in 2010–11 on writing down the value of council houses.
[c] Updated for the change from ESA95 to ESA10 and for other revisions made by the ONS since the original publication of the WGA, but not for the incorporation of housing associations.
Source: Whole of Government Accounts 2010–11, 2012–13 and 2013–14; Office for National Statistics, Public Sector Finances, October 2015 and GDP November 2015; ICAEW calculations.

Table 4.3. Operating loss development

Fiscal year	2009–10 to 2010–11 £bn	2010–11 to 2011–12 £bn	2011–12 to 2012–13 £bn	2012–13 to 2013–14 £bn	2009–10 to 2013–14 £bn
Revenue in prior year	583	614	617	620	**583**
Inflation	17	10	11	13	**51**
Increase/(decrease) after inflation	14	(7)	(8)	15	**14**
Revenue in year	614	617	620	648	**648**
Operating expenditure in prior year	(692)	(727)	(715)	(717)	**(692)**
Inflation	(21)	(12)	(13)	(15)	**(61)**
(Increase)/decrease after inflation	(14)	24	11	14	**35**
Operating expenditure in year	(727)	(715)	(717)	(718)	**(718)**
Operating loss in prior year	(109)	(113)	(98)	(97)	**(109)**
Net effect of inflation	(4)	(2)	(2)	(2)	**(10)**
Net change after inflation	0	17	3	29	**49**
Operating loss in year	(113)	(98)	(97)	(70)	**(70)**

Note: Inflation based on the GDP deflator for the years shown of 3.0%, 1.6%, 1.8% and 2.1% respectively.
Source: Whole of Government Accounts 2013–14; Office for National Statistics GDP Deflator Blue Book update issued 3 November 2015; ICAEW calculations.

Table 4.4. Balance sheet for the five years to 2013–14

Fiscal year Balance sheet	2009–10 £bn	2010–11 £bn	2011–12 £bn	2012–13 £bn	2013–14 £bn
Property, plant & equipment	713	714	745	747	763
Other assets	537	520	525	550	574
Total assets	1,250	1,234	1,270	1,297	1,337
Debt and bank deposits	(988)	(1,097)	(1,232)	(1,330)	(1,451)
Net pension obligations	(1,135)	(961)	(1,006)	(1,172)	(1,302)
Other liabilities	(354)	(362)	(379)	(423)	(436)
Total liabilities	(2,477)	(2,420)	(2,617)	(2,925)	(3,189)
Net liabilities	**(1,228)**	**(1,186)**	**(1,347)**	**(1,628)**	**(1,852)**
Total assets / GDP	*81%*	*77%*	*77%*	*76%*	*74%*
Total liabilities / GDP	*(161%)*	*(151%)*	*(158%)*	*(171%)*	*(177%)*
Net liabilities / GDP	*(80%)*	*(74%)*	*(81%)*	*(95%)*	*(103%)*
Net liabilities per person	*(£19,600)*	*(£18,800)*	*(£21,200)*	*(£25,400)*	*(£28,700)*
Public sector net debt	**(960)**	**(1,102)**	**(1,192)**	**(1,300)**	**(1,403)**
Asset-related differences	831	872	891	904	905
Public sector pensions	(1,135)	(961)	(1,006)	(1,172)	(1,302)
Provisions	(102)	(108)	(113)	(131)	(142)
Other assets less liabilities	138	113	73	71	90
Net liabilities	**(1,228)**	**(1,186)**	**(1,347)**	**(1,628)**	**(1,852)**

Source: Whole of Government Accounts 2011–12, 2012–13 and 2013–14; adjusted by the ICAEW to reflect changes in public sector net debt as a consequence of the implementation of ESA10.

Balance sheet

Each revenue and expenditure statement is complemented by a balance sheet, as shown in Table 4.4. This confirms how the financial position of the UK government has deteriorated dramatically over the last five years, with increases in assets being outpaced by much larger increases in liabilities.

The main drivers were higher levels of government debt and growing public sector pension obligations, with total liabilities increasing from £2.5 trillion (161% of GDP) at 31 March 2010 to £3.2 trillion (177% of GDP) at 31 March 2014.

Table 4.4 also shows that growth in public sector pension obligations was the main contributor to the widening gap between public sector net debt in the National Accounts (which do not include these obligations) and net liabilities in the WGA.

The weakening financial position of the UK government as presented in the balance sheet is a concern. In particular, there will be significant increases in finance costs as interest rates rise, while pension obligations and other liabilities will absorb increasing amounts of cash as they are settled. As a consequence, there will be less available to spend on other policy objectives out of future tax revenues and potentially less headroom to absorb future economic shocks.

Asset-related differences

In going from the National Accounts measure for the public finance deficit to the WGA equivalent, the first step is to add back public sector net investment. This is because capital expenditure and financial investments result in the addition of assets to the balance sheet in the WGA rather than being treated as an expense as they are in the National Accounts.

Perhaps surprisingly, asset-related charges recorded in the financial accounts end up to a greater or lesser extent offsetting this add-back, as shown in Table 4.5. These charges are

Table 4.5. Asset-related differences

Fiscal year	2009–10 £bn	2010–11 £bn	2011–12 £bn	2012–13 £bn	2013–14 £bn
Public sector net investment	49	40	30	35	26
Write-downs in					
- property, plant & equipment	(20)	(13)	(13)	(12)	(13)
- other assets	(4)	(16)	(30)	(9)	(13)
Capital grants	(16)	(18)	(13)	(12)	(11)
Depreciation	(6)	(7)	(4)	5	8
Gains or losses on disposals	0	(4)	0	(3)	4
Asset-related differences	(46)	(58)	(60)	(31)	(25)
Property, plant & equipment	713	714	745	747	763
Investment property	12	12	11	12	13
Intangible fixed assets	36	35	35	35	32
Financial investments	70	111	100	110	97
Asset-related differences	831	872	891	904	905

Note: Write-downs in the table exclude a one-off £24 billion write-down in council houses in 2010–11.
Source: Whole of Government Accounts 2011–12, 2012–13 and 2013–14; adjusted by ICAEW to reflect changes in the reported public finance deficit as a consequence of the implementation of ESA10.

real costs that are not recognised in the National Accounts, reflecting either reductions in the value of assets or the cost of giving capital grants to external parties.

For property, plant and equipment, asset write-downs or 'impairments' may arise as a consequence of physical damage, destruction or replacement, but they are also recorded when a conclusion is reached that the economic value of an asset is less than the amount it cost to construct. One example was the £1.3 billion write-down in the recorded value of the Olympic Park in 2012–13.

Total amounts written off property, plant and equipment over the five years amounted to £72 billion, an average charge of almost 2% of the carrying value each year. This is relatively high in the context of recurring depreciation charges of just over 3% a year. Without further information, it is difficult to understand whether this might be an indicator of problems in capital procurement processes, an accounting issue or inherent to the way the public sector works. It would be helpful if a more detailed analysis of the causes of asset write-downs could be provided in future WGA to address this issue. This may also be an area worthy of further investigation by the National Audit Office.

Impairments in other assets mostly relate to write-downs in the carrying value of financial investments or receivables, including recognising uncollectable taxes, impairing student loan receivables and, in this period, losses on investments in the UK banking sector.

Capital grants, which are treated as operating expenditure in the WGA because the assets concerned do not end up in the balance sheet, have declined over the period as the government has sought to reduce cash spending.

In addition to recognising property, plant and equipment in the balance sheet, the WGA also record the government's investment in commercial properties, intangible fixed assets such as IT systems and military equipment, and financial investments. The last includes equity investments in nationalised banks (£43 billion at 31 March 2014).

Pensions

The largest individual difference between the National Accounts and the WGA is in the accounting treatment of pensions. This is analysed in Table 4.6.

The scale of liabilities for public sector pensions is critically important as the government is obligated to make these payments as they fall due, restricting the cash available for other spending priorities. The net pension obligation is discounted over several decades, which means the eventual cash payments will be significantly higher than the £1.3 trillion net pension obligation recorded in the WGA at 31 March 2014.

Pension costs recorded in the National Accounts comprise payments to current pensioners and transfers to external pension schemes, less contributions received from current employees and external employers.

These cash costs are substantially less than the accounting costs of providing pensions to public sector employees recorded in the WGA, which instead reflect the growth in pension *entitlements* over the course of the year. In 2009–10 the accounting costs were almost four times as much as the net cash costs recorded in the National Accounts, while in 2013–14 they were more than double.

This is primarily due to the long-standing approach of not funding the majority of public sector pension schemes, which means that, outside of local authorities and a limited

Table 4.6. Public sector pensions

Fiscal year	2009–10 £bn	2010–11 £bn	2011–12 £bn	2012–13 £bn	2013–14 £bn
Pension costs in National Accounts	(18)	(22)	(24)	(28)	(31)
Difference	(52)	(57)	(52)	(48)	(49)
Pension costs in the WGA	**(70)**	**(79)**	**(76)**	**(76)**	**(80)**
Cost of pension entitlements	(30)	(41)	(36)	(36)	(40)
Contributions received	10	10	11	8	9
Interest on pension liabilities	(59)	(61)	(65)	(59)	(59)
Investment income	9	13	14	11	10
Pension costs in the WGA	**(70)**	**(79)**	**(76)**	**(76)**	**(80)**
Funded pension investments	193	208	216	219	228
Funded pension obligations	(310)	(275)	(305)	(318)	(324)
Net funded pension obligations	(117)	(67)	(89)	(99)	(96)
Unfunded pension obligations	(1,018)	(894)	(917)	(1,073)	(1,206)
Pensions in WGA balance sheet	**(1,135)**	**(961)**	**(1,006)**	**(1,172)**	**(1,302)**

Note: Pension accounting charges in 2010–11 exclude one-off gain of £126 billion.
Source: Whole of Government Accounts 2010–11, 2011–12, 2012–13 and 2013–14.

number of other bodies (such as the BBC) with funded pension plans, there is no investment income to offset the growth in liabilities in the main public sector pension schemes.

The substantial increase in net cash payments since 2010–11 reflects an increase in payments for an increased number of retirees, combined with a fall in the number of current employees contributing as the public sector contracts in size. The £10 billion increase in annual accounting cost in 2013–14 compared with five years previously (nominal growth of 14%, compared with 9% inflation over that period) is hence much lower than the £13 billion (72%) increase in the net cash cost recorded in the National Accounts.

The government acted to restrain the increase in pension liabilities with a change in pension entitlements in 2010–11, resulting in a one-off £126 billion reduction in the obligation. Together with investment growth, the element of this relating to local authority and other funded pension schemes resulted in a lower net obligation in 2013–14 than in 2009–10, despite actuarial revaluations that have increased the liability as discount rates have fallen.

The overall net pension obligation increased from £802 billion at 31 March 2009 (not shown in Table 4.6) to £1,302 billion at 31 March 2014, an increase of £727 billion before taking account of cash payments and other movements of £101 billion and the one-off reduction of £126 billion. Of this increase, approximately half (£367 billion) was as a result of actuarial revaluations as discount rates have fallen, with the balance (£360 billion) representing the growth in net pension entitlements over the five years shown.

The government has subsequently undertaken further steps to restructure public sector pension entitlements, but the impact of these changes on the net pension obligation will

not be known until the publication of the next WGA. The government has also linked the normal pension age for public sector workers (the youngest age at which someone can usually first receive a full pension) to the increasing state pension age, which is one reason why pension payments are now expected to fall as a proportion of GDP over the next fifty years.

Provisions

Of the remaining differences between the National Accounts and the WGA, the most significant to the accounting deficit arise from the treatment of provisions for general liabilities (see Table 4.7).

These are liabilities where the amount or timing of eventual payments is uncertain. As the amounts recorded in the balance sheet are estimates, they can change as those estimates are revised as well as when new costs are incurred during the course of each year.

The largest element of provisions relates to decommissioning nuclear facilities and cleaning up nuclear waste. These have grown as the Nuclear Decommissioning Authority has continued to re-evaluate upwards its estimates of the eventual payments that it expects to have to make over the next 125 years.

Of the £34 billion in charges for nuclear decommissioning recorded in the WGA over the five years to 2013–14, £27 billion arose from revisions to these estimates. Net of spending over the period, this translated into a £22 billion or 40% increase in nuclear decommissioning provisions from £55 billion at 31 March 2009 (not shown in the table) to £77 billion at 31 March 2014.

The next most significant element relates to clinical negligence claims against the NHS. Here costs averaged around £4 billion a year over the period, as provisions grew by £13 billion or 93% from £14 billion at 31 March 2009 (also not shown in the table) to £27 billion at 31 March 2014.

Other provisions relate to a wide range of different exposures, including the Financial Services Compensation Scheme, tax refund litigation and other legal claims.

Table 4.7. Provisions

Fiscal year	**2009–10 £bn**	**2010–11 £bn**	**2011–12 £bn**	**2012–13 £bn**	**2013–14 £bn**
Payments in National Accounts	(12)	(13)	(13)	(14)	(10)
Difference	3	(6)	(5)	(16)	(10)
Provision charges in the WGA	**(9)**	**(19)**	**(18)**	**(30)**	**(20)**
Nuclear decommissioning costs	(4)	(6)	(6)	(8)	(10)
Clinical negligence costs	(3)	(3)	(3)	(6)	(5)
Other provision costs	(1)	(10)	(9)	(16)	(5)
Provision charges in the WGA	**(9)**	**(19)**	**(18)**	**(30)**	**(20)**
Nuclear decommissioning	(57)	(61)	(64)	(70)	(77)
Clinical negligence	(16)	(17)	(19)	(24)	(27)
Financial Services Compensation	(4)	(4)	(4)	(4)	(4)
Other provisions	(25)	(26)	(26)	(33)	(34)
Provisions in WGA balance sheet	**(102)**	**(108)**	**(113)**	**(131)**	**(142)**

Source: Whole of Government Accounts 2010–11, 2011–12, 2012–13 and 2013–14.

4.3 Further insights from the WGA

As integrated financial statements, with extensive disclosures as required by accounting standards, the WGA contain information beyond the revenue and expenditure statement and balance sheet that provides further insights into the financial performance and position of the government.

Cash flows

The revenue and expenditure statement is prepared on an accruals basis, which means that it combines cash receipts and payments during the year with items of revenue and expenditure that arose from cash flows in previous periods or will be settled in cash in future periods.

As a consequence, revenue includes a mixture of tax and other receipts received in the year and amounts expected to be received at a later date – for example, accompanying a tax return. Similarly, expenditure includes a mixture of spending paid in cash during the year, accrued expenses that will be settled at a later date and prepaid expenses that were paid in advance in earlier periods. It also includes a depreciation charge on assets, which mostly arises from cash payments to acquire or construct those assets in earlier years.

This provides a more comprehensive view of financial performance than a statement based on just cash receipts and payments would provide, but means it does not satisfy the need of readers of financial statements wanting to understand how cash has been generated and used during the year.

This need is instead satisfied by a cash-flow statement, which analyses cash flows during the year between operational activities (operating receipts minus operating payments), investing activities (including capital expenditure) and financing activities (including new borrowing and the servicing of debt).

Table 4.8 summarises the cash-flow statements in the WGA for the five years to 2013–14, together with public sector net borrowing in the National Accounts.

The cash-flow statement should in theory provide a similar picture to that provided by public sector net borrowing in the National Accounts, but in practice there are a number of differences. For example, government borrowing to fund student loans is netted off against those loans within public sector net borrowing, unlike in the WGA where they are reported as part of financing and investing cash flows respectively. However, the most

Table 4.8. Cash flows

Fiscal year	2009–10 £bn	2010–11 £bn	2011–12 £bn	2012–13 £bn	2013–14 £bn
Operating cash outflow	(82)	(49)	(19)	(9)	(39)
Investing cash outflow	(134)	(27)	(84)	(86)	(55)
Cash flow before financing	(216)	(76)	(103)	(95)	(94)
Net financing cash inflow	**246**	**114**	**139**	**130**	**125**
Interest and similar outflows	(31)	(35)	(37)	(32)	(30)
Net change in cash	(1)	3	(1)	3	1
Public sector net borrowing	**153**	**135**	**114**	**120**	**100**

Note: The operating cash outflow in 2012–13 benefited by £27 billion from cashing in Royal Mail pension scheme investments.
Source: Whole of Government Accounts 2010–11, 2012–13 and 2013–14.

significant differences arise from financial interventions in the banking sector following the financial crisis, as these were excluded from the principal measure used for public sector net borrowing in the National Accounts.

Net financing cash inflow, the WGA measure for new borrowing, illustrates the scale of financing required by the government to fund its operations during the five years to 2013–14, including the exceptional circumstances of 2009–10 when more than a quarter of a trillion pounds was borrowed in a single year.

This means that over the past five years the government has raised a total of £754 billion in new finance. Almost half of this, £363 billion, was used to fund a total of £198 billion in operating cash outflows and £165 billion in interest and similar payments. The balance was used to fund £235 billion in capital expenditure and £151 billion in other investing cash outflows, principally in financial interventions to rescue the banking sector, together with a £5 billion increase in cash balances.

Even if the need to finance capital expenditure and financial investments is excluded, the position is far from rosy. In 2013–14, for example, operating cash flows were £69 billion short of the level needed to cover interest and similar payments.

Table 4.9 analyses investing cash outflow, the WGA measure for investment activity, and also reconciles it with the public sector investment measures in the National Accounts.

Investing cash outflow comprises capital expenditure, student loans and net movements in other financial investments, partially offset by sales of non-financial assets. Averaged over the five years to 2013–14, it reflected average cash outflows for capital items of £47 billion a year, loans to students of £7 billion and net increases in other financial investments of £27 billion, before taking into account an average of around £3 billion in receipts each year from the sales of non-financial assets.

The average for financial investments was distorted by financial interventions in the banking sector during the financial crisis. These, together with capital grants (treated as an operating cash outflow in the WGA), were the principal contributors to the differences

Table 4.9. Investing cash flows

Fiscal year	**2009–10 £bn**	**2010–11 £bn**	**2011–12 £bn**	**2012–13 £bn**	**2013–14 £bn**
Payments for capital expenditure	(46)	(51)	(54)	(44)	(40)
Sales of non-financial assets	3	5	2	2	5
Student loans	(4)	(6)	(7)	(9)	(9)
Financial investments	(87)	25	(25)	(35)	(11)
Investing cash outflow	**(134)**	**(27)**	**(84)**	**(86)**	**(55)**
Public sector net investment	**(49)**	**(40)**	**(30)**	**(35)**	**(26)**
National Accounts depreciation	(30)	(31)	(33)	(34)	(35)
Public sector gross investment	**(79)**	**(71)**	**(63)**	**(69)**	**(61)**
Add back: capital grants	16	18	13	12	11
Sales of non-financial assets	3	5	2	2	5
Financial investment differences	(74)	21	(36)	(31)	(10)
Investing cash outflow	**(134)**	**(27)**	**(84)**	**(86)**	**(55)**

Source: Whole of Government Accounts 2010–11, 2012–13 and 2013–14; Office for National Statistics, Public Sector Finances, October 2015.

between public sector gross investment in the National Accounts and investing cash outflow in the WGA.

Cash balances can vary significantly each month, but the balance at the end of each of the last five years has been relatively stable at between £20 billion and £25 billion. This is equivalent to slightly less than two weeks' expenditure by the public sector, highlighting the critical dependence of the government on being able to access financial markets to continue to operate.

Changes in financial position

Table 4.10 reconciles the movements in the balance sheet over each of the five years shown, demonstrating how net liabilities more than doubled from £0.8 trillion at 31 March 2009 (not shown in the table) to £1.85 trillion at 31 March 2014.

Table 4.10. Changes in financial position

Fiscal year	2009–10 £bn	2010–11 £bn	2011–12 £bn	2012–13 £bn	2013–14 £bn
Accounting deficit	(163)	(94)	(185)	(179)	(149)
Property revaluations	7	21	20	7	11
Financial revaluations	11	(2)	(2)	5	9
Actuarial revaluations	(287)	100	1	(97)	(84)
Comprehensive loss	**(431)**	**25**	**(166)**	**(263)**	**(213)**
Other movements	(16)	17	5	(18)	(11)
Change in financial position	**(447)**	**42**	**(161)**	**(281)**	**(224)**
Opening net liabilities	(781)	(1,228)	(1,186)	(1,347)	(1,628)
Closing net liabilities	**(1,228)**	**(1,186)**	**(1,347)**	**(1,628)**	**(1,852)**

Note: Accounting deficit is inclusive of one-off items in 2009–10 and 2010–11 (see Table 4.2).
Source: Whole of Government Accounts 2010–11, 2011–12 and 2013–14.

This deterioration was the result of weak economic growth, reflected in repeated accounting deficits. It was exacerbated by sizeable negative actuarial revaluations, which principally arose from the movement in the corporate interest rates used to discount pension liabilities. As these have fallen (apart from in 2010–11), there have been consequent increases in the pension liability. The sheer scale of the undiscounted pension obligations means that relatively small changes in the discount rate can have a very large impact on the balance sheet.

Against the scale of the accounting deficits and pension liability changes, neither property revaluations, principally from inflationary increases in the carrying value of infrastructure assets (as they are recorded at depreciated replacement cost), nor financial revaluations, arising from fluctuations in the market values of non-pension investments, had a significant impact.

Financial risk exposure

One area where the government did make progress in improving its financial situation was in reducing its exposure to financial risks, as indicated by Table 4.11.

While contingent liabilities increased to 16% of a year's revenue before falling to 10% over the period to 31 March 2014, remote contingencies fell dramatically from around 150% of a year's revenue at 31 March 2009 to 16% as guarantees and indemnities provided to support the financial sector during the financial crisis subsequently expired.

Table 4.11. Contingencies

Fiscal year	2008–09 £bn	2009–10 £bn	2010–11 £bn	2011–12 £bn	2012–13 £bn	2013–14 £bn
Contingent liabilities	-	41	50	101	88	63
As a share of a year's revenue	-	*7%*	*8%*	*16%*	*14%*	*10%*
Remote contingencies	851	434	331	162	74	105
As a share of a year's revenue	*~150%*	*74%*	*54%*	*26%*	*12%*	*16%*

Note: 2008–09 contingent liabilities and revenue not available.
Source: Whole of Government Accounts 2010–11, 2011–12 and 2013–14.

Combined, the remaining exposures amounted to just over a quarter of a year's revenue at 31 March 2014.

Contingent liabilities of £63 billion at 31 March 2014 included credit guarantees provided to exporters, potential clinical negligence claims and taxes subject to challenge, amongst other exposures. The balance of £105 billion in remote contingencies at 31 March 2014 included £50 billion in exposures to international financial institutions and the EU.

These measures, while more comprehensive than the National Accounts, do not capture all aspects of the public finances in practice. While the most explicit guarantees to the financial sector have expired, it remains likely that the government would stand behind the banking sector if it once again ran into big enough problems, an exposure not measured in the WGA. Such unmeasured commitments also need to be considered when assessing whether actions to improve the stability of the financial system, such as increased capital adequacy requirements, have reduced the risk to the taxpayer of a future financial crisis.

4.4 Using WGA to improve financial management in an era of change

Over recent years, successive governments in the UK have made significant progress in strengthening financial management within government. This has included implementing accruals and resource accounting, multi-year spending reviews, developing explicit fiscal objectives and the appointment of non-executive directors to departmental boards with outside financial experience. More recently, a Director General of public spending and finance within HM Treasury was appointed to support further development of the finance function across government and to improve the quality of financial reporting.

Despite this progress, decision-making within the public sector continues to be hampered by a lack of timely comprehensive financial information.

Replacing the current complex accounting structure with best-practice financial reporting and accounting would contribute to the government's ability to improve the fiscal position of the country, at the same time as delivering radical change across the public sector. This would involve extending WGA from a supplementary annual external financial report to form the basis for comprehensive internal monthly financial reporting throughout the public sector, including providing consolidated financial reports to the Cabinet.

In last year's Green Budget,[5] we described some of the specific benefits of extending the use of financial accounting across the public sector, including:

- better financial analysis, through the use of techniques and systems developed for businesses and other organisations already using financial accounting;
- using the balance sheet to inform financial decision-making, with a consequent longer-term focus on the impact of those decisions;
- driving alignment across public sector bodies, with more consistency in accounting and internal financial reporting enabling improvements in their ability to work together to deliver public services;
- restricting the scope for financial engineering through adopting accounting standards that are set independently of government;
- improving transparency and accountability – for example, through the development of financial reports and presentations similar to those that listed companies use in communicating with their shareholders.

Financial accounting is about much more than providing a more comprehensive set of financial reports in the form of the WGA. The standardisation of financial systems and processes enhances financial control. Structured financial data support better decision-making, forecasting and budgeting. And the use of a common financial language with the outside world increases transparency and accountability.

Greater use of financial accounting would also enable the government to benefit from the developments in accounting and financial reporting processes, systems, financial analysis techniques and skills in the private sector. Although there will always be aspects of government accounting that are specific to the public sector, the financial experience and skills developed outside of government will become easier to utilise once a common set of financial principles and rules is embedded. The government will also be better placed to utilise standardised accounting systems and so improve the efficiency of its financial processes.

Public finance reporting within the National Accounts and its international equivalents is currently a specialised activity, with around 200 national governments, together with their respective sub-units, involved in accounting in this way. This compares with the millions of companies and other organisations in the UK and around the world that use International Financial Reporting Standards or similar financial reporting frameworks as a basis for their accounting and financial reporting. The view that governments should adopt financial accounting in accordance with some form of generally-accepted accounting standards is becoming more popular around the world, with a number of countries announcing plans to adopt International Public Sector Accounting Standards, which provide a similar (although not identical) financial accounting framework to the IFRS-based system adopted by the UK government. Some countries, such as New Zealand, have already adopted WGA as their primary form of accounting.

The government will continue to need to produce and use the internationally comparable public finance numbers reported in the National Accounts for the foreseeable future, not least because most other countries are still at a much earlier stage in implementing

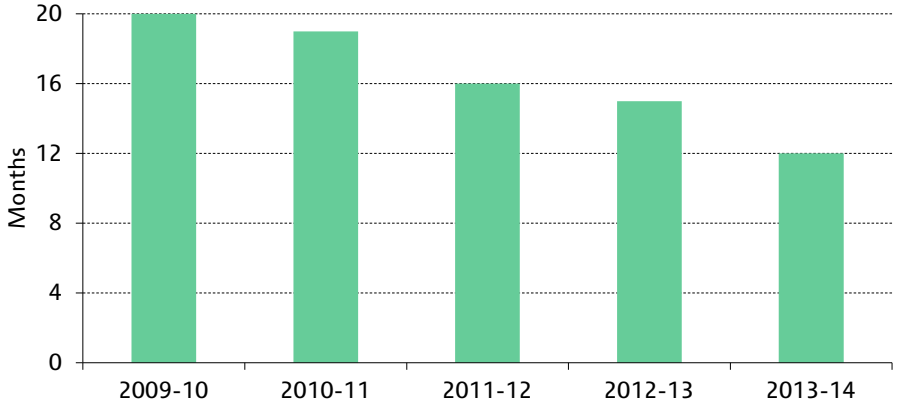
[5] R. Hodgkinson and M. Wheatcroft, 'The government's financial accounts: an ICAEW perspective', in C. Emmerson, P. Johnson and R. Joyce (eds), *The IFS Green Budget: February 2015*, IFS Report R106, 2015, http://www.ifs.org.uk/publications/7530.

standards-based financial accounting for their own accounts. However, the key benefits of financial accounting will be seen when Whole of Government Accounts numbers become the primary measures for assessing financial performance and position used by the government both internally for financial decision-making and externally in its dialogue with parliament and the public.

Progress made, but still some way to go

One key aspect of improving financial management in the public sector relates to the progress made in implementing WGA, including the time it takes to produce them as shown in Figure 4.2. Accounting policies and practices are being aligned, the quality and breadth of financial information available are being improved and, more importantly, the WGA have started to be actively used within government to support strategic financial decision-making.

Figure 4.2. Time to produce the WGA



Source: Whole of Government Accounts 2009–10, 2010–11, 2011–12, 2012–13 and 2013–14.

However, the government continues to struggle to produce the WGA in a period much less than twelve months, compared with a period of around three months typically achieved even in very complex multinational private sector organisations.

The more modest target of reducing the time to produce the next WGA from twelve to nine months has not been achieved. This is partly because current financial processes are not designed to support timely reporting, as well as because of specific issues in a number of departments. One particular difficulty this year arises from the challenges being experienced by the Department for Education as thousands of schools convert into academies and they are transferred from local government to central government control.

Turning round a back-to-front accounting system

The current framework for accounting within central government is based on resource accounting. This is a hybrid form of accounting that uses financial accounting at a detailed level, but which is then adjusted onto a National Accounts basis for financial reporting and management purposes.

In this process, some of the key information available in public sector bodies' detailed financial accounts, such as the balance sheet, is stripped out or not collected, leaving departments and the Treasury with a limited subset of the financial information available to use in its operational financial decision-making.

Ironically, the process of preparing WGA means that, many months later, departments and other bodies have to reverse the hybrid adjustments they made initially for their departmental statutory accounts or to conform with National Accounting rules and instead complete the financial accounting process they originally started with. It is also only at this stage that they collect a full set of financial accounting information from many thousands of public sector organisations, almost all of which use financial accounting on a regular basis for their own internal financial management.

This explains one of the major reasons for the time it takes to prepare the WGA. Rather than prepare financial information each year-end in a single process, building on the output of regular internal monthly financial reporting processes, each department prepares a series of different reports involving separate information collection exercises.

Best practice would involve collecting all the required financial data in a single standard and routine process and preparing financial reports together rather than separately. Such a streamlined process would also enable a single audit exercise to confirm the accuracy of the financial information presented, rather than the multiple exercises currently required.

Improving financial systems

There would be substantial benefit to the government from implementing comprehensive internal monthly financial reporting, in line with best practice across the private sector.

Currently, the government does not have a full range of financial information when making operational or strategic financial decisions. It has only limited visibility of financial performance across the public sector, with no access to balance-sheet information on a monthly basis. This lack of timely, accurate and comprehensive financial information hampers the effectiveness of financial management within Whitehall.

The foundation for change would be a modern standardised financial consolidation system, providing for a comprehensive set of financial data to be reported by the thousands of public sector bodies on a monthly basis. Such a system would provide individual spending departments, and the Treasury, with a significantly improved and timelier set of financial information on which to base decisions, while also strengthening financial management across the public sector by aligning the way financial performance is measured.

This does not mean eliminating reporting of the public finance deficit, public sector net debt or other National Accounts measures, which provide important information about the government's liquidity and debt obligations and also provide a basis for international comparisons. Instead, it means using these as part of a wider and more comprehensive set of financial reporting measures when making decisions.

4.5 Conclusion

The first five years of WGA have proved that it is possible for the government to prepare financial statements in a similar form to that adopted by commercial and other types of organisations. They enable a more comprehensive assessment of progress against the government's objective of improving the public finances than is possible using National Accounts measures, using the development in revenue and expenditure, the balance sheet and the cash-flow statement over time.

The WGA illustrate how only limited progress was made in the five years to 31 March 2014 in reducing the accounting deficit, which reduced by 20% compared with the headline 35% reduction in the public finance deficit reported in the National Accounts. There was a significant deterioration in the financial position reported in the balance sheet, with net liabilities more than doubling to £1.85 trillion at 31 March 2014, while operating cash flows were negative in each of those five years.

Effective financial management for the longer term involves addressing the balance sheet as well as revenue, expenditure and cash flows reported in the WGA but not in the National Accounts. A relatively high level of asset write-downs, growing pension obligations (£1.3 trillion at 31 March 2014) and increasing charges to cover nuclear decommissioning and clinical negligence exposures are areas of particular concern, with the level of asset write-downs potentially worthy of further investigation.

The WGA also provide further insights when considering the vulnerability of the public finances to future economic shocks, with total liabilities at 31 March 2014 of £3.2 trillion, or 177% of GDP. This is substantially higher than public sector net debt, the National Accounts measure typically referred to in this context, which stood at £1.4 trillion, or 78% of GDP, at that date.

Although it is also possible to use net liabilities (which captures assets as well as liabilities) as a measure of fiscal vulnerability, it is important to understand that in practice most assets on the balance sheet are essential to delivering public services and so in practice not easily realisable for cash. As a consequence, total liabilities may be a better indicator given it represents obligations to make payments in the future ahead of other fiscal priorities: the greater they are, the more constrained the government will be in dealing with a future economic downturn.

Adopting best practice

Recent governments are to be congratulated on their commitment and achievements to date in implementing WGA. However, there is more to WGA than preparing an external financial report once a year: they also provide an opportunity for the government to replace its current non-standard hybrid system of resource accounting with modern financial reporting processes.

The government has set out best practice in financial reporting, accounting and management in its official guidance on good corporate governance. This requires listed companies to present a fair, balanced and understandable assessment of their position and prospects, based on strong financial systems – systems that include comprehensive internal monthly financial reports at all levels, and clear line of sight on the financial consequences of decisions.

Strong public governance requires firm financial foundations. It is time for the government to adopt best practice and embed WGA into those foundations.

5. Risks to the rules: tax revenues

Rowena Crawford, Carl Emmerson, Thomas Pope and Gemma Tetlow (IFS)

Summary

- The government's plan to reach a fiscal surplus is predicated on tax receipts increasing by 1.1% of national income (£21 billion per year in today's terms) between 2015–16 and 2019–20.
- Lower- (higher-)than-expected growth would hit (boost) cash tax receipts and, since cash spending is unlikely to be affected to the same degree, this would feed through into higher (lower) borrowing. Changes in average earnings levels of just 1% can change income tax and National Insurance revenues by around £5 billion.
- Capital taxes are dependent on the prices of, or transactions in, particular assets, which can be very volatile even if the economy grows as forecast. For example, the Office for Budget Responsibility (OBR) downgraded its underlying forecast for receipts from stamp duty on residential properties in 2020–21 by one-sixth between July and November 2015.
- Between the November 2015 Autumn Statement and the end of January 2016, equity prices fell by 7½%. If they were to remain 7½% below the OBR's latest forecast, this could reduce capital tax receipts in 2020–21 by around £2 billion.
- Revenues from North Sea oil and gas production are currently £12 billion below their 2008–09 level, largely as a result of lower oil prices. The overall impact of a decline in oil prices, though, is to strengthen the public finances slightly, as a fall in the price of oil boosts economic activity and hence other tax receipts.
- One particular risk to tax receipts is future policy change. The government has commitments to increase the income tax personal allowance and the higher-rate threshold by the end of the parliament, at an estimated cost of £8 billion per year. All else equal, government will presumably need to find tax increases, or additional spending cuts, of a similar scale elsewhere to fund these tax cuts.
- With no increase in the £150,000 threshold at which the additional rate of income tax kicks in, numbers affected have already risen by 40% since it was introduced in 2010. Current policy also fixes the £50,000 point at which child benefit starts to be taxed away in nominal terms. The number losing child benefit might rise by 50% within five years. This may prove sustainable but is not a good way of making policy.
- History suggests the government might not increase fuel duties in line with RPI inflation as is assumed in the OBR's forecasts – since 2011, all increases that had been pencilled in have been cancelled. Freezing fuel duties for a further five years would cost around £3 billion per year by 2020–21.
- The government might raise revenue through changes to the pensions tax regime. However, it will need to be careful to distinguish between what is genuinely a permanent increase in revenues and what is only a temporary windfall. Relying on temporary revenues to achieve a budget surplus in 2019–20 would not be in keeping with the rationale underpinning the Chancellor's stated fiscal objectives.

5.1 Introduction

George Osborne has an ambitious target to eliminate the budget deficit by 2019–20 and then to continue to run budget surpluses thereafter. As Chapter 3 discussed, this forms one of the three fiscal rules he has set himself. The latest official forecasts from the Office for Budget Responsibility suggest that he is on course to achieve this. However, there are many risks facing the public finances, which could knock the current plans off course.

How the UK economy grows over the next few years will be crucial for determining how tax revenues, spending and borrowing evolve. The Office for Budget Responsibility (OBR) estimates that the economy will grow by 2.4% in 2016, 2.5% in 2017 and 2.4% in 2018, before returning to 2.3% in 2019 and 2020. It is on the basis of this forecast for economic growth that the OBR forecasts that borrowing will fall from 3.9% of national income this year to a surplus of 0.5% of national income in 2019–20. However, if growth were to turn out significantly stronger (weaker) than this, borrowing is likely to be lower (higher) than currently forecast.

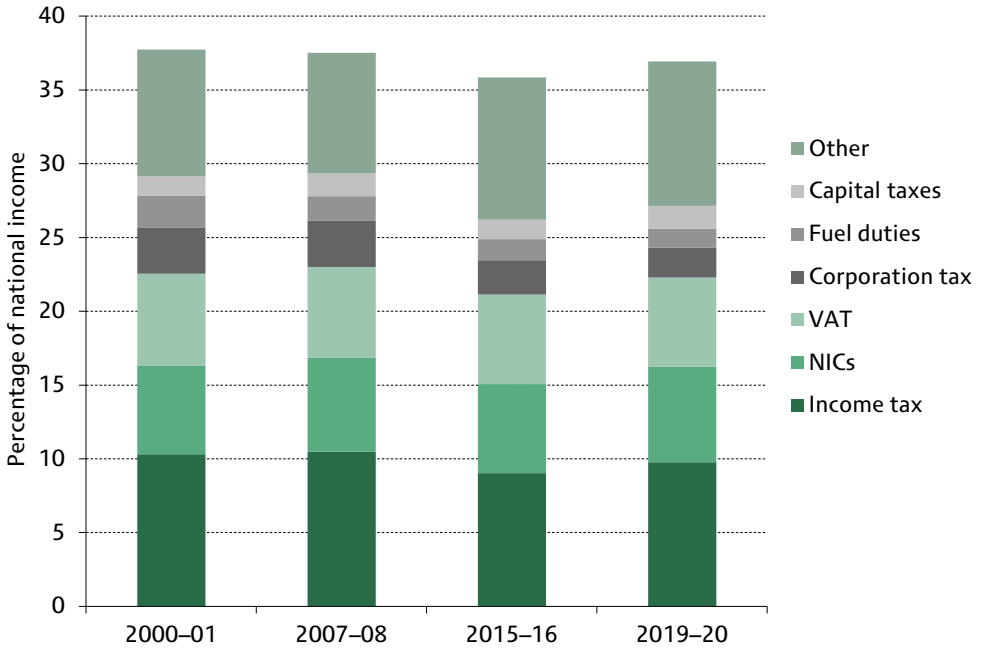
One risk on the downside for the UK would be the sort of scenario described by Oxford Economics in Chapter 2, in which the Federal Reserve increases interest rates more quickly than the market currently expects, dampening economic growth in the UK in 2016 and 2017 but with growth rebounding thereafter. If this were to happen, by 2019–20 the UK economy might be 0.7% smaller than it is currently expected to be by the OBR. A simple rule-of-thumb estimate suggests that a loss of output of this magnitude would result in borrowing being 0.5% of national income higher in 2019–20 than the latest OBR forecast suggests – i.e. a budget balance rather than a surplus of 0.5% of national income. This increased deficit would result from tax revenues being lower and spending higher than forecast as a share of national income. As a share of national income, tax revenues would be slightly reduced (as the progressive nature of the tax system means that, in cash terms, taxes tend to grow slightly more quickly than the economy does), while public spending would rise, as (largely) fixed cash plans for spending on public services would amount to a larger share of the smaller-than-expected national income.

Of course, there are also potential upside risks. If, instead, growth were to be higher than the OBR currently expects, the budget surplus could be larger in 2019–20. This improvement would in part be due to revenues being slightly increased as a share of national income but would mainly be due to public spending being pushed down as a share of the (larger-than-expected) national income.

Between 2015–16 and 2019–20, revenues are forecast to increase by 1.1% of national income (£21 billion in today's terms) from 35.8% to 36.9% of national income (as shown in Figure 5.1). This would still leave them below the level seen just prior to the financial crisis (in 2007–08 they were at 37.5% of national income) and below the level seen in 2000–01 when the UK last ran an overall budget surplus (when receipts were 37.7% of national income). In other words, the government is aiming to achieve an overall budget surplus in 2019–20 with a level of tax receipts that is not particularly high by recent UK standards.

Of the taxes decomposed in Figure 5.1, the largest growth in receipts as a share of national income between 2015–16 and 2019–20 is expected to be in income tax receipts – an increase of 0.7% of national income – though these are still forecast to remain below the level they were at in 2007–08 and 2000–01. Receipts of National Insurance contributions (NICs) are forecast to grow by 0.5% of national income, which would be

Figure 5.1. Revenues as a share of national income, selected years



Source: Figures for 2015–16 and 2019–20 are from table 4.6 of OBR, *Economic and Fiscal Outlook*, November 2015. Figures for 2000–01 and 2007–08 are from table PSA6D of ONS, Public Sector Finances, November 2015. GDP from the OBR databank, http://budgetresponsibility.org.uk/data/.

sufficient to push them above the level seen in 2007–08 and 2000–01. Receipts of capital taxes, which are currently running about the same level as in 2000–01, are forecast to increase by 0.2% of national income, returning them to the level seen on the eve of the financial crisis in 2007–08. In contrast, receipts of VAT, corporation tax and fuel duties are forecast to fall as a share of national income, and to be below the level seen in both 2007–08 and 2000–01.

In addition to general uncertainty about how the economy as a whole (and thus overall revenues, spending and borrowing) will grow over the next few years, there are specific risks facing some components of revenues. In this chapter, we set out some of the key risks and uncertainties to revenues that the government faces (and in some cases has created) that could affect whether or not the Chancellor does succeed in running budget surpluses from 2019–20 onwards. Chapter 6 does the same for risks facing public spending.

Section 5.2 focuses on risks to underlying tax revenues. Specifically, this looks at the risk that some parts of the economy might not evolve as is currently expected. In particular, we look at employment and earnings, VAT receipts, corporate profits, stamp duty land tax on purchases of residential properties, equity prices, and North Sea oil and gas prices. Section 5.3 looks at risks from future policy changes, specifically highlighting areas where politicians may not (and, in some cases, are likely not to) adhere to currently legislated policy plans. Section 5.4 draws some conclusions.

5.2 Uncertainty in revenue forecasts

Outlook for employment and earnings

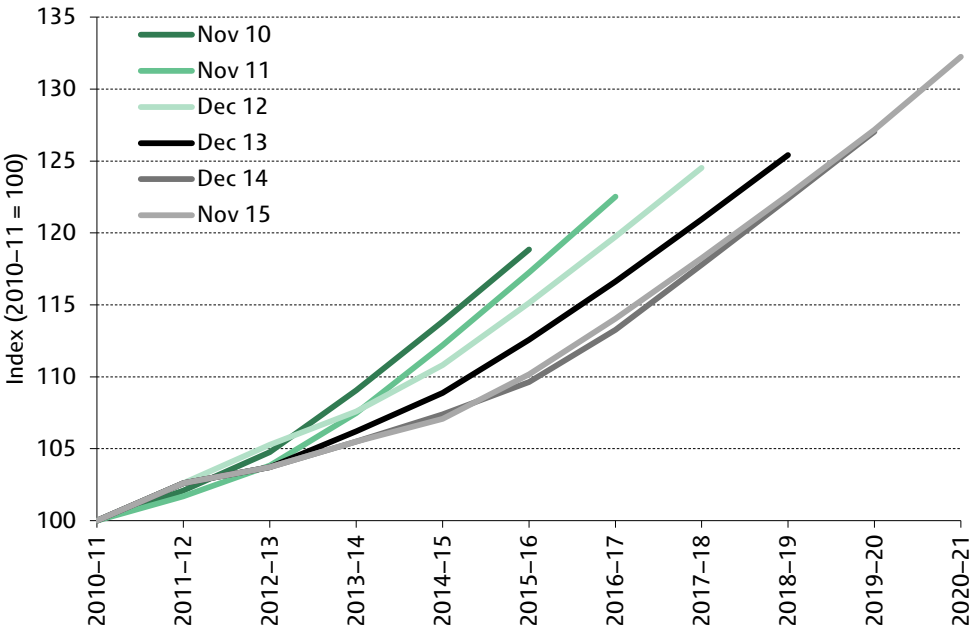
As we discussed in last year's Green Budget, one factor that drove large revisions to forecasts for revenues published between 2012 and 2014 was changes to expectations of future earnings and employment growth.[1] These economic factors significantly determine receipts from the two largest taxes – income tax and National Insurance contributions. Income tax receipts are forecast to be £171.8 billion in 2015–16, of which £147.2 billion is expected to come through pay-as-you-earn, while NICs receipts are expected to total £114.6 billion.

Figure 5.2 compares successive forecasts for growth in average earnings, while Figure 5.3 compares forecasts for growth in employment. Between November 2010 and December 2014, forecasts for average earnings growth were repeatedly downgraded, while forecasts for employment growth were repeatedly revised up.

While the November 2015 forecast saw a break in this pattern, with forecasts for growth in average earnings and employment being very similar to what had been forecast a year earlier, recent experience should teach us that forecasts can surprise on the upside or the downside, with consequent significant effects for receipts of income tax and NICs.

The OBR's ready reckoner for the effect of average earnings on income tax and NICs revenues suggests that a 1% increase in average earnings would boost annual receipts from these taxes by around £4¼ billion to £5¼ billion (or 1½% of the tax base[2]). If the

Figure 5.2. Changing forecasts for growth in average earnings

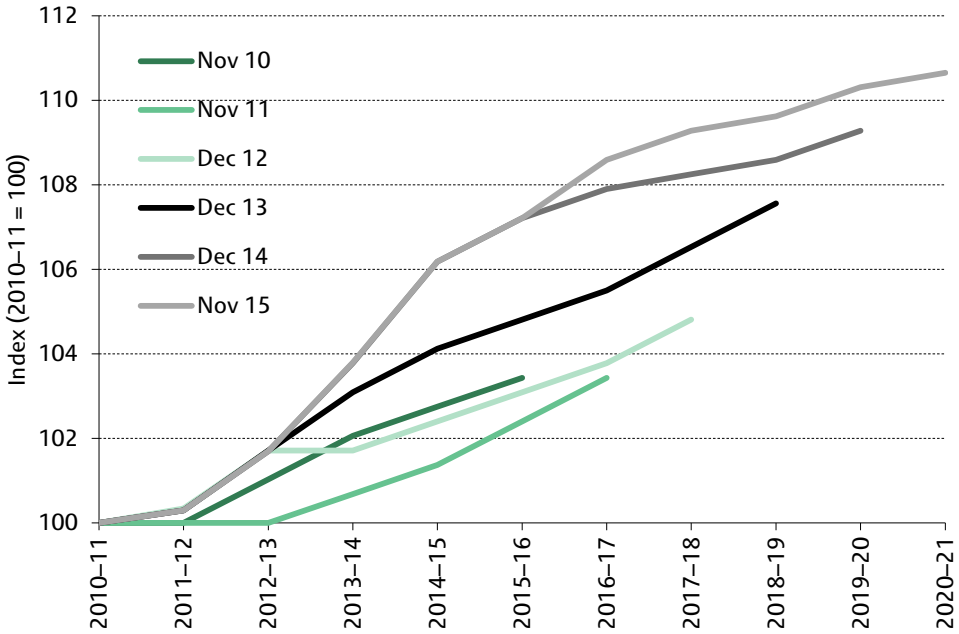


Source: Authors' calculations using OBR, *Economic and Fiscal Outlook*, various editions.

[1] See R. Crawford, C. Emmerson and G. Tetlow, 'Public finances: a dicey decade ahead?', in C. Emmerson, P. Johnson and R. Joyce (eds), *The IFS Green Budget: February 2015*, http://www.ifs.org.uk/publications/7530.

[2] See Office for Budget Responsibility, 'How we present uncertainty', Briefing Paper No. 4, June 2012, http://budgetresponsibility.org.uk/wordpress/docs/Briefing-paper-No4-How-we-present-uncertainty.pdf.

Figure 5.3. Changing forecasts for growth in employment



Source: Authors' calculations using OBR, *Economic and Fiscal Outlook*, various editions.

latest OBR forecast for earnings growth in 2015–16 proves correct, earnings this year will be 7% lower than they were forecast to be in the November 2010 forecast. If the latest OBR forecast for 2020–21 contains an error of the same magnitude, tax revenues in that year could turn out to be as much as £40 billion lower or higher (in nominal terms) than they are currently forecast to be.

The OBR's ready reckoner for the effect of employment growth on income tax and NICs revenues suggests that a 1% increase in employment would boost receipts from these taxes by around £2½ billion to £3½ billion (or 1% of the tax base). If the latest OBR forecast for employment growth in 2015–16 proves correct, employment this year will be 10% higher than forecast in the November 2010 forecast. If the latest OBR forecast for 2020–21 contains an error of the same magnitude, tax revenues in that year could turn out to be around £35 billion lower or higher than they are currently forecast to be.

Forecasting VAT

Currently, the second-largest revenue stream is VAT: revenues from VAT in 2015–16 are forecast by the OBR to total £115.6 billion, very slightly more than forecast receipts of NICs, meaning that (for now) it is the second-largest UK tax. Revenues from VAT are sensitive to growth in consumer spending.

The November 2015 *Economic and Fiscal Outlook* (EFO) introduced a significant change to the way that the OBR forecasts VAT revenues, which had the effect of boosting forecast VAT revenues by £3.3 billion a year by the end of the forecast horizon. This is equal to 2.3% of forecast VAT revenues in 2020–21. Though this modelling change had been flagged by the OBR in its October 2015 Forecast Evaluation Report,[3] the publication of the

[3] See paragraph 3.21 of OBR, *Forecast Evaluation Report: October 2015*, http://budgetresponsibility.org.uk/forecast-evaluation-report-october-2015/.

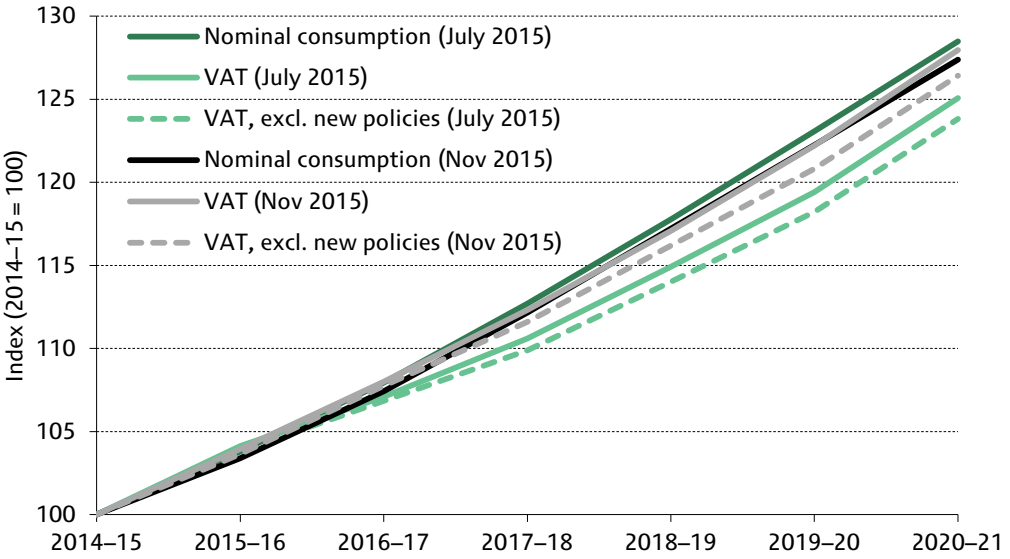
new figures in the EFO caused a lot of debate and drew ridicule from some quarters for being such a large (and, apparently, politically convenient) change.[4]

The reason that the OBR gave for the change was that its model had previously been overestimating future VAT deductions on spending by government (and thus underestimating net VAT revenues). Specifically, the OBR model had previously projected VAT deductions on the basis of a continuation of past trends. However, because of cuts to spending on public services, deductions claimed by government have not been growing nearly so quickly. The OBR's new model therefore assumes that these deductions will grow at the same rate as government spending, rather than in line with past trends.

This change is significant and begs the question of whether the new forecasts are reasonable. Since businesses and the public sector are able to reclaim VAT on any intermediate inputs to production, the main driver of growth in net VAT revenues is growth in consumer spending (and what fraction of that spending is on goods that are subject to VAT).[5] Therefore, one way to assess the forecasts for VAT revenues is to compare forecast growth in VAT revenues with forecast growth in consumer spending. This is done in Figure 5.4.

The most recent forecasts from the OBR suggest that VAT revenues (solid grey line in Figure 5.4) will grow at almost exactly the same pace as consumer spending (black line) between 2014–15 and 2019–20 but then grow somewhat more strongly in 2020–21. However, if we strip out the effect of new policies that are to be implemented over the

Figure 5.4. Comparing forecasted growth in consumer spending and VAT receipts



Source: Authors' calculations based on data from OBR, *Economic and Fiscal Outlook*, July 2015 and November 2015.

[4] See, for example, C. Giles, 'Autumn Statement: how do Osborne's sums add up?', *Financial Times*, 25 November 2015, http://www.ft.com/cms/s/0/e65dd262-9384-11e5-b190-291e94b77c8f.html?siteedition=uk#axzz3wYW3jWpA.

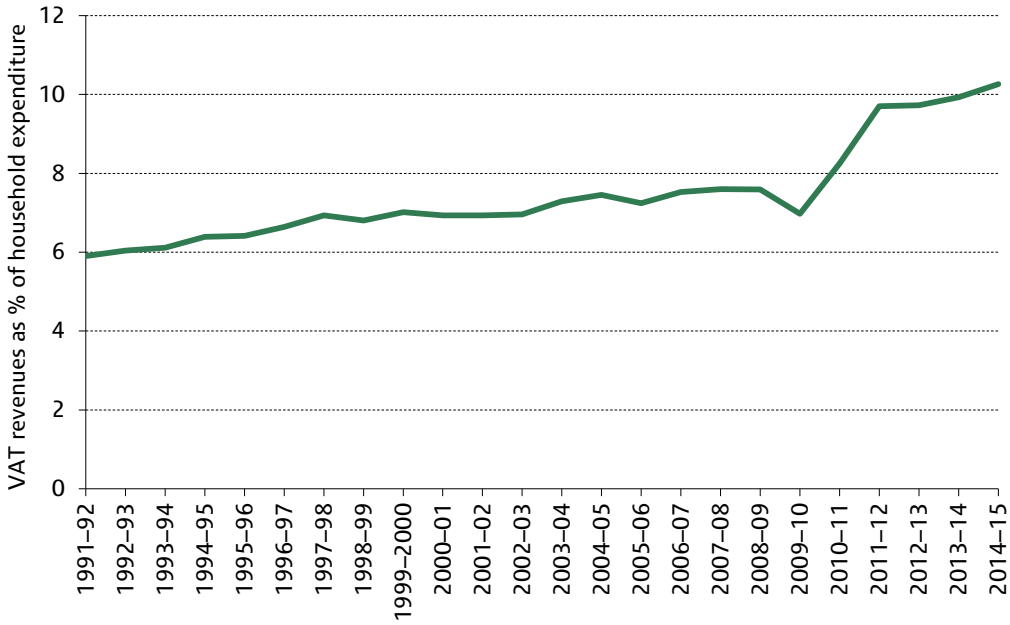
[5] IFS's public finance forecasting model, which was used to produce forecasts in each Green Budget up to 2013, was based on the assumption that VAT revenues grew in line with nominal consumer spending. For a more detailed explanation of the IFS forecasting model, see C. Giles and J. Hall, 'Forecasting the PSBR outside government: the IFS perspective', *Fiscal Studies*, 1998, 19, 83–100.

next few years, underlying growth in VAT revenues (dotted grey line) is projected to be a little lower than growth in consumer spending.[6]

In contrast, the earlier forecasts produced by the OBR (as shown, for example, by the comparison of figures from the July 2015 Budget in Figure 5.4) suggested that net VAT revenues would grow substantially less quickly than consumer spending over the next five years. This comparison suggests that the OBR's latest forecasts do not look unduly optimistic. If anything, the earlier forecast looks rather pessimistic – in a way that is consistent with the OBR's narrative.

The above line of argument relies on the assumption that VAT receipts are likely to grow at least in line with consumer spending. Figure 5.5 suggests that this has been the case over the last two decades, as VAT revenues as a share of household expenditure have grown.[7] In fact, VAT revenues have grown more quickly than household spending on average. The drop between 2008–09 and 2009–10 is due to the temporary reduction in the main rate of VAT from 17.5% to 15% that lasted for 13 months from the start of December 2008. The increase between 2009–10 and 2010–11 is the result of this cut being reversed (as planned) and then the permanent rise in the main rate of VAT from 17.5% to 20% that took place in January 2011. The more general drift upwards over time will be driven at least in part by a greater share of expenditure being devoted to goods that are subject to VAT over time as incomes have risen.

Figure 5.5. VAT receipts as a share of household expenditure over time



Source: Authors' calculations based on data from HM Revenue & Customs and the Office for National Statistics (series ABJR).

[6] The main changes that are to be made to VAT policy over the next few years are anti-avoidance measures announced in the July 2015 Budget (including measures to improve compliance and tackle the hidden economy). Together, the new measures coming in over the next few years are expected to raise £1.5 billion a year by 2020–21.

[7] Prior to this, during the early 1990s, there was concern that VAT receipts were underperforming relative to consumer spending, as discussed in HM Treasury (1997). However, this divergence appears to have ceased around 1995–96, as described in HM Customs & Excise (2002). (HM Treasury, *The VAT Shortfall: Report of the Working Group on VAT Receipts and Forecasts*, Treasury Occasional Paper 9, 1997; HM Customs & Excise, 'Measuring indirect tax losses', 2002.)

This analysis suggests that, rather than the pressure being on the OBR to justify the validity of its new forecasts, the onus perhaps ought to be on those thinking that the latest forecast is unduly optimistic to explain whether this is because they expect consumer spending to grow less quickly than the OBR, or whether they think VAT revenues will grow substantially less quickly than nominal consumer spending (and, in either case, to explain why).

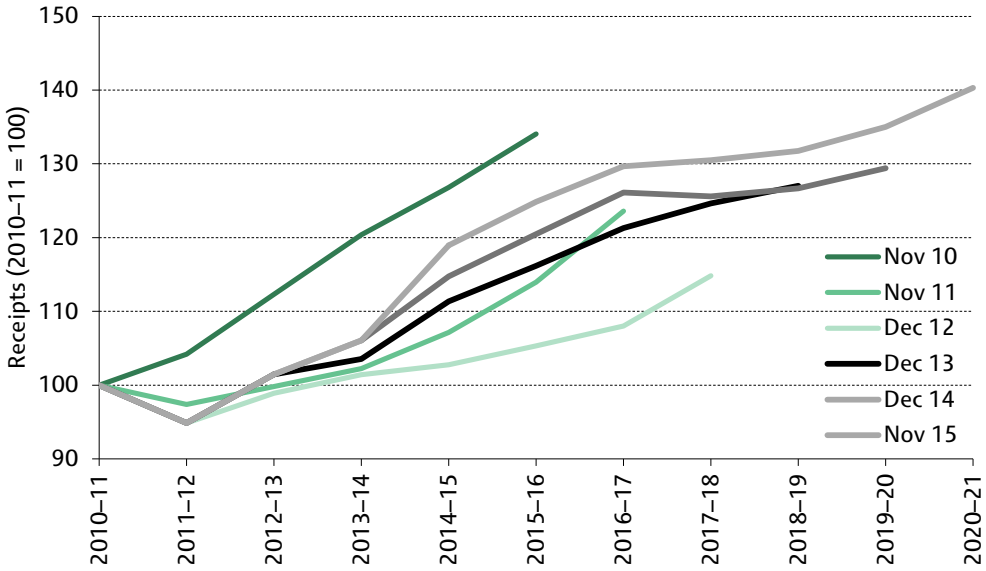
The OBR may now have a better model for producing central forecasts of future VAT receipts than it previously had (as opposed to one that appears to have been biased downwards). However, there is still uncertainty about how much revenue will be raised from this tax because consumer spending could grow faster or slower than the latest OBR forecast suggests. The latest OBR forecast suggests that between 2015–16 and 2020–21 nominal consumer spending will grow by 23%. The OBR's ready reckoner suggests that a 1% increase (fall) in nominal consumer spending will increase (reduce) VAT revenues by around £¾ billion (or around 0.1% of total revenues).

Risks to corporate profits and corporation tax revenues

Onshore corporation tax receipts are the fourth-largest source of tax revenues (bringing in an expected £43.4 billion in 2015–16) but they are volatile and extremely responsive to economic conditions. Onshore receipts fell from a peak of £41.3 billion in 2007–08 to a low of £31.6 billion in 2009–10, caused by a large decrease in corporate profits as a result of the financial crisis and associated recession.

Figure 5.6 shows the last six Autumn Statement forecasts for onshore corporation tax revenues after stripping out the direct impact of policy changes. The large spread reflects the uncertainty and sensitivity of this revenue stream. In November 2010, revenues were expected to be £48 billion in 2015–16. In November 2011, just a year later, after stripping

Figure 5.6. Changing forecasts for growth in onshore corporation tax, accounting for policy change



Note: Calculated as forecast from the OBR's *Economic and Fiscal Outlook* minus the aggregate effect of policy changes announced from Budget 2011 to the date of forecast, based on initial costing.
Source: OBR, *Economic and Fiscal Outlook*, November 2010 to November 2015; OBR policy measures database, http://budgetresponsibility.org.uk/pubs/Measures_database_BUD15-FINAL.xlsx.

out the effects of policy change in the intervening period, 2015–16 revenues were expected to be over £7 billion lower. Although the last five years have been especially uncertain, and so we might expect more modest forecasting adjustments going forwards, the sensitivity of these receipts to even minor changes in the economic situation means that significant uncertainty remains, particularly in the face of recent global uncertainty – as highlighted by the recent falls in equity prices (see below).

Uncertainty about property prices, transactions and revenues from stamp duty on residential property transactions

Stamp duty land tax on residential property purchases raises a relatively small amount of money compared with the taxes just discussed (an expected £7.8 billion in 2015–16) but there is considerable uncertainty around the forecast for these revenues because of the difficulty of forecasting residential property prices and, in particular, the volume of transactions.

Purchases of residential property in England, Wales and Northern Ireland are subject to stamp duty land tax (SDLT).[8] Since 4 December 2014, this has been charged at a rate of:

- 0% on the value up to £125,000;
- plus 2% on the value between £125,001 and £250,000;
- plus 5% on the value between £250,001 and £925,000;
- plus 10% on the value between £925,001 and £1.5 million;
- plus 12% on the value above £1.5 million.

In addition, the Chancellor announced in the November 2015 Autumn Statement that from 1 April 2016 some purchases of second or subsequent residential properties will face an additional bill of 3% of the property value.[9]

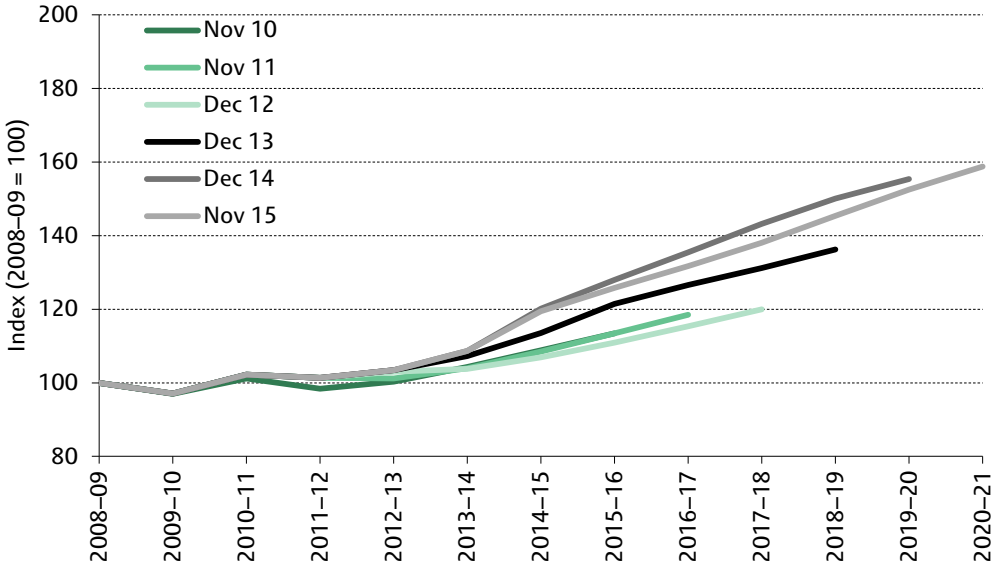
The latest forecasts from the OBR are for receipts from SDLT on residential property purchases (in England, Wales and Northern Ireland) to rise from £7.6 billion in 2014–15 to £13.4 billion in 2020–21. Policy changes are forecast to boost revenues by around £1.1 billion over the next few years (the majority of which is from the new levy on purchases of additional residential properties mentioned above). Stripping this out leaves underlying revenues forecast to rise by just over 60% over the six-year period from 2014–15 to 2020–21.

But there is a considerable amount of uncertainty around this forecast. Like all transaction taxes, receipts of SDLT are very sensitive to the number of transactions made in a year and the price of properties transacted. If the distribution of prices of properties sold were unchanged, a doubling of transactions would double receipts. The progressive nature of the tax with respect to property values means that an across-the-board 10% increase in prices would boost receipts by more than 10%, since it would increase the average tax rate that applied to the properties.

[8] Since 1 April 2015, Scotland has had its own land and buildings transaction tax.

[9] Purchases of properties worth less than £40,000, and those made by corporate landlords with more than a certain number of properties, will be exempt. The precise details of this new policy to charge an additional levy on purchases of additional residential properties are still being consulted on: https://www.gov.uk/government/consultations/consultation-on-higher-rates-of-stamp-duty-land-tax-sdlt-on-purchases-of-additional-residential-properties/higher-rates-of-stamp-duty-land-tax-sdlt-on-purchases-of-additional-residential-properties.

Figure 5.7. Changing forecasts for residential property prices



Source: Authors' calculation using OBR, *Economic and Fiscal Outlook*, various years.

Forecasting housing prices and, in particular, housing transactions with any degree of accuracy is extremely difficult to do. In addition, historic data on the relationship between property prices and SDLT receipts will not be a good guide to revenues going forward due to the major reform that took place in December 2014.[10]

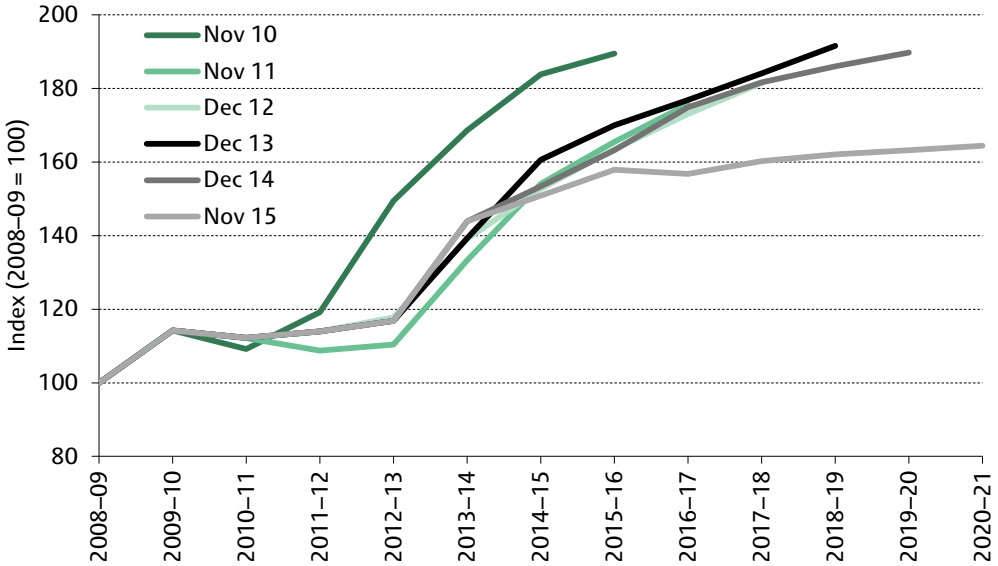
The OBR's forecasts have, on average, tended to understate growth in residential property prices. The forecasts from each autumn are shown in Figure 5.7. The November 2010 forecast implied that residential property prices would grow by 13% between 2008–09 and 2015–16, whereas the latest figures suggest they will have grown twice as fast over this same period.

