# Why the Government should spend more on capital

Graham Gudgin, Warwick Lightfoot, Gerard Lyons and Jan Zeber

Foreword by Lord Darling of Roulanish

# Why the Government should spend more on capital

Graham Gudgin, Warwick Lightfoot, Gerard Lyons and Jan Zeber

Foreword by Lord Darling of Roulanish

# About the Author

**Dr Graham Gudgin** is Policy Exchange's Chief Economic Adviser. He is currently Honorary Research Associate at the Centre for Business Research (CBR) in the Judge Business School at the University of Cambridge. He is also visiting Professor at the University of Ulster and Chairman of the Advisory Board of the Ulster University Economic Policy Centre, and was senior Economic Adviser at Oxford Economics from 2007 to 2015. He was Director of the ESRC-funded Northern Ireland Economic Research Centre from 1985 to 1998 when he became Special Adviser to the First Minister in the NI Assembly until 2002. Prior to this he was economics fellow at Selwyn College, Cambridge and a member of the Cambridge Economic Policy Group under Wynne Godley. He is the author of a large number of books, reports and journal articles on regional economic growth in the UK, the growth of small firms and electoral systems. He is currently working with Ken Coutts on a macro-economic model and forecasts for the UK economy and on the economic impact of Brexit.

**Warwick Lightfoot** is Head of Economics and Social Policy at Policy Exchange. He is an economist, with specialist interests in monetary economics, labour markets, and public finance. He has served as Special Adviser to three Chancellors of the Exchequer, and a Secretary of State for Employment. Warwick was a treasury economist at the Royal Bank of Scotland, and has also been Economics Editor of The European. His many articles on economics and public policy have appeared in the Wall Street Journal, the Financial Times, The Times, The Sunday Times, the Daily Telegraph, the Sunday Telegraph, and in specialist journals ranging from the Times Literary Supplement and The Spectator, to the Investors Chronicle and Financial World. His books include Sorry We Have No Money — Britain's Economic Problem.

**Dr Gerard Lyons** is a Senior Fellow at Policy Exchange. He is a leading expert on the world economy, global financial markets, and economic and regulatory policy. Formerly he was Chief Economic Adviser to the Mayor of London, Boris Johnson and he also has 27 years' experience in The City in senior roles with leading international banks, including Standard Chartered, DKB International, and Swiss Bank, where he had an excellent forecasting record. He is also Chief Economic Strategist at Netwealth Investments, and sits on the advisory boards at both Warwick Business School, and the Grantham Institute at the LSE and Imperial College. He co-founded Economists for Brexit, and his ebook, *The UK Referendum: An Easy Guide to Leaving the EU*, was released by Amazon. His first book, *The Consolations of Economics*, was serialised in the *Daily Telegraph*, and he is a regular press and television commentator. He frequently speaks at major domestic and global economic and financial conferences.

**Jan Zeber** is Deputy Head for Economics and Prosperity at Policy Exchange, where he primarily works on the Prosperity programme, helping to lead on a range of topics including corporate governance, competition and regulation. Prior to his current role he was a Policy Analyst at the TaxPayers' Alliance. He has worked for a number of other think-tanks as well as the private sector, producing legal and economic analysis in fields as diverse as the regulation of sharing economy in the UK and administrative justice reform in Kenya


Published by
Policy Exchange, 8 – 10 Great George Street, Westminster, London SW1P 3AE

www.policyexchange.org.uk

ISBN: 978-1-913459-31-4

# Contents

# Foreword

*by Lord Darling of Roulanish, former Chancellor of the Exchequer*

When I was Transport Secretary in the early 2000s, I spent nearly every day thanking the Victorians for their genius and their foresight. Without engineers such as Brunel and Bazalgette, the UK wouldn't be nearly as well connected and engineered as it is, from our railways to countless tunnels, bridges and sewers. They, better than any generation of Britons before or since, understood that infrastructure – though not always glamorous – was vital to growing and improving the economy and that you had to plan years, sometimes decades, ahead.

In recent times, I worry that we have forgotten this important insight. Economists recognise that infrastructure spending can boost GDP and eventually deliver genuine returns on investment. Successive Governments have from time to time cut investment as it is easier to do than to cut current spending on public services. The period after the last crash was one of extraordinary challenges and there was an urgent need to reduce the budget. But as the economy reels from an even more profound shock, the Covid-19 crisis, I sincerely hope that the Government's approach this time must be different.

Even before the pandemic, it was generally recognised that infrastructure spending should be a priority in the UK, and that the quality of our roads and railways has not been rated highly by international business. We also need to invest in broadband and in meeting our carbon reduction targets, for example. If we are to attract investment and improve connectivity for British businesses and everyday commuters, we must be prepared to spend more.

I would suggest two guiding principles. First, wherever possible, central government should hand funds and control to regional and local powers. For the largest projects, there is of course a role for central Government in keeping costs down, project managing and delivering on time. But Policy Exchange's proposal that central Government should not control any project costing under £500 million should be vigorously pursued. If the Government is in favour of levelling up the economy, ministers must recognise that this cannot be done from the top down.

The second principle, as explored in this paper, is to prioritise shovel-ready, and usually smaller, projects. The sort of infrastructure that the Victorians built, along grand designs, takes years to get planning approval and legal sign-off today. Even medium-sized projects have a habit of getting delayed. I noted recently that the Government had unveiled plans to upgrade the A66 between Cumbria and Yorkshire, with a preferred route finally being settled on. This is not a huge project – it's about the

dualling of a 50-mile section of a single carriageway between Penrith and Scotch Corner. Alas, I remember almost exactly the same announcement being made in 2004[1], when I was Transport Secretary. Local people must be losing patience and faith in Government to deliver.

The difference now is an even greater sense of urgency and, in macro-economic terms, far more favourable conditions for borrowing. After the Covid-19 crisis subsides, we will enter a new period of recovery. Increasing taxes will not be the answer here, even as the budget deficit and government debt rises. If anything, emergency tax cuts – slashing VAT to 15% for instance, as I did in November 2008 – should be considered to boost consumer spending. But the argument in this paper is persuasive: over this Parliament, infrastructure and capital spending will be crucial to the post-Covid-19 economic recovery.

1. https://www.thenorthernecho.co.uk/news/6997825.upgrading-two-sections-a66-approved/

# Executive Summary

## The case for capital spending in a post-Covid world

- The Government should spend more on capital investment. The case was already strong before the Covid-19 crisis and has been strengthened since, as its financing has become more affordable. This paper highlights the importance of taking advantage of the present macro-economic environment afforded by low borrowing costs to provide stable – and sizeable – funding for new infrastructure through an increase in capital spending by the public sector. Additional capital spending, in excess of the fiscal rules, would be sustainable and affordable.
- In the interests of good governance, we recommend that all infrastructure projects, especially in transport, of less than £500 million be devolved to metro and local authorities. "Whitehall" will not always be the best judge of local projects and with this, devolution and high accountability should be enhanced.
- The Covid-19 crisis will, however, affect the levelling up agenda and the type of infrastructure spending, as people may change how they work, live and travel, and as the rail operators have, in effect, been nationalised. There will almost certainly be implications for capital investment, whether people decide to travel more by car or continue to use public transport where it is available. If people work more from home, as seems likely, increased subsidies for ultra-fast broadband in hard-to-reach areas should also be fast-tracked. Charging points for electric vehicles (EVs) would allow greater choice for people who choose to travel by car more, as is also likely, yet find EVs to be impractical. Health-related infrastructure, such as green walking and cycling routes, will be more relevant to a health-conscious public after the worst pandemic for a century.
- Even when borrowing costs are low, productivity improvements arising from infrastructure still depend upon what gets built effectively. The evidence that improving infrastructure alone leads to higher national productivity is mixed.

## Take advantage of the financial environment

- We would support the plans outlined in the March 2020 Budget to spend £426 billion on infrastructure over the course of this Parliament although we recognise that not all of the plans will materialise in this timescale.
- The absence of shovel-ready projects and the need to have a sufficient number of skilled people to work on these, suggests the need for a rolling series of capital projects. In addition, to avoid a stop-start approach, there needs to be an accompanying rolling funding programme.
- One of the biggest problems for capital public spending has been slow growth. This is the challenge for the future, too. We estimate that if the economy had grown at its pre-financial crisis trend, then an extra £140 billion - equivalent to 17% of current government spending - would have been available for public spending (or tax cuts) in 2019. While it is possible to question if that trend rate was sustainable, the point is to highlight the importance of economic growth to spending plans. Thus, using Cambridge University's Centre for Business Research model we generate scenarios for the macro-economic impact of different assumed levels of public spending.

## Change the fiscal rules to reflect a more holistic approach

- The current fiscal rules are arbitrary and should be changed, such that spending likely to enhance competitiveness at reasonable cost should be supported. The hard distinction between current and capital spending in these rules needs to be reconsidered – trying to control public expenditure or skew it towards capital through exempting spending scored as capital from fiscal targets creates a situation where the Treasury is incentivised to build a school (capital spending) but disincentivised from hiring teachers for it (current spending). It also means that capital-heavy policy options seem more attractive than current-heavy ones for budgetary reasons, which can lead to suboptimal spending decisions being taken.

## Renewed focus on quality, not just quantity

- There is little evidence that government infrastructure investment in the UK is low by historic standards. There is, however, evidence it is low by international standards. Although we recognise that the Government's plans will raise investment to the OECD average, there needs to be a renewed focus on the quality of infrastructure spending, not just the quantity. The quality of UK transport infrastructure is not rated highly in international business surveys and within the UK, road and rail infrastructure has failed to keep up with demand. The quality of that infrastructure needs to improve post-crisis and may be easier to achieve if fewer people are traveling by public transport post the Covid-19 crisis.

## Quality of life and amenity value

- When considering public infrastructure investment, economic returns should not be the sole guiding objective – a conception of 'amenity value' should form part of the equation, conducive to approving projects yielding material social benefit.
- There are a host of areas where infrastructure plans can meet the desire of the Government for shovel-ready projects in the post Covid-19 economy. These include:
  - health- related infrastructure such as green walking and cycling routes, which (in addition to being quick to implement and relatively cheap could also be viewed as mechanisms for healthcare demand management
  - transport treatments, including support for local authorities, national parks and landowners such as the National Trust in improving opportunities to walk and cycle.
  - improving (and where possible adding to) public parks, sport, leisure and swimming facilities.

## Focus on local and small

- We outline the need for a focus on local and small projects. In many areas, small projects, run and controlled locally, are likely to produce better outcomes. Small, more local infrastructure projects yield higher rates of return. Smaller scale projects are also labour-intensive, providing jobs straight away, meaning they can form a part of any future stimulus package to soak up excess unemployment in a post Covid-19 environment.
- Clearly, there will still be a desire for large and centralised projects. Major projects – HS2, for example – are generally not appropriate sources of economic stimulus since they take a long time to complete, even longer to reap productivity rewards and the labour intensive aspects do not arise until after lengthy preparatory stages.
- There is a case for funding local authorities and social landlords to take the measures to make their buildings energy efficient; the National Infrastructure Commission has suggested that £2.9 billion should be spent on this.

## Capital spending can support the pre-crisis domestic agenda

- Infrastructure can support the pre-crisis agenda of levelling up, preparing for after Brexit and helping to deliver a net zero emissions economy.
- The post-Brexit agenda will strengthen the case to improve the UK's international transport infrastructure, to facilitate travel and trade, at sea-ports and airports.
- One key aspect that will remain important post-crisis is levelling up, where infrastructure has an important role to play.

## Three examples of post Covid-19 infrastructure plans

- Electric Vehicle (EV) charging infrastructure investment is a rare example of a relatively shovel-ready project. The Government could support its development in tandem with the private sector by, amongst other things, taking the same approach to de-risking as it did in the case of wind power: switching subsidies from a one-off contribution to the initial cost of capital to a guarantee of minimum revenue stream, an approach which has a track-record of success in the case of wind power.
- Rolling out gigabit-capable broadband should be supported further given likely future changing patterns of working. To expedite this rollout, the generosity of the voucher schemes for the hardest to reach areas could be increased, while at the same time tackling administrative barriers to deployment such as difficulties in getting the appropriate permissions, simplifying the distribution of administrative responsibility by having central government work directly with local authorities.
- In terms of achieving the UK's carbon targets, there will need to be decisive investment in R&D. If we were to develop technologies to allow us to hit our carbon targets, there is a strong argument for this to be supported by increased capital investment by the Government, in addition to the private sector. Hydrogen is an attractive area to focus on in this context, given its versatility and cheapness.

# Introduction

This paper looks at some of the big questions surrounding public investment and public investment in infrastructure. For some time, it has been apparent that very low interest rates on long-term government debt provide an opportunity to finance investment and should make many projects that were not financially viable before a practical possibility. The slow pace of economic growth that followed the long recovery after the financial crisis and the Great Recession distinguished in the UK and among advanced economies more generally by very weak improvements in productivity has raised profound questions about stationary states, stasis and secular stagnation. An ambitious public investment programme that takes advantage of historically very low rates of interest to finance capital accumulation could make a significant contribution to raising the economy's long-term productive potential. Moreover, it offers the opportunity to address the concern that public policy in the UK has neglected investment and public infrastructure in particular.

## a) Changing financial environment

Even before the economic shock delivered by the health measures taken to deal with the Covid-19 emergency it was clear that in the event of an adverse shock to demand macro-economic policy would have to change significantly. Monetary policy was no longer a reliable instrument to stimulate demand and economic activity and fiscal policy would have to take the lead in stabilising output in the economy. A part of any such policy of stabilisation demand stimulus was likely to include spending on public investment. The economic consequences of the Covid-19 shock have amplified this context of public policy. The cost of servicing public debt has fallen. Debt service costs for the UK had already fallen to around 1.5 per cent of GDP by the start of the year. Since the March Budget in its analysis of the impact of the Covid-19 crisis estimated that the combination of lower interest rates and a fall in the rate of inflation – that lowers the cost of index linked government debt that uses the RPI as a price index – it estimated that the cash cost of debt service had fallen a further 30 per cent . The OBR are not alone as a public authority forecasting higher borrowing but lower debt services costs as a result of the combination of lower interest rates, lower inflation, central bank policy and increased investor demand for risk free assets.

### b) Changes resulting from Covid-19

The dramatic change that results from the Covid-19 shock is the reduction in demand and the dramatic change in demand for different categories of economic activity. This is most evident in the collapse in the international transport, hospitality and tourism sectors. This will inevitably create spare capacity in the economy that can be redeployed into projects and economic activity that supports public investment. Until the spring, with full employment and an economy operating at close to full capacity, there was a reasonable question to explore in relation to an ambitious publicly funded investment programme using the opportunities of low interest rates. This was that while such a programme could be cheaply financed how could the real resources of human capital – labour and skill be found in an economy so close to its productive limit. The crisis will present opportunities to beneficially re-deploy existing skills and to retrain and develop further capacity.

### c) Changing political priorities

The discussion surrounding UK public investment and infrastructure spending has become part of a wider political debate about the performance of the UK's regional economies and the concern that the investment needs of many communities have been overlooked. The Conservative manifesto for the 2019 General election promised a major rise in spending on public infrastructure. The promise was that an extra £100 billion would be spent over the five-year lifetime of this government. This planned to fund housing transport and broadband improvements. In the words of the manifesto, 'roads, buses and rail … and gigabit capable broadband in every home' with a focus on the Northern Powerhouse and Midlands Rail Hub. These plans were in addition an intention to spend an extra £10 billion over four years on current projects, predominantly in health, skills and childcare plus £13 billion on tax cuts.

### d) Infrastructure investment in a wider spending context

This represented a large planned change from the austerity years 2010-2018, even if the scale of original planned cuts had been greatly reduced after 2015. The Government had clearly taken the view that the public finances are back under control and the cost of borrowing is at a low level of close to 2% of GDP. With inflation showing few signs of accelerating from its current level below the Bank of England's 2% per annum target and interest rates at what appears to be sustainably and historically low levels, arguments against further borrowing have receded into the background.