In sharp contrast, the OBR has tended to overestimate the number of residential property purchases – in some cases quite considerably. Large errors in these forecasts are not surprising as forecasting the number of transactions that will take place in a year is difficult to do in any period, but especially so during a period when the economy is recovering from a financial crisis, when mortgage regulations are changing, when new housing market policies (such as the various Help to Buy initiatives) have been introduced[11] and when SDLT itself is being reformed. Figure 5.8 shows successive OBR forecasts from each autumn for the growth in residential property transactions. The November 2010 forecast was for these to grow by 90% between 2008–09 and 2015–16 as, in particular, credit conditions eased. But the latest estimate is that these will only have grown by 58% over the same period and that even by 2020–21 they will only be 64% up on their 2008–09 level.

[10] Prior to this date, the rates of SDLT (which were lower than the current rates) applied to the whole value of the property and not just the marginal value within each band. Revenues from this system of SDLT will have been much more sensitive to the level and distribution of house price growth than those under the new system.

[11] See https://www.gov.uk/government/policies/homebuying.

Figure 5.8. Changing forecasts for residential property transactions



Source: Authors' calculation using OBR, *Economic and Fiscal Outlook*, various years.

The combined effect of these forecasting revisions is that forecast receipts of SDLT in 2020–21 will be much lower than they would have been had the earlier vintages of OBR forecasts for residential property prices and transactions been correct. While the latest estimates of higher residential property prices will have pushed up forecast receipts, this will have been more than offset by the much lower level of residential property transactions that has been seen in recent years and is expected in future.

The November 2015 OBR forecast was for £1.4 billion lower receipts from SDLT on residential property transactions in 2020–21 (£13.4 billion) than had been forecast in July 2015 (£14.8 billion). This is despite the £1.1 billion increase in SDLT revenues from measures implemented in the November 2015 Autumn Statement. The underlying downgrade to forecast receipts in 2020–21 is therefore £2.5 billion: this is equivalent to a one-sixth decline in receipts in the space of OBR forecasts produced just four months apart.

Much – but by no means all – of this downgrade can be simply explained by the overall change to forecast residential property prices and transactions. A simple calculation suggests that this explains £1.5 billion of the £2.5 billion downgrade. The remaining £1 billion is due to the fact that the OBR now expects growth in the value of residential property transactions to generate a smaller increase in SDLT revenues than it previously did.[12] This is because it is now expecting fewer residential property transactions at higher prices (which contribute disproportionately to revenues) than it was in July 2015. The OBR has made this change to its modelling on the basis of evidence from the current year, in which there has been a 10% drop in purchases of residential properties worth more than £2 million (perhaps because the December 2014 change to the structure of SDLT, which raised tax rates on purchases of the highest-value residential properties, is

[12] This is based on a simple model of 2020–21 revenues being equal to revenues in 2014–15 × (1+T) × (1+p) × E plus the estimated revenue effect of any policy changes, where T is the forecast growth in transactions, p is the forecast growth in prices and E is an elasticity. The estimated elasticity from the OBR's July 2015 forecast is 1.22 (i.e. 1% growth in the value of transactions would, all else equal, boost revenues by 1.22%), whereas in the OBR's November 2015 forecast this had declined to 1.12.

depressing transactions by more than the OBR originally assumed). But how the number and price of properties transacted will evolve over the next few years is particularly uncertain. It certainly would not be a surprise were the OBR's forecasts for these receipts to be revised significantly – either upwards or downwards – again.

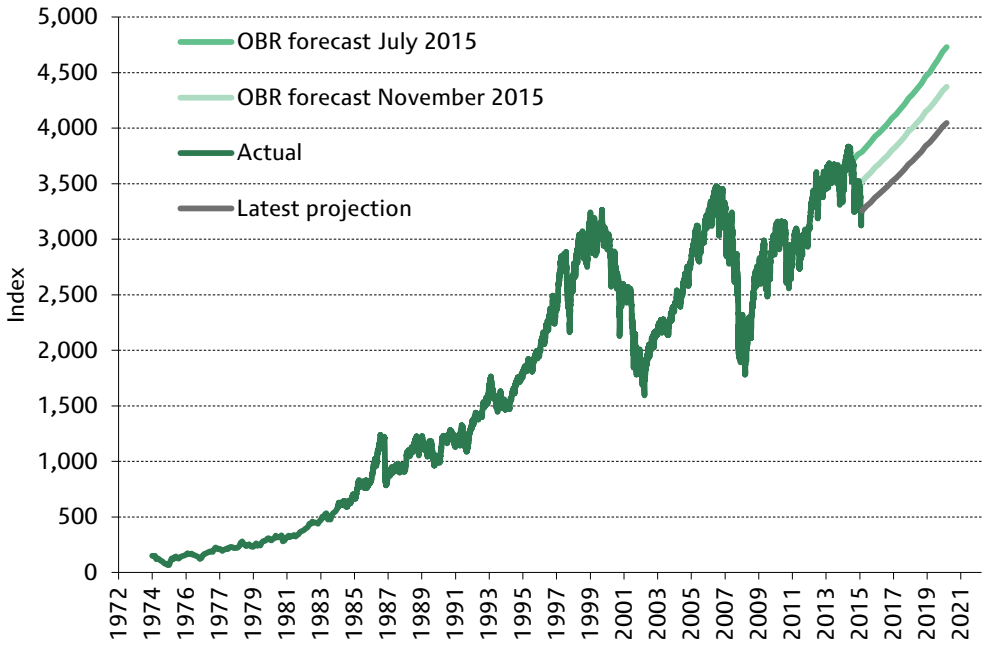
Outlook for equity prices

The risks discussed above look relatively balanced – the outlook for receipts is uncertain but, as yet, there is no strong evidence to suggest that things will necessarily move in one direction or the other between the OBR's last and its next forecast. In contrast, developments since November 2015 suggest that the outlook for equity prices (and thus revenues from capital taxes that depend on equity prices) seems biased to the downside. Equity prices significantly affect the public finances. If the falls in equity prices seen since the OBR published its last forecast in November are not reversed before March, this will depress the outlook for receipts.

Equity prices in particular feed directly through into receipts from capital taxes, namely capital gains tax (forecast receipts of £6.4 billion in 2015–16), inheritance tax (£4.4 billion) and stamp duty on share transactions (£2.9 billion). They also affect corporate tax receipts as they influence the taxable profits of the life assurance sector. Equity prices also indirectly affect receipts of personal and corporation taxes from the financial sector.

The OBR's forecasting model makes a fairly simple assumption about how equity prices will evolve in future. Essentially, the model assumes that equity prices will grow in line with nominal GDP from the level that they are at when the forecast is made. Between July

Figure 5.9. FTSE All-Share index



Note: Projections are calculated assuming that equity prices grow in line with the OBR's quarterly GDP forecast from July 2015 (for the 'OBR forecast July 2015' line) or November 2015 (for the 'OBR forecast November 2015' and 'Latest projection' lines).
Source: FTSE All-Share data from https://uk.finance.yahoo.com/q/hp?s=%5EFTAS and https://www.google.co.uk/finance/historical?q=INDEXFTSE:ASX.

and November 2015, equity prices fell, rather than growing at the rate that had been assumed in the OBR's July 2015 forecast. Predominantly as a result of this, in November 2015 the OBR revised down its forecast for equity prices in 2020–21 by 7.4%. This translated into a reduction in forecast revenues from capital taxes in that year of £2.1 billion. Of this downwards revision, £1.5 billion was from a reduced forecast for receipts of capital gains tax.

This weaker-than-assumed performance of the FTSE All-Share index between the OBR's July and November forecasts is shown in Figure 5.9. Also shown is how the index has evolved since the November forecast was made. Rather than growing as the OBR had expected, it has fallen further. If the index were to grow from its level at the end of January 2016 in line with the OBR's forecast for nominal growth in national income through to 2020–21, this would suggest that there would be a further 7.4% downgrade.

If equity prices remain 7.4% below the OBR's November forecast at the time that the forecast is made for the March 2016 Budget, a further downgrade in capital tax receipts is likely to occur. Scaling the decline seen between the last two forecasts would suggest this could be around £2 billion. In addition to this, there might also be a reduction in corporation tax receipts from declining taxable profits of life assurance companies and indirect impacts of weaker equity prices on receipts of personal and corporate taxes related to the performance of the wider financial sector.

North Sea oil and gas prices

Revenues from North Sea oil and gas have, for the last four decades, made up a small but not insignificant share of the UK government's revenues. However, they are volatile and, related to this, very difficult to forecast. Receipts can, and have, varied due to changes in the sterling oil price, changes in production, changes in capital and operating expenditure (both of which are fully tax-deductible) and changes to the tax regime. As recently as 2008–09, total North Sea revenues were £12.4 billion, whereas the latest OBR forecast is that in 2015–16 these receipts will amount to just £0.2 billion.

Furthermore, the revenue from these receipts could become negative, so the downside risk is not bounded at zero: the low level of receipts forecast this year arises from £0.9 billion of corporation tax on offshore activities being offset by £0.7 billion of negative receipts from petroleum revenue tax, PRT (in other words, the payable tax write-offs that companies operating in the North Sea can claim are expected to exceed their PRT liabilities). The OBR's latest long-run forecast is for negative receipts to occur frequently from the mid 2020s onwards.[13]

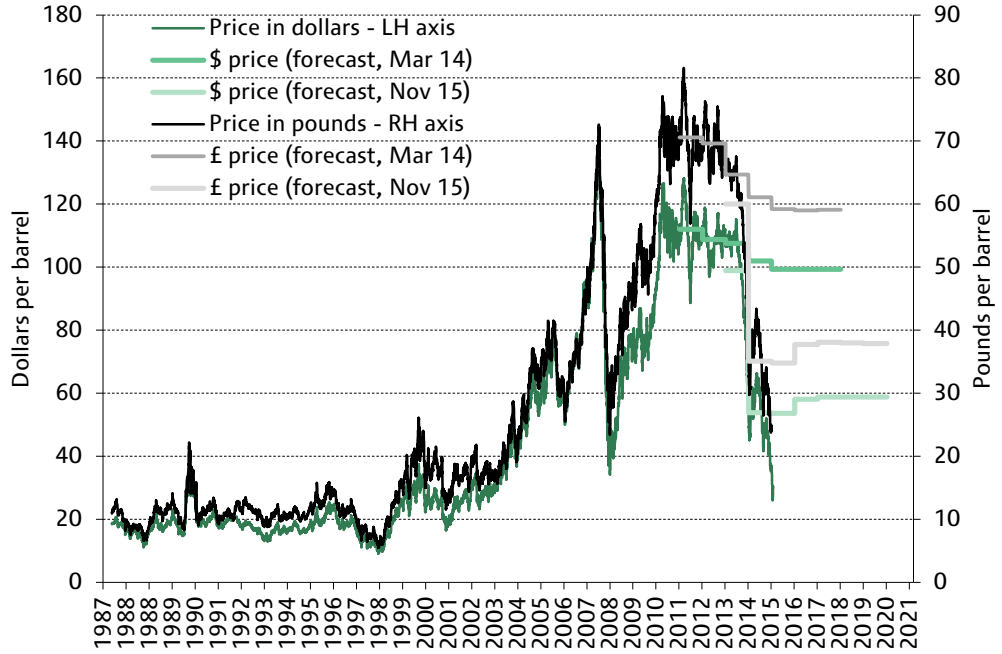
A large part of the volatility in North Sea revenues is due to fluctuations in the dollar price of Brent Crude, which has translated into large fluctuations in the sterling price. As shown in Figure 5.10, the Brent Crude oil price was generally above $100 per barrel between Spring 2011 and Summer 2014 but has since fallen to below $30 per barrel. This has translated into a drop in the price in pounds from over £60 per barrel to £30 per barrel.

The sharp decline in the oil price after Summer 2014 was not forecast by the OBR (or most other commentators). The March 2014 Budget assumed that the oil price in 2015 would be $102.0 per barrel, and that this would translate to a sterling oil price of £61.1 per barrel. It was then assumed to decline slightly to $99.3 per barrel (or £59.1 per

[13] See chart 4.5 of Office for Budget Responsibility, *Fiscal Sustainability Report: June 2015*, http://cdn.budgetresponsibility.independent.gov.uk/49753_OBR-Fiscal-Report-Web-Accessible.pdf.

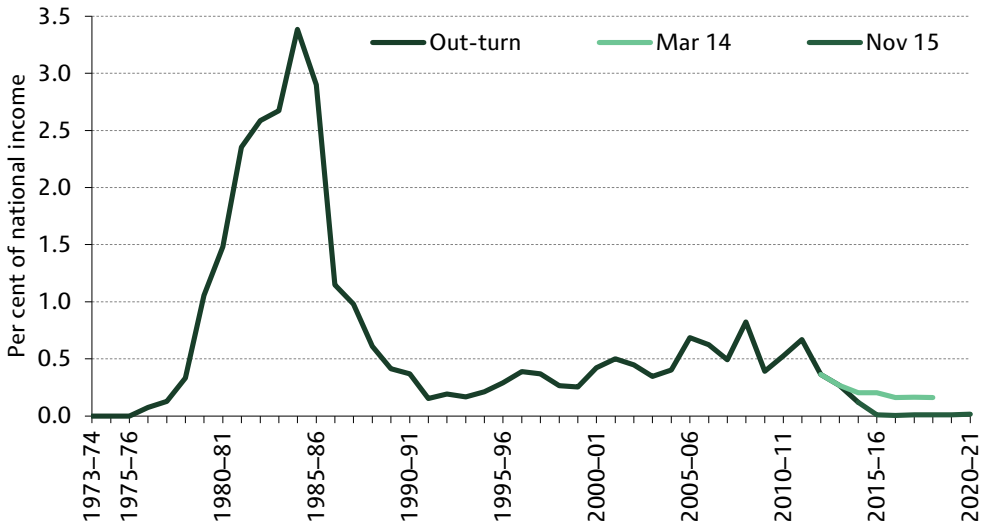
barrel) in 2018. The latest OBR forecast implied that the oil price in 2015 would instead be $53.8 (or £35.1) per barrel and that this will only increase slightly over the next few years, reaching $58.8 (£38.1) per barrel in 2018 and remaining roughly constant in nominal terms thereafter.

Figure 5.10. Brent oil prices over time ($ and £ per barrel)



Source: Figure shows the spot price of Europe Brent Oil downloaded from the US Energy Information Administration (https://www.eia.gov/dnav/pet/pet_pri_spt_s1_d.htm). Price of oil in pounds calculated using the dollar/pound exchange rate from the Bank of England (http://www.bankofengland.co.uk/boeapps/iadb/Rates.asp?Travel=NIxIRx&into=GBP).

Figure 5.11. UK oil and gas revenues



Note: Figure takes cash receipts from petroleum revenue tax and offshore corporation tax and divides through by the latest estimates of GDP.
Source: Authors' calculation using chart A on page 122 of OBR, *Economic and Fiscal Outlook*, December 2014, table 4.5 of OBR, *Economic and Fiscal Outlook*, March 2014, and table 4.6 of OBR, *Economic and Fiscal Outlook*, November 2015.

This unexpected decline in the oil price has led to forecasts for revenue from North Sea oil and gas production being reduced significantly. The March 2014 Budget forecast that revenues would fall from £3.9 billion in 2015–16 to £3.5 billion in 2018–19, whereas the most recent OBR forecast is for these receipts to be just £0.2 billion in 2015–16 and for them to remain around this level over the period to 2019–20. This would be the lowest level of receipts in cash terms, let alone as a share of national income, since 1977–78 (shown in Figure 5.11).

A key source of uncertainty for receipts from these revenues remains the sterling oil price. The OBR estimates that the direct impact of a £10 rise (fall) in the price of a barrel of oil would be to increase (reduce) North Sea oil and gas revenues by approximately £2 billion a year.[14] For large changes, the relationship is likely to be different: for example, the £26 per barrel downgrade in the assumed oil price in 2015 that was seen between March 2014 and November 2015 (as described above) was associated with a £3.7 billion downgrade in forecast receipts in 2015–16 (rather than the £5.2 billion that would have been expected from scaling the ready reckoner).

In any case, these figures significantly overstate the impact of oil price changes on the overall public finances. Most obviously, a change in oil prices will also affect petrol purchases and thereby receipts of fuel duties: a £10 rise (fall) in the oil price is estimated to reduce (increase) fuel duty revenues by £¼ billion a year.[15] However, as the UK is a net oil importer, a higher (lower) oil price would – in isolation – also tend to depress (boost) output in the economy, which would feed through into a significant reduction (increase) in other revenues.[16] While there is much uncertainty about the net effect of oil prices on the UK's public finances, earlier analysis from the OBR suggested that the overall impact of a (moderate) rise (fall) in oil prices would be to weaken (strengthen) the public finances very slightly. In other words, the OBR's central estimate is that the indirect impact on tax receipts (in particular, from affecting economic activity and revenue from fuel duties) would be more than sufficient to offset the direct change in receipts from North Sea oil and gas revenues.

In practice, changes in oil prices happen for a reason, and the nature of the trigger associated with any future change in oil prices may be crucial. For example, a lower oil price that was caused by an increase in the global supply of oil – such as from the lifting of sanctions on Iran – might be of clear benefit to the UK's onshore economy. In contrast, the impact of a lower oil price that was predominately caused by a drop in global demand would have clearer adverse consequences: the direct impact of lower oil prices would still be to boost the onshore economy, but the drop in global demand could contribute to a macroeconomic slowdown that has larger effects on the public finances.

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[14] See table 3.2 of Office for Budget Responsibility, 'How we present uncertainty', Briefing Paper No. 4, June 2012, http://budgetresponsibility.org.uk/wordpress/docs/Briefing-paper-No4-How-we-present-uncertainty.pdf.

[15] See table 3.2 of Office for Budget Responsibility, 'How we present uncertainty', Briefing Paper No. 4, June 2012, http://budgetresponsibility.org.uk/wordpress/docs/Briefing-paper-No4-How-we-present-uncertainty.pdf.

[16] A rise in the oil price is also estimated slightly to increase VAT revenues, to increase spending on benefits, public service pensions and debt interest, and to reduce spending on the state pension. See Office for Budget Responsibility, *Assessment of the Effect of Oil Price Fluctuations on the Public Finances*, Occasional Paper, 14 September 2010, http://budgetresponsibility.org.uk/wordpress/docs/assessment_oilprice_publicfinances.pdf.

Summary

Table 5.1 summarises the sources of uncertainty around future receipts from the specific taxes that were discussed in this section.

Table 5.1. Uncertainty in revenue forecasts: summary table

Taxes	2015–16 revenue forecast (£bn)	Source of uncertainty	New central estimate
Income tax / NICs	286.4	Growth of earnings and employment	Unchanged
VAT	115.6	Growth of consumer spending	Unchanged
Corporation tax (onshore)	43.4	Growth of corporate profits	Unchanged
Stamp duty (residential property)	7.8	Residential property prices and transaction volume	Unchanged
Capital taxes	13.7	Equity prices, which have slumped since forecast	£2 billion p.a. lower
North Sea revenues	0.2	Oil price, though offsetting changes to public finances elsewhere	Unchanged

Note: Forecast from OBR, *Economic and Fiscal Outlook*, November 2015. 'Capital taxes' comprises capital gains tax, inheritance tax and stamp duty on share transactions. 'North Sea revenues' refers to petroleum revenue tax and offshore corporation tax.

5.3 Policy risk

The OBR's forecasts are predicated on currently legislated policy continuing and on legislated policy changes having the anticipated impact on revenues. However, there are some parts of the tax system where policy stability looks far less assured than in others and some planned policy changes that have particularly uncertain revenue implications.

Policy commitments that are not included in the forecast

The Conservative Party manifesto in 2015 committed to increasing the income tax personal allowance to £12,500 by 2020 and the higher-rate threshold to £50,000. However, given current CPI inflation forecasts, current legislated policy suggests that these thresholds will only have increased to £11,900 and £46,100, respectively, by April 2020.[17] Increasing the personal allowance by a further £600 and raising the higher-rate threshold to £50,000 would cost around £8 billion.[18]

This is a significant additional cost (amounting to around 3½% of income tax revenues forecast for 2020–21) that has not yet been factored into the official forecasts. As the

[17] Current policy is for the personal allowance to be increased to £11,200 by April 2017 and for the higher-rate threshold to be increased to £43,600 by that point. Thereafter, both are set to be increased in line with the CPI. The latest OBR forecasts are for CPI inflation of 6% between September 2016 and September 2019 (see table 4.1 of Office for Budget Responsibility, *Economic and Fiscal Outlook: November 2015*, http://budgetresponsibility.org.uk/economic-fiscal-outlook-november-2015/).

[18] The HMRC ready reckoner suggests that each £100 increase in the personal allowance reduces revenues by £800 million a year, while a 10% increase in the basic rate limit reduces revenues by £3.3 billion a year (see https://www.gov.uk/government/statistics/direct-effects-of-illustrative-tax-changes).

commitments for a £12,500 personal allowance and £50,000 higher-rate threshold are set in nominal terms, any further downgrade to the outlook for inflation would increase the cost of meeting this pledge, while any increase in expected inflation would make it less expensive to meet.

These costs would come on top of the cost of increases in income tax allowances that were seen over the last parliament and those that were announced in the July 2015 Budget. Together, the total cost of changes to the personal allowance and the higher-rate threshold between 2010–11 and 2017–18 will be about £11 billion per year.[19]

However, even if the higher-rate threshold is increased to £50,000 by 2020–21, it is still forecast to fall relative to average earnings, meaning that a greater fraction of individuals will be paying the higher rate of income tax. Estimates produced by IFS researchers in the run-up to the last election suggest that if the higher-rate threshold is increased to £50,000 by 2020–21, the numbers paying higher rates of income tax would still increase by around 300,000.[20]

Policies to tackle tax avoidance

Since coming to power, the Conservative government has announced a package of anti-avoidance and anti-evasion measures that the OBR expects to result in £3.6 billion additional revenues in 2020–21.[21] These come on top of similar types of measures introduced by the previous coalition government that were forecast to raise revenues by £6.1 billion in 2015–16.[22] These costings are already included in the OBR's forecasts. However, the costings for most of these policies have been designated 'highly uncertain' by the OBR. In November 2015, the OBR assessed a subset of anti-avoidance policies and found that, while some exceeded their original expected yield, on average the original costings had overestimated the true revenue yield. There is a clear risk that the measures implemented over this parliament fail to raise the anticipated revenues.

On the other hand, it is likely that further anti-avoidance measures will be introduced in response to recent policy recommendations from the OECD. As described in more detail in Chapter 8, the OECD has recently made a series of policy recommendations for countries to tackle tax avoidance. The expected result is substantial international policy change. When the UK government implements its response, the OBR will have to incorporate a costing into its official forecasts. Section 8.4 considers the revenue implications for the UK, concluding that they are highly uncertain. While several expected changes should increase UK revenues, the actual revenue yield from these measures is

[19] Source: slide 2 of S. Adam, 'Tax measures', July 2015, http://www.ifs.org.uk/uploads/publications/budgets/Budgets%202015/Summer/Adam_tax_.pdf.

[20] Source: page 16 of See S. Adam, J. Browne, C. Emmerson, A. Hood, P. Johnson, R. Joyce, D. Phillips, H. Miller, T. Pope and B. Roantree, 'Taxes and benefits: the parties' plans', IFS Briefing Note BN172, 2015, http://www.ifs.org.uk/uploads/publications/bns/BN172.pdf.

[21] Figure for total revenue raised from anti-avoidance and anti-evasion measures was calculated by summing the estimated effect of policies classified under the headings 'avoidance and tax planning' and 'avoidance, evasion and tax planning' in table A.1 of Office for Budget Responsibility, *Economic and Fiscal Outlook: July 2015*, http://budgetresponsibility.org.uk/efo/economic-fiscal-outlook-july-2015/ and table A.1 of Office for Budget Responsibility, *Economic and Fiscal Outlook: November 2015*, http://budgetresponsibility.org.uk/economic-fiscal-outlook-november-2015/.

[22] Figures for total revenue raised from anti-avoidance and anti-evasion measures were calculated by summing the estimated effect of policies classified under the headings relating to 'avoidance', 'evasion' or 'tax planning' in Budgets and Autumn Statements since the last coalition government came to power, but excluding the introduction of the bank levy, and policies that are expected to have predominantly temporary effects on revenues such as accelerated payment schemes and restrictions on loss write-offs.

very difficult to predict. Meanwhile, policies undertaken by other countries could negatively impact the UK's tax take. Overall, the likely effect is perhaps for a slight revenue increase, but there is substantial uncertainty surrounding this.

Planned increases in rates of fuel duties may not occur

The OBR's forecasts assume that fuel duties will be increased in line with inflation – as measured by the discredited Retail Prices Index (RPI) – each year from April 2016. However, recent years – as described in Chapter 9 – have seen a number of previously-planned inflation increases being deferred and, eventually, abandoned. Fuel duty rates have remained frozen in nominal terms since April 2011. Similar behaviour – of cancelling planned increases in line with inflation – also often happened during the last period of Labour government.

This might lead one to suspect that the indexation planned for the next few years will not take place either. Given current inflation forecasts, freezing fuel duties for the next five years, rather than increasing them in line with RPI inflation as is currently planned, would reduce forecast revenues by an estimated £3 billion a year by 2020–21. Moving instead to indexation in line with the Consumer Prices Index – which would be more justifiable than indexation in line with the RPI and which would bring the indexation of indirect taxes into line with the indexation of direct tax and benefit parameters – would reduce forecast revenues from fuel duties by £1¾ billion by 2020–21.[23]

Current low oil prices perhaps provide scope for the government to increase duty rates, which has been more difficult politically when oil prices have been high. However, oil prices have been declining steadily since mid 2014 (as Figure 5.10 shows) and yet the previous and current governments have made no attempt to increase duty rates. Most recently, in March 2015, the previous government chose to cancel a planned increase in line with inflation that was due to take effect in September 2015. It remains to be seen whether the government will go ahead with the inflationary increase planned for April 2016, which is due to amount to an increase of 1.16p per litre.

Implications of freezing certain income tax thresholds

There are now several parameters of the income tax system that are not indexed at all. Because the underlying tax base is expected to grow in nominal (and real) terms over time, while the thresholds are frozen, the forecasts imply that the average tax rate and the number of individuals to whom the tax applies will increase over time.

The threshold at which the personal allowance starts to be withdrawn (£100,000) – which creates an effective marginal income tax rate of 60% over a range of income (£22,000 from April 2016) above the threshold – and the point at which the 45p additional rate starts to be paid (£150,000) are, by default, not indexed at all. This means that the thresholds are already 15% lower in real terms than when they were introduced and are due to be 30% lower by 2020–21. Combined with the fact that earnings levels tend to grow in real terms over time, this means that the numbers affected are likely to grow substantially. Already the number of people paying the additional rate of income tax

[23] The OBR forecasts that the RPI will increase by 12.8%, and the CPI by 6.8%, over the period from September 2014 to September 2019 inclusive (see table 4.1 of Office for Budget Responsibility, *Economic and Fiscal Outlook: November 2015*, http://budgetresponsibility.org.uk/economic-fiscal-outlook-november-2015/). The HMRC ready reckoner suggests that each 1% off fuel duty rates reduces revenues by £265 million a year (see https://www.gov.uk/government/statistics/direct-effects-of-illustrative-tax-changes).

has grown by more than 40%, from 236,000 to 332,000, since its introduction in April 2010.[24]

It may well be politically feasible for the current government to continue freezing these thresholds. However, if the desire is for these tax rates to apply to a greater fraction of individuals than is currently the case, it would be better for politicians to state this clearly, rather than achieving the outcome through stealth using fiscal drag, which is unlikely to be the most desirable way of achieving the preferred distributional objective. Current policy here lacks any coherent principle: it embodies no view at all on either the real level of income at which higher rates of tax should kick in or the appropriate fraction of people who should be affected by them (since these can both change every year indefinitely).

Another threshold related to the income tax system that is frozen in cash terms is the point at which child benefit starts to be withdrawn. Since January 2013, child benefit has been tapered away from families containing an individual with a taxable income exceeding £50,000 a year, such that families containing an individual with a taxable income of £60,000 a year or more receive no child benefit at all. These thresholds are, by default, not indexed at all. Not indexing the £50,000 threshold means that more and more families will have part or all of their child benefit withdrawn in future as incomes rise in cash terms. In 2016–17, we estimate that 1.1 million families will lose some or all of their child benefit. If taxable incomes rise in line with the OBR's forecast, while the thresholds remain fixed, we estimate that in five years' time the number of families affected would increase by 50% and in ten years' time it would have more than doubled as a result of fiscal drag.[25] In addition, because neither the £50,000 nor the £60,000 threshold is indexed, the range of income over which child benefit is withdrawn is fixed at £10,000. This means that over time, if child benefit rises in cash terms (which it is scheduled to do from April 2020), the effective income tax rate faced by those who have their child benefit withdrawn would increase.[26]

It remains to be seen whether this is sustainable. On the one hand, it may be particularly hard to sustain beyond 2020–21 when (if the Conservatives deliver on their manifesto pledge) the higher-rate threshold will reach and then (presumably) rise above £50,000. If the threshold for child benefit withdrawal remained frozen at £50,000, basic-rate taxpayers would start losing child benefit.

On the other hand, it could be that, as fewer families are able to receive child benefit, public support for the benefit is eroded. If continued indefinitely, child benefit would be received by fewer and fewer families over time. But if this is the government's intention, it would again be better to state this clearly rather than achieving it by stealth.

[24] Source: table 2.5 of HM Revenue & Customs, 'Income tax statistics and distributions', https://www.gov.uk/government/collections/income-tax-statistics-and-distributions.

[25] Andrew Hood provided these estimates using TAXBEN run on uprated 2013–14 Family Resources Survey data.

[26] The marginal income tax rate faced by someone with three children was around 65% (40% plus 25%) in 2015–16. Child benefit is set to be frozen in cash terms over the four years from April 2016, which would leave this unchanged until at least the end of 2019–20. For more details, see A. Hood and D. Phillips, 'Benefit spending and reforms: the coalition government's record', IFS Briefing Note BN160, http://www.ifs.org.uk/publications/7535.

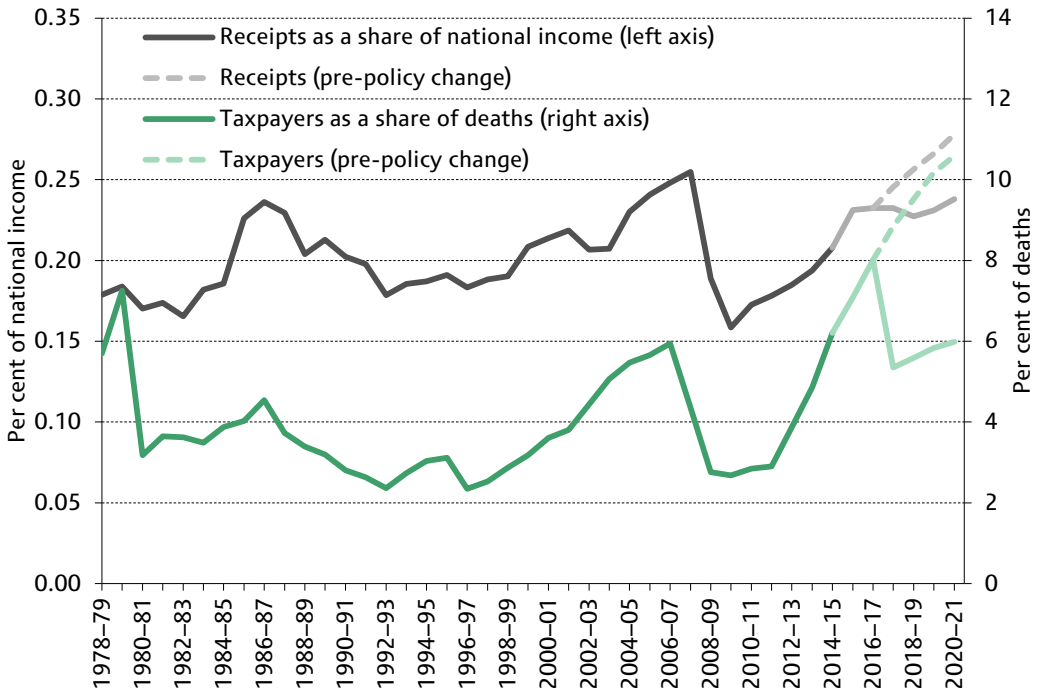
Is it plausible to freeze inheritance tax thresholds in cash terms?

In aggregate, inheritance tax is a relatively small tax, currently raising around £4 billion a year (less than 1% of total government revenues). It is paid by only a small minority of estates – currently around 6%, and that figure has been even lower for much of the last 40 years. Despite this, it has proved an unpopular tax. Current policy is for the inheritance tax threshold (£325,000) to be frozen in nominal terms through to March 2021. This alone would tend to push up the number of estates liable for inheritance tax over time. Putting to one side the economic arguments for and against such an outcome, is it plausible that politicians will allow it to happen?

In last year's Green Budget, we highlighted that, as a result of freezing the threshold and the rising value of asset holdings, the fraction of estates liable for inheritance tax was due to increase steadily and by 2018–19 to reach its highest level since at least 1978–79.[27] In fact, the trend will now be (at least temporarily) reversed as a result of a new policy announced in the July 2015 Budget.

From April 2017, there will be a new transferable main residence allowance for couples who are married or in a civil partnership. It will initially be set at £100,000 and then rise by £25,000 per year until it reaches £175,000 in 2020–21. Figure 5.12 shows that this policy change has reduced both forecast inheritance tax receipts and, especially, the

Figure 5.12. Receipts from and fraction of estates liable for inheritance tax



Note: Figure shows total receipts and number of estates liable for inheritance tax and (for years before 1986–87) capital transfer tax at death. Forecasts are shown including and excluding the effect of measures announced in the July 2015 Budget, which introduced a new transferable main residence allowance and extended the freeze in the threshold for an additional two years.
Source: Authors' calculations based on data from HM Revenue & Customs, the OBR and the Office for National Statistics.

[27] R. Crawford, C. Emmerson and G. Tetlow, 'Public finances: a dicey decade ahead?', in C. Emmerson, P. Johnson and R. Joyce (eds), *The IFS Green Budget: February 2015*, http://www.ifs.org.uk/publications/7530.

number of estates likely to be liable for the tax. The latter is estimated to be reduced by 40% in 2020–21 – from 60,500 to 34,200.

It is notable that there was also a significant policy change the last time the fraction of estates liable for inheritance tax approached 6% (in 2008–09). At that time, in the October 2007 Pre-Budget Report, the Labour government introduced for the first time the ability for married couples and civil partners to transfer any unused inheritance tax allowance to their surviving partner. This had the effect of sharply reducing the fraction of estates that would be liable for the tax.

Recent history suggests, therefore, that politicians have a habit of cutting inheritance tax when the fraction of estates liable for it rises above its current level. Despite the latest significant tax cut, both receipts of inheritance tax and the percentage of estates liable are forecast to rise to a relatively high level over the next few years compared with the last 40 years. In 2020–21, it is forecast that 6.0% of deaths will be liable for inheritance tax. While this is lower than the 6.2% seen in 2014–15, it would be higher than any year between 1980–81 and 2013–14 (inclusive), and it remains to be seen whether this can be maintained.

Potential reforms to the taxation of pensions

One factor that could significantly affect the future level and profile of tax revenues is the possible reforms to the tax treatment of private pension contributions that are currently being considered by the government. At the moment, broadly speaking the income tax treatment of pensions is that contributions to private pensions are made from pre-tax income, returns on investments held by pension funds are tax-free, and then pension income is taxed on receipt. This is often referred to as EET (exempt–exempt–taxed) treatment.[28]

Over the summer, the Treasury consulted on potential reform of the current personal tax treatment of pension saving, with an apparent focus on three broad types of potential future system:[29]

- Retaining the current system, though potentially with reductions to the annual and lifetime contribution limits.
- Offering tax relief on pension contributions at a flat rate, rather than at each individual's marginal tax rate. This rate would be set to be greater than the current basic rate of income tax (20%), but lower than the current higher rate of income tax (40%).
- Moving to a system of TEE (taxed–exempt–exempt) treatment of pension contributions – that is, contributions to private pensions would be made out of taxed income, while investment returns and any income ultimately received would be tax-

[28] For a discussion of the ways in which the current personal tax treatment of private pension contributions deviates from the EET ideal, see C. Emmerson, 'Taxation of private pensions', in C. Emmerson, P. Johnson and H. Miller (eds), *The IFS Green Budget: February 2014*, http://www.ifs.org.uk/publications/7072. In addition to the factors discussed there, announcements made in the July 2015 Budget mean that – from April 2016 onwards – those whose income including pension contributions is above £150,000 and whose income excluding pension contributions is above £110,000 will have a reduced annual allowance.

[29] HM Treasury, *Strengthening the Incentive to Save: A Consultation on Pensions Tax Relief*, 2015, https://www.gov.uk/government/consultations/strengthening-the-incentive-to-save-a-consultation-on-pensions-tax-relief. These three reform options are the ones reported by J. Cumbo and C. Barrett, 'Pensions — which way now?', *Financial Times*, 21 August 2015, http://www.ft.com/cms/s/0/3ec9a72a-44fa-11e5-af2f-4d6e0e5eda22.html#axzz3we4NOVfq.

free. Under this reform, there would also be an additional government top-up on at least some pension contributions.

The implications of and the economic rationale (or lack thereof) for these alternative tax treatments for private pension saving were discussed in detail in the 2014 IFS Green Budget.[30] We do not revisit these arguments here but instead focus on the potential implications for the level and profile of tax revenues and the resultant risks for the public finances.

Retaining the current system

Retaining the current tax treatment but with reduced annual and lifetime allowances would have two main effects, though it is difficult to quantify how large these would be. By reducing the amount that individuals can contribute tax-free to a pension, the reforms would tend to increase the amount of income that would immediately be liable for income tax (and National Insurance contributions). This would boost tax revenues in the near term. However, this would come at the expense of some future tax revenues, since future pension payments would be expected to be lower and thus less tax would be payable.

The overall effect on the public finances is likely still to be positive, since pension savings are much more tax favoured than most other forms of saving. If the funds not placed in a pension were spent rather than saved in some other form, this would also boost indirect tax receipts now and depress them in future. To give a sense of scale, the government estimated that the reduction of the annual limit from £50,000 to £40,000 and the reduction in the lifetime limit from £1.5 million to £1.25 million that was announced in the Autumn Statement of 2012 would together raise £1.1 billion in 2017–18, while the March 2015 Budget announcement to cut the lifetime limit from £1.25 million to £1 million was scored as a £600 million tax rise in 2019–20.[31] Further reductions of the same size would raise significantly more than that because far more people would be affected. As far as we are aware, no estimates have been produced of the extent to which this would represent a permanent strengthening in the public finances as opposed to just bringing revenue forwards in time.

Flat-rate tax relief

The proposals that have been discussed for offering a single flat rate of 'tax relief' on pension contributions entail offering relief at a rate higher than the basic rate of income tax (20%) but lower than the higher rate (40%). This would tend to increase the total amount of tax relief offered up front to those on middle or lower incomes but reduce the amount offered to those on higher incomes. In the latter case, the lower amount of tax relief claimed would be both because the tax relief per pound of saving would be reduced and because the incentive to save in a private pension at all would be reduced.

This policy – like the option of reducing the annual and lifetime limits – has the potential to increase tax revenues somewhat in the short term but potentially at the cost of slightly lower revenues in the longer term. The magnitude of these effects would depend on the

[30] See C. Emmerson, 'Taxation of private pensions', in C. Emmerson, P. Johnson and H. Miller (eds), *The IFS Green Budget: February 2014*, http://www.ifs.org.uk/publications/7072.

[31] Source: table 2.1 of HM Treasury, *Autumn Statement 2012*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221550/autumn_statement_2012_complete.pdf and table 2.1 of HM Treasury, *Budget 2015*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/416330/47881_Budget_2015_Web_Accessible.pdf.

precise policy design. It would be possible to design the flat-rate relief in such a way that it reduced revenues in both the short and long runs – for example, if the flat rate of relief were set at a fairly high level. However, the Treasury's consultation suggests that it is looking to make net exchequer savings, suggesting that this is an unlikely outcome.

In 2013, the Pensions Policy Institute published an estimate suggesting that a flat rate of tax relief of around 30% might, in the short term, be roughly revenue neutral.[32] However, there is uncertainty around this estimate for a number of reasons. First, it is based on estimates of the distribution of up-front tax relief on contributions made directly by individuals in recent years, whereas the majority of pension contributions have been made on individuals' behalf by their employers. Second, the cost and distribution of this up-front relief will have been changed by the recent reductions to the annual limit and lifetime allowance. Third, any changes in pension saving behaviour in response to the reforms would also affect the impact on revenues.

The crucial issue of the impact on revenues in the longer term is even more uncertain. If lower- and middle-income individuals end up having larger pension pots (for example, because they choose to save more or just because of the higher amount of up-front tax relief), then tax revenue on the resulting pension would increase. But if higher-income individuals end up having smaller pension pots (due to them saving less or just because they received less up-front tax relief), then this would result in less tax revenue on the resulting pension. Any impact on household saving and spending decisions would also impact upon future indirect tax revenues.

TEE tax treatment

The third option – moving to TEE tax treatment – has much more dramatic consequences for the profile of tax revenues and poses significant political risks. Moving to a system in which contributions are taxed up front rather than on receipt would dramatically boost tax revenues in the near term. But levying this income tax up front would come at the expense of a reduction in revenues in the future, as the government will no longer collect income tax on these pensions in payment.

The extent to which the net increase in tax is permanent rather than temporary would depend on a number of factors, including the extent to which people face lower marginal tax rates in retirement than when they make their pension contributions and future investment returns. If the tax rates some individuals face in retirement are lower than those they faced when their pension contributions were made and if there were no excess returns, then at least part of the higher revenues raised in the short term from a move to TEE would be a permanent gain. If there were excess returns (but no tax-rate smoothing), then a move to TEE would lose the government revenue over the longer run.

The longer-run cost would also depend on the size of any new tax incentives offered to all those saving in pensions compared with what is currently available. Under the current EET income tax system, the incentive offered takes the form of the tax-free lump sum. Under a TEE income tax system, the incentive could take the form of an up-front government top-up. If the new incentive is less generous than the old one, then part of the additional revenues raised in the short run would be permanent.

The government estimates that up-front income tax relief on pension contributions totalled £27.0 billion (£6.8 billion on individual contributions and £20.2 billion on

[32] Pensions Policy Institute, *Tax Relief for Pension Saving in the UK*, London, 2013, http://www.pensionspolicyinstitute.org.uk/publications/reports/tax-relief-for-pension-saving-in-the-uk.

employer contributions) in 2013–14.[33] However, much of this will be recouped in future from income tax received when private pension incomes are drawn. In 2013–14, £13.1 billion of income tax was paid on income received from private pensions. This figure gives some feel for how much of the up-front tax relief might be only temporary, though in practice future growth in the pensioner population is likely to push this number up. If the government also wanted to introduce a significant up-front top-up, then it would be quite possible that the vast majority of any additional income tax revenues raised in the short term would be temporary rather than permanent.

This raises a concern that, with a tendency to focus on short-term indicators of the health of the public finances, the Chancellor – or one of his successors – might inappropriately spend rather than bank this temporary windfall. To the extent that the policy change only brings revenue forwards in time, the right response is to bank this money rather than use it to cut taxes or boost spending in the short term. But is it credible that the Chancellor or one of his successors – faced with a large surge in income tax revenues – would resist the temptation to give at least some of it away? In the longer term, when higher-income older people are enjoying their tax-free pension income, is it credible that a future, potentially cash-strapped, Chancellor will avoid the temptation to levy tax again on this income (i.e. TET tax treatment)? The first question suggests that future generations of taxpayers may not thank us if we allowed a Chancellor to take the tax revenue up front and spend it. The second question suggests that we might ourselves be wary of putting much into our pension funds in case a future Chancellor decides to tax us again.

Summary

The Treasury confirmed in the 2015 Autumn Statement that a decision about the future tax treatment of pension contributions would be made in the 2016 Budget. Depending on which of the options is chosen, the effect on the headline public finances over the next five years could be substantial, but the true effect on the underlying and longer-term fiscal position may not be so easy to glean from the numbers that will be presented on Budget Day. Any revenues lost in the longer term will not show up in the five-year forecast. In addition, the behavioural response to the policy will be difficult to predict. The assumptions made about this could have important effects on the policy costing, but the evidence base that could be used to inform them is patchy and any assumptions will not be verifiable for years to come. This means it would be very important for the OBR to publish estimates of the impact on revenues in future years and full details of the underpinning assumptions used to produce those estimates.

Finally, it is worth noting that if the government does announce a major change to tax relief on pension contributions – either a shift to a single rate of up-front relief or a move to a TEE system – there would likely be complicated responses in the very short term before the policy is implemented. Both of the major reforms being considered would lead to higher-income individuals expecting to receive less generous tax treatment of pension contributions in future. Therefore, they might plausibly respond by bringing forwards their future pension contributions in order to qualify for more generous tax treatment while they still can. This would have the effect of depressing income tax receipts prior to the reform coming into effect and then increasing them significantly for a while thereafter.

[33] Source: table PEN6 at http://www.hmrc.gov.uk/statistics/pension-stats.htm.

Summary

Overall, the balance of policy risks to receipts is biased to the downside. Manifesto commitments on the personal allowance and higher-rate threshold are expected to reduce revenues by £8 billion per year by 2020–21. Meanwhile, there are further policy decisions assumed by the OBR in its forecast that may prove infeasible. In particular, there is good reason to doubt whether fuel duties will be increased as much as standard indexation would dictate over the course of the parliament: continuing the recent pattern of freezing the rates of these duties for five more years would cost around £3 billion. There are counterbalancing risks to the upside, although these come with caveats. Reform to the taxation of pensions could lead to a large increase in revenue in the short term, though a somewhat smaller gain in the long term. Further anti-avoidance policies are likely to raise more revenue, but these costings are highly uncertain and previous anti-avoidance costings have slightly overestimated their impact on revenues on average.

5.4 Conclusion

There are clear upside and downside risks to the OBR's latest forecast for tax revenues in the UK. However, on balance, it seems likely that its next (March 2016) forecast will be for lower total revenues over the next few years than it expected in November.

If the pessimistic scenario set out by Oxford Economics – in which the Federal Reserve raises interest rates more sharply than markets currently expect – were to materialise, then absent further policy action, the public budget might be only in balance by 2019–20, rather than reaching a surplus of 0.5% of national income as the latest OBR forecast suggests.

The key economic determinants that, if downgraded, would feed through into a significantly weaker outlook for tax receipts are average earnings, employment and consumer spending, since these affect revenues from the three largest taxes – income tax, National Insurance contributions and VAT. There is no strong evidence that the outlook for these determinants has moved in a particular direction since the OBR's forecasts in November.

Equity prices, however, have fallen particularly sharply since the start of the year. Unless the lost ground is made up before March, this alone could result in a reduction of around £2 billion a year in forecast receipts from capital taxes by the end of the forecast horizon. This is equal to around 0.3% of total revenues or 0.1% of national income.

Another downside risk to future revenues is that, at some point in the next few years, the Conservative government makes good on its manifesto commitment to increase the income tax personal allowance and higher-rate threshold to £12,500 and £50,000, respectively. This would cost around £8 billion per year, which is not yet factored into the official forecasts.

Official policy is for rates of fuel duties to be increased each year from April 2016 in line with inflation as measured by the (discredited) RPI. Given that rates have been fixed since 2011, it is arguably more likely that they continue not to be indexed at all. But doing this for a further five years would result in £3 billion of lost revenue from 2020–21.

There is also uncertainty about how much will be raised from recently-introduced and potential new anti-tax avoidance measures. The Conservative government has introduced a raft of anti-avoidance and anti-evasion measures that are predicted to raise £3.6 billion

a year by 2020–21. However, the costings for these policies are highly uncertain and they could disappoint. While proposed new international action to tackle tax avoidance might boost expected future revenues (which is not yet factored into the official forecast), again there is a significant risk that revenue from these measures will disappoint.

The March 2016 Budget may contain significant new announcements on the income tax treatment of private pension contributions. Some of the options being considered would have a more significant effect on the timing of tax payments in future years than they do on the overall amount that is being raised. It will be very important for the OBR to publish estimates of the effect on revenues in all future years and full details of the underpinning assumptions. The government should not rely on temporary revenues to achieve a budget surplus in 2019–20, since this would not be in keeping with the rationale underpinning the Chancellor's stated fiscal objectives (described in Chapter 3).

6. Risks to the rules: public spending

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Summary

- The government's objective of having a budget surplus in 2019–20 is set to be achieved with a level of public spending that will be the lowest as a share of national income for over 60 years with the exception of 1999–2000 and 2000–01. Spending on public services in 2019–20 is set to fall to its lowest level as a share of national income since the early 2000s. Spending on services outside of health will be at its lowest level since at least 1948–49.
- Public service spending by central government and local authorities is forecast to be cut by 1.0% between 2015–16 and 2019–20, compared with 8.3% between 2010–11 and 2015–16.
- A growing and ageing population will increase demands for many public services. Public service spending per person by central government and local authorities is forecast to fall by 3.7% over this parliament and by 14.9% between 2010–11 and 2019–20. While NHS spending is expected to grow by 6.1% in real terms over the parliament, over three-quarters of this real increase will be needed just to keep pace with the changing size and demographic structure of the population.
- In addition, changes to National Insurance contributions will cost public sector employers an additional £3.3 billion a year, while Resolution Foundation estimates suggest that the new National Living Wage could cost more than £1 billion a year.
- The government's spending plans imply that public sector pay will fall to much its lowest level relative to the private sector since at least the mid 1990s, when comparable data are available. This could result in difficulties for public sector employers trying to recruit and retain high-quality, motivated workers and raises the possibility of (further) industrial relations issues.
- The Chancellor has set out £12 billion of cuts to annual spending on working-age benefits and tax credits by 2019–20. This is the same magnitude, but two years later, than pledged in the Conservative Party manifesto. Benefit levels for some groups will reach very low levels relative to earnings by comparison with historical rates. One risk to the public finances is that the latest disability benefit reforms might not deliver as large or swift a cut to spending as forecasts assume.
- Lower expected interest rates or further delay to the expected date at which the Bank of England begins to unwind quantitative easing would reduce expected debt interest spending. But both of these would likely indicate a weaker, not stronger, economy. So, while they would reduce debt interest spending, they would likely signal bad news overall for the UK's public finances.
- Together, the risks to revenues and to spending, combined with the OBR's central estimate of a surplus of (only) 0.5% of national income in 2019–20, suggest that there is a significant chance that the government's current fiscal plans will not deliver the targeted surplus in that year without further tax rises or spending cuts.

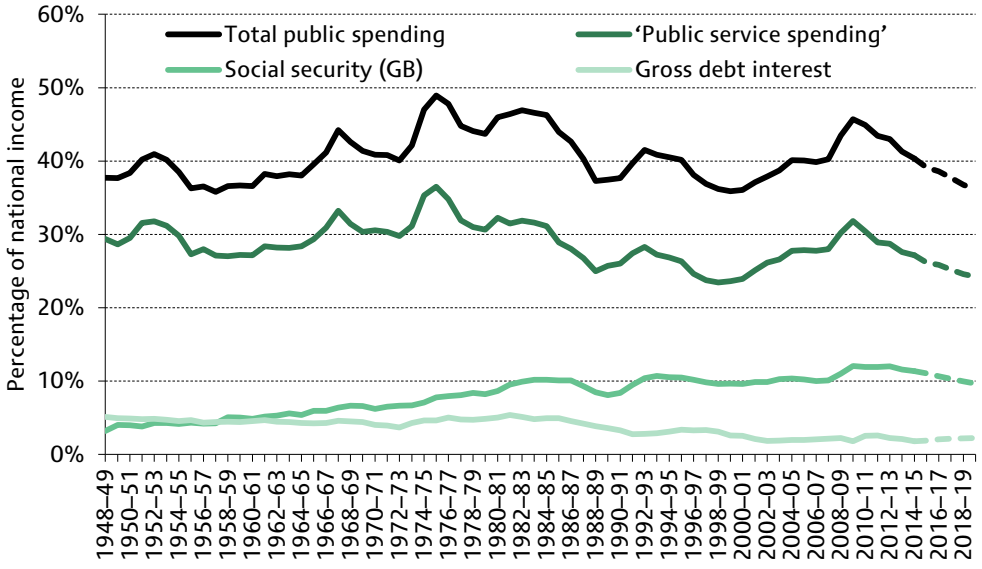
6.1 Introduction

The government intends to reach a budget surplus of 0.5% of national income in 2019–20 by increasing tax revenues over this parliament by 1.1% of national income and reducing total public spending by 3.2% of national income. Total public spending (excluding housing associations) in 2019–20 would then amount to 36.1% of national income. This would be the lowest level of public spending for 60 years, with the exception of 1999–2000 and 2000–01 (shown in Figure 6.1).

Within public spending, spending on social security (in Great Britain) is planned to be cut by 1.4% of national income over the parliament, bringing it down to around the share of national income that it was at for most of the period from 1980–81 to 2007–08. Debt interest spending, on the other hand, is expected to increase slightly, by 0.3% of national income, as the recent sharp rise in the national debt feeds through into higher debt servicing costs. This leaves all other areas of public spending, which can broadly be referred to as 'public service spending', being cut by 1.9% of national income between 2015–16 and 2019–20. This would reduce public service spending to 24.2% of national income, a low level by recent historical standards. The only other sustained period since the end of the Second World War where spending on public services as a share of national income has been below 25% of national income was throughout the first term of the last Labour government (from 1997 to 2001). For spending on public services outside health, the picture is more dramatic: in 2019–20, this is set to fall to its lowest level as a share of national income since at least 1948–49.

A key question for the government's ability to achieve a surplus in 2019–20 and thereby meet its new fiscal mandate (discussed in more detail in Chapter 3) is whether or not

Figure 6.1. Public spending over time



Note: Total public spending excludes housing associations throughout; the reduction in total public spending between 2015–16 and 2019–20 on this measure is 3.0% of national income. 'Public service spending' is defined as total public spending less gross debt interest and social security spending.
Source: Total public spending is from the OBR's Public Finances Databank, adjusted for housing associations using table 4.15 of OBR, *Economic and Fiscal Outlook*, November 2015. Social security is Great Britain only, and is from DWP Benefit Expenditure Tables. Gross debt interest is ONS series JW2P, with forecasts from fiscal supplementary table 2.35 of the OBR's November 2015 Economic and Fiscal Outlook.

these spending plans are feasible. The uncertain outlook for economic growth certainly presents some risks. If future growth were to disappoint, then spending plans that have been (at least in principle) fixed in cash terms – such as the budgets allocated to central government departments – would represent larger-than-anticipated shares of national income. In the absence of further policy change, this would likely feed through into higher borrowing, since tax revenues would fall as growth falls. Furthermore, lower-than-anticipated growth would be likely to increase cash spending as well; spending on cyclical benefits, for example, would tend to increase.

Even if future growth evolves as expected, there are risks around the government being able to stick to its planned cash levels of public spending for the parliament. It is these risks that we discuss in this chapter. We start in Section 6.2 by describing in more detail the government's plans for cuts to public service spending over the parliament, the risks to public service quality, and the political risks around whether the plans will be delivered. We then turn to social security spending in Section 6.3 and consider some of the reasons for uncertainty around whether social security spending will be cut as planned. Finally, we discuss debt interest spending in Section 6.4 and the uncertainty around the future level of that spending. Section 6.5 concludes by summarising the risks to the government's spending plans, and drawing together Chapters 5 and 6 to discuss the uncertainty around the government's planned path for deficit reduction.

6.2 Public service spending

The measure of 'public service spending' described above is very broad – it includes all public spending outside that on debt interest payments and social security transfers to individuals. A measure for spending on public services more commonly used in recent years has been 'departmental spending' (formally 'departmental expenditure limits' or DELs) – essentially, central government departments' budgets for administration and programme delivery, and the grants given to English local authorities and the devolved administrations of Scotland, Wales and Northern Ireland. Departmental spending was cut by more in real terms[1] over the last parliament than broad public service spending – by 10.4% between 2010–11 and 2015–16 compared with 4.4% (set out in Table 6.1). Going forwards, cuts to departmental spending are planned to continue, with a cut of 2.3% between 2015–16 and 2019–20. This is a significantly slower pace of cuts than over the last parliament (an average 0.6% per year, compared with an average of 2.2% per year) but these cuts come on top of those already delivered, taking the total cut since 2010–11 to 12.4%.

In addition to departmental spending, public services are also funded by 'local authority self-financed expenditure' (LASFE). This is spending financed by revenue raised and retained locally by English local authorities and the devolved administrations of Scotland, Wales and Northern Ireland – namely through council tax and rates on non-domestic properties.[2] LASFE increased by 11.6% between 2010–11 and 2015–16 and is forecast by the Office for Budget Responsibility (OBR) to increase by a further 8.7% between 2015–

[1] When deflating public service spending, we use economy-wide inflation as measured by the GDP deflator.

[2] For the most part, this revenue is not tied to spending on specific purposes (the police precept on council tax being one exception). Local authorities combine the revenue they raise with block grants from central government to finance all the services they are responsible for, which include social care, transport, environment and refuse services, social housing, and cultural services.

Table 6.1. Change in public spending this parliament and last

	Spend in 2015–16 (£bn)	Real-terms change (%) 2010–11 to 2015–16	2015–16 to 2019–20	2010–11 to 2019–20
Total public spending	744.6	–3.1	+1.4	–1.8
Of which:				
Debt interest	35.9	–17.8	+29.8	+6.7
Social security (GB)	210.7	+3.2	–4.2	–1.1
'Public service spending'	498.0	–4.4	+1.7	–2.8
of which:				
Departmental spending (DEL)	356.8	–10.4	–2.3	–12.4
Local authority self-financed expenditure (LASFE)	46.3	+11.6	+8.7	+21.4
Other[a]	94.9	+17.1	+13.1	+32.4
DEL plus LASFE	*403.1*	*–8.3*	*–1.0*	*–9.3*

[a] 'Other' areas of 'public service spending' include net spending on public service pensions, spending by the BBC, transfers to the European Union, depreciation, and spending financed by environmental levies and the National Lottery.
Note: To produce consistent series over time, total public spending excludes housing associations, while central government departments' spending (DEL) and local authority self-financed spending are adjusted for large classification changes (such as the business rate retention policies, council tax localisation and the reclassification of the Network Rail grant).
Source: Authors' calculations using HM Treasury, *Spending Review and Autumn Statement 2015*, HM Treasury, *Public Expenditure Statistical Analysis 2015*, DWP, *Benefit Expenditure Tables* and OBR, *Economic and Fiscal Outlook 2015*.

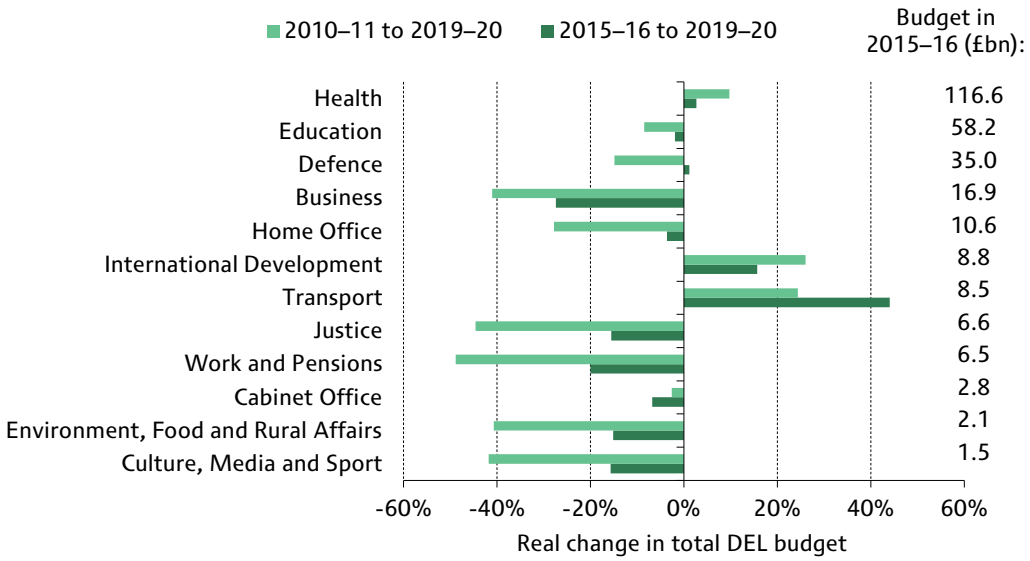
16 and 2019–20. Taking departmental spending and LASFE together, this broader measure of public service spending by central and local authorities is forecast to be cut by 1.0% between 2015–16 and 2019–20 (an average rate of 0.2% per year), compared with a cut of 8.3% between 2010–11 and 2015–16 (an average rate of 1.7% per year).

Departmental spending cuts

In the Spending Review published in November 2015, the government set out its plans for departments' budgets for each year up to and including 2019–20. On average, the government plans to cut departments' budgets by 2.3% in real terms between 2015–16 and 2019–20, but some departments face much harsher budget cuts than others. Figure 6.2 shows the real-terms budget cuts planned between 2015–16 and 2019–20 for the main government departments, ordered by size of department. To highlight that these cuts come on top of those delivered over the last parliament, Figure 6.2 also shows the expected real change in each department's budget over the whole period between 2010–11 and 2019–20.[3] Across health, education, defence and international development, spending is forecast to grow by 1.7% over the period from 2015–16 to 2019–20, meaning that the cumulative change in these budgets over the nine-year period from 2010–11 will be 0.6%. In contrast, the budgets of other departments are, on average, set to be cut by 7.6% over the next four years, which would bring the cumulative cut since 2010–11 up to 25.8%.

[3] Further discussion of the cuts implemented over the last parliament is available in R. Crawford and S. Keynes, 'Options for further departmental spending cuts', in C. Emmerson, P. Johnson and R. Joyce, *The IFS Green Budget: February 2015*, http://www.ifs.org.uk/publications/7530.

Figure 6.2. Change in selected departments' budgets, 2010–11 to 2019–20



Note: International Development excludes cross-government official development assistance (ODA) funding from 2015–16 onwards for comparability with the budget in 2010–11; including this funding would imply an 18% real budget increase between 2015–16 and 2019–20 rather than a 16% real budget increase. Transport excludes the capital grant to Network Rail throughout. Defence includes spending on war pensions throughout, but is not adjusted to remove the cost of military operations.
Source: HM Treasury, *Spending Review and Autumn Statement 2015*; HM Treasury, *Public Expenditure Statistical Analyses 2015*; supplementary fiscal tables from the OBR's Economic and Fiscal Outlook, November 2015.

Health

The largest department, the Department of Health (DH), is expected to see a real-terms increase in its budget between 2015–16 and 2019–20 of 2.7%. This is the result of the government's well-publicised commitment to increase annual NHS spending in England by £10 billion in real terms between 2014–15 and 2020–21 in response to the recommendation of Simon Stevens, the NHS Chief Executive.

The NHS budget (which is a subset of the DH budget) is planned to increase by 6.1% between 2015–16 and 2019–20. However, alongside that, the government expects NHS service provision to increase, in particular with a move towards a seven-day service from hospitals and GPs, and an integration of health and social care services.

In contrast to spending on the NHS, other areas of health spending, such as administration, health spending outside the NHS and spending on training health-care professionals, will be cut by an average of 20.4% over this period. One strategy that has been announced for achieving some of the required cut is that grants for students of nursing, midwifery and allied health subjects will be replaced with loans.

The protection of the NHS from real spending cuts during this parliament builds on a similar commitment last parliament. Over the period 2010–11 to 2019–20 as a whole, the budget of DH is expected to increase by 9.7% in real terms.

Defence, Transport and International Development

The other main departments that are planned to see increases in their budgets between 2015–16 and 2019–20 are the Ministry of Defence, the Department for International

Development (DfID) and the Department for Transport (DfT). DfID is expected to see a real increase in its budget over the parliament as a result of the government's commitment, enshrined in law, to continue to spend 0.7% of national income on aid each year. The DfT is expected to see a particularly large increase in its budget (44%) due to a £4.5 billion real-terms increase in capital spending.

Education

The Department for Education (DfE) is planned to see a budget cut of 1.9% over the period 2015–16 to 2019–20, a smaller cut than planned for most other departments. The government has pledged to protect day-to-day schools spending per pupil in cash terms over the parliament. This is expected to equate approximately to a real freeze in the budget for day-to-day spending on schools, which accounts for two-thirds of the total DfE budget. Most of DfE funding per student for 16- to 19-year-olds in school sixth forms, sixth form colleges and further education colleges in England is also to be protected in cash terms for the rest of the parliament. Furthermore, the government has promised to increase entitlements to free childcare for 3- and 4-year-olds whose parents are in work; these entitlements will increase from 15 hours to 30 hours a week from September 2017, at an estimated annual cost of around £700 million a year.[4] This means other areas of education spending, such as administration and other spending on early years education, face greater cuts over the coming years than the cut to the overall DfE budget implies. Over the whole period since 2010–11, the total DfE budget is expected to be cut by 8.5%.[5]

Home Office

The Home Office is planned to see a cut to its budget of 3.6% in real terms between 2015–16 and 2019–20. However, within that, police spending has been relatively protected – with central government funding for the police planned to be cut by just 1.4% in real terms – while other areas of the Home Office budget (such as net spending on border, immigration and citizenship services) face greater cuts.

The government expects that increases in the police precept on council tax (which supplements central government grants to the police) will mean that total spending on the police is flat in real terms over the parliament. However, income from central government grants and the council tax precept comprise different fractions of total revenues for different police authorities. Over the last parliament, those authorities that were more reliant on central government grants saw greater cuts to their overall spending power than those that raised a greater fraction of revenues locally.[6] It is currently unclear whether this will also be the case over the coming parliament. It will depend on how the government chooses to change the funding formula that is used to allocate grants between forces; this is the subject of a recent government consultation and ongoing debate.[7]

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[4] Table 2.1 of HM Treasury, *Summer Budget 2015*.

[5] Further detail on how different components of education spending have fared to date is available in L. Sibieta, 'Schools spending', IFS Briefing Note BN168, March 2015, http://www.ifs.org.uk/publications/7669.

[6] See R. Crawford, R. Disney and D. Innes, 'Funding the English and Welsh police service: from boom to bust?', IFS Briefing Note BN179, November 2015, http://www.ifs.org.uk/publications/8049.

[7] The original Home Office consultation on reforming the police funding formula is available at https://www.gov.uk/government/consultations/reforming-police-funding-arrangements-in-england-and-wales. The subsequent House of Commons Home Affairs Committee inquiry report is available as http://www.publications.parliament.uk/pa/cm201516/cmselect/cmhaff/476/476.pdf.

Business, Innovation and Skills

The Department for Business, Innovation and Skills (BIS) faces a large cut to its budget over the coming parliament, although once financial transactions are excluded the real cut planned is 19.2% (or £2.9 billion) rather than 27.4% (or £4.6 billion). Within BIS, some areas are protected, such as spending on science and apprenticeships (which are planned to increase by around £0.5 billion and £0.9 billion respectively by 2019–20), meaning the cuts elsewhere will need to be much greater. One area of spending that is going to be cut is maintenance grants to higher education students from low-income families – these are to be replaced by loans, saving the government over £2 billion per year in the short run.[8] Looking at the whole period since 2010–11, BIS is one of a number of departments that are expected to deliver around a 40% cut to their budget, with a particularly large cut to the BIS budget for funding higher education.[9]

Cuts to English local government spending

In England, local authority spending on public services is funded by revenue from three main sources: grants from central government (predominantly from the Department for Communities and Local Government, DCLG), revenues from council tax and revenues from business rates. Between 2015–16 and 2019–20, the grants to local authorities from DCLG (which form part of 'departmental spending') are planned to be cut by 56% in real terms.[10] However, partially offsetting that, the OBR is forecasting that both council tax receipts and the revenues from the proportion of business rates retained by local authorities will grow by around 9% over the period. Taking these three sources of revenue together, local government spending power is expected to fall by around 7% between 2015–16 and 2019–20.

These cuts come on top of the cuts to local government spending power that occurred between 2009–10 and 2015–16, but represent a slower pace of cuts. Though grants are set to be cut slightly faster over this parliament than last (at an average annual rate of around 17% compared with 13%), receipts from council tax and business rates are forecast to grow more rapidly over the current parliament than they did over the last parliament.

The other notable difference in the planned cuts to local government spending in this parliament compared with the last is that they will be much more equally distributed between local authorities. Previously, cuts in spending power were much greater for local authorities that received a greater proportion of their funding from grants. These are typically poorer local authorities with low council tax bases and/or high spending needs. This pattern arose because DCLG effectively cut all local authorities' grants by the same proportion, which translated into a larger cut to spending power for those authorities

[8] In the long run, the saving will be lower than this as not all the loans will be paid back. For a more detailed discussion of this reform, see J. Britton, C. Crawford and L. Dearden, 'Analysis of the higher education funding reforms announced in the Summer Budget 2015', IFS Briefing Note BN174, July 2015, http://www.ifs.org.uk/publications/7904.

[9] For further detail on changes in BIS non-investment spending over the last parliament, see C. Crawford, R. Crawford and W. Jin, *The Outlook for Higher Education Spending by the Department for Business, Innovation and Skills*, IFS Report R86, November 2013, http://www.ifs.org.uk/publications/6907.

[10] The government is also planning to fully devolve business rates by 2020, at which point grants to local authorities will end as full localisation of business rates will actually represent a transfer of significant additional money to councils. The government is expected to be consulting soon on how to devolve business rates fully, and what extra responsibilities it can and should ask local authorities to take on in exchange for the additional revenues.

that were more reliant on central grants than for those authorities with greater local revenue-raising capacity. In contrast, the DCLG's recent 'Provisional Local Government Funding Settlement' (which set out the core grant it plans to give to each local authority in each year from 2016–17 to 2019–20) allocated grants in a way that explicitly takes into account the ability of local authorities to raise revenue locally. The resulting cuts to local authorities' overall spending power are therefore expected to be much more equally distributed, although still greater on average for more grant-reliant authorities. For further detail, see Innes and Phillips (2015) and Innes and Tetlow (2015).[11]

Risks to delivering the cuts to departmental spending

Whether or not the government achieves its planned cuts to departmental spending over the next parliament will be crucial for the success of its overall deficit reduction plans. One reason for confidence in the government's ability to deliver is its track record over the last parliament. Despite the 10% cut to departmental spending over the last parliament, on the whole departments actually spent less than their budget allocations each year, and particularly so in 2012–13.[12] The cuts planned over the current parliament are also more gradual than those already delivered. On the other hand, one might reasonably assume that any cuts that were easy to identify and deliver were made first and so further cuts may be harder to make.

So past evidence suggests that there is the political will and capacity within government to deliver planned spending cuts. In fact, the forecasts for total departmental spending described above take into account the fact that the OBR expects departments to underspend against their currently-set budgets – for example, by a total of £4 billion in 2019–20 (although these underspends are not factored into the figures for individual departments).[13] This assumption is based on past evidence that departments traditionally underspend relative to any final budget allocation. The question is whether this new round of cuts will nevertheless prove too politically difficult to implement. This risk is not taken into account in the OBR's forecast, although it has in the past chosen to highlight how the planned level of public spending compares with historical precedents, implying that it thinks planned levels might be difficult to achieve.[14]

Whether the planned departmental spending cuts will prove to be politically feasible is uncertain. However, there are at least three important reasons why the real-terms budget cuts presented in Figure 6.2 may actually understate the difficulty facing departments. First, there is rising demand for some public services. Second, these budget cuts may have implications for the ability of public sector employers to recruit and retain public sector

[11] D. Innes and D. Phillips, 'Council tax rises to ease the pace of cuts to local government budgets', IFS Observation, December 2015, http://www.ifs.org.uk/publications/8095; D. Innes and G. Tetlow, 'Central cuts, local decision-making: changes in local government spending and revenues in England, 2009–10 to 2014–15', IFS Briefing Note BN166, March 2015, http://www.ifs.org.uk/publications/7617.

[12] The OBR estimates that departments underspent by around £9 billion in 2011–12, £12 billion in 2012–13, £5 billion in 2013–14 and £3 billion in 2014–15 (see fiscal supplementary table 2.18 of the November 2015 Economic and Fiscal Outlook). The reason for the particularly large underspend in 2012–13 is likely political: departments likely came under pressure to reduce their spending in 2012–13 when it became clear there was a risk that, on existing spending plans, borrowing might increase between 2011–12 and 2012–13, which would have been politically awkward for the government.

[13] See table 4.20 of Office for Budget Responsibility, *Economic and Fiscal Outlook: November 2015*, http://budgetresponsibility.org.uk/efo/economic-and-fiscal-outlook-november-2015/.

[14] See Office for Budget Responsibility tweet 'Budget moves towards surplus as public spending heads for 80 year low', 3 December 2014, https://twitter.com/OBR_UK/status/540150169355173888.

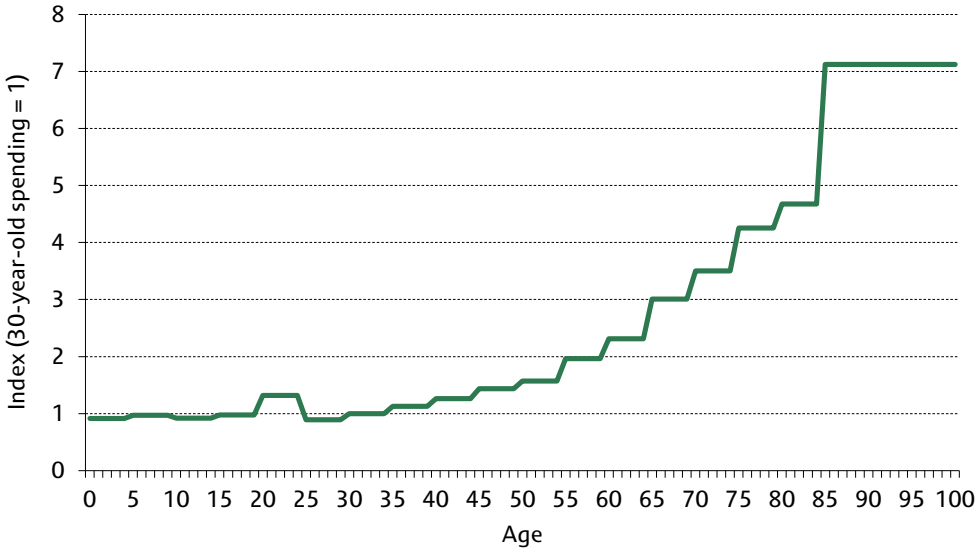
workers of appropriate motivation and quality. Third, there are additional cost pressures facing public sector employers over this period.

Increasing demand for public services

The figures set out in Figure 6.2 describe the changes in departments' budgets in real terms – in other words, after taking into account the cost pressure from economy-wide inflation. Demand pressures are another important factor to bear in mind: the population is forecast to grow by 2.8% between mid 2015 and mid 2019, which will tend to increase pressure on many public services. This means that, while departmental spending is forecast to be cut by 2.3% in real terms over the coming parliament, real public service spending per person is forecast to fall by 4.9%. Between 2010–11 and 2019–20, real departmental spending per person is expected to fall by 17.9%. Taking departmental spending and local authority self-financed expenditure together, this measure of public service spending per person is forecast to fall by 3.7% over this parliament and by 14.9% between 2010–11 and 2019–20.

The UK population is not just growing but is ageing as well. For example, while the population as a whole is forecast to grow by 2.8% over the parliament, the population aged 80 and over is forecast to grow by 10.3%. This places particular demand pressures on public services that are disproportionately used by older individuals, such as health and social care. Older people on average use more, and more expensive, health care. Recognition of these pressures is one reason why NHS spending is planned to be increased in real terms over the coming parliament and why the government has given local authorities the power to raise additional council tax revenues to spend on social care services.

Figure 6.3. Age profile of English health spending, 2011



Note: The age profile for health spending is aggregated from age profiles for Hospital and Community Health Services, Primary Care and prescriptions, weighted according to the share of each of these components of spending within total health spending. The age profiles for the components of spending are based on data published by the Department of Health and therefore relate to health-care use in England.
Source: Authors' calculations based on Department of Health, *Resource Allocation: Weighted Capitation Formula*, 7th edition, 2011, https://www.gov.uk/government/publications/resource-allocation-weighted-capitation-formula.

Table 6.2. Change in public service spending per person

	2015–16 to 2019–20		
	Real-terms change	Real-terms per-person change	Real-terms per-person (age-adjusted) change
Departmental spending (DEL)	–2.3%	–4.9%	–
DEL + LASFE	–1.0%	–3.7%	–
Department of Health	+2.7%	–0.1%	–
NHS	+6.1%	+3.2%	+1.3%

Note: LASFE is local authority self-financed expenditure. Age-adjusted spending per person for the NHS is estimated using the 2011 age profile of NHS health spending.
Source: As for Table 6.1 and Figure 6.3, plus ONS National Population Projections (2014-based).

Figure 6.3 shows estimated public health spending on individuals of different ages (expressed as a ratio relative to spending on an average 30-year-old) in 2011. This shows, for example, that spending on an individual aged between 70 and 75 is on average three-and-a-half times higher than average spending on a 30-year-old. This means that, while the NHS would need an increase in real spending of 2.8% between 2015–16 and 2019–20 just to keep pace with population growth, a 4.8% increase would be required to keep pace with both the changing size and demographic structure of the population.

As a result, over three-quarters of the planned 6.1% real increase in NHS spending will be needed just to keep pace with the changing size and demographic structure of the population. The NHS also faces demand pressures from the increasing prevalence of some chronic conditions and cost pressures from wages and high-cost drugs. Historically, NHS spending has typically increased at a much faster rate than keeping pace with simple demographic changes would imply. Over the period from 1971–72 to 2010–11, health spending (most of which is spending by the NHS) grew by an average of 4.2% per year compared with population growth of 0.3% and 'age-adjusted' population growth of 0.5% per year.[15]

Going forwards, the NHS is hoping to increase productivity by over 2% per year in order to meet the gap between its funding increases and the cost and demand pressures the health service faces. This will be challenging for the NHS: productivity in the NHS is notoriously hard to measure, but the estimates that do exist tend to suggest that annual productivity increases of over 2% would be high by historical standards.[16]

Table 6.2 summarises the real-terms cut and real-terms per-person cut to different areas of public service spending between 2015–16 and 2019–20.

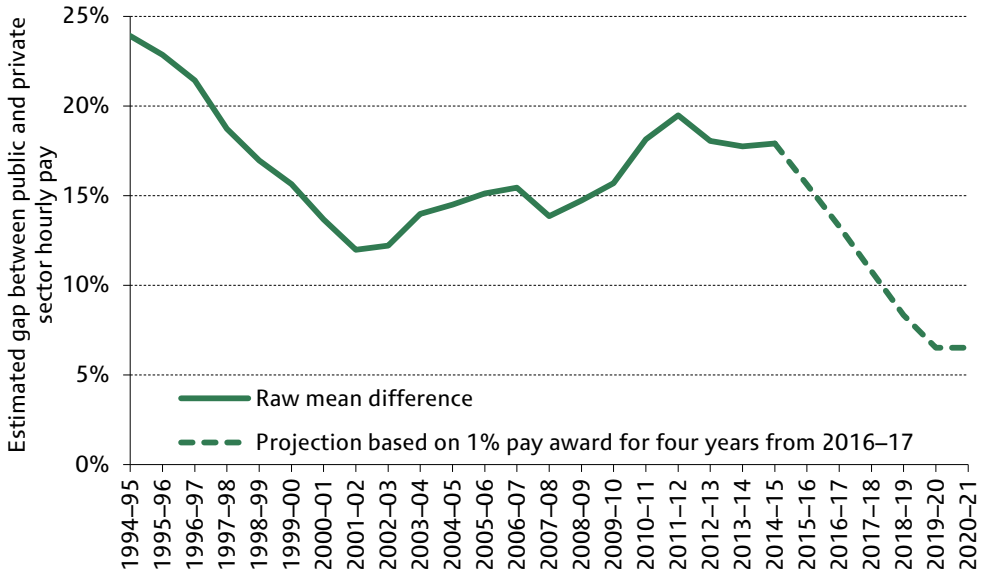
Public sector pay

Part of the real-terms cut to public service spending over the last parliament was achieved by holding down public sector pay. Pay was frozen in cash terms for all but the lowest-paid public sector workers in 2011–12 and 2012–13, and pay awards were limited to 1% across most of the public sector in 2013–14, 2014–15 and 2015–16. Since private sector wages were also growing slowly over this period, such pay restraint did not have a particularly adverse impact on relative wages. By 2014–15, average pay in the

[15] The last figure assumes that the 2011 age profile of health spending applied throughout the period.

[16] For a review of past estimates of NHS productivity, see annex B of Office for Budget Responsibility, *Fiscal Sustainability Report 2012*.

Figure 6.4. Gap between average public and private pay



Note: Data up to 2014–15 estimated using usual hourly wages from the Labour Force Survey. Projections are based on OBR forecasts.
Source: Authors' calculations using the Labour Force Survey and OBR, *Economic and Fiscal Outlook: November 2015*.

public sector was about the same level relative to the private sector as it had been in 2010–11, and still well above its pre-crisis (2007–08) level.[17] This is shown in Figure 6.4.

However, going forwards, private sector wages are expected to grow more rapidly. The OBR's latest forecast is that average earnings across the private sector will grow by around 17% (in cash terms) between 2015–16 and 2019–20. The government's announced 1% limit on annual pay increases for a further four years from 2016–17 is therefore expected to reduce wages in the public sector to their lowest level relative to private sector wages since at least the 1990s (also shown in Figure 6.4). This could result in difficulties for public sector employers trying to recruit, retain and motivate high-quality workers, and raises the possibility of (further) industrial relations issues.

The restraint on public sector pay in 2016–17 is likely to be felt particularly strongly. Around 80% of public sector workers are members of a defined benefit pension scheme (compared with slightly over 10% in the private sector),[18] and from 2016–17 it will no longer be possible for those with such pensions to contract out of part of the state pension by paying lower National Insurance contributions (NICs). This means that employees will have to pay 1.4% more National Insurance on all earnings between the lower earnings limit and the upper accrual point: this equates to a reduction in take-home pay of up to around £480 per year.[19]

[17] A positive differential can occur due to differences in experience and skill between the two sectors. For more details, see J. Cribb, C. Emmerson and L. Sibieta, *Public Sector Pay in the UK*, IFS Report R97, 2014, http://www.ifs.org.uk/publications/7395.

[18] Figure 1 of J. Cribb and C. Emmerson, 'Workplace pensions and remuneration in the public and private sectors in the UK', IFS Briefing Note BN151, http://www.ifs.org.uk/publications/7396.

[19] The maximum reduction in annual take-home pay of £480 would apply to employees earning £40,040 or more (who would then be paying 12% NICs rather than 10.6% NICs on earnings between the primary threshold of £8,060 per year and the upper accrual point of £40,040 and who would no longer be receiving a NICs rebate of 1.4% of earnings between the lower earnings limit of £5,824 and the primary threshold).

Additional cost pressures

The ending of contracting out (paying lower NICs in exchange for a lower entitlement to the state pension) for members of defined benefit pension schemes also has cost implications for public sector employers. From 2016–17, public sector employers will have to pay an additional 3.4% National Insurance on earnings between the lower earnings limit and the upper accrual point for all employees who were previously contracted out – this equates to an increase in the cost of employing an employee of up to around £1,165 per year.[20] HM Treasury estimated that the ending of contracting out would cost public sector employers £3.3 billion in 2016–17.[21] Stripping this additional spending pressure out means that – rather than a real increase in departmental spending and local authority self-financed expenditure of 0.7% between 2015–16 and 2016–17 – spending power is forecast to be essentially flat in real terms between this year and next.

Another possible upwards cost pressure on public sector employers is the government's pledge to substantially increase the minimum wage (for workers aged 25 and over) over the course of the parliament. The so-called 'National Living Wage' (NLW) will be £7.20 per hour in 2016–17, with a target to reach 60% of median earnings by 2020 (which, on current forecasts, would be over £9 per hour). The direct impact of this on public sector employers is likely to be small, since few individuals employed in the public sector are on such low hourly wages: the Low Pay Commission 2015 report found that less than 1% of jobs in the public sector paid the minimum wage in April 2014.[22] However, it is likely to be more of an issue for parts of the public sector that commission services from low-wage employers. One such area is social care, where services tend to be commissioned by local authorities from private and third-sector providers. The Low Pay Commission found that in 2014 around 9% of jobs in the social care sector paid at the minimum wage (and that the social care sector accounted for around 6% of all minimum-wage jobs). The Resolution Foundation has estimated that the new NLW will increase the cost of social care to the public sector by £2.4 billion per year by 2020, compared with a world in which wages increased only in line with inflation (and by £1.4 billion compared with a world in which the National Minimum Wage would otherwise have increased to £8.25 per hour in 2020, which is what the OBR assumed in July 2015 would have happened in the absence of the new NLW).[23]

The new Apprenticeship Levy may also place cost pressure on public sector employers. This is a levy of 0.5% on the part of an employer's pay bill in excess of £3 million per year, which is to be introduced in April 2017. However, alongside this, employers who offer apprenticeship training will be able to access funding for this investment. The government is planning to mandate that public sector bodies with 250 or more employees must have apprentices accounting for at least 2.3% of their workforce.[24]

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[20] The maximum cost of £1,165 would be incurred for employees earning at or above the upper accrual point, for whom NICs would now be payable at 13.8% rather than 10.4% on earnings between the secondary threshold (£8,112) and the upper accrual point (£40,040) and for whom a NICs rebate of 3.4% of earnings between the lower earnings limit and the secondary threshold would no longer be available.

[21] Table 2.1 of HM Treasury, *Budget 2013*.

[22] *National Minimum Wage*, Low Pay Commission Report 2015, Cm 9017, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/413415/The_National_Minimum_Wage_Low_Pay_Commission_Report_2015.pdf.

[23] L. Gardiner, 'Care to pay? Meeting the challenge of paying the National Living Wage in social care', Resolution Foundation Briefing, 2015, http://www.resolutionfoundation.org/wp-content/uploads/2015/11/Social-care-NLW.pdf

[24] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/482754/BIS-15-604-english-apprenticeships-our-2020-vision.pdf.

Therefore, it may be that the cost pressure on public sector employers from the levy is offset by the subsidy they receive for the apprentices employed, some of whom they might have employed in any case. It remains to be seen how onerous different parts of the public sector find the obligation to take on a minimum number of apprentices.

Summary

Whether or not the government achieves its planned cuts to departmental spending over the next parliament will be crucial for the success of its overall deficit reduction plan. Over the last parliament, the Chancellor was successful at delivering the tight spending plans he initially envisaged. The most direct risk, then, is perhaps not so much to public service spending levels but rather to the quality of services that can be delivered. However, a significant deterioration in quality could in turn lead politicians to decide that more spending is required.

The fact that many of the same departments will be delivering cuts in this parliament as in the last may make the new cuts harder to achieve, as these departments now have smaller budgets and presumably the easiest, and most costless, cuts will have already been done. Rising demand for public services, private sector wage growth and other cost pressures on public sector employers – most obviously the April 2016 rise in National Insurance contributions for the employers of those contracted out into defined benefit pensions – will all make sticking to the intended spending plans more difficult.

6.3 Social security spending

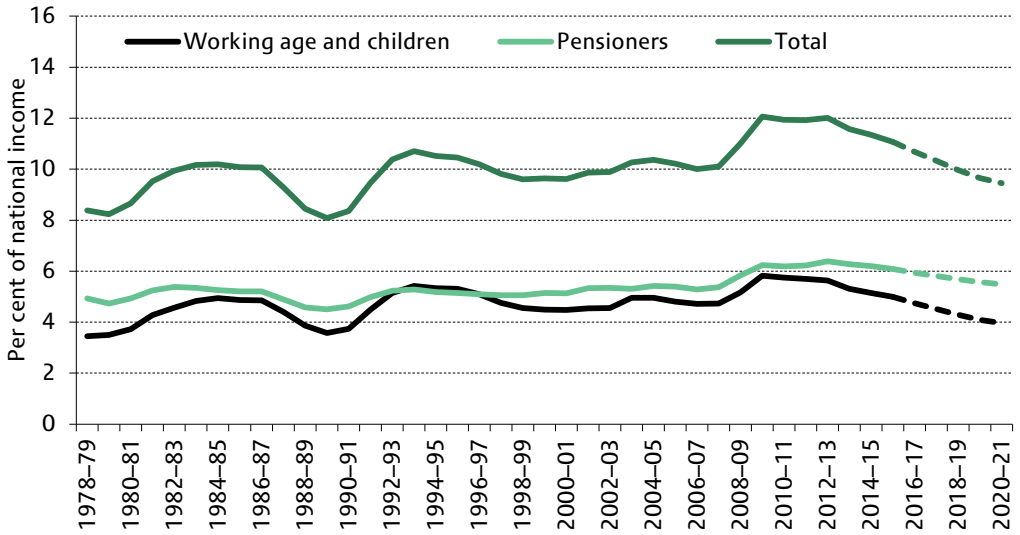
The latest OBR forecast suggests that nominal 'welfare' spending across the UK will rise from £217.2 billion this year to £229.4 billion by 2020–21. However, this equates to a real-terms decline of almost £9 billion and means that spending on social security benefits and tax credits is expected to fall from 11.1% of national income to 9.5% over the next five years.

Planned spending on working-age and pensioner benefits

Figure 6.5 shows how, in Great Britain, this spending is shared between pensioners and working-age families and how this has evolved over time. In 2010–11, just over half of spending on social security benefits and tax credits went to pensioners and just under half to working-age families. Between 2010–11 and 2015–16, spending on benefits to pensioners remained roughly constant as a share of national income (that is, spending grew at a similar rate to growth of the economy) while spending on working-age families fell (because real-terms spending fell rather than growing as the economy did).

In part, this pattern – of a rising share of social security spending being devoted to pensioners – is due to rising numbers of individuals receiving the state pension (despite increases in the female state pension age that have been phased in since 2010) and falling unemployment. However, it has also been driven by policy reforms. Reforms to the benefit system announced by the coalition government that were implemented by 2015–16 are estimated to have reduced social security spending by £16.7 billion relative to what would otherwise have been spent in that year. The brunt of these cuts has been focused on working-age individuals; indeed, the 'triple lock' on the state pension and increases to the generosity of the means-tested pension credit are estimated to have

Figure 6.5. Social security and tax credit spending over time



Note: Spending in Great Britain.
Source: Department for Work and Pensions, 'Benefit expenditure and caseload tables 2015', https://www.gov.uk/government/statistics/benefit-expenditure-and-caseload-tables-2015.

increased spending on pensioners in 2015–16 by £4.8 billion relative to the plans that the coalition government inherited from the outgoing Labour government.[25]

The latest forecasts suggest that between 2015–16 and 2020–21, annual spending on pensioner benefits will grow by £1 billion in real terms but will not grow as rapidly as the economy, and so spending on pensioner benefits will fall by 0.6% of national income (so we will be spending £11 billion less than we would if spending had grown in line with the economy). This relatively low forecast growth in pensioner benefit spending is very largely due to the planned increases in the state pension age for men and women, which will reduce the number of people reaching state pension age over the next five years.[26] At the same time, spending on working-age benefits is projected to decline by £10 billion in real terms and is thus expected to fall by 1.0% of national income (so we will be spending £19 billion less than we would if spending had grown in line with the economy). If correct, this will lead to spending on benefits and tax credits for working-age families falling to their lowest level as a share of national income since 1990–91.

This fall in working-age benefits is, at least in part, explained by policy reforms. First, there is expected to be a continued reduction in spending from reforms that were announced by the coalition government: in particular, the shift in indexation of most working-age benefits from RPI to CPI will deliver an increasing saving over time, while the shift from disability living allowance (DLA) to personal independence payments (PIP), discussed below, is also expected to reduce spending. Second, the new Conservative government has announced further cuts to spending on working-age benefits – including cuts to universal credit (UC) that are discussed in Chapter 10 – which are expected to

[25] For a discussion of the benefit reforms implemented by the coalition government, see A. Hood and D. Phillips, 'Benefit spending and reforms: the coalition government's record', IFS Briefing Note BN160, January 2015, http://www.ifs.org.uk/publications/7535.

[26] Spending on the state pension is forecast to rise by 6.2% between 2015–16 and 2020–21, due to a combination of 8.8% growth in average state pension payments per recipient – from £133 per week to £145 per week in 2015–16 prices – and a 2.4% fall in the number of recipients.

reduce spending by £12 billion in 2019–20 (in cash terms) relative to what would otherwise have been the case.[27]

Risks to social security spending

Of course, spending on social security benefits and tax credits might turn out to be different from the OBR's current central forecast. There are three broad types of reasons why this might occur. Two of these are analogous to the types of risks facing tax revenues that were described in Chapter 5. First, a given social security system may turn out to cost more or less than expected because the population to which it applies is different from what was forecast. For example, the number of children and the incomes of their parents will determine spending on chid benefit and a large chunk of spending on UC, but these are not known with certainty. Second, the government might introduce new measures in future that are not reflected in the current forecast. These two risks are not always entirely distinct: most obviously, if it becomes apparent that welfare spending is rising more quickly than expected, the government may introduce new reforms to counteract this (or vice versa). The third reason is that reforms that are already planned may prove operationally difficult to implement and may end up being delayed or reversed. In principle, this type of risk could also apply to the tax system, but in practice, in the UK's recent history, this has been more relevant for social security spending than for tax policies.

The following subsections discuss some of the risks to social security spending, with a particular focus on spending on working-age benefits and tax credits since that is where, perhaps, the greatest uncertainty lies.

Manifesto commitments

The Conservative Party manifesto set out some specific changes to the working-age social security system and also pledged to cut social security spending by £12 billion by 2017–18.[28] The ambition to cut spending by £12 billion has now been pushed back to 2019–20, but this and the specific measures spelled out in the manifesto have already been incorporated into the OBR's forecast. So there does not appear to be a risk to social security spending from firm policy commitments that are not yet factored into the official forecast.

Is the welfare cap constraining?

In principle, the Chancellor's welfare cap (see Chapter 3) ought to limit the risks to the public finances of working-age social security spending. This provides a ceiling above which a large chunk of social security spending will not rise. At the moment, this ceiling is set at the level of the forecast for those items of spending as of July 2015. The idea is, therefore, that social security spending can only undershoot, not overshoot, the forecast.[29]

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[27] See A. Hood, 'Benefit and tax credit changes', presentation at IFS post Spending Review / Autumn Statement briefing, November 2015, http://www.ifs.org.uk/publications/8074.

[28] The specific cuts in the Conservative Party manifesto are: to freeze the rates of most working-age benefits for two years, to reduce the household benefit cap, and to remove eligibility for housing benefit among recipients of jobseeker's allowance aged 18 to 21. The first has been extended to four years and the other two have been confirmed.

[29] The welfare cap rules allow spending to exceed the cap by up to 2% as a result of forecasting changes but not as a result of new policy action.

However, in practice, the welfare cap has proved much less binding. Spending is already forecast to exceed the cap that was set in July 2015 for each of the next three fiscal years. In other words, even though the welfare cap has only been in operation for less than two years (since the March 2014 Budget), it has already been broken by the Chancellor. It is therefore not clear whether it remains a real constraint on the government's actions.

Inflation risk

Ordinarily, one risk to the outlook for cash spending on working-age benefits and tax credits is that the rate of inflation turns out to be different from the forecast. This is because the rates of most of these benefits are uprated each year in line with inflation.[30] In 2015–16, the Department for Work and Pensions forecasts that total spending on working-age benefits and tax credits across Great Britain will be £95.0 billion. Therefore, roughly speaking, a 1 percentage point deviation in inflation from forecast would reduce or increase spending in cash terms by around £1 billion. But if higher inflation also translates into higher cash tax receipts – for example, from taxes on earnings and consumer spending – then this could easily be offset elsewhere in the public finances.

However, for the four years up to 2019–20, rates of working-age benefits are to be frozen in cash terms. This means that higher (or lower) inflation than forecast would not – at least by default – feed into higher (or lower) forecast spending in cash terms on these benefits. This means that, in real terms, spending on working-age benefits and tax credits is now subject to inflation risk: lower-than-expected inflation would lead to this spending being higher in real terms (and would mean that the policy of freezing benefit rates was delivering a smaller cut to spending than expected), while higher-than-expected inflation would lead to this spending being lower in real terms. Similarly, recipients of the benefits that are being frozen are also exposed to inflation risk: lower-than-expected inflation would boost the real-terms value of their benefits, while higher-than-expected inflation would depress the real value of their benefits.

In terms of the overall public finances, it means that lower-than-expected inflation would, most likely, have a more harmful impact than usual, as we would still get a downgrade in cash tax receipts but this would not be accompanied by the usual reduction in cash benefit spending. Conversely, higher-than-expected inflation would, most likely, be more beneficial to the public finances than usual. Given the sharp drop in the oil price that has occurred since the OBR's last forecast (discussed in Chapter 5), a downwards revision to expected inflation seems more likely than an upwards revision. This would mean that the government's benefit cuts would be less likely to deliver the government's desired £12 billion reduction to spending.

Is it possible to continue freezing benefit rates?

The currently-planned four-year freeze to rates of working-age benefits – which is forecast to reduce spending by £4.0 billion by 2019–20 – is expected to result in these benefits falling in generosity relative to both prices and average earnings. The OBR's latest forecast is for prices, as measured by the CPI, to increase by 7.2% over the next four years, while it expects average earnings to grow (in nominal terms) by 15.4% over the same period.

Over the longer term, it seems reasonable to argue that benefit rates should not be reduced relative to prices, or even earnings, indefinitely since this would reduce the

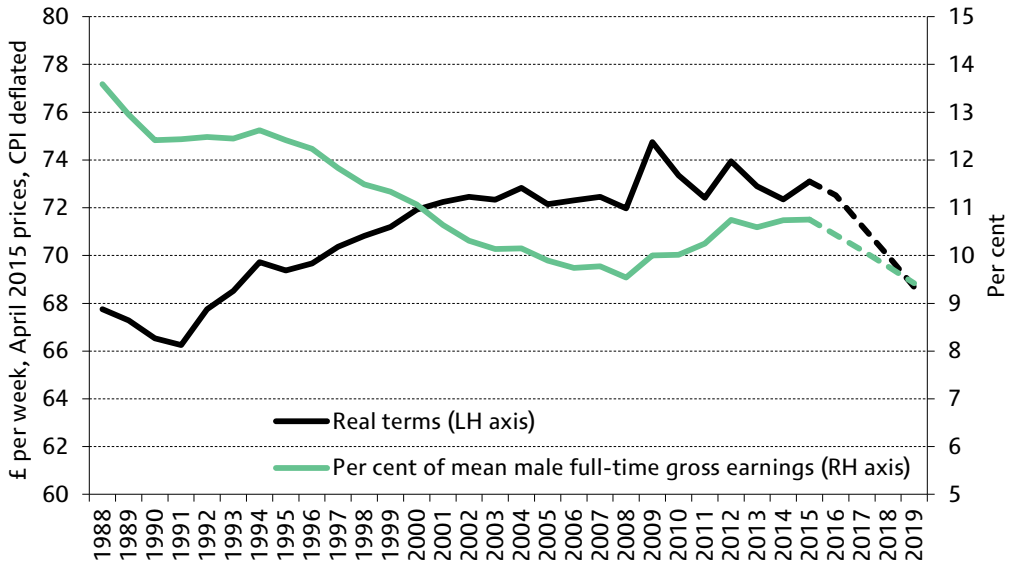
[30] Usually, benefit rates are increased each April by the annual growth in the Consumer Prices Index observed the previous September.

incomes of those not in work further and further below those who are in paid work. But is it plausible that the government can do this for four more years? If the government were to turn out to be unable or unwilling to freeze benefits for so long, this would push future spending up. However, two (somewhat related) pieces of evidence from recent history suggest that the risk to the public finances of these benefits being made more generous could actually be quite small.

First, rates of many working-age benefits have fallen relative to average earnings over quite long periods of time. Figure 6.6 shows the rate of income support for a single childless individual aged 25 or over relative to both prices (as measured by the CPI) and average earnings (as measured by mean full-time male gross earnings) from its introduction in April 1988 to April 2019.[31] Relative to average earnings, its value was cut significantly from the mid 1990s right up to the start of the financial crisis in 2008. In fact, the freeze is only expected to return the value of this benefit to a similar percentage of average earnings to what it was at the eve of the financial crisis in April 2008. The experience from 1994 to 2008 might suggest that reducing the value of this benefit relative to average earnings is not unlikely to happen despite the obvious consequences for the relative living standards of those affected.

Admittedly, a sustained cut in income support (among other benefits) in real terms has less recent historical precedent and could prove more difficult. Figure 6.6 shows that real cuts to the rate of income support for childless single people (aged 25 or over) have not occurred on a sustained basis since it was introduced in April 1988. Over the period up to April 2011, the default was to increase the rate of this benefit in line with inflation as measured by the RPI the previous September. This led to the real value of the benefit, relative to CPI inflation, increasing from about £66 per week in April 1990 to £72 per

Figure 6.6. Income support for a single childless person aged 25 or over



Source: Authors' calculations using data on benefit rates from Department for Work and Pensions, *Annual Abstract of Statistics 2014*, https://www.gov.uk/government/statistics/abstract-of-statistics-2014; out-turns for inflation as measured by the CPI and mean full-time gross earnings as measured in the Annual Survey of Hours and Earnings from the Office for National Statistics; and forecasts for the CPI and average earnings growth from the Office for Budget Responsibility.

[31] The rate of jobseeker's allowance for a single childless individual was similar up to April 1997 and has been identical since then.

week by April 2000 (in today's prices). The current rate is £73.10 per week but is expected to fall steadily to £68.67 (in 2015–16 prices) by 2019–20. However, on this front, historical experience perhaps provides less useful insight, since no previous government has actually attempted to implement sustained cuts to income support relative to the CPI. Therefore, history provides little guide to what is likely to happen if a determined government attempts to follow such a policy.

The second reason why these cuts might not prove so difficult is that – though cash freezes represent real-terms decreases in generosity – no claimant will see a reduced entitlement in cash terms. Over the last parliament, the coalition government was able to reduce social security spending considerably (relative to what would have been spent in the absence of reform) through reducing the generosity of indexation. Most working-age benefits were linked to the CPI rather than the RPI and this was followed by a two-year policy of limiting increases in most benefits to 1% a year. Such policies may attract less public attention than other reforms to the benefit system because no one sees an existing benefit entitlement cut in cash terms (unlike, for example, the so-called 'bedroom tax', which has been much discussed but saved far less money). This feature (i.e. that no existing recipients see their entitlements cut in cash terms) is also common to many of the other cuts to social security spending that are now planned for this parliament. In contrast, the controversial cuts to tax credits that were announced in the July 2015 Budget, but abandoned by the Chancellor just four months later in the November 2015 Autumn Statement, were due to result in some existing claimants receiving lower cash payments from April 2016 onwards.

Perhaps the benefit where current indexation might prove hardest to maintain is the planned indexation of the local housing allowance (LHA) caps that apply to housing benefit for private sector tenants, and will from April 2018 apply to new tenants in social housing as well. Until April 2013, these caps were linked to contemporaneous local rents. Since then, though, the default has been to increase them in line with general prices (CPI), and in April 2014 and April 2015 most increases were in fact limited at 1%, while over the next four years they will be subject to the four-year benefit freeze. Were rents to grow particularly quickly in some parts of the country, this might place pressure to increase the caps to prevent housing becoming increasingly unaffordable in those areas.[32]

Difficulties in implementing structural reforms

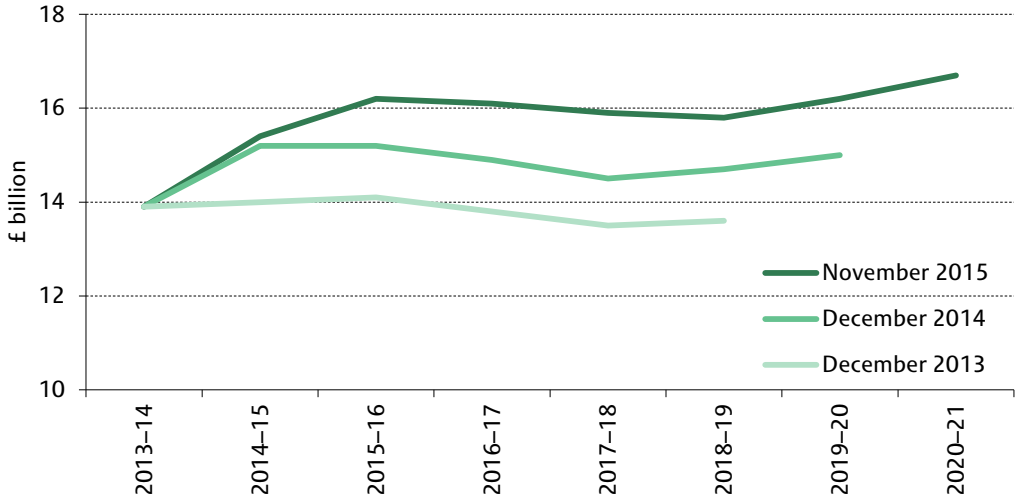
Recent history suggests that a more significant risk to social security spending appears to be that the structural benefit reforms that are under way might not deliver the reduction in spending that the OBR expects. Two particular reforms are worth mentioning – the replacement of DLA with PIP, and the replacement of most working-age benefits with UC.

The shift from DLA to PIP – originally announced in the June 2010 Budget – was expected to cut working-age DLA spending by 20% in 2015–16.[33] In its latest forecast, the OBR revised up forecast spending on disability benefits over the next five years. This was

[32] There are other features of current policy for LHA caps which perhaps pose less risk politically but are undesirable and should be rethought. If rents rise by different amounts in different parts of the country, as is virtually inevitable, then the relative generosity of housing benefit across the country will depend on historical rent differences between areas (i.e. those that applied in 2012, before the change to indexation policy) but not on current ones. Hence, for example, one area could have higher current rents than another area and yet have a less generous housing benefit system.

[33] Source: Department for Work and Pensions, 'Disability living allowance reform impact assessment', 2012, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220176/dla-reform-wr2011-ia.pdf.

Figure 6.7. Successive autumn OBR forecasts for spending on disability benefits



Source: Chart 4.7 of Office for Budget Responsibility, *Economic and Fiscal Outlook*, November 2015.

driven by two factors. First, recent data on new PIP claimants suggest that their entitlements are higher than had been anticipated. Second, the OBR now expects it to take longer for the Department for Work & Pensions and its contractors to reassess existing DLA claimants, meaning that it will take longer to transition fully from DLA to PIP and so the expected reductions in spending will take longer to materialise.[34]

Spending on disability benefits in 2018–19 is now forecast to be £15.8 billion, which is £2.2 billion higher than was forecast to be spent in the same year back in December 2013 (as shown in Figure 6.7). A similar phenomenon occurred in the last parliament with the shift from incapacity benefit to employment & support allowance (ESA), with this failing to deliver the reduction in spending that had been anticipated.[35] The latest forecasts from the OBR may prove to be accurate – and could even prove to be an overestimate of how much will be spent – but the lesson from recent history is that we should not be surprised if the reforms once again take longer to implement and deliver less than the intended reduction in spending.

The most significant reform to working-age benefits that is taking place is the introduction of universal credit. As described in Chapter 10, this is now being rolled out considerably more slowly than was initially envisaged.

The full implementation of UC is now expected to reduce social security spending in the long run.[36] Therefore, further across-the-board delays in the roll-out of UC would weaken the public finances. However, the precise impact of further delays in the roll-out of UC on the public finances over the next few years will depend on exactly which part of it is being delayed. New claimants of UC face a less generous system straightaway, and so any (further) delays in when new claims are made to UC rather than the 'legacy' system

[34] The OBR's latest forecast assumes that 45% fewer reassessments will be carried out in 2016–17 than had previously been expected.

[35] See chart 2.4 of Office for Budget Responsibility, *Welfare Trends Report: June 2015*, http://cdn.budgetresponsibility.independent.gov.uk/49754-OBR-Welfare-Accessible-v0.2.pdf.

[36] As Chapter 10 sets out, this was not originally the case with the UC scheme under its initial guise. However, recent reforms to the UC system (including those announced in the July 2015 Budget) mean that this is now the expected outcome.

would increase social security spending and weaken the public finances. However, existing claimants moved onto UC receive 'transitional protection' – that is, they cannot lose in cash terms at the point they are moved onto the benefit. Therefore, any further delays in when existing claimants are moved over could slightly *strengthen* the public finances in the short term, as some claimants gain from the move to UC, and none lose while transitional protection is in place.

Summary

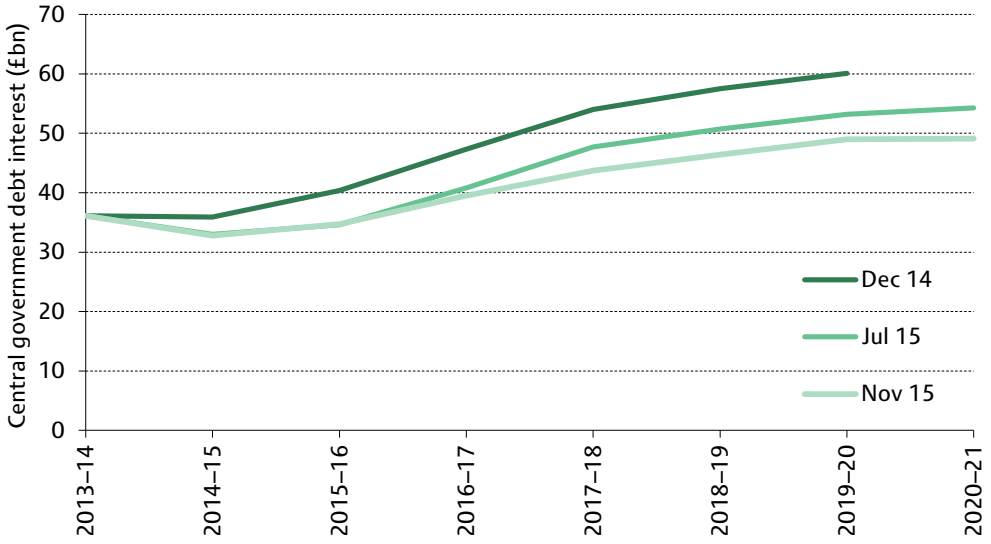
The government has announced cuts to working-age benefits that are estimated to reduce annual spending on working-age benefits and tax credits by £12 billion by the end of this parliament. But the hoped-for savings might not materialise, not least because any further downwards revisions to inflation would mean that the four-year freeze to most working-age benefits would deliver less than the £4.0 billion expected cut to spending in 2019–20. A further significant risk to the public finances is that the shift from DLA to PIP does not deliver as large a cut to spending as, or delivers the cuts less quickly than, the forecasts assume.

6.4 Debt interest spending

In 2015–16, debt interest spending is expected to account for 4.8% of total government spending (or £36 billion). Between 2015–16 and 2019–20, spending on debt interest is expected to increase by 30% in real terms, rising to account for 6.2% of total public spending in 2019–20.

In the last two years, there have been substantial downwards revisions to the OBR's forecast for spending on debt interest – illustrated in Figure 6.8. Most recently, in the November 2015 *Economic and Fiscal Outlook*, forecast central government debt interest spending was £4.2 billion a year lower in 2019–20 and £5.2 billion a year lower in 2020–21 than the July 2015 forecast. This was a significant contributing factor that allowed George Osborne to announce a loosening of the squeeze on 'unprotected' public service

Figure 6.8. Successive forecasts for central government debt interest



Note: Figures shown are for central government debt interest net of the Asset Purchase Facility.
Source: OBR, *Economic and Fiscal Outlook*, various editions.

spending in the November 2015 Autumn Statement without affecting his forecast for total borrowing.[37] With public sector debt expected to stand at £1,599 billion by the end of March 2016 and with the Debt Management Office's illustrative gross financing requirement suggesting it will be seeking to raise over £500 billion over the next five years,[38] it is not terribly surprising that public spending forecasts are sensitive to the assumptions made about future debt interest rates.

Currently, some government debt is held by the Bank of England through the Asset Purchase Facility (APF) as part of the programme of quantitative easing (QE). Interest payments made to the Bank of England on these gilts effectively do not count as central government debt interest spending in the National Accounts, as they would do if these gilts were instead held by a private sector entity. As a result, forecast central government debt interest spending (excluding the APF payments) is sensitive to the assumptions made about when the Bank of England will unwind its QE programme. Part of the reduction in forecast debt interest spending in November 2015 was caused by the OBR pushing back the date at which it assumes the Bank will start to unwind QE, in line with the Bank's statement in the November 2015 *Inflation Report*.[39] This revised assumption alone had the effect of reducing forecast central government debt interest spending by £2.1 billion a year by 2020–21, though it did nothing to change the long-run strength of the public finances.

Even in the absence of the APF, the November 2015 forecast would have included a sizeable downwards revision to forecast central government debt interest spending (to the tune of £2.7 billion in 2020–21) because forecasts of future interest rates were reduced. The government could hope to benefit from downwards revisions to debt interest spending again. However, it is worth noting two things. First, any future interest rate shock is likely to be accompanied by other important changes in the economy. To the extent that lower interest rates are associated with worse economic performance or lower inflation, this would also be expected to be associated with a deterioration in forecast receipts and a lower level of forecast national income. Second, gilts rates are already low by recent historical standards; Figure 6.9 illustrates how the annual average yield on 10-year British securities has declined over the past three decades.

Helpfully, the OBR has provided a reader reckoner which, by taking planned gross gilt issuance over the next few years as given, provides a sense of how sensitive spending on debt interest is to the rate of interest that applies to this issuance.[40] This suggests that a 1 percentage point increase (reduction) in gilt and short rates, from April 2016, would increase (reduce) debt interest spending in 2019–20 by about £8 billion. A further risk surrounds government gilts that have interest payments linked to the rate of inflation as measured by the RPI. This is around one-quarter of the stock of debt already issued

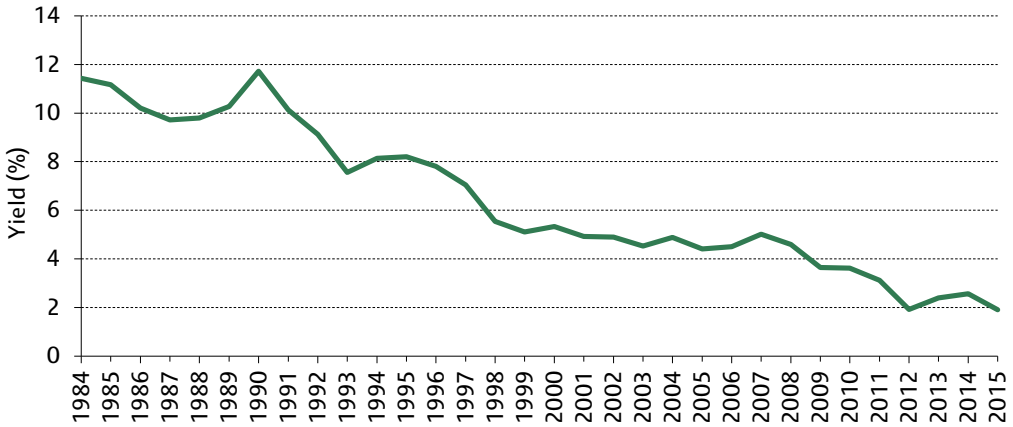
[37] P. Johnson, opening remarks made at the IFS post Autumn Statement / Spending Review briefing, 26 November 2015, http://www.ifs.org.uk/publications/8070.

[38] See Debt Management Office, 'Autumn Statement 2015: revision to the DMO financing remit 2015–16', http://www.dmo.gov.uk/documentview.aspx?docname=remit/sa251115.pdf&page=Remit/full_details.

[39] The Bank of England announced in the November Inflation Report that the stock of gilts in the APF will be kept at £375 billion until Bank Rate reaches around 2%. The assumption underlying the OBR's November 2015 forecast is that this will not happen until after 2020–21. In July 2015, the OBR had instead assumed that the APF's gilt holdings would be reduced gradually from 2016–17 onwards. For further details, see paragraph 4.116 of OBR, *Economic and Fiscal Outlook: November 2015*, http://budgetresponsibility.org.uk/economic-fiscal-outlook-november-2015/.

[40] Fiscal supplementary table 2.28 of OBR's, November 2015 Economic and Fiscal Outlook.

Figure 6.9. Annual average yield on 10-year British government securities



Source: Bank of England, 'Statistical Interactive Database', series IUAAMNPY, downloaded 11 January 2016, http://www.bankofengland.co.uk/boeapps/iadb/index.asp?SectionRequired=I&first=yes&HideNums=-1&ExtraInfo=true&Travel=NIxIRx&levels=1.

(outside the APF) and is forecast to increase.[41] The OBR's ready reckoner suggests that a 1 percentage point increase (fall) in RPI inflation from April 2016 would increase (reduce) debt interest payments in 2019–20 by around £5 billion.

6.5 Conclusion

The Chancellor's objective to achieve an overall budget surplus by 2019–20 is predicated on the plan to reduce public spending (excluding housing associations) as a share of national income from 39.1% in 2015–16 to 36.1% by 2019–20. This chapter has considered three broad categories of public spending where there is a risk that spending will not evolve as currently expected.

One area where the previous coalition government managed to cut spending significantly and where the Conservative government intends to cut further is spending on public services. The Spending Review published in November 2015 set out plans to cut departmental spending by 2.3% in real terms over the next four years, with the pain shared unevenly across different services. Experience over the last parliament suggests that the Chancellor was successful at delivering the tight spending plans he initially envisaged. In fact, faced with hard spending limits, in aggregate departments underspent their budgets by fairly significant margins – in the last parliament, annual underspends peaked at £12 billion in 2012–13. This provides some reassurance that the spending plans that have been set out for departments in this parliament could be adhered to.

The most direct risk, then, is perhaps not to public service spending levels but rather to the quality of services that can be delivered. But a significant deterioration in quality could lead politicians to decide that more spending is required. The cuts planned for many departments in this parliament come on top of cuts averaging 10.4% in real terms already seen in the last parliament, and it is many of the same departments that will see the biggest cuts again. Presumably, departments will have cut the lowest-value and easiest-to-cut elements of spending first, meaning that their remaining spending is more likely to be noticed if cut and/or more difficult to cut. Some departments have already set

[41] Fiscal supplementary table 2.27 of OBR's, November 2015 Economic and Fiscal Outlook.

out specific plans for how they can reduce spending – for example, the Department for Business, Innovation and Skills and the Department of Health are both replacing grants for students with loans, while the Department for Transport is phasing out the non-investment grant it makes to Transport for London – but for others it is, as yet, less clear how they will balance their books.

In some areas of public services, the government aspires to make radical changes – such as better integrating health and social care services. While bold ambitions are to be welcomed, they will be harder to achieve when budgets are so tight. Achieving these objectives would be easier if money were available to invest up front and/or to compensate any losers from the changes.

One particular pressure that is likely to bear much more heavily on departments in this parliament than the last is the recruitment and retention of staff. Over the last parliament, part of the cut to real-terms public service spending was delivered by freezing public sector pay. Since private sector wages were also growing slowly over this period (and had fallen between 2007 and 2010), this public sector pay restraint did not have a particularly adverse impact on relative wages between the public and private sectors. However, continuing similar policies over the next four years may be more difficult, as private sector wages are expected to grow more rapidly. Continuing restraint on public sector pay could, therefore, make it harder to recruit and retain suitable-quality public sector workers and raises the prospect of worsening industrial relations.

The November 2015 spending settlement was not, however, ultimately as tight as many had expected in advance. One of the factors that allowed George Osborne to ease the squeeze on many departments was a significant downwards revision to the OBR's forecast for spending on debt interest. This was hailed as positive news and no doubt similar revisions in the future would be welcomed with similar optimism. However, it is worth remembering that the recent downwards revisions to debt interest spending reflected lower expected Bank of England interest rates and a delay to the expected date at which the Bank will start to unwind quantitative easing. Both of these are indicators of economic weakness, not strength. Therefore, while higher (lower) interest rates might put upwards (downwards) pressure on debt interest spending, the stronger (weaker) economic growth that would likely accompany them could overall signal good (bad) news for the UK's public finances.

Measures announced by the previous coalition government and the current Conservative government have done much to limit growth in spending on (particularly working-age) social security. As a result, annual social security spending is forecast to decline in real terms by almost £9 billion over the next five years, despite spending on benefits for pensioners being forecast to grow by £1 billion in real terms over the same period. The magnitude of cuts to working-age benefits that have already been announced over the last few years, and Mr Osborne's recent U-turn on planned cuts to tax credits, suggest that further substantial cuts to the welfare budget may be hard to find. However, there are also risks that the planned cuts will not save as much as is anticipated or that the savings do not materialise as quickly. A notable recent example has been the difficulty in moving from disability living allowance to the new system of personal independence payments – this has both taken longer and saved less money than was originally envisaged. This suggests that, notwithstanding the government's supposed 'cap' on some elements of welfare spending, there may be upside risk to this element of spending.

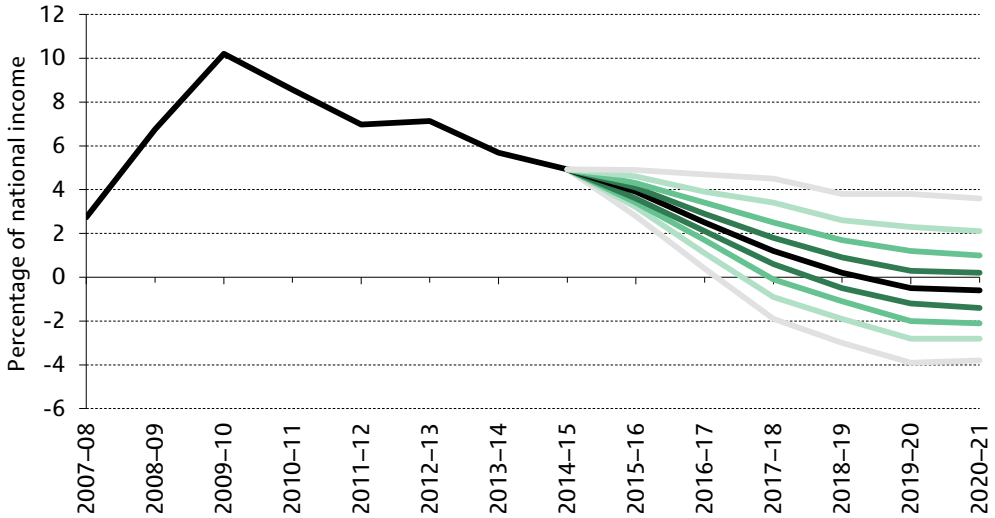
The outlook for the public finances as a whole

While the latest OBR forecast is that the government will be running a surplus in 2019–20, as ever the outlook for the public finances is uncertain. Figure 6.10 illustrates the likely uncertainty around the OBR's central projection for borrowing, based on past forecasting performance and assuming that this is informative about the future. The OBR's central projection is for a 0.5% of national income surplus in 2019–20 based on current policy. However, the fan chart indicates that, based on previous forecast errors, the chance of a surplus in 2019–20 is around 55%: in other words, historic forecast errors suggest there is a 45% chance that some combination of further tax rises and deeper spending cuts would be required to deliver a surplus in 2019–20.

As this chapter and the previous chapter have discussed, there are a number of specific risks facing the public finances over the next few years. Some of these are balanced – with there being an equal likelihood of positive or negative news – but some are biased in one direction. These risks arise both on the tax side and on the spending side and derive both from uncertainty facing the economy and from the actions of politicians themselves.

There will always be uncertainties and risks around future borrowing levels. Many of these risks are difficult for the government to control. To handle these types of risks, the government should ensure that its plans involve some degree of caution and that it remains responsive to new developments. The government's new fiscal mandate – that, in normal times, the government will run a surplus every year – involves relatively little flexibility (discussed in more detail in Chapter 3). It is reasonable to wonder, given the OBR's central estimate of a 0.5% of national income surplus in 2019–20 and the risks highlighted in this and the previous chapter, whether the government's current fiscal plans will prove cautious enough to meet this new fiscal target without requiring potentially highly suboptimal adjustments, potentially made in-year, to tax or spending plans for 2019–20 and beyond.

Figure 6.10. Public sector net borrowing fan chart



Note: The solid black line represents the central OBR projection. Different coloured lines going outwards represent 20% probability bands. For example, the probability that the out-turn will be between the two dark green lines is 20%. Probabilities based on past forecasting errors.
Source: Chart 5.3 of Office for Budget Responsibility, *Economic and Fiscal Outlook: November 2015*, http://budgetresponsibility.org.uk/efo/economic-and-fiscal-outlook-november-2015/.

7. Infrastructure funding: an ICAEW assessment

Ross Campbell (ICAEW) and Martin Wheatcroft (on behalf of ICAEW)

Summary

- Addressing the weak state of the public finances presents a dilemma for the Chancellor if he wants to increase investment in infrastructure at the same time.
- By committing to achieve a public finance surplus every year in 'normal' economic times, the government has ruled out borrowing to fund public infrastructure. The exception is investments through the Private Finance Initiative (PFI), which do not affect the headline public finance numbers.
- Since the financial crisis, there has been less private finance available to invest in either public–private or private infrastructure projects. At the same time, direct public investment has also decreased.
- One of the concerns of investors is political risk arising from potential changes in government policies. Significant private sector investment in electricity, gas and water supply networks is based on long-term regulatory arrangements where investors have confidence around future revenues. While market incentives have also been used successfully to encourage investment in renewable electricity generation, recent changes in policy have called into question whether there is sufficient stability to encourage long-term investment in the UK.
- Government efforts to encourage private investment have been disappointing, with the coalition government's Pensions Infrastructure Platform sourcing less than £1 billion in total over its first four years of operation, against a target of £2 billion every year. Similarly, only £1.7 billion of guarantees were issued in the first two years of the £40 billion UK Guarantees scheme designed to support private sector infrastructure investment.
- Public sector pension funds, principally in local authority schemes, have longer time horizons than private sector schemes and so should in theory have more of an appetite for investing in infrastructure. But they were effectively prevented from investing in infrastructure projects until 2013. Even so, up to £3 billion a year could potentially be made available, assuming the proposed aggregation of local authority portfolios into collective investment vehicles goes ahead.
- There is a strong economic case for bringing PFI contracts on balance sheet, and doing so now may be politically easier than in the past, as the proportional effect on public sector net debt would now be small.
- A more commercially sustainable approach would also permit new borrowing for public infrastructure projects that are expected to generate positive financial returns (either directly or through higher tax receipts) – for example, qualifying housing and transport developments. This would allow the government to retain the flexibility to make targeted investments that pay for themselves.

7.1 Introduction

The Chancellor faces a dilemma:

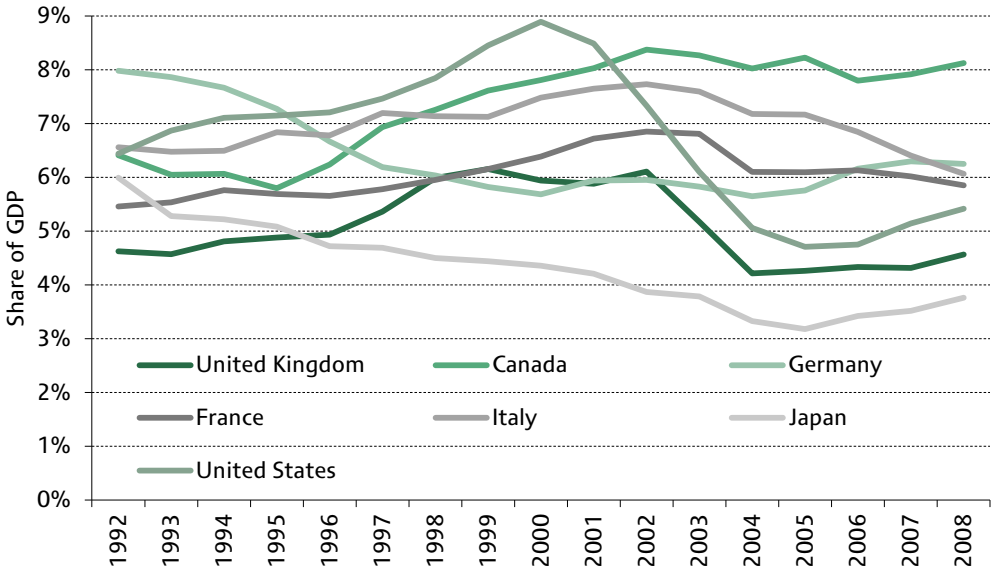
- it is clear that actions are needed to address the weak state of the public finances; but
- there is also pressure to support economic growth and improve public services by investing in new infrastructure.

The Chancellor has chosen to address the former concern by legislating for a public finance surplus and implementing cuts in spending on public services, aiming to end the significant net cash outflows experienced by the public sector since the financial crisis.

The fiscal charter rule to run a surplus effectively prohibits new borrowing in 'normal' economic times (see Chapter 3). As a consequence, the amount available for investment in public infrastructure may be more constrained than it has been in the past. This is at the same time as the government has expressed a belief in the need for more investment, establishing the National Infrastructure Commission to drive improvements in the delivery of infrastructure projects across the UK.[1]

The call for more investment has also been made by, among others, the OECD, which says that the UK government has spent less on infrastructure than most of its peers (see Figures 7.1 and 7.2), highlighting transport infrastructure as an area of particular underinvestment. The OECD notes that 'the key challenge … is to encourage private infrastructure investment, which up to now has been held back by unclear signals regarding the country's long-term infrastructure needs and strategy'.[2]

Figure 7.1. Public investment

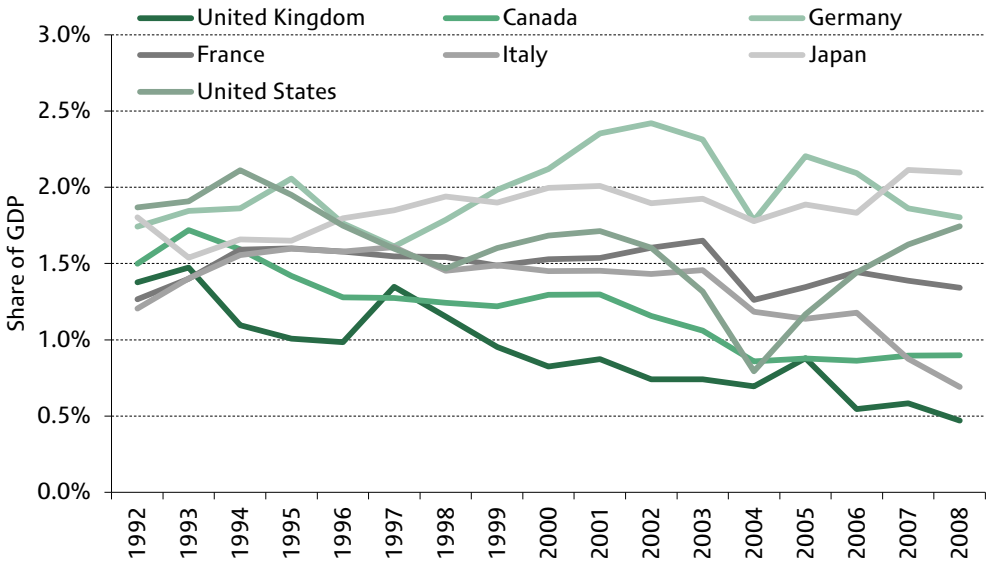


Source: Gross government capital formation as a percentage of GDP derived from OECD Data (https://data.oecd.org).

[1] HM Treasury, 5 October 2015, 'Chancellor announces major plan to get Britain building', https://www.gov.uk/government/news/chancellor-announces-major-plan-to-get-britain-building.

[2] Page 34 of OECD, *Economic Surveys: United Kingdom 2015*, February 2015.

Figure 7.2. Investment in transport



Source: Investment in transport equipment as a percentage of GDP derived from OECD Data (https://data.oecd.org).

Balancing prudent financial management on one hand with the need to invest for the future is similar to the challenges faced by many finance directors. There is always a tension between achieving an organisation's financial goals in the short and medium term at the same time as delivering adequate investment to ensure long-term viability and growth. This becomes particularly acute in a turnaround situation, where an organisation needs to take relatively radical action to avert serious short-term problems, without sacrificing its long-term future.

The government has several options to expand infrastructure spending while still meeting its objective of running a cash surplus, including even deeper than planned cuts to day-to-day spending. Given the scale of cuts already happening (see Chapter 6), the scope for this is limited.

Another option would be to expand the use of private financing to fund public infrastructure, bypassing the fiscal charter by increasing the number of off-balance-sheet Private Finance Initiative (PFI) contracts (see Figure 7.3 and Box 7.1). This option is discussed further in Section 7.2.

Alternatively, Section 7.3 looks at the potential for encouraging more investment into both public and private sector infrastructure, whether through making infrastructure projects more financially attractive or through increasing the pool of finance available. It reflects on the performance to date of the coalition government's Pensions Infrastructure Platform, as well as on the potential for encouraging more investment by public sector pension schemes. It also explores options to give support to projects through the use of guarantees or through regulatory or market incentives.

In Section 7.4, we discuss how a more sustainable commercial rationale for infrastructure investment might work, given the UK's capacity as a sovereign nation to take on risk and access capital markets. It proposes a new model that would prioritise public sector investments if they provide a positive financial return to the public finances, replacing the current approach that prioritises off-balance-sheet investments.

Section 7.5 concludes.

Figure 7.3. On or off balance sheet?

Classification as public sector debt / financial accounting liability		
	National Accounts	**Whole of Government Accounts**
Government and local authority debt	On	On
Debt of public corporations	On	On
Debt of bodies under public sector control[a]	On	On
Special purpose vehicles (e.g. Network Rail)	Off (ESA95) On (ESA10)	On[b]
Operating leases	Off	Off
Finance leases	On	On
Finance leases embedded inside PFI contracts	On	On
PFI contract liabilities	Off	On
Debt of independent public bodies (e.g. universities)[a]	Off	Off
Debt of third-sector entities (e.g. charities)	Off	Off
Debt of private sector businesses & private individuals	Off	Off

[a] The Office for National Statistics concluded in October 2015 that housing associations are controlled by the government and should be incorporated into National Accounts measures. This will also affect the Whole of Government Accounts.