The March 2019 Budget began to deliver on these promises even if the amounts do not fully match the manifesto intentions. Austerity cuts in capital spending amounting to 0.6% of GDP between 2010 and 2018 are planned to be completely reversed in this financial year and capital spending is planned to continue throughout this parliament at around 0.5% of GDP above the pre-Austerity (2010) level[2].

Additional planned fixed investment over the five years 2021-5 is £67

2. OBR EFO March 2020 Chart 3.3. Spending on CDEL This allows for a 20% underspend on planned spending on new capital projects

billion equivalent to 3% of the current level of GDP. Actual capital spending always lags behind plans and this figure includes the OBR assumption that a fifth of planned investment will remain unspent within the period. In real terms this represents an increase of £42 billion a 33% increase over existing levels of investment by 2024. After allowing for depreciation our estimate is that the real capital stock of general government will be 38% higher by 2025 compared with last year.

In the long run, the public sector will also have to address the issue of cost control in infrastructure and large-scale public investment projects and the problem of progressive delay and paralysis of infrastructure investment in the UK. Both of these questions lie beyond a paper looking at the broad financial opportunities and economic returns of infrastructure and are outside of the scope of this paper, although in terms of cost control the need for clarity of objectives and hard budget constraints would appear to be at the heart of what is needed to contain cost more effectively. The same issues that apply to public expenditure as a whole. The issues of delay and paralysis turn as much on matters of planning, consultation and the role of judicial review as on economic planning, procurement and analysis.

We will not know what all of the extra capital spending will consist of until the new National Infrastructure Strategy in the Autumn and the Comprehensive Spending Review, but the Budget Statement – notwithstanding the impact of Covid-19 – lays out the priorities. In order of size of spending, the priorities are road building and mending, support for building a million new houses over the Parliament, improvements to broadband coverage in rural areas, better flood defences and extra capacity in FE colleges.

Total managed expenditure (TME) is planned to rise by 2024/25 stabilising at 41% of GDP and increased capital spending accounts for all of this increase.[3] Planned increases in current spending included not only £12 billion to manage the Covid-19 Virus crisis but also student loans recently redefined as grants as well as growing pensions budgets. However, since then the Government significantly increased the scope of its measures and to date has spent £133bn mitigating coronavirus measures. That said, in the OBR coronavirus reference scenario, TME for 2024/25 stood unchanged at 41%, as measures are expected to be wound down quickly.[4] These rises are offset by expected falls in debt interest payments and falling net payments to the EU. These plans for current spending are unlikely to leave much headroom to reform social care budgets or increase spending on prisons.

### e) Getting infrastructure investment right

This report asks whether the spending plans on infrastructure are optimal. In what sense is there a shortage of infrastructure and, if there is a deficiency, are the Government's plans commensurate with the task? To the extent that infrastructure spending is supported, is it possible to control costs better than in the past in ways that allow a more effective

3. OBR EFO March 2020 table 3.12
4. OBR Coronavirus Reference Scenario: commentary, Table 1.5

decision-making? Will additional infrastructure spending make much difference to national productivity or regional balance? Does the UK have the fiscal headroom to spend more if necessary and does the current and prospective era of low interest rates make additional investment something that can be easily afforded. Indeed, is the planned continuing high debt to GDP wise or is it as some commentators suggest, a risk? Is the balance between current and capital spending and tax reductions sensible? Indeed, is a distinction between current and capital spending meaningful. Should we make contributions to national and regional competitiveness the key criteria for evaluating spending rather than the duration of an asset?

Direction of private choice has much greater chance of achieving genuine traction than previous policy the these are big and difficult questions. Often advocates of infrastructure investment and public investment in general exaggerate their potential wider economic benefits and exhibit the optimism bias that underestimates the costs of projects and exaggerates their potential return. This paper recognises the importance of public investment and has attempted to offer a realistic analysis of the costs, opportunities and challenges presented by an ambitious public investment programme. It is clear that the financing constraint has been transformed by the fall in the cost of public debt and lower interest rates. Moreover, the scope for public investment to play an important and beneficial role in an economy recovering from a severe economic shock is clear.

In many respects, the Government's levelling up agenda is both more pertinent and more likely to make progress as a result of the shock. Great metropolises have huge attraction, yet they come with costs, inconvenience and often a lack of amenity. The public health crisis will have increased the attraction of space, roomier homes and lessened the attraction of being based in, or travelling to, a metropolitan centre. Technology has moreover demonstrated that distance working is more practicable than ever before. Households and businesses will reassess the costs and benefits of different locations. Public investment that increases the broadband infrastructure and the transport and other infrastructure will contribute to making previously neglected communities that possess obvious advantages in terms of cost base more attractive. An ambitious public investment programme in this context has the potential to work with the grain of business and household choice about location rather than against it. An investment programme working with the direction of private choice has a much greater chance of gaining effective traction than previous policy that tried to work against it.

The rest of this paper is organised as follows: in Chapter 1, infrastructure investment is placed in the historical context of wider public spending, as well as against international comparisons. Chapter 2 then discusses the issues around using infrastructure as a tool of promoting economic growth, concluding that economic returns from infrastructure investment are highly dependent on the existing level of demand and on the macroeconomic environment. Therefore, while it is a necessary prerequisite, there are few situations in which it can be transformational, and those are usually confined to urban areas rather than 'left-behind' places outside of major

urban agglomerations. Chapter 3 then goes on to describe the UK's public investment and infrastructure investment plans, while Chapter 4 considers how the changing economic and financial environment – interest rates at record low, low and anchored inflationary expectations and perpetually high demand for Government debt – mean that borrowing for higher infrastructure investment is now much more affordable. Chapter 5 then goes on to consider how the proposed increases in infrastructure spending would affect the public budget.

# Chapter 1: What is the scope for public spending?

## 1.1 Background – a brief history of public spending in the UK – current & capital

One of the most frequently cited concerns with infrastructure projects large and small – which bear multi-million or -billion price tags – is: can we afford it? How else could that money be spent? If other countries have better infrastructure than the UK, is it because they are spending much more on it? This chapter briefly discusses the wider context of UK public spending, how capital spending fits into the overall picture, how other countries compare, and the difficulties that nevertheless arise when making international comparisons.

It is generally accepted that a society needs its government to provide key public services and infrastructure. The reasons for this are various. Public funding for the education system stems from the compulsory nature of school education and the widespread nature of gains to society including to those who have no children. In some countries virtually all schooling and higher education is provided by the state, and this tends to encourage social equality. In others, private education lies alongside state provision. State run health services are again supported on equity grounds as well as general protection from infectious diseases, but another strong reason is that the state can provide cheap and effective universal health insurance. Countries which have tried to run health on a private market basis run into problems of inequity and unacceptable unfairness but also a high cost. The US healthcare system costs twice as much as European systems for outcomes which are not obviously favourable. Having employers providing much of health insurance involves a 'tied cottage' syndrome in which the loss of a job can involve a loss of healthcare cover.

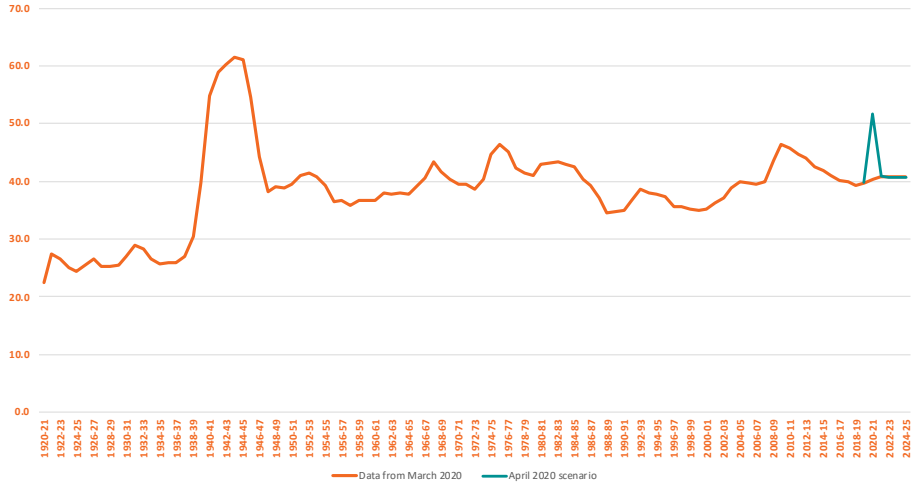
Over the 20th century European countries have also evolved large-scale social security systems, again providing insurance against unemployment, widowhood or other threats to a livelihood. Systems have however evolved beyond their original humane rationale. A type of mission creep has meant that benefits now subsidise the incomes of those in work as well as those without work.

The main rationale for infrastructure spending is the universal use of roads and the difficulty of charging for use. In the UK some experiments have taken place with toll roads and bridges but it is not obvious that

charging actual users for some transport infrastructure is necessary or sensible. The long queues at the Dartford Crossing toll points imposed a cost on hauliers and others that was not measured. The removal of the tolls greatly improved the free flow of traffic at this point on the M25. The jury is perhaps out on whether the rail system can and should be publicly rum. In the UK the track and signalling infrastructure is state-owned and experiments with privatised rail service providers only partially succeed. East coast Railways and Northern Rail have been renationalised and Great Western Railways may need the same treatment. A sustainable balance between public and private railways has yet to be reached.

The buildings in which public administration, health and education are provided are often state-owned in the UK but recent decades have seen experiments with leasing buildings and tying this with private provision of associated services including maintenance. There is considerable doubt whether such PFI projects provide value for money and too often the motivation has not been efficiency but rather getting public expenditure 'off the books' to make the public sector accounts look healthier than they really are. The Office for National Statistics takes an independent view of how to classify PFI projects and generally takes the view that where the risk is borne by the public sector then the investment should be accredited to that sector.

### Chart 1.1 Total managed Expenditure (% of GDP).

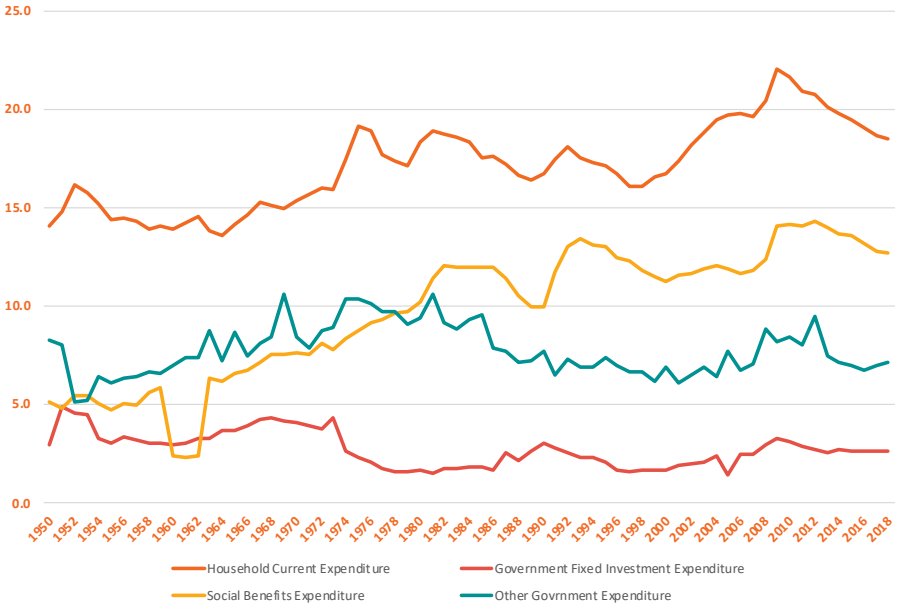



Total government spending (excluding public corporations) is usually referred to as Total Manage Expenditure or TME. TME reached 40% of GDP in the 1970s and has stayed close to this level ever since. Recessions lead to higher percentages as social spending rises and the GDP denominator falls. The Thatcher governments drove TME down to 36% in the late 1980s only to see it return to 40% in the subsequent recession. The Major government repeated the experience and the first years of the Blair Government extended this, but soon began another fiscal expansion taking TME back to 40% of GDP. Despite claims to have ended cyclical booms and busts the Brown Government saw TME soar to 46%. It has taken another decade to

return to 40% with austerity policies. Expenditure cuts under the Coalition government 2010-15 were slightly less than had been planned in Alistair Darling's final 2010 budget. Subsequent Conservative attempts to achieve a budget balance have been thwarted by reality and TMEN remains at 40%.

The largest component of government spending is current spending on goods and services, dominated by health and education budgets. This total was taken to a new high relative to GDP in 2007 by the Labour government and saw a further boost in dealing with the consequences of the banking crisis. It is this budget which has been driven down most strongly since 2010.

### Chart 1.2 Components of Government Expenditure



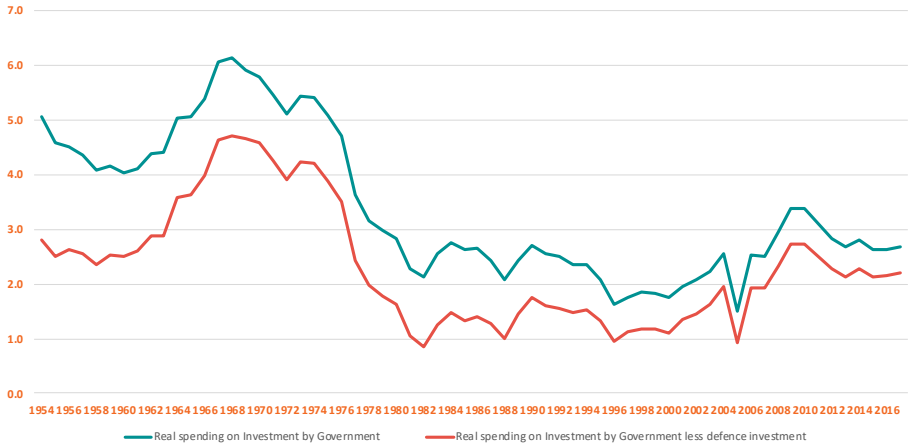

Social spending has been a rising trend since WW2 and again saw an upturn as unemployment rose in the banking crisis with a subsequent squeeze, albeit less than for current services. A third component, subsidies and interest payments has fallen in the post-1980 era only to experience a moderate rise in the banking crisis years

Capital spending, mainly on infrastructure, is a relatively small component of overall expenditure and is generally low compared with the pre-Thatcher era. Since 1980 it has absorbed only around 2% of GDP and close to 6% of overall government spending. If capital investment is a significant influence on economic growth and competitiveness, then we can ask whether the fiscal headroom exists to increase spending on infrastructure and whether doing so will crowd other, perhaps equally useful expenditure. Related questions are how to achieve maximum value for money from what are often large and complex projects.

To begin answering these questions we need to assess whether government investment and capital stock are in some sense too small or in other ways deficient. Real government Investment in the UK has fallen from its peak in 2009/10 as a proportion of real GDP (Chart 1.3).

The 2010 peak was itself partly genuine as a Keynesian boost during the recession but was also flattered by the low level of the GDP denominator during these banking crisis years. However, investment over the last decade has been higher than it was in the immediate pre-crisis years and indeed for several decades before that.

### Chart 1.3 Expenditure on Fixed Capital of General Government (% of GDP) Constant Prices

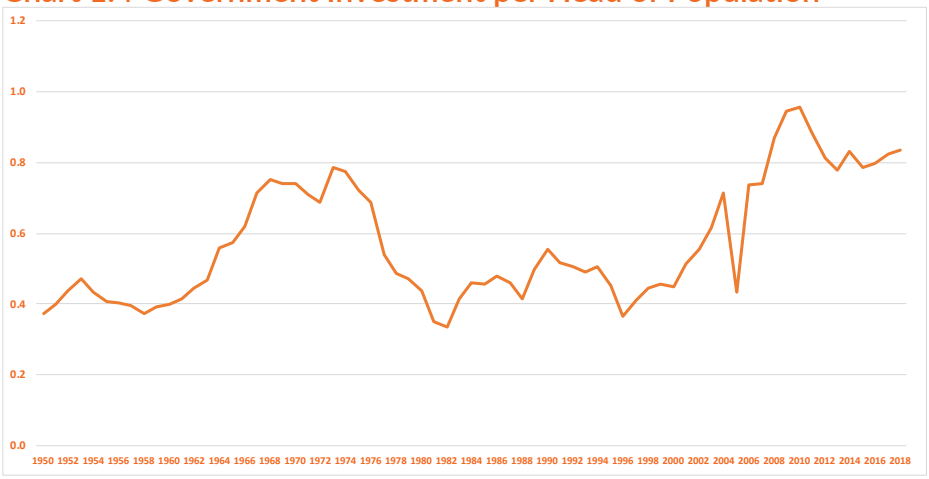



The ONS maintains its historic data only back to 1987 on a consistent basis and we have had to use earlier data series for previous years which may not be wholly consistent. The data for earlier years shows that government investment (excluding public corporations) had been much higher in the 1960s and 1970s as a share of GDP. There were several reasons for this. One was that defence spending was much higher in these years. Defence had accounted for almost 10% of GDP in the early 1950s when the Korean War reversed the post-war fall in defence. By 1960 it was still 6% of GDP or three times the current level. In Chart 1.3 we have assumed that the current (2018) share of capital spending in the defence budget (25%) applied to all years. The red line in Chart 1.3 is government capital spending excluding defence. Another important difference was the importance of local authority house building in the years before the Thatcher era. At the beginning of the 1950 local authorities were building 80% of all dwellings in the UK and even by the 1960s and 1970s still constructed 40%. By 1990 this had fallen to 10% and by 1995 only 2%.

If we restrict comparison to the period since 1980, Chart 1.3 shows that government investment has remained relatively high as a share of GDP during the austerity decade since 2010. Although the growth of GDP has itself been slow during this period investment levels have been maintained. The position is clear if we express investment relative to population (Chart 1.4). Here it can be seen that government investment spending in constant prices has been as high over the last decade as it has ever been. It has also been much higher than in the 1980s and 1990s. Even, so there is of course that investment has not kept up with demand in some areas. Many roads and railways are overcrowded and road surfacing

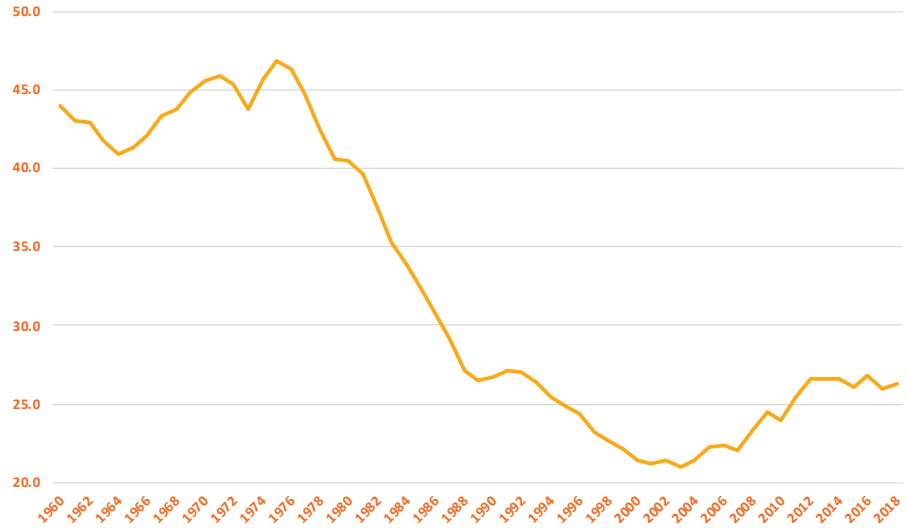
could be better. In other respects, the stock of infrastructure is at least adequate. The major school and university building programme during the Blair years has left the education infrastructure at a generally high level and health infrastructure (although not bed availability) are also at least adequate.

### Chart 1.4 Government Investment per Head of Population




The stock of government capital is difficult to measure. The ONS statistics are constructed using the perpetual inventory method in which capital consumption (or depreciation) is deducted from previous levels and new investment added. There are uncertainties about starting points for this process and most importantly on the length of life of different assets. The ONS has very recently revised down its assumptions about the effective lifetime of government assets (see Annex 1). As a result, the size of the stock of government assets was reduced by 29%.

### Chart 1.5 Stock of Capital General Government constant prices

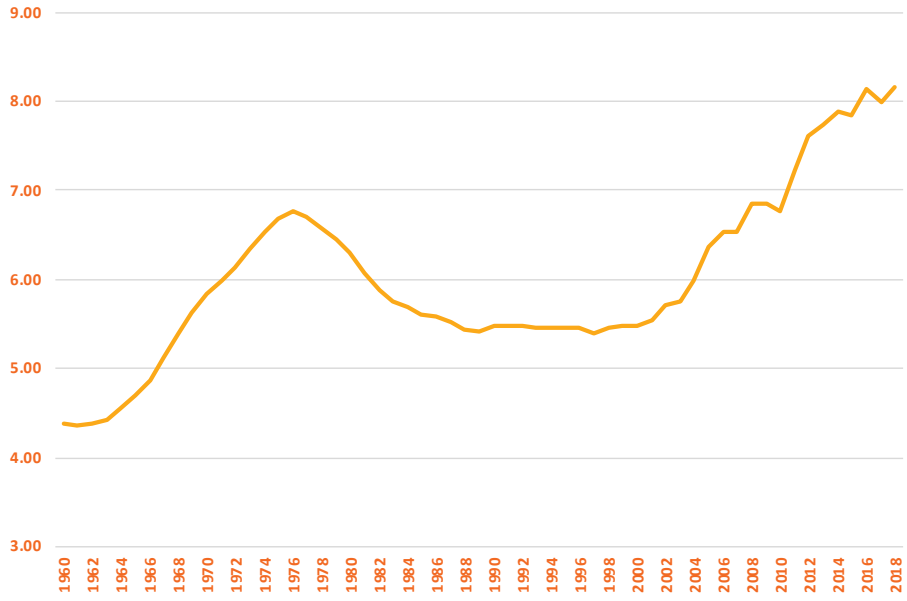



The capital stock series shown in Chart 1.5 is on the ONS new consistent basis back to 1995. For earlier years we have used to the perpetual

inventory method based on a 1960 starting point from Kamps (2006)[5]. The Chart shows that the stock of government capital is as high now as in any year since the mod-1080s. It is lower than the pre-1980 period when housing and defence infrastructure were a larger part of the total. The impact of austerity is seen in the plateau in capital stock since 2010. As argued below the fact that capital stock is not now higher than in 2010 is largely due to  is as much due to the slow growth of the economy as to any reduction in investment as a share of GDP

When measured as capital stock per head it seems clear that infrastructure per person is greater than it has ever been and has been growing steadily throughout the present century (Chart 1.6). The plateau in the level of government capital during the Thatcher and Major years 1980-97 has been followed by a sustained growth in capital. A similar trend was experienced across most OECD countries[6]. In other words, new investment in government capital stocks has been outpacing depreciation since 1997, even assuming shorter asset lives as in the latest ONS data. If we were to focus solely on civilian capital, then the contrast with the position 50 years ago would be greater. The rate of growth of capital stock accumulation may have slowed over the last decade but it has not ceased. In other words, the UK has more schools, hospitals, roads etc per head than ever before. This is not to say, however, that the stock is adequate or optimal in any sense.

### Chart 1.6 Government Capital Stock per person (£000 per head, 2016 prices)




## 1.2 Capital Stock and Infrastructure

There is no widely accepted definition of infrastructure. The National Infrastructure Delivery Plan 2016-21 covers economic and social infrastructure and housing. Economic infrastructure includes transport, energy, water and waste disposal infrastructure as well as flood defences

5. https://www.imf.org/External/Pubs/FT/staffp/2006/01/pdf/kamps.pdf
6. Romps and De Haan (2005) Public Capital and Economic Growth. A Critical review. European Investment Bank. Papers Vol 10 No.1

and digital communications. Social infrastructure includes health, education and justice. This is a rather narrower definition than government capital stock as defined in the National Accounts. In the latter 'other structures' which correspond largely to the above definition of economic infrastructure account for 42% of government capital stocks in 2018. 'Buildings other than dwellings', which include schools, hospitals and prisons but also administrative buildings, account for 33% of capital stocks. Together these are three-quarters of government capital and can broadly be thought of as fixed structures. Another 20% of the capital stock is mobile machinery and equipment, including vehicles, ICT equipment and weapons systems. A final 4% is intellectual property i.e. R&D and software.

### Table 1.1 Types of Infrastructure

| Type of infrastructure | Description | Rationale |
|---|---|---|
| **Transport** | Primary focus is on road (including bridges, tunnels, and similar) and rail assets. Also considers seaports and airports. | Appears in all of the reviewed literature, and so is arguably the most widely accepted infrastructure asset. |
| **Energy** | Includes power distribution and transmission networks, especially electricity. Also includes some generation assets, such as in the oil and gas industries. | Almost as common as transport assets and is included in almost all of the reviewed literature. Some researchers exclude generation and supply from infrastructure measures. |
| **Water** | The main components are the water distribution and purification networks. | Appears alongside energy in almost all of the reviewed literature. |
| **Communication** | Includes telecommunication and digital communication assets. In this article, we focus on produced assets, but non-produced assets, such as radio spectra, could also be considered in this category. | Included in most of the reviewed literature, although is less common than transport, energy and water. This might be due to the recent rapid development of communications technologies, meaning that older studies had less cause to include them. |
| **Waste** | This group covers assets for the collection and disposal of hazardous waste, solid waste, wastewater, and sewage. | When not identified as a sub-section of water assets, waste is a relatively common inclusion. |
| **Flood defences** | Includes waterways, dams and levees. | When not identified as a sub-section of water assets, flood defences are a relatively common inclusion. This group is separately identified by the National Infrastructure Commission. |

*Source: Office for National Statistics*

Much of what is defined above as infrastructure is in the private sector in the UK. Most of this is energy and water infrastructure and oil. The public sector is primarily concerned with roads, railways and flood defences.

Accordingly, focusing more closely on the Government investment in infrastructure part of capital investment, the National Infrastructure Commission (NIC) estimates the following breakdown of annual investment in infrastructure by the public sector:

### Table 1.2: Existing government infrastructure spending within the fiscal remit of the NIC:

| £m | 2013/14 | 2014/15 | 2015/16 | 2016/17 | 2017/18 | 2018/19 |
|---|---|---|---|---|---|---|
| Transport | | | | | | |
| national roads | £1,366 | £1,887 | £1,950 | £2,094 | £2,367 | £2,875 |
| local roads | £2,682 | £3,327 | £3,451 | £3,616 | £4,252 | £3,716 |
| local public transport | £203 | £216 | £246 | £217 | £118 | £125 |
| railway | £9,898 | £9,899 | £10,735 | £11,131 | £11,350 | £11,804 |
| other transport | £175 | £52 | £264 | £102 | £316 | £301 |
| *Transport (total)* | £14,324 | £15,381 | £16,648 | £17,160 | £18,402 | £18,821 |
| | | | | | | |
| Waste Management | £410 | £517 | £537 | £437 | £987 | £500 |
| Flood Risk Management | £325 | £438 | £402 | £492 | £481 | £479 |
| Digital | £55 | £43 | £20 | £29 | £42 | £62 |
| Energy | £4 | £108 | £63 | £0 | £1 | £1 |
| Water | £0 | £0 | £0 | £0 | £0 | £0 |
| | | | | | | |
| Current Prices | £15,118 | £16,486 | £17,670 | £18,118 | £19,913 | £19,862 |
| 18/19 Prices | £16,400 | £17,638 | £18,742 | £18,773 | £20,291 | £19,862 |
| *(as a % of GDP)* | *0.85%* | *0.89%* | *0.92%* | *0.91%* | *0.96%* | *0.93%* |

***Source: National Infrastructure Commission***

## 1.3 How does UK Infrastructure compare with other advanced economies?

There is a natural interest in international comparisons of infrastructure, including government infrastructure, partly for concerns of living standards but also because infrastructure is believed to influence national competitiveness. Congested roads and railways involve costs for commerce and households and unreliable bridges and other structures increase

congestion and impose extra costs on the economy and society.

It is difficult to compare government infrastructure for reasons outlined in Annex 1. The scope of government differs between countries and national statistical organisations use different assumptions on important matters like the assumed productive lifetimes of assets – the rate of depreciation. There's also a further challenge which arises from the fact that the wider economic circumstances that may merit infrastructure investment will substantially differ between different countries and their regions. In general, advanced economies with large existing accumulations of capital gain less at the margin from additional infrastructure investment than economies with little capital held in this form.

The ONS get around the definitional problems by comparing 'public' infrastructure irrespective of whether this is owned and run in the public and private sectors[7]. More, generally it is well known that overall investment in the UK is low by international standards. Indeed, it is one of the lowest anywhere in the world. This is likely to be connected with the importance of the service sector in the UK which has gone further in the direction of de-industrialisation than any other country.

For investment in infrastructure the ONS concludes that economic infrastructure (technically 'other structures' as defined in the UK National Accounts) is smaller than in France, the Netherlands or Italy, but larger than Denmark, Belgium or Sweden. On a per capita basis the UK was a little below France but above Italy. Data for Germany was excluded due to definitional differences. Norway is an outlier in this data, having a very low density of population and oil revenues which have financed a huge programme of road, tunnel and bridge construction. Although the figures for the UK were based on data prior to the latest ONS revisions, the impact of the revisions on this, mainly private sector, capital was relatively slight since asset lives were not shortened much on average (see annex 1). In general, the UK appears to occupy an intermediate position in the provision of economic infrastructure.

### Table 1.3 Stocks of Economic Infrastructure (% of GDP)

| Country | 1997 | 2007 | 2016 |
|---|---|---|---|
| Norway | 80.3 | 66.0 | 89.9 |
| Netherlands | 51.8 | 47.8 | 54.6 |
| France | 54.6 | 57.1 | 54.4 |
| Italy | | | 51.6 |
| **UK** | **33.6** | **42.0** | **47.0** |
| Denmark | 38.0 | 39.6 | 38.1 |
| Belgium | 36.5 | 30.6 | 27.9 |
| Sweden | 17.7 | 19.1 | 19.6 |

***Source: ONS[8]***

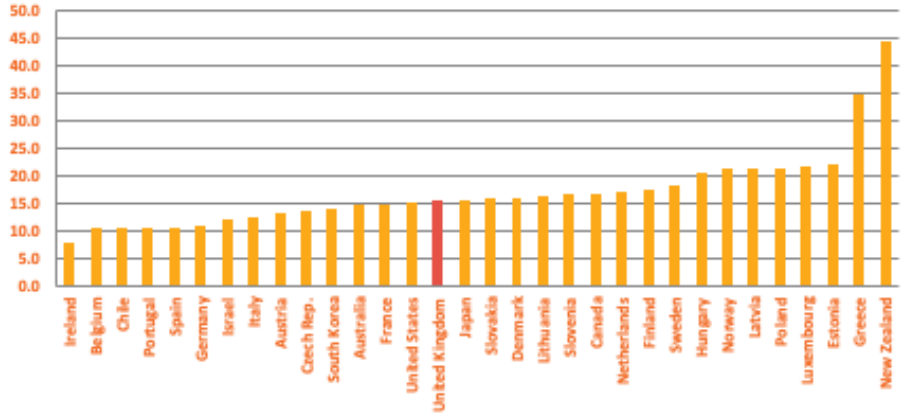
8.