[b] Up until 2013–14, Network Rail was excluded from the Whole of Government Accounts in order to align with ESA95. This was in breach of accounting standards, as reported in the Comptroller and Auditor-General's audits.

Box 7.1. What is 'off balance sheet' financing?

Technically, the term 'off balance sheet' is only applicable in the context of financial accounts, which have balance sheets from which to be 'off'. It is easiest understood as the opposite of 'on balance sheet', which is when an asset and the associated financing obligation are both recognised within financial accounts.

Despite this, the term is often also used in relation to the National Accounts to describe financial obligations that do not count towards public sector net debt and hence are excluded from the public finance deficit or surplus for the year. A more accurate description would be 'off debt'.

Two common ways that assets can be financed off balance sheet are:

- by using 'special purpose vehicles', where assets and the associated debt are placed in a separate entity that is legally owned by an external party but is in effect controlled by the government;
- where assets are owned and financed by an external party, with use of the asset then provided through a contractual arrangement, such as a lease or a service contract.

An example of a special purpose vehicle is Network Rail, which was set up after the collapse of Railtrack plc in 2002. It is owned by an independent industry organisation, even though the government effectively controls it. This legal technicality was the basis for excluding the debts of Network Rail from public sector debt in the National Accounts until late 2014, when its status changed with the implementation of ESA10.

Over time, accounting standard setters have moved to capture more situations where specific assets are used by an organisation, but not owned directly. As a consequence, most special purpose vehicles and many contractual arrangements to use a specific asset, in particular leases, are now on balance sheet in financial accounts.

Leases captured in this way are known as finance leases. The legal ownership of an asset is ignored and the asset is treated as if it had been purchased for the period of the lease. A liability is then recorded for the capital element of the payments due. After all, a stream of payments for the use of an asset does not look that dissimilar to a stream of payments to repay a loan used to purchase it, so why should the accounting treatment be different?

Finance leases are on balance sheet for both the National Accounts and the Whole of Government Accounts (WGA).

However, there remains one major loophole. Not all leases are captured, with 'operating leases' off balance sheet in both the National Accounts and the WGA. These are leases where the majority of the financial risks and rewards relating to the asset are judged to be with its owner. A simple example would be a five-year lease for one floor of an office building with an overall economic life of 30 years.

This loophole is wider in the case of the National Accounts. Where the use of an asset forms part of a larger service contract (known as an 'embedded lease'), none of the financial obligations incurred will be counted as part of public sector net debt so long as the private sector contractors concerned retain most of the financial risks and rewards. This means that a PFI contract to design, construct, maintain and operate a hospital for 30 years would in most cases still be off balance sheet in the National Accounts, despite the hospital being dedicated to the use of the NHS for its entire working life.[a] This contrasts with the Whole of Government Accounts, which would treat that hospital as belonging to the NHS and a proportion of the service payments due as capital repayments.

As a consequence of the above, PFI contracts are classified as follows:

- Some PFI contracts are on balance sheet for both the National Accounts and the WGA. In the WGA, they form the largest element of the £5 billion balance reported for finance leases at 31 March 2014.[b]
- The majority of PFI contracts are off balance sheet in the National Accounts, but are on balance sheet in the WGA. At 31 March 2014, the capital value of these obligations excluded from public sector net debt amounted to around £40 billion.[b]
- A small number of 'operating lease' PFI contracts are off balance sheet in both the National Accounts and the WGA.

The International Accounting Standards Board has decided to end the arbitrary distinction between different types of leases and bring operating leases onto financial accounting balance sheets from 2019 onwards.[c]

This decision is likely to increase the pressure on national governments to follow suit and remove the loopholes that still exist within systems of National Accounts.

[a] Based on guidance set out in Application Note F of the (now repealed for private sector financial accounts) UK Financial Reporting Standard No. 5.
[b] See Table 7.4.
[c] International Financial Reporting Standard No. 16 *'Leases'* issued 13 January 2016.

7.2 Private investment in public infrastructure

> The United Kingdom has been a leader in modernising the way in which public infrastructure and services are delivered and finding new ways to work in partnerships with the private sector over the last twenty years.
>
> The realities of the private sector market place exert a powerful discipline on businesses to maximise efficiency and take full advantage of business opportunities. Successful Public Private Partnerships (PPP) enable the public sector to access the discipline, skills and expertise of the private sector.
>
> Not all PPPs have, however, been successful. The Private Finance Initiative (PFI), the form of PPP used most frequently in the United Kingdom, has become tarnished by its waste, inflexibility and lack of transparency.
>
> *HM Treasury, A New Approach to Public Private Partnerships, December 2012*

Partnering with private sector organisations to deliver infrastructure projects is not a new idea; PFI contracts have been used to construct schools, hospitals and many other public assets since the 1990s, while private finance has also been used to construct toll bridges and a motorway.

Each PFI project involves a long-term contract, involving the construction of an asset as well as its operation and the provision of services over the course of several decades. For example, a hospital PFI contract generally involves the building of the hospital, its operation and maintenance, and the provision of support services (from heat and power, through portering, to blood tests) to the NHS medical staff who provide health care to the public.

Arguably, the existence of public–private partnerships as a politically acceptable contracting option has facilitated the construction of many new buildings or facilities that would otherwise never have occurred.

In theory, public–private partnerships can have several advantages over traditional procurement by reducing exposures to cost overruns and improving operational efficiency, sufficient to offset the higher financing cost inherent in using private, rather than public, borrowing.

However, these objectives have not always been achieved. In some PFI contracts, contractual flaws have resulted in poor value for money for the taxpayer, while the need to transfer upside as well as downside risks has provided windfall gains for some private sector operators. In addition, long-term service arrangements have sometimes meant reduced flexibility (and hence higher costs) as circumstances change.

Examples include the Metronet contract for Transport for London, where the National Audit Office estimates that between £170 million and £410 million was lost to the taxpayer when the private contractor failed,[3] and the Norfolk and Norwich PFI hospital, where a refinancing enabled investors to increase their return from 16% to 60%.[4]

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[3] National Audit Office, *Department for Transport: The Failure of Metronet*, 5 June 2009, https://www.nao.org.uk/report/the-department-for-transport-the-failure-of-metronet/.

[4] National Audit Office, *The Refinancing of the Norfolk and Norwich PFI Hospital: How the Deal Can Be Viewed in the Light of the Refinancing*, 10 June 2005, https://www.nao.org.uk/report/the-refinancing-of-the-norfolk-and-norwich-pfi-hospital-how-the-deal-can-be-viewed-in-the-light-of-the-refinancing/.

Although the coalition government was critical of its predecessors' use of PFI contracts, it decided to reform them rather than abolish their use. A new generation of 'PF2' contracts was initiated, with an objective of delivering better value for money for the taxpayer and more flexibility as circumstances change.[5] The current Conservative government plans to continue to use PF2 contracts over the course of this parliament and beyond.

Planned investment in public infrastructure

In October 2015, the Chancellor announced plans to invest an average of £20 billion a year into public infrastructure projects over the course of the current parliament, including PFI deals. This includes the selected infrastructure investment plans from the 2015 Spending Review set out in Table 7.1.

Table 7.1. Selected infrastructure investment

Fiscal year	2015–16 £bn	2016–17 £bn	2017–18 £bn	2018–19 £bn	2019–20 £bn
Railways[a]	7.6	8.2	7.3	7.1	9.8
Schools	4.6	5.1	4.6	4.5	4.5
Highways and roads	2.8	2.8	3.2	3.5	4.0
Housing and regeneration	1.0	1.0	1.3	2.2	2.1
Science	1.1	1.1	1.1	1.2	1.2
Flood defences and other	0.4	0.5	0.5	0.5	0.5
Total selected infrastructure	17.5	18.7	18.0	19.1	22.1
Housing associations[b]	7.9	7.7	7.3	7.2	7.2
Total incl. housing associations	25.4	26.4	25.3	26.3	29.3

[a] Railways include HS2.
[b] Housing association spending estimated by the Office for Budget Responsibility.
Source: HM Treasury, *Autumn Statement and Spending Review 2015*; Office for Budget Responsibility, *Economic and Fiscal Outlook: November 2015*.

If housing association capital expenditure is included, then the average investment expected is around £26 billion a year in the first four years of the parliament, before increasing to £29 billion in 2019–20.

Investment is expected to be higher in 2019–20 than in 2015–16 principally as a result of an increase of £4 billion a year in spending on the High Speed 2 (HS2) rail link, together with £1.2 billion more on roads and £0.4 billion more on housing offset by £1.8 billion in lower spending on railways other than HS2.

Existing PFI contracts

Information about current PFI contracts can be found in the official PFI register, which is summarised in Table 7.2. According to the register, annual spending on PFI contracts is estimated to be around £10 billion a year, comprising around £4 billion in capital repayments and interest and £6 billion in service charges.

At 31 March 2014, there were 671 operational PFI contracts with a capital value of £49.8 billion, equivalent to an average capital value of £74 million per project. There were

[5] HM Treasury, *Private Finance 2*, December 2012 and July 2013, https://www.gov.uk/government/publications/private-finance-2-pf2.

Table 7.2. PFI register at 31 March 2014

	Number of live contracts	Capital value £bn	Number under const-ruction	Capital value £bn	Total value £bn
Department of Health	*117*	10.7	*6*	1.4	12.1
Ministry of Defence	*41*	9.0	-	-	9.0
Scotland, Wales and N. Ireland	*144*	8.2	-	-	8.2
Department for Transport	*61*	7.3	*1*	0.6	7.9
Department for Education	*145*	6.5	*23*	1.3	7.8
DEFRA	*15*	1.4	*15*	2.7	4.1
Other departments	*148*	6.7	*12*	0.7	7.4
Total	*671*	49.8	*57*	6.8	56.6

Source: HM Treasury, *Private Finance Initiative Projects: 2014 Summary Data*, 15 December 2014, https://www.gov.uk/government/publications/private-finance-initiative-projects-2014-summary-data.

also 57 contracts under construction, with an average capital value of £119 million per project.

Together, these contracts include commitments to make total undiscounted payments of £232.4 billion between 2014–15 and 2049–50 once service charges are included in combination with capital repayments and interest. This scale of commitment in comparison with the costs of constructing the assets is an important element in achieving off-balance-sheet treatment in the National Accounts – use of the asset is only one part of a much larger overall contract that includes services.

Projects range in size from as little as £1 million for a hospital energy efficiency project in Wales to as much as £2.6 billion for future strategic tanker aircraft for the Ministry of Defence.

The introduction of Whole of Government Accounts (WGA) has significantly improved the transparency surrounding PFI contracts, as almost all PFI arrangements are included in the financial accounting balance sheet, as shown in Table 7.3.

Table 7.3. PFI and finance lease assets

Fiscal year	2009–10 £bn	2010–11 £bn	2011–12 £bn	2012–13 £bn	2013–14 £bn	*2013–14 %*
Highways & roads	4.1	5.8	6.7	6.6	6.7	*14%*
Buildings	26.7	27.4	28.6	28.0	28.6	*58%*
Dwellings	3.6	3.1	5.1	4.8	5.4	*11%*
Land	1.9	3.9	3.8	3.3	3.4	*7%*
Equipment & other	4.5	4.6	4.8	4.6	5.0	*10%*
PFI & leased assets	40.8	44.8	49.0	47.3	49.1	*100%*
Total property, plant & equipment	712.8	714.0	744.5	746.8	762.6	
As a % of total	*5.7%*	*6.3%*	*6.6%*	*6.3%*	*6.4%*	

Note: A substantial proportion of finance lease assets relate to PFI contracts that have been classified as on balance sheet in both National Accounts and the Whole of Government Accounts. PFI assets in this context relate to those contracts that are on balance sheet for the Whole of Government Accounts, but which are excluded from public sector net debt in the National Accounts.
Source: Whole of Government Accounts 2010–11, 2011–12 and 2013–14.

Table 7.4. PFI and lease obligations

Fiscal year	2009–10 £bn	2010–11 £bn	2011–12 £bn	2012–13 £bn	2013–14 £bn
Finance lease liabilities	5	5	5	5	5
Other PFI contract liabilities	**36**	**37**	**38**	**40**	**40**
PFI and finance lease liabilities	41	42	43	45	45
Operating lease obligations	20	21	22	21	18
PFI and finance lease interest	52	62	60	62	61
PFI service charges	97	109	111	117	110
Financial commitments	169	192	193	200	189
Public sector net debt	960	1,102	1,192	1,300	1,403
As a % of public sector net debt					
Finance lease liabilities	*0.6%*	*0.5%*	*0.4%*	*0.4%*	*0.3%*
Other PFI contract liabilities	***3.8%***	***3.3%***	***3.2%***	***3.1%***	***2.9%***
Financial commitments	*17.7%*	*17.4%*	*16.2%*	*15.4%*	*13.5%*

Source: Whole of Government Accounts 2010–11, 2011–12 and 2013–14; Office for National Statistics, *Public Finance Statistics October 2015*; ICAEW calculations.

Including PFI contracts in the balance sheet allows them to be seen in the context of overall investment by the public sector, with the £49.1 billion of PFI and finance lease assets on the balance sheet as at 31 March 2014 representing 6.4% of the overall book value of public sector property, plant and equipment. This is equivalent to approximately £760 per person out of a total investment in property, plant and equipment of around £11,800 per person living in the UK.[6]

More than half of the investment in PFI and finance lease assets is in buildings with £28.6 billion invested, principally in schools and hospitals. The remainder is spread over roads, housing and equipment. Land relating to all these categories is shown separately in Table 7.3.

Total amounts due for leases and PFI contracts are reported in the WGA in two elements: liabilities on the balance sheet, and financial commitments for off-balance-sheet operating leases together with future interest and service charges due under PFI contracts and finance leases, as shown in Table 7.4.

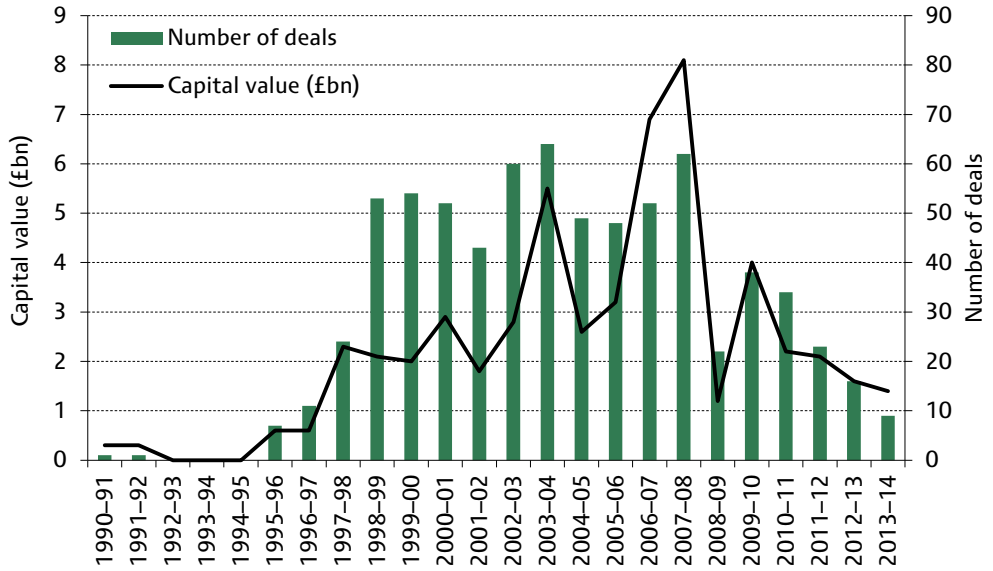
PFI and finance lease liabilities were lower than the capital value on the asset side of the balance sheet at the same dates because of advance payments.

Table 7.4 also compares PFI and finance lease obligations with public sector net debt in the National Accounts. This illustrates how bringing PFI contracts on balance sheet for the National Accounts would result in an increase of 2.9% in public sector net debt at 31 March 2014.

It also gives an indication of the scale of related financial commitments in the context of the size of government debt obligations, which although 12% higher in nominal terms at 31 March 2014 than at 31 March 2010, fell as a proportion of public sector net debt from 17.7% to 13.5% over the period.

[6] Office for National Statistics, 'Mid-year 2014 population estimate' (adjusted for one-quarter difference in timing to 64.5 million people).

Figure 7.4. PFI contracts reaching financial close



Source: HM Treasury, *Private Finance Initiative Projects: 2014 Summary Data*, 15 December 2014, https://www.gov.uk/government/publications/private-finance-initiative-projects-2014-summary-data.

The capital value of PFI projects reaching financial close (i.e. coming into operation) each year is substantially lower than it was before the financial crisis, as illustrated by Figure 7.4. The graph provides a summary of the number and value of PFI contracts reaching financial close between 1990–91 and 2013–14.

Only £1.4 billion of projects came into operation in 2013–14, less than the £1.6 billion in the previous year, and a substantial drop on the £4.0 billion completed during 2009–10 and on the £8.1 billion completed in 2007–08. This was expected to have increased to £2.0 billion in 2014–15 and to increase to £2.9 billion in 2015–16, according to HM Treasury in December 2014.

This compares with approximately £2–3 billion a year in capital repayments under existing contracts, indicating that growth in PFI contracts is likely to be fairly small at current rates of contracting.

Potential PFI expansion

PFI contracts have a privileged position in sitting outside of capital budgets and the fiscal targets (see Chapter 3), which in theory could allow substantial capital expenditure to be delivered through this route without affecting the principal fiscal measures used by the government. However, in order to provide a restriction against potential overuse, the Chancellor has set a cap on the total capital value of £70 billion for all PFI contracts from 2015–16 onwards.[7]

Taking into account repayments on existing contracts, this implies that there is capacity for £5–6 billion a year in new assets to be constructed over the course of the current parliament through PFI, significantly more than that delivered in 2012–13 and 2013–14 or expected in 2014–15 or 2015–16.

[7] Section 1.17 of HM Treasury, *Investing in Britain's Future,* June 2013, https://www.gov.uk/government/publications/investing-in-britains-future.

This cap is not set out in legislation and the Chancellor could decide to increase it if desired. In reality, a substantial expansion in off-balance-sheet PFI contracts in excess of the current cap is likely to be difficult to achieve because:

- although PFI contracts are 'free' in terms of capital budgets in the year of construction, the associated long-term service commitments would take up an increasing proportion of future operating budgets, already under severe pressure from the need to make substantial cuts;
- establishing value for money is not always easy, especially as operational efficiencies and cost savings obtained by combining the construction of an asset and its operations may still be achievable through appropriately-designed construction and service contracts that do not involve private sector financing for the asset itself;
- departments are more cautious in identifying opportunities given their experience of the difficulties in ensuring sufficient flexibility to cater for future changes in circumstances over a multi-decade contract;
- persuading private investors to participate in PFI projects is more difficult than before the financial crisis as there is less financing available, and with fewer opportunities to make windfall profits under PF2 contracts, projects are less financially attractive.

The current generation of PFI contracts, PF2, are designed to retain the benefit of off-balance-sheet treatment in the National Accounts, while providing a better deal for the taxpayer. They typically involve the government taking a minority equity stake in projects so that the taxpayer will share in profits and losses made by private sector operators, together with improving flexibility when circumstances change. The PF2 guidance also seeks to address a number of issues that have resulted in poor value for money for the taxpayer in previous-generation PFI contracts.

However, there are inherent conflicts between the criteria for off-balance-sheet treatment and the PF2 guidelines for PFI contracts. The requirement to ensure that most financial risks and rewards sit with the private sector operator in order to achieve off-balance-sheet treatment in the National Accounts has to be balanced with the need for flexibility to adapt to changes in the future. In practice, there is a tension with value for money because there may be an incentive to sign contracts of a type that will be classified as off balance sheet even if taxpayers get poorer value for money as a result of these terms.

These conflicts can cause tensions during the procurement process. A recent example of this was seen in 2015 with the £745 million Aberdeen Western Peripheral Route (AWPR) bypass, intended by the Scottish government to be the forerunner of a series of new (off-balance-sheet) PF2 contracts in Scotland. Contractual terms designed to improve the level of control and flexibility for the Scottish government, including returning excess profits to the public sector, resulted in the loans used to finance the construction of the bypass being classified by the Office for National Statistics as part of public sector debt.[8]

This decision has significant implications for the Scottish government's capital budget plans, and it has been seeking to find ways to amend the AWPR contracts to enable them to be classified as off balance sheet, albeit without success so far. John Swinney, Scottish

[8] 'Scotland hits snag in funding model for infrastructure projects', *Financial Times*, 31 July 2015.

Finance Minister, stated in November 2015, 'It has become clear that a rapid reversal of the ONS's public classification of the Aberdeen Western Peripheral Route project under the revised Eurostat rules will not be possible'.[9]

Despite the improvements expected to be delivered by PF2, there continues to be criticism of the use of PF2 contracts, in particular the need to enter into long-term service commitments.[10]

Service concessions

One variant on PFI contracts for financing public infrastructure concerns situations where there is the potential for user charges to fund the cost in place of general taxation – for example, in the case of toll roads or bridges. In this case, a service concession could be granted to a private sector operator, with the operator assuming at least some of the revenue risks in addition to construction, operating and financing risks.

Most long-term service concession contracts are also off balance sheet for National Accounts purposes. Whether they are on or off balance sheet in financial accounts will depend on the terms of the contract; many service concessions involve a sharing of revenue and control over the asset between the government and the private sector operator and, in those circumstances, the asset and the associated financing obligation would need to be on balance sheet in the WGA, similar to other types of PFI contracts.

Facilitating private investment into public infrastructure by granting service concessions may make sense where user charges can be levied. Social housing is one area with the potential for projects to be developed using a service concession model, similar to the construction of purpose-built student accommodation on behalf of universities. This could supplement the role of housing associations, now part of the public sector, for which capital investment is expected to decline (see Table 7.1 earlier).

A number of commentators have suggested expanding the role of user charges in areas such as road pricing, which if pursued would provide further opportunities for encouraging private investment in public infrastructure assets.[11]

7.3 Encouraging more private investment

> We haven't done enough of that in our country in the past. And as a result British people have to spend longer than they should getting to work; they pay more than they should in energy bills; they can't buy the homes they want, all because of the failure of successive governments – and the societies that elected those governments – to think long term. That has started to change. New railway lines are being laid, new roads are being built, new broadband is being installed. Britain has rediscovered its ambition and we are thinking big again.
>
> *George Osborne, Chancellor of the Exchequer, October 2015*

[9] 'Swinney faces tricky route to negotiate £745m bypass', *The Times*, 27 November 2015.

[10] 'PFI has a new look, but the same old failings', *The Times*, 19 June 2014; 'Scotland's PFI boom means £1.3bn a year bill is in the post', *The Guardian*, 15 December 2015.

[11] D. M. Newbury, 'Pricing and congestion: economic principles relevant to pricing roads', 1990, *Oxford Review of Economic Policy*, 6(2), 22–38; Department for Transport, *Feasibility Study of Road Pricing in the UK*, July 2004.

The government's objective of increasing economic growth not only involves investment in publicly owned or controlled infrastructure. Investment is also needed into essential infrastructure owned and controlled by private sector businesses – for example, in the energy, water, telecommunications and housing sectors.

There are no definitive statistics on the level of infrastructure spending in the UK, although in 2015 PwC and Oxford Economics estimated that total investment in infrastructure amounted to £72 billion in 2014.[12]

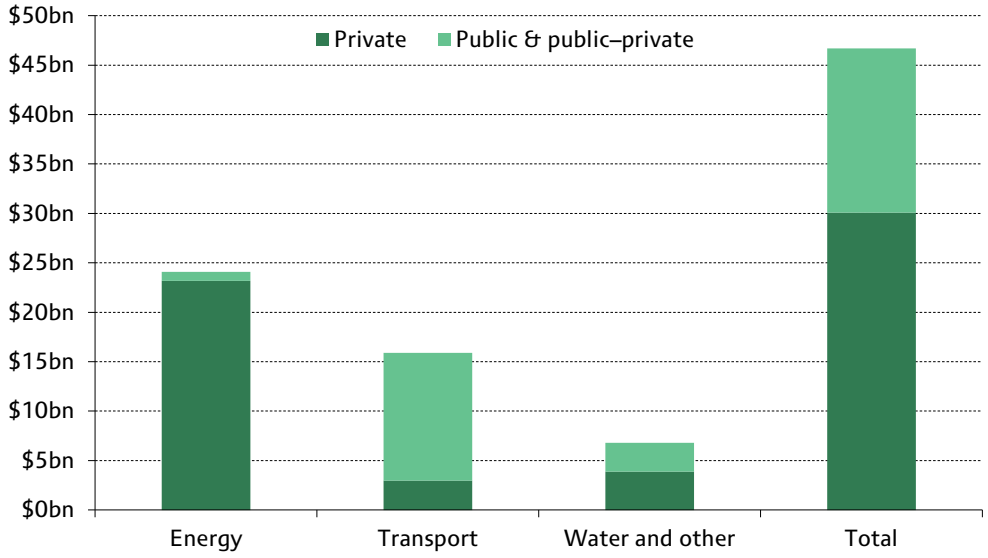
The government also tracks both private and public infrastructure through the National Infrastructure Pipeline, which tracks infrastructure projects in excess of £50 million. In July 2015, this had identified 564 projects and programmes with a total value of £411 billion expected to be delivered over the course of the coming decade, including around £47 billion a year on average over the course of this parliament (see Figure 7.5).

Of the average expected spending of £47 billion a year over the course of this parliament, approximately £30 billion a year is expected to be financed solely by the private sector, £6 billion by a mixture of public and private funding, and £11 billion directly by the public sector.

With the majority of investment in energy, water and telecommunications coming from the private sector, the largest area of public sector and public–private investment captured by the Pipeline is in transport infrastructure. This includes not only roads and highways, but also the railways, with Network Rail, HS2 and metropolitan transport networks, including Transport for London.

The average spending of £11 billion a year in direct public investment in the Pipeline is lower than the average of £14 billion of investment in public infrastructure over the same period in the Autumn Statement 2015 (excluding schools and housing; see Table 7.1

Figure 7.5. Average annual infrastructure spending, 2015–16 to 2019–20



Note: 'Water and other' comprises water, communications, waste, science and research, and flood infrastructure spending.
Source: Cabinet Office, 'National Infrastructure Pipeline: July 15 update', August 2015.

[12] PwC and Oxford Economics, 'Capital project and infrastructure spending: outlook to 2025', 2015.

earlier in this chapter), primarily because the Autumn Statement analysis includes some transport spending expected to be funded by both public and private funding.

Less finance available since the financial crisis

Since the financial crisis, raising new finance has been a particular challenge as financial institutions have sought to repair their balance sheets, governments have borrowed substantial sums to fund deficit spending and there has been a perceived lowering in the risk appetite of investors.

Banks have reduced lending as they have sought to strengthen their balance sheet in response to regulatory requirements to increase their capital reserves and to improve liquidity. This has particularly affected infrastructure investments, which tie up funds for a long period, especially as banks have been less willing to participate in the debt syndication market, which allows the risk of funding very large projects to be shared.

The bond market was also adversely affected by the insolvency of several major monoline insurers. They had specialised in raising the creditworthiness of bonds issued to finance large infrastructure projects to AAA status by insuring repayments in the event of a default. This AAA status enabled many institutional investors to invest in bonds used to finance infrastructure projects when otherwise they would not have been able to do so. Without underwriting capacity, debt market investment in infrastructure projects reduced, removing the main source of competition to bank-sourced finance, increasing the cost of finance to infrastructure projects even as general interest rates fell.

Even where finance could be obtained, this increase in the cost of funding undermined the financial viability of some of the large infrastructure projects that had been planned. This was one of the major contributors to the fall in PFI contracts since the financial crisis, with fewer viable opportunities. Some government departments did decide to proceed with projects for strategic reasons – for example, the Department for Transport proceeded with the M25 road widening project despite £660 million in higher financing costs than would have been incurred had it been entered into before the financial crisis.[13] If this had been publicly funded, then the opposite would have occurred, given the significant reductions in the government's borrowing costs over the same period.

Pricing for infrastructure finance continues to be high compared with pre-crisis levels, indicating that the market has yet to recover even today.

This does not mean that there is no finance available at all. There has continued to be a supply of finance to price-regulated utilities, primarily in electricity and gas transmission and distribution networks and in water supply. The revenue certainty provided by their regulatory arrangements, and the strength of their balance sheets, mean that they are able to access bond markets directly, without requiring underwriting support.

However, with less bank and bond finance generally available, the government has been seeking to find ways to support new investment into both public and private infrastructure.

[13] National Audit Office, *Procurement of the M25 Private Finance Contract*, 19 November 2010, https://www.nao.org.uk/report/procurement-of-the-m25-private-finance-contract/.

Increasing incentives

One method of encouraging investors to provide more finance for infrastructure projects is to improve financial incentives.

Traditionally, tax incentives have been used to encourage investment of all types, but as corporate tax rates have reduced and anti-avoidance measures have increased, these have become less useful, especially in the context of long-term investments where stability around the tax regime is particularly important. In particular, as headline rates have come down, capital allowances have been made less generous, in many circumstances reducing the incentive for investment within the corporation tax system.

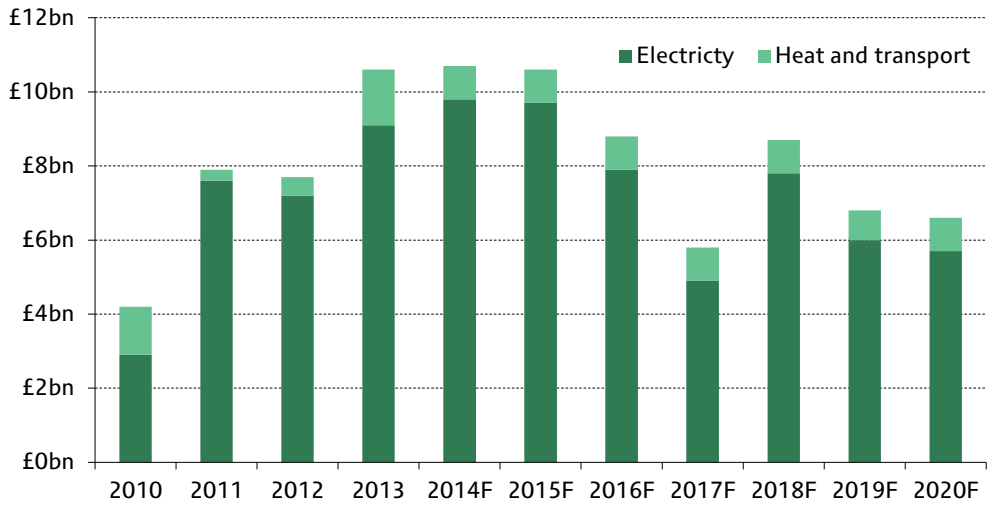
Electricity generation is an area where market incentives have been successfully used to encourage investment in renewable energy sources, such as wind turbines and solar panels, as well to provide revenue certainty to investors in new nuclear power plants. This has led to substantial investment in renewable energy, although at the cost of significant increases in bills to consumers. Even so, concerns remain over whether overall investment will be sufficient to replace retiring coal and nuclear plants, with available capacity now at relatively low levels.[14]

According to a PwC report from May 2015, investment in renewable energy in the UK was expected to amount to £10.7 billion in 2014, as shown in Figure 7.6, with an average of just over £8 billion a year expected to be invested between 2015 and 2019.

However, this report was issued before the government announced a number of changes to market incentives for renewable energy, and actual investment is now expected to be substantially less than that being forecast less than a year ago, with many investors cancelling projects as a consequence of these changes.[15]

This highlights one of the problems in using market incentives, given the tendency of incoming governments to scrap or reform their predecessors' incentive schemes. A lack

Figure 7.6. Historical and forecast renewable energy investment



Note: F denotes forecast.
Source: PwC UK, 'State of the renewable industry: investment in renewable electricity, heat and transport', May 2015.

[14] 'UK electricity supply fears follow power crunch', *Financial Times*, 5 November 2015.

[15] 'Energy groups axe UK renewable projects', *Financial Times*, 20 October 2015.

of long-term consistency presents a high degree of political risk for investors, with the potential that, even if new incentive arrangements are put in place, they will not have the desired effect.

This contrasts with the position surrounding investment in price-regulated utilities, where delegated authority to regulators, combined with a cross-party consensus not to make radical changes to regulatory arrangements when governments change, provides a more stable foundation for making investment decisions.

In looking at market incentives as a route to encourage investment, whether in energy generation, broadband, housing or other markets, the government may therefore wish to consider providing regulators or equivalent bodies with the power to establish long-term market incentives that might be considered more likely to endure through changes in government.

Reducing risk

An alternative way of encouraging investment is to reduce risk. The principal route for doing so is to provide financial guarantees to investors, in effect replacing the underwriting capacity that is no longer provided by monoline insurers.

This has two benefits. First, by reducing the financial downside risk to investors, more projects may become viable. Second, better credit quality for bonds used to finance infrastructure will increase the pool of institutional investors willing to invest.

For example, a guarantee might be granted over the borrowing used to fund an initial investment in a long-term project where planning hurdles, technical uncertainties or the risk of changes in government policy midway through might otherwise deter an investor from proceeding.

Guarantees can facilitate projects with much larger investments than the value of the guarantee itself. On the other hand, such guarantees can obviously create moral hazard – if the investor faces limited downside risk, they may do less to protect against that downside.

In order to expand the use of guarantees to support infrastructure investment, the government has established the UK Guarantees scheme. This provides a standardised route through which investors can apply for government guarantees on qualifying infrastructure projects.

This scheme was initially set up with a maximum capacity of £40 billion, similar in scale to the £50 billion exposure limit for export credit guarantees.[16]

In theory, there is plenty of capacity to expand the UK Guarantees scheme if desired, given that overall government financial exposures are relatively low compared with recent years (see Table 4.11).

Increasing the scheme's capacity is unlikely to be necessary in the near future as, after two full years of operation, UK Guarantees had only secured six guarantees over a total of £1.7 billion in new investment, as shown in Table 7.5.

The slowness in take-up is probably partly due to the newness of the scheme, but is also because of the need to demonstrate compliance with EU state aid rules. For example, one

[16] Annex B of UK Export Finance, *Business Plan 2014–17*.

Table 7.5. UK Guarantees scheme: the first two years

Fiscal year	2013–14 £m	2014–15 £m	Total £m
Energy	84	268	352
Transport	1,007	-	1,007
Education	-	292	292
Total	1,091	560	1,651

Source: HM Treasury, Infrastructure (Financial Assistance) Act 2012 reports.

out of the six guarantees prior to 31 March 2015 is subject to an official investigation by the European Commission for this reason.[17]

The level of guarantees is expected to increase further, with 19 pre-qualified projects not reflected in Table 7.5. Fifteen of these projects relate to energy generation or energy transportation and storage, with the remaining four relating to housing and telecommunications. The largest of these is the £2 billion guarantee announced in September 2015 to support investment in the new Hinkley Point C nuclear power station.[18]

The UK Guarantees scheme is relatively new and so it will take some time before it becomes clear whether the provision of guarantees to private sector investors is encouraging investment into infrastructure that would not otherwise have been provided.

One other way of encouraging investment would be to address the high-risk pre-approval stage of infrastructure projects. Investors may need to invest millions of pounds on feasibility studies, planning applications and preliminary design costs with no certainty that a project will be approved. Finding ways of mitigating these costs would be likely to increase the number of viable projects and so unlock more investment.

Widening the pool of finance available

Another route to increasing investment is to seek new sources of funds from investors who have not previously invested in infrastructure projects.

One potential source identified by the government is UK pension funds. With their long-term investment horizons, they seem natural investors into infrastructure projects. After all, foreign pension funds are often major investors in infrastructure – for example, the Ontario Teachers Pension Plan alone has around £7 billion invested into infrastructure projects.[19]

Table 7.6 reflects the estimated £2 trillion in investments held within UK pension funds. Assuming a typical maximum limit of 15% for any particular asset class, this implies that potentially up to £300 billion could be available for investment.

This was the rationale for the Pensions Infrastructure Platform (PIP), an investment vehicle established by the UK pension fund industry in 2011 at the instigation of the

[17] European Commission, *'In-depth investigation into UK public support for Drax power plant',* 5 January 2016, http://europa.eu/rapid/press-release_IP-16-2_en.htm.

[18] HM Treasury, '£2 billion support for Hinkley Point', press release, 21 September 2015.

[19] Ontario Teachers Pension Plan, *Annual Report 2014* – CAD 12,659 million invested in infrastructure converted at an exchange rate of 1.81:1.

Table 7.6. Estimated pension funds available

	Total funds invested £bn	Potential investment £bn
Private sector pension schemes	1,800	270
Public sector funded schemes	200	30
Public sector unfunded schemes	0	0
	2,000	300

Note: Investment amounts rounded to nearest £100 billion.
Source: Towers Watson Global Pension Assets Study 2014; Whole of Government Accounts 2013–14.

coalition government. Its aim was to raise £2 billion a year in new infrastructure funding from UK pension funds. This would mean redirecting around 0.1% of total UK pension fund investments into infrastructure each year.

This may appear to be a relatively modest objective. However, asking private sector pension schemes to switch from traditional investments in bonds, equities and commercial property into higher-risk direct investments in infrastructure projects is not as easy as it seems. Most of the larger schemes – those with the capacity to make large investments – are defined benefit plans that are currently actively reducing their risk profiles as they mature (many of them are closed to new members and the average age of their participants is rising). Defined contribution and private self-invested pension plans generally do not have the scale or desire to participate as investors in infrastructure projects.

Perhaps it is unsurprising that by 2015 less than £1 billion had been raised, reflecting the challenges in persuading investment managers that risks involved in infrastructure projects are sufficiently worthwhile.

Ironically, public sector pension schemes potentially make much better candidates for sources of investment funding. They are less mature than private sector schemes and hence should have more of an appetite to invest in long-term infrastructure projects. Infrastructure projects should also improve the financial health of their participating public sector employers (and so their ability to make future contributions) through improved economic growth and hence greater tax revenues.

Three-quarters by value of public sector pension schemes in the UK are unfunded, meaning that it is mainly local authority schemes that have funds available to invest. And, as the PIP discovered in 2011, local authority pension schemes were restricted in the proportion of their portfolios that they could invest in partnerships, the legal form used for most UK infrastructure project investments.

This made encouraging investment from public sector pension funds difficult, but with legislation to repeal this restriction and replace it with a higher limit in 2013, this first obstacle has been overcome.

Unfortunately, this change has not facilitated a rush of investment, as there are 89 local authority pension schemes, most of which do not have the scale or expertise necessary to invest directly in larger infrastructure projects. A significant investment in a single project by an individual pension scheme might put too large a proportion of its funds at risk, while there are relatively few opportunities to take small minority stakes at a project level.

This was illustrated by the £4.2 billion investment in London's 'super-sewer' project to build a new 25-kilometre underground tunnel, which was funded almost entirely by overseas institutional investors and infrastructure funds, including overseas pension schemes. This is perhaps unsurprising given that this project alone is not much smaller than the whole of the £5½ billion Lancashire pension fund, one of the larger local authority pension schemes.[20]

The government plans to address this by forming several collective investment vehicles for local authority funds to provide the scale necessary for larger investments. This would reduce transactions costs per pound of investment and provide sufficient funds to be considered as a partner for a large infrastructure project, or even to be the lead investor. Even so, some local authorities do not believe the proposed regional investment vehicles will have the scale necessary and they have called for a single national vehicle for infrastructure investment.[21]

Removing these obstacles is necessary before public sector pension funds are even in a position to choose to invest; whether they decide to do so remains uncertain given the risks involved. Even so, with £228 billion in public sector pension funds at 31 March 2014 and £10 billion a year in contributions to those funds,[22] it might be possible to switch as much as £3 billion a year into infrastructure investment over the course of a decade if sufficient opportunities were available.

7.4 Improving public investment decisions

The most straightforward way of funding infrastructure is, of course, to do it yourself.

The allocation of the capital budget to different infrastructure projects in the UK is based on sound principles embodied in the Green Book, the government's internal manual for deciding how to appraise proposals before committing funds to achieve a public policy objective.[23] It primarily focuses on obtaining the best value between different options for delivering a policy objective – for example, in deciding between options for procuring a new hospital in order to provide medical services to the public.

However, the government's current approach for determining the total amount of investment does not appear to be the most sensible one: it involves setting a budget for capital spending and then permitting additional investment outside of that budget only if funded by higher-cost off-balance-sheet borrowing.

The current preferential treatment of PFI contracts within the National Accounts creates an incentive to use PFI contracts to avoid budgetary limits. It also reduces flexibility in negotiating them with private sector operators.

[20] 'UK lacks homegrown investors for its large infrastructure needs', *Financial Times*, 3 August 2015.

[21] 'Set up infrastructure investment platform for local government pension schemes, say councils', *Public Finance*, 25 January 2016.

[22] Whole of Government Accounts 2013–14.

[23] See HM Treasury, *The Green Book: Appraisal and Evaluation in Central Government*, 2011, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220541/green_book_complete.pdf.

Time to bring PFI contracts on balance sheet?

Many commentators, including the Treasury Select Committee, believe that PFI contracts should be brought onto the balance sheet in the National Accounts.[24] For some, this is about improving the quality of fiscal reporting in the National Accounts, better reflecting the commercial substance of these transactions as forms of borrowing to finance public assets. For others, it is because the availability of off-balance-sheet routes to finance projects may provide untoward incentives to use PFI when straightforward borrowing would be more appropriate.

Such a change would also enable more flexibility in negotiating PFI contracts, which would no longer be required to meet the strict requirements necessary to achieve off-balance-sheet treatment. For example, it would be easier to make the clawback of windfall profits from private sector operators a standard feature of future contracts.

Ironically, now may be an opportune time to include PFI contracts within public sector net debt in the National Accounts as the significant growth in the size of the government's debts means that PFI contract liabilities are now proportionately smaller. For example, public sector net debt at 31 March 2014 (excluding housing associations) would have been only 2.9% higher at £1,442 billion instead of the previously reported £1,403 billion.

In addition, assuming PFI contracting continues at the current level, the headline public finance deficit or surplus would be relatively unaffected. This is because higher capital spending from recording new PFI contracts on balance sheet would be offset by a similar reduction in current spending from lower operating payments on existing PFI contracts.

As a consequence, bringing PFI contracts on balance sheet in the National Accounts – which is an economically sensible thing to do – could probably now be done without many of the political difficulties this might have created in the past.

There is one caveat. If PFI contracts were to increase to the level of £5–6 billion a year, then there would be an increase in spending of around £3 billion a year recorded in the National Accounts if PFI contracts were brought on balance sheet. Although relatively small in the context of total government spending of £821 billion forecast for 2019–20, such a change would significantly reduce the Chancellor's headroom in the first year that there is required to be a public sector surplus under the fiscal mandate.

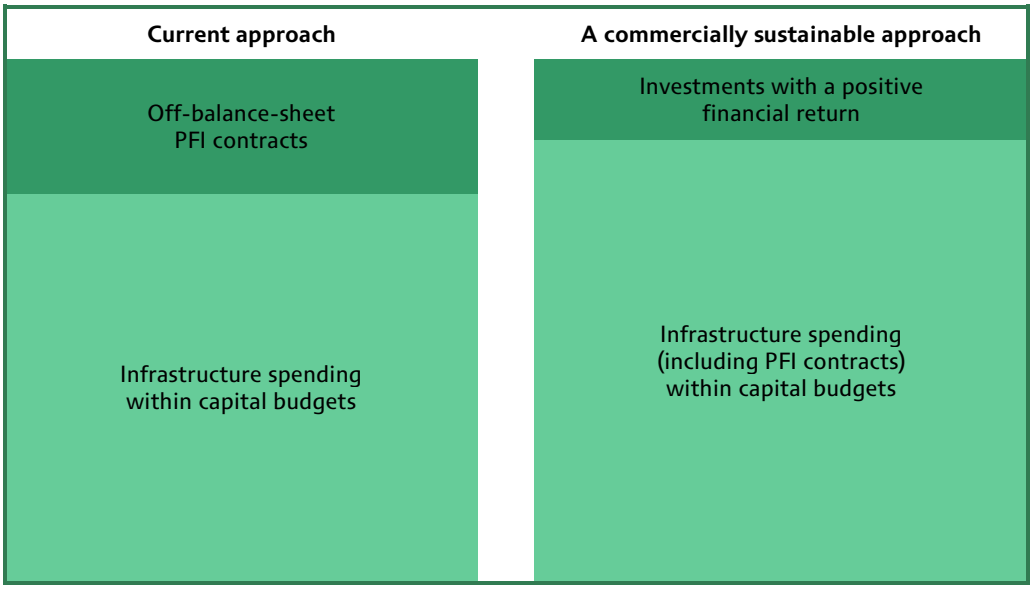
A sustainable commercial rationale for public investment

The government's approach permits (de facto) borrowing through off-balance-sheet PFI contracts, but does not permit borrowing to fund investments that would generate a positive financial return and hence pay for themselves, either directly through income from user charges or indirectly through higher tax receipts.

This creates a systemic preference for higher-cost off-balance-sheet projects over financially beneficial investments that might improve economic growth by much more in comparison. Requiring such investments to be paid for out of current income means that they need to compete for funds against other priorities, even though the public sector as a whole would be better off if borrowing were to be permitted to fund them.

[24] House of Commons Treasury Committee, *Private Finance Initiative*, Seventeenth Report of Session 2010–12, July 2011.

Figure 7.7. Prioritisation of infrastructure investments



Examples of projects that are disadvantaged by this approach include direct public sector investment in housing and transport developments that are not suitable to be built through PFI contracts, but which would potentially generate sufficient additional direct revenues and higher tax revenues to pay back the cost of the public borrowing needed to finance them.

A more commercially sustainable approach would enable targeted investments that would generate positive financial returns to the taxpayer, while still meeting the government's desire to improve the financial health of the public finances.

This proposed approach is illustrated in Figure 7.7.

A rigorous process would be needed to assess the business case for investments that are believed capable of generating a positive financial return. Similar to the capital investment approval processes of larger commercial organisations, it would evaluate the merits of each proposal and assess the risks of achieving a financial return for the taxpayer, with a higher threshold for approving projects with less certainty of paying back the original investment.

Objective and independent assessment would be needed for both assessing the criteria used and evaluating individual businesses' cases. The former might be appropriately the province of the Office for Budget Responsibility, while the National Infrastructure Commission or a similar operationally independent body could deal with the latter, all overseen by the National Audit Office.

Given the lower cost of borrowing available to government, care would also need to be taken to ensure that public sector investments do not inappropriately substitute for private sector investment by ensuring that there is an appropriate public policy objective being met. For example, increased investment in social and affordable housing is likely not to be an issue given the failure of private sector house builders to compete in this area, whereas investment in luxury housing might be inappropriate for government investment even if it did provide a positive financial return.

Generating a sufficient financial return to the public sector to justify incremental borrowing while still achieving public policy objectives is a relatively high bar. The majority of the economic benefit of a public infrastructure accrues to individuals and the wider economy, with the increase in tax revenues being only a proportion of that. Hence, to generate a positive financial return, a project would need to increase economic growth enough to pay back its costs and the interest on the public borrowing used to finance it.

One benefit of this approach might be in areas of historical underinvestment such as housing and railway networks, where direct income such as rents or contributions from train operators would contribute to a positive financial return when combined with incremental tax revenues stemming from increased economic growth.

This approach would be consistent with the principle implicit in the Chancellor's objective of eliminating the deficit in order to reduce public sector net debt. Capital investments in improving public services, such as in new schools and hospitals, would be made when covered by revenues, without preventing commercially-driven decisions to invest in infrastructure projects that are reasonably expected to pay for themselves.

7.5 Conclusion

The desire to strengthen the public finances while delivering necessary investment in infrastructure presents the Chancellor with some difficult choices, particularly as the economy is still emerging from the financial crisis.

Significant challenges are faced in encouraging fresh investment from private investors, whether into public or private infrastructure, and efforts to date in terms of the use of guarantees and encouraging pension fund participation have had only limited success. Although there is plenty of capacity to use guarantees to support investment, in practice this has proved to be more difficult than hoped, with only £1.7 billion issued over the course of the first two years of the £40 billion UK Guarantees scheme.

Widening the pool of finance available for infrastructure projects is also important and the pooling of local authority pension funds into collective investment vehicles is likely to enable them to have the scale necessary to invest in major infrastructure projects.

Reducing operating expenditure or increasing tax to free up further cash for infrastructure investment may be part of the solution, but it might be that the best way to deliver the essential public infrastructure the government believes necessary to support future economic growth will be for the government to borrow to deliver it.

A more sustainable and commercial rationale for public sector investment would be to permit borrowing for investments that are expected to generate a positive financial return, in preference to the current fiscal structure that implicitly prioritises higher-cost off-balance-sheet projects that lock the government into long-term financial and service commitments.

8. Corporate tax avoidance: tackling Base Erosion and Profit Shifting

Helen Miller and Thomas Pope (IFS)

Summary

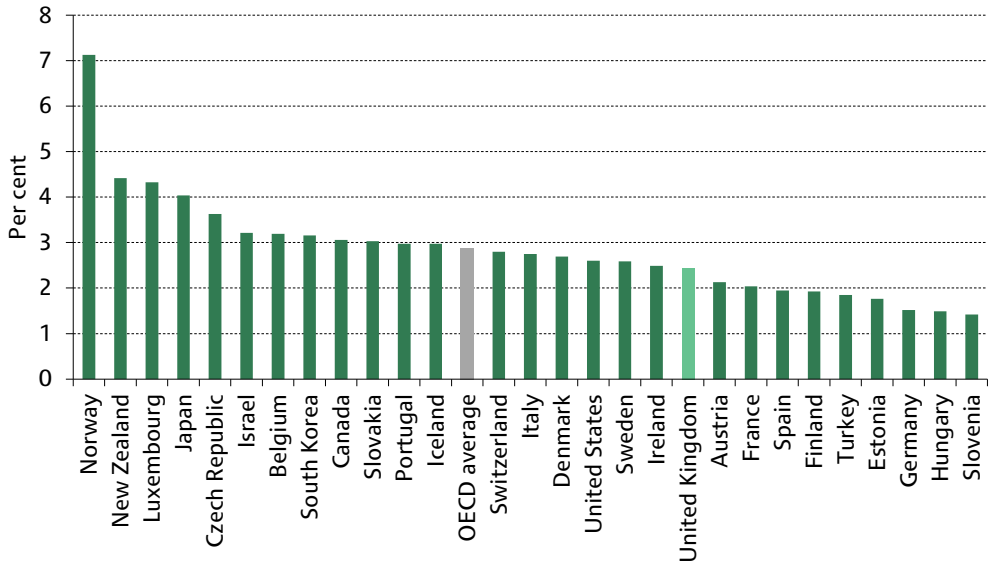
- The OECD Base Erosion and Profit Shifting (BEPS) project aims to foster consensus on how to modify corporate tax rules to prevent multinational tax avoidance. How the proposals are implemented, in the UK and elsewhere, will depend in part on how tensions between maintaining a competitive tax regime and minimising avoidance are traded off against one another.
- The UK has already introduced a new 'hybrid' rule to prevent multinationals from taking advantage of cases where an income stream is taxed differently in different jurisdictions. This is a good move. Other countries may follow, but some may continue to allow some hybrid structures because they can advantage domestic multinationals.
- Preferential intellectual property regimes, including the UK patent box (a reduced rate of tax on income from patents), need to be modified in 2016 to install a link between the tax break and the underlying research and development (R&D). This will limit some tax competition and will likely raise UK revenues. However, the UK's patent box will remain poorly targeted at incentivising additional R&D.
- All countries have committed to aligning taxation rights with real economic substance better by changing the rules on how transfers within companies across borders are priced and the definition of what constitutes a taxable presence. While preventing some avoidance, aligning tax with real activities will sometimes conflict with the principle that the returns to intangible assets are taxed based on the owner's location.
- The UK (like most countries) does not meet a BEPS best-practice recommendation for the rules that limit interest deductions of multinationals. The UK government has consulted on possible moves to restrict interest deductibility. The decision involves a trade-off: a more stringent rule would prevent some forms of avoidance but also distort genuine commercial decisions of high-debt firms and make the UK less attractive to multinationals.
- All countries have agreed to require multinational companies to produce 'country-by-country' reports that provide tax authorities with more information on the location of firms' activities. This, and other information-sharing moves, will assist authorities in indentifying BEPS risks.
- The BEPS process will result in some important improvements, but is not a silver bullet. Allocating profits across countries and preventing avoidance will always be difficult. A more fundamental change to the system deserves consideration.

8.1 Introduction

It can rarely be said that corporate tax excites the imagination of the public. Over the past several years, however, one aspect has at least piqued their interest: tax avoidance. Against the backdrop of austerity, revelations that companies such as Amazon, Google and Starbucks paid little or no tax in the UK incited widespread upset, though not necessarily accompanied by a great understanding of the often complex issues underlying these outcomes.[1]

The UK currently (2014–15) raises £43.0 billion from corporate tax.[2] This represents 2.4% of national income, which is slightly below the OECD average (see Figure 8.1). UK revenues have fallen substantially in recent years, largely as a result of the financial crisis and associated recession and subsequent deliberate policy changes rather than any increase in avoidance activity.[3] Taking a longer-term view, most countries have not seen substantial falls in corporate tax revenues over the last three decades (see Figure 8.2). In many cases, falling tax rates have been offset by a higher share of corporate profits in national income.[4] Trends in tax avoidance may also have affected these trends in corporate tax revenue, though we lack robust quantitative evidence on the extent to which it has done so. Concerns about growing avoidance are certainly prevalent.

Figure 8.1. Corporate tax receipts as a percentage of national income, 2014



Note: 'OECD average' series is an unweighted average of OECD countries and is for 2013; all other shares are 2014.
Source: 'Tax revenue as percentage of GDP for 1200 corporate', OECD revenue statistics, http://stats.oecd.org.

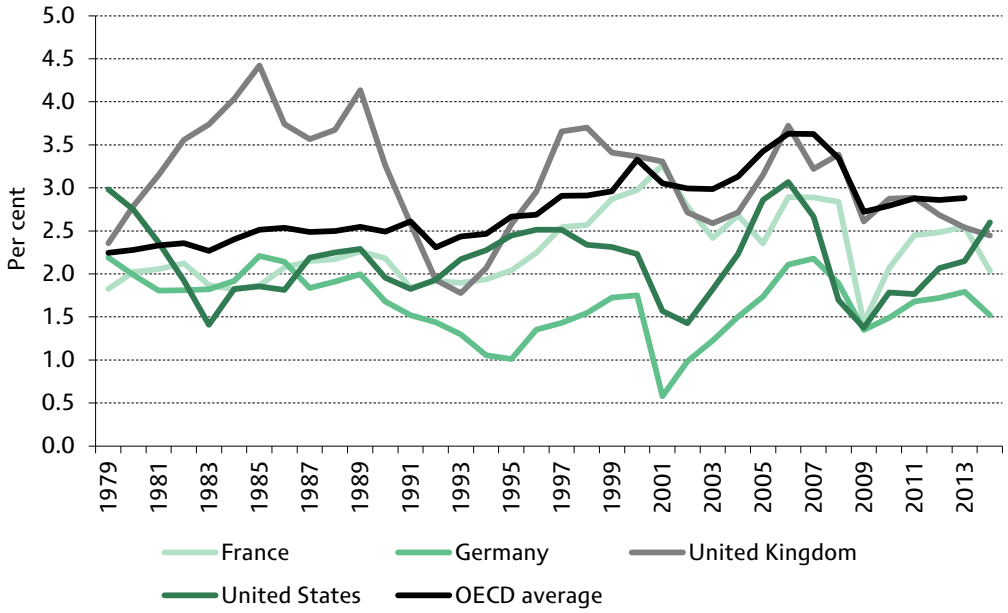
[1] Many media outlets ran large projects to highlight the strategies companies use to shift paper profits. These included Bloomberg's 'The Great Corporate Tax Dodge', the New York Times's 'But Nobody Pays That', the Times's 'Secrets of Tax Avoiders' and the Guardian's 'Tax Gap'.

[2] Office for Budget Responsibility, *Economic and Fiscal Outlook*, November 2015, http://budgetresponsibility.org.uk/economic-fiscal-outlook-november-2015/.

[3] For a discussion of policy changes under the coalition government, see H. Miller and T. Pope, 'Corporation tax changes and challenges', IFS Briefing Note 163, 2015, http://www.ifs.org.uk/publications/7590.

[4] For a discussion, see R. Griffith and H. Miller, 'Taxable corporate profits', *Fiscal Studies*, 2014, 35, 535–57.

Figure 8.2. Corporate tax receipts as a percentage of national income, 1979–2014



Note: 'OECD average' series is an unweighted average of OECD countries.
Source: 'Tax revenue as percentage of GDP for 1200 corporate', OECD revenue statistics, http://stats.oecd.org.

Policymakers in the UK and elsewhere have responded to concerns that large multinational companies are not paying enough tax with unilateral attempts to strengthen anti-avoidance rules. However, many of the opportunities for tax avoidance arise at the boundaries between tax systems in different jurisdictions. In recognition of this, in 2013 the G20 called on the OECD to coordinate a body of work that would provide a blueprint for how to modify domestic and international tax rules to tackle avoidance. The subsequent OECD Action Plan on Base Erosion and Profit Shifting (BEPS) identified 15 areas where there were possible gaps or loopholes in tax laws that facilitated avoidance behaviours, or where improvements in data, transparency and processes could enhance governments' abilities to enforce tax rules.[5] There was a particular focus on trying to realign taxation with economic substance.

Since the launch of the BEPS project, over 100 countries (including all OECD countries, Brazil, China and India) have been involved in a massive effort to find consensus on how to redesign tax rules. This culminated in October 2015 in a series of recommendations on each of the 15 'action points'.[6] The next phase of the process is implementation, with countries currently deciding whether and how to revise their tax rules to comply with OECD recommendations.

This chapter sets out the challenges that the BEPS process sought to tackle (Section 8.2) and how the resulting recommendations seek to address these (Section 8.3, with further details in an appendix). In Section 8.4, we consider the main changes in and choices facing the UK.

[5] OECD, *Action Plan on Base Erosion and Profit Shifting*, 2013, http://dx.doi.org/10.1787/9789264202719-en.

[6] OECD, BEPS 2015 Final Reports, http://www.oecd.org/ctp/beps-2015-final-reports.htm.

The UK government has engaged in the BEPS process and stated its intention to reduce avoidance opportunities. The previous government introduced anti-avoidance measures, most notably including a new Diverted Profits Tax aimed at changing the behaviour of some large digital-based companies.[7] One of the aims of the BEPS project is to foster coordinated action so that countries do not introduce a patchwork of unilateral measures that complicate the system and risk fixing avoidance at the cost of taxing the same income more than once (double taxation is something that the OECD has long worked to prevent).

The UK already complies with some of the BEPS recommendations. In other cases, the government has changed or announced that it will change tax policies in order to comply. One such policy is the patent box, which will be adjusted by April 2016 in order to satisfy the new minimum requirement for preferential regimes. Some BEPS action points resulted in recommendations for best-practice rules, with the idea that countries will choose whether they want to adopt them. The most notable of these action points relates to the interest deductions made by multinational groups, where the UK (like most other countries) departs significantly from the recommendations. The UK government has just concluded a consultation on whether to change the treatment of interest expenses and is expected to set out a plan for corporate tax for the remainder of the parliament, including BEPS actions, in a Business Tax Roadmap to be published alongside the March 2016 Budget.

There is much to recommend a multilateral approach that seeks to coordinate a coherent response to avoidance issues and to address directly the gaps and mismatches in tax rules across jurisdictions. The OECD was in a good position to act as the coordinator, having spent the preceding five decades at the forefront of efforts to facilitate agreement on international tax rules.[8] The OECD has no legal basis upon which to require countries to change their tax rules. It operates by building consensus and seeking voluntary compliance by governments. The majority of developed (and a large number of developing) countries have been at the negotiating table and many have signalled their intention to comply with at least a subset of the BEPS actions. A substantial body of work has been delivered within the ambitious two-year time frame, making it more likely that the BEPS process will benefit from continued political momentum.

The policy actions that result from BEPS are likely to prevent some forms of avoidance behaviour and make others more difficult, although the degree of success will depend in large part on the extent to which governments take action to adopt new rules. The BEPS project has sought to patch up the current system for taxing corporate profit, which has come under increasing strain as firms' activities have become more global, digital and intangible. This approach will produce a more workable but still far from ideal system. In particular, it will remain fundamentally difficult to allocate profits of multinationals to different jurisdictions and countries will continue to have the incentive to compete to attract both real activities and paper profits. A more satisfactory solution to concerns that multinationals are bending the rules to avoid tax may require more radical moves to a different type of tax system. We continue this discussion in the concluding section.

[7] For more details, see H. Miller and T. Pope, 'Corporation tax changes and challenges', IFS Briefing Note 163, 2015, http://www.ifs.org.uk/publications/7590.

[8] Most notably, the OECD Model Tax Convention launched in the 1960s has provided a framework for eliminating double taxation of multinationals' income streams and the OECD Transfer Pricing Guidelines, formalised in 1979 and regularly revised since, are now used by most countries as the basis for implementing the arm's length principle.

8.2 Avoidance: how and how much?

Most governments seek to tax corporate profits that are created within their jurisdiction. This is a relatively straightforward task for firms that operate in only one country. It is much more challenging when companies operate across borders. In this case, profits must be allocated to different tax jurisdictions. Large companies, many of which are multinational, account for the vast majority of UK tax revenues. In 2007–08, 1% of companies contributed around 80% of revenues.[9]

The rules used to determine profit allocations stem from a set of principles that were put in place in the 1920s. Since then, firms' activities have changed massively. They have become more global: around 60% of trade is in intermediate goods and much of this occurs within companies across country borders.[10] There has also been an increase in the role of the digital economy and a move away from investment in physical machinery towards 'intangible' assets, such as intellectual property (IP). UK investment in intangible assets overtook investment in physical assets in the early 2000s, and continues to increase as a share of total investment.[11] These changes make it more difficult to value different activities and to identify where they should be taxed. This in turn puts pressure on tax rules and creates avoidance opportunities. This section discusses what the tax system is currently trying to tax, how multinationals can try to avoid this liability, and the rules in place to try to stop them.

Defining tax liability

Taxable profit is equal to sales revenue minus certain allowable deductions, including for wage costs, material costs and some capital investment (through capital allowances). When a company operates in more than one jurisdiction, more than one country may lay claim to the taxable profit. For example, if a UK company makes sales of a new product through an establishment in France, then both the UK and French governments may wish to tax (at least part) of the resulting profits. A method of allocation between countries is required to ensure that the same profit is not taxed multiple times.

Broadly, countries have agreed on the notion of allocating profit on a source basis, meaning that profits are taxed where the underlying value added was created.[12] In the above example, this means that the profits arising from sales in France should partly be taxed in the UK and partly in France, depending on the relative importance of the UK functions (for example, designing and producing the new product) and those in France (for example, sales activities). The returns to intangible assets – for example, patented technologies – tend to be taxed where the owner of the asset is located. This may, but

[9] See M. Devereux and S. Loretz, 'Corporation tax in the United Kingdom', Oxford University Centre for Business Taxation, 2011, https://www.sbs.ox.ac.uk/sites/default/files/Business_Taxation/Docs/Publications/Reports/corporation-tax-in-the-uk-feb-2011.pdf.

[10] Page 122 of UNCTAD, *Global Value Chains: Investment and Trade for Development*, World Investment Report 2013, http://unctad.org/en/PublicationsLibrary/wir2013_en.pdf.

[11] Intangibles are also an important input in other countries. See C. Corrado, J. Haskel, C. Jona-Lasinio and M. Iommi, 'Intangible capital and growth in advanced economies: measurement methods and comparative results', Institute for the Study of Labor (IZA), Discussion Paper 6733, 2012, http://ftp.iza.org/dp6733.pdf.

[12] For a fuller discussion of the definition of UK taxable profit and the identification of avoidance, 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/budgets/gb2013/GB2013_Ch10.pdf.

need not, be the same location as the real activities that created the asset.[13] It is this feature of the tax system that often leads to claims of tax avoidance. For example, a commonly-discussed case is that of Starbucks. Starbucks paid no corporation tax in the UK in 2012 in part as a result of significant royalty payments for the use of the Starbucks brand, the intellectual property for which was held in a Dutch subsidiary (i.e. Starbucks claimed that most of the profits it earned came not from the sale of coffee through UK shops but through the exploitation of its brand).[14]

Allocating profits can be difficult conceptually because it can be hard to assign profits that are contingent on activities in multiple countries. For example, the 'UK' and 'French' parts of the company may have designed a new product in collaboration – what is the value of one part of the business without the other?

In practice, allocating profits to different countries is achieved by pricing all transactions that happen within a company (between related parties) across a border. A key outcome of OECD efforts in the 1970s was that countries agreed to set these 'transfer prices' according to the arm's length principle: prices must be set as if the transaction occurred between unrelated parties. In our example, there would be a price associated with the UK activities. The higher that price (i.e. the more valuable the UK activities), the higher the taxable UK profits and the lower the taxable French ones. In the Starbucks case, the price refers to the royalty. The idea is that the arm's length principle should ensure that profit is allocated to the value-creating activities.

Opportunities for avoidance

HM Revenue & Customs (HMRC) defines tax avoidance as 'bending the rules of the tax system to gain a tax advantage that Parliament never intended' and 'operating within the letter – but not the spirit – of the law'.[15] However, this definition, resting as it does on an interpretation of the 'spirit of the law', is inherently difficult to apply in practice. It is thus difficult to identify, and so prevent, instances of tax avoidance.

The OECD project considers two broad types of multinational tax avoidance. Base erosion refers to cases where companies take advantage of differences between rules in different jurisdictions to achieve 'double non-taxation' – a situation in which income is not taxed in any country. Profit shifting refers to the artificial transfer of profit from higher- to lower-tax countries. It also identifies tax avoidance that is related to the definition of which types of entities should be deemed to be part of the tax base.

Profit shifting

Conceptually there may be no 'correct' transfer price, and in practice there may be no comparable third-party transaction from which to estimate it. One of the key advantages of operating as a multinational is the ability to make investments and transfers that would not happen between unrelated parties (because, for example, it is difficult to write

[13] This is often referred to as intangible assets being taxed on a residence basis. See page 12 in Section 8.3 for an example of this.

[14] See 'Special report: how Starbucks avoids UK taxes', Reuters, 15 October 2012, http://uk.reuters.com/article/us-britain-starbucks-tax-idUKBRE89E0EX20121015. Starbucks has since restructured some of its business practices.

[15] Page 12 of HM Revenue & Customs, *Measuring Tax Gaps 2015 Edition*, October 2015, https://www.gov.uk/government/statistics/measuring-tax-gaps.

complete contracts[16]). Firms face incentives to take advantage of ambiguity around the 'correct' allocation of taxing rights and to report their activities in such a way as to minimise their tax liabilities. Specifically, firms may seek to charge a higher price for inputs coming from low-tax countries, or a lower price for inputs coming from high-tax countries, in order to reduce the overall tax liability of the multinational group.

Intellectual property (IP) such as patents, trademarks, copyright and trade names can be particularly difficult to value because it is often highly specific and has no third party comparator. It can also make no conceptual sense to value any given piece of IP separately from related IP and other activities. An added difficulty is that the location of IP is highly mobile. For example, firms can, and do, separate the research and development (R&D) activities that create a patent from the ownership and resulting income streams. Unlike with a machine, the use of the knowledge embedded in a patent or of a brand protected by a trademark does not depend on the location of the IP: a patent held in the Netherlands can easily be simultaneously used in many countries. Firms may locate IP in a low-tax country for non-tax-related commercial reasons or with a view to reducing their tax liabilities, and distinguishing between the two motives may be impossible. The size of royalty flows is large. In 2014, the UK received royalties (including those within and between groups) worth $20 billion and made payments of $11 billion,[17] making the associated tax liabilities at stake large.

Base erosion

Base erosion can be achieved in a number of ways. There are two areas that received particular attention in the BEPS reports: intra-group debt and hybrid entities.

Interest paid on debt is deductible from taxable profit as a business expense, while interest received is taxable. Firms can shift profit through intra-group loans from a subsidiary in a low-tax country (where the interest payments received will be taxable income) to one in a high-tax country (where interest payments made will get tax relief). This reduces overall tax liability. In a variant of this, companies can also reduce the total tax liability by taking out third-party loans in high-tax countries (where the interest deduction reduces tax liability by more), before transferring these funds to an investing company in a lower tax country. Box 8.1 provides examples.

A further dimension of avoidance risk surrounding debt is hybrid debt instruments and entities. Hybrid debt instruments often look at face value like debt but have some features of equity (an example is 'convertible bonds', which are bonds in a company that the holder can choose to exchange for a specific number of the company's shares). These instruments may be treated differently by different jurisdictions. When one jurisdiction treats an instrument one way – for example, as debt – and another treats it in a different way – for example, as equity – firms can exploit the mismatch in tax rules to achieve double non-taxation (the profit is not taxed anywhere). A multinational can structure its affairs such that the interest in one country is deducted, while the interest paid is not taxed in the other country. This constitutes base erosion – profit is not merely taxed at a lower rate: it is not taxed at all.

[16] A complete contract would specify all parties' rights and responsibilities for every possible future state of the world. Since a third-party lender cannot perfectly observe how a borrower behaves or dictate behaviour that may affect the probability of default, the lender will require a risk premium.

[17] Source: World Bank, 'Charges for the use of intellectual property', receipts and payments, http://data.worldbank.org/indicator/BX.GSR.ROYL.CD.

Box 8.1. Interest deductibility and tax avoidance

Example 1: Intra-group loans

Consider a multinational company with two subsidiaries, subsidiary A in a country with a tax rate of 10% and subsidiary B in a country with a tax rate of 20%. Subsidiary A makes a loan to subsidiary B of £100 million at an interest rate of 10%. The interest on the loan is £10 million, which is deducted from subsidiary B's taxable profit and added to subsidiary A's taxable profit. Assuming subsidiary B has other profits against which to offset this payment, tax payable by subsidiary B decreases by £2 million (20% of £10 million) while tax payable by subsidiary A increases by £1 million (10% of £10 million). Overall, therefore, the intra-group loan has reduced the tax liability of the multinational group by £1 million.

Example 2: Location of third-party interest expense

Now consider an investment made by subsidiary A of £100 million with a return of 20%. If subsidiary A takes out a third-party loan of £100 million at an interest rate of 10%, the pre-tax profit of the investment will be £10 million and the post-tax profit will be £9 million.

If, on the other hand, subsidiary B takes out the same loan and provides £100 million in cash to subsidiary A (an untaxed equity purchase), pre-tax profit of subsidiary A will be £20 million and the pre-tax loss in subsidiary B will be £10 million. Assuming subsidiary B can offset this loss against other profits, the post-tax loss is £8 million, while the post-tax profit for subsidiary A is £18 million. The total pre-tax profit is £10 million and the total post-tax profit is also £10 million. By locating interest in the higher-tax country, the multinational has ensured that the investment is not taxed at all.

A hybrid entity is a similar concept – a company that is viewed differently by different jurisdictions. An example used by many UK multinationals investing in the US is a 'tower structure'. This could work as follows. A UK parent has a subsidiary in the US, which itself has a subsidiary in the UK. The UK parent makes a loan to the UK subsidiary. This does not affect the UK tax liability: the deduction in the subsidiary effectively cancels out the extra income in the parent. However, from the US perspective, the US company specifies that its UK subsidiary should be treated as a branch. US tax rules allow branches to be 'looked through' and treated as part of the US entity. From the perspective of the US, the UK parent is irrelevant. The interest payments made by the UK subsidiary can therefore be deducted against the company's US tax liability. Because the entity is treated as a UK company by the UK and a foreign branch by the US, the interest is deducted in both jurisdictions. This works to strip tax liability out of the US.

Assigning taxation rights

Tax treaties (which assign taxable rights between two countries) state that a company's profits are taxable in a foreign jurisdiction in as far as it operates a *permanent establishment* (PE) in that jurisdiction. This is an internationally agreed definition of what constitutes a fixed place of business that gives rise to taxable income. The rationale is that if, say, a company performs all of its substantive activity in its home country and simply has a storage or distribution facility in a second country, sales income in that second country should be assigned to the home country. In practice, this creates an incentive for firms to structure themselves to avoid PE status in higher-tax countries so that profits flow to a lower-tax jurisdiction. This concern has often been raised in the case of Amazon, for example, which in recent years has claimed that much of its EU activity is conducted

from Luxembourg and not through a UK PE (i.e. profits from sales are attributable to Luxembourg and not to UK storage and distribution facilities).[18]

The taxation rights over certain transactions, such as the payment of interest or dividends, are principally assigned to the jurisdiction of the recipient. However, transactions may also be taxed in the jurisdiction where that payment arose through a withholding tax. Tax treaties between countries limit the withholding tax, often to zero. Not all countries have bilateral treaties with one another, and some treaties are more generous than others in terms of the maximum level of the withholding tax. The limitation of the withholding tax is a 'treaty benefit' and firms may try to benefit from the treaty even when it should not apply to them. For example, if a UK company is making an interest payment to a company in a tax haven (with which the UK has no treaty), the company may limit the withholding tax paid by 'artificially' routeing the payment through a country with which the UK does have a treaty. This is called 'treaty shopping' and means income may be subject to low or zero tax when a UK withholding tax should have applied.

How much avoidance?

No one knows how much tax revenue is lost to multinational tax avoidance. This is partly because there is no accepted definition of what constitutes 'avoidance' and partly because we lack full information about the activities of firms. HMRC estimates a UK 'tax gap' – the difference between the amount of tax it estimates it is entitled to and the amount of tax actually collected. In 2013–14 the estimated gap attributable to corporate tax avoidance was £1 billion, 2.5% of that year's corporate tax revenue. However, this measure is not designed to capture the bulk of multinational base erosion and profit shifting so is an underestimate.[19]

Much larger estimates have been arrived at. One approach to quantifying profit shifting is to measure the difference between the amount of tax declared on firms' accounts and an estimate of the tax due. For example, a Trades Union Congress (TUC) report estimates that £12 billion is lost each year through avoidance of the 700 largest UK corporations, equivalent to 27.9% of 2014–15 revenues.[20] However, such measures can overstate the tax gap (possibly by a wide margin) because, in estimating the tax that 'should' have been paid in the UK, they do not fully account for deliberate features of the tax system that reduce tax liabilities. For example, taxes paid can be legitimately reduced by capital allowances, the R&D tax credit or loss carry-forwards. The TUC estimate may also be an underestimate to the extent that it does not capture UK taxes that are avoided by some foreign multinationals.

It should be noted that observing a firm operating and paying taxes in a low-tax country does not necessarily indicate tax avoidance – firms take tax into consideration when

[18] See 'Amazon: £7bn of sales, no corporation tax', *The Guardian*, 4 April 2012, http://www.theguardian.com/technology/2012/apr/04/amazon-british-operation-corporation-tax. Amazon restructured some of its business practices in 2015.

[19] The total tax gap estimate was £34 billion, with £3 billion related to corporate tax (including evasion, predominately by small and medium-sized enterprises). The tax gap calculation is based on cases that HMRC has identified and is litigating against. HM Revenue & Customs, *Measuring Tax Gaps 2015 Edition*, October 2015, https://www.gov.uk/government/statistics/measuring-tax-gaps.

[20] See Trades Union Congress, 'The missing billions', https://www.tuc.org.uk/economic-issues/missing-billions-uk-tax-gap. The Guardian's analysis takes a similar approach (http://www.guardian.co.uk/business/series/tax-gap).

making genuine commercial decisions. Distinguishing between legitimate responses to the tax system and avoidance behaviours is very difficult.

Based largely on existing studies, the BEPS project estimated the global revenues lost to BEPS at between $100 billion and $240 billion per year, which is between 4% and 10% of total global corporate income tax revenues. This large range reflects the high degree of uncertainty. One of the 15 BEPS action points is devoted to constructing better measures of the scale of avoidance globally.

The widespread perception is that the prevalence and scale (in terms of revenue forgone) of avoidance activity are very large. In reality, the amount lost may be much smaller than imagined. Avoidance may often be overestimated due to the difficulty of defining what counts as avoidance – holding intellectual property in a low-tax country is often thought of as synonymous with tax avoidance, but in many cases may just represent firms responding to tax incentives. Importantly, even if we could precisely estimate the revenue lost to avoidance, it would not be right to assume that, were all avoidance opportunities to be completely removed, the UK's total tax take would increase by that full amount. We would expect reduced avoidance opportunities to lead to higher taxes, which feed through, at least to some degree, to lower investment in the UK and changes in prices such that genuine UK profits may be lower. Raising taxes (including by reducing avoidance opportunities) changes incentives and can deter real economic activity. The overall impact of a tax rise would depend in part on how the resulting revenues were used.

While we cannot confidently quantify how much revenue might be on the table, we do have evidence of specific avoidance channels. Removing avoidance opportunities, especially if done on a coordinated basis across countries, can reduce distortions related to tax planning and protect tax bases.

8.3 The BEPS recommendations

The BEPS project set out to find improvements to tax rules that would reduce avoidance opportunities. Of the project's 15 action points, most are focused on a specific aspect of domestic or international tax rules. The recommendations, which are summarised in Table 8.1, vary by action point and can be broadly categorised into three types: **minimum standards** to which countries have agreed their tax rules must adhere; **revised international standards** that will be incorporated into tax treaties; and recommendations for common approaches and **best practices**. Four actions are concerned either with the **measurement** of BEPS or with the **processes** required to implement changes. The table highlights the UK action required or under way in each area. An appendix explains each of the main issues in more detail. Section 8.4 discusses the main policy changes for the UK.

One area that the project focused on, and where legislative action is already taking place in the UK and elsewhere, is improved transparency and information flows. In particular, countries are legislating to require that multinationals file a country-by-country report detailing certain key statistics for each jurisdiction in which they operate. This information will then be shared between tax authorities and should help authorities identify BEPS risks and target their resources (such as audits) more effectively.

Table 8.1. BEPS recommendations: a summary

Main issue (action point)	Recommendation(s)	UK action
Minimum standards		
IP / patent box regimes (5)	New 'modified nexus approach' to align tax benefit with real activity	UK regime to be modified by July 2016
Treaty benefits (6)	All treaties to incorporate explicit intention (of governments) to prevent treaty abuse	UK adopted a 'main purpose test' in 2012 (the main purpose of an arrangement cannot be to gain a treaty benefit), which already meets the minimum standard
Transfer pricing documentation and country-by-country reporting (13)	Provide tax authorities with more information on transfer pricing policies and location of activities	Required by 2016; UK has begun legislative process; UK firms to start reporting from 2017
Revised international standards		
Transfer pricing guidelines (8–10)	New practice for assessing the value of intangibles and the allocation of risk	New guidelines will be adopted (UK legislation refers directly to OECD guidelines)
Permanent establishment (7)	Broaden definition of a permanent establishment	UK will adjust bilateral treaties
Best-practice approaches		
Interest deductions (4)	New 'fixed ratio' rule for limiting interest deductions	Consultation in UK on whether to adopt ended January 2016
Hybrid mismatches (2)	New two-part hybrids rule to prevent instruments / entities being treated differently across countries	UK has already legislated for new rule to start on 1 January 2017
CFC rules (3)	Framework for designing a rule	UK regime was revised in 2011; it does not adhere to best practice rule, but will not be changed
Mandatory disclosure rule (12)	Require promoters and/or firms taking part in certain schemes to report scheme to tax authority	UK has operated disclosure of tax avoidance schemes (DOTAS), which meets the recommended best practice, since 2004
Measurement and process		
Measuring BEPS (11)	Measures to improve availability and analysis of data	OECD plans to work with countries to improve data availability and analysis
Mutual agreement procedure (MAP) (14)	Mechanism to settle international taxation disputes	All countries adhering to the BEPS outcomes, including the UK, have signed up to ensure the MAP is utilised; more work on how to resolve disputes is under way
Multilateral instrument (15)	Mechanism to adjust all bilateral tax treaties simultaneously	Instrument being designed; UK expected to sign up; outcome expected later in 2016

Note: Action point 1 (not listed) seeks to address 'tax challenges of the digital economy'. The report on this action concluded that the digital economy should not be treated separately for tax purposes. The challenges are address as part of the specific issues in other actions.
Source: Authors' own summary based on OECD, BEPS 2015 Final Reports, http://www.oecd.org/ctp/beps-2015-final-reports.htm.

The implementation of BEPS is just as important in determining the success of the project as the work set out to date. The OECD has no power to impose the minimum standards or adherence to new processes. Implementation of BEPS instead relies on pressure and consensus from the international community to ensure the recommendations are implemented. For treaty changes (for example, on PEs and treaty benefits) to be swiftly and successfully implemented, a multilateral instrument must be developed and adopted. The minimum standards on information sharing and preferential regimes require unilateral amendments to domestic legislation.

One of the largest unknowns is how many governments will move to adopt any of the new best-practice rules. A key tension here is that strengthening controlled foreign company (CFC) rules or reducing interest deductibility may make a country a less attractive location and therefore be in conflict with a country's competitive aims. Many countries face an incentive to see what others do before changing their own policies, and no government may be willing to move first.

A new principle

An overarching aim of BEPS was to align taxing rights more closely to economic substance. This may sound innocuous. In some cases, it amounts to reinforcing what the current system is trying to achieve and is therefore desirable. However, in other cases, it represents a new principle being added in such a way that it can conflict with the pre-existing principles.

The desire to realign the taxation of profits with the real activities that created them may appear to be a straightforward and sensible restatement of what the tax system is already trying to achieve. Firms can sometimes organise themselves in egregious ways that involve the complete separation of taxable income from any real activities and are purely motivated by the avoidance of tax. It is desirable to prevent this.

However, the idea that the taxation of profits always be aligned with real economic substance is not a principle that underlies current tax rules. It is often the case that tax liability does arise alongside real activities. For example, if a company is building and selling cars, we would expect a tax liability to arise alongside the car-building factory and the employment of workers. But, as highlighted in Section 8.2, the current system aims to tax the returns to intangible assets in the location of the asset owner. This means that taxable income may arise in a location that is different from that in which the underlying technology was created or sold. There would be benefits to reconsidering the principles of the current tax system, assessing whether they deliver the outcomes that policymakers desire and, if they do not, designing a new set of principles. The BEPS actions do not amount to replacing the old principle (that returns to intangibles are taxed based on ownership) with a new one (that returns are always taxed where economic substance is located), but to having both principles operate at the same time. This may be a form of second-best solution to avoidance. But it means that any benefits come at the cost of a less coherent and more complex system.

Consider the following example. A UK multinational decides it wants to move into the driverless car market. It contracts a US subsidiary to research the new technology required to do this. The US subsidiary creates a new technology and gets a patent which is held by a Dutch subsidiary that is involved with managing the IP. The US subsidiary will earn (taxable) income (i.e. a payment from the UK firm) that reflects the value of the R&D activity (commonly the cost of conducting the R&D plus a markup). The UK firm will earn

income by selling cars that incorporate the new technology. The UK firm will also make royalty payments to the Dutch subsidiary reflecting the value of the patent (possibly including any economic rents that accrue as the result of the market power bestowed by the new technology). The more valuable the patent (i.e. the more of the value of the cars that results from the new technology), the higher the taxable income in the Netherlands and the lower the taxable income in the UK. This is a case where a large amount of income may accrue in a location (the Netherlands) without there being a great deal of 'economic substance' (possibly just a small team of people to manage the IP). This is effectively the choice that was made about how to run the international tax rules.

However, firms can sometimes abuse the fact that intangibles are taxed according to the location of ownership to avoid taxes. We already have transfer pricing rules that aim to deal with this by ensuring, for example, that the income received in the Netherlands only reflects the value of the real economic activities (i.e. the US subsidiary gets the correct price for the value of the R&D, the UK gets the correct price for the value of integrating the technology and selling cars, and the Netherlands only receives a payment for managing services). In practice, as discussed above, it is difficult to price all transactions correctly (and in many cases there will be no 'correct' answer on how to divvy up profits). And because the income streams associated with intangible assets are large, the location of the associated tax revenues is of much interest to companies and governments. The BEPS approach is effectively seeking to override current outcomes when they are deemed undesirable.

A number of the actions have adopted the new substance requirement.[21] For example, modifications will be made to the transfer pricing guidelines to clarify that ownership of intangible assets alone does not give a company the right to any or all of the profit flows associated with that asset (see the appendix for further details). The basic idea is that, in examples such as the above, more weight will be placed on the real activities of the IP owner (for example, what they are contributing to the management of the asset) in determining the correct transfer price. Again, this may help prevent avoidance. But it may also conflict with the outcome that would be expected under the current rules even absent avoidance. For example, the new rules could mean that the arm's length price received by the Dutch subsidiary is lower than if it licensed the technology to a third party. Changes to IP boxes are also driven by the desire to align taxing rights with real activities and we give an example in Section 8.4 of where this may override current principles.

In summary, adding a new principle provides a way for governments to move taxing rights towards something that they think more accurately reflects where value is created. In some cases, this will prevent tax avoidance. But it does come at the cost of having a tax system that embeds two principles that sometimes conflict and that is therefore less coherent and more complex. It may also distort genuine activities in some cases. It will still be difficult to assess the correct transfer price and the new approach opens the door for disputes over whether passive income (such as royalty flows to a patent) should be taxed based on the residence of the owner or under the new substance requirement. Further, many firms will face an incentive to adjust their activities by just enough to meet the minimum substance requirement rather than to restructure their activities completely.

[21] Most notably, actions on harmful tax practices (5) and transfer pricing (8–10).

The BEPS process could have done much more to acknowledge that the substance requirement can be at odds with current principles and to consider explicitly how the interaction will work.

8.4 Main implications for UK policy

Table 8.1 highlighted the actions that the UK is undertaking (or has undertaken) as a result of the BEPS process. Here we consider four of these in more detail and discuss the likely overall effect for UK tax revenues.

Redefining permanent establishment status

The BEPS process sought to deal with concerns that companies are avoiding tax by structuring themselves such that they do not have a taxable presence (a PE) in a foreign jurisdiction by broadening the definition of PEs in international tax rules. The revisions are particularly focused on tackling issues related to the digital economy. Notably, entities are currently exempt from PE status if they undertake only activities of a 'preparatory or auxiliary character', such as storage and distribution.[22] This means that a UK consumer may purchase a good via the website of a foreign company (such as Amazon) that is then delivered from a UK distribution centre, and that transaction will not lead to a UK corporate tax liability because there was no UK PE involved. This is the correct outcome under current law. But it leads to concerns that some activities are being undervalued and countries therefore missing out on taxable income. Storage and distribution facilities may actually constitute core business activities that contribute to the creation of value added (for example, by providing quick distribution or high levels of customer service).

To operate the current rules, we require a definition of what constitutes a taxable presence and what does not. There is no clear answer. The rules dictating PE status will be revised to move where the dividing line is drawn. In particular, the revised rules will specify that storage and distribution activities will constitute the operation of a PE unless the activities are genuinely only preparatory and auxiliary in nature, which is, of course, still somewhat subjective. There will also be clarifications to prevent some forms of 'commissionaire' arrangements, whereby a good is sold by one company on behalf of one in another country, such that the sales go directly to the other company. Relatedly, there will be clarifications to address situations where a seller avoids having a PE where sales take place and instead formally concludes sales in a lower-tax jurisdiction. Google has used the latter form of arrangement: substantial negotiation of sales happens in the UK but Google sales are booked in Ireland.[23]

Redefining PE status should result in taxing rights that better reflect the source of profits if countries find a way to adjust bilateral treaties to implement a new PE definition, and if that works to redefine some activities that are currently deemed auxiliary.

It is worth noting that this change may work in both directions for the UK. For example, more income (and therefore tax) could be received from the UK storage and distribution

[22] Article 5(4) of OECD, 'Model convention with respect to taxes on income and on capital', 2014, http://www.oecd.org/ctp/treaties/2014-model-tax-convention-articles.pdf.

[23] See 'Google avoided $2bn tax by funnelling profits through Bermuda', *Daily Telegraph*, 10 December 2012, http://www.telegraph.co.uk/finance/personalfinance/tax/9735448/Google-avoided-2bn-tax-by-funnelling-profits-through-Bermunda.html.

facilities of foreign multinationals (such as Amazon) – although some companies may choose to adjust their activities to avoid becoming a PE. At the same time, some UK multinationals may receive less foreign income if their foreign storage and distribution facilities are given PE status.

Preventing hybrid mismatches

The longest BEPS report set out a best-practice framework for hybrid debt structures (such as tower structures – see Section 8.2). The recommendation was a set of rules to ensure companies could not benefit from instruments (or entities) being treated differently in different jurisdictions. The new rule specifies new rules for instruments and entities, each with two parts. For instruments, the rule is:

1. A transaction that generates a deduction from tax in one country (for example, an interest payment) should only be allowed if the corresponding income (for example, interest received) is taxed in another country.
2. If part 1 is breached (i.e. the transfer and deduction go ahead), a defensive rule can be applied and the transfer will be included as taxable income in the second jurisdiction.

For entities, the rule operates a little differently:

1. When a hybrid entity would achieve a 'double deduction' of a payment, the deduction in the parent jurisdiction (the country in which the multinational parent is based) is disallowed.
2. If part 1 is breached, a defensive rule is applied and the deduction will be disallowed in the subsidiary jurisdiction instead.

By linking the tax treatment in one jurisdiction to the tax treatment in another, this rule prevents hybrid mismatches from occurring. The UK is among a group of countries that has already legislated for this rule (Australia is another). It will be in place in the UK from 1 January 2017.[24] This is a positive move that will prevent some forms of avoidance, including the much-used tower structure cited above (UK companies have already started the process of unwinding such structures). In this specific case, the UK is the parent jurisdiction and, under the new hybrid entities rule, the interest deduction would be disallowed in the UK while taxable income in the US would be unaffected.

One of the nice features of this type of rule is that it is designed to encourage take-up among countries. The inclusion of the defensive rule means that, if one country has the rule, other countries in which the same multinational firms operate and use hybrid arrangements may be forgoing tax revenue by not having it. From the perspective of the multinational, it makes no difference whether one or both countries have the rule as either way the use of the mismatch is prevented. A country therefore gains a competitive advantage only so long as other countries within which its firms operate do not have a rule. Otherwise, the defensive rule employed by other countries would simply reduce tax revenues (with no corresponding competitive advantage). However, since many countries do not currently have the rule, many may be reluctant to introduce it and thereby reduce the competitive advantage to domestic multinationals. This new hybrid rule will be most effective if a significant number of large countries implement it. A

[24] HM Treasury, *Autumn Statement 2014: Policy Costings*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384071/AS2014_policy_costings_final.pdf.

disadvantage of a best-practice rule rather than a minimum standard is that countries may struggle to coordinate on the introduction of hybrid rules.

Patent box

The UK's patent box – its own version of an IP box – offers a reduced corporate tax rate of 10% on the income derived from patents, compared with the main rate which is currently 20% and will fall to 18% by 2020.[25] By the end of 2015, the policy had been used by 639 companies, representing a cost to the exchequer in terms of forgone tax revenue of £335 million to date.[26] This is forecast to rise to £740 million in 2016–17.[27]

The UK patent box, like all similar regimes operating in Europe, does not currently meet the minimum standard for preferential regimes set out by BEPS. In particular, it does not require that the research underlying a new patent took place in the UK.[28] The current scheme will be closed to new entrants from April 2016 (with grandfathering of existing patents until 2020–21) and replaced by new rules that follow a 'modified nexus approach'. At the end of 2015, the government ran a consultation on exactly how the policy will be changed.[29]

The aim of the new 'modified nexus approach' is to ensure that the granting of a tax benefit aligns more closely with the location of real activities. The policy change required will be larger in some other countries than in the UK (because their policies are further away from the minimum standard). The new approach will make the policy better at attracting R&D activity to a country, although how attractive any one country is depends on the actions of others and this is an area where governments face an incentive to compete. However, the new UK rules will be substantially more complex and will require detailed tracking between R&D and resulting income streams. The patent box remains a policy that is poorly targeted at incentivising firms to undertake additional R&D investments. For this, an R&D tax credit is better targeted and much simpler.

The modified nexus approach

One of the features of the UK patent box that has been previously highlighted is that the real innovative activity underlying the creation of a patent need not be located in the same country as the IP and therefore the taxable income.[30] The modified nexus approach seeks to stop a preferential regime being applied in this scenario. Instead, it sets out a framework in which preferential IP regimes can only be used when there is real substance in the jurisdiction in which the tax relief is granted. The BEPS plan is effectively

[25] The regime was phased in from 2013, starting with smaller reductions in the tax burden (because only a fraction of the tax break was allowed). It will reach its steady-state level of generosity (a 10% rate) in 2017.

[26] HM Revenue & Customs and HM Treasury, *Patent Box: Substantial Activities*, Consultation Document, 22 October 2015, https://www.gov.uk/government/consultations/patent-box-substantial-activities.

[27] HM Treasury, *Budget 2013*, March 2013, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221885/budget2013_complete.pdf.

[28] The new minimum standard also places restrictions on the types of IP that can be included in a preferential regime. This does not affect the UK but will require changes in other countries' policies.

[29] See HM Revenue & Customs and HM Treasury, *Patent Box: Substantial Activities*, Consultation Document, 22 October 2015, https://www.gov.uk/government/consultations/patent-box-substantial-activities.

[30] See section 5 of L. Evers, H. Miller and C. Spengel, 'Intellectual property box regimes: effective tax rates and tax policy considerations', *International Tax and Public Finance*, 2015, 22, 502–30, http://dx.doi.org/10.1007/s10797-014-9328-x and 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.

to try to limit the potential for preferential IP regimes to erode countries' tax bases (by encouraging firms to locate IP income but not real activities in a country with a regime) while continuing to allow countries to compete for the associated real activities.

As highlighted in Section 8.3, this is an example of where the new substance requirement (i.e. that taxing rights align with real activities) is being used. This can be seen by following the example, introduced in Section 8.3, of a UK multinational that developed a new technology in the US and holds the related patent in the Netherlands. Under current rules, the income earned in the Netherlands (i.e. the royalty payments sent from the UK) would be eligible for the Dutch IP regime. The UK company could not use the UK patent box. If, instead, the patent had been filed in the UK, then all of the net revenue that accrued in the UK (i.e. profits from the sale of cars minus the payment to the US subsidiary for the R&D) would currently be eligible for the reduced patent box rate. This will not be the case under the new rules. That is, even though the tax system says that the income (from the use of the technology in the new cars) should be taxed in the UK, the income will not qualify under the new patent box regime because the underlying R&D activity took place in the US. In order to qualify, the R&D would need to take place in the UK (if only some of the R&D took place in the UK, only some of the tax benefit would be granted; more on this below). This is a case where the desire to align tax with real activities (which underlies the modified nexus approach) deviates from the principle currently used in the international tax system that income from intangibles is taxed where the owner is located.

Is the change a good one?

Effectively, the aim of the new minimum standard on preferential regimes is to ensure that they can only be used to attract real activities and not to try to attract footloose revenue streams. There is merit to this. The move should help to prevent 'harmful' tax competition – broadly, this is competition that shifts the location of taxable income such that overall revenues are reduced without affecting the location of real activities.

Regimes vary in how easily they can be used for tax avoidance purposes. Some countries already operate rules aimed at preventing the use of IP regimes for pure profit shifting. For example, acquired IP (i.e. IP purchased from another company or acquired in a merger or acquisition) is eligible under the Belgian and Dutch regimes, but a tax benefit is only granted for that part of value added that is created through further development by the taxpayer. Others operate IP boxes that are clearly targeted at attracting income, with less concern for the real activity. This is clearly the case in Malta, for example, where there is a 0% rate that only applies to acquired IP where no domestic R&D expenses are claimed (i.e. the reduced rate would apply if a company transferred their IP to Malta). Cyprus, France, Hungary and the Swiss canton of Nidwalden also stand out because their regimes neither require acquired IP to be further developed in order to qualify nor allow internal use of IP to benefit from the relief (i.e. only royalty and capital gains income qualifies).[31] These are the kinds of regime that are of most concern as they may act to erode other countries' tax bases. The UK regime is not targeted purely at attracting income, and many firms that use the regime are likely to be doing some real activity in the UK. However, as is the case with all IP box regimes, there is currently no requirement that

[31] For a description of European IP regimes and discussion of the surrounding policy issues, see L. Evers, H. Miller and C. Spengel, 'Intellectual property box regimes: effective tax rates and tax policy considerations', *International Tax and Public Finance*, 2015, 22, 502–30, http://dx.doi.org/10.1007/s10797-014-9328-x.

the underlying innovative activity be carried out domestically.[32] Modifying patent box policies will change this. It will work to prevent some forms of avoidance (for example, where a patent is shifted to a low-tax country purely to take advantage of a tax break). However, it will also affect some genuine commercial decisions (for example, in the above example, the UK firm will face a tax disadvantage to conducting R&D in the US).

Conditional on having a patent box, the BEPS changes should place a cap on some forms of tax competition. However, there is still a question of whether having a patent box at all is a good idea. The BEPS report states that the idea of a substantial activity requirement builds on the principle that 'IP regimes are designed to encourage R&D activities'.[33] If the aim is to incentivise R&D activities, then a better policy would be an R&D tax credit. This has the key benefit of being given in proportion to the amount of investment activity undertaken, and is well targeted at the externalities created from R&D – the fact that one firm's innovation may have spillover benefits for the rest of the economy that are not factored into that firm's decision when deciding how much innovation to do is what justifies a subsidy. Where an IP box will be more effective than an R&D tax credit is in attracting highly profitable activities (because in these cases the level of the tax rate will be more important than the tax base). If the aim is to be a more competitive location for this kind of activity, then only granting the IP tax break when there is associated real activity makes sense. A preferential rate could also allow tax competition to be isolated in one part of the tax system (taking pressure off the main rate, for example). However, competitiveness is a moving target, as evidenced by the sequential introduction of IP boxes across Europe. Therefore, as with other elements of corporate tax, there is an open question as to whether all countries could be better off if they agreed not to operate IP boxes.

There are other possible aims behind the introduction of IP boxes. For example, a preferential regime could be used to provide a lower rate on a mobile form of income (effectively accepting that high levels of tax cannot be raised from a certain kind of income). In this case, the location of the real activity is less important and adding a restriction on the location of R&D and thereby distorting some commercial decisions is an unwelcome step. Another aim could be to encourage further commercialisation of IP, yet there is no clear justification for subsidising commercialisation activities.[34] If it is an aim, it does not require a link to R&D expenditure.

Achieving the new minimum standard

The BEPS minimum standard sets out a framework for applying the 'modified nexus approach' to preferential regimes. It stipulates that a tax reduction can only be granted to the extent that there is a direct link ('nexus') between the IP income and the expenditures on real activities that created the IP. As a proxy for real 'substantial' activity, the approach will use expenditures on R&D. Specifically, the calculation of qualifying income will comprise the income from an IP asset multiplied by the 'nexus fraction'. The nexus

[32] This is in line with the fundamental freedoms codified in the Treaty on the Functioning of the European Union.

[33] See page 9 of the Final Report on action point 5 (*Countering Harmful Tax Practices More Effectively, Taking into Account Transparency and Substance*), available at http://www.oecd.org/ctp/beps-2015-final-reports.htm.

[34] There may be some specific market failures around getting technologies to the market in the UK. For example, there may be less than efficient information sharing between university research departments and the private sector or financial market frictions that limit commercialisation. However, there is no evidence of large spillovers from commercialisation activities (such as branding and advertising).

fraction is the share of total R&D expenditures that went into the creation of the IP that were carried out by the taxpayer. If all R&D is carried out in the same country, the nexus fraction is likely to be 1 (such that all income qualifies). There are two notable categories of expenditure that are explicitly excluded from qualifying (and that will therefore reduce the nexus fraction and the tax benefit). One is expenditure on acquired IP, which is currently allowed in many regimes. Under the new rules, such income will only be eligible to the extent that the taxpayer has undertaken additional R&D expenditures. The other is expenditure on R&D that is outsourced to a related party (expenditure on outsourcing to third parties is allowed as it is not deemed to be associated with BEPS risk). It is this latter restriction that will prevent a tax benefit in examples, such as the one above, where a UK firm holds a patent created from R&D conducted by a related subsidiary located offshore.

Within the minimum standard, jurisdictions are free to define qualifying income and expenditure for IP regimes as they wish, so long as they adhere to the nexus fraction. The UK completed a consultation on exactly how to achieve this in December 2015. More information on the new patent box is expected at Budget 2016. New rules will be introduced in Finance Bill 2016 and come into effect on 1 July 2016 for patents applied for after that date.[35] Importantly, applying the new method will require firms to track R&D expenditures through to resulting income and to document the relationship (this is referred to as the 'streaming' approach). In most cases, this will lead to a significant increase in complexity and compliance burden. At present, the patent box applies to a company's IP proceeds as a whole, with no regard for associated R&D expenditures. In future, firms will have to provide data at the level of an individual patent or product such that R&D expenditures can be traced to resulting income. This will be administratively burdensome and difficult in practice, especially for large firms that hold many related patents. It may be hard to identify exactly which spending contributed to the creation of a patent, and the spending may be ongoing such that the calculation has to be regularly updated.

For many UK firms, notably including domestic firms, the new rule may not lead to a change in the UK tax treatment (i.e. 100% of their patent income will still be deemed eligible). Those firms that conduct a large share of the related R&D offshore (either for legitimate commercial purposes or because IP is held in the UK for tax avoidance purposes) will see a reduced tax advantage under the new regime.

The new minimum standard has a number of other restrictions, including that the allowable scope of IP regimes be limited to patents (and equivalents) and copyrighted software. This will not affect the UK regime (which applies only to patents), but will have a significant effect on many other regimes that allow income from a broader set of IP, often including trademarks and copyrights and in some cases secret formulas and business know-how.

Interest deductibility

Multinational companies can use intra-group loans to shift interest expenses (and therefore taxable profits) from one member of the group to another. These arrangements

[35] Most patents filed (but not necessarily granted) before July will continue to receive the benefit of the existing patent box until 30 June 2021. Draft clauses of the legislation are available at https://www.gov.uk/government/publications/corporation-tax-patent-box-compliance-with-new-international-rules.

can result in low, or even zero, taxation for certain projects. The BEPS goal was to produce an anti-avoidance rule that could be used to prevent multinationals from artificially shifting income expenses. In designing such a rule, it specifically targeted 'excessive' intra-group lending and the location of third-party debt in high-tax countries, both of which can result in the use of interest expense to shield other income from tax (see Box 8.1 earlier).

It is worth noting that it is not desirable to simply disallow all interest deductions arising from intra-group loans or third-party loans from high-tax countries. There are legitimate reasons for such arrangements. For example, some members of a multinational group may be more capital intensive and require more investment and an intra-group loan may be preferable (i.e. lower cost and more available) to a loan from a third party because the group has more information about its own operation. Most corporate tax regimes allow interest payments on loans to be fully deductible from taxable income as a business expense and, in general, this is sensible as it helps ensure that only the net return (to debt-financed projects) is subject to tax.[36]

Most governments aim to deal with avoidance by operating rules that prevent or restrict interest deductions in certain circumstances. It is not possible to identify cases of avoidance perfectly, so any rule can only hope to define situations that are correlated with avoidance. In designing such rules, there is always a trade-off: a more stringent rule that severely restricts interest deductions does a better job of limiting avoidance but also places a greater tax burden on genuine commercial activities.

The UK operates a worldwide debt cap that is generous relative to rules in other developed countries: it rarely limits interest deductions as most companies are below the cap. The UK rule does not meet the BEPS best-practice recommendation; the current UK approach is compared with the new best-practice rule below. The UK has consulted on possible changes to interest relief, including whether or not to implement the new 'fixed ratio' rule and what the surrounding provisions could look like were it to be implemented.[37] More information about the government's decision is expected in the 2016 Business Tax Roadmap. Were the UK to adopt the proposed new 'fixed ratio' rule, which would likely be in place no earlier than April 2017, it would be a substantial change that would restrict interest deductions in the UK and raise UK revenues.

In the run-up to the 2010 election, the Conservative Party floated the idea of restricting interest deductions and 'reducing the dependence of our corporate sector on debt'.[38] Before the 2015 election, the Liberal Democrats also pledged to restrict interest deductions.[39] Despite these statements and the consultation, it is far from certain that the UK will adopt a new approach, not least because to do so would directly conflict with previous statements that generous interest deductibility rules are one of a number of aspects of the UK corporate tax system (the CFC rules are another) that make the UK an attractive location for multinationals' headquarters: 'The UK's current interest rules,

[36] In a closed economy with capital allowances that perfectly reflect depreciation, allowing interest deductibility should mean that the tax does not distort investment at all.

[37] The consultation closed in January this year. See https://www.gov.uk/government/consultations/tax-deductibility-of-corporate-interest-expense/tax-deductibility-of-corporate-interest-expense-consultation.

[38] http://conservative-speeches.sayit.mysociety.org/speech/601394.

[39] See S. Adam, J. Browne, C. Emmerson, A. Hood, P. Johnson, R. Joyce, D. Phillips, H. Miller, T. Pope and B. Roantree, 'Taxes and benefits: the parties' plans', IFS Briefing Note BN172, 2015, http://www.ifs.org.uk/uploads/publications/bns/BN172.pdf.

which do not significantly restrict relief for interest, are considered by businesses as a competitive advantage'.[40] The consultation document notes that 'consideration will need to be given to if and when other countries act upon the recommendations in the OECD report', an indication that the UK would not want to make a unilateral move that put it at a disadvantage. Given this, a likely outcome is that the UK decides not to introduce a BEPS best-practice recommendation (and therefore not prevent some forms of avoidance) because it places a higher value on the perceived competitive advantage and the associated real activity that encourages.

The UK would not be alone in such calculations. Many face an incentive to wait to see whether others will adjust their rules. The new rule is not a minimum standard because there is no cross-country consensus on where to draw the line on interest deductions. Coordinating implementation of a new rule, even among a subset of countries, would be difficult. Some countries may decide on a different approach altogether.

Current UK rule: worldwide debt cap

The UK's worldwide debt cap (WWDC) applies only to large companies that are part of a multinational group, and applies at the UK sub-group level (the UK sub-group is all of the members of a multinational group located in the UK). In effect, it caps the total amount of net interest that the UK sub-group can deduct from taxable profit at the gross external interest payments of the worldwide group.[41] This means that the net interest (interest paid minus interest received) deducted in the UK must be less than the total amount of interest paid by the group as a whole to third parties. Under this regime, interest deductibility will be limited only if the net interest payments of the UK sub-group are larger than the total amount of interest that the worldwide group pays on debt from third parties. Recall, such rules are effectively designed to prevent situations that are highly likely to signal tax avoidance. The WWDC targets cases where very high levels of debt are held in the UK and defines high debt based on how much debt is held in the multinational as a whole.

BEPS outcome: fixed ratio rule

The recommended rule would limit interest deductions to a fixed proportion of what is known as EBITDA. This is a measure of Earnings (profit after deducting labour costs) Before deductions for Interest paid, Tax paid, Depreciation of tangible assets and Amortisation of intangible assets. For example, if the allowable fixed ratio of net interest to EBITDA were set at 10%, a company that had net interest equal to 20% of EBITDA could only deduct half of its interest when calculating taxable profit. The OECD suggests a 'corridor' of 10% to 30% within which each country's ratio might fall. A rule that compares the level of interest deductions with a measure of firm size provides a way to link the degree of interest deductions to real activity and can be used to combat both excessive third-party and intra-group loans.

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[40] Paragraph 3.8 of HM Treasury and HM Revenue & Customs, *Corporate Tax Reform: Delivering a More Competitive System*, 2010, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/81303/corporate_tax_reform_complete_document.pdf.

[41] The WWDC mechanism is actually slightly more complicated. Initially, the 'tested expense amount' is calculated as the aggregate net interest payments of all those companies in the UK sub-group with positive net interest payments. If this exceeds the 'available amount' (the gross external interest of the worldwide group), the difference between the tested expense amount and the available amount is called the 'disallowed amount'. The UK sub-group can then disregard net interest income (for those companies in the sub-group with negative net interest payments) up to the disallowed amount. While the mechanism has implications for the distribution of interest deductions over the UK sub-group, interest deductibility will only be limited if the net interest deduction of the UK sub-group is greater than the external interest payments of the worldwide group.

The OECD sets out several other aspects that jurisdictions may wish to incorporate into their rule. Principal among them is a supplementary 'group rule'. The idea is to allow interest to be deducted above the fixed ratio as long as the worldwide group's net external interest to EBITDA ratio was higher than the fixed ratio. In that case, interest could be deducted up to the group ratio (plus an optional uplift of 10%). Other optional elements include the carry forward or back of spare interest capacity or disallowed interest and a de minimis threshold that limits the application of the rule to firms larger than the given threshold. Consultation is ongoing on the precise design of the group rule, other options, and the application of the fixed ratio rule to certain industries, such as finance and insurance.

The two rules compared

As highlighted above, it is not possible to discriminate perfectly between structures motivated by tax avoidance and those motivated by other, 'legitimate' considerations, so any anti-avoidance rule faces an inevitable trade-off between two types of error. An excessively lenient rule will do little to prevent tax-avoiding structures. An excessively stringent rule will distort legitimate firm behaviour, either not allowing full interest deductions (distorting investment) or forcing firms to modify their debt structure (which is itself costly).

The WWDC is a lenient rule that is more likely to succumb to the first type of error (permitting avoidance activities) than the second (distorting legitimate behaviour). It will only restrict interest if the amount deducted by the UK sub-group is greater than the total third-party interest of the world group. This is an extremely high bar. It is poorly targeted in particular at preventing firms locating third-party debt in the UK. If there is no intra-group lending, the WWDC allows all third-party interest expense (subject to thin capitalisation rules) to be held in the UK.[42] It places some limited restrictions on intra-group lending.

The fixed ratio is far more likely to limit interest deductibility.[43] Even at the upper bound of the OECD corridor (30%), it would affect some firms' decisions. Based on firm accounts data for 2009–13, the OECD estimates that 13% of multinational groups had an average net third-party interest to EBITDA ratio over 30%. This rises to 38% of multinationals for a 10% ratio.[44] That is, a net interest to EBITDA ratio of greater than 30%, let alone 10%, is not particularly exceptional or unusual. Therefore the rule may be innocuous for low-debt firms, but it will bind for higher-debt business models.

The UK could choose to relax the rule for high-debt firms by also operating the suggested group rule that would allow each subsidiary of a multinational to deduct up to the overall group ratio (possibly with 10% uplift). However, debt in multinational groups is rarely spread evenly, and for good reasons. For example, a parent firm may use its reputation and collateral to secure external debt finance to be used for new foreign ventures and, in

[42] In this case, the interest deduction made by the UK sub-group would be equal to the total deduction of the world group (and so would abide by the WWDC). If there were also intra-group loans to the UK company, however, the WWDC would not allow all third-party interest to also be deducted in the UK.

[43] The application of the fixed ratio rule is potentially much broader than that of the WWDC (which applies only to multinationals) because it could apply to domestic firms. However, the operation of an appropriately-designed group rule could be used to effectively ensure that the rule only applied to multinational firms. As these are the firms that pose the vast majority of the BEPS risk, such a restriction seems appropriate.

[44] Among firms that are not parts of multinational groups, 19% were above a 30% threshold and 45% above a 10% threshold.

so doing, have a higher interest to EBITDA ratio than the overall group. The WWDC allows for more flexibility in the distribution of debt between companies.

If the UK were one of only a few countries to implement the fixed ratio rule, firms may be able to limit the impact by restructuring their activities and/or debt. Reflecting the trade-off highlighted above, if many countries implemented the rule, the likely consequence would be less avoidance and less than full interest deductibility (even for some entirely legitimate activities and corporate structures) for high-debt business models that were not able to spread debt evenly across the business.

Another side effect of the fixed ratio rule is that it would discriminate between similar companies in possibly undesirable ways. Two firms could have identical debt structures, with a fixed ratio above the fixed ratio rule. If one was part of a multinational group that happened to have a very high group ratio, that firm could deduct more interest than the other (by using a group rule). The implementation of the fixed ratio rule could therefore even have the unintended consequence of inducing multinationals to take on more third-party debt, at least in jurisdictions where debt rules were more flexible.

However it is designed, the fixed ratio rule would limit multinationals' use of debt (for both legitimate and tax-motivated reasons) more than the WWDC. The merits of moving to a rule that prevents more avoidance activity but would likely also distort more legitimate firm behaviour depending on how the government values the trade-off between these two kinds of error.

A further complication in evaluating these errors is that interest deductibility, while reducing the distortion to debt-financed investment, also generates a debt–equity distortion as equity-financed investment is treated differently. This in turn distorts the level and financing of investments and creates opportunities for multinational avoidance (for example, hybrid debt instruments; see Section 8.2). A rule that limited interest deductions could reduce the debt bias. However, this would only arbitrarily remove the distortion in some cases. The debt–equity distortion could be better solved by correcting the treatment of equity.[45]

What effect will the BEPS outcomes have on UK tax revenue?

The initial motivation for the BEPS project was a perception of insufficient tax payments by multinationals. It is therefore natural to expect the policy responses to mean higher UK revenues. Some measures already announced are expected to be small revenue raisers for the UK. The new hybrid rule is expected to raise £90 million in 2019–20, while country-by-country reporting is forecast to boost receipts by £15 million.[46] Changes to transfer pricing rules may also operate in the UK's favour. If implemented, limits on interest deductibility in the UK would lead to a (possibly substantial) increase in revenue. It is not clear to what extent changes to the PE definition will lead to a net increase in the UK tax take.

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[45] For a discussion of the debt–equity bias and possible solutions (including an allowance for corporate equity (ACE)), see A. Auerbach, M. Devereux and H. Simpson, 'Taxing corporate income', in J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba (eds), *Dimensions of Tax Design: The Mirrlees Review*, Oxford University Press for Institute for Fiscal Studies, Oxford, 2010, http://www.ifs.org.uk/publications/7184.

[46] HM Treasury, *Autumn Statement 2014: Policy Costings*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/384071/AS2014_policy_costings_final.pdf.

Taken together, the BEPS actions specify different ways for income to be distributed between jurisdictions. While some outcomes from BEPS may mean the allocation of income to the UK from elsewhere, profit shifting goes both ways. Underlining countries' incentive to compete, UK firms and the UK tax base may be impacted by the legislative action of others. For example, the UK could increase revenues by reducing interest deductibility. But if the US restricted interest relief, it could impact the profits (and taxable income) of some UK multinationals holding US debt. If a number of OECD countries restricted interest relief and the UK did not, firms may move debt to the UK and the increased interest deductions would lower revenue.

Further uncertainty arises from the likely behavioural response to any policy changes. If the outcomes really are successful at linking income more closely to real activity, firms may make large changes to the organisation of those real activities between countries.[47] In particular, higher-tax countries may become less attractive as a location for real activity. The UK has a low tax rate relative to its competitors, but it also has an uncompetitive tax base. If there were substantial increases in taxes across countries as a result of the BEPS actions, the UK may become more attractive for some companies and less attractive for others. Overall, it is unclear whether the UK will see a significant increase in revenues as a result of the BEPS project.

8.5 Conclusion

The BEPS process was an ambitious attempt to patch up an international tax system creaking under the pressure of increased multinational activity. It has largely met its equally ambitious two-year time frame and, in so doing, should be able to capitalise on the political momentum behind anti-avoidance initiatives.

The success or otherwise of the process will be hard to evaluate comprehensively for several years, but the likely result is a reduction in at least some forms of avoidance behaviour. If implemented, the following should represent improvements in the suitability and operation of the international tax system:

- changes to the PE definition and new hybrid rules;
- the information sharing initiatives (including country-by-country reporting) and the move toward mandatory disclosure of avoidance schemes, which should make it easier for tax authorities to identify BEPS risks;
- measures to prevent treaty abuse;
- a modified patent box better targeted at attracting R&D activities to a country and that will limit some forms of government tax competition. But this comes at the cost of a substantially more complex policy and one that is fundamentally not well designed to incentivise additional R&D activity.

Other changes represent choices over how to deal with trade-offs, which are unavoidable given the current structures of corporate taxes, and their benefits will need to be weighed up against potential costs:

[47] There is a large literature on the ways in which firms respond to taxes. For a review, see R. de Mooij and S. Ederveen, 'Corporate tax elasticities: a reader's guide to empirical findings', *Oxford Review of Economic Policy*, 2008, 24, 680–97.

- The changes to transfer pricing rules offer the possibility to prevent some forms of avoidance related to risk allocation and intangibles, but it remains difficult to price the related transactions accurately and it is not clear that the treatment will be any more coherent than at present.
- Curbs to interest deductibility could have substantial effects both in terms of preventing some forms of avoidance and in terms of raising revenues, but the proposed rule could also distort genuine commercial activities and seems unlikely to be implemented by many countries.

The implementation of BEPS is just as important in determining the success of the project as the work set out to date. It is yet to be seen how much real policy change there will be.

One of the key constraints on both the BEPS outcomes (which required extensive negotiation to reach a consensus) and the subsequent implementation is the desire that countries have to operate competitive tax systems. BEPS does not remove countries' incentives to compete to attract activity and income (firms are still taxed differently depending on where they locate and where they declare income). This creates a tension: there are areas where cooperation cannot be achieved, and best practices will not be followed, because countries want to maintain a competitive advantage. The UK (current and previous) government has explicitly pursued the aim to have 'the most competitive tax regime in the G20'. Achieving this has included substantial cuts to the headline rate, a patent box and generous interest deductibility.[48] As noted earlier, the UK will be reluctant to adopt a rule that limits interest deductibility precisely because it would reduce the competitive edge that it has explicitly pursued. Similarly, the new recommended hybrid rule would be more effective if a significant number of countries implement it, but many may be wary of doing so if they think others will not follow suit. The final report on CFC rules acknowledges a concern that CFC rules that are too stringent will put a country at a competitive disadvantage and notes that 'another way to maintain competitiveness would be to ensure that more countries implement similar CFC rules'.[49] Yet agreement on a common approach was not reached.[50]

The BEPS exercise, valuable though it may be, has inevitable limitations. BEPS does not offer a silver bullet that 'solves' the problem of tax avoidance and even if all recommendations were enacted we would still be operating a system that required profit allocation between jurisdictions (using the arm's length principle). This will always be difficult to administer and be open to avoidance opportunities.

There are real economic trade-offs embedded in the BEPS approach. We cannot perfectly identify what is legitimate behaviour and what is tax avoidance. Rules are being adjusted to capture more avoidance, but in some cases will do so at the expense of increasing the tax burden on genuine activities. The key 'patch' used by the BEPS system is a new principle that says that taxing rights should be aligned with economic substance. In many cases, this will not conflict with the current principles (effectively that trading income is

[48] See H. Miller and T. Pope, 'Corporation tax changes and challenges', IFS Briefing Note BN163, February 2015, http://www.ifs.org.uk/publications/7590. Part of the trend towards lower tax rates in developed countries over the past 35 years can be attributed to tax competition (see M. Devereux, B. Lockwood and M. Redoano, 'Do countries compete over corporate tax rates?', *Journal of Public Economics*, 2008, 92, 1210–35).

[49] Page 16 of Final Report on action point 3 (*Designing Effective Controlled Foreign Company Rules*), available at http://www.oecd.org/ctp/beps-2015-final-reports.htm.

[50] The report also notes practical reasons, such as the balance between territorial and source income in different countries, why CFC rules may need to vary across countries.

taxed at source and the returns to intangible assets are taxed where the owner resides). But in some cases, it will conflict: some forms of passive income will be taxed based on the location of economic activity rather than on a residence basis. By layering a new principle on top of the current system, we get a more complex and less coherent tax system that will distort some genuine commercial decisions.[51]

Modifications to the source-based system were probably the only politically feasible option on the table. Yet other systems with different features are possible and deserve consideration.[52] One possibility is to move to a system that is able to consider the whole of a multinational company's activities (rather than looking at its activities in each country separately). The basic idea is to require firms to produce an account of their total activities (profits and costs) in all (or a subset of) countries they operate in and to use information on the location of real activities (sales, assets and employment, for example) to allocate taxing rights to individual jurisdictions. This is similar to how profits are allocated across individual states in the US. The European Commission, having long supported more harmonised corporate taxation in Europe, has recently relaunched proposals for a common consolidated corporate tax base (CCCTB).[53]

Another, more radical solution would be to move towards a destination basis for the corporate income tax. The idea would be to tax income where the final purchaser of a good or service resides (i.e. where the sale was made) and to deduct costs where they are incurred. The place of sale is visible, limiting firms' opportunities to avoid taxes and removing complexity associated with identifying the source of profit. Moreover, a destination-based system does not distort firm location decisions.[54]

A destination-based tax would represent a substantial departure from the current approach to corporate tax. However, unlike the outcomes arising from the BEPS process, it poses solutions to the fundamental problems of taxing mobile companies. The system would also have the nice feature that, once some countries began to implement it, there would be an incentive for others to follow. While this is a radical suggestion, at the very least it merits further investigation and consideration.

[51] For further discussion of this issue, and of the competition incentives, see M. Devereux and J. Vella, 'Are we heading towards a corporate tax system fit for the 21st century?', *Fiscal Studies*, 2014, 35, 449–75.

[52] For a discussion of other alternative tax systems, see A. Auerbach, M. Devereux and H. Simpson, 'Taxing corporate income', in J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba (eds), *Dimensions of Tax Design: The Mirrlees Review*, Oxford University Press for Institute for Fiscal Studies, Oxford, 2010, http://www.ifs.org.uk/publications/7184.

[53] http://ec.europa.eu/taxation_customs/taxation/company_tax/common_tax_base/index_en.htm.

[54] A destination-based system would operate in a similar way to a value added tax (VAT) with an additional deduction for labour costs. Exports would be exempt from tax in the exporting country and imports taxed in the importing country. For a detailed discussion of the implementation of this tax, see M. Devereux and R. de la Faria, 'Designing and implementing a destination-based corporate tax', Oxford University Centre for Business Taxation, Working Paper 14/07, May 2014, http://eureka.sbs.ox.ac.uk/5081/1/WP1407.pdf.

Appendix 8.1 The BEPS recommendations

The following subsections discuss the BEPS outcomes according, where appropriate, to the types of avoidance risk addressed (as set out in Section 8.2).

Profit shifting[55]

Three of the BEPS action points were devoted to **transfer pricing**. In two areas in particular – the value of intangibles and the allocation of risk – the OECD deemed the current rules insufficient to prevent profit shifting.

Transfer pricing guidelines will be changed to clarify that ownership of intangible assets alone does not give a company the right to any or all of the profit flows associated with that asset. Instead, revenue should flow to the companies 'performing important functions, controlling economically significant risks and contributing assets'. This clarification is designed to ensure that a company in a low-tax country cannot receive the revenues associated with IP merely through passive ownership of that asset. However, as discussed in Section 8.3, this represents a new principle that is being layered onto, and may be at odds with, principles underlying the current tax system.

The transfer pricing revisions also clarify the treatment of risk. Higher economic risk is associated with higher expected returns; a firm genuinely taking on risk can expect this to be reflected in the (transfer) price charged for its services. However, multinationals can institute risk-sharing contracts, with an associated transfer price, that shift the reported risk (to a low-tax country) without changing real activity or the true underlying distribution of economic risk. The new guidelines seek to clarify that risk should be allocated to the companies that have 'meaningful and specifically defined control' over the risks and have the financial capacity to bear those risks. These rules are intended to move closer to an economic interpretation of risk rather than a legal interpretation, a welcome idea given that the rationale for higher returns to riskier activities is inherently an economic one.

However, it is conceptually very difficult to work out how risk is allocated within a multinational group. For example, a parent and a wholly-owned subsidiary may have a legal contract stipulating that the subsidiary will bear the risk for a new investment (i.e. its profits will be reduced if there are losses). However, in what sense can the subsidiary actually bear any risk if any gains or losses are ultimately borne by the parent company (through lower dividends, for example)? No matter what kinds of rules are in place, it will always be difficult to assess how to place a value on (and therefore determine the taxable income from) risk taking.[56]

The OECD transfer pricing guidelines will now be modified.[57] For these to come into effect, they must be enshrined in countries' legislation. Some countries, including the UK, subscribe fully to the OECD interpretation of the arm's length principle and have transfer pricing legislation that refers directly to the OECD guidelines. In such cases, OECD

[55] This section refers to BEPS action points 8–10 (*Aligning Transfer Pricing Outcomes with Value Creation*). All BEPS reports can be found at http://www.oecd.org/ctp/beps-2015-final-reports.htm.

[56] For further discussion of issues around risk, see M. Devereux and J. Vella, 'Are we heading towards a corporate tax system fit for the 21st century?', *Fiscal Studies*, 2014, 35, 449–75.

[57] OECD, *Transfer Pricing Guidelines for Multinational Enterprises and Tax Administrations*, 2010, http://www.oecd.org/tax/transfer-pricing/transfer-pricing-guidelines.htm.

changes (when confirmed in early 2016) will be instituted automatically. Other countries will receive revised guidance on acceptable interpretations and will need to change their legislation accordingly.

Base erosion[58]

Limiting interest deductions

Loan agreements were identified as a significant BEPS risk. In part, these are dealt with by transfer pricing regulations. The 'price' that must be consistent with the arm's length principle is the rate of interest charged. There is also a further layer of transfer pricing regulation – thin capitalisation rules – which require that a company cannot take on more debt than would be permitted if it were a stand-alone entity.

However, these rules leave considerable scope for avoidance. Many countries therefore operate a further layer of rules to limit interest deductibility under certain circumstances. There is diversity in the type of rule applied across countries and in how restrictive it is for companies. The BEPS process provides a recommendation for best practice (*not* a minimum standard). The new **'fixed ratio' rule**, which would limit interest deductions, is discussed in Section 8.4.

Preventing hybrid mismatches

BEPS set out a best practice rule for preventing the use of hybrid debt structures to avoid tax. The new **hybrid rule** comes in two parts and aims to ensure that a hybrid mismatch between two countries is prevented even if only one of the countries operates the rule. Further discussion can be found in Section 8.4.

Assigning taxation rights

Several BEPS action points are devoted to the assignment of taxable rights between countries, either by addressing the avoidance of permanent establishment status, tackling the abuse of treaty benefits or recommendations for appropriate CFC rules.

Permanent establishment status[59]

There will be revisions to the international standard on **permanent establishments** that will broaden the definition and stipulate that distribution activities will constitute the operation of a PE unless the activities are genuinely only preparatory and auxiliary in nature (see Section 8.4 for further details).

The implementation of this change (along with other definitional clarifications) requires changes to bilateral tax treaties (in which PE definitions are stated) and not legislative change. The aim is for these changes to be implemented using a new multilateral instrument (see below).

Treaty benefits[60]

As outlined in Section 8.2, multinationals may organise their activity so as to benefit from **treaty benefits** (such as lower withholding taxes) when they are not entitled to those

[58] This section refers to BEPS action points 2 (*Neutralising the Effects of Hybrid Mismatch Arrangements*) and 4 (*Limiting Base Erosion Involving Interest Deductions and Other Financial Payments*).

[59] This subsection refers to action point 7 (*Preventing the Artificial Avoidance of Permanent Establishment Status*).

[60] This subsection refers to action point 6 (*Preventing the Granting of Treaty Benefits in Inappropriate Circumstances*).

benefits. The outcome from the BEPS process is a (flexible) minimum standard to be incorporated into tax treaties through the multilateral instrument (see below). This requires that every tax treaty incorporate an explicit stated intention from all countries that they intend to prevent abuse of treaty benefits. The minimum standard also requires that countries operate some kind of rule to ensure that treaty benefits can only be allowed in certain circumstances and not when activities have been arranged in order to avoid tax. There is some flexibility on how such a rule can be designed. In 2012, the UK implemented legislation that applies to all of its tax treaties that specifies a 'main purpose test'; this sets out that one of the main purposes of the arrangement or scheme cannot be to gain the treaty benefit. This conforms to the OECD minimum standard. Other countries, such as the US, have also incorporated rules into their tax treaties that conform to the OECD minimum standard. The US uses a 'limitation on benefits' rule, which grants benefits only if a company meets certain conditions.

CFC rules[61]

A number of countries, including the UK, operate anti-avoidance **controlled foreign company (CFC) rules**. A CFC is a subsidiary of a multinational that, while a permanent establishment in another country, will be taxed as if it resides in the home country. CFC rules are targeted at identifying subsidiaries residing in low-tax countries and deemed to be avoiding taxes in the home country. The UK rules apply to companies resident in countries with a tax rate below 75% of the UK rate earning solely or predominantly 'passive' income. Passive income is income, such as royalty flows to a patent, that is not associated with substantial real activities.

The OECD has now set out a best-practice framework for CFC rules. This includes clarification over the appropriate definition of a CFC and computation of taxable income, as well as provisions to guard against double taxation (the same income being taxed in two different jurisdictions). There is scope for many rule designs within the framework. It is unlikely that many countries will add or modify CFC rules as a result (the rule is a best practice, not a minimum requirement), such that this recommendation seems likely to have only a limited effect.

Countries may choose not to operate a CFC regime, or to operate a weaker version than the OECD recommends, in order to gain a competitive advantage. The UK regime was revised in 2011 and is considered generous, particularly in its treatment of financial income. This provides an incentive for multinationals to locate their headquarters in the UK. As with interest deductions, there is a trade-off between tighter CFC rules (that prevent more avoidance) and looser ones that are seen as part of a competitive strategy.

Harmful tax competition[62]

The scope of the BEPS process was not confined to preventing certain firm behaviours, but also covered preventing the kinds of government policies that are deemed to constitute 'harmful tax competition'. The OECD and EU both have forums that seek to identify harmful tax policies, which, broadly, can be defined as policies that lead a tax base to be artificially shifted between countries or that facilitate the avoidance of other

[61] This subsection refers to action point 3 (*Designing Effective Controlled Foreign Company Rules*).

[62] This subsection refers to action point 5 (*Countering Harmful Tax Practices More Effectively, Taking into Account Transparency and Substance*).

countries' taxes.[63] In practice, what constitutes harmful tax competition is somewhat arbitrary and thus a grey area. But the idea behind the OECD and EU efforts is to encourage countries to agree multilaterally not to operate certain kinds of policies in order that they may all benefit from the coordination.

The BEPS process singled out **'preferential regimes'** – tax rules that provide a lower tax liability if companies meet certain conditions – as a type of instrument that may be harmful. A key and long-running concern with preferential regimes is that they may be used for artificial profit shifting. The outcome of the BEPS approach is a new methodology that can be used to ensure that preferential tax treatment is only granted where there is substantial real activity in the same country as the tax benefit.

The main focus of the work was on **IP or patent boxes**, which grant a lower tax rate for income arising from the exploitation of some forms of intellectual property.[64] There had already been work at the European level considering the role of IP regimes in promoting harmful conduct. For many years no action was taken, but in 2013 the EU Commission concluded that the British regime meets two of the criteria used to identify harmful tax measures.[65] The BEPS outcome arising on IP boxes was a minimum standard that specifies a new 'modified nexus' approach to the calculation of applicable income. This approach seeks to link the benefits from the regimes to the R&D (the 'substantial activity') underlying the IP. All IP boxes need to be modified to comply with this principle.

A number of countries, including the UK, the Netherlands and Spain, have acknowledged the need to adjust their legislation. It is anticipated that other countries will contest the idea that their regime is harmful and encourages BEPS. The modified nexus approach and implications for the UK patent box are considered in more detail in Section 8.4.

Transparency and implementation

As well as changes to tax rules, the BEPS process devoted five action points to information gathering, information sharing and the implementation of new rules.

Information gathering and sharing[66]

When tackling avoidance, tax authorities face several constraints. One of these is a limitation of resources; authorities must choose how many and which cases they can feasibly investigate. The BEPS process seeks to assist authorities by improving information flows that will help them better target their resources.

One aspect of this is a minimum standard requiring that all countries implement legislation on **transfer pricing documentation** and **country-by-country reporting**. The

[63] See OECD, *Harmful Tax Competition: An Emerging Global Issue*, 1998, http://www.oecd.org/tax/transparency/44430243.pdf and http://ec.europa.eu/taxation_customs/taxation/company_tax/harmful_tax_practices/index_en.htm.

[64] Sixteen of the 43 regimes examined were IP boxes. The majority of others were either judged not harmful or are already being phased out. This eclectic group includes, for example, regimes for the Brazilian semi-conductor, Canadian life insurance and Turkish shipping industries. A minority of non-IP schemes are under review.

[65] European Commission, Room Document No. 2 prepared for the Code of Conduct Group (Business Taxation), 22 October 2013, *Tax Notes International*, Doc. 2013-24148. For discussion, see http://www.ifs.org.uk/publications/6899 and the introduction to L. Evers, H. Miller and C. Spengel, 'Intellectual property box regimes: effective tax rates and tax policy considerations', *International Tax and Public Finance*, 2015, 22, 502–30, http://dx.doi.org/10.1007/s10797-014-9328-x.

[66] This subsection refers to action points 11 (*Measuring and Monitoring BEPS*), 12 (*Mandatory Disclosure Rules*) and 13 (*Guidance on Transfer Pricing Documentation and Country-by-Country Reporting*).

new country-by-country reporting requires large multinationals to report certain key statistics from their operations in each jurisdiction (turnover, profit before tax, tax paid, number of employees etc.), which will be made available to the tax authority of every jurisdiction in which they operate.[67] On transfer pricing, companies must provide a 'master file' containing information on their global activities and transfer pricing policies, which will be shared with every relevant tax authority, and a 'local file' with more detailed transfer pricing policies for each individual jurisdiction. The legislation requiring documentation to be produced must be in place for all countries for accounting periods that begin on or after 1 January 2016, with the report due no later than 12 months after the end of the accounting period. The UK (as well as others) has begun the legislative process. The tight time frame is a likely challenge for the 'implementation' phase of the BEPS process, especially because the OECD has no power to impose the minimum standards. Country-by-country reporting may prove to be the first test of how binding the BEPS recommendations will be in practice.

The aim is that the increased information on transfer prices and the location of activities will help authorities to target resources (such as audits) at the highest BEPS risks. This should be the case: authorities should be able to find a way to use the information to improve their tax-raising abilities, although there are areas in which they would probably like even more information. (Some less developed governments may find that they lack the resources required to make use of the large amount of information.)

The move will represent an increased burden for firms, although the extent of this will vary according to how close firms' current recording of their own activities is to the new reporting templates. During the BEPS process, many firms raised concerns that the information will be misused by tax authorities to produce quick but inaccurate proxies to identify BEPS. The UK tax authority has set out that it plans to use the information in risk assessments and not to target firms based on simple indicators. Another often-raised concern was that higher disclosure to authorities could be the first step towards the public disclosure of information on firms' activities. Under the BEPS recommendation, all information will remain confidential. There would be costs and benefits to making information on firms' activities public. More information would allow a range of parties to put more pressure on firms that were deemed to be avoiding tax, although this would be difficult to determine and could lead to many false accusations (as discussed in the main text, there is often ambiguity about what counts as avoidance and it is difficult to identify even for fully-informed tax authorities). It would also be a move away from taxpayer confidentiality, which protects information that may be deemed competitively sensitive (i.e. some firms do not want their competitions, and perhaps not even other parts of the same firm, to have detailed information on their costs and profits).