ONS also compared annual investment across countries for certain types of infrastructure. They include investment made in transport, energy, water waster and telecommunications sectors but not public administration, health or education. Much of public sector investment, including on road building is thus excluded. On this definition, ONS found that UK investment in 2016 at 2.5% of GDP was close to France or Italy and above Germany (2%). Twenty years earlier the UK had been at the top of this group with investment at 3% of GDP. This was not due to investment in North Sea oil and gas, which is not included. The UK investment has slowly converged towards the average for these other countries.

When ONS examined investment by governments it found that while UK investment was rising as a share of all government spending 2005-17, this share was falling in France, Italy and Germany all within the Eurozone. By 2017 the UK share of government investment in total investment was twice as high as the average of these EU three countries.

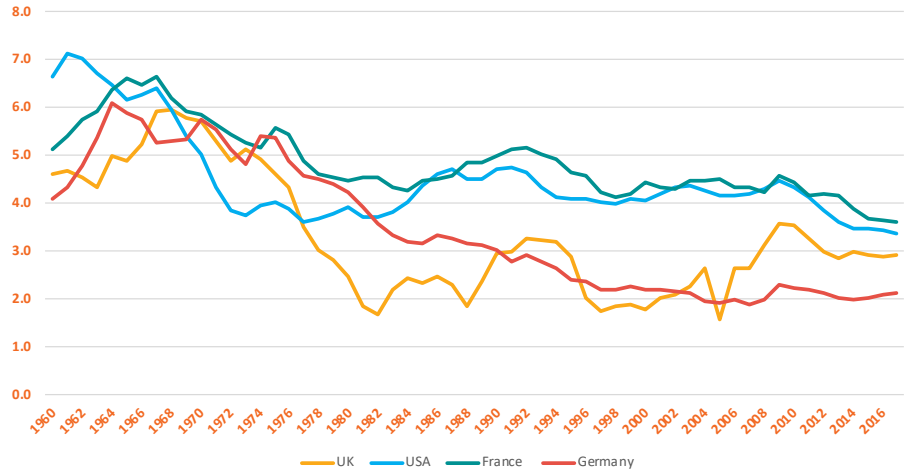
Government Investment (gross fixed capital formation) expressed as a proportion total investment – reveals an Intermediate position for the UK. In the UK the government contributed 15.5 per cent of total investment in 2017, ahead of the US, France, Germany and Italy – the only G7 member with a higher proportion was Canada. That said, the differences are not large. In several EU economies, including Germany, government investment was a much lower proportion of total Investment. In most eastern EU states, the proportion of government Investment was larger.

Chart 1.7 Government Investment (% of Total Investment, 2017)




*Source: OECD*

## Chart 1.8 Government Investment (% of GDP)




***Source of data: IMF Investment and Capital Stock Database***

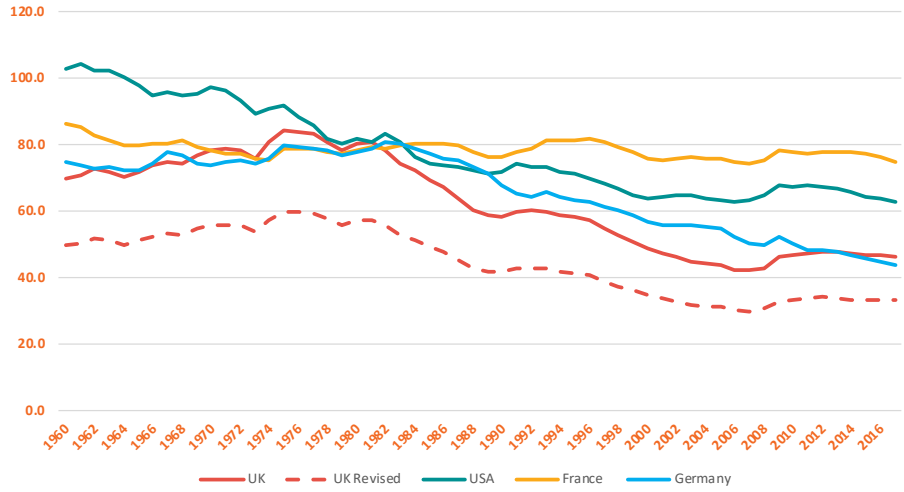
None of this tells us whether government Investment in the UK Is comparatively high or low compared with similar countries. To assess this Chart 1.8 expresses government investment relative to GDP in each country. The recovery of government Investment in the UK over the last decade Is still evident. UK Government Investment is a little below the USA and France but higher than Germany which famously has a low and falling level. In its latest Economic and Fiscal Review (March 2020, the Office for Budget Responsibility calculates that the UK has been in the bottom quartile for public investment among OECD countries but should converge on the OECD average with the rising investment planned for the next five years (box3.3).

The impact of several decades of low Government Investment is shown in Chart 1.9. The government capital stock In the UK has been low throughout the Thatcher and post-Thatcher years, only catching up with Germany's low level in the last ten years. This data from the IMF uses UK data from the ONS prior to the latest revisions which reduced the government capital stock by 29%. Since this was due to new assumptions about shorter asset lives, and was Intended to bring the UK more Into line with comparator countries, it Is the new data we should arguably use. This revised data Is shown in the pecked line in Chart 9.[9]

Since we saw above that several important classes of UK infrastructure were similar to major comparator countries, it seems likely that the low ratio of UK government capita stock to GDP is due to definitional differences in the scope of the government sectors in different countries. Although the US government has less health sector capital its defence sector is proportionately twice as large as that in the UK and over three times as large as Germany's.

9. The revised data from ONS is consistent back to 1995. For previous years we have assumed a similar reduction.

## Chart 1.9 Government Capital Stock




*Source of data: IMF Investment and Capital Stock Database 2019*

We can conclude from this evidence that there is a deficiency in UK capital stock relative to similar countries. Although this evidence is not conclusive other indicators point in the same direction. The World Economic Forum (WEO) Global Competitiveness Report ranks countries on the quality of their transport infrastructure based on the views of decision-makers in each country. In the 2018 report the UK comes 26-28$^{th}$ for the quality of its roads behind Chile, Malaysia and Cyprus. Nor is the UK much better for the efficiency of its rail services in which it is ranked 22$^{nd}$ in the world behind Indonesia, Russia and even Azerbaijan but ahead of Canada, Australia and most of Scandinavia. The UK score (out of 100) is 60 for rail services compared with 94 in Switzerland and Japan. Even worse the UK is ranked 51$^{st}$ for interruptions in electricity supply and is only 14$^{th}$ for reliability of water supply. On broadband mobile subscriptions the UK is a low 41$^{st}$ but even so the UK is high (6$^{th}$) for the proportion of the proportion using the internet.

Even so, the UK comes 8$^{th}$ in the WEO's global competitiveness index. In short, the UK is a good place to do business, but clearly not because of the quality of its public infrastructure. We can also take from this that business leaders are not overly constrained in their view of the UK by the efficiency of its transport system or power and water utilities. The argument for improving public infrastructure may then lie as much in personal convenience as in economic competitiveness, although the two are clearly related.

# Chapter 2: Does Capital Spending Improve Productivity?

Having sketched a broader picture of how much the UK spends on capital investment, it is time to ask: *why* do countries invest in capital? How does it affect economic growth? When are economic returns the greatest? It goes on to discuss two main ways in which capital investment boosts growth – through acting as stimulus and through improving productivity – and outlines when each of these methods is most conducive to growth, and how different types of infrastructure and ways of financing differently affect those two effects. Perhaps most importantly, it goes on to apply those insights to answering the question of whether, and if so under what circumstances, is infrastructure the most effective tool we have for boosting *regional* growth.

The theoretical underpinnings of the link between infrastructure and the expansion of productive capacity are well established and easy to conceptualise, especially with transport, energy and digital infrastructure. In the case of transport, a well-maintained system of roads will allow vehicles supplying goods to complete their orders on time and with minimal wear and tear to the vehicles, reducing cost of the journey and allowing more contracts for the supply of goods to be completed in a timely manner. A firm will then be able to spend the money saved on the wear and tear of the vehicle or earned from delivering their goods on time to spend it on increasing pay or expanding their operation. Similarly, energy is a crucial production input and a key cost for businesses – more reliable and cheaper energy supply will, again, allow the better functioning firm supplied with energy at a lower cost to spend the extra money on other things.

New capital spending measures are justified not just on the basis of popular demand for higher quality infrastructure, but also as a way to boost productivity and economic growth. In the current UK debate significantly increased infrastructure spending is both the Government's and the Opposition's plan for solving two of the country's main economic problems: sluggish productivity growth and regional inequality. Boris Johnson's 2019 election landslide victory means that the Government is now committed to delivering the promised 'Infrastructure Revolution' (including specific commitments to Northern Powerhouse Rail and the Midlands Rail Hub) in the context of 'levelling up' – a desire to boost not just living standards but also the underlying economic fundamentals of regional economies. The decision to go ahead with stage 1 of HS2 and the

scoping work for a bridge to Northern Ireland fit in with this approach.

Therefore, in addition to considering the financial and economic context within which greater capital spending in the UK is to be carried out, it must also be considered whether it is the best way to use that additional spending if the goal is higher and more equally distributed economic growth. Public spending usually carries an opportunity cost, not just in terms of alternative ways of spending but also in terms of foregoing prospective pro-growth fiscal measures such as tax cuts, or indeed other growth inducing policy measures such as greater spending on education. This was particularly the case prior to the Covid-19 crisis, where the economy was close to full employment and the Government was planning constraints on future migration.

An illustrative example, due to its very significant cost, is High Speed 2 – a rail project building a new railway link between London and Birmingham in Phase 1, while its Phase 2 sees two new lines running from Birmingham, one two Manchester and Crewe, and the other to Leeds. Even assuming significant productivity gains can be attained by the project, its £100bn price-tag means we must compare these benefits with economic effects of, for example, spending that money improving public services in places we want to 'level-up', or indeed foregoing £100bn in tax revenue, which can even be targeted geographically through 'special economic zones'.

A bridge between Scotland and Northern Ireland Is another example. A bridge would reduce driving time between Belfast and Glasgow (and other UK cities) by around two hours, or more if roads between Stranraer and Glasgow and Dumfries were upgraded. In the UK context this is a major improvement, equivalent to the Impact of the M25 Is driving from the north of London to the Channel ports. The cost of a bridge would be huge and the opportunity costs great, although the decision may eventually be made on political consideration of binding the union rather than on economic grounds alone. The link between capital spending and in particular infrastructure spending in the UK context will therefore be considered.

There are two ways of thinking about how public capital investment boosts economic growth: through improvements in productivity, and as a fiscal stimulus. The former generally is a long-term effect, is difficult to measure, does not depend on the nature of financing and depends a great deal on what the money is spent on and how efficiently it is spent. The latter, by contrast, is a more short-term effect, is easier to measure, is greatly dependent on the nature of financing but less dependent on what the money is spent on. The effectiveness of both is dependent on the state of the economy and country characteristics.

## 2.1 How does infrastructure boost economic growth: Productivity?

The first way in which higher capital spending can be said to boost economic growth is through expanding the long-term output capacity of the economy – in other words, making it more productive. The impact of public capital investment is a complex issue because the capital in question often comes in the form of networks. The construction of an initial road, rail or power network in an emerging economy will have potentially large economic impacts, depending on the associated social and economic conditions, but increments to an existing developed economy networks will depend on the extent to which problems such as congestion are being addressed. In some cases, especially in attempts to stimulate economic development in depressed regions, attempts to build infrastructure ahead of demand may have limited or at least delayed impacts.

Evaluation is complicated by cause and effect. Additional infrastructure may help economies to grow but growing countries are also able to afford better and more modern infrastructure. The notoriously poor road system of the west of Ireland in the 1950s and 1960s did not prevent industrialisation spurred on by low profits taxes and development grants. Once Ireland became richer, road and other infrastructure was greatly improved in the 1980s and 1990s.

The World Bank (1994, p19) concluded that '*infrastructure investment is not sufficient on its own to generate sustained increases in economic growth*'. Others associated the USA's productivity slowdown of the 1970s and 1980s with reduced public infrastructure development. Aschauer (!989) found that a 10% increase in the public capital stock was associated with an almost 4% improvement in multifactor productivity.[10] Aschauer's estimate is viewed by several economists as implausibly high. For the UK if this conclusion for public infrastructure were to apply to government capital stock this estimate would imply an implausible 28% boost to productivity over the subsequent period 1997-2018, equivalent to all of the actual increase in real GDP per hour worked over this period.

Subsequent studies found an unhelpfully wide range of estimates for an association between public infrastructure and economic growth.[11] Romps and De Haan (2005) point out that the benefits of government infrastructure such as roads are non-linear. Initial new investment may reduce congestion and hence raise productivity, but after some threshold extra investment is likely to have no further impact on productivity.[12]

Though generally positive, research shows wide disparity in the size of multipliers resulting from public capital investment and does not offer obvious guidelines. Early literature review by Munnell from 1992 focusing on US studies using aggregate time series data finds a 'positive' and statistically significant' relationship between public capital and output, with output elasticities to public capital investment surveyed between .03 to .39 depending on area studied, though some of the given multipliers the author finds 'too large to be credible.'[13] This leads to the conclusion that

10. Aschauer, D.A. (1989). "Is public expenditure productive?". *Journal of Monetary Economics* (23), pp. 177-200.

11. Romps and De Haan (2005) Public Capital and Economic Growth. A Critical review. European Investment Bank. Papers Vol 10 No.1 https://www.eib.org/attachments/efs/eibpapers/eibpapers_2005_v10_n01_en.pdf#page=42

12. Romps and De Haan opc it p 43

13. *Supra* note 70, 191

aggregate results 'cannot be used to guide actual investment spending.'[14] More recent studies conducted by the International Monetary Fund (IMF) concentrating on macroeconomic effects of public investment on advanced economies – particularly useful as much literature on infrastructure investment focuses on emerging economies – found that, using a sample of 17 OECD countries, '*increased public investment raises output, both in the short term and in the long term, crowds in private investment, and reduces unemployment*', but also found that this depends on the presence of several specific factors, such as a given country having higher public investment efficiency.[15] Perhaps the most comprehensive literature review on the subject – studying international literature spanning 30 years – has found through meta-regression analysis of 578 estimates collected from 68 studies that short-run multipliers of output associated with public capital supplied at central government level of 0.083, rising to 0.122 in the long run.[16]

However, the relationship between infrastructure and economic growth, as also acknowledged by Munnell, while positive generally and in the aggregate, is neither constant nor perfect.

The key point to make is that even when borrowing costs are low, productivity improvements still depend on choosing what gets built correctly. Widening a congested motorway linking two productive cities or improving capacity on busy railway links will yield relatively high returns. However, improvements past a certain point will not be met with demand, reducing the ratio of extra economic activity per pound spent as extra capacity is unused or the quality of airports and railway stations reaches a point where their lack of quality is no longer a constraining factor on economic activity. It is therefore extremely important to calibrate the size and scope of investment to the prospective gains from unlocking additional economic activity or making existing economic activity more efficient.