A further BEPS outcome pursues information sharing of a different kind. There is a recommended best practice for countries to implement a **mandatory disclosure rule** requiring that promoters and/or firms taking part in schemes with certain hallmarks (related to BEPS risk) report the scheme to the relevant tax authority. This will help authorities and policymakers close loopholes quickly as well as discouraging firms from entering suspect schemes. The UK has, since 2004, had a mandatory disclosure scheme in the form of DOTAS (disclosure of tax avoidance schemes), so this outcome will not

[67] The OECD has set up a Multilateral Competent Authority Agreement to facilitate automatic exchange of country-by-country information between tax authorities and to enable businesses to file information once centrally rather than via all tax offices.

require a legislative response from the UK but may encourage countries without such a regime to implement one.

The final aspect of information gathering that the BEPS process addressed was the measuring and monitoring of the scale of BEPS internationally. In addition to providing an estimate of global revenues forgone as a result of BEPS (see the final section of 8.4), the report also provided recommendations to improve the precision of this task going forwards. Specifically, the report recommended that the OECD work with countries to report corporate tax statistics in a more consistent way and to improve the availability and analysis of existing data.

Implementing BEPS outcomes and handling teething issues[68]

Three aspects of the OECD BEPS outcomes – changes to transfer pricing rules, permanent establishment status and rules surrounding the granting of treaty benefits – require changes to bilateral tax treaties. The renegotiation of hundreds of treaties would take many years, and each would require domestic ratification. Instead, the OECD proposes a single **multilateral instrument** that would simultaneously adjust all tax treaties between those countries that signed (subject to domestic ratification). Work is ongoing, including in the UK, on the precise design of this 'multilateral instrument', with an outcome expected later in 2016. This endeavour involves considerable legal complexity, especially when it comes to the limitation of treaty benefits where the minimum standard has considerable flexibility, meaning the precise rule will vary by treaty.

The BEPS outcomes also entail considerable change beyond those incorporated into the multilateral instrument. Legislative changes will likely occur at different rates in different countries, and this is widely expected to lead to an increase in the number of disputes – for example, over instances of double taxation or perceived unfair tax treatment. The BEPS process addresses 'making dispute resolution mechanisms more effective'. There is more work to come on this action in 2016. So far, countries have signed up to certain minimum requirements relating to the **mutual agreement procedure** (MAP), which is a mechanism by which countries can settle international taxation disputes. Broadly, these minimum standards require that countries ensure the MAP is utilised effectively and appropriately.

[68] This subsection refers to action points 14 (*Making Dispute Resolution Mechanisms More Effective*) and 15 (*Developing a Multilateral Instrument to Modify Bilateral Tax Treaties*).

9. Excise duties

Peter Levell, Martin O'Connell and Kate Smith (IFS)

Summary

- Excise taxes on tobacco, fuel and alcohol comprise 7.2% of total receipts, which is a large share by international standards. However, revenues from these duties have already fallen from 10.3% of receipts in 1978–79 and are forecast to fall to 6.0% of receipts by 2020–21. Had these duties maintained their 1978–79 share of national income, they would be raising £26 billion more than they currently raise.
- Specific taxes on these goods are justified by the costs their consumption imposes on others (externalities) and/or costs on the consumer themselves that they may not fully take into account when making their consumption decision (internalities). Taxes should seek to target the externality- or internality-generating activity and should be set based on the incremental social harm associated with consumption.
- Real cuts to rates of fuel duties, combined with recent falls in oil prices and improving vehicle fuel efficiency, have pushed the average cost of driving a new vehicle a kilometre to its lowest level since at least 1997. The main social cost from motoring is congestion and this is rising. This suggests the price of motoring has not been tracking its social cost. Petrol and diesel duty increases of 41% and 31% respectively would return the average cost of driving a new vehicle to its 1997 level and raise £9 billion a year. However, fuel duties are poorly targeted at congestion; the government should move towards a system of road pricing.
- The current structure of alcohol duties is not well targeted at harmful alcohol consumption. As heavy drinkers tend to consume stronger alcoholic drinks, reversing the long-run trend towards lower spirits duties would target the system better at them. Action to tackle the very low levels of duty charged on strong cider would also make sense: a litre of 7.5% ABV beer is liable for duty of 138p, while a litre of 7.5% ABV cider attracts duty of only 39p. Changes of this nature should take precedence over imposing minimum prices, which has legal obstacles and which would likely result in windfall profits for drinks companies.
- There is also potentially a case for higher taxes on particular foods associated with diet-related disease. There have been calls for a tax on sugar, and sugar-sweetened soft drinks in particular. But the issues are more complex than may initially appear.
- A sugary soft drinks tax is likely to lead consumers to switch away from taxed products, but the efficacy of the policy will depend on what products they switch to and how firms change their prices. Some consumers might switch to chocolate, for example, which is also high in sugar and contains saturated fat to boot. Some manufacturers and/or retailers might respond to the tax by increasing the prices of diet drinks, dampening the extent of any consumer switching to these products.
- An alternative policy would be to levy a broad-based sugar tax. This would have the advantage of targeting all sources of dietary sugar. However, the effect of such a tax on consumption of other nutrients, and hence overall diet, is highly uncertain.

9.1 Introduction

Excise duties[1] make a significant contribution to UK government revenues. In 2014–15, the duties levied on fuel, tobacco and alcohol raised £47 billion, comprising 7.2% of total receipts.[2] However, the future of these taxes is uncertain. Revenues from existing duties are set to decline in coming years, and new planned and proposed regulations, such as plain packaging for cigarettes and minimum pricing for alcohol, would be likely to act to accelerate this process if enacted. At the same time, public health bodies have proposed introducing new duties on foods and beverages with high sugar contents. In this chapter, we consider the current structure of excise duties and the principles that should underpin them. We argue that current duties are not always well designed and we raise similar concerns with regard to proposed sugar taxes. Overall, there is a need for a clear long-term strategy for this part of the tax system, informed by economic principles and empirical evidence.

The chapter is structured as follows. We start in Section 9.2 by outlining the case for excise duties in the first place: given the existence of the broad-based value added tax (VAT), what justification is there for levying excise duties? Section 9.3 discusses trends in, and the current structure of, duties for tobacco, motoring and alcohol. It also makes the case for reform of fuel and alcohol duties. Section 9.4 discusses proposals for a new tax on certain goods with high sugar content. We offer concluding thoughts in Section 9.5. First, we look at the amount of revenue excise duties raise.

How much revenue do duties raise?

Table 9.1 reports how much revenue was raised from duties on tobacco, motoring and alcohol and the share of total receipts from each of these sources in 2014–15. Tobacco duties raised £9.3 billion (1.4% of total receipts) and duties on alcohol raised £10.5 billion (1.6% of total receipts). Revenue from duties applied to motoring are considerably larger; fuel duties raised £27.2 billion (4.2% of total receipts) and vehicle excise duties (VED) raised £5.9 billion (0.9% of total receipts).

While our focus in this chapter is on duties levied on tobacco, motoring and alcohol, note that an additional set of duties including air passenger duty, betting and gaming duties and the insurance premium tax collectively raised a further £8.3 billion (1.3% of total receipts) in 2014–15.

Figure 9.1 shows how revenues from these duties, expressed as a percentage of national income, have changed over time. Revenues from fuel duties peaked at 2.3% of national income in 1998–99, before falling back to 1.5% in 2014–15. Revenues from this source have largely followed rates of duty (see Figure 9.7 later). Revenues from tobacco duties (as a share of national income) have been in steady decline despite the large increases in rates that have been introduced over this period (see Figure 9.5 later). As we discuss in Section 9.3, this reflects the long-term decline in the proportion of individuals who smoke. Revenues from alcohol duties have declined in importance at a similar rate to

[1] Excise duties (or taxes) are typically levied on particular goods, and are distinct from broad-based indirect taxes, such as value added tax. Typically, they are 'specific' taxes (levied as a fixed absolute amount per unit); however, in some cases, they also have an *ad-valorem* component (proportional to price).

[2] Table D.6 of HM Treasury, *Spending Review and Autumn Statement 2015*, November 2015, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/479749/52229_Blue_Book_PU1865_Web_Accessible.pdf.

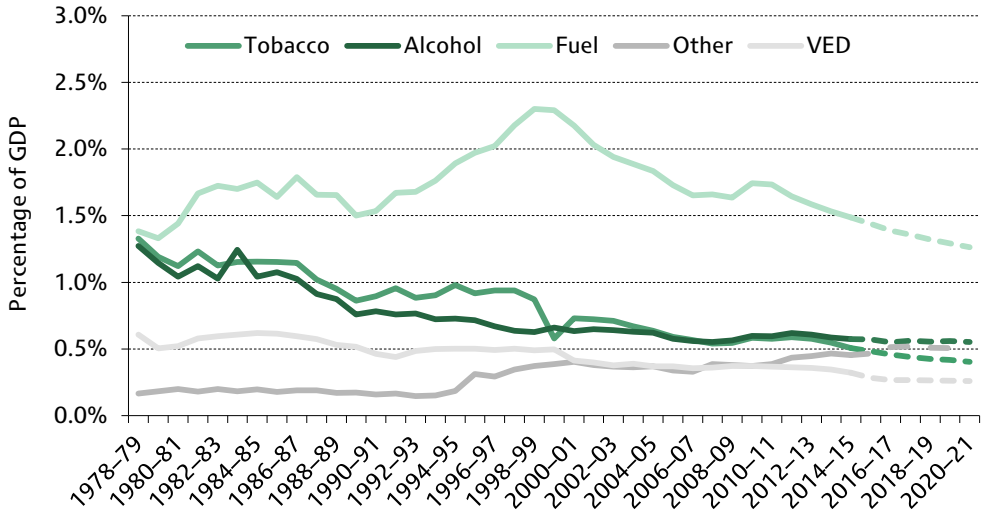
revenues from tobacco duties over this period, though for different reasons. Alcohol consumption has not fallen in the same way as tobacco consumption, but rates of duty on some alcoholic drinks have fallen over time (see Figure 9.10 later). Revenues from all three of these excise duties are forecast to decline further in the coming years, taking the total ratio of revenue to national income from these taxes down from a high of 4.1% in 1983–84 to 2.6% in 2014–15 and 2.2% by 2020–21. Had they maintained their 1978–79 share of national income, they would now be contributing an additional £26 billion to the

Table 9.1. Tax revenue contributions, 2014–15

	Revenue (£ billion)	Share of total receipts (%)
Tobacco duties	9.3	1.4
Fuel duties	27.2	4.2
Vehicle excise duties	5.9	0.9
Beer and cider duties	3.7	0.6
Spirits duties	3.0	0.5
Wine duties	3.8	0.6
Other duties	8.3	1.3

Note: Other duties comprise air passenger duty, insurance premium tax, and betting and gaming duties.
Source: HM Treasury, *Spending Review and Autumn Statement 2015*, November 2015, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/479749/52229_Blue_Book_PU1865_Web_Accessible.pdf; Office for Budget Responsibility, *Economic and Fiscal Outlook*, November 2015, http://budgetresponsibility.org.uk/economic-fiscal-outlook-november-2015/.

Figure 9.1. Revenue from duties as a percentage of national income, 1978–79 to 2020–21



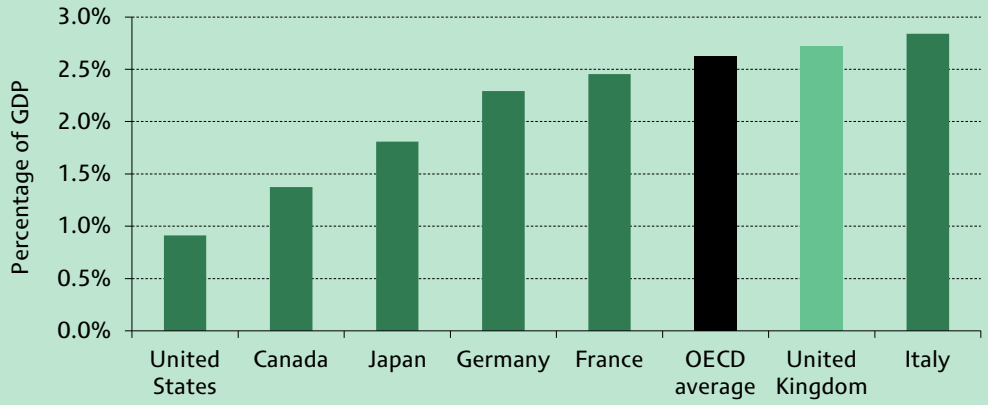
Note: Dashed lines indicate forecasts. 'Other' includes revenues from air passenger duty, insurance premium tax, and betting and gaming duties.
Source: IFS Fiscal Facts, http://www.ifs.org.uk/tools_and_resources/fiscal_facts/; HM Treasury, *Budget 2015*, March 2015, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/416330/47881_Budget_2015_Web_Accessible.pdf; HM Treasury, *Spending Review and Autumn Statement 2015*, November 2015, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/479749/52229_Blue_Book_PU1865_Web_Accessible.pdf; Office for Budget Responsibility, *Economic and Fiscal Outlook*, November 2015, http://budgetresponsibility.org.uk/economic-fiscal-outlook-november-2015/.

Box 9.1. UK excise duties in an international context

The UK stands out in having high rates of excise duties relative to other developed countries. In 2014, the UK had the fourth-highest tobacco duty rates among comparable countries in the Organisation for Economic Cooperation and Development (OECD) and the second-highest in the European Union (behind Ireland). In 2014, only five OECD countries (Israel, Italy, the Netherlands, Norway and Turkey) had higher rates of fuel duties. The UK also had the fourth-highest excise duties on still wine (which in many countries is not subject to an excise duty at all) among 28 comparable countries and the fourth-highest duty on beer among 18 comparable countries.[a]

These differences mean that duties in the UK are unusually large relative to GDP. Figure 9.2 shows total revenues from excise duties on tobacco, fuel and alcohol, as a proportion of national income, for countries in the G7. In the UK, revenues from these duties make up a larger proportion of GDP than in any other member of the G7 countries, with the exception of Italy, and are above the OECD average.

Figure 9.2. Revenues from excise duties across G7 countries, 2013



Note: Covers excise duties on tobacco, fuel and alcohol.
Source: Organisation for Economic Cooperation and Development.

[a] OECD, *Consumption Tax Trends 2014*, December 2014, http://dx.doi.org/10.1787/ctt-2014-en.

public finances – a gap that will have widened to £41 billion by 2020–21. Nevertheless, despite declines in revenues, these duties still make up a large share of GDP in the UK relative to other developed countries (see Box 9.1). Figure 9.1 shows that revenues from vehicle excise duties, as a share of national income, have also been gradually falling over time, while revenues from other duties have been rising from a low base.

The value of revenues raised from duties on tobacco, fuel and alcohol has fallen not only as a share of national income but also relative to other sources of revenue. Revenues from these duties fell from 10.3% of total receipts in 1978–79 to 7.2% in 2014–15. They are forecast to fall further to 6.0% of receipts by 2020–21.

There have been a number of policy announcements since the 2010 general election that have had implications for revenues from excise duties. According to official estimates, the cumulative effect of all changes in duties from 2010 has been to lower expected tax receipts in 2015–16 by £2.5 billion.[3] This revenue loss is driven by the £4.0 billion in lost

[3] Figures are based on calculations using the Office for Budget Responsibility's Policy Measures Database (downloaded from http://budgetresponsibility.org.uk/data/ on 31 January 2015) and various HM Treasury Budget, Autumn Statement and Pre-Budget Report documents.

revenue associated with freezes in fuel duties. This has, to some extent, been offset by policy changes that have led to increases in revenues from vehicle excise, tobacco and alcohol duties of £0.1 billion and an increase in revenues of £1.4 billion from the set of other excise duties (primarily changes to insurance premium tax and betting and gaming duties).[4]

9.2 Principles of excise taxation

There are a number of possible justifications for levying excise duties. The first is as a means of raising revenue. However, by itself, this is a weak justification for levying especially high taxes on a small number of goods, such as tobacco, fuel and alcohol. When designing a tax system to raise a target amount of revenue, the government should seek to minimise the distorting effects on consumers' behaviour unless there is a specific reason to encourage change. In particular, as long as consumption does not have direct consequences for other people or for the consumer in the future (that he or she fails to fully take into account), economic efficiency weighs strongly in favour of having commodity tax rates that are uniform across goods.[5] In the absence of a specific reason for discouraging tobacco, fuel or alcohol consumption, levying especially high taxes on these goods is difficult to motivate on economic grounds.

A second more convincing justification is that consumption of these goods imposes costs on others ('externalities') and/or costs on the consumer in the future ('internalities') that they may not fully appreciate or take into account when making their consumption decision. Taxation can, in these circumstances, discourage the excessive consumption that would occur in its absence. Taxes introduced with this purpose are known as corrective or 'Pigouvian' taxes.

Externalities may take a number of forms. Consumption of a good can confer direct costs to other people in close proximity, such as victims of passive smoking or of alcohol-fuelled physical abuse. Externalities may also be borne collectively by the population – for instance, the cost of publicly-funded medical treatment for smoking-, alcohol- and pollution-related disease. A third type of externality operates through the tax system. In the absence of an income tax system, lost earnings associated with sickness would primarily be borne by the consumer and therefore would not count as an externality. However, the associated loss in income tax revenue (and possible increase in benefit payments) over the consumer's lifetime does convey external costs as it leads to lower

[4] The government also levies a set of environmental taxes. While these taxes are not generally considered as duties – for instance, being outwith the set of taxes classified as duties by the OECD – they do share similarities with excise duties, being levied as specific taxes on certain activities. Environmental taxes include the climate change levy, the aggregates levy and landfill tax. In 2014–15, they raised £3.1 billion. The revenue contribution of these taxes has been increasing over time; policy decisions made since 2010 have led to these taxes generating an additional £1.7 billion by 2015–16.

[5] High levels of taxation for specific commodities are often thought to be justified by the 'inverse-elasticity rule' – high taxes on goods with inelastic demand do not reduce demand by much, and therefore cause little distortion in behaviour, while providing a strong source of revenue. This intuition is misleading, as it is based on the assumption of no income tax, homogenous consumers and no cross price effects. In more realistic models, differential commodity taxes are justifiable only on the basis of differences in how complementary goods are with leisure (or on the basis of externalities or internalities). Given the challenges associated with measuring these complementarities, most economists argue for the benchmark of uniform commodity taxation with deviations from this perhaps justifiable in a few particular cases (e.g. lower tax on childcare). For a fuller discussion, see I. Crawford, M. Keen and S. Smith, 'Value added tax and excises', in J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba (eds), *Dimensions of Tax Design: The Mirrlees Review*, Oxford University Press for Institute for Fiscal Studies, Oxford, 2010, http://www.ifs.org.uk/publications/7184.

public revenues. When considering the extent of externalities borne collectively by the population or through the tax system, it is important to also factor in reduced spending such as on state and public service pensions associated with people undertaking activities that lead to them dying prematurely.

Internalities are similar to externalities in the sense that the consequences of consumption are not accounted for by the consumer at the time of consumption. However, while the consequences associated with externalities are borne by others, the consequences of internalities are borne by the consumer in the future. Internalities may arise because a consumer is ill informed about the possible effects of their current behaviour – for example, consumers may not know how their alcohol consumption affects the likelihood of developing liver disease in the future. They may also arise in the case of fully-informed consumers who understand future consequences but simply fail to factor them fully into their current decisions – perhaps because of some form of dependence or addiction. The large industry in smoking cessation products is evidence for the existence of such self-control problems.

In the presence of either externalities or internalities, and in the absence of government intervention, individuals will tend to consume a socially excessive quantity; they will choose to consume the quantity of a good that equates their own perceived marginal benefit from consumption to the perceived marginal cost to themselves (which includes the price paid for the good), not taking account of costs imposed on others or any internalities imposed on themselves in the future. The case for taxation rests on discouraging socially harmful consumption by aligning the perceived private marginal costs of an activity with its actual social costs. An externality- or internality-correcting tax raises the price of a good by the amount of the marginal externality or internality, thereby leading consumers to take account of the full marginal cost associated with their behaviour. Of course, such a tax may also raise revenue; however, this should be secondary to the tax's principal purpose of discouraging socially excessive consumption.

The design of corrective taxes

While in principle the role of an externality- (or internality-)correcting tax is clear, designing the structure and deciding on the rate of such a tax can be challenging. In determining the tax rate, it is the *marginal* externality (or internality) that is relevant – what, for instance, is the incremental social cost associated with having an additional pint of beer in an evening? In some cases, as discussed further in Section 9.3, externalities (or internalities) are likely to be highly non-linear in quantity consumed: the marginal social cost of the tenth pint of the evening is probably very different from the marginal social cost of the first. In addition, these costs are likely to vary significantly across people; for a given level of intoxication, some individuals are likely to be more prone to alcohol-related abuse than others. In the case of alcohol, it is ultimately excessive consumption leading to serious drunkenness in individual episodes or alcoholism over time that is the prime source of externality or internality, while the social costs of moderate consumption are significantly lower. This means the marginal externality (or internality) is likely to differ sharply from the average. In any case, even estimating *average* social costs is difficult. These considerations make it hard to set excise duties at their optimal rates. However, a few broad principles stand out that can be useful in guiding policymakers towards an appropriate design for corrective taxes.

The first is that corrective taxes should target the externality- or internality-generating behaviour as directly as possible. This can be difficult. For example, in the case of

externalities associated with alcohol, it is often the abusive behaviour associated with some consumers' consumption episodes that creates problems. Tax levied on beer (consumption of which creates little or no externalities most of the time) is quite far removed from the ultimate harm. However, in other cases, it is conceptually easier to target the harm-inducing behaviour directly with a tax, but regulation often prevents the implementation of such a tax. For example, in order to reduce CO_2 emissions associated with air travel using the tax system, governments would ideally levy a tax directly on emissions. However, this is prohibited under international agreements. Instead, the UK government has chosen to tax airline passengers in a manner very loosely related to flight distance, which does not give passengers very strong incentives to choose short over more polluting long-haul flights. The tax also fails to encourage innovation in the form of the development of more-fuel-efficient flight paths or aircraft, or the use of these technologies where they are available.

The second principle is that governments should not hesitate to set corrective taxes above the revenue-maximising rate if the targeted activity is particularly harmful. If revenue raising is the sole objective, setting a tax rate above the level at which revenue from the tax is maximised (above the 'Laffer' rate) does not make sense. However, for corrective taxes, rates should be set according to the marginal social damage caused by the associated activity, and indeed the aim of the tax can be seen as (at least partially) to erode its own revenue base by discouraging certain activities.

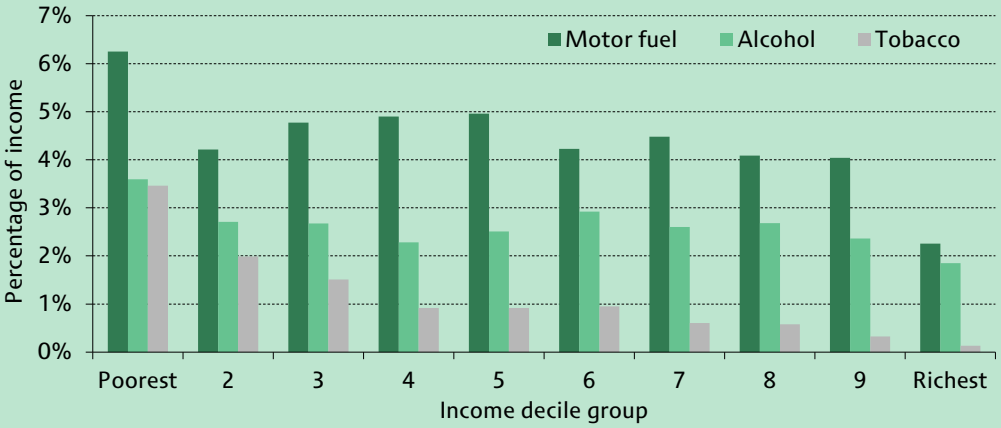
A final principle concerns the question of redistribution. A common objection to the use of excise duties as corrective taxes is that they are regressive. However, this does not provide a strong argument against setting rates to fully correct externalities and internalities. What matters for meeting distributive goals is the distributional impact of the tax and benefit system as a whole, not the progressivity or regressivity of any single tax. In general, policymakers should seek to meet distributive goals through adjustments to the income tax and benefit system, and should primarily focus excise taxes on targeting market failures. Of course, understanding the distributional impact of excise taxes can be important in determining how to adjust other aspects of the tax and benefit system to offset excise tax reforms that on their own would be regressive. As we argue in Box 9.2, the distributional impact of excise taxes is somewhat more ambiguous than simple characterisations would suggest.

Box 9.2. Are excise taxes regressive?

The distributional impact of taxes is often examined using a graph such as Figure 9.3. This shows how consumer spending on motor fuel, alcohol and tobacco varies as a proportion of current consumer income across the income distribution. Those in the lowest income deciles do, on average, spend more on these goods relative to their incomes. This pattern is particularly pronounced for tobacco.

This picture, however, can be misleading for at least two reasons. First, some consumers with low levels of current income may have access to other resources, such as wealth accumulated in the past or borrowing in anticipation of higher future income. These consumers may not be poor in any meaningful sense and may spend a lot in total relative to their current income. Ideally, we would like to know what fraction of consumers' total lifetime income they spend on each good. Second, in addition to consumer spending on motor fuel, a considerable fraction of total fuel spending is likely to be made by firms. This spending is likely to be, at least in part, passed on to consumers as higher prices. This portion of the incidence of motor fuel duty is not reflected in Figure 9.3.

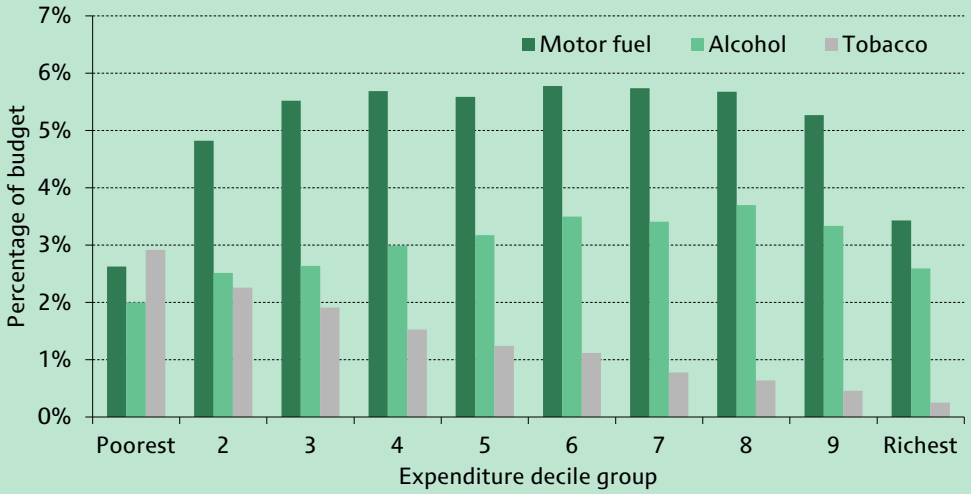
Figure 9.3. Shares of income devoted to fuel, alcohol and tobacco by income decile



Note: Income decile groups are derived by dividing all households into 10 equal-sized groups according to income adjusted for household size using the modified OECD equivalence scale. Decile group 1 contains the poorest tenth of the population, decile group 2 the second poorest, and so on up to decile group 10, which contains the richest tenth.
Source: Living Costs and Food Survey 2013.

An alternative way of assessing the distributional impact of these taxes, which may proxy for lifetime income better, is to consider the shares of total *spending* (not income) devoted to these items and to compare these shares for high and low spenders. Doing this leads to a different picture (shown in Figure 9.4). Those in the poorest (i.e. lowest expenditure) decile actually devote the smallest proportion of their budgets to motor fuel and alcohol. The largest budget shares for fuel are in the middle of the distribution, while across deciles 1 to 8 the share spent on alcohol tends to increase with total spending, suggesting it is a luxury good. However, the poorest tend to spend a larger share of their expenditure on tobacco.

Figure 9.4. Shares of spending devoted to fuel, alcohol and tobacco by expenditure decile



Note: Expenditure decile groups are derived by dividing all households into 10 equal-sized groups according to total expenditure adjusted for household size using the modified OECD equivalence scale. Decile group 1 contains the poorest tenth of the population, decile group 2 the second poorest, and so on up to decile group 10, which contains the richest tenth.
Source: Living Costs and Food Survey 2013.

An additional consideration should also be taken into account when thinking about the progressivity and regressivity of taxes that can help to correct internalities. The impact of these taxes depends not only on how much poorer or richer consumers spend on these goods but also on the degree to which the taxes help correct their internalities. As we have seen, there is an argument for taxation of these goods on the grounds that they provide benefits to consumers with self-control problems. If the self-control benefits of taxation are greater for poorer consumers, this could adjust or even reverse perceptions of the distributional impact of the tax based on traditional notions of spending patterns. In one paper, Gruber and Koszegi (2004) argue that, other things equal, the self-control benefits of cigarette taxes will be greater for those whose consumption is more price sensitive as they will reduce their overconsumption of tobacco by more when taxes rise. This price responsiveness turns out to be much larger for those at the lower end of the income distribution. Taking this into consideration, the authors find that the estimated regressivity of tobacco taxes in the United States is greatly reduced and that cigarette taxes may even be progressive.[a]

[a] J. Gruber and B. Koszegi, 'Tax incidence when individuals are time-inconsistent: the case of cigarette excise taxes', *Journal of Public Economics*, 2004, 88, 1959–87.

9.3 Current excise duties

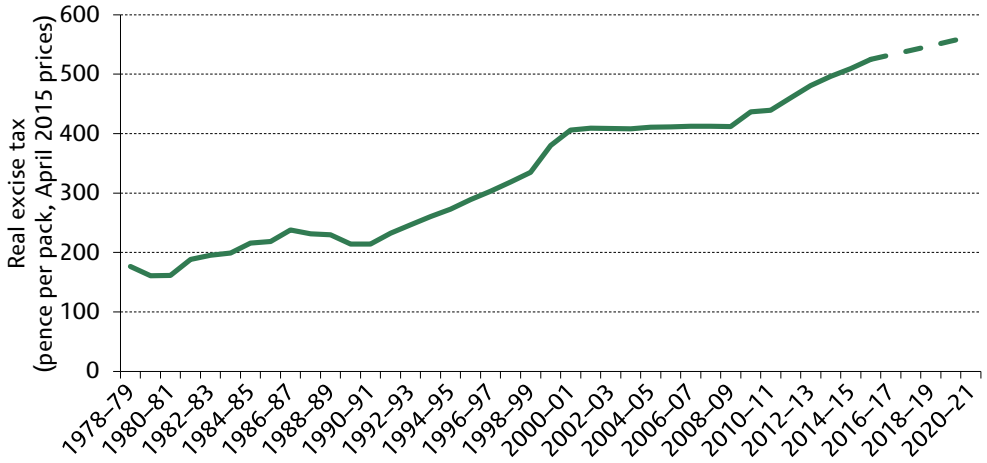
In this section, we discuss the current rates and structures of duties applied to tobacco, motoring and alcohol in the UK and how well these target the externalities and internalities associated with smoking, motoring and drinking.

Tobacco duties

Cigarette taxation in the UK consists of both a specific (£3.79 for a pack of 20 cigarettes in 2015) and an *ad-valorem* component (16.5% of the retail pack price). Other tobacco products such as cigars and hand-rolled tobacco are subject to their own specific duties. In addition to these, VAT is charged at a rate of 20% on the pack price (inclusive of the specific component of the duty). Thus, a 1p increase in the specific component of duty currently results in an increase of 1.4p of total tax (including VAT) liable.

The real value of total duty (including both the specific and *ad-valorem* components) charged on a packet of 20 cigarettes has grown quite considerably over time, as Figure 9.5 shows. Total duties more than doubled from £2 per pack in 1990 to over £5 in 2015. This is a consequence of explicit tobacco duty 'escalator' policies that have been introduced at various times. Between 1993 and 2000, the specific component of duty was increased initially by 3% above inflation (as measured by the Retail Prices Index (RPI)) and 5% from July 1997. In 2001, the government stopped the escalator and froze duties in real terms. In December 2008, the specific component of duty rates increased to 'offset' a temporary reduction in the rate of VAT from 17.5% to 15% enacted as a fiscal stimulus (though this increase was not reversed when VAT rates rose again in January 2010). Real specific duties then rose by 1% in 2010, and another escalator was introduced of 2% above RPI increases until 2014. In 2014, this was then extended to cover the whole of the following parliament. Tobacco duties accounted for £9.3 billion in revenue in 2014–15, representing 1.4% of total receipts.

Figure 9.5. Real tobacco duties, 1978–79 to 2020–21



Note: Converted to April 2015 prices using the RPI. Figures show total excise duty (including both the specific and *ad-valorem* components) paid on a packet of 20 cigarettes. Dashed line indicates announced future policy. To calculate the specific rate of duty in future years, it is assumed that cigarette prices increase in line with forecast growth in the RPI.
Source: Duty rates – HMRC website, https://www.gov.uk/government/organisations/hm-revenue-customs; HM Treasury, *Tax Benefit Reference Manual 2002–03 Edition*, 2002; various HMRC / HM Customs & Excise Annual Reports. RPI from Office for National Statistics and RPI forecasts from Office for Budget Responsibility, *Economic and Fiscal Outlook*, November 2015, http://budgetresponsibility.org.uk/economic-fiscal-outlook-november-2015/.

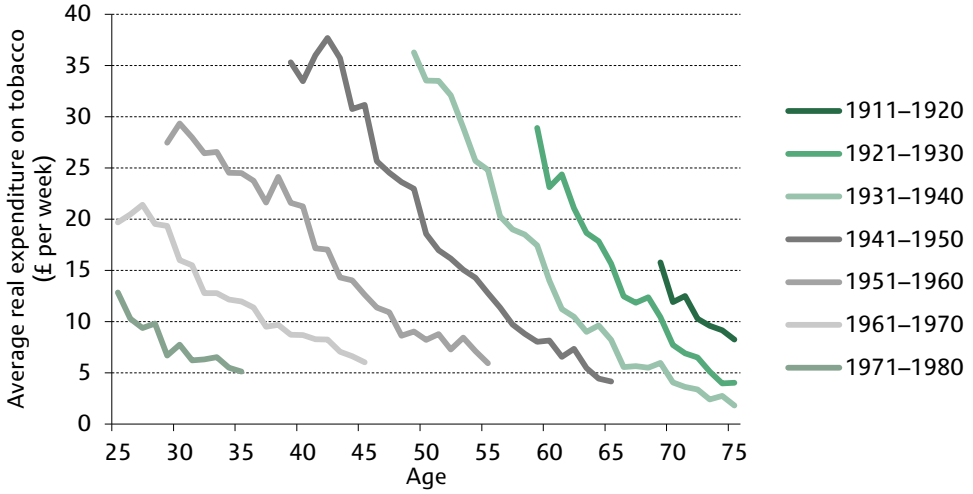
Despite the increases in tobacco duties that have been pencilled in, revenues from tobacco duties are expected to fall in real terms to £8.5 billion in 2020–21.[6] This reflects an expected continuation of a long-term decline in the proportion of individuals who smoke: Office for National Statistics (ONS) figures suggest that the proportion of males aged over 16 who smoke has fallen from 51% in 1974 to 22% in 2013, while the figure for females has fallen from 41% to 17%.[7] Indeed, there is good reason to expect these declines to continue. Tobacco consumption among younger individuals today is substantially lower than it was among previous generations at the same ages. Figure 9.6 shows tobacco spending of different birth cohorts (individuals born within the same period – in this case, the same decade) at the different ages they are observed over the period 1978–2013. Spending here is measured by dividing cash expenditures by an index for the price of tobacco taken from the RPI. For all cohorts, tobacco spending tends to fall as individuals get older, but it is also clear that spending at a given age is lower for those born later.[8] This suggests that as members of older cohorts die in the coming years, total tobacco consumption is set to decline further. Trends such as these may also be accelerated in future by the development of substitutes for tobacco smoking such as 'vaping'.

[6] Revenues taken from HM Treasury, *Spending Review and Autumn Statement 2015*, November 2015, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/479749/52229_Blue_Book_PU1865_Web_Accessible.pdf, deflated using the GDP deflator.

[7] Figure 2 in Office for National Statistics, 'Opinions and Lifestyle Survey: adult smoking habits in Great Britain, 2013', Statistical Bulletin, November 2014, http://www.ons.gov.uk/ons/dcp171778_386291.pdf.

[8] This pattern may in part be explained by known declines in the amount of total household spending captured by the Living Costs and Food Survey, but the broad pattern accords with evidence from other sources – see figure 4 in Office for National Statistics, 'Opinions and Lifestyle Survey: adult smoking habits in Great Britain, 2013', Statistical Bulletin, November 2014, http://www.ons.gov.uk/ons/dcp171778_386291.pdf.

Figure 9.6. Real expenditure on tobacco by age and birth cohort, 1978–2013



Note: Each line represents average real household expenditure on tobacco at each age for household heads born in one of seven 10-year intervals from 1911 to 1971 over the periods they are observed from 1978 to 2013. Real expenditures calculated by dividing household nominal expenditure on tobacco by the tobacco price component of the RPI (in 2014 prices).
Source: Authors' calculations from Living Costs and Food Survey (various years).

The shrinking revenues for tobacco taxes as smoking rates fall may partly be driven by the high rates of tobacco duties themselves. Tobacco duties now amount to 59% of the pack price of an average packet of 20 cigarettes.[9] The decline in the number of smokers that has gone along with increases in the rates of duty naturally raises the question of whether tobacco taxes now exceed the Laffer rate at which revenues are maximised. If past and projected declines in tobacco consumption were solely driven by high duty rates, then one might indeed conclude this. However, other factors may have hastened reductions in cigarette consumption over this period. Perhaps most importantly, there has been a general increase in awareness of the dangers of smoking over the last few decades, which has most likely led more individuals to quit and fewer individuals to start smoking. Also, in recent years, the UK has been tightening regulatory restrictions on the sale and consumption of tobacco. The minimum age at which individuals may purchase cigarettes was increased from 16 to 18 in 2007. The UK has also introduced bans on smoking in public places. Bans were first introduced in Scotland from 26 March 2006, followed by Wales (2 April 2007), Northern Ireland (30 April 2007) and finally England (1 July 2007). A law enforcing standardised ('plain') packaging including health warnings for cigarettes was passed in 2015 and is scheduled to come into force in May 2016. In addition, as of 2012, large shops selling cigarettes must keep tobacco products hidden from public view.

Considering the effects of tax changes in isolation, figures from HM Revenue & Customs (HMRC) indicate that the government still expects to raise additional revenue when specific cigarette duties are increased by 1 per cent (by around £20 million).[10] If correct, then tobacco duties remain below their (short-term) Laffer rate. As we discussed in

[9] £8.86 in April 2015 according to the Office for National Statistics (series CZMP).

[10] See HM Revenue & Customs, 'Direct effects of illustrative tax changes', November 2015, https://www.gov.uk/government/statistics/direct-effects-of-illustrative-tax-changes.

Section 9.2, however, whether the rate of tobacco duties is set too high or low relative to its revenue-maximising rate is not as important as whether the tax adequately captures the internalities and externalities of smoking. If (though only if) taxes are set appropriately, then the erosion of the revenue base is something that policymakers should consider desirable, as it implies a reduction in the harmful consequences of smoking. In this case, adjusting general taxation would be a better way to recoup lost revenue than raising or lowering tobacco duty specifically. Higher taxes eroding the revenue base further would, however, be a matter of real concern if smokers were substituting to illicit or smuggled sources of tobacco. This would not only cost the government revenue but also leave the market failures associated with smoking unaddressed. Given government estimates of the size of the illicit tobacco market, there is a real danger of this. We discuss the market for illicit tobacco further in Box 9.3 later.

Externalities of tobacco consumption

Smoking creates external costs imposed directly on people other than the smoker, which provides one rationale for levying excise duties. Such externalities include health and other costs (for example, the unpleasant experience of inhaling smoke) imposed on others through second-hand smoke. These tend to be largely borne by other members of smokers' households (the vast majority of deaths from passive smoking are believed to have been caused by smoke inhaled at home).[11]

There may also be fiscal externalities, including lower taxes paid by smokers as a result of sick leave or shorter working lives, as well as the publicly-funded costs of treating smoking-related illnesses. Two studies of the costs smokers imposed on the NHS in 2006 and 2005–06 estimated costs of £2.7 billion and £5.2 billion (in 2006 prices) respectively.[12] However, some US-based studies suggest the costs smokers impose are more than completely offset by the reduced costs of public pensions and care for the elderly that arise because smokers tend to die prematurely.[13] Counting these savings as 'benefits' to the public purse may seem unpalatable, but it is the logical counterpart to counting the costs that smokers impose on others.

Fiscal externalities that arise due to the health effects of smoking may be approximately targeted by taxes levied per cigarette, although the medical costs incurred may of course vary across different types of smokers (and there is some evidence that smokers respond to higher taxes by simply smoking each cigarette more intensively, which offsets some of the effect of the tax).[14] Externalities from passive smoking may be more difficult to target directly, however. These will likely vary according to the times and places at which people smoke and so will not be exactly targeted by tax that is levied on individual cigarettes. For example, these externalities may be larger for those who live with children than for those who do not, or larger in enclosed communal places. A combination of taxation and regulation such as the UK has adopted would seem to be the most

[11] Royal College of Physicians, 'Going smoke-free: the medical case for clean air in the home, at work and in public places', July 2005, http://www.smokefreeengland.co.uk/files/going-smokefree.pdf.

[12] S. Allender, R. Bakarishnan, P. Scarborough, P. Webster and M. Rayner, 'The burden of smoking-related ill health in the United Kingdom', *British Medical Journal*, 2009, 18, 262–7; C. Callum, S. Boyle and A. Sandford, 'Estimating the cost of smoking to the NHS in England and the impact of declining prevalence', *Health Economics, Policy and Law*, 2011, 6, 489–508.

[13] W. G. Manning, E. B. Keeler, J. P. Newhouse, E. M. Sloss and J. Wasserman, 'The taxes of sin: do smokers and drinkers pay their way?', *Journal of the American Medical Association*, 1989, 261, 1604–9.

[14] J. Adda and F. Cornaglia, 'Taxes, cigarette consumption and smoking intensity', *American Economic Review*, 2006, 96, 1013–28.

appropriate response to this issue. Policymakers should, however, remain wary of unintended consequences. Some research using data on individuals' time suggests that bans on smoking in public places led smokers to smoke more often at home, and that children's exposure to second-hand smoke may therefore have increased as a result, although other studies looking for the same phenomenon have not found evidence of this.[15]

Internalities of tobacco consumption

Smoking imposes large future costs on the smokers. These include reduced productivity, worse health and higher mortality. If smokers are completely rational, this would not provide an additional justification for taxing cigarettes: smokers would fully account for the future costs when deciding whether or how much to smoke. A good deal of evidence suggests, however, that many smokers suffer from self-control problems. For example, a high proportion of current smokers would like to give up – figures from the General Lifestyle Survey covering the period 2008–11 indicate that around 60% of current smokers in Great Britain would like to quit.[16] This is a much higher share than the fraction that ends up successfully quitting in any given year. There is also evidence of actual support among some smokers for policies or programmes that restrict the general availability of tobacco.[17]

Whether taxation is the most appropriate policy response to self-control issues depends on how people respond to the tax. If individuals' consumption is relatively insensitive to the tax rate, then taxation will increase the cost of people's smoking habits without helping many of them to quit, thereby making smokers worse off. In this case, removing the stimuli that trigger the desire to smoke may be a more appropriate policy – for example, restricting the advertising of cigarettes. On the other hand, if smokers do reduce their demand in response to a price increase, then taxation could be an effective mechanism to help them cut down. The evidence that tobacco taxes increase the reported well-being of smokers *themselves* is mixed. Some studies have shown that the self-reported happiness of smokers actually increases relative to non-smokers when cigarette taxes increase.[18] Other studies have indicated that smokers' happiness falls when prices increase but the happiness of smokers who have expressed a desire to quit increases in response to bans on smoking in public places.[19] However, taxes do appear to be successful both in preventing individuals from taking up smoking in the first instance and

[15] Adda and Cornaglia (2010) find that measures of smoke intake among non-smokers increase when bans are introduced, with particularly large effects for young children and those living with smokers. Looking at time-use data leads them to conclude that smokers respond to bans in public spaces by smoking more at home. Carpenter, Postolek and Warman (2011), however, find that reported exposure of non-smokers to second-hand smoke in the home does not increase when bans are introduced and that the overall exposure of non-smokers falls. (J. Adda and F. Cornaglia, 'The effect of taxes and bans on passive smoking', *American Economic Journal: Applied Economics*, 2010, 2, 1–32; C. Carpenter, S. Postolek and C. Warman, 'Public-place smoking laws and exposure to environmental tobacco smoke (ETS)', *American Economic Journal: Economic Policy*, 2011, 3(3), 35–61.)

[16] Figure 5 in Office for National Statistics, 'Opinions and Lifestyle Survey: adult smoking habits in Great Britain, 2013', Statistical Bulletin, November 2014, http://www.ons.gov.uk/ons/dcp171778_386291.pdf.

[17] J. Hersch, 'Smoking restrictions a self-control mechanism', *Journal of Risk and Uncertainty*, 2005, 31, 5–21; K. Kan, 'Cigarette smoking and self-control', *Journal of Health Economics*, 2007, 26, 61–81.

[18] A. Leicester and P. Levell, 'Anti-smoking policies and smoker well-being: evidence from Britain', *Fiscal Studies*, forthcoming, DOI: 10.1111/j.1475-5890.2015.12063; J. Gruber and S. Mullainathan, 'Do cigarette taxes make smokers happier', *Advances in Economic Analysis and Policy*, 2005, 5, 1–5.

[19] R. Odermatt and A. Stutzer, 'Smoking bans, cigarette prices and life satisfaction', Center for Research in Economics, Management and the Arts (CREMA), Working Paper no. 2015-16.

in reducing cigarette consumption among existing smokers.[20] This implies that taxes do help to address individuals' self-control problems, even if it is difficult to conclude whether existing tax rates are too high or too low relative to the costs smokers impose on their future selves.

Of course, variation across smokers in the degree to which they suffer from self-control problems introduces an additional distributional consideration to levying tobacco taxation. Taxes may benefit those with greater self-control problems by helping them quit but at the expense of imposing greater costs on those smokers who may not wish to give up. For more on the distributional impact of tobacco taxation, see Box 9.2 earlier.

Taxes on motoring

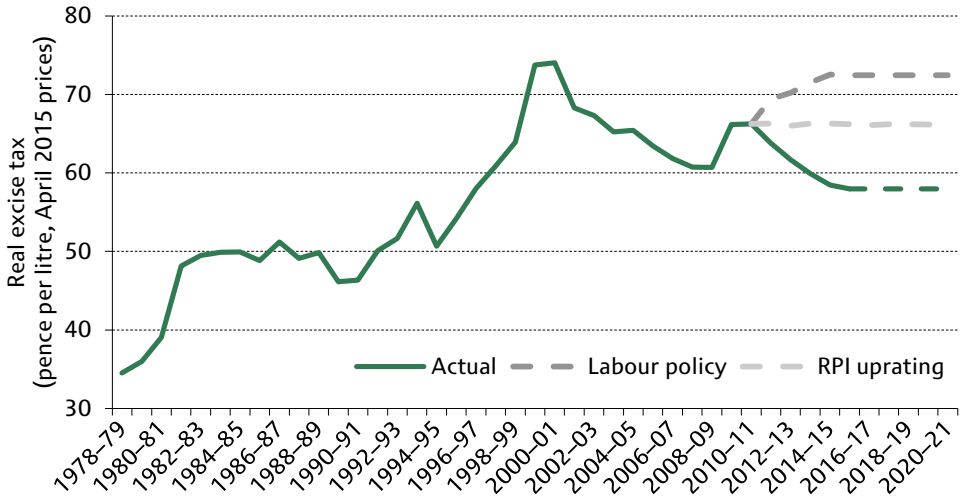
There are two main types of duty levied on motorists in the UK: fuel duties and vehicle excise duty.

Fuel duties

Unleaded petrol and diesel (which together account for the vast majority of road fuel in the UK) are subject to excise duties currently set at 57.95 pence per litre.

As with cigarette duties, VAT is charged on the duty-inclusive price of petrol. Like tobacco duty, fuel duties have also been subject to escalator policies that pencil-in above-inflation increases for future years. In an ideal world, such policies would be a good way of providing firms and consumers with certainty over future rates of duty. In practice, governments have not stuck to them, as Figure 9.7 shows. Indeed, the recent history of rates of fuel duties suggests that current rates of fuel duties are not the result of careful planning.

Figure 9.7. Real petrol duties, 1978–79 to 2020–21



Note: Petrol is leaded (4*) up to 1993, premium unleaded from 1994 to 2000 and ultra-low sulphur from 2001 onwards. Converted to April 2015 prices using the RPI. 'Labour policy' uprates duty by RPI plus 1p from April 2011 until April 2014 and RPI thereafter; 'RPI uprating' uprates duty by RPI. Dashed green line indicates announced future policy.
Source: Duty rates – HMRC website, https://www.gov.uk/government/organisations/hm-revenue-customs; HM Treasury, *Tax Benefit Reference Manual 2002–03 Edition*, 2002; various HMRC / HM Customs & Excise Annual Reports. RPI from National Statistics.

[20] See, for instance, F. Chaloupka and K. Warner, 'The economics of smoking', in A. J. Culyer and J. P. Newhouse (eds), *Handbook of Health Economics*, Volume 1B, North-Holland, 2000.

Table 9.2. Increases in rates of fuel duties: planned and enacted

(1) Date of planned uprating before Budget 2011	(2) Budget 2011	(3) Autumn Statement 2011	(4) June 2012	(5) Autumn Statement 2012	(6) Budget 2013	(7) Autumn Statement 2013	(8) Budget 2015 (March)
Apr 2011	*Jan 2012*	*Aug 2012*	*Jan 2013*	Cancelled	-	-	-
Apr 2012	*Aug 2012*	Cancelled	-	-	-	-	-
Apr 2013	Apr 2013	Apr 2013	Apr 2013	*Sep 2013*	Cancelled	-	-
Apr 2014	Apr 2014	Apr 2014	Apr 2014	*Sep 2014*	*Sep 2014*	Cancelled	-
Apr 2015	Apr 2015	Apr 2015	Apr 2015	*Sep 2015*	*Sep 2015*	*Sep 2015*	Cancelled
Apr 2016	Apr 2016	Apr 2016	Apr 2016	Apr 2016	Apr 2016	Apr 2016	Apr 2016

Note: Column (1) refers to the planned uprating in rates before the 2011 Budget; columns (2)–(8) show the fate of each planned rise at subsequent Budgets and Autumn Statements; e.g. the planned rise in April 2012 was cancelled in the 2011 Autumn Statement. Text in italics indicates a delay in the uprating.

Real duties increased dramatically in the early 1990s as escalators were introduced by the then Conservative government. These policies continued (and indeed accelerated) until they were abandoned under Labour in 1999 in the face of increases in the pre-tax cost of fuel and ahead of widespread fuel price protests the following year. There then followed a steady decline in the real duty rate, as planned increases in line with inflation were delayed and then cancelled. That pattern came to a short-lived pause in 2008 when duties were increased by the then Chancellor Alistair Darling and a new escalator was announced.

The coalition government initially stuck to the previous government's plans to increase duties but then, in George Osborne's second Budget, the remainder of the escalator was abandoned, duties were cut by 1p and a planned adjustment in line with inflation was delayed until August 2012. This marked the beginning of another prolonged period, reminiscent of the early 2000s, when inflation adjustments to rates of fuel duties would be announced, postponed and then cancelled. Table 9.2 shows the fate of inflation-based increases that were planned prior to the 2011 Budget.

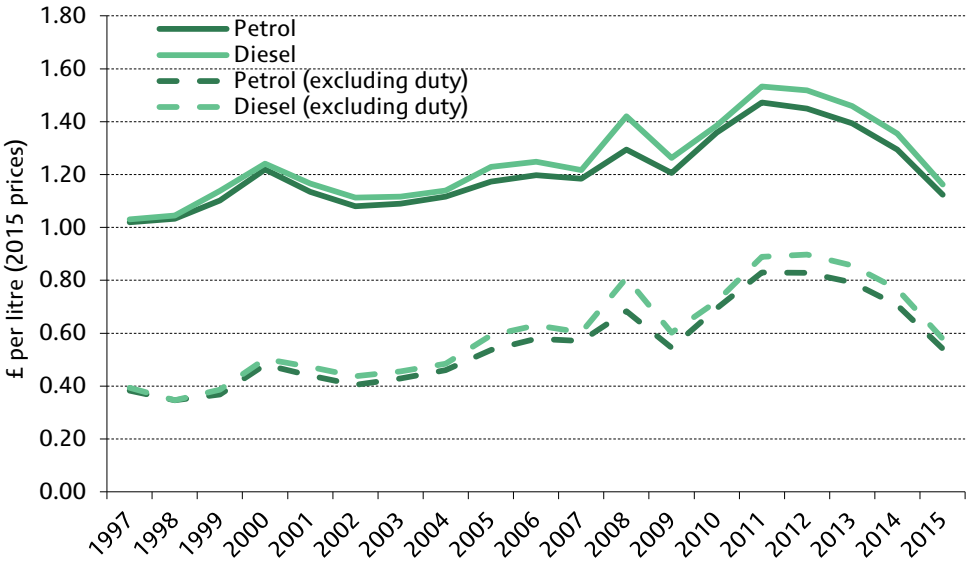
The coalition government's change in direction on fuel duties came at a substantial cost in terms of revenues. Revenues from fuel duties would have been around £6.3 billion higher in 2015 had the government stuck to the escalator planned by the previous Labour government and £4.0 billion higher if duty had been increased in line with inflation.[21] By 2015, real fuel duties had fallen to roughly where they had been in at the end of the last Conservative government in April 1997.

In November 2015, duties made up 54% of the cost of a litre of petrol and 53% of the price of a litre of diesel.[22] Nonetheless, the cost of a litre of fuel has tended to track movements in the pre-tax cost of petrol and diesel in recent years. Figure 9.8 shows movements in the pump prices of petrol and diesel since 1997. These increased steadily

[21] Figures taken from S. Adam and B. Roantree, 'The coalition government's record on tax', IFS Briefing Note no. 167, March 2015, http://www.ifs.org.uk/uploads/publications/bns/BN167170315.pdf and updated by adding the estimated £140 million in lost revenue from the cancelling of a planned inflation increase in the March 2015 Budget.

[22] Authors' calculations from Department of Energy and Climate Change figures, https://www.gov.uk/government/statistical-data-sets/oil-and-petroleum-products-monthly-statistics.

Figure 9.8. Real pump prices for petrol and diesel, 1997–2015



Note: Costs converted to 2015 prices using the RPI.
Source: Department of Energy and Climate Change.

before reaching peaks of £1.47 and £1.53 in 2011 for petrol and diesel respectively. In the last few years, they have fallen quite rapidly. The evolution of prices excluding duties shows a very similar pattern. Over the whole period, changes in fuel duties have only slightly reduced the size of fluctuations in pump prices. Under the previous coalition government, reductions in duty helped to dampen the effects of increases in the pre-tax price of fuel in the early years of the government. However, the additional declines in duties implemented since 2012 have served to accelerate falls in pump prices.

In the past, the Conservative Party considered adopting an explicit policy of adjusting duties so as to stabilise pump prices. Ahead of the 2010 election, it promised to introduce a 'fair fuel stabiliser' that would attempt to do just that. After the election, this policy took the form of a promise made in the 2011 Budget to reintroduce the 1p-above-inflation fuel duty escalator only if oil prices fell below $75 a barrel in a 'sustained way'. It is worth noting that oil prices did fall below this threshold towards the end of the coalition's period in office, in late 2014, and have since remained there without fuel duties being increased. However, it is unclear whether this fall should count as 'sustained' or whether the pledge to reintroduce the escalator was still in effect at this time (the escalator was originally envisioned to last until April 2014). In any case, in practice, the coalition government tended to reduce fuel duties in periods of both rising and falling fuel prices; hence there is little evidence that fuel price stabilisation was really the key objective.

The cost of motoring does not depend only on the price of a litre of fuel. Over time, the amount of fuel required to travel a given distance has declined as technology has advanced and regulations have been tightened. Figures from the Department for Transport show that the average fuel efficiency for new petrol-powered vehicles increased from 8.3 litres per 100 kilometres in 1997 to 5.5 litres per 100 km in 2014. New diesel-powered vehicles likewise improved their fuel efficiency from an average of 7.0 litres per 100 km to 4.7 litres per 100 km over the same period.[23] Figure 9.9 shows

[23] Table TSGB0303 from https://www.gov.uk/government/statistical-data-sets/tsgb03.

Figure 9.9. Average real cost of driving 100 kilometres for new cars, 1997–2014

Note: Figures converted to 2015 prices using the RPI. Department for Transport figures on fuel efficiency are obtained using data from laboratory estimates of the fuel efficiency on new cars sold.
Source: Authors' calculations using petrol and diesel prices from the Department of Energy and Climate Change and km per litre from the Department for Transport.

how the implied costs of driving a kilometre changed in these years according to Department of Energy and Climate Change (DECC) estimates of petrol and diesel prices. While the real cost of fuel rose over this period, the average cost of motoring for those purchasing new vehicles fell from £8.50 per 100 km to £7.15 for the owners of petrol-powered cars and from £7.24 to £6.38 for the owners of diesel-powered cars. As well as the average efficiency of both petrol and diesel cars improving, there has also been a rapid shift in the composition of new car purchases towards those using more efficient fuels. From 2000 to 2012, the share of new cars using more-fuel-efficient diesel engines increased from 14.1% to 50.8%, while those using 'alternative' fuels (such as electricity) increased from close to 0% to 1.4%.[24]

Improvements in fuel efficiency have implications for the future of fuel duties as a source of revenue. The Office for Budget Responsibility (OBR) expects fuel duty revenues to decline in importance in the coming years even as it expects total vehicle mileage to increase.[25] Fuel duty as a percentage of GDP is forecast to decline from 1.44% in 2015–16 to 1.26% in 2020–21. We discuss how the government could respond to these developments further in what follows.

Vehicle excise duties

Fuel duties are not the only taxes levied on motorists. Vehicle excise duty is an annual charge levied on the owners of vehicles. Currently, rates are banded according to cars' CO_2 emissions per kilometre, with the owners of cars in lower emissions bands paying less. In 2010, a special first-year rate (the so-called 'showroom tax') was introduced that is paid in the year a new car is registered. This rate is much more sensitive to vehicle emissions than the VED rate for subsequent years. It is currently zero for vehicles with

[24] Society of Motor Manufacturers and Traders, 'New car CO_2 report 2013', http://www.smmt.co.uk/wp-content/uploads/sites/2/SMMT-New-Car-CO2-Report-2013-web.pdf.

[25] Office for Budget Responsibility, *Fiscal Sustainability Report*, July 2014, http://budgetresponsibility.org.uk/fiscal-sustainability-report-july-2014/.

emissions below 130 grams per kilometre but increases steeply for more polluting vehicles. Cars with emissions greater than 255g per km pay a charge of £1,100.[26]

As with fuel duty, improvements in the efficiency of the car fleet over time have gradually eroded VED revenues. In his Summer Budget Speech, George Osborne claimed that by 2017, three-quarters of cars would pay no VED in their first year at all.[27] As a consequence, a reform to VED was announced that will take effect from 1 November 2017. All cars registered after April 2017 with non-zero emissions will pay a charge in their first year. As before, the charge increases with the level of emissions per kilometre. VED in subsequent years will, however, no longer depend on emissions (except that zero-emissions vehicles will be exempt) but will instead be charged at a flat rate of £140.[28] These changes are expected to raise an additional £1.4 billion by 2020–21.

How effectively are motoring externalities taxed?

Motoring is associated with a number of external costs that potentially justify excise taxation. Vehicle emissions contribute to general air pollution, and CO_2 emissions contribute to climate change. In addition, motorists may cause wear and tear on roads that they do not directly pay for. Finally, a decision to drive contributes to congestion that slows down the journeys of other drivers.

VED and fuel duties can both be thought of as addressing these externalities with varying degrees of success. Of the two, VED is the blunter instrument. This is because VED does not vary according to vehicle *use*, which essentially all motoring externalities depend on. While it discourages the purchase of more polluting vehicles for instance, it does not provide incentives for drivers to use their cars less. This might serve a purpose in increasing the salience of fuel efficiency as a consideration when vehicles are purchased, but is otherwise unlikely to achieve anything that could not be more effectively achieved with higher rates of fuel duties.

Fuel duties, on the other hand, are actually an effective tax for targeting the externalities associated with CO_2 emissions and climate change. This is because emissions are directly proportional to fuel use. However, carbon emissions alone cannot justify the current level of fuel duties. Burning a litre of petrol produces 2.4 kilograms of CO_2, while burning a litre of diesel produces slightly more, at 2.6 kg per litre.[29] With fuel duty on petrol and diesel at 57.95 pence a litre, this implies a CO_2 tax of £242.47 per tonne for petrol and £221.18 per tonne for diesel. These implied rates of tax per unit of emission are much higher than the values placed on carbon savings in UK government analyses (which are £29 per tonne in sectors covered by the EU Emissions Trading Scheme and £69 in non-traded sectors[30]).

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[26] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/419799/V149_Budget_2015_Final_version.pdf.

[27] https://www.gov.uk/government/speeches/chancellor-george-osbornes-summer-budget-2015-speech.

[28] In addition, cars worth £40,000 or more will pay a £310 supplement for the first five years.

[29] http://www.publications.parliament.uk/pa/cm200203/cmselect/cmenvfru/929/3091706.htm.

[30] Central estimates taken from Department of Energy and Climate Change, *Carbon Valuation in UK Policy Appraisal: A Revised Approach*, 2009, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/245334/1_20090715105804_e____carbonvaluationinukpolicyappraisal.pdf and converted to 2015 values using the Consumer Prices Index.

They are also much higher than the rates implied by carbon taxes that are applied to other forms of energy use.[31]

However, estimates of external costs associated with emissions tend to be greatly outweighed by other costs. The most widely cited evidence is Sansom et al. (2001), whose estimates suggest that congestion is by far the largest component of the external cost of motoring, accounting for 9.7–11.2p out of total externalities of 11.5–16.2p per kilometre driven.[32] In recent years, the costs of congestion also appear to have been worsening. According to statistics from the Department for Transport, average vehicle speeds on English A-roads from 7am to 10am have declined from 25.3 miles per hour in 2011–12 to 24.3 miles per hour in 2013–14.[33]

Fuel duties are better targeted at correcting for the external costs caused by congestion than VED, but they are imperfect. The amount of fuel used in a given journey is relatively insensitive to the degree of congestion, which varies from one part of the country to another and across different times of the day. Furthermore, more-fuel-efficient vehicles cause just as much congestion as other vehicles but pay less in fuel duty. Not only does this mean that fuel duties do not give the right incentives to drivers of more efficient vehicles, but it also means that unless duties increase as overall fuel efficiency improves, taxes paid per kilometre driven will fall even as road use (and so presumably congestion) increases in future.

The tendency of fuel duty payments to fall as vehicle efficiency improves, even as congestion has worsened, implies that changes in the private costs of motoring have not kept pace with changes in the social cost. (This would of course be desirable if fuel duties were previously set above their optimal rates, though in that case it still would not be desirable for the trend to continue indefinitely.) The fuel duty changes that would be required to reverse the declines in the cost of motoring for new vehicles would be substantial. Petrol and diesel duties would need to increase by 41% and 31% respectively to take the cost of driving a kilometre for new vehicles from its 2014 level to its 1997 level. HMRC estimates suggest this would raise £9 billion a year.[34] The smaller required increase in diesel duties is due to less improvement in the efficiency for cars with diesel-powered engines than for those with petrol-powered engines. However, since diesel-powered cars currently pay less fuel duty per kilometre on average, there may be reason to increase diesel duties more than petrol duties.

A far more promising approach to addressing congestion externalities now and in the future would, however, be a system of road pricing that charges drivers according to when and where they drive. Unlike the current system of duties, this would incentivise motorists to drive at less congested times and to travel on less congested routes. Such a system could replace much of the revenues currently received from fuel duties and VED.

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[31] See, for example, figure 6.5 in A. Advani, S. Bassi, A. Bowen, S. Fankhauser, P. Johnson, A. Leicester and G. Stoye, *Energy Use Policies and Carbon Pricing in the UK*, IFS Report R84, November 2013, http://www.ifs.org.uk/publications/6915.

[32] T. Sansom, C. Nash, P. Mackie, J. Shires and P. Watkiss, 'Surface transport costs and charges: Great Britain 1998', Department of the Environment, Transport and Regions, 2001, http://www.its.leeds.ac.uk/fileadmin/user_upload/Surface_Transport_Costs_and_Charges_Great_Britain_2001.pdf. We do not include the costs of operating public service vehicles, taxes due but not paid by motorists or the 'Mohring effect' in the total cost of road use in our figures for total cost as we only aim to capture the social costs of private motoring.

[33] Table CGN0201a at https://www.gov.uk/government/statistical-data-sets/cgn02-flow-weighted-vehicle-speeds.

[34] https://www.gov.uk/government/statistics/direct-effects-of-illustrative-tax-changes.

These taxes could, however, remain – at lower rates – to ensure that vehicle emissions are correctly priced. The introduction of road pricing would have the additional advantage of making future revenues less sensitive to continued improvements in vehicles' fuel efficiency. This would be a much more rational response to falling revenues than raising rates of fuel duty and VED as cars' fuel use and emissions decline. Further increases in existing taxes in the face of these developments will simply lead to a situation where those travelling on uncongested routes are greatly overtaxed relative to the costs they impose on others.

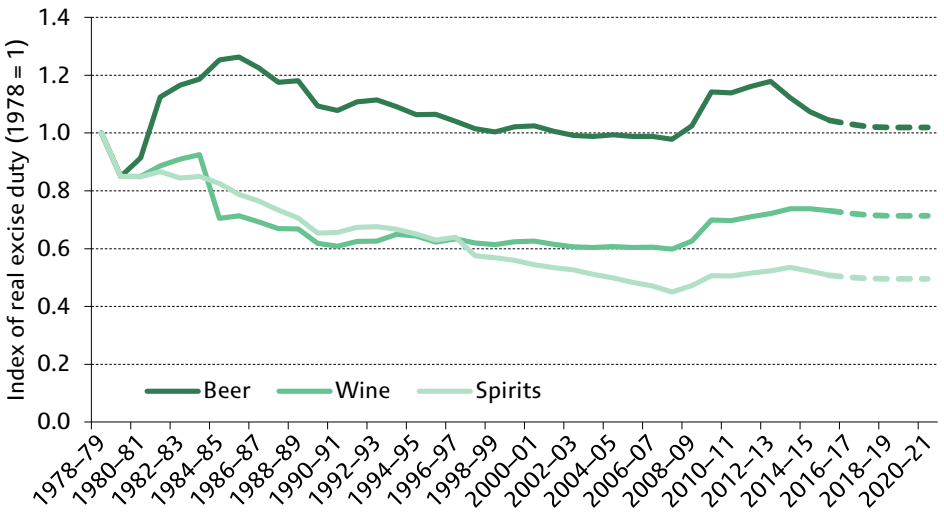
Road pricing schemes already exist in a number of countries and in some cases are automatically adjusted quite sensitively according to road conditions. The arguments for such an instrument are examined in detail in a previous IFS report.[35]

Alcohol duties

In the UK, alcohol taxes are differentiated across different alcohol types. As with tobacco and fuel, VAT is charged on the duty-inclusive price. Figure 9.10 shows how real alcohol duty rates for beer, wine and spirits have evolved from 1978–79 to present and how they are expected to evolve to 2020–21 under currently-announced policy. Beer duty peaked in 1985–86 (around 25% higher than in 1978–79) before falling back to a level that today, in real terms, is around 4% higher than in 1978–79. For wine and spirits, the broad trend has been a decline in real duties. Real wine duty is now just 73% of its 1978–79 level and for spirits the duty level is now only 51% of the 1978–79 level.