In their extensive review of this literature published by the European Investment Bank, Romps and De Haan (2005) conclude as follows:

- *First, although not all studies find a growth-enhancing effect of public capital, there is more consensus in the recent literature than in the older literature*
- *Second, according to most studies, the impact is much lower than found by Aschauer (1989), which is generally considered to be the starting point of this line of research.*
- *Third, many studies report that there is heterogeneity: the effect of public investment differs across countries, regions, and sectors. This is perhaps not a surprising result. After all, the effects of new investment spending will depend on the quantity and quality of the capital stock in place.*
- *In general, the larger the stock and the better its quality, the lower will be the impact of additions to this stock. The network character of public capital, notably infrastructure, causes non-linearities.*
- *The effect of new capital will crucially depend on the extent to which investment spending aims at alleviating bottlenecks in the existing network. Some studies also suggest that the effect of public investment spending may also depend on institutional and policy factors.*

14. *Supra* note 70, 196
15. Abiad A et al, 'The Macroeconomic Effects of Public Infrastructure Investment: Evidence from Advanced Economies', IMF Working Paper, May 2015, https://www.imf.org/external/pubs/ft/wp/2015/wp1595.pdf
16. Bom PRD et al, 'What have we learned from three decades of research on the productivity of public capital?', *Journal of Economic Surveys*, Vol. 28, No. 5, December 2014, pp. 889-916, https://onlinelibrary.wiley.com/doi/abs/10.1111/joes.12037

An extreme example of miscalibration in infrastructure development was the prevalence of the so-called 'Bridges to Nowhere' in Japan. Disused infrastructure like roads and bridges are a legacy of the stimulus package intended to wrench the country out of its Lost Decade (1991-2001) which resulted in approximately $2.1 trillion spent on public works projects like toll-bridges which bore costs heavily exceeding income from their use.[17] The Japanese example prompts a question with key implications for the levelling-up agenda in the UK: would it be more effective to spend the money elsewhere?

There is some evidence that in Japan, this money would have been better spent supporting 'non-core' infrastructure such as education and health services. One report by the Japan Research Institute for Local Government showed that every 1 trillion yen spent, infrastructure projects increased GDP by 1.37 trillion, but spending on public services such as care for the elderly or pension provision increased GDP by 1.64 trillion, while spending on education – by 1.74 trillion.[18] Though some economists argue that the spending stimulus had the desired effect from a Keynesian stimulus perspective, there is agreement that there were significant misallocations of spending which failed to attain the goal of increasing productivity.[19]

Of course, there are many positives we could take from Japanese capital investment now, judging from both the high quality of much of its public investment, and also from the evolution in recent years to its focus on Society 5.0, which is a radical, far reaching way to transform their economy. Described by the Japanese as a desire to create a new social contract and economic model by fully incorporating the technological innovations of the fourth industrial revolution, it has as a key bedrock increased capital spending.

However, in a more general context, other studies are generally showing much higher returns to 'core infrastructure.' For example, the aforementioned large-scale literature review by Bom et al suggests that a 1 per cent increase in core infrastructure capital stock translates to an increase in private sector output of 0.131 per cent in the short-term and 0.170 per cent in the long run. By contrast, the aggregate figure for all types of infrastructure – which includes things like schools and hospitals – is diluted to 0.083 per cent.[20]

This point is subject to a complication, known as 'induced demand' – a theory which posits that an increase of supply of a given good leads to more of that good being consumed. In transport, it is easy to imagine this in practice: improved transport links between two major cities leads to economic growth in both cities, which leads to even more demand for transport, leaving the links congested though carrying more passengers.[21] But there is evidence to suggest that this can be overstated: a literature review study carried out for the Department for Transport in 2018 and based mainly on US evidence concluded that [22] road construction leads to an average 20% increase in usage, most notably in urban and congested areas.

17. Fackler M, 'Japan's Big-Works Stimulus is Lesson', *New York Times*, 5 February 2009, https://www.nytimes.com/2009/02/06/world/asia/06japan.html
18. *Ibid*
19. Patrick HT, 'The causes of Japan's financial crisis', discussion paper, August 1998, https://academiccommons.columbia.edu/doi/10.7916/D8ZK5Q79
20. *Supra* note 75
21. Schneider, B, 'CityLab University: Induced Demand', *CityLab*, 6 September 2018, https://www.citylab.com/transportation/2018/09/citylab-university-induced-demand/569455/
22. WSP Global and RAND Europe, 'Latest evidence on induced travel demand: An evidence review', May 2018, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/762976/latest-evidence-on-induced-travel-demand-an-evidence-review.pdf

## 2.2 How does infrastructure boost economic growth: Keynesian stimulus

There is another way in which infrastructure spending can be said to boost the economy: if used as part of an economic 'stimulus.' Government spending on capital – especially jobs-heavy capital like construction of new roads, bridges, railways or telecoms infrastructure – creates demand in the economy for raw materials, labour and other things needed to bring about the investment. Particularly when an economy is in a downturn and there are idle resources going unused, such a stimulus – if well timed, targeted and temporary – has the potential to help an economy avoid a recession. However, economists agree that it takes particular macroeconomic conditions for the stimulus argument to be appropriate.

Evidence suggests that for the 'infrastructure as stimulus' argument to apply, several macroeconomic conditions should be met, relating to the interaction between monetary policy and the intended stimulus, level of public indebtedness and indicators of an output gap such as level of unemployment.

*Firstly*, the most frequently cited condition cited in the literature generally suggests that fiscal stimulus is best applied during an economic downturn, as that is when multipliers are highest. The key reason for that is because during a downturn, resources such as labour are likely to be idle due to lack of demand in the economy. Creating 'artificial' demand through Government spending is therefore, at that time, least likely to 'crowd out' private economic activity – that is to say, divert resources already working elsewhere, instead of mobilising resources that were until now idle. This is why macroeconomic indicators pointing to 'economic slack' or a large 'output gap' (ratio of actual output to potential output) such as relatively high unemployment generally should obtain before an economy is judged ripe for stimulus.

Secondly, a less well known but no less important consideration is the potential for monetary policy to counteract, or 'offset', effects of the economic stimulus. The most common way this could happen is through the central bank responding to expansionary fiscal policy of the government with contractionary monetary policy through raising interest rates or open market operations. Higher interest rates mean more expensive loans and mortgages, which reduces demand for credit in the economy. This reduction in demand for money can wholly or partially offset the effects of a stimulus, which intends the opposite – to increase demand. In the UK context, it is never certain what the central bank will do because it is an independent institution with a primary mandate of keeping inflation around the 2 per cent mark.

Deciding whether or not monetary offset is likely to occur in the UK context, therefore, depends on how likely the members of the Monetary Policy Committee (MPC) are to think there is a risk of inflation. As discussed in the previous section, there is a strong argument that this isn't likely – inflation is low and anchored, growth is positive but slow, and

the last time a central bank of a developed nation tried to raise rates it was forced into an embarrassing U-turn.[23]

## 2.3 Is infrastructure the best way of boosting regional growth?

The idea that improved infrastructure could improve the relative performance of depressed regional economies has a long history. In the 1960s and early 1970s - the last decades when a determined effort was made to improve regional economic performance through direct government action – higher infrastructure spending in the so-called Development Areas was allied with financial grants to induce manufacturing firms to move into these areas. Road building ran well ahead of local demand. The joke was that a light plane could land on some of the North East's dual carriageways since there were so few vehicles. Similarly, in Northern Ireland it took decades before 1960's motorways experienced congestion. A new port at Londonderry looked good but lacked ships.

Nonetheless, all of the transport and other infrastructural improvements in the North East, Wales, Scotland and Northern Ireland modernised these regions. While not being essential to the attraction of domestic and foreign direct investment – financial grants and especially low profits taxes are much more important – they have been helpful.

The policy question is how much additional government capital spending is needed in the devolved regions and in the north and west of England. We need to establish precisely what the regional problems are. The first thing to say is that the idea that living standards are low and that these regions are somehow 'left behind' is neither correct nor helpful. We can measure living standards in each region by calculating how much each household spends on average and adding to this the amount that the government spends per head in each region on behalf of households on such things as education, health, transport etc. This is shown in table 1.3 below. The first column shows the sum of household spending per head plus government current spending per head. Scotland has living standards on this measure 3.7% above the UK average and not far below the South East of England (excluding London). Northern Ireland is only a little below the UK average.

It is more instructive to exclude the cost of housing which varies hugely across regions. These should be excluded because they largely reflect the cost of land rather than the quality of housing. The measure for living standards excluding costs of housing captures what households in each region have to spend after paying for their accommodation. The measure excluding housing costs is shown in column 2 of table 1.3. It reveals that living standards are above the UK average in Scotland and Northern Ireland and close to London and the South East. For Wales, living standards are close to the UK average. Low living standards occur rather in Yorkshire and the Midlands than further afield.

The problem across the devolved and northern regions is not so much

23. Fleming S, 'Federal Reserve's "momentous" U-turn prompts puzzlement', *Financial Times*, 31 January 2019, https://www.ft.com/content/36cb58ba-24ef-11e9-8ce6-5db4543da632

low living standards as an inadequate ability to support these living standards through their local economies. The value of

### Table 2.3 Regional Living Standards and GVA 2016 (UK=100)

| | All | Excluding Housing | GVA per Head |
|---|---|---|---|
| **UK** | 100.0 | 100.0 | 100.0 |
| **England** | 100.1 | 99.3 | 102.9 |
| **NE** | 90.9 | 97.2 | 73.0 |
| **NW** | 93.1 | 97.3 | 87.6 |
| **YH** | 88.8 | 93.0 | 78.5 |
| **EM** | 90.8 | 95.7 | 80.4 |
| **WM** | 86.4 | 90.1 | 82.9 |
| **East** | 96.7 | 98.5 | 91.3 |
| **London** | 124.0 | 106.5 | 176.5 |
| **SE** | 108.7 | 106.4 | 108.9 |
| **SW** | 99.0 | 100.1 | 87.7 |
| **Wales** | 93.3 | 99.6 | 72.7 |
| **Scot** | 103.7 | 105.4 | 94.2 |
| **NI** | 97.4 | 104.7 | 75.9 |

***Source: ONS***[24]

Production in each region, gross value added (GVA), is shown in the third column of the table. It is these figures which excite most comment and which identify the UK as the most regionally unequal country in the western world. A wish to equalise GVA across regions reflects a need for all regions to contribute to the national economy rather than a need to equalise living standards since fiscal flows between regions do most of the latter. More equal productivity across regions would reduce the need for fiscal flows between regions, but this is not a current political imperative.

If there are left behind regions they are in the midlands and the north rather than the devolved regions. Precisely the areas that unexpectedly switched to voting Tory in the 2019 general election. Some of these areas require additional public spending to bring public services up to the standards enjoyed in Scotland, Wales and Northern Ireland. This is also illustrated on another metric key to infrastructure – the level of general government capital spending.

### 2.3.1 Level of government capital spending in the regions

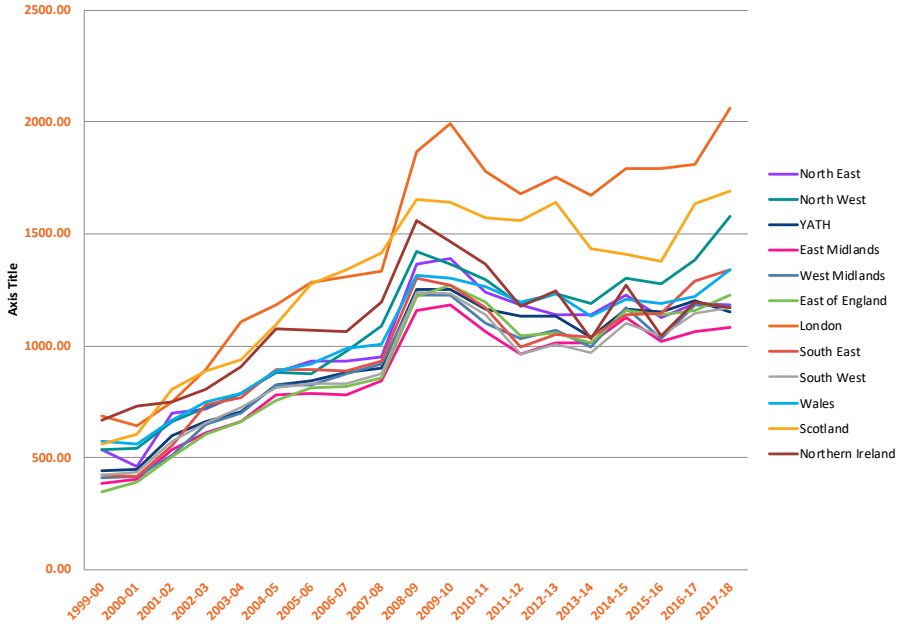
**Public capital spending figures by region reveal stark differences between some regions, even over a short period of time and diverging particularly strongly in the mid-2000s.** The clear outliers are London and Scotland, with investment in those regions in the period 1990-2018 on average higher by 38 per cent and 25 per cent than the average for the country for that year.[25] In nominal per person spend, this means that total

24. Office of National Statistics Development of Regional Household Expenditure Measures 2016 and Regional Accounts 2016
25. ONS, 'Country and Regional Public Sector Finances', FYE 2019, https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/publicsectorfinance/articles/countryandregionalpublicsectorfinances/financialyearending2019

per capita public capital spending was higher than the country average for that year by on average £405 for London and £256 for Scotland. There are slight differences between the rest of the group, but the other remarkable trend is just how small they are. Every region apart from London, Scotland, North West and Northern Ireland follows a very similar pattern – North West only begins to diverge in the second half of the 2010s, while Northern Ireland regresses to the peer group mean at the beginning of 2010s.

**At least when it comes to per capita public capital spending, this does not appear to be a story of North-South divide.** To be sure, it was lower than average both in the North East, on average by £32 every year, or 3 per cent. But figures are above average in the North West, though not by much – on average 3 per cent higher. By contrast, figures in particular for the Midlands and the South West are significantly lower. For East and West Midlands, total per capita public spending on capital was on average lower by £169 and £122 every year, or 17 and 12 per cent. In the South West it was lower by £162 (13 per cent) while in the East of England it was lower by £128 (14 per cent). This is likely to be due to the fact that North East and in particular North West have many of the UK's regional cities, which in turn have large hospitals, universities and other forms of public capital.

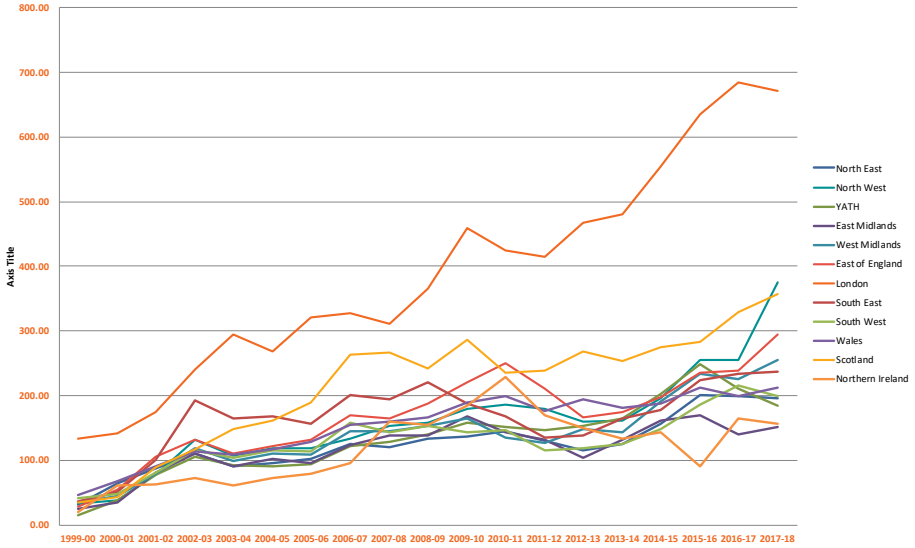
## Chart 2.3: Total public capital spending per capita




**Looking at transport spending in particular, the story is even more pronounced, with London emerging as the clear winner.** On a per capita basis, total public capital spending on transport has increased from 79 per cent of the average per capita transport spend in the UK by region in 2007-08 to 145 per cent in 2017-18. In nominal terms, £132 were spent on transport capital for every resident in London in 1999-00 – by

2018-18, this has risen to £671. Though this is not the largest increase in percentage terms (per capita transport capital expenditure for both North West and Yorkshire and The Humber increased more than 1000 per cent in that period) this was because London was not starting from a low base. Indeed, 1999-00 was a year in which London's per capita transport spend was highest in percentage terms than the country average – well over three times more at 232%. London's dominance as the region with by far the highest levels of capital transport spending is therefore not a recent phenomenon.

### Chart 2.4: Transport capital spending per capita




### 2.3.2 Is more capital spending therefore the answer to levelling up?

**In the March 2020 Budget, the Government committed to increasing capital spending on infrastructure up to around £600bn.** This is on top of existing commitments and therefore is not all new money, but one of the key points about the latest Budget is the dominance of capital spending over current spending, where increases are far less significant. Coupled with the fact that the Budget does not contain any significant tax rises – indeed, it delivers major manifesto commitments to cut taxes by, for example, increasing National Insurance Contributions (NICs) threshold – and does not repeal Sajid Javid's fiscal rules, it means that the Government is relying heavily on the new capital spending to boost growth and thus pay back the public debt increases incurred as a result of this spending.

**As discussed previously in the section, the relationship between infrastructure spending and growth is mixed and complex, but it does have several policy implications.**

**Firstly, returns from transport infrastructure are very highly dependent on choosing the right type and place.** The single most important consideration is whether the additional capacity, higher comfort, shorter journey times and additional stations enabled as a result

are responding to pent-up demand. If so, this:

- Increases supply of labour to a given locality as commuting becomes possible from further afield.
- Induces additional investment and consumption as improved transport induces trips into the locality resulting in increased consumption or contributes to a decision to base a business there.
- Boosts productivity as a result from agglomeration effects, that is, positive spillovers from synergy between businesses located closely together in the same locality.

**Therefore, to boost economic output, transport infrastructure must, firstly, respond to excess demand, and/or, secondly, induce additional investment and business activity.** Data from the Centre for Cities think-tank indicates that significant transport investment would yield significant returns particularly in Manchester, Birmingham, Bristol and Leeds, as those cities have relatively high density of jobs in their city centres but at the same time score relatively low metrics measuring relative ease of accessibility of those jobs.[26] The underlying economic conditions in those cities are able to generate sufficient demand for labour so that returns from the extra supply exceed the costs of providing the transport infrastructure in the long run.

**Those conclusions are supported by evidence from Open Data Institute Leeds, which hypothesise that poor intra-city transport links in Birmingham mean that at peak times the city's effective population is much smaller than official figures** as commuting times make it excessively difficult to get to a city centre job from the outskirts. The Institute calculated that at peak times, effective city limits were much smaller than the administrative boundaries. This could partially explain why British cities outside of London appear to exhibit no agglomeration effects, with GVA negatively correlated to the size by population: because regional cities are in economic terms much smaller than their administrative boundaries suggest. Adjusting Birmingham's population for ease of commuting made the productivity shortfall no longer statistically significant.[27]

**Reversing the logic of ODI Leeds' findings, we may conclude that if poor intra-city transport can shrink the effective population, then very good intra-city transport can increase it, thus boosting economic benefits of agglomeration, increased labour supply and induced investment and consumption.** This happens because good transport makes it viable to commute to a job in the city centre from a place further away, even from outside of the city's administrative boundaries. London is a perfect example of this – good transport links in the wider South East make it possible to commute from surrounding towns.

**Conversely, Centre for Cities authors caution against excessive optimism about the potential of improved transport in places with weak economic fundamentals including weak demand for labour** – conditions present in some even relatively large cities such as Sheffield

26. Jeffrey S and Enenkel K, 'Getting moving: where can transport level up growth?', Centre for Cities, March 2020, p3, https://www.centreforcities.org/wp-content/uploads/2020/03/Getting-moving-transport-infrastructure-in-cities-2020.pdf
27. Forth T, 'Birmingham isn't a big city at peak times: How poor public transport explains the UK's productivity puzzle', *CityMetric*, 31 January 2019, https://www.citymetric.com/transport/birmingham-isn-t-big-city-peak-times-how-poor-public-transport-explains-uk-s-productivity

and Newcastle: 'Rather than investing in new transport infrastructure, these cities should focus on making their city centres more attractive for businesses to increase the number of jobs in them.'[28]

**It is also far from certain whether poor transport infrastructure is the most important factor – and therefore worthy of such high spending – factor holding back growth in the regions.** Evidence for the relative quality and effectiveness of transport infrastructure in London and the South East compared with everywhere else gives a mixed picture. Data for relative length of commuting by region in the UK supports this thesis, showing that average commuting times are already lower in places outside of London than in the capital, where it takes on average 40 mins to get to work, compared with an average of 28 minutes outside of London, which suggest relatively more spare capacity compared with London.[29]

**Box 1: 'Amenity value' of infrastructure**

**When considering infrastructure investment, economic returns should not always be the sole guiding objective – some conception of 'amenity value' should be incorporated into the equation.** There are many public investment projects and local infrastructure projects that may not meet the strict criterion of economic or financial return, or realistically contributing to wider economic regeneration within a regional economy, that still have amenity merit for a local community. As part of the levelling up, green and environment ambitions of the Government there may be projects that are worthwhile for reasons other than economic merit. It is a mistake solely to value investment in narrow economic terms. Public policy should have regard to other important values such as the aesthetic of public space, ensuring that housing and the built environment does not neglect beauty and amenity.

**Policy Exchange has given a lot of thought to these important wider matters of sensibility in terms of consideration of building beautiful, reviving the concept of garden cities and greening our streets and landscape with trees.** There has been a tendency over the last forty years in British public policy to concentrate on narrow economic merit, rather than the intrinsic merit of a course of action whether it has been the funding of education, science or the arts. Public policy should have the scope to recognise amenity and the non-economic benefits that an investment may offer, and should avoid knowing 'the price of everything and the value of nothing.' Modern public investment should be alert to intrinsic and wider merits of investment that go beyond a narrow economic calculus.

**One implication of this is the need to reconsider how we evaluate projects.** It is far from clear whether things like parks in urban areas – built during the Victorian era, so important to the quality of life of city dwellers – would today pass the Government assessment of value for money and appropriate use of public funds, given how valuable large swathes of land are in urban centres.

**This point about assessment bias goes further than this.** For example, while there is a consensus among policy makers and in the economic literature that smaller more local infrastructure projects yield the highest economic rates of return – a view shared by the authors – this consensus may reflect the relative ease of evaluation in relation to smaller projects.

28. *Ibid*

29. ONS, 'Average home to work travel time, age 16 years and over, UK, October to December 2018', 8 July 2019, https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/adhocs/010202averagehometoworktraveltimeage16yearsandoverukoctobertodecember2018

Proper evaluation involves holding other variables apart from the change in infrastructure investment constant and ex-post carrying out an assessment. Inevitably this may bias results in favour of smaller scale investment because there are fewer complicated factors that have to be held constant in the analysis and smaller local projects are completed relatively swiftly compared to large projects and their results are available for evaluation in a more timely manner. Moreover, the full impact of a major infrastructure investment may not be apparent for decades. Yet just because it is easier to measure the benefits of something compared to an alternative, does not mean a priori the alternative must always be dismissed.

### 2.3.3 Levelling up beyond capital investment

The more general task is to raise levels of economic output and wages in the northern and peripheral regions and especially in the three least productive regions, the North East, Wales and Northern Ireland. The problems of the lagging regions have a history going back to the interwar period. The staple 19th century industries which made these regions rich and populous began to decline after the first world war for technological and competition reasons. Coal, textiles and shipbuilding, the staples in these regions all lost competitiveness. A temporary revival during WW2 and its aftermath only delayed their final decline and disappearance. An intensive attempt was made tin the 1960s to persuade firms to relocate into these regions both from within the UK and from abroad at a peak cost of around £2 billion per annum (£24 billion in today's money). Estimates are that around 250,000 jobs were moved, including vehicle assembly and engine plants into Scotland, Merseyside, South Wales and Cumbria.

Some of these plants later failed (e.g. the Linwood car plant in Scotland) but most succeeded just as the Shorts aircraft factory (now Bombardier) succeeded in Belfast after moving there in 1942. Regional policy was eventually wound down in the late 1970s as mass unemployment spread to all regions and it became politically impossible and economically pointless to move jobs from one area of high unemployment to another. Regional incentives have continued to attract foreign direct investment into peripheral regions. Incentives have been increasingly constrained by EU state aid rules as the EU focussed its incentives on newer and poorer regions especially those in eastern Europe.

Leaving the EU may provide renewed flexibility for regional financial incentives, although as seen above there is little need to support living standards in most peripheral regions. Nor is high unemployment a significant issue in these regions. Former unemployment blackspots like Northern Ireland now have unemployment below the low UK average. Jobs creation in Northern Ireland has been a considerable success over several decades when it was the UK's fastest growing region. Even over the last two decades, centred on the banking crisis, job creation has matched the UK average. In part this reflects a continued success in attracting foreign direct investment, now mainly in services including legal services and cyber-security at an annual cost in grants and subsidies of under £200

million per annum. Companies are attracted by low wages (by UK or US standards) and the new jobs do little to raise average wages or productivity.

Infrastructure in roads, rail, ports, energy, water and telecommunications is relatively good in Northern Ireland and in Wales and Scotland although with problems in the heavily urban northern English regions. The problem in these regions has been a failure to replace the first-generation industrial revolution sectors with sufficient activities in high wage and high productivity sectors. At existing sterling exchange rates and even with corporation tax rates lower than the OECD average at 19%, these regions have no compelling competitive advantage. Some areas have succeeded for special reasons, Aberdeen in oil support for instance, and traditional successes like Scotch and Irish whisky, or high-quality borders knitwear but there are not enough of these. Scotland's independent financial and legal traditions have enabled high productivity services to succeed more than in other peripheral regions, but even here HQ's have migrated to London and elsewhere and former boom industries in Scottish banking required rescue from the UK Treasury.

Additional physical infrastructure is unlikely to change these fundamental weaknesses. Dramatic changes in access to UK markets through a bridge to Northern Ireland or HS rail to Scotland may provide some extra advantage, but in an internet age they will not be fundamental. Innovation and expertise will be much more important, along with competitive exchange and tax rates. Poor levels of enterprise (as measured by new firm formation) need to be addressed, especially in Scotland but policies attempting to do this have not generally worked. Improvements in education are likely to be much more important than new infrastructure.

Instead of (or perhaps as well as) increased investment in infrastructure an alternative proposal would be to use the Government's Freeports idea to introduce ultra-low rate of corporation tax in specific local areas. As with previous Enterprise Zone experiments, part of any economic gain to such areas will involve moves from the rest of the UK and to a significant extent from neighbouring local authorities but the experiment will be instructive. One warning is that although Irish experience teaches us that low corporation tax is a powerful attractor of FDI, even after decades of apparent success it is not obvious that the benefits of low profits tax have done much to raise Irish living standards. Professors Fitzgerald and Morgenroth estimate that Irish living standards are still below those of Northern Ireland even after 60 years of low profits tax in Ireland[30].

30. https://econpapers.repec.org/paper/tcdtcduee/tep0619.htm

**Box 2: Using Infrastructure to strengthen the Union and level up the Regions**

Enhanced infrastructure spending should be used to level up regional economies and to strengthen the Union as argued in Policy Exchange's 'Modernising the United Kingdom' report. This should include bolstering City Deals with places in devolved nations, deepening existing devolution agreements with mayoral combined authorities in England and agreeing new devolution agreements with local areas in England that have so far been overlooked. The report argued for enhanced local decision-making powers on transport infrastructure spending to improve connections within their area and achieving self-sustaining regional transport systems across the country over the next few decades.

This should include full local control of a new UK Government Modernising Transport Grant with greater devolution of relevant parts of the Department for Transport budget and local discretion to raise tax levies and charges to fund specific local infrastructure projects, for instance through supplements on Business Rates and Tourist Taxes – we recommend that the Government sets an ambition to aim for no project which costs less than £500m to be controlled by central Government.

Our case to devolve decision making to the local level would be a natural evolution from the present centralisation. When Boris Johnson was Mayor of London, his London Finance Commission put forward the case for modest fiscal devolution, aimed at enhancing economic growth, ensuring greater accountability, greater oversight of taxpayers funds and, as the 2013 London Finance Commission said, affording "London government greater autonomy to invest in the capital."[31]

There are many examples, in recent years, of investment plans under £500 million that are outlined in the annual Budget document given by the Chancellor, where it would be hard to argue that these decisions would not be better served at a local or regional level. An example would include these plans, for the West Midlands, outlined in the 2018 Budget:[32] "An additional £71.5m Transforming Cities Fund allocation to support transport projects in the West Midlands Combined Authority; Stoke-on-Trent shortlisted for share of £440m increase to the competitive allocation of the Transforming Cities Fund; £8.5m to support Coventry as the UK's City of Culture; £20m Future Mobility funding for the West Midlands."

Or, in the same Budget, the following plans for the North-East: "An additional £16.5m Transforming Cities Fund allocation to support transport projects in the Tees Valley Combined Authority; North East Combined Authority shortlisted for share of £440m increase to the competitive allocation of the Transforming Cities Fund, plans for a Special Economic Area for the South Tees Development Corporation and up to £14m to develop the site." All would, in our view, meet the criteria to be devolved locally.

Likewise, in terms of current projects, a host of desirable transport proposals, all for under £500 million is currently in progress or completed, are good examples of what should be or stay local: improvements to major roads in towns such as the £355m[33]works on A63 Castle Street in Hull, or building and maintaining cycleways and footpaths such as the £2.1m Saxton to Seamer improvements. Important yet local non-transport projects which provide a good example are, for example, the £214m offshore wind farm in Tees Valley.[34]

In the forthcoming Comprehensive Spending Review, the UK Government should create a UK Modernisation spending programme. This should replace current UK Government and European Union regional growth funds that are due to end in the next few years. The spending programme should include funding to deliver national projects that support economic development across the country as well as providing places with funding to stimulate prosperity in their areas, including:

a. A Modernising Transport Grant giving local areas freedom to decide how public money for transport investment is spent in their area.

b. Increased funding to deliver ultrafast broadband to all corners of the UK.

31. https://www.london.gov.uk/business-and-economy-publications/raising-capital
32. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/752202/Budget_2018_red_web.pdf
33. https://highwaysengland.co.uk/projects/a63-castle-street-improvement/
34. National Infrastructure and Procurement Pipeline Summer 2020, https://www.gov.uk/government/publications/national-infrastructure-and-construction-procurement-pipeline-202021

c. promote an effective and competitive UK-wide market in wholesale full-fibre networks Working directly with local authorities - where close government involvement in the rollout of full-fibre broadband is needed (for example, in the context of providing subsidies for hard to reach areas) the UK government should work directly with local authorities.

d. Create a single Electric Vehicle delivery body to sit across Whitehall departments, devolved administrations, industry bodies, National Grid and DNOs to create an interoperable ultra-fast charging network throughout the UK, especially outside the larger cities.

The UK Government should consider how it can support the building of cultural institutions in places which currently have poor access to culture. This could include building new parts of existing institutions, like the V&A Museum of Design has recently been built in Dundee, or building entirely new institutions. In Northern Ireland, for example, the UK Government could support the establishment of a new institution while Northern Ireland could facilitate the UK touring of exhibitions with themes ranging from the Titanic to Game of Thrones.

## 2.4 Conclusions

This chapter argued that investment in UK infrastructure, including government capital, has been rising and is relatively high by historic standards. Nor is the UK obviously deficient in infrastructure compared to similar countries, although the government may supply or own less of this infrastructure than elsewhere. Even so, international surveys do not rank the UK highly in infrastructure standards and it is clear that investment has not fully kept up with demand in roads or railways. Energy security is also compromised by the imperatives of carbon reduction with green replacements in nuclear energy and offshore wind being relatively expensive.