Data collected by the World Health Organisation suggest that average per-capita consumption of pure alcohol for people aged 15 and over in the UK grew from 10.9 litres

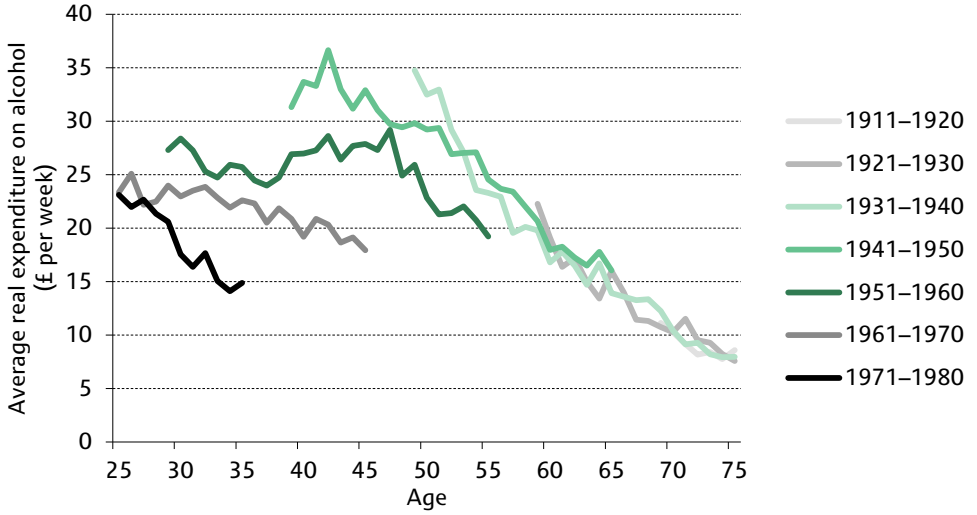
Figure 9.10. Real alcohol duties, 1978–79 to 2020–21



Note: Assumes beer at 3.9% ABV, wine not exceeding 15% ABV and spirits at 40% ABV. Rates are indexed relative to levels in 1978–79. Dashed lines indicate announced future policy.
Source: HMRC website, https://www.gov.uk/government/organisations/hm-revenue-customs; HM Treasury, *Tax Benefit Reference Manual 2002–03 Edition*, 2002; various HMRC / HM Customs & Excise Annual Reports.

[35] P. Johnson, A. Leicester and G. Stoye, *Fuel for Thought: The What, Why and How of Motoring Taxation*, May 2012, RAC Foundation, London, http://www.ifs.org.uk/publications/6175.

Figure 9.11. Real expenditure on alcohol by age and birth cohort, 1978–2013



Note: Each line represents average real household expenditure on alcohol at each age for household heads born in one of seven 10-year intervals from 1911 to 1971 over the periods they are observed from 1978 to 2013. Real expenditures calculated by dividing household nominal expenditure on alcohol by the alcohol price component of the RPI (in 2014 prices).
Source: Authors' calculations from Living Costs and Food Survey (various years).

in 1978 to 11.7 litres in 2004, before falling back to 9.7 litres in 2012.[36] This recent reduction in alcohol consumption may reflect a fall in consumption among younger consumers. Figure 9.11 plots spending on alcohol by different birth cohorts (in this case, household heads born within the same decade) at the different ages they are observed over the period 1978–2013. Spending is measured by dividing cash expenditures by an index for the price of alcohol taken from the RPI. While the fall in the age profile of spending across cohorts is not quite as striking as for tobacco, there is nevertheless evidence that, at each age, consumers born between 1971 and 1980 on average spent less on alcohol than those born between 1961 and 1970, who in turn at each age spent less than those born between 1951 and 1960. This pattern continues until the 1941–1950 cohort, who have an age-spending profile similar to those of earlier cohorts. Like cigarettes, spending on alcohol tends to fall as individuals get older. Of course, while the fall in alcohol spending across younger cohorts may reflect a fall in alcohol consumption, it may also reflect a change in spending patterns – for instance, any increased tendency among younger cohorts to consume off- rather than on-trade.[37]

Externalities and internalities of alcohol consumption

Externalities associated with alcohol consumption include (i) direct externalities experienced by victims of accidents, property damage and violence caused by other people's drinking, (ii) collectively-borne costs such as policing and publicly-funded medical costs associated with alcohol abuse and (iii) tax revenue externalities. Alcohol consumption, for some individuals, is also likely to lead to internalities such as future health problems.

[36] World Health Organisation Global Health Observatory data, http://apps.who.int/gho/data/node.main.A1022?lang=en.

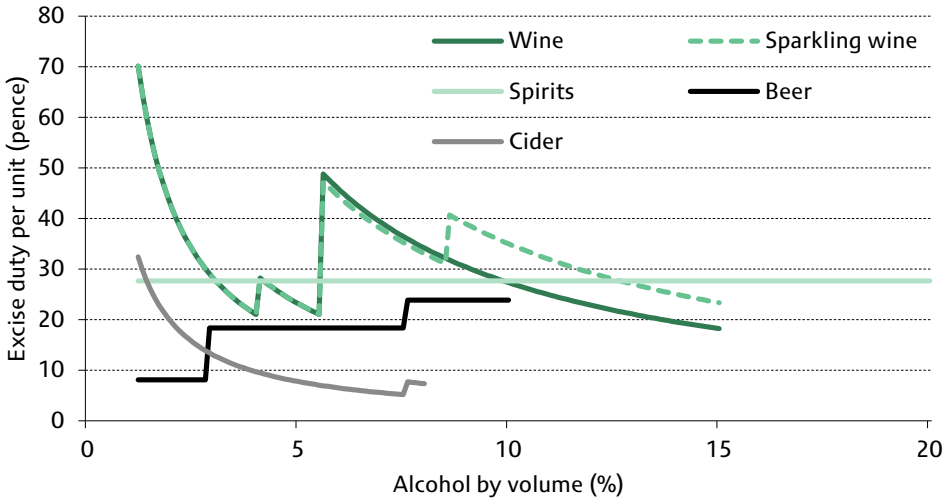
[37] This pattern may also in part be explained by known declines in the amount of total household spending captured by the Living Costs and Food Survey.

In contrast to tobacco, where the social harm from externalities is probably approximately linear in the level of consumption, both externalities and internalities from alcohol are likely to be highly non-linear: while for a smoker the next cigarette of the day is roughly as damaging as the first, the tenth pint of beer in an evening is likely to cause much more harm than the first. In addition, for a given level of consumption, the size of harm is likely to vary across people: the tenth pint of beer for someone prone to alcohol-fuelled violence is likely to be more harmful than the tenth pint consumed by the convivial drunk. This creates challenges both in quantifying the marginal external (or internal) costs of alcohol consumption, and hence the appropriate tax level, and in designing a tax structure that effectively targets the most harm-inducing consumption.

Notwithstanding these difficulties, a reasonable starting point in the design of alcohol excise taxes may be that, all else equal, taxes per unit of alcohol should be the same regardless of the form of drink. This would make sense if the harm associated with the consumption of an additional unit of alcohol by an abusive consumer is not dependent on the type of alcohol he or she drinks.[38] On the other hand, if abusive drinkers tend to consume more of their alcohol units in concentrated form (as, for instance, this allows for more rapid alcohol consumption) or alcohol with any other identifiable characteristic, then there is a case for taxing this form of alcohol more strongly.

Figure 9.12 shows the current structure of alcohol excise taxes, measured per unit of alcohol. Excise taxes vary by alcohol type and strength. Strength is measured as alcohol by volume (ABV) – the percentage of an alcohol product's volume comprised of pure alcohol. For beer, lager, spirits and spirit-based alcopops, the tax is levied directly on alcohol content. For cider and wine, the tax is levied per litre of product (within broad strength bands). To make the figure easier to read, we stop the horizontal axis at 20% ABV; however, it should be noted that the 27.66 pence per unit duty for spirits also applies to spirits products stronger than 20% ABV.

Figure 9.12. Excise tax per unit of alcohol, by alcohol strength and type



Note: Figure assumes all cider is 'still' ('sparkling' cider attracts a different duty rate, which is levied only on champagne substitutes in pressurised bottles).
Source: Calculated from HMRC data.

[38] A unit of alcohol is equal to 10 millilitres (8 grams) of pure alcohol. In the UK, a standard measure of strong spirits (e.g. vodka) contains 1 unit of alcohol.

For spirits and spirit-based alcopops, the tax levied per unit of alcohol is constant in strength. For beer, the tax per unit of alcohol increases with strength; strong beers attract a higher tax rate than mid-strength beers, which in turn attract a higher tax rate than low-strength beers. For wines and cider, the tax per unit varies by type and declines in strength, with discrete jumps at several points. For instance, a cider with 6% ABV attracts half the excise tax per unit of alcohol of a cider with 3% ABV. The highest rates of all are levied on very low-strength wine 'coolers', at more than 50p per unit, in contrast to a typical table wine of 12.5% ABV which has a duty rate of 21.9p per unit. The banding creates particular oddities for wine: moving from a wine of 5.5% ABV to 5.6% ABV sees the duty rate per unit jump from 21.1p to 48.8p. Cider typically attracts a much lower rate of duty per unit than other alcohol types, and high-strength ciders have by far the lowest duty rates per unit of any alcohol product. A cider of 7.5% ABV attracts a duty of 5.2p per unit, whereas a beer of the same strength attracts a duty of 18.4p. As a result, a litre of 7.5% ABV beer will be liable for duty of 138p, while a litre of 7.5% ABV cider will attract duty of only 39p.

Overall, it is very difficult to justify the existing structure of alcohol excise taxes based on the likely harm associated with consuming different types and strengths of alcoholic drinks. The structure of alcohol excise taxes is partly restricted by an EU Directive that sets out that the tax base for wine and cider should be the volume of liquid, whereas the base for spirits and beer is the alcohol content.[39] This places legal constraints (the existence of which is hard to defend on any economic grounds) on what reforms the government could legally undertake. Nevertheless, within these constraints, the system could better target problem drinking.

A minimum unit price for alcohol?

A minimum unit price for alcohol has been proposed as an alternative price-based policy aimed at targeting problem alcohol consumption. The policy involves imposing a price floor for alcohol below which it would be illegal to sell. In 2012, the Home Office consulted on the introduction of a 45p minimum unit price for alcohol in England and Wales. Previous IFS research has shown that around 55% of alcohol units purchased off-trade (in off-licences and supermarkets for home consumption) were priced below the proposed 45p minimum unit price, ranging from 84% of cider units to fewer than 1% of alcopop units.[40] Therefore the introduction of this policy would have had a considerable impact on the price of a large range of alcohol products. However, the UK government subsequently shelved plans for a minimum unit price in England and Wales and instead, on 28 May 2014, introduced a ban on selling alcohol products at prices below the amount of duty plus VAT levied on them.[41] This alternative price floor is much lower than the proposed minimum unit price, with only around 1% of alcohol sales prior to the ban being below the floor.[42]

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[39] European Commission Council Directive 92/83/EEC, http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:31992L0083:en:HTML.

[40] R. Griffith, A. Leicester and M. O'Connell, 'Price-based measures to reduce alcohol consumption', IFS Briefing Note BN138, March 2013, http://www.ifs.org.uk/publications/6644.

[41] For details, see Home Office, 'Guidance on banning the sale of alcohol below the cost of duty plus VAT', March 2015, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415522/HO_Guidance_on_BBCS.pdf.

[42] R. Griffith, A. Leicester and M. O'Connell, 'Price-based measures to reduce alcohol consumption', IFS Briefing Note BN138, March 2013, http://www.ifs.org.uk/publications/6644.

In 2012, the Scottish government legislated for a 50p minimum unit price.[43] However, the European Court of Justice has questioned the legality of the Scottish legislation, ruling that its effect would be 'to restrict the market, and this might be avoided by the introduction of a tax measure designed to increase the price of alcohol instead of a measure imposing a minimum price per unit of alcohol'. Whether the policy is implemented depends on whether the Scottish government can demonstrate that it is not possible for health to be protected equally effectively by alternative tax measures.[44]

Table 9.3 uses data on off-trade alcohol purchases made by a representative sample of British households over the calendar year 2011.[45] It categorises households into groups based on the number of units of alcohol per adult per week they record purchasing throughout the year, and it describes the average price per unit the households paid, the average alcohol strength of their purchases and the share of their alcohol units comprised of spirits. The table shows that households that consistently purchase relatively large amounts of alcohol do indeed tend to buy products that are cheaper in per-unit terms. Therefore a minimum unit price would, to some extent, target heavy drinkers more than more moderate drinkers. However, households that consistently purchase relatively large amounts of alcohol also tend to purchase stronger products and purchase more of their alcohol in the form of spirits. This suggests that tax reform that increases taxes on high-strength products, or on spirits, would also target heavy drinkers (while also raising questions about the sense behind the historic decline in spirits duties). An increase in the rate of tax levied on spirits could be implemented without falling foul of EU law.

Previous IFS research has demonstrated that if all consumers reduce their alcohol demand in response to price increases by the same amount, it would be possible to target heavy drinkers more effectively by reforming taxes (so that they increase in alcohol strength) than by introducing a minimum unit price.[46] The same work also showed that a minimum unit price, which will have the effect of dampening price competition, is likely

Table 9.3. Variation in alcohol purchases by long-run purchase level

Average purchase of units of alcohol per adult per week	Price per unit of alcohol (p)	Alcohol by volume (%)	Share of alcohol units from spirits (%)
Less than 7 units	51.0	10.1	27.1
7–14 units	46.0	11.2	27.0
14–21 units	44.3	12.1	29.6
21–35 units	42.6	12.6	32.1
More than 35 units	40.2	14.1	39.6
All households	48.6	10.8	31.1

Note: Numbers are based on the off-trade purchases made by a representative sample of British households in 2011.
Source: Authors' calculations using the Kantar Worldpanel.

[43] Details of the legislation can be found at http://www.legislation.gov.uk/asp/2012/4/contents/enacted.

[44] See BBC News website, 'Minimum alcohol pricing plan "may breach EU law"', 23 December 2015, http://www.bbc.co.uk/news/uk-scotland-35160396.

[45] Off-trade purchases refer to alcohol products that households purchase and bring into the home. Such purchases made up three in four alcohol units purchased in 2010 – 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.

[46] 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.

to lead to windfall profits for the alcohol or retail industry and lower tax revenue (it estimated a 3% reduction in alcohol tax revenue following the introduction of a 45p minimum unit price). However, whether tax reform could be better targeted than a minimum unit price in reality depends crucially on how consumer price responsiveness for alcohol varies both across consumers with different levels of consumption and across

Box 9.3. Cross-border and illegal shopping

One way in which some consumers are likely to respond to higher prices resulting from excise taxes is by switching to purchasing goods abroad (where the price may be lower) or in an illicit segment of the market (in which tax is not levied). The higher are duties the larger is the incentive for consumers to switch to consumption that entails tax avoidance (cross-border shopping) or evasion (illicit purchases). Such switching, at least from a domestic point of view, is undesirable as it results in the same loss in tax revenue as if the consumer ceased consumption altogether, but without the reduction in social harm.

Measuring the extent of tax avoidance and evasion is difficult. HM Revenue & Customs does, however, provide estimates of the extent of both, although these numbers should be treated as having a high degree of statistical uncertainty. Table 9.4 summarises these estimates for alcohol and tobacco. In particular, we report the illicit share of the market and the tax gap, which, respectively, measure the share of the market made of illicit (non-taxed) purchases and the associated loss in tax revenue. We also report the share of domestic revenue estimated to be lost to cross-border shopping. Overall, illicit and cross-border shopping is estimated to have resulted in a £1.5 billion loss in tax revenue from alcohol (14% of total alcohol tax revenue) in 2013–14 and a £2.6 billion loss in tax revenue from tobacco (27% of total tobacco tax revenue). The illicit sector is particularly large for hand-rolled tobacco, in part because hand-rolled tobacco is commonly used in the (illegal) consumption of marijuana. In contrast, estimates of the tax gap for diesel and petrol are very small, although HMRC does estimate £0.5 billion is lost to cross-border shopping for diesel.

Table 9.4. Lost revenue from evasion and cross-border shopping, 2013–14

	Illicit market share (%)	Tax gap (£m)	Tax loss from cross-border shopping (£m)
Beer	13	750	10
Spirits	5	250	80
Wine	3	200	160
Cigarettes	10	1,100	400
Hand-rolled tobacco	39	1,000	100

Note: Tax gap and tax loss from cross-border shopping include both lost duty and VAT revenue.
Source: HM Revenue & Customs, *Measuring Tax Gaps 2015 Edition*, October 2015, https://www.gov.uk/government/collections/measuring-tax-gaps.

The scale of tax avoidance in the alcohol and tobacco markets appears to be a matter of some concern for the government. In the Summer 2015 Budget, the Chancellor announced a whole raft of measures to try to address the trade in illicit tobacco and alcohol. These measures are expected to raise £450 million by 2020–21, which would represent around 2% of total alcohol and tobacco revenues in that year.[a]

[a] HM Treasury, *Summer Budget 2015*, July 2015, https://www.gov.uk/government/publications/summer-budget-2015.

different types of alcohol. IFS research to be published in Spring 2016 is exploring precisely this question.

Future policy

While much of the recent debate over how best to tackle alcohol-related harm has focused on minimum unit pricing, we recommend that serious consideration should be given to reform of alcohol taxes. Even within the constraints placed by EU law, the alcohol tax system should be reformed to better target alcohol consumed disproportionately by heavy drinkers. For instance, ceasing (and potentially reversing) the decline in spirits duties relative to duties on other alcoholic drinks and reforming cider duties so that they are no longer extremely low for strong products would be a good start.[47] Sensible tax reform may well do a more effective job at targeting harmful alcohol consumption than minimum unit pricing. It would also avoid providing a windfall boost to those making or selling alcohol and the legal wrangles associated with a minimum unit price.

Nevertheless, the impact of any policy reform is uncertain and will depend on how consumers and firms change their behaviour in response. For instance, will firms change prices one-for-one with tax changes; will they keep the prices of the products not directly affected by a minimum unit price unchanged? Will consumers respond to higher prices by switching to alcohol purchase illegally or abroad (see Box 9.3)? Ultimately, the response of consumers and firms to policy change will determine the effectiveness of any change. It is crucial to factor existing evidence into policymaking and to expand the evidence base.

9.4 A tax on sugar?

Excise duties are not currently levied on any food or non-alcoholic drinks in the UK.[48] The House of Commons Health Committee has recently published proposals that include calling for a tax on sugar-sweetened soft drinks.[49] Public Health England has suggested introducing a tax to achieve a minimum price increase of 10–20% on high-sugar products such as sugar-sweetened soft drinks.[50] In this section, we discuss the rationale for such a tax and factors that should be taken into account when considering its introduction. We will draw on some preliminary findings from ongoing research due to be published in Spring 2016.

Externalities and internalities of sugar consumption

There is growing concern about the dangers of excessive sugar consumption. Consuming excess sugar is associated with weight gain, which increases the risk of heart disease,

[47] In the March 2015 Budget, the Chancellor instead cut spirits duty and cider duty by 2%, claiming the latter cut was 'to support our producers in the West Country and elsewhere'. He failed to make the case for why British producers need specific government assistance and, if such a case does exist, it is highly unlikely that cuts in cider duties are the most appropriate response. See https://www.gov.uk/government/speeches/chancellor-george-osbornes-budget-2015-speech.

[48] Unlike tobacco, fuel and alcohol, VAT is not applied to all food products. VAT is applied to food supplied in the course of catering, but is not applied to most food not supplied in the course of catering. Exceptions to the latter include ice cream (but not frozen yoghurt) and confectionery (but not cakes or some biscuits). The differential application of VAT to food is a policy mess and certainly cannot be justified on the basis of encouraging better diet.

[49] Page 13 of House of Commons Health Committee, *Childhood Obesity: Brave and Bold Action*, November 2015, http://www.publications.parliament.uk/pa/cm201516/cmselect/cmhealth/465/465.pdf.

[50] Page 8 of Public Health England, *Sugar Reduction: The Evidence for Action*, October 2015, https://www.gov.uk/government/publications/sugar-reduction-from-evidence-into-action.

type 2 diabetes, strokes and other health conditions.[51] The existence of these health costs potentially justifies government intervention to reduce sugar consumption. First, there are likely to be externalities associated both with the publicly-funded medical costs and through lost tax revenue and increased benefit payments due to diet-related illness (and, more specifically, excessive sugar consumption). Second, internalities might arise due to a lack of awareness of the sugar contents of products or the dangers of high sugar consumption or due to the existence of self-control problems that may lead individuals to consume in ways that they subsequently regret.

Official government advice recommends that less than 5% of total calorie intake should come from 'added sugar'.[52,53] However, most people purchase much more than this recommendation: more than 90% of households buy in excess of 5% of their calories as added sugar, and 35% of households buy in excess of 15% of their calories as added sugar.[54] On average, households buy 13% of their calories in the form of added sugar. This figure has remained broadly stable over the last 15 years.

As with alcohol, the externalities and internalities of sugar consumption are not likely to be linear in the amount of sugar consumed, nor are they likely to be the same across people. While consuming a small amount of sugar is unlikely to have harmful health effects, the health effects of an additional portion of sugar for someone suffering from diabetes could be severe. Ideally, any policy would target the sugar consumption of those already, or liable to become, obese, overweight or suffering from diet-related illness, and leave the behaviour of healthy-weight individuals unaffected.

A sugar tax

The motivation for introducing a tax on sugar is simple: by increasing the relative prices of sugary products, it will induce consumers to switch to buying lower-sugar alternatives. This in turn would lower the incidence of obesity- and diet-related disease. In practice, there are a number of complicating factors that may limit a sugar tax's effectiveness at reducing the harms of sugar consumption.

Purchases of sugar are concentrated in a relatively small number of food groups: almost 40% of added sugar purchases are from chocolate, confectionery and sugary drinks,[55] as shown by Figure 9.13. However, although sugary drinks contribute a significant proportion of people's total added sugar, their contribution is still less than 20%.

Even if a sugar tax imposed on soft drinks achieved the very unlikely goal of leading everyone to switch entirely to low-sugar alternatives (reducing the sugar obtained from sugary drinks to zero), more than 88% of people would still be purchasing more than the recommended 5% level.[56] This is a best-case scenario in the sense that it assumes the

[51] Page 9 of Public Health England, *Sugar Reduction: The Evidence for Action*, October 2015, https://www.gov.uk/government/publications/sugar-reduction-from-evidence-into-action.

[52] Scientific Advisory Committee on Nutrition, *Carbohydrates and Health*, June 2015, https://www.gov.uk/government/publications/sacn-carbohydrates-and-health-report.

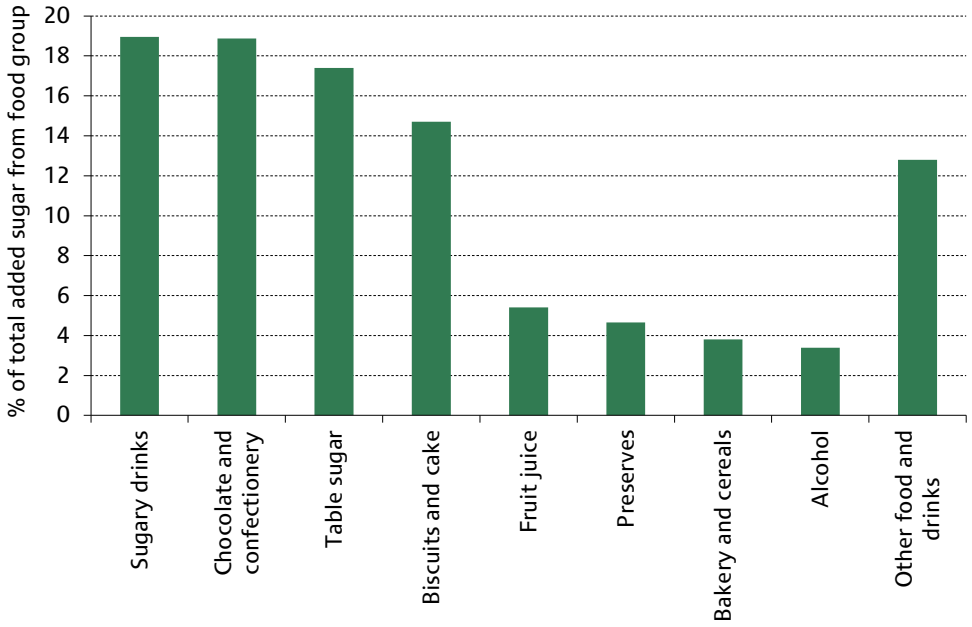
[53] Added sugar includes all sugars added to foods plus those naturally present in fruit juices, syrups and honey. It does not include the sugars naturally present in intact fruit and vegetables or milk and dairy products.

[54] Authors' calculations using the Living Costs and Food Survey 2011. Includes food brought into the home, takeaways and food eaten out in restaurants and pubs.

[55] Sugary drinks include non-diet soft drinks, concentrated squash and other drinks containing sugar (e.g. milkshake mixes), but exclude fruit juice.

[56] Authors' calculations using the Living Costs and Food Survey 2011. Includes food brought into the home, takeaways and food eaten out in restaurants and pubs.

Figure 9.13. Sources of added sugar



Note: Added sugar includes all sugars added to foods plus those naturally present in fruit juices, syrups and honey. It does not include the sugars naturally present in intact fruit and vegetables or milk and dairy products. Sugary drinks include non-diet soft drinks, concentrated squash and other drinks containing sugar (e.g. milkshake mixes), but exclude fruit juice.
Source: Authors' calculations using Living Costs and Food Survey 2011.

maximum possible reduction in sugar and ignores any substitution towards other sources of sugar, such as fruit juice, chocolate, sweets or alcohol. In practice, if a tax were imposed on sugary soft drinks, it is likely that there would be some degree of substitution to other products that contain sugar. It is clear, therefore, that a tax levied only on sugary soft drinks could not of itself achieve anything like the reduction necessary to bring sugar consumption below the recommended levels.

Nevertheless, a tax on sugar-sweetened soft drinks may represent a reasonable first step towards lower dietary sugar. Unlike other products that contain sugar, sugar-sweetened soft drinks do not contain any other nutrients and therefore consumer substitution away from these products would not directly lead to a reduction in the consumption of other, potentially nutritious, nutrients. A tax on sugar-sweetened soft drinks, by increasing their relative price, would induce some consumer switching away from these products, and could potentially have an additional effect of deterring consumption by signalling the associated potential health consequences.

However, the impacts of such a measure would depend crucially on what, if any, other foods or drinks consumers switch to in response, and how this pattern of substitution varies with consumers' total sugar consumption. If, for instance, some consumers have very strong preferences for sugar and therefore switch from taxed sugary soft drinks to chocolate, a tax on sugar-sweetened soft drinks may have a limited impact on their sugar consumption while also increasing their consumption of saturated fat (another nutrient that is typically consumed in excess of government guidelines and for which there is evidence linking it to diet-related disease). Some consumers are also likely to respond to the tax by switching to diet soft drinks (which contain sweeteners instead of sugar). While this form of switching may be welcomed, as it leads to less dietary sugar, evidence

on the health effects of consumption of low-calorie sweeteners is both mixed and limited.[57]

If the government's aim is to reduce added sugar towards the recommended intake level for the majority of the population, it may consider the broader measure of introducing a tax that applies to a wider range of products (for example, all food and drink) and that is levied in proportion to products' sugar contents. This is likely to be more challenging to implement than a sugary soft drinks tax, but given that most food and beverages are covered by mandatory labelling that requires that sugar contents are displayed on packaging, the implementation costs may not be prohibitive.

However, it is also important to understand that a 'sugar tax' levied on all food and drink products is likely to have a considerable effect on consumption of nutrients other than sugar. For example, most food products contain many nutrients: a food product low in sugar may be high in salt or fat. A tax on sugar may decrease the relative price of some salty or fatty foods and thus induce people to substitute towards these. This could lead to an ambiguous effect on overall diet quality, which depends on many things besides the proportion of ingested calories that come from added sugar.

The response of retailers and food manufacturers

An important determinant of the effect of any tax on consumption is the extent to which it is passed on to retail prices. In a perfectly competitive market, firms set prices equal to the cost of producing the product; the introduction of any tax will therefore be entirely passed through to consumer prices. However, the UK food market is characterised by large manufacturers and supermarkets that are likely to have some power to set prices above the cost of production. This means that they may choose to increase prices by less (or more) than any tax levied. They may also choose to change the prices of products that are not affected by the tax. For example, if a price increase for cola results in some consumers switching to diet cola, it is possible that the manufacturers and/or retailers will respond to tax levied on cola by also raising the price of diet cola, dampening the extent of any consumer switching to this product.

Manufacturers may also respond to a tax levied on sugar by reformulating their products. If they try to avoid the tax by reducing the amount of sugar in their products, this could contribute to the success of the policy in reducing sugar consumption. However, the overall impact will also depend on whether manufacturers alter other ingredients too. For example, if manufacturers respond by replacing the sugar in products with more salt or fat, this could dampen the positive impact of the policy on overall diet quality.

Future policy

There is evidence of considerable external costs associated with obesity- and diet-related disease – for instance, the NHS bill for treating obesity is £5 billion per year and the bill for treating diabetes is £10 billion per year.[58,59] In addition, it is likely that poor diet leads to large internalities – it is unlikely, for instance, that the 10% of 4- to 5-year-olds or the

[57] See BBC News Website (2016) 'Diet debate: Are diet drinks a no-go?' http://www.bbc.co.uk/news/health-34924036.

[58] Page 5 of Public Health England, *Sugar Reduction: The Evidence for Action*, October 2015, https://www.gov.uk/government/publications/sugar-reduction-from-evidence-into-action.

[59] Page 5 of Diabetes UK, *The Cost of Diabetes Report*, January 2014, https://www.diabetes.org.uk/Documents/Diabetes%20UK%20Cost%20of%20Diabetes%20Report.pdf.

19% of 10- to 11-year-olds in England who are obese (or their parents) have all fully taken account of the severe future consequences of their current obesity.[60] As excessive sugar consumption is a leading contributor to obesity- and diet-related disease, there is a clear case for considering measures (including taxation) that seek to limit the consumption of sugar.

However, to varying degrees, tackling the externalities and internalities associated with diet is more complex than tackling those associated with tobacco, motoring and alcohol. Diet is multifaceted, which makes designing policy to improve nutrition difficult: achieving a reduction in the consumption of a particular nutrient may also lead to a reduction in another broadly healthy nutrient or an increase in a broadly unhealthy nutrient.

One policy that may sidestep some of these challenges, at the cost of having a more limited impact on sugar intake, is to introduce a tax levied specifically on sugar-sweetened soft drinks (which contain no other nutrients). As the vast majority of people consume more sugar than is recommended, this may represent a reasonable first step towards reducing sugar consumption. However, even here the efficacy of the policy is not immediately clear; it will depend on what consumers switch to and on how firms change their prices in response to the tax. In addition, even if the tax is successful in eliminating all sugar consumption from soft drinks, most people will still be left consuming more than the recommended maximum amount of sugar.

A more broad-based sugar tax, applied to added sugar in all food and drinks, may offer the potential of lowering sugar consumption towards recommended levels. However, such a policy risks having unintended consequences for other dimensions of diet, which may offset the benefit of lower dietary sugar. Any such policy should be very carefully designed, based on the best evidence and adjusted as more evidence becomes available. It should also be considered alongside alternative or complementary policies such as regulation and voluntary agreements with industry.[61]

9.5 Conclusion

The main economic justification for the use of excise taxes is to correct socially costly behaviour that is not taken into account by individuals when deciding what and how much to consume. These costs may be borne by others or society at large, or by the consumer in the future. There is considerable evidence that consumption of tobacco, fuel and alcohol generates such costs, although the extent of these costs can vary in complex ways with the amount consumed and can vary across individuals. The existence of such social costs provides a rationale for levying excise duties on these goods. However, it is important that any tax is well designed to target externalities or internalities associated with consumption.

There is a clear case for reform to the way that motoring and alcohol are taxed. Fuel and vehicle excise duties do not target the primary externality – congestion – associated with

[60] Page 5 of Public Health England, *Sugar Reduction: The Evidence for Action*, October 2015, https://www.gov.uk/government/publications/sugar-reduction-from-evidence-into-action.

[61] There is evidence that efforts to encourage the food industry to lower the salt contents of products have been successful in reducing dietary salt. See R. Griffith, M. O'Connell and K. Smith, 'The importance of product reformulation versus consumer choice in improving diet quality', IFS Working Paper W14/15, http://www.ifs.org.uk/uploads/publications/wps/wp201415.pdf.

motoring. The government should consider moves towards road pricing that would better address this. The system of alcohol taxation should be reformed in order to target higher-strength alcohol products systematically, as these are disproportionately consumed by heavy drinkers (who are most likely to generate alcohol-induced harm).

Revenues from excise taxes are forecast to fall in the coming years. However, given that the primary justification for levying excise duties is to correct socially costly behaviour, this is not necessarily cause for concern. Indeed, reduction in the consumption of tobacco, fuel and alcohol could lead to an improvement in their net contribution to the public purse if it leads to sufficiently large falls in associated health, environmental and crime costs. Even if this were not the case, there are other, more appropriate ways to raise revenue than levying high taxes on a small number of goods.

Future excise duty policy may include the possibility of levying taxes on other forms of consumption that generate externalities and internalities. One proposal that has garnered support in the public health community is a tax on sugar. While this policy may seem an attractive solution to the growing problem of obesity- and diet-related illness, it should be carefully evaluated in order to avoid generating unintended consequences such as worsening other aspects of dietary health. Diet is multifaceted, which makes designing policy to improve nutrition relatively difficult: while smoking each cigarette, for example, is associated with harm and little obvious good (beyond the immediate gratification of the smoker), consumption of some products that contain sugar also involves the intake of nutrients that can contribute to a healthy diet. This makes the consequences of a broad based tax on sugar uncertain; further evidence of the possible effects is needed.

10. The (changing) effects of universal credit

James Browne, Andrew Hood and Robert Joyce (IFS)

Summary

- The government is in the process of integrating six means-tested benefits and tax credits for working-age families into a single payment called universal credit (UC). This is the most radical reform to the working-age benefits system for decades.
- Since it was first proposed, the design of UC has been significantly changed. The amounts recipients can earn before their benefits start to be withdrawn have been cut, shaving almost £5 billion per year off its long-run cost. As a result, 2.1 million working households will get less in benefits due to the introduction of UC (average loss of £1,600 a year) and 1.8 million will get more (average gain of £1,500 a year).
- Overall, UC will cut benefit spending by £2.7 billion a year in the long run. Taking working and non-working households together, 3.2 million will see lower benefit entitlements (average loss of £1,800 a year) while 2.2 million will see higher benefit entitlements (average gain of £1,400 a year). Those relatively likely to gain include low-earning households in rented accommodation and one-earner couples with children. Working lone parents, those with assets or unearned income, and two-earner couples are more likely to lose.
- The increase in support for one-earner couples with children strengthens the incentive for couples with children to have one adult in work rather than none, but weakens the incentive for both parents to work rather than just one.
- By increasing entitlements for renters while reducing them for owner-occupiers, and reducing support for those with substantial savings or unearned income, UC will likely focus support more on those with long-term rather than temporary low incomes than the current system, but will impose very high effective tax rates on saving for some claimants.
- Despite cuts to work allowances, UC will still strengthen work incentives overall. Importantly, UC will have the welcome effect of strengthening work incentives for groups who face the weakest incentives now: the number of people who keep less than 30% of what they earn when they move into work (due to the combination of withdrawn benefits and taxes) will fall from 2.1 million to 0.7 million. UC will also reduce the numbers facing very high effective *marginal* tax rates: 800,000 people who would currently keep less than 20 pence, and in many cases less than 10 pence, of an additional pound earned would keep at least 23 pence under UC.
- Expanding job-search conditions to recipients in working families is an unprecedented step. Some recipients may work more, though it could discourage some from claiming. Integration of benefits will likely boost take-up, make the system easier to understand, and ensure easier transitions into and out of work. Making UC a single monthly payment to one person in the household and removing direct payments to landlords may be riskier.

10.1 Introduction

Over the course of this parliament, the government is rolling out the most radical reform to the working-age benefits system for decades. A single means-tested payment, known as universal credit (UC), is being introduced as a replacement for six existing means-tested benefits and tax credits for those of working age: income support, income-based jobseeker's allowance, income-based employment and support allowance, child tax credit, working tax credit and housing benefit.

The 'legacy' system that UC will replace is largely the product of a history of separate decisions to layer new strands of support on top of what came before: for example, the decisions in the 1970s to create a national system of housing benefit and a new form of support for low-income working families. Previous social security reforms, including the Fowler reforms of the late 1980s and the introduction of the current tax credit system in 2003, stopped far short of the ambitious integration of benefits that UC will bring about. The central point of UC, and the reason for many of its potential advantages, is that it replaces the resulting jumble of separate and overlapping means tests with one integrated assessment of families' entitlements. UC should look more like a system that has been designed from scratch as a coherent whole – as indeed it is.

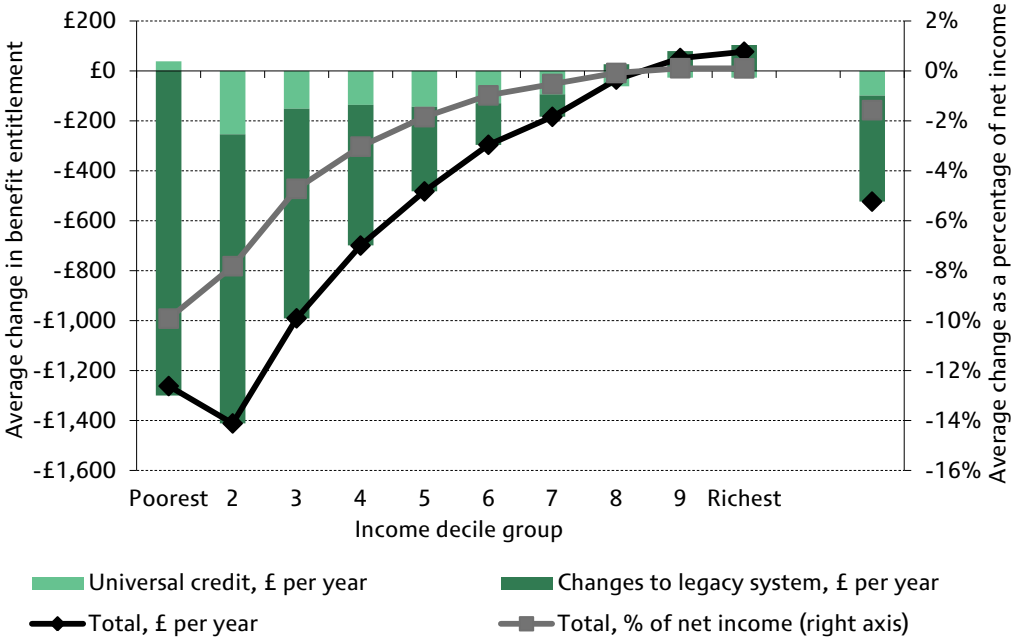
Unsurprisingly with such a radical structural overhaul, its impacts on the incomes and incentives of different households are complicated. They depend on the precise combination of benefit entitlements that a household has under the legacy system – the product of multiple separate benefit entitlement calculations – which in turn depends on a wide array of household characteristics. The impacts also depend, of course, on the structure of UC that the government chooses. That plan has changed significantly since the idea of UC was first set out. In particular, the so-called 'work allowances' – the amounts working families can earn before UC starts to be withdrawn – have been repeatedly reduced relative to the initial UC proposal, significantly cutting the amount of support that UC will give to low-income working families.

The main purpose of this chapter is to set out the impacts on incomes and incentives of introducing UC, given the current (substantially revised) plans for how UC will look. We also review some of the other very important changes that will be associated with the introduction of UC, such as the regime of conditionality, and discuss its potential effects on behaviour, such as labour supply and take-up of benefits.

There are, of course, a number of other important changes to the benefits system being introduced over the course of this parliament, including the introduction of a two-child limit for the child element of child tax credit for new births from April 2017 and a four-year freeze on most working-age benefits. Most of these changes apply to both the legacy benefits system and UC, since many UC parameters correspond to equivalent parameters in the legacy benefits system (so, for example, most elements of UC are also being frozen and the child element of UC is also being restricted to the first two children, and there will be a lower rate of UC for families with children who are new claimants in line with the abolition of the family element of child tax credit for new claimants). Hence those changes are not part of the effect of replacing the legacy system with UC.

Figure 10.1 shows the distributional impact of the changes to the legacy system that are planned between now and 2019–20, and compares it with the distributional impact of then replacing this reformed legacy system with UC – the change that we focus on in the rest of this chapter. We see that both of these sets of changes reduce benefit entitlements

Figure 10.1. Distributional impact of changes to the benefits system to be introduced between 2015–16 and 2019–20



Note: Assumes all reforms are fully in place. Income decile groups are derived by dividing all households into 10 equal-sized groups according to income adjusted for household size using the McClements equivalence scale.
Source: Authors' calculations using TAXBEN run on the 2013–14 Family Resources Survey.

on average, but that the reduction in benefit entitlements resulting from changes to the legacy benefit system is larger in aggregate and more skewed towards the lowest-income households. Indeed, the richest fifth of households gain on average from other changes to the benefits system as a result of the introduction of the single-tier pension and the tax-free childcare scheme. Replacing the legacy system with UC reduces benefit entitlements in the long run by an estimated £2.7 billion a year. It also results in relatively large losses for lower-income households on average (though not for the very poorest), but the losses are more evenly spread than the losses from reforms to the legacy system. This is because the reduction in work allowances particularly reduces entitlements for those households with higher incomes.

In the remainder of this chapter, we focus solely on the impact of replacing the legacy benefits and tax credits system with UC, ignoring these other changes, which in our modelling we assume are fully in place both in the legacy benefits system and under UC. It is also important to realise that our modelling ignores transitional arrangements that ensure that families transferred from the legacy system to UC will not see an immediate reduction in their benefit payments if their UC entitlement is lower than the amount they receive from the legacy system. Thus, our analysis is concerned with the long-run impact on household incomes of introducing UC as opposed to retaining the (reformed) legacy system.

The rest of this chapter proceeds as follows. We first describe UC and how the plans for its design and roll-out have changed over time (Section 10.2), before examining its effects on households' benefit entitlements (Section 10.3) and individuals' financial work incentives (Section 10.4). We then examine the evidence on the effects it has had in the areas where it has been rolled out so far (Section 10.5). Section 10.6 concludes.

10.2 What is universal credit, and how have the government's plans changed over time?

UC will replace six means-tested benefits and tax credits with a single payment for working-age families. As is clear from this description, the legacy system is somewhat disjointed, with separate out-of-work and work-contingent payments and yet more separate payments to support families who face particular costs (principally housing costs and the costs of children). The benefits that will be replaced by UC are:[1]

- **Income support (IS).** Introduced in 1988 as the main income-related out-of-work benefit for those deemed unable to work (those with disabilities, pensioners, lone parents and carers), its scope has diminished over time. The minimum income guarantee and subsequently pension credit replaced IS for pensioners from 1999, income-based employment and support allowance replaced IS on the grounds of disability in 2008, and lone parents whose youngest child is aged 5 or over now have to claim jobseeker's allowance instead. Over the course of 2015–16, there are expected to be an average of 715,000 claimants in Great Britain and total expenditure is expected to be £2.6 billion.
- **Income-based jobseeker's allowance (JSA).** This is the income-related out-of-work benefit for those who are not in paid work and are required to take steps to look for work. Introduced in its current form in 1996, it is expected that the number of claimants will average 598,000 across 2015–16 in Great Britain and the total cost will be £2.0 billion.
- **Income-based employment and support allowance (ESA).** This is the income-related out-of-work benefit for those assessed as having limited capability for work on health grounds. Introduced in 2008, it is expected that there will be an average of 1.7 million claimants across 2015–16 in Great Britain, and total expenditure is expected to be £9.8 billion.
- **Child tax credit (CTC).** This provides support to low-income families with children, both in and out of work. It was introduced in 2003 to replace child additions to other benefits (including those mentioned above). In December 2015, there were 3.8 million families claiming child tax credit, of whom 1.2 million contained no adult in paid work and 2.6 million contained at least one working adult, and total expenditure in 2014–15 was £22.8 billion.
- **Working tax credit (WTC).** This provides support to low-income working families, both with and without children. As well as supporting low-income working families, WTC also strengthens work incentives for those with low incomes who would otherwise see little difference between their earnings in work and the benefits they would be entitled to if they did not work. Similar programmes exist in other developed countries – for example, the earned income tax credit in the US and the French *prime pour l'emploi*. Programmes for providing support to low-income working families with children have existed in the UK since 1971, but they have

[1] Figures for number of claimants and total expenditure are taken from https://www.gov.uk/government/statistics/benefit-expenditure-and-caseload-tables-2015, https://www.gov.uk/government/publications/hmrc-annual-report-and-accounts-2014-to-2015 and https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/485170/cwtc-main-Dec15.pdf.

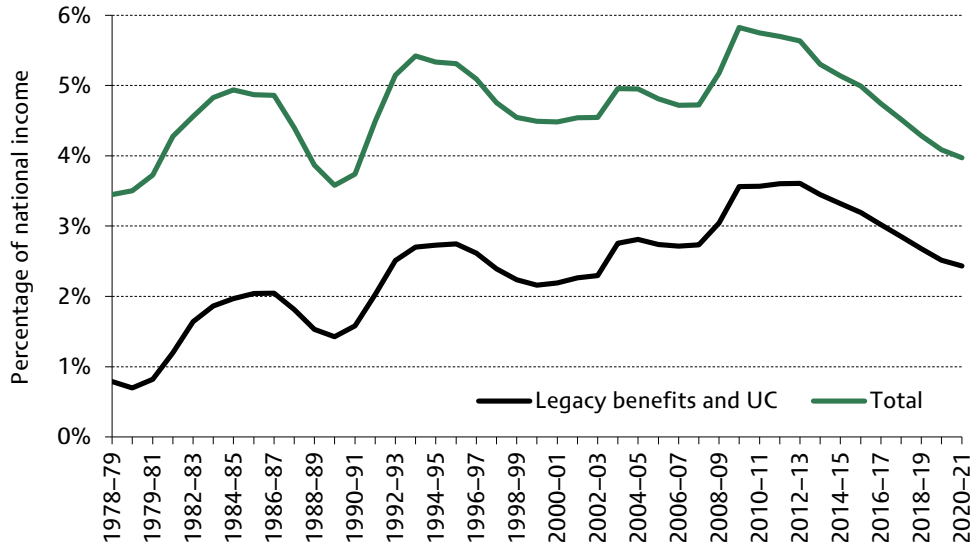
expanded over time to the extent that they are almost unrecognisable from their original incarnations. They were extended to families without children when working tax credit was introduced in 2003. There were 2.3 million families claiming WTC in December 2015 and total expenditure in 2014–15 was £6.2 billion.

- **Housing benefit.** This provides low-income households in rented accommodation with support for their rental costs. A national system of housing benefit has existed since the early 1970s, with the current system introduced in 1988. Over the course of 2015–16, there are expected to be an average of 4.8 million claimants of housing benefit in Great Britain and total expenditure is expected to be £24.4 billion.

Figure 10.2 shows spending on these six 'legacy' benefits and then UC as a share of national income from 1978–79 to 2020–21, along with overall spending on benefits for working-age families. Despite the planned cuts in generosity over the course of this parliament, spending on UC and legacy benefits in 2020–21 is still forecast to be higher (as a share of national income) than annual spending on legacy benefits between 1997–98 and 2002–03. By contrast, overall spending on working-age families in 2020–21 is forecast to be at its lowest level in 30 years. Compared with 1990–91, we are forecast to be spending more on means-tested benefits (particularly for low-income working households) and less on the working-age benefits that are not being rolled into UC (for example, contributory incapacity benefits and child benefit).

As one would expect given that all six of the benefits being replaced by UC are means tested, most of those entitled are towards the bottom of the overall income distribution: the poorest fifth of households have more than 40% of all entitlements, and the poorest half have 85% of all entitlements. Households where at least one person is in paid work have 40% of these entitlements despite making up 90% of working-age households.[2]

Figure 10.2. Benefit spending on working-age families, 1978–79 to 2020–21



Note: Spending figures are for Great Britain; GDP is for the whole UK.
Source: Benefits spending from https://www.gov.uk/government/collections/benefit-expenditure-tables. GDP from https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-december-2015-quarterly-national-accounts.

[2] Source: authors' calculations using TAXBEN run on uprated data from the 2012–13 and 2013–14 Family Resources Survey.

To demonstrate the effect of UC on benefit entitlements at different levels of family income, Figure 10.3 shows the benefit and tax credit entitlements (in current prices) of a lone parent with two children renting in an average-rent area and paid the National Living Wage under the system we currently expect to be in place in 2019–20. We show this first under the legacy benefits and tax credits system (the blocks) and second under UC (the grey line). We can see that the main features of UC are as follows:

- Its basic structure involves a 'maximum' level of entitlement, which is received by those with the lowest levels of private incomes and financial assets. Entitlement is reduced below this maximum when income exceeds a certain threshold, known as the work allowance.
- The maximum entitlement is set in a similar manner to the maximum entitlements to the different benefits and tax credits under the legacy system. Thus, in this and most other cases, there is no change in total benefit entitlement for non-working families who have no private income.[3] (Though, of course, actual levels relative to today will be lower in real terms as a result of the abolition of the family element of CTC and the four-year freeze on benefit levels announced in the July 2015 Budget, which will affect both the legacy system and UC.)
- This example individual can earn more before benefits start to be withdrawn than they can under the legacy system. Furthermore, when benefits start to be withdrawn, they are withdrawn at a slower rate. Both of these features strengthen the incentive for this individual to work a small number of hours each week.
- Unlike in the legacy system, there is no jump in entitlement at 16 hours of work, the point at which the lone parent becomes entitled to WTC under the legacy system. This means that UC is less generous than the legacy system if this lone parent works more than 16 hours, but more generous than the legacy system if they work less than 16 hours.
- When this example individual is working at least 16 hours per week, UC is withdrawn more slowly as income rises than the combination of tax credits and housing benefit under the legacy system, strengthening the incentive for this lone parent to increase their earnings (whether through additional hours or higher hourly pay).
- The overall effect for this individual is that there is marginally less support when working part time (between 16 and 40 hours per week) than under the legacy system, but more support at higher levels of earnings and for those working only a few hours per week ('mini jobs').

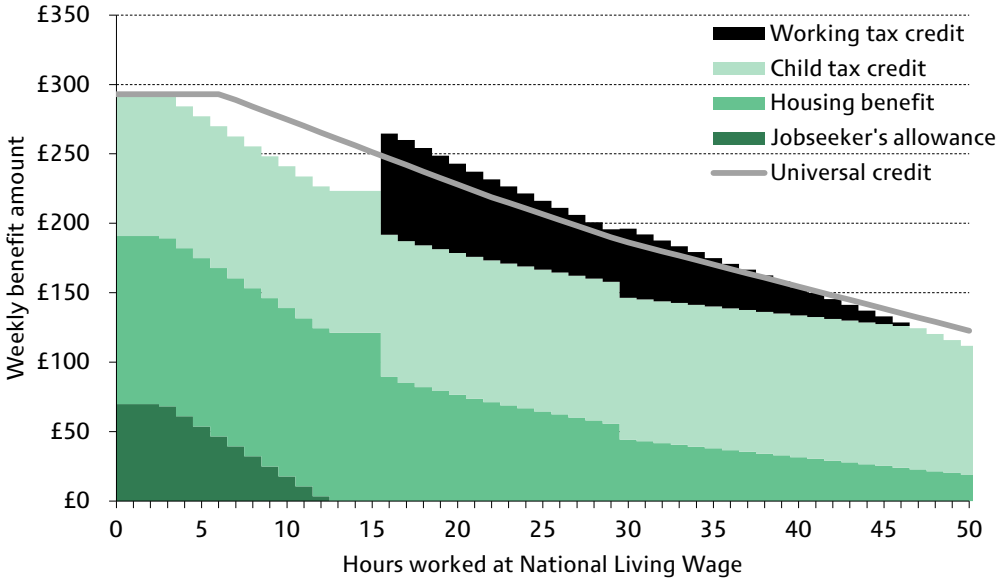
The legacy system provides a clear incentive for lone parents to work at least 16 hours a week, but little incentive to work less than this and a weak incentive to increase their hours worked beyond this level. As a result, few lone parents currently work for less than 16 hours per week and there is a large mass of lone parents working exactly 16 hours each week (see Figure 10.4). Since benefit entitlements do not jump when a lone parent

[3] There are, however, some exceptions to this. Couples where one person is aged above the state pension age and the other is not will no longer be entitled to pension credit and will have to claim universal credit instead, meaning that they will no longer receive more support than couples where both people are under state pension age. The additional support given to people with disabilities through the means-tested benefit system is being simplified, which will mean that some groups with the most severe disabilities (those claiming the middle or higher rates of the care component of disability living allowance) will receive less support, and others (those in the ESA support group who are not entitled to disability living allowance) will receive more. Finally, lone parents aged under 25 will receive less support, in a similar manner to the way single people without children aged under 25 receive a lower rate of jobseeker's allowance under the current system.

works 16 hours a week under UC, it is likely that some of these lone parents will choose to reduce or increase their hours worked in response to the changing incentives they face – the amount of support available to those working fewer than 16 hours a week will increase, and benefit entitlement will decline more slowly as they work more hours above this level.

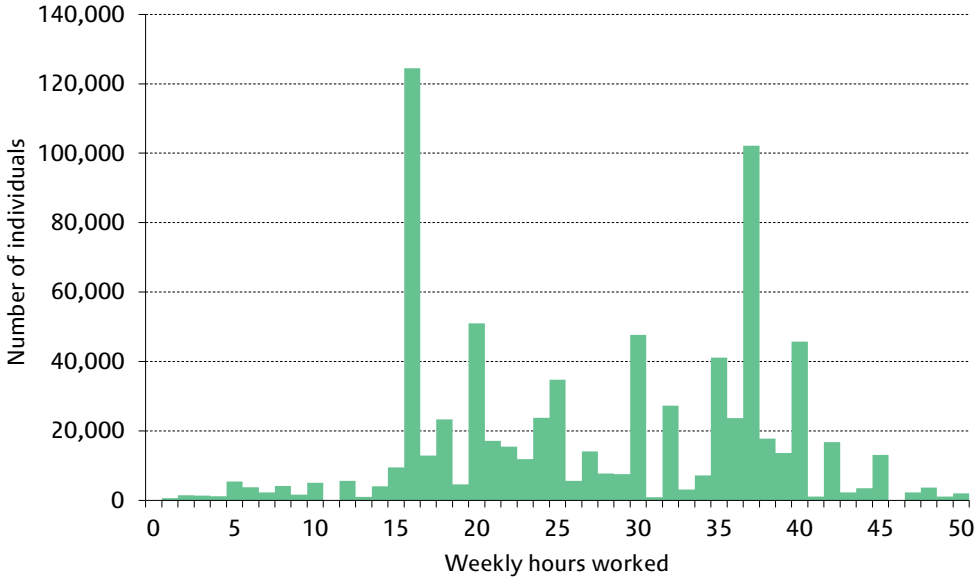
However, perhaps the most significant change that UC will bring about is that it will integrate several strands of support into a single programme, meaning that families will

Figure 10.3. Benefit entitlements by hours worked for lone parent with two children under legacy system and UC



Note: Assumes two children aged under 5, no childcare costs, no unearned income, renting at the LHA rate in a median rent area and paid the National Living Wage under the system we currently expect to be in place in 2019–20. Ignores child benefit and council tax support.
Source: Authors' calculations using TAXBEN.

Figure 10.4. Weekly hours worked by lone parents, 2013–14



Source: 2013–14 Family Resources Survey.

not have to change which benefits they claim when they move into or out of paid work, and will only have to deal with one government agency rather than three (HMRC for tax credits, Jobcentre Plus for out-of-work benefits and local authorities for housing benefit). The introduction of UC is also likely to increase benefit take-up rates, as it will no longer be possible for families to only claim part of their benefit entitlement and because they will not have to apply for different benefits should they move into or out of paid work. This is not the end of the story, however. The benefits of greater integration and lower benefit withdrawal rates will be undermined by the decision to leave council tax support as a separate benefit designed and administered by local authorities.[4] (And, of course, individuals may still need to interact with HMRC to deal with any income tax or National Insurance issues.) This chapter ignores council tax and council tax support, but it is important to bear in mind that the gains from the introduction of UC will not be as large as they could have been had the principle of greater integration been taken to its logical conclusion.

As well as changing families' benefit entitlements, the government has taken the opportunity of the introduction of UC to introduce some other important changes to the way that the benefits system works. The most important of these are the following:

- UC will be paid monthly, as opposed to fortnightly for out-of-work benefits, weekly or every four weeks for tax credits, and fortnightly or every four weeks for housing benefit.
- UC will all be paid to one member of a couple, whereas members of a couple can choose which of them receives each of the legacy benefits.
- Claimants in rented accommodation will, in most cases, be unable to choose to have their support for housing costs through UC paid directly to their landlord, in contrast to the current arrangements for social tenants under housing benefit.
- Job-search conditions will be applied to more benefit claimants than at present when UC is fully in place. Under UC, conditionality will be applied to individuals working fewer hours than the government expects them to and whose total pre-tax family earnings are below a certain threshold. The earnings threshold will be set at the amount that the family would earn if each adult worked for the number of hours they are expected to work at the relevant minimum wage for their age group.[5,6] This is a significant expansion of conditionality compared with the legacy system, where only those on JSA (and thus by definition working less than 16 hours per week) can be subject to such conditions. Examples of people who would become subject to conditionality would therefore include those working part time and non-working partners of those working full time.
- Individuals who are self-employed will be exempt from these requirements to seek work but will be assumed, for the purposes of the UC means test, to be earning at

[4] For a discussion of how local authorities can design council tax support schemes to work alongside UC, see S. Adam and J. Browne, *Reforming Council Tax Benefit*, IFS Commentary C123, 2012, http://www.ifs.org.uk/publications/6183.

[5] That is, the National Minimum Wage for those aged under 25 and the National Living Wage for those aged 25 and over.

[6] So, for example, in a couple where one person was working for 35 hours at the National Living Wage and the other person was not working despite being expected to work 35 hours a week, only the individual who was not working would be subject to conditionality. By contrast, if the person who was in work earned at least 70 times the National Living Wage, neither member of the couple would be subject to conditionality as their total family earnings would be above the threshold.

least the minimum wage that applies to them multiplied by the number of hours they are expected to work each week (even if their income from self-employment is in fact lower than this). In other words, they will not receive more UC than someone employed at the minimum wage even if their earnings from self-employment were below this level. This so-called 'minimum income floor' will not apply during the first year after an individual has set up a business, during which time they will face no conditionality. Partners of self-employed people will still be subject to conditionality if they are not working the number of hours they are expected to work and their total family earnings are below the relevant threshold.

These are all important changes that could have real impacts on labour market behaviour, the allocation of resources within households and the ability of families to manage budgets. Indeed, these changes might have bigger impacts than the changes to benefit entitlements that we can more readily quantify and which we will go on to analyse in detail in the remainder of this chapter.

How has the proposed design of universal credit changed?

We saw in the previous section that the design of UC is relatively simple: each family has a maximum entitlement, based on an integrated assessment of its needs, which is withdrawn at a constant rate once earned income after tax exceeds the family's work allowance (and pound-for-pound against any unearned income the family has). The maximum entitlement is, in most cases, equal to the amount the family would have received under the legacy benefits system if they had no private income (for example, child additions in UC are equal to child elements of CTC, and so on). Therefore changes that have been made to parameters in the legacy benefits system (largely real-terms cuts to its generosity) mostly change maximum entitlements under the UC system automatically and by the same amount.

One area where the UC system has been made more generous relative to the legacy system is in the level of subsidy given to childcare costs: it was announced at the 2014 Budget that UC will cover 85% of childcare costs up to a maximum of £175 a week for one-child families and £300 a week for families with two or more children. This compares with 70% under the current WTC system and under the original plan for UC. This increase in generosity for childcare support will cost an estimated £350 million per year in the long run.[7]

Once net earnings exceed the work allowance, families lose 65p of UC for each additional pound of net earnings. This planned 65% taper rate has remained unchanged since UC was first announced. However, big changes have been made to the work allowances since UC was first proposed: they have now been made less generous on four separate occasions, significantly reducing the planned generosity of UC to working families:

- The 'finalised' (as they were labelled at the time) work allowance levels announced in the 2012 Autumn Statement were significantly lower for many types of families than had been previously proposed.[8] It was also announced that these work allowances

[7] Source: paragraph 1.229 of Autumn Statement 2014, Cm 8961, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/382327/44695_Accessible.pdf.

[8] See Department for Work and Pensions, 'Earnings disregards and tapers', Universal Credit Policy Briefing Note 14, 2011, http://webarchive.nationalarchives.gov.uk/+/http:/www.dwp.gov.uk/docs/ucpbn-14-disregards-tapers.pdf.

would (like most parameters in the legacy system) increase by 1% a year, rather than with inflation, in 2014–15 and 2015–16.

- The 2013 Autumn Statement announced that, instead of this, the levels of work allowances would be frozen in cash terms for three years, from 2014–15 to 2016–17.
- This freeze was extended for a further year, to 2017–18, in the 2014 Autumn Statement.
- The July 2015 Budget announced further significant reductions in the level of the work allowances, including the abolition of any work allowances for non-disabled families without children. Those planned reductions remain, even though the cuts to tax credit earnings disregards (the work allowance equivalents in the tax credit system) announced at the same Budget were subsequently cancelled at the November 2015 Autumn Statement.

Together, these changes to the level of work allowances mean that spending on UC will be nearly £5 billion a year lower in the long run than it would otherwise have been: a considerable contribution to Mr Osborne's fiscal consolidation from changes to a benefit

Table 10.1. Changes in planned work allowances for different family types in 2017–18 over time (£ per month)

Family type	2012	2013	2014	2015	% cut since 2012
Not claiming support for housing costs					
Single, no children	£114	£112	£111	£0	100%
Lone parent	£755	£741	£734	£397	47%
Couple without children	£114	£112	£111	£0	100%
Couple with children	£551	£541	£536	£397	28%
Disabled	£667	£653	£647	£397	40%
Claiming support for housing costs					
Single, no children	£114	£112	£111	£0	100%
Lone parent	£272	£266	£263	£192	29%
Couple without children	£114	£112	£111	£0	100%
Couple with children	£228	£224	£222	£192	16%
Disabled	£198	£194	£192	£192	3%
Saving from this change	£1,175m[a]	£385m[b]	£100m[c]	£3,200m[d]	

[a] Source: Saving for 2018–19 from table 2.2 of HM Treasury, *Budget 2014*, HC 1104, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/293759/37630_Budget_2014_Web_Accessible.pdf.

[b] Source: Saving for 2018–19 from table 2.37 of fiscal supplementary tables from OBR's December 2013 Economic and Fiscal Outlook, http://budgetresponsibility.org.uk/efo/economic-fiscal-outlook-december-2013/.

[c] Source: Saving for 2019–20 from table 2.2 of HM Treasury, *Budget 2015*, HC 1093, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/416330/47881_Budget_2015_Web_Accessible.pdf.

[d] Source: Saving for 2020–21 from Office for Budget Responsibility, 'Supplementary forecast information release: tax credits costings – November 2015', http://budgetresponsibility.org.uk/wordpress/docs/Tax-credits-costings_November2015.pdf.

Note: Plans announced in Autumn Statement in each year for 2017–18. Monthly figures in 2015–16 prices, CPI-adjusted.

not yet in place. Table 10.1 details the level of work allowances for 2017–18 as planned at different points in time.

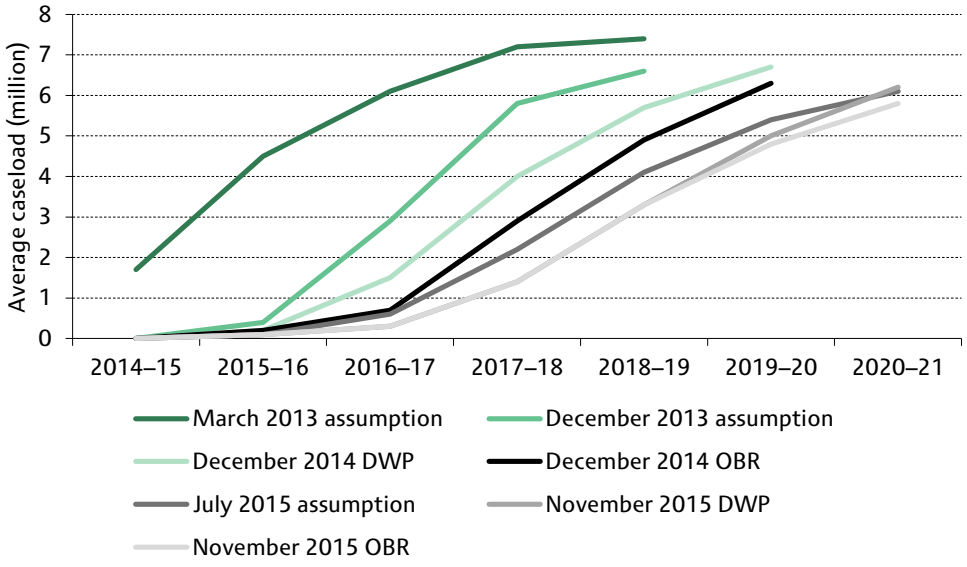
As we shall see in Section 10.3, the combined effect of all this is that UC will now provide less support to working families, on average, than the legacy system that it replaces – a reversal of the original intention.

The roll-out of universal credit

The initial UC proposal was published in a government White Paper in November 2010.[9] This envisaged that new claims to the legacy benefits (but not tax credits) would cease in October 2013, that new tax credit claims would cease in April 2014 and that all existing benefit and tax credit claimants would be transferred to UC by October 2017. This ambitious plan has not been stuck to, mainly as a result of problems developing the IT systems that will be required to administer the new benefit. Figure 10.5 shows successive vintages of the forecast UC caseload as the roll-out plans have been severely delayed since March 2013.

The Department for Work and Pensions (DWP)'s current plan is for claims of income-based JSA for single people without children to cease across Great Britain by March 2016 and for this group to claim UC instead. Other new claims for legacy benefits and tax credits will then end on a rolling geographic basis between November 2016 and June 2017. Existing claimants of IS, income-based JSA and housing benefit will then be transferred onto UC between May 2018 and January 2020, with those claiming income-based ESA or tax credits only being transferred in 2020–21. The OBR assumes, given delays to the roll-out so far, that this migration will in fact take place six months later than DWP is currently assuming. In any case, it is clear that UC will not be delivered to

Figure 10.5. Revisions to the OBR's universal credit roll-out assumptions



Source: Chart 4.8 of OBR, *Economic and Fiscal Outlook*, November 2015, http://budgetresponsibility.org.uk/efo/economic-and-fiscal-outlook-november-2015/.