There is evidence that investment in infrastructure can raise productivity, but the evidence is mixed and much depends on exactly what infrastructure is constructed. Bridges to nowhere may be features of Japan but UK has in the past also built infrastructure of doubtful value like the Humber bridge for example. There is current view that infrastructure can help to balance the regional dimension of the UK economy, but we take the view that although helpful this will fall well short of being a decisive influence.

We now turn to look at the UK's record in infrastructure in more detail. This starts with the question of how efficient are the costs of developing that infrastructure and goes on to examine the nature of the current infrastructure strategy.

# Chapter 3 - Infrastructure Spending in the UK

Having discussed how much the UK spends on infrastructure and why capital spending is important, it is time to dive more deeply into the specifics of what infrastructure actually is, how much the UK spends on the different components of infrastructure spending, what are the policy frameworks governing the process and, most importantly, what are the current Government's specific infrastructure priorities. Since those priorities were largely set prior to the Covid-19 pandemic, the paper goes on to discuss how the changing economic environment might affect the Government's infrastructure agenda. In particular, it outlines some examples of relatively quick to build 'shovel-ready' projects, some policy issues around a more effective rollout of types of infrastructure which gained in importance since Covid-19 such as digital, and how the Government should consider a new programme of health-related infrastructure – such as parks and cycling routes – which in addition to being quick, relatively cheap and labour-intensive, could also be viewed as mechanisms for healthcare demand management.

## 3.1 Managing Infrastructure Projects Effectively

A key factor which can decide whether a given infrastructure project lives up to its promised potential is its construction time and cost. The contribution that roads, railways, wind farms, nuclear power plants and telecoms infrastructure make to the economy must be assessed against the cost of building them.

A detailed consideration of why infrastructure projects overrun and general issues with their management is beyond the scope of this paper. However, some of the most common explanation will be surveyed here. The Iron Law of Megaprojects, according to Bent Flyvbjerg – one of the most influential experts in the area is: *over budget, over time, over and over again.*[35]

### 3.1.1 Case study: Transport

In a study encompassing 258 transport infrastructure projects in 20 nations worth approximately $90bn in 1995 prices – which at that time was the largest study of its kind – Flyvbjerg *et al* found that 'substantial cost escalation is a rule rather than exception.'[36] The research has found that for rail, average cost escalation is 45 per cent, 34 per cent for tunnels and bridges, and 20 per cent for roads.[37]

35. Flyvbjerg, B, 'Megaprojects: over budget, over time, over and over' (2017) *Cato Policy Report*, XXXIX(1) available at https://www.cato.org/policy-report/januaryfebruary-2017
36. Flyvbjerg, B, Skarmis Holm, MK, Buhl, SL, 'How common and how large are cost overruns in transport infrastructure projects?' (2003) *Transport Reviews* 23(1) 71-88, available at https://www.tandfonline.com/doi/abs/10.1080/01441640309904
37. *Ibid*, 80

### Table 3.1 Cost Over-Runs in Large Infrastructure Projects

| Type of project | Number of cases (*n*) | Average cost escalation (%) | Standard Deviation | Level of significance, *p* |
|---|---|---|---|---|
| Rail | 58 | 44.7 | 38.4 | <0.001 |
| Bridges and tunnels | 33 | 33.8 | 62.4 | 0.004 |
| Road | 167 | 20.4 | 29.9 | <0.001 |
| All projects | 258 | 27.6 | 38.7 | <0.001 |

***Source: Flyvbjerg et al, 2003***

A year later, using the same data, the same researchers produced an analysis of the causes behind the overruns.[38] They cite three sets of findings, two of which are relevant: first, cost escalation was highly dependent on the length of the implementation phase, suggesting delays and long implementation phases tend to lead to or exacerbate cost overruns.[39] Analysis of a selected subset of their data shows that 'for every passing year from the decision to build a project until construction ends and operations begin, we must expect the project to incur an average increase in cost escalation of 4.6 per cent.'[40] The authors therefore recommend that prior preparation, planning, authorisation and evaluation of the project which may reduce the risk of unforeseen problems stalling it are key to not just avoiding delays but also cost overruns, because the former are a key cause of the latter.[41]

*Second*, attempting to answer the question of whether public projects perform better than private ones, they find that of the projects included in their data set, average cost increase for state-owned enterprises was 110 per cent, compared to 34 per cent for privately-owned projects.[42] Interestingly, for the third category of 'other public ownership' (i.e. conventional public ownership where a government department owns it and holds it on their balance sheet) average increase was 23 per cent.[43]

The researchers conclude that the issue of the public/private divide is therefore not clear cut, and suggest that the issue may be that state-owned enterprises – which lack both transparency and control of the public sector *and* the competitive pressure of the private sector.[44] This is a phenomenon labelled elsewhere in the literature as a project falling 'between two stools' and having the worst of both worlds.[45] The clear policy suggestion is therefore to avoid state-owned enterprises as a model of delivery.

## 3.2 What Are the Government's Plans for Infrastructure?

The Conservative Government has promised an 'Infrastructure Revolution.' In a speech on the economy in Manchester on 7 November Sajid Javid pledged to increase capital spending from 2 per cent of national income to 3 per cent.[46] In the March 2020 budget this pledge is fleshed out in terms of costs but for the detail of what will be built the manifesto remains the

38. Flyvbjerg, B, Skarmis Holm, MK, Buhl, SL, 'What causes cost overrun in transport infrastructure projects?' (2004) *Transport Reviews* 24(1) 3-18, available at https://www.tandfonline.com/doi/abs/10.1080/0144164032000080494a
39. *Ibid*, 4
40. *Ibid*, 5
41. *Ibid*, 16
42. *Ibid*, 14
43. *Ibid*, 14
44. *Ibid*, 17
45. Flyvbjerg, B, Bruzelius, N, Rothengatter, W (2003) *Megaprojects and Risk: An Anatomy of Ambition* (Cambridge: CUP)
46. Giles C and Stubbington T, 'Will Jeremy Corbyn's spending plans trigger a crisis for the UK economy?', *Financial Times*, 15 November 2019, https://www.ft.com/content/49d73a86-0622-11ea-9afa-d9e2401fa7ca

best guide until a new Infrastructure plan is published in the Spring.

On infrastructure in particular, there are different definitions of infrastructure spending. The UK Government has used a definition of economic infrastructure that comprises largely spending and roads. In its plans it was proposing before the March Budget to spend 1.2 per cent of national income on that economic definition but the National Infrastructure Commission economic estimates that in practice it tends to only spend 0.93 per cent of national income on capital investment in road and rail infrastructure each year. Following the March Budget, it appears that the Government is proposing to spend a further 0.3 per cent of GDP on infrastructure investment that would take the planned objective to 1.5 per cent of GDP. It is not clear whether this additional expenditure is planned to be confined to the narrow economic definition of investment in road and rail or whether the increased ratio is intended to cover other aspects of infrastructure and investment such as hospital building and flood defences. What is clearer is that aggregate spending on government capital (gross fixed capital spending and departmental capital spending) are set to rise. The OBR's March 2020 forecast has capital DEL rising from 2.7% of GDP in 2018/19 to 3.6% in 2024/25, with 0.6% of GDP added in the March 2020 budget.

### 3.2.1 Budget 2020

**Building on the 2019 general election manifesto commitments, the Government has outlined in more detail a £100bn programme of additional capital investment across transport, digital connectivity, flooding and water, housing, skills, science and green investment.** In total, the Budget commits to an increase of total government spending on capital to £600bn by the end of Parliament, or an average of 3.4 per cent of GDP over the next five years, which would amount to doubling of investment spending on the average level seen in the past 40 years.[47] The table below provides a breakdown of capital spending commitments

47. Institute for Fiscal Studies, 'Initial Budget reaction', 12 March 2020, https://www.ifs.org.uk/budget-2020

| Category | Item | Funding |
|---|---|---|
| ***Transport*** | Second Road Investment Strategy (RIS2) | £27bn |
| | Midlands Rail Hub (manifesto commitment) | £20m |
| | Allocations from the Transforming Cities Fund | £1bn across allocations, £800m earmarked for bus connectivity and cycling |
| | Infrastructure allocations to Combined Mayoralties | £4.2bn |
| | Additional funding for bus and cycling connectivity (previously announced in February) | £5bn |
| | Potholes Fund | £500m |
| ***Digital*** | Funding for gigabit-capable broadband in hard to reach areas | £5bn |
| | Local Full Fibre Networks Challenge Fund allocations | £40.8m allocated out of £1bn available |
| | Shared Rural Network Agreement | £510m equally matched by the private sector |
| ***Flooding & Water*** | Additional funding for flood defences | £2.6bn |
| | Hardship fund for victims of winter 2019-20 flooding | £120m |
| | Place-based flooding resilience programme | £200m |
| | Investment in Environment Agency's water supply and water navigation assets | £39m |
| ***Housing*** | Affordable Homes Programme | £12.2bn |
| | Funding for Combined Authorities to build housing on brownfield sites | £400m |
| | Allocations from Housing Infrastructure Funds | n/a |
| ***Skills*** | Capital investment programme in the FE sector | £1.5bn |
| | National Skills Fund | £2.5bn |
| | West Yorkshire Devolution Deal | £1.1bn over 30 years (approx 300m every 5 years) |
| ***Science*** | Increase in funding for public R&D investment | 22bn every year by 2024-2025 |
| ***Green investment*** | Carbon Capture and Storage Infrastructure Fund (manifesto commitment) | £400 |
| | Additional funding for Heat Networks Investment Projects | £270m |
| | Rollout of Electric Vehicle (EV) charging infrastructure | £500m |

***Source: HM Treasury***

### 3.2.2 Conservative Manifesto

The party's manifesto costings document, included an intention to spend an additional £100 billion on infrastructure over the five year period 2020-25, including Northern Powerhouse Rail, the Midlands Rail Hub, local roads, buses, trains and supporting rollout of gigabit capable broadband to every home.[48] This Includes £22 billion over this period In excess of previous plans. More specifically, in the context of transport, the 2019 Conservative manifesto commits the Government to the following items of spending additional to previous plans:[49]

- **Northern Powerhouse Rail** between Leeds and Manchester, with extension to Liverpool, Tees Valley, Hull, Sheffield and Newcastle.
- **Midlands Rail Hub** to strengthen the links between Birmingham, Leicester, Nottingham, Coventry, Derby, Hereford and Worcester.
- **South West and East Anglia** rail improvement programme, as yet without further detail.
- **Extending contactless pay-as-you-go system further in the South East,** with a specific ambition of around 50 per cent of all train journeys in the South East and 'almost all' commuter journeys in London able to be paid for using a contactless bank card.
- **Enabling city regions to carry out their own transport improvements with dedicated funds from central government,** citing the example of the plan proposed by Andy Street, Conservative West Midlands Metro Mayor.
- **Abolishing the current railway franchising system,** replacing it with a simpler system with a degree of control from metro mayors.
- **Investing £28.8 billion in 'strategic and local roads', as well as £1bn in 'completing the fast-charging network',** with a specific pledge that everyone is within 30 miles of a rapid electric vehicle (EV) charging station.
- **Considering the findings of the Oakervee review into High Speed 2 (HS2)** and working with metro mayors to find the best way forward. This is potentially very significant, as for the first time the Government has signalled that the HS2 project may not have full and unconditional government backing.
- **Restore many of the 'Beeching' lines** – railway connections which were decommissioned in the 1960s following a review by Dr Richard Beeching, who was tasked with rationalising and amalgamating Britain's expansive railway network which was struggling to compete with the road network as a mode of transport and had a number of lines which were proving uneconomic after the 19th century 'Railway Mania.'
- **Invest in 'superbus' networks** with lower fares, more frequent services and upgraded vehicles including electric buses, with a specific pledge for an all-electric-bus town.
- **'Biggest-ever pothole-filling programme** as part of broader investment in roads

48. Conservative Party Manifesto Costings Document, 24 November 2019, https://assets-global.website-files.com/5da42e2cae7ebd3f8bde353c/5ddaa257967a3b50273283c4_Conservative%202019%20Costings.pdf
49. Conservative Party Manifesto 2019, p27-28, https://vote.conservatives.com/our-plan

- £350m Cycling Infrastructure Fund for new commuter cycling routes and a set of new design standards.
- **Full fibre and gigabit-capable broadband to every home and business across the UK by 2025,** with £5 billion of public funding for areas most difficult to reach.

The table below sets out the precise costings associated with pledges above.[50] A holistic view of the figures shows that the total additional capital spending on transport of £4.8bn on transport, and £6bn on environmental and greening policies.[51]

## Table 3.3 Government Spending Plans

| £ million | 2020-21 | 2021-22 | 2022-23 | 2023-24 | Total over 4 years |
|---|---|---|---|---|---|
| Transport: reversing Beeching fund | 500 | 0 | 0 | 0 | 500 |
| NHS: car parking | 257 | 0 | 0 | 0 | 257 |
| Transport: cycling | 70 | 70 | 70 | 70 | 280 |
| Community sentencing | 3 | 0 | 0 | 0 | 3 |
| Further education: upgrade estate | 0 | 194 | 241 | 348 | 783 |
| Potholes Fund | 500 | 500 | 500 | 500 | 2,000 |
| Social Housing Decarbonisation Fund | 0 | 60 | 240 | 410 | 710 |
| Homes Upgrade Grants | 150 | 260 | 370 | 590 | 1,370 |
| Public Sector Decarbonisation Scheme | 170 | 640 | 660 | 690 | 2,160 |
| CCS Infrastructure Fund | 0 | 0 | 100 | 300 | 400 |
| Nature for Climate Fund | 60 | 110 | 150 | 160 | 480 |
| Intra-city transport settlements | 0 | 0 | 840 | 840 | 1,680 |
| Industrial Energy Transformation Fund | 30 | 30 | 70 | 90 | 220 |
| Electric Vehicle Infrastructure | 70 | 110 | 110 | 110 | 400 |
| Flexible Childcare Fund | 0 | 250 | 0 | 0 | 250 |
| R&D | 800 | 1,300 | 2,000 | 3,200 | 7,300 |
| New Flood Defence Programme | 680 | 790 | 810 | 840 | 3,120 |
| TOTAL | 3290 | 4314 | 6161 | 8148 | 21,913 |

*Source: Conservative Manifesto, 2019*

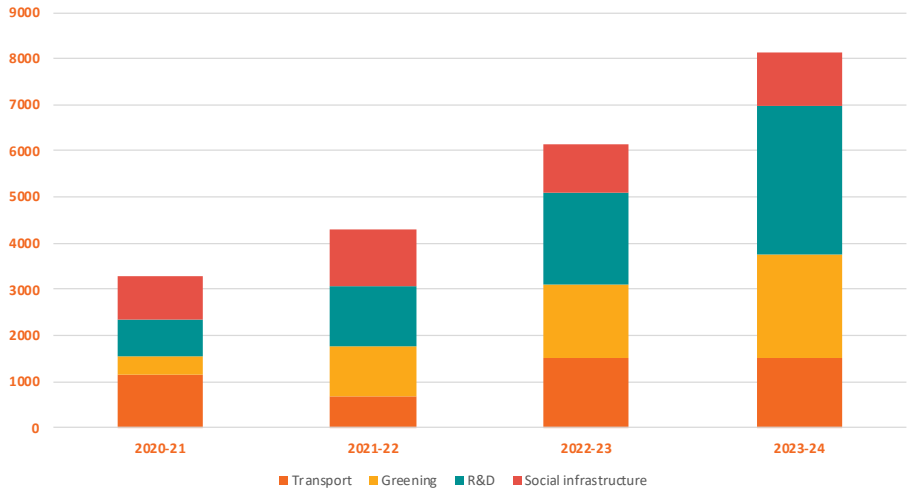
Looking at the pledges holistically, several trends stand out, in particular the prominence of R&D-spending increase which accounts for one-third of the total. This should be read as a clear signal that the Government is serious about meeting its pledge of spending 2.4 per cent of GDP on R&D

50. *Supra* note 9
51. The distinction between transport and environmental policies includes double-counting of Electric Vehicle Infrastructure and spending on transport: cycling, which combined carry a cost of £680m.

across the economy. In total, a £7.3bn increase over a four-year period has been promised on top of existing commitments, with the annual amount increasing every year – gradually from £800m in 2020-21 to £3.2bn in 2023-24. To put this in context, government expenditure on R&D (excluding higher education but including research councils) in 2017 (latest available) was £2.2bn and experiencing growth of around 1% from 2016.[52] Assuming that level of growth as base, the pledged increases in R&D spending would represent an overall increase of 36, 59, 91 and 145 per cent in government R&D spending, assuming the £2.2bn figure would remain constant. Compared with hitherto increases of the order of 1 per cent, this is very significant.