[9] Department for Work and Pensions, *Universal Credit: Welfare that Works*, Cm 7957, 2010, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/48897/universal-credit-full-document.pdf.

anything like the original timescale: there are currently fewer than 200,000 claimants of UC compared with the 4.5 million there were expected to be at this point under the original plan.

When families are transferred onto UC, they will not suffer a reduction in support at that point even if their entitlements are lower under UC than under the legacy benefits system. This is known as 'transitional protection'. Families in this situation will continue to receive the amount of benefits that they would have been entitled to under the legacy system at the point when their UC claim began, but with no subsequent uprating in line with inflation (hence the protection is only 'in cash terms'). This cash-terms entitlement will remain constant until either:

- UC entitlement exceeds this amount – this could be either the result of nominal increases in UC rates (in other words, inflation will erode the value of transitional protection over time) or from changes in circumstances such as the birth of a child or a reduction in income;[10] or
- certain changes in family circumstances occur – a family member moves out of employment, a couple splits up or a single person forms a partnership.

The existence of transitional protection creates a peculiar set of incentives for those affected. Since a family will lose transitional protection if they do something that would normally increase their benefit entitlement, such as reducing their earnings, moving to a higher-rent property or having another child, a family entitled to transitional protection would face a stronger incentive not to do any of these things. In some ways, this would simply be reducing the perverse incentives that are inherent in means-tested benefit systems, but it could produce some less desirable incentives: for example, a family might be more reluctant to take on some temporary additional work as they would permanently lose their transitional protection when their situation returned to normal. It also means that those currently receiving benefits or tax credits have an incentive to maintain their claim in order to avoid having to make a UC claim as a new claimant in the future, as they would not receive transitional protection in this case. This might mean that some claimants were reluctant to take on additional work that would increase their income to the extent that they were no longer entitled to means-tested support, if they thought it was likely that they would claim UC in the future.

In summary, it is crucial to understand the role of transitional protection, which means that no family will lose benefit entitlement in cash terms at the point of transition onto UC. The sense in which UC represents a reduction in generosity is that, ultimately, families' entitlements under UC will tend to be lower than the entitlement of families with the same characteristics would have been had the legacy system remained in place. That is because the transitional protection will become irrelevant over time, as more and more claimants will have started their claim after the introduction of UC, and the protection enjoyed by the shrinking number of pre-existing claimants expires due to inflation and changes in families' circumstances.

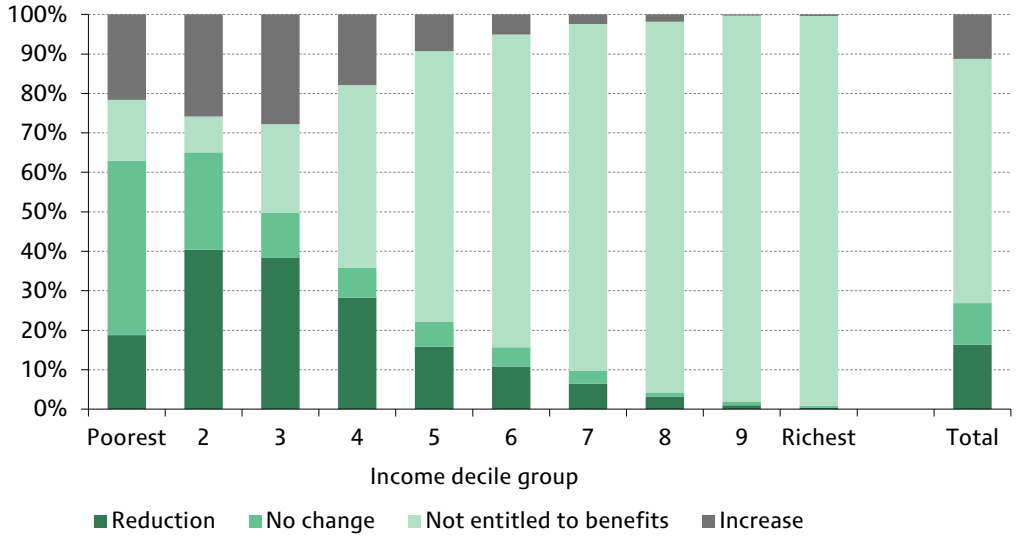
[10] If a family's circumstances change in a way that would reduce their benefit entitlement (e.g. if their earnings increased), they would continue to have the same amount of transitional protection on top of their adjusted benefit entitlement. This is to avoid a situation where families could be worse off as a result of increasing their income by losing transitional protection.

10.3 Who gains and loses from the introduction of universal credit?

Figure 10.6 shows the number of working-age households[11] in each decile (or tenth) of the income distribution who see higher or lower benefit entitlements as a result of the introduction of UC. This ignores transitional protection, as discussed above, which will ensure that no claimant loses in cash terms at the point of transition to UC. Hence we are analysing the long-run effect of introducing UC, i.e. comparing the benefit entitlements of families under UC once transitional protection has expired with what their entitlements would have been under the legacy system with all other planned changes in place.

In total there are 19.7 million working-age households (of which 15.6 million contain someone in paid work). We see that the majority of these households (12.2 million, or 62%) are not entitled to means-tested support either before or after the introduction of UC and so are not affected by the reform. These are predominantly the richer half of households. A further 2.1 million households are entitled to means-tested support but see no change in their entitlement under UC. These are predominantly households in the lowest income groups who have no earnings or other private income. However, 3.2 million households see a reduction in their means-tested benefit entitlement from the introduction of UC and 2.2 million see an increase. Both of these groups are most heavily concentrated in the bottom half of the income distribution, though not at the very bottom.

Figure 10.6. Number of working-age households who see increases or reductions in benefit entitlements from the introduction of universal credit, by income decile



Note: Income decile groups are derived by dividing all working-age households into 10 equal-sized groups according to income adjusted for household size using the McClements equivalence scale. Decile group 1 contains the poorest tenth of the population, decile group 2 the second poorest, and so on up to decile group 10, which contains the richest tenth.
Source: Authors' calculations using TAXBEN run on the 2013–14 Family Resources Survey.

[11] That is to say, households containing at least one adult aged below the female state pension age.

- The average reduction in entitlements among those who see a reduction in entitlements is £1,800 a year and the average increase in entitlements among those who see their entitlements increase is £1,400 a year.
- 2.1 million working households lose an average of £1,600 a year and 1.8 million working households gain an average of £1,500 a year.
- 1.1 million non-working households lose an average of £2,300 a year and 0.5 million non-working households gain an average of £1,000 a year.

In the remainder of this section, we focus on those households who will be entitled to one or more of the means-tested benefits and tax credits that are being replaced by UC once other planned changes have been introduced, who we estimate will number 7.0 million. Of these households:

- 3.0 million contain no one in paid work and 4.0 million contain at least one worker.
- 3.2 million see a reduction in benefit entitlements (after transitional protection). Of these, 2.1 million are working households and 1.1 million have no one in work. The average reduction in entitlements for those who see their entitlement reduced is around £1,800 per year.
- 2.0 million will see an increase in their entitlements. Of these, 1.5 million are working households and 0.4 million non-working households (the figures do not sum due to rounding).[12] The average increase in benefit entitlements among these 2.0 million households is around £1,450 per year.

Table 10.2 gives more information about the types of household that see their benefit entitlements increase or decrease when the legacy benefits system is replaced by UC (ignoring transitional protection). We see that non-working households see lower benefit entitlements on average as a result of the introduction of UC. Although approximately half of non-working households claiming a benefit that will be replaced by UC do not see their benefit entitlements change (1.5 million out of 3.0 million), some non-working households who have more than £6,000 of savings or substantial amounts of unearned income lose out very significantly as these are treated more harshly in the UC means test than in the means test for tax credits.[13] This harsher treatment means that UC weakens the incentive to save for some families. We do not look at these incentive effects here, but they will be examined in detail in forthcoming IFS research.

Among working households, those in rented accommodation gain on average and those who are homeowners lose. Of the 1.8 million working owner-occupying households on legacy benefits, 1.3 million lose from the introduction of UC and only 0.3 million gain (with the remaining 0.2 million unaffected). By contrast, of the 2.2 million working renting households on legacy benefits, 0.8 million lose and 1.3 million gain (with the

[12] A further 200,000 households who are currently not entitled to any benefits or tax credits will become entitled to UC, and will thus also gain from its introduction, bringing the total number of households with increased benefit entitlements to 2.2 million as above. These households gain an average of £1,200 a year.

[13] Specifically, those with savings or other financial assets of more than £16,000 cannot receive means-tested benefits but they can receive tax credits. UC retains the rules from means-tested benefits, meaning that those with high levels of savings who receive tax credits will see this support eliminated. Those claiming tax credits with savings between £6,000 and £16,000 will also see this reduce their UC to a greater extent than it reduces their tax credit entitlement. Finally, certain forms of unearned income, including contributory JSA and ESA and spousal maintenance, will reduce UC entitlement pound-for-pound – this is the same as the way this income is treated in out-of-work benefits, but with a higher withdrawal rate than in housing benefit (65%) or tax credits (41%).

Table 10.2. Average change in benefit entitlements among those entitled to legacy benefits as a result of the introduction of universal credit, by housing tenure and earnings level

Household type	Owner-occupiers		Renters	
	Average change in entitlement	Number of households (thousands)	Average change in entitlement	Number of households (thousands)
Non-working households	–£995	615	–£596	2,407
Lowest-earning third of working households	–£745	515	+£460	825
Middle-earning third of working households	–£1,506	569	+£227	765
Highest-earning third of working households	–£941	680	+£625	656
All working households	–£1,066	1,764	+£429	2,247
All	–£1,048	2,379	–£102	4,654

Note: Only includes households entitled to a means-tested benefit or tax credit that is being replaced by UC. Household earnings adjusted for household size using the McClements equivalence scale. A couple without children would be in the bottom third if their total earnings are less than £6,400 per year and the top third if their total earnings are more than £12,600 per year. For a couple with two children, the equivalent numbers are £9,300 and £18,400 (assuming the children are aged between 5 and 12).
Source: Authors' calculations using TAXBEN run on the 2013–14 Family Resources Survey.

remaining 0.2 million unaffected). The gains for renters arise because the legacy benefits system withdraws housing benefit and tax credits over the same range of income, meaning that the overall level of support for renters can decline very rapidly as their earnings increase. By effectively replacing separate and overlapping housing benefit and tax credit means tests with one means test, UC ensures that total support is withdrawn more gradually from these families as incomes rise. This increases the overall benefit entitlement of many households in rented accommodation – particularly those with higher levels of earnings. By contrast, owner-occupiers tend to see a reduction in their in-work support, mainly because the reductions in the proposed work allowances mean that they receive less in-work support than they receive from tax credits in the legacy system. The biggest losses among owner-occupiers are in the middle third of earners currently entitled to benefits: those with lower earnings are not as affected by reductions in the work allowances as their earnings were below the previous level of the work allowance, whereas those with the highest incomes have low levels of entitlements to means-tested benefits in the first place and so cannot lose very much when their total level of support is reduced under UC.

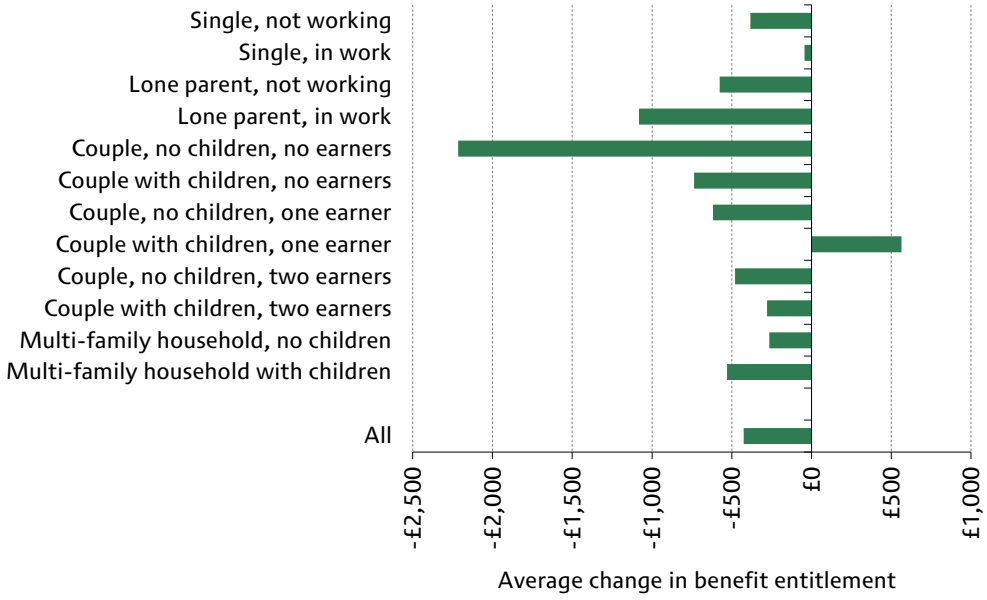
Owning a property or having built up savings is an indication that a family is likely to have had a higher income in the past than a family with a similar level of current income who do not have these things. Hence, the combination of renters doing better than owner-occupiers and assets being treated more harshly in the means test under UC

means that it may well better target benefits on those who are poor over their whole lifetime as opposed to those who have a low income at a particular point in time.

Figure 10.7 shows the average change in entitlements by household type (again, within the group of households who have some means-tested benefit or tax credit entitlement under the legacy system). We can see that the only group to see an increase in their average entitlements is single-earner couples with children, who gain around £500 a year on average. This mainly arises because, under the legacy system, couples with children are entitled to more out-of-work benefits than lone parents, but the maximum entitlement to WTC for those in work is the same as for lone parents. This means that the cut in support upon entering work is particularly large for couples with children. As one integrated payment without this distinction between in-work and out-of-work benefits, it is not possible for the difference between in-work and out-of-work benefits to be as large under UC. Hence couples with children with one adult in work tend to hold onto more benefit entitlements under UC than under the legacy system. By contrast, the reductions in work allowances mean that working lone parents see a big reduction (of around £1,000 a year) in their benefit entitlements on average.

The group that sees the biggest average reduction in its benefit entitlements is non-working couples without children. This is despite the fact that most are unaffected; the average losses result from some very large losses for a small number of these households. These include couples where one individual is aged above the state pension age and the other is not, who are entitled to pension credit under the legacy system (which is more generous than working-age out-of-work benefits) but who will have to claim UC instead following its introduction; and households with someone claiming the middle or higher rate of the care component of disability living allowance, who will no longer receive the severe disability premium under UC.

Figure 10.7. Average change in benefit entitlement among those receiving a legacy benefit by household type



Source: Authors' calculations using TAXBEN run on the 2013–14 Family Resources Survey.

Summary

UC will reduce benefit entitlements on average, but not for everyone. Many non-working families without any private income or assets will see no change in the amount they receive, and some low-income working families – particularly those in rented accommodation and single-earner couples with children – will see their entitlements increase. Owner-occupiers and families with significant amounts of unearned income or financial assets will see the biggest reductions in their benefit entitlements, on average.

However, this analysis gives a far from complete picture of the impact UC will have on household incomes. First, transitional protection means that in the short run, claimants rolled onto UC will gain from its introduction on average, as some families' benefit entitlements increase and the rest are protected from cash cuts in support. Second, many households do not take up all the benefits to which they are entitled under the legacy system and this may change under UC: under the legacy system, it is possible for families to take up one benefit but not another, but the integrated nature of the system means that this will not be possible under UC. It seems likely that this will increase benefit take-up overall (though conceivably changes to conditionality associated with UC could mean that some families – in particular, those in work who would not be subject to any conditionality under the legacy system – choose not to take up UC so that they would not become subject to the new job-search requirements). Third, UC changes the incentives people face to engage in paid work or increase their earnings, and if people respond to these changes in incentives, this will also affect their households' incomes. Effects on work incentives are the focus of the next section.

10.4 The impact of universal credit on work incentives

In this section, we examine the impact of UC on individuals' incentives to do paid work. We first quantify UC's effects on financial work incentives: that is, the relationship between the amount an individual earns before taxes and benefits and their net income after taxes and benefits. We also discuss how the non-financial aspects of UC affect work incentives.

In our analysis of financial work incentives, we distinguish between two concepts: the incentive for individuals to be in paid work at all (as opposed to not working) and the incentive for those in paid work to increase their earnings slightly. We measure the incentive for individuals to be in paid work at all using the participation tax rate (PTR), the proportion of earnings that an individual loses in either higher taxes or withdrawn benefits when they enter paid work. The incentive for those in work to increase their earnings is measured by the effective marginal tax rate (EMTR), which measures the proportion of a small change in earnings that is lost in either higher taxes or withdrawn benefits. Thus, in both cases, higher numbers mean weaker work incentives.

Impact on the incentive to be in work at all

Table 10.3 shows the impact of UC on the distribution of PTRs among those aged between 19 and the state pension age. We can see that the most striking effect of the introduction of UC is to reduce the number of people with very high PTRs (i.e. very weak work incentives) but increase the number of people with slightly lower PTRs: the number of

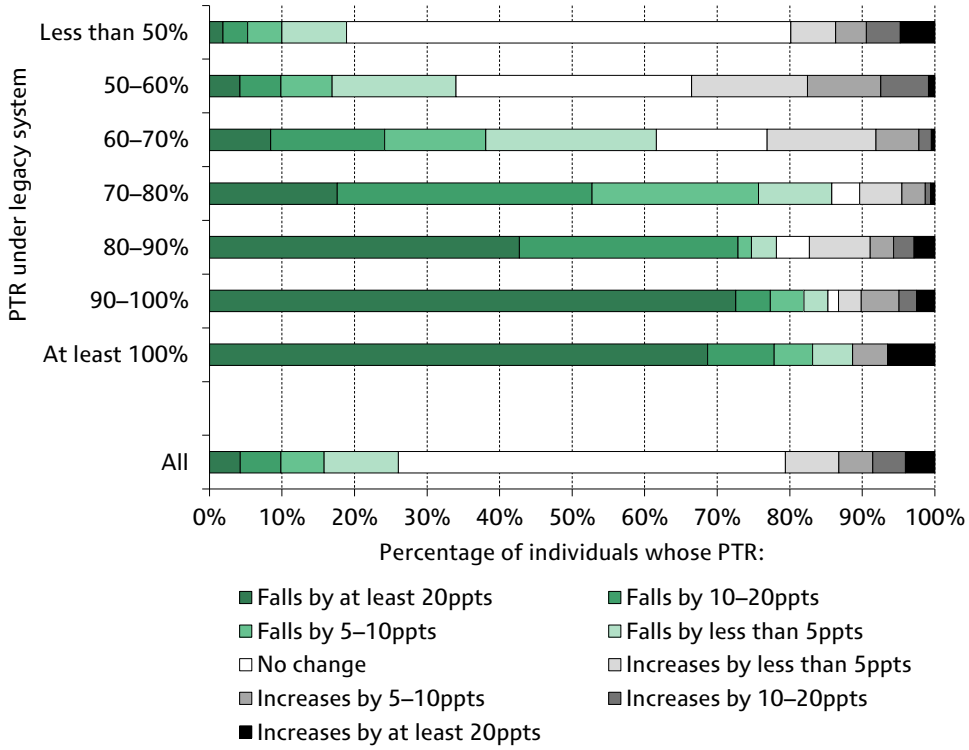
people with a PTR of at least 70% falls by about two-thirds, from 2.1 million to 0.7 million, and the number of people with PTRs of between 50% and 70% increases by around 1.9 million. This is the result of UC rationalising the means-tested benefit system, which removes the very weak incentives that can result in the legacy system when

Table 10.3. Numbers of working-age people with PTRs of different levels under universal credit and legacy benefits system (millions)

PTR	Legacy system	Universal credit
Less than 50%	30.2	29.7
50%–60%	2.7	3.3
60%–70%	2.0	3.3
70%–80%	1.3	0.4
80%–90%	0.5	0.2
90%–100%	0.2	0.1
At least 100%	0.1	0.1
Average PTR	31.8%	31.4%

Note: Sample is all aged between 19 and the state pension age. Potential earnings for non-workers calculated as described in S. Adam and D. Phillips, An Ex-Ante Analysis of the Effects of the UK Government's Welfare Reforms on Labour Supply in Wales, IFS Report R75, 2013, http://www.ifs.org.uk/publications/6586. Ignores council tax and associated rebates, indirect taxes and employer National Insurance contributions.
Source: Authors' calculations using TAXBEN run on the 2013–14 Family Resources Survey.

Figure 10.8. Changes in PTRs resulting from the introduction of UC, by PTR under legacy system



Note: Sample is all aged between 19 and the state pension age. Potential earnings for non-workers calculated as described in S. Adam and D. Phillips, An Ex-Ante Analysis of the Effects of the UK Government's Welfare Reforms on Labour Supply in Wales, IFS Report R75, 2013, http://www.ifs.org.uk/publications/6586. Ignores council tax and associated rebates, indirect taxes and employer National Insurance contributions.
Source: Authors' calculations using TAXBEN run on the 2013–14 Family Resources Survey.

individuals face the simultaneous withdrawal of multiple benefits when they enter work. This is a welcome change: the distortion imposed by a tax increases more than proportionally to the effective tax rate, so it is preferable – all else equal – to have two people with a 60% PTR rather than one with a PTR of 50% and the other with a PTR of 70%. This advantage of UC is masked when looking at average work incentives: the average (mean) PTR falls by only 0.4 percentage points (ppts) and the median (or middle) PTR by less than 0.1 ppts.

Figure 10.8 shows the number of working-age people who see changes in their PTR of different magnitudes as a result of the introduction of UC, by the initial PTR they face. We see that more than half will see no change in their PTR from the introduction of UC: these are individuals who have no entitlement to means-tested benefits when they are not working (most likely because their partner's income is sufficient to keep them off benefits), or who have no in-work benefit entitlement and an out-of-work benefit entitlement unchanged by the introduction of UC. These individuals tend to have relatively low PTRs.

But many people do see their PTRs changed by UC – 9.6 million see a reduction in their PTR and 7.6 million an increase – and within this there are a significant number who see large changes: 29% of working-age adults (10.8 million people) see their PTR change by at least 5ppts, 18% (6.8 million) by at least 10ppts and 8% (3.1 million) by at least 20ppts. Big changes in PTRs can arise either from big changes in the amount of support received when working or from big changes in the amount that would be received when not working (or some combination of the two). In the case of those with a partner in paid work, this means that their PTR will also depend on the amount of in-work support their partner would receive if they themselves stopped working.

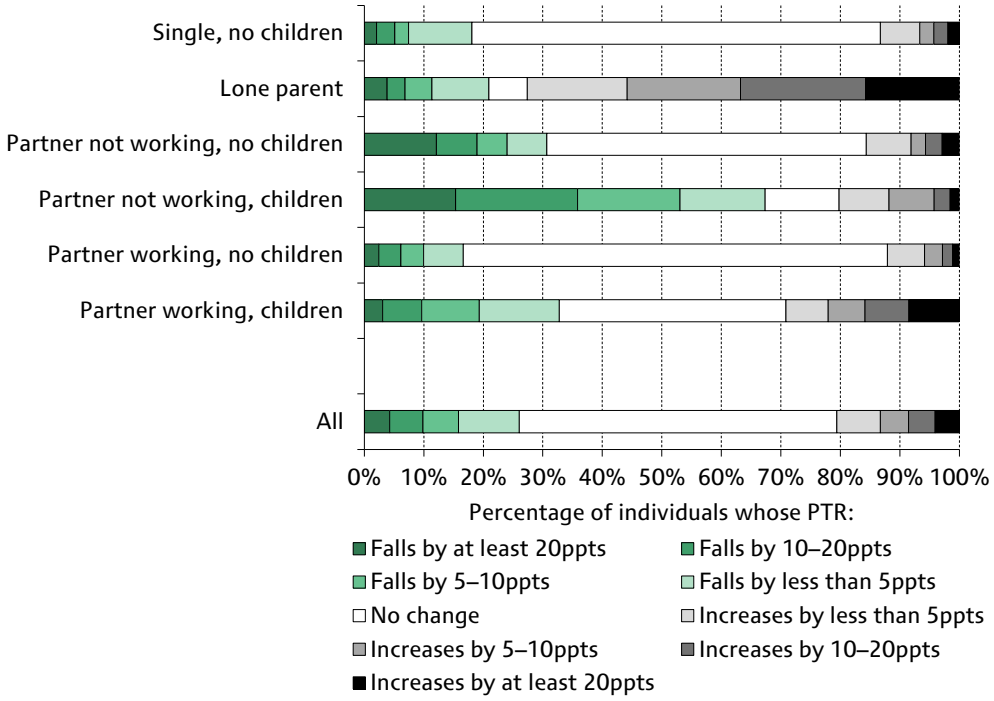
Perhaps unsurprisingly given the results in Table 10.3, those who have the highest PTRs (i.e. weakest incentives to work) under the legacy system are the most likely to see big reductions in their PTRs under UC, whereas those with more moderate PTRs under the legacy system (though not those with the strongest incentives) are the most likely to see increases in their PTRs.

Figure 10.9 shows how the PTRs of different groups of individuals change as a result of the introduction of UC. We can see that the biggest effect UC has is to strengthen the incentive for couples with children to have one person in paid work: two-thirds of those in couples with children whose partner is not in paid work see their PTR fall, and their average PTR falls by 9.5ppts. This is unsurprising given Figure 10.7, where we saw that single-earner couples with children gained on average from the introduction of UC.

Lone parents, by contrast, are the group most likely to see an increase in their PTR: 73% of lone parents see their incentive to be in work weakened as a result of the introduction of UC, and on average their PTR increases by 8.0ppts. The reason for this is again apparent from Figure 10.7, as their in-work support on average falls by more than their out-of-work benefits. Note that this is a much larger increase in the average PTR for lone parents than was the case before the reduction in work allowances announced in the July 2015 Budget.[14]

[14] See table 6.3 of S. Adam and J. Browne, 'Do the UK government's welfare reforms make work pay?', IFS Working Paper W13/26, 2013, http://www.ifs.org.uk/publications/6853.

Figure 10.9. Changes in PTRs resulting from the introduction of UC, by person type

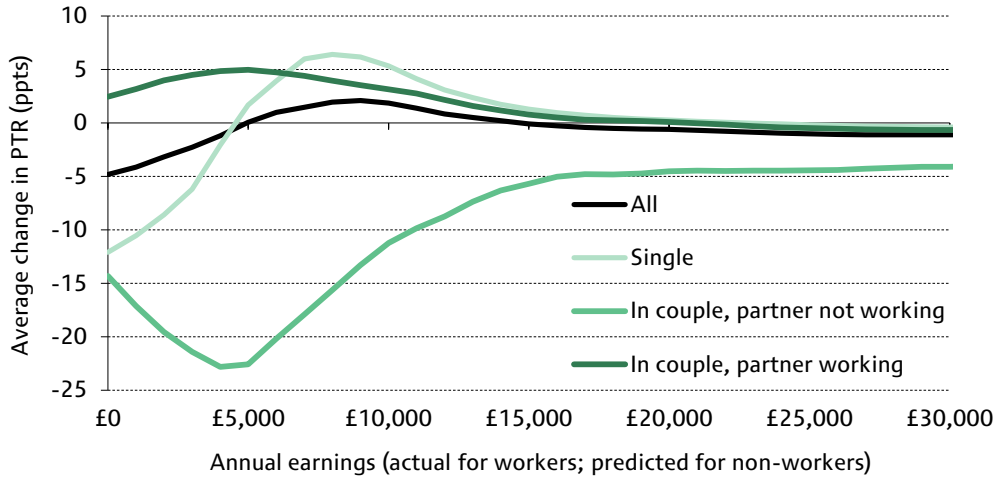


Note: Sample is all aged between 19 and the state pension age. Potential earnings for non-workers calculated as described in S. Adam and D. Phillips, An Ex-Ante Analysis of the Effects of the UK Government's Welfare Reforms on Labour Supply in Wales, IFS Report R75, 2013, http://www.ifs.org.uk/publications/6586. Ignores council tax and associated rebates, indirect taxes and employer National Insurance contributions.
Source: Authors' calculations using TAXBEN run on the 2013–14 Family Resources Survey.

Another group that is more likely to face higher PTRs is those with children and a partner in paid work: 29% of this group see an increase in their PTR, and the average PTR for the group increases by 2.1ppts. Again, the reason for this can be found in Figure 10.7: single-earner couples with children receive an increased level of support from UC in a way that two-earner couples do not, thus making having only one member of the couple working more attractive relative to both members being in paid work. A way of avoiding this weakening of work incentives for the group would be to introduce an individual-level work allowance in UC: that is to say, allowing each member of a couple to earn a certain amount before UC started to be withdrawn rather than starting UC withdrawal once *family* earnings exceed the work allowance.[15] The overall impacts of such a policy would depend on its precise design: simply giving each individual in a couple a work allowance at the same level as the current family-level work allowances would strengthen incentives for those with a working partner without weakening incentives for any other group, but would increase overall benefit spending. An alternative of reducing the levels of work allowances for couples, but using the revenue raised to give a work allowance to each member of a couple, would strengthen incentives for those with a working partner but weaken them for those whose partner was not in paid work, since they could earn less before their UC started to be withdrawn.

[15] The Resolution Foundation's review of UC recommended a similar change – see D. Finch, *Making the Most of UC: Final Report of the Resolution Foundation Review of Universal Credit*, 2015, http://www.resolutionfoundation.org/wp-content/uploads/2015/06/UC-FINAL-REPORT1.pdf.

Figure 10.10. Changes in PTRs resulting from the introduction of UC, by earnings and person type



Note: Sample is all aged between 19 and the state pension age. Potential earnings for non-workers calculated as described in S. Adam and D. Phillips, An Ex-Ante Analysis of the Effects of the UK Government's Welfare Reforms on Labour Supply in Wales, IFS Report R75, 2013, http://www.ifs.org.uk/publications/6586. Ignores council tax and associated rebates, indirect taxes and employer National Insurance contributions.
Source: Authors' calculations using TAXBEN run on the 2013–14 Family Resources Survey.

People without children are far less likely to see their PTRs affected by the introduction of UC: they are far less likely to receive in-work support either before or after the introduction of UC, and their out-of-work benefit entitlements are often unaffected.

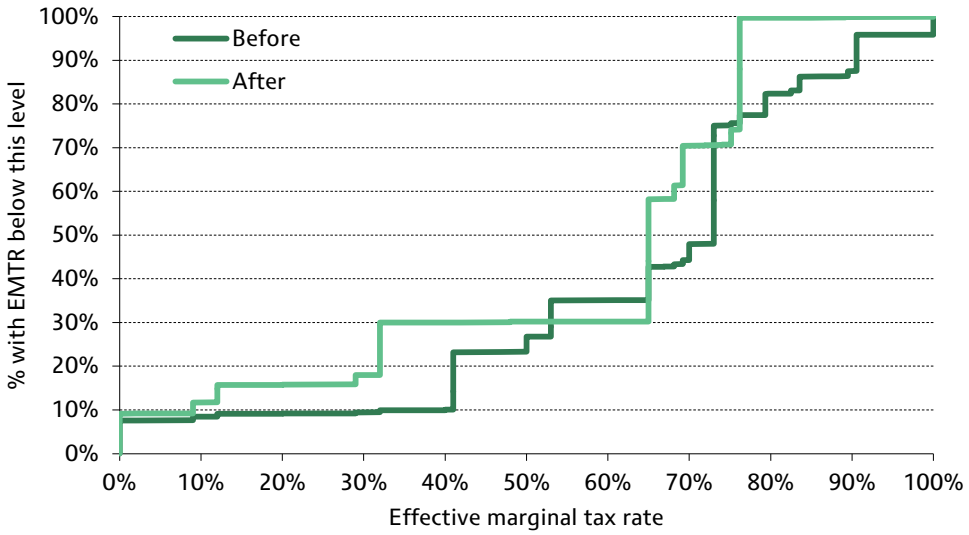
These patterns are also apparent when we look at the impact by earnings level in Figure 10.10. At very low levels of earnings, both single people and those in couples without a working partner see big reductions in their PTRs, driven mainly by the fact that, under UC, benefits are withdrawn much more slowly when an individual works only a few hours each week. However, at slightly higher earnings levels, UC increases average PTRs for single people as it provides less in-work support for this group than the legacy benefits system. For those in couples with a working partner, however, UC increases average PTRs at earnings levels below £20,000 a year. As discussed previously, this arises because the additional support for single-earner couples with children is not replicated for two-earner couples with children, meaning that couples gain less from the second member of the couple moving into work. (As we would expect, changes to means-tested benefits become less important at higher earnings levels.)

Impact on the incentive for those in work to earn more

We can also examine the impact of UC on the incentive for those already in work to increase their earnings slightly. We measure this by the effective marginal tax rate, which is the proportion of a small (1p per week) increase in earnings that is lost in higher taxes or lower benefit entitlements. As in Section 10.3, we focus only on those workers who are entitled to one of the means-tested benefits and tax credits that are being replaced by UC: 4.5 million out of 27.2 million workers.[16]

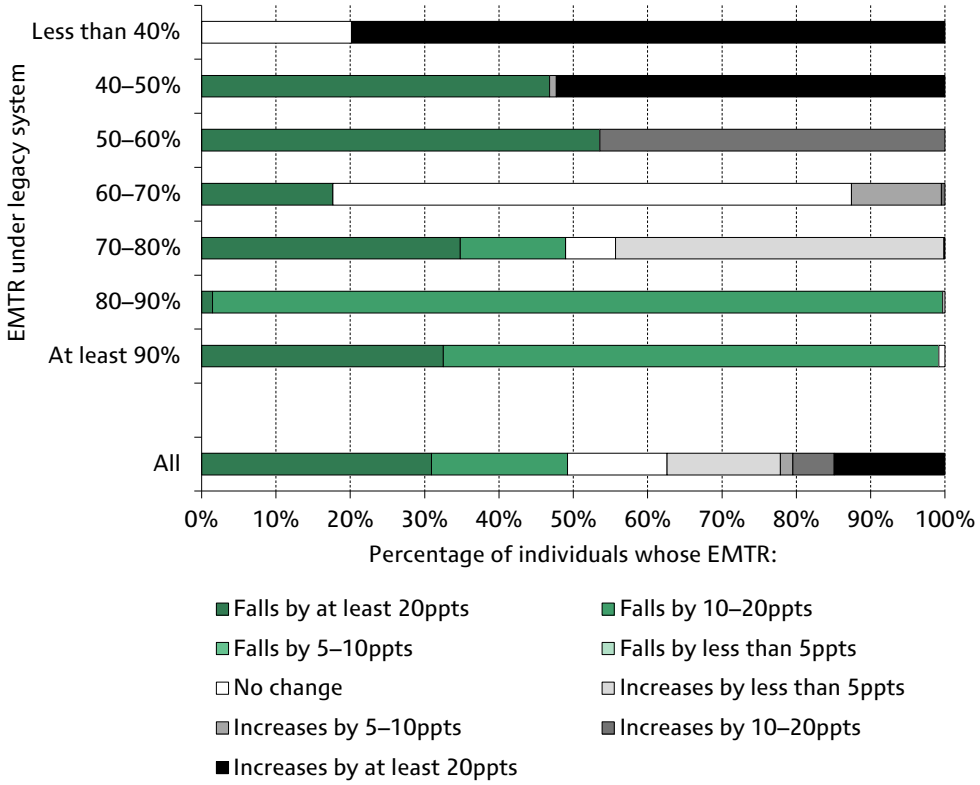
[16] We estimate that a further 350,000 workers not entitled to a means-tested benefit or tax credit under the legacy system will become entitled to UC when it is introduced, and these workers see their EMTRs increase by an average of 55.7ppts as a result since they now face withdrawal of UC if they increase their earnings slightly.

Figure 10.11. The distribution of EMTRs among workers entitled to legacy benefits, before and after the introduction of UC



Note: Sample is all workers aged between 19 and the state pension age. Ignores council tax and associated rebates, indirect taxes and employer National Insurance contributions.
Source: Authors' calculations using TAXBEN run on the 2013–14 Family Resources Survey.

Figure 10.12. Changes in EMTRs resulting from the introduction of UC, for workers entitled to legacy benefits, by EMTR under legacy system



Note: Sample is all aged between 19 and the state pension age. Ignores council tax and associated rebates, indirect taxes and employer National Insurance contributions.
Source: Authors' calculations using TAXBEN run on the 2013–14 Family Resources Survey.

On average, the introduction of UC strengthens the financial incentive for these workers receiving means-tested benefits to earn a little more: their average EMTR reduces by 7.7ppts from 62.2% to 54.5%. But this disguises substantial variation within the group. Figure 10.11 shows the impact of UC on the distribution of EMTRs among these workers and Figure 10.12 shows how EMTRs change depending on the EMTR workers face under the legacy system. We see that the highest EMTR faced by workers following the introduction of UC is 76.2%,[17] and reading across we see that this rate is faced by just over a quarter of these workers or 1.2 million individuals. Under the legacy system, by contrast, around 1 million individuals face EMTRs that are higher than this, all of whom see a reduction in their EMTR to 76.2% or lower. These individuals are all income taxpayers who also pay the main rate of employee National Insurance contributions and face withdrawal of UC if they slightly increase their earnings. For some of these individuals, this represents an increase in their EMTR: for those entitled to tax credits but not housing benefit, the EMTR increases from 73% to 76.2%: nearly 700,000 people see this small increase in their EMTR. But for others, in particular those facing withdrawal of both housing benefit and tax credits if they increase their income slightly, this represents a reduction in their EMTR from around 90%.[18] The removal of these very high EMTRs (under the legacy system, around 800,000 workers face an EMTR of at least 80% and 600,000 face an EMTR of at least 90%) is one of the main achievements of the integration of the benefits system by introducing UC.

Among current workers on legacy benefits, 1.3 million would face an EMTR of 65% under UC. These are people who would face the withdrawal of UC at a rate of 65% if they increased their earnings, but would be subject to no additional direct tax or benefit withdrawal. For around 600,000 of these individuals, this represents an increase in their EMTR as they face no benefit withdrawal at all under the legacy system[19] or they face only withdrawal of tax credits at a rate of 41%. For around 350,000 others, it represents no change in their EMTR, as they face withdrawal of housing benefit under the legacy system at a rate of 65% and would face withdrawal of UC at the same rate. For the remaining 350,000, it represents a reduction in their EMTR, as under the legacy system they face withdrawal of both tax credits and housing benefit at a combined rate of close to 80% or they face withdrawal of an out-of-work benefit at a rate of 100%.

We also see that around 550,000 of those previously entitled to a means-tested benefit or tax credit face an EMTR of 32% following the introduction of UC – the EMTR faced by a basic-rate taxpayer who also pays employee NICs at the standard rate. These individuals are not entitled to UC, and so no longer face withdrawal of means-tested support if they increase their earnings; thus, these individuals lose out from the introduction of UC but see their incentive to increase their earnings strengthen. Consistent with the analysis in Section 10.3, members of this group are more likely to be owner-occupiers than renters.

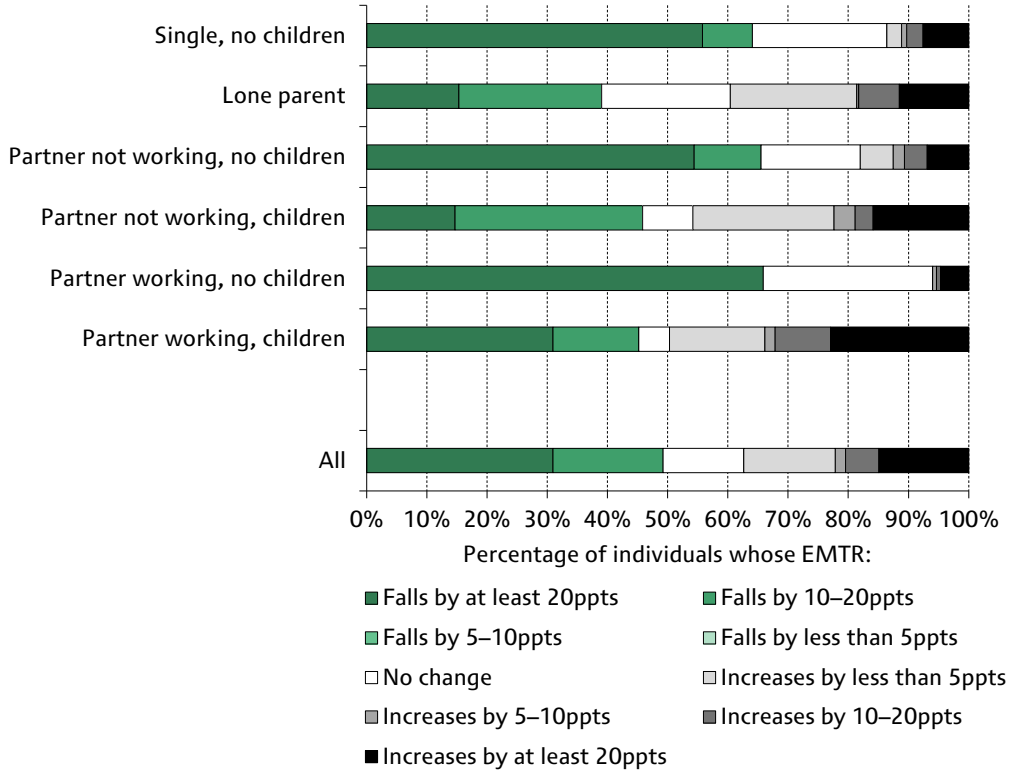
Figure 10.13 shows how these changes vary for different types of workers claiming one of the legacy benefits or tax credits. We see that those without children are particularly likely to see reductions in their EMTR, as they are the most likely to see their entitlement to means-tested support eliminated once UC is introduced, meaning that they will no

[17] Though remember that this analysis excludes employer NICs, council tax support and indirect taxes, all of which will increase the EMTRs that workers face.

[18] Note that this means that owner-occupiers, who do not receive housing benefit, are more likely to see an increase rather than a decrease in their EMTR than renters.

[19] These are people below the threshold for the withdrawal of any of the legacy benefits or tax credits but above the UC work allowance (which is zero for non-disabled childless claimants).

Figure 10.13. Changes in EMTRs resulting from the introduction of UC, for workers entitled to legacy benefits, by person type



Note: Sample is all aged between 19 and the state pension age. Ignores council tax and associated rebates, indirect taxes and employer National Insurance contributions.
Source: Authors' calculations using TAXBEN run on the 2013–14 Family Resources Survey.

longer face withdrawal of means-tested benefits if they increase their earnings. Those who are most likely to see an increase in their EMTR are people in couples with children whose partner is in paid work. Many of those in this group who see big increases in their EMTRs do not earn enough to pay income tax and are entitled to tax credits but not housing benefit under the legacy system; these individuals see their EMTRs increase from 41% to 65%. Lone parents and those in couples with children are more likely to see more modest reductions in their EMTRs. This occurs for those individuals who face withdrawal of both housing benefit and tax credits if they increase their earnings under the legacy system, and a lower overall withdrawal rate under UC as these two overlapping means tests are combined into a single one.

Discussion of incentives for individuals to increase their earnings raises the question of whether those working families who see reductions in their benefit entitlement might make up the loss of income by increasing their earnings. In fact, many of those who do see a reduction in their benefit entitlements as a result of the introduction of UC also see a fall in their EMTR, meaning that their financial incentive to earn more is strengthened even if one ignores the desire to make up the lost income. Of the 3.0 million workers in the 2.1 million households who see their benefit entitlement reduced, 1.3 million see a reduction in their EMTR as a result of UC's introduction, 0.7 million see no change and 1.0 million see an increase in their EMTR. This arises because many of those who see a reduction in their overall benefit entitlement see that entitlement removed entirely, meaning that they no longer face withdrawal of means-tested benefits if they increase

their earnings. Overall, 1.1 million of the 2.1 million working households who see their benefit entitlements reduced as a result of the introduction of UC contain an adult whose EMTR is reduced.

Changes to non-financial aspects of work incentives

The changes to the amounts of benefits people are entitled to at different levels of hours and earnings are not the only way UC will change work incentives. As previously discussed, UC also involves a significant change in the job-search conditions for those in receipt of means-tested benefits. Under the legacy system, those in receipt of JSA are subject to work-search conditions if they are working less than 16 hours per week. Working 16 or more hours makes one ineligible for JSA, and potentially eligible for WTC, for which there are no conditions requiring one to look for more hours or higher pay. Under UC, an hours limit for work-search requirements is to be replaced by an earnings threshold that is significantly tougher. The rules stipulate that non-disabled single people will in most cases be expected to look for higher-paid employment (whether through more hours or a higher wage) if they earn less than 35 times the relevant minimum wage for their age group per week, whilst non-disabled couples will in some cases be required to earn double that between them. This significantly increases the number of individuals who will be subject to conditionality, particularly among those in couples. Indeed, the 2015 Spending Review stated that the introduction of UC will mean that conditionality is extended to an additional 1.3 million people by 2020,[20] approximately doubling the number of people claiming JSA or ESA who are subject to conditionality at the moment.[21]

In many cases, those brought into the conditionality regime – such as people with children and a working partner – are those who will face weaker financial work incentives as a result of the introduction of UC. Hence the financial and non-financial changes may have offsetting effects on people's choice over how much to work. It remains to be seen which will be more important drivers of people's behaviour – it is possible that conditionality will be more significant than the changes to financial incentives already discussed, but the effects are highly uncertain. It is not clear exactly how much will be required of those already in work but earning less than the relevant threshold, and there is little evidence from previous reforms on the effects we would expect from in-work conditionality.

The integrated nature of UC could also have impacts on people's behaviour. One consequence of the plethora of programmes that currently exist is that people often do not know what they are entitled to, let alone what they would be entitled to if their circumstances were different. Many out-of-work families are unaware that they could continue to claim housing benefit if they moved into low-paid work.[22] People might therefore be discouraged from working by a perception of lost entitlements that exceeds the reality. Similar problems arise because some potential claimants do not realise that

[20] Paragraph 1.129 of HM Treasury, *Spending Review and Autumn Statement 2015*, Cm 9162, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/479749/52229_Blue_Book_PU1865_Web_Accessible.pdf.

[21] In May 2015, there were just under 1.2 million people either claiming JSA or in the work-related activity group of ESA (source: DWP tabulation tool, http://tabulation-tool.dwp.gov.uk/100pc/tabtool.html). Lone parents with young children claiming IS also face some very limited conditionality.

[22] See C. Turley and A. Thomas, *Housing Benefit and Council Tax Benefit as In-Work Benefits: Claimants' and Advisors' Knowledge, Attitudes and Experiences*, DWP Research Report 383, 2006, http://webarchive.nationalarchives.gov.uk/20130314010347/http://research.dwp.gov.uk/asd/asd5/rports2005-2006/rrep383.pdf.

WTC can be claimed by those without children. Under UC, by contrast, it is likely to be clearer that the same benefit will be available to a large number of working-age people in different circumstances. This also means that people could be more secure in the knowledge that their entitlement would continue even if their circumstances changed, unlike in the legacy system where problems sometimes arise when people have to apply for support from a different programme when they move into work: delays between stopping receiving one benefit and starting to receive another can cause hardship to families and discourage people from moving into work.

These impacts could work in either direction, however. However complicated the legacy system is, working tax credit arguably provides a clear signal that, if you work the requisite hours, support is available. UC might lack that kind of salient and easily-understood focal point: whatever the true effect on net incomes, higher disregards and a moderate withdrawal rate might be more obscure and may be seen as limiting the losses from going into work rather than providing an explicit reward to doing so. Furthermore, if it is the case that people overestimate (rather than underestimate) the return to work, a simpler, more transparent system might actually weaken perceived work incentives as people become aware of how much support they can lose when entering work.

Summary

UC will have little effect on average measures of financial work incentives, but will significantly strengthen or weaken work incentives for a minority of individuals. It has the welcome effect of strengthening incentives for those who face the very weakest incentives in the legacy benefits system. On average, it will strengthen the incentive for couples to have one person in work rather than none, but weaken the incentive for lone parents to work. Non-financial aspects of UC – in particular, the conditionality requirements and increased transparency – could also be important. But to understand how people's behaviour is likely to change, we need to take account of how responsive they are to the changing incentives they face. In the next section, we examine the evidence to date on the impact UC has actually had on people's behaviour.

10.5 What impact has universal credit had so far?

As discussed in the previous section, one would expect the changes in financial work incentives and conditionality that result from the introduction of UC to affect some people's choices over whether to work and how much to work.[23] However, given the limited extent to which UC has currently been rolled out, we have little evidence of its effects in practice.

The DWP has produced detailed peer-reviewed analysis of the early labour market effects of UC, by comparing the employment outcomes of new benefit claimants in areas where UC has been rolled out to those of similar claimants in other areas.[24] Note that, because

[23] For example, in its initial impact assessment of universal credit, the government stated that it expected the changes to financial work incentives to increase employment by between 100,000 and 300,000. Note however, that that figure was based on a system of universal credit with much higher work allowances. Source: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/220177/universal-credit-wr2011-ia.pdf.

[24] Department for Work and Pensions, *Estimating the Early Labour Market Impacts of Universal Credit: Updated Analysis*, 2015,

these are new claimants, there is no transitional protection so claimants can lose as well as gain entitlement relative to the legacy system right from the outset. The DWP analysis looks solely at the very specific group of claimants who were first eligible for UC: non-disabled single adults without children who are not claiming support for housing costs. The analysis found a relatively large impact of UC in increasing the probability of people in this group being in work at some point within the first nine months after making a claim (8ppts), but much smaller impacts on the probability of actually being in work after nine months (3ppts) and on total earnings over that nine-month period (2%, and not statistically significantly different from zero). This may reflect the fact that UC makes it more worthwhile for these individuals to accept (and report) a small number of hours of short-term temporary work, but (as we saw in Section 10.4) little difference to their incentive to engage in the type of work that we might expect single people without children to be most likely to seek, i.e. full-time work.

The evidence on the early effect of UC for this group seems robust. But non-disabled single adults without children who are ineligible for support for housing costs make up a small share of those who will eventually be affected by UC – around 10% – and are far from a random sample of the wider population eligible for UC. We estimate that this group actually sees no change in its average PTR as a result of UC whereas, as shown in Section 10.4, some groups will see their financial work incentives strengthened by UC (for example, those in couples with children whose partner is not in paid work) and some will see those incentives weakened (for example, lone parents). In addition, the same change in incentives can have different behavioural effects on different people. For example, those with a disability may be less responsive to financial work incentives. Overall, then, we cannot draw firm conclusions about the labour market impact of UC when fully rolled out on the basis of these initial estimates.

10.6 Conclusion

Universal credit will look significantly different when it is finally fully introduced compared with the original plans. In particular, reductions in the planned levels of work allowances – the amount claimants can earn before benefit entitlements start to be reduced – mean that it reduces rather than increases the total level of support for working households. The way in which the planned levels of work allowances have been repeatedly trimmed back does not give the impression that this has been the result of a carefully-thought-through plan for the shape of the future benefits system. Rather, it appears as though cutting work allowances has been seen as a convenient way of reducing planned social security spending by making changes to a benefit that has not yet been introduced.

Despite the overall reduction in in-work support, there are groups that will benefit directly from UC's introduction. Those in rented accommodation and single-earner couples with children will see their benefit entitlements increase under UC on average. This will strengthen the financial incentive for couples with children to have one person in work rather than none. On the other hand, this does weaken the incentive for both members of a couple with children to work rather than just one, as two-earner couples with children see a reduction in their benefit entitlements on average under UC.

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https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/481827/universal-credit-estimating-early-labour-market-impacts-dec-2015.pdf. All figures in this paragraph are from this publication.

While the winners and losers from UC, and its impacts on financial work incentives, have been affected significantly by the changes made to it since it was first mooted, the main potential benefits of the structural changes that UC will bring remain intact. It will be a welcome simplification of the benefits system, and will still strengthen work incentives for those who face the weakest incentives under the legacy system. On the other hand, it also remains the case that these benefits are being undermined to some extent by the decision to leave support for council tax as a separate system designed by local authorities. This complicates the overall system and potentially reintroduces some of the very high benefit withdrawal rates that UC would otherwise have abolished entirely.

If UC is to significantly increase the amounts of paid work that people do, it seems likely that this would be more the result of non-financial changes – such as increasing the conditionality requirements on benefit claimants and the increased level of integration and simplicity that UC will bring to the system – rather than because people face stronger financial incentives to do paid work. Indeed, early evidence has shown that UC has led to increased labour market participation among a group for whom it does not strengthen financial work incentives on average. The success of UC as a whole may also depend on how smoothly other non-financial changes work, such as the fact that payments will be made monthly and only to one member of a couple and that there will be no direct payments to landlords.

Appendix A. Headline tax and benefit rates and thresholds

			2015–16	2016–17[a]
Income tax				
Personal allowance:	born after 5/4/38		£10,600 p.a.	£11,000 p.a.
	born before 6/4/38		£10,660 p.a.	£11,000 p.a.
Married couple's allowance, restricted to 10%:				
at least one spouse or civil partner born before 6/4/35			£8,355 p.a.	£8,355 p.a.
Dividend allowance[b]			-	£5,000
Personal savings allowance basic (higher) rate[c]			-	£1,000 (£500)
Basic rate			20%	20%
Higher rate			40%	40%
Additional rate			45%	45%
Tax rates on interest income			0%, 20%, 40%, 45%	0%, 20%, 40%, 45%
Tax rates on dividend income			10%, 32.5%, 37.5%[b]	7.5%, 32.5%, 38.1%[b]
Starting-rate limit			£5,000 p.a.	£5,000 p.a.
Basic-rate limit			£31,785 p.a.	£32,000 p.a.
Higher-rate limit			£150,000 p.a.	£150,000 p.a.
Income limit for personal allowance			£100,000 p.a.	£100,000 p.a.
National Insurance				
Lower earnings limit (LEL)			£112 p.w.	£112 p.w.
Upper earnings limit (UEL)			£815 p.w.	£827 p.w.
Upper accrual point (UAP)			£770 p.w.	-
Primary earnings threshold (employee)			£155 p.w.	£155 p.w.
Secondary earnings threshold (employer)			£156 p.w.	£156 p.w.
Class 1 contracted-in rate:	employee	– below UEL	12%	12%
		– above UEL	2%	2%
	employer	– below UEL[d]	13.8%	13.8% / 0%
		– above UEL	13.8%	13.8%
Class 1 contracted-out rate:[e]	employee	– below UAP	10.6%	-
(salary-related schemes)		– UAP to UEL	12%	-
		– above UEL	2%	-
	employer	– below UAP	10.4%	-
		– above UAP	13.8%	-
Corporation tax				
Main rate			20%	20%
Bank levy				
Rates: equity and long-term liabilities			0.105% (0.09% from 1 Jan 2016)	0.09% (0.085% from 1 Jan 2017)
short-term liabilities			0.21% (0.18% from 1 Jan 2016)	0.18% (0.17% from 1 Jan 2017)
Capital gains tax				
Annual exemption limit:	individuals		£11,100 p.a.	£11,200 p.a.
	trusts		£5,550 p.a.	£5,600 p.a.
Standard rate			18%	18%
Higher rate			28%	28%
Inheritance tax				
Threshold			£325,000	£325,000
Rate for transfer at or near death			40%	40%
Value added tax				
Registration threshold			£82,000 p.a.	£83,000 p.a.
Standard rate			20%	20%
Reduced rate			5%	5%

		2015–16	2016–17[a]
Excise duties			
Beer (pint at 3.9% ABV)		40.7p	41.5p[f]
Wine (75cl bottle at 12% ABV)		205.0p	209.1p[f]
Spirits (70cl bottle at 40% ABV)		774.5p	790.0p[f]
20 cigarettes:[g] specific duty		379.0p	386.6p[f]
ad valorem (16.5% of retail price)		151.2p	154.2[f]
Ultra-low-sulphur petrol (litre)		57.95p	59.11p[f]
Ultra-low-sulphur diesel (litre)		57.95p	59.11p[f]
Air passenger duty			
Band A (up to 2,000 miles):	economy	£13[h]	£13[h]
	club & first class[i]	£26	£26
	higher rate[j]	£78	£78
Band B (over 2,000 miles):	economy	£71[h]	£73[h]
	club & first class[i]	£142	£146
	higher rate[j]	£426	£438
Betting and gaming duty			
Gaming duty (depends on gross gaming yield)		15–50%	15–50%
Spread betting rate: financial bets		3%	3%
other bets		10%	10%
Insurance premium tax			
Standard rate		6% (9.5% from Nov 2015)	9.5%
Higher rate (for insurance sold accompanying certain goods and services)		20%	20%
Stamp duty[k]			
Land and buildings:			
residential threshold		£125,000	£125,000
marginal tax rate for house values:		*marginal rate:*	*marginal rate:*
	up to threshold	0%	0%
	threshold–£250,000	2%	2%
	£250,001–£925,000	5%	5%
	£925,001–£1,500,000	10%	10%
	above £1,500,000	12%	12%
non-residential threshold		£150,000	£150,000
average tax rate for property values:		*average rate:*	*average rate:*
	up to threshold[l]	0%	0%
	threshold–£250,000	1%	1%
	£250,001–£500,000	3%	3%
	above £500,000	4%	4%
Stocks and shares: rate		0.5%	0.5%
Vehicle excise duty			
Graduated system (for new cars from 1 March 2001)		£0–£505 p.a.	£0–£515p.a.[f]
Graduated system (first-year rate from April 2010)		£0–£1,100 p.a.	£0–£1,120 p.a.[f]
Standard rate (for cars registered before March 2001)		£230 p.a.	£235 p.a.[f]
Small-car rate (for cars registered before March 2001, engines up to 1,549cc)		£145 p.a.	£150 p.a.[f]
Heavy goods vehicles (varies according to vehicle type and weight)		£165–£1,850 p.a.	£170–£1,885 p.a.[f]
Landfill tax			
Standard rate		£82.60 per tonne	£84.40 per tonne
Lower rate (inactive waste only)		£2.60 per tonne	£2.65 per tonne
Climate change levy			
Electricity		0.554p/kWh	0.559p/kWh
Natural gas		0.193p/kWh	0.195p/kWh
Liquefied petroleum gas		1.240p/kg	1.251p/kg
Any other taxable commodity		1.512p/kg	1.526p/kg

	2015–16	2016–17[a]
Business rates		
Rate applicable for low-value properties[m] in: England	48.0%	48.4%
Scotland	48.0%	48.4%
Wales	48.2%	48.6%
Council tax		
Average band D rate in England and Wales	£1,484	Councils to set
Income support / Income-based jobseeker's allowance		
Single (aged 25 or over)	£73.10 p.w.	£73.10 p.w.
Couple (both aged 18 or over)	£114.85 p.w.	£114.85 p.w.
Basic state pension		
Single	£115.95 p.w	£119.30 p.w.
Couple	£185.45 p.w.	£190.80 p.w.
Winter fuel payment: for those born on or before 5/1/53 and aged under 80	£200 p.a.	£200 p.a.
for those aged 80 or over	£300 p.a.	£300 p.a.
Pension credit		
Guarantee credit for those over female state pension age:		
single	£151.20 p.w.	£155.60 p.w.
couple	£230.85 p.w.	£237.55 p.w.
Savings credit for those aged 65 or over:		
threshold – single	£126.50 p.w.	£133.82 p.w.
– couple	£201.80 p.w.	£212.97 p.w.
maximum – single	£14.82 p.w.	£13.07 p.w.
– couple	£17.43 p.w.	£14.75 p.w.
withdrawal rate	40%	40%
Child benefit		
First child	£20.70 p.w.	£20.70 p.w.
Other children	£13.70 p.w.	£13.70 p.w.
Threshold[n]	£50,000 p.a.	£50,000 p.a.
Withdrawal rate	1% per £100	1% per £100
Child tax credit		
Family element	£545 p.a.	£545 p.a.
Child element	£2,780 p.a.	£2,780 p.a.
Disabled child element	£3,140 p.a.	£3,140 p.a.
Working tax credit		
Basic element	£1,960 p.a.	£1,960 p.a.
Couple and lone-parent element	£2,010 p.a.	£2,010 p.a.
30-hour element	£810 p.a.	£810 p.a.
Disabled worker element	£2,970 p.a.	£2,970 p.a.
Childcare element:		
maximum eligible cost for one child	£175 p.w.	£175 p.w.
maximum eligible cost for two or more children	£300 p.w.	£300 p.w.
proportion of eligible costs covered	70%	70%
Features common to child and working tax credits		
Threshold	£6,420 p.a.	£6,420 p.a.
Threshold if entitled to child tax credit only	£16,105 p.a.	£16,105 p.a.
Withdrawal rate	41%	41%
Maternity benefits		
Sure Start maternity grant	£500	£500
Statutory maternity pay: weeks 1–6	90% of earnings	90% of earnings
weeks 7–33	£139.58 p.w., or 90% of earnings if lower	£139.58 p.w., or 90% of earnings if lower
Maternity allowance	£139.58 p.w.	£139.58 p.w.

Notes and source to table

See next page.

[a] 2016–17 figures take pre-announced values where available and estimated results of standard indexation otherwise.
[b] From 2016–17, the offsetting tax credits available for dividends in 2015–16 (which reduce marginal effective tax rates to 0%, 25% and 30.6%) will be replaced by a £5,000 tax-free allowance for dividend income.
[c] From 2016–17, this new personal savings allowance entitles basic-rate taxpayers to their first £1,000 of interest income tax free. Higher-rate taxpayers have a £500 allowance and additional-rate taxpayers have no allowance.
[d] Employers are not liable for National Insurance contributions on the earnings of employees under the age of 21 (and apprentices under the age of 25 from 2016–17) below the upper earnings limit.
[e] From April 2016, employees with defined benefit pension schemes can no longer contract out of the additional part of the state pension.
[f] Assumes RPI inflation of 2.0% in the third quarter of 2016 as per Office for Budget Responsibility, *Economic and Fiscal Outlook: November 2015*.
[g] Assumes the November 2015 average pre-tax price of 20 king-size filter cigarettes (based on series CZMP from table 63 of ONS's consumer price inflation detailed reference tables).
[h] From May 2015, children aged under 12 are not subject to air passenger duty if they are flying economy class. The same will apply to children aged under 16 from March 2016.
[i] If any class of travel provides a seat pitch in excess of 1.016 metres (40 inches), the club and first class (standard) rate is the minimum rate that applies.
[j] The higher rate applies to flights aboard aircraft of 20 tonnes and above with fewer than 19 seats.
[k] Land and building transactions tax operates instead of stamp duty land tax in Scotland.
[l] 1% on non-residential properties up to £150,000 with annual rent of £1,000 or more.
[m] Applies to all businesses in Wales, and where rateable values are less than £25,500 in Greater London, £18,000 in the rest of England and £35,000 in Scotland. A supplement is payable on higher-value properties in England (1.3%) and Scotland (rising from 1.3% in 2015–16 to 2.6% in 2016–17), and an additional 0.4% is payable on all properties in the City of London.
[n] The high-income child benefit charge applies to all families containing at least one individual with a taxable income in excess of £50,000.

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For a summary of the main tax measures introduced in each Budget, Pre-Budget Report and Autumn Statement since 1979, see http://www.ifs.org.uk/uploads/publications/ff/budget_measures.xls.

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Appendix B. Abbreviations

ABV	alcohol by volume
ACE	allowance for corporate equity
APF	Asset Purchase Facility
AWPR	Aberdeen Western Peripheral Route
BBC	British Broadcasting Corporation
BEPS	Base Erosion and Profit Shifting (OECD Action Plan)
BIS	Department of Business, Innovation and Skills
bn	billion
BRIC	Brazil, Russia, India and China
CAD	Canadian dollar
CCCTB	common consolidated corporate tax base
CFC	controlled foreign company
cl	centilitre
CNY	Chinese yuan renminbi
CPI	Consumer Prices Index
CPP	Centre for Microeconomic Analysis of Public Policy
CREMA	Center for Research in Economics, Management and the Arts
CTC	child tax credit
DCLG	Department for Communities and Local Government
DECC	Department of Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
DEL	departmental expenditure limit
DfE	Department for Education
DfID	Department for International Development
DfT	Department for Transport
DH	Department of Health
DLA	disability living allowance
DOTAS	disclosure of tax avoidance schemes
DWP	Department for Work and Pensions
EBITDA	a measure of Earnings (profit after deducting labour costs) Before deductions for Interest paid, Tax paid, Depreciation of tangible assets and Amortisation of intangible assets
ECB	European Central Bank
EET	exempt–exempt–taxed
EFO	Economic and Fiscal Outlook
EMTR	effective marginal tax rate
ESA	employment and support allowance (Chapters 6 and 10) European System of National and Regional Accounts (Chapters 2, 4 and 7)
ESA10	European System of National and Regional Accounts 2010
ESA95	European System of National and Regional Accounts 1995
ESRC	Economic and Social Research Council
EU	European Union
FDI	foreign direct investment
FOMC	Federal Open Market Committee

FPC	Financial Policy Committee
FRAB	Financial Reporting Advisory Board
FRS	Family Resources Survey
g	gram
G7	Group of Seven countries: Canada, France, Germany, Italy, Japan, UK, US
GB	Great Britain
GDP	gross domestic product
GP	general practitioner
HM	Her Majesty's
HMRC	Her Majesty's Revenue and Customs
HMSO	Her Majesty's Stationery Office
HS2	High Speed 2
IASB	International Accounting Standards Board
IFRS	International Financial Reporting Standards
IFS	Institute for Fiscal Studies
ILO	International Labour Organisation
IMF	International Monetary Fund
IP	intellectual property
IPS	International Passenger Survey
IS	income support
IT	information technology
IZA	Institute for the Study of Labor
JSA	jobseeker's allowance
kg	kilogram
km	kilometre
kWh	kilowatt-hour
LASFE	local authority self-financed expenditure
LCF	Living Costs and Food Survey
LEL	lower earnings limit
LFS	Labour Force Survey
LH	left-hand
LHA	local housing allowance
MAP	mutual agreement procedure
MPC	Monetary Policy Committee
MSCI	emerging market stock market index
NAIRU	non-accelerating inflation rate of unemployment
NBER	National Bureau of Economic Research
NHS	National Health Service
NICs	National Insurance contributions
NLW	National Living Wage
NMW	National Minimum Wage
OBR	Office for Budget Responsibility
ODA	official development assistance
OE	Oxford Economics
OECD	Organisation for Economic Cooperation and Development
ONS	Office for National Statistics

OPEC	Organisation of the Petroleum Exporting Countries
p	pence
p.a.	per annum
PE	permanent establishment
PF2	second-generation Private Finance Initiative contracts
PFI	Private Finance Initiative
PIP	Pensions Infrastructure Platform (Chapter 7) personal independence payment (Chapter 6)
PPP	public–private partnership
ppt	percentage point
PRT	petroleum revenue tax
PSNB	public sector net borrowing
PTR	participation tax rate
p.w.	per week
Q	quarter
QE	quantitative easing
R&D	research and development
RH	right-hand
RICS	Royal Institution of Chartered Surveyors
RPI	Retail Prices Index
SDLT	stamp duty land tax
SPA	state pension age
TAXBEN	the IFS tax and benefit microsimulation model
TEE	taxed–exempt–exempt
TET	taxed–exempt–taxed
TFP	total factor productivity
TUC	Trades Union Congress
UAP	upper accrual point
UC	universal credit
UEL	upper earnings limit
UK	United Kingdom
UKDA	UK Data Archive
UNCTAD	United Nations Conference on Trade and Development
US	United States
VAT	value added tax
VED	vehicle excise duty
WGA	Whole of Government Accounts
WTC	working tax credit
WWDC	worldwide debt cap