The pledged transport capital spending totals to 4.8bn over four years across various transport-related expenditure items and would come on top of existing transport capital spend. In 2018-19, this was £32.6bn across central government, local government and public corporations, meaning an increase of 14.7 per cent.[53] It is notable that the 'Reversing Beeching' fund contains only £500m for the four-year period, suggesting that the government is yet to make any decisions about which lines to prioritise, given re-opening even a single line is likely to cost much more than that.

### Chart 3.1 Capital Spending commitments 2019 Manifesto




*Source: 2019 Conservative Manifesto Costings Document*

The above figures are of course all plans. What is likely to emerge in practice will inevitably be rather less than planned. The additional £100 billion of capital spending promised in the Conservative's 2019 manifesto is in current prices and represents an increase over previous plans. OBR estimates of inflation over this period suggest that the actual volume of spending over the five years of the current government's programme would be around two-thirds of this amount. In addition, capital spending plans are always over-optimistic, and the OBR estimate an underspend of close to 8% though much of the period. As a result, the OBR projects an increase of £67 billion over the five-year parliament in current prices

52. ONS, Gross domestic expenditure on research and development, UK: 2017, https://www.ons.gov.uk/economy/governmentpublicsectorandtaxes/researchanddevelopmentexpenditure/bulletins/ukgrossdomesticexpenditureonresearchanddevelopment/2017
53. ONS, 'Public Expenditure Statistical Analyses (PESA) 2019', Table 4.2, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/818399/CCS001_CCS0719570952-001_PESA_ACCESSIBLE.pdf

above the level of spending in 2019/20. The increase in volume terms can be estimated at £42 billion over 5 years. This is still a large increase in capital spending even since the 2019 budget, and the OBR estimate that it will lift government infrastructure spending up to the OECD average by the end of the period. In recent years economic infrastructure within the remit of the national Infrastructure Commission accounts for under half of this total but we expect this proportion to rise during the planning period.

## 3.3 Current Expenditure on Infrastructure Investment

### 3.3.1 The departmental capital budgets: state of departmental Capital DEL plans

The main mode of government investment spending in the UK – on new schools, hospitals or roads – is through the relevant department's capital budget. Known as 'Capital Departmental Expenditure Limit' – or Capital DEL – this is a given department's budget which is completely under its control, i.e. is not 'demand' driven such as expenditure on welfare, pensions or debt interest payments. It should also be distinguished from 'Current DEL' – non-demand driven departmental spending on 'day-to-day' things such as payroll rather than assets such as buildings.

| | 'Resource' or 'current' spending on things like payroll | 'Capital' or 'investment' spending on things like buildings |
|---|---|---|
| 'Departmental Expenditure Limit' (DEL) denoting predictable spending under total control of the department | RDEL | CDEL |
| 'Annually Managed Expenditure' denoting DEL plus unpredictable 'demand-driven' spending on things like interest payments or pensions | RAME | CAME |

***Source: HM Treasury***[54]

DELs are set every few years at government 'Spending Rounds' – there is a separate spending round for current and capital expenditure. The most recent spending round, which took place 4 September 2019, related solely current or 'resource' expenditure though did contain some commitments on additional commitments on healthcare, policing and prisons.[55] It also made clear that 'Later in the autumn, the government will announce its ambitious plans for future capital spending, including through the publication of the National Infrastructure Strategy.'[56] This timetable, however, should be considered as no longer valid due to the unexpected timing of the general election.

The most recent round of departmental capital budgets is still the 2015 Spending Round, which has set capital DELs until 2020/21.[57] The table below gives a breakdown by central government department:

54. HM Treasury, 'How to understand public sector spending', 29 May 2013, https://www.gov.uk/government/publications/how-to-understand-public-sector-spending/how-to-understand-public-sector-spending
55. HM Treasury, 'Spending Round 2019', September 2019, para 1.6, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/829181/Spending_Round_2019_print.pdf
56. *Ibid*
57. HM Treasury, 'Spending Review and Autumn Statement 2015', November 2015, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/479749/52229_Blue_Book_PU1865_Web_Accessible.pdf

## Table 3.4 Capital Budgets in the Current Spending Round

| | £ billion | | | | | |
|---|---|---|---|---|---|---|
| **Capital DEL** | **2015-16** | **2016-17** | **2017-18** | **2018-19** | **2019-2020** | **2020-21** |
| Defence | 7.1 | 7.3 | 7.5 | 7.8 | 10.5 | 10.6 |
| Single Intelligence Account | 0.4 | 0.4 | 0.4 | 0.4 | 0.6 | 0.8 |
| Home Office | 0.4 | 0.5 | 0.5 | 0.4 | 0.7 | 0.8 |
| Foreign and Commonwealth Office | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| International Development | 2.6 | 2.7 | 3.2 | 2.8 | 2.0 | 4.8 |
| Health (incl. NHS) | 4.8 | 4.8 | 4.8 | 4.8 | 7.1 | 8.2 |
| Work and Pensions | 0.2 | 0.3 | 0.4 | 0.3 | 0.1 | 0.2 |
| Education | 4.6 | 5.2 | 4.6 | 4.4 | 4.6 | 4.5 |
| BIS / BEIS | 3.8 | 3.1 | 2.2 | 1.7 | 11.2 | 12.3 |
| *Of which financial transactions in CDEL* | 1.6 | 1 | 0.4 | 0 | 0 | 0 |
| Transport | 6.1 | 6.3 | 7.6 | 8.9 | 14.6 | 17.6 |
| Energy and Climate Change | 2.3 | 2.4 | 2.5 | 2.4 | n/a | n/a |
| CMS / DCMS | 0.4 | 0.4 | 0.4 | 0.4 | 0.6 | 0.6 |
| DCLG / MHCLG Housing and Communities | 3.1 | 4 | 3.7 | 4 | 8.4 | 13.1 |
| Scotland | 3 | 3.2 | 3.2 | 3.2 | 4.4 | 5.5 |
| Wales | 1.5 | 1.5 | 1.5 | 1.6 | 2.3 | 2.4 |
| Northern Ireland | 1.1 | 1.1 | 1.1 | 1.2 | 1.4 | 1.7 |
| Justice | 0.4 | 0.7 | 0.7 | 0.7 | 0.5 | 0.7 |
| Law Officers' Department | 0 | 0 | 0 | 0 | 0 | 0 |
| Environment, Food and Rural Affairs | 0.5 | 0.6 | 0.6 | 0.6 | 0.8 | 0.9 |
| HMRC | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.4 |
| HM Treasury | 0 | 0.1 | 0.1 | 0.1 | 0.1 | 0 |
| Cabinet Office | 0 | 0 | 0 | 0 | 0.1 | 0.1 |
| Small and Independent Bodies | 0.1 | 0.1 | 0.1 | 0.1 | 0.4 | 0.5 |
| Reserves | 1 | 1.1 | 1.3 | 1.3 | 0 | 3.4 |
| Capital spending not yet in budgets | – | – | – | – | n/a | n/a |
| Adjustment for non-baselined funding | 0.3 | – | – | – | n/a | n/a |

***Source: HM Treasury Spending Round 2015[58], HM Treasury Budget 2020***

*58. Ibid*, p77

As part of Spending Round 2019, the Government has confirmed that it will be setting out its capital investment projects in more detail later on in the full Spending Review in 2020. This is when we can expect these budgets to be updated beyond 2020-21.

### 3.3.1 National Infrastructure and Construction Pipeline

The National Infrastructure and Construction Pipeline (NICP) is the most complete documentation of current and future public infrastructure and construction projects compiled by the government. The latest publication[59] – from 2018 – includes:

- **700** 'planned projects, programmes and other investments in the pipeline'
- £600bn of projected both 'private and public investment over the next 10 years'
- £400bn of 'planned projects, programmes and other investments in the pipeline'
- Of which £190bn 'to be invested by 2020-21

The table below gives a breakdown of annual pipeline investment by sector over the period of the pipeline. Transport, energy and utilities regularly make up the largest share of the budget – unsurprising given capital-intensity of these sectors. It is striking how little is spent on digital infrastructure relative to others, given its importance and similar levels of capital intensity.

### Table 3.5 Annual Pipeline Investment by Sector (£bn)

| Sector | 2018/19 | 2019/20 | 2020/21 | Total 2017/18 to 2020/21 |
|---|---|---|---|---|
| Transport | £18.4 | £19.8 | £16.7 | £54.9 |
| Energy | £15.5 | £17.8 | £18.4 | £51.7 |
| Utilities | £11.7 | £15.0 | £8.7 | £35.4 |
| Digital Infrastructure | £2.9 | £2.8 | £1.2 | £6.8 |
| Science and Research | £1.2 | £1.5 | £1.2 | £3.9 |
| Flood and Coastal Erosion | £0.6 | £0.6 | £0.7 | £1.9 |
| Social Infrastructure[60] | £12.4 | £11.2 | £9.9 | £33.5 |
| **Total** | £62.8 | £68.7 | £56.7 | £188.2 |

*Source: National Infrastructure and Construction Pipeline 2018*[61]

The 2018 NICP also provides an estimate of infrastructure and construction spending beyond 2020-21, for a 10-year period between 2017-18 and 2027-28. It should be noted that these are only projections,

59. Infrastructure and Projects Authority, 'Analysis of the National Infrastructure and Construction Pipeline', 26 November 2018, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759222/CCS207_CCS1118987248-001_National_Infrastructure_and_Construction_Pipeline_2018_Accessible.pdf

61. *Ibid*, p12

60. Social infrastructure includes Defence, Justice and Security, Education, Healthcare, and Housing and Regeneration. This is in contrast to economic infrastructure, which includes Transport, Energy, Utilities, Digital Infrastructure, Science and Research, and Floods and Coastal Erosion.

which are likely to underestimate the actual outturn, since the estimate is based on the progress of old announcements, and it is already clear that infrastructure is a key priority for this government and a number of new projects have already been announced. The estimate is prepared on the basis of current spending trajectories to 2027-28 as well as 'forecasts from economic regulators and projections within the National Infrastructure Commission's fiscal remit of economic investment in infrastructure.'[62] The table below shows a breakdown by sector of estimated expenditure:

### Table 3.6 Estimated Expenditure 2021-27

| Sector | Total |
|---|---|
| Regulated utilities | £92bn |
| Economic infrastructure (public) | £220bn |
| Private investment all sectors | £186bn |
| Social infrastructure (public) | £111bn |

*Source: National Infrastructure and Construction Pipeline 2018*[63]

The NCIP also provides a breakdown of the pipeline spending by geographical region. The figures show the largest commitment to be in the South West, followed by the North East and London. It is striking that in those top two regions, private sector funding makes up the bulk of the spending, but in London – third highest – it is public spending that makes up the lions' share, though the difference is smaller. Indeed, the size of the difference between public and private sector finding in the South West and the North East is striking.

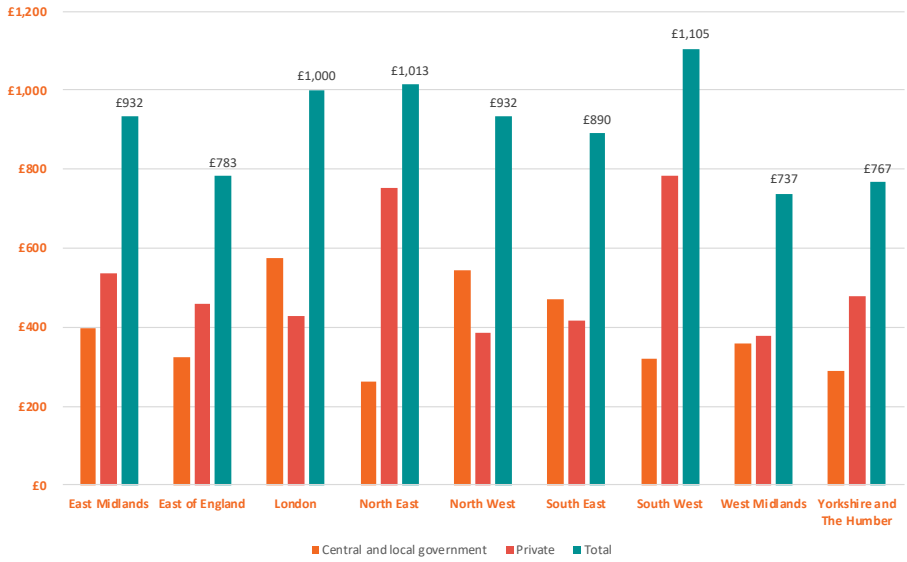
### Table 3.7 Pipeline Spending by Region (£, 2018-19 – 2020-21)

| Region | Central and local government | Private | Total |
|---|---|---|---|
| South West | £321 | £784 | £1,105 |
| North East | £262 | £751 | £1,013 |
| London | £573 | £428 | £1,000 |
| East Midlands | £397 | £536 | £932 |
| North West | £545 | £387 | £932 |
| South East | £472 | £417 | £890 |
| East of England | £324 | £460 | £783 |
| Yorkshire and The Humber | £289 | £478 | £767 |
| West Midlands | £360 | £377 | £737 |

*Source: National Infrastructure and Construction Pipeline*[64]

62. *Ibid*, p16
63. *Ibid*, p16
64. *Ibid*, p17

## Chart 3.2 Regional Investment by Sector (£ per head)




## 3.4 National Infrastructure Assessment

The National Infrastructure Assessment (NIA) is a report produced by the National Infrastructure Commission (NIC) once every Parliament. It sets out long-term infrastructure needs of the country with a set of recommendations on how to deliver them. The NIC is an independent executive agency within HM Treasury, with a remit to provide the Government with an impartial, rigorous assessment of long-term infrastructure needs and recommendations for delivery, and can keep the Government to account for delivery of those recommendations which the Government chose to accept in their response to the NIA.[65]

Founded in 2015 under George Osborne, its formation can be viewed as recognition that a major part of the problem surrounding UK infrastructure is political short-termism. It is easy to see how problems might arise. Big infrastructure projects have very high upfront costs – at least in political terms as far as fiscal targets are concerned – but take twenty or more years to be built and even longer for the benefits to be realised. In addition, their benefits are frequently concentrated in one area, yet drawback in another – e.g. benefits of a railway line are located at its either ends, yet it imposes costs geographically elsewhere, namely between them, in the form of environmental damage and even destruction of people's homes. It therefore suffers from adverse short-term incentives anchored both in time preference and geography. Yet final decisions about public infrastructure and investment are taken by MPs – a group of people subject to both of these adverse incentives, in the form of five-year Parliaments and representing specific geographic areas. Creation of an independent, fixed-tenure commission is an attempt to take the politics out of the question – to provide political cover for unpopular

65. HM Treasury, 'National Infrastructure Commission framework document', January 2017, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/585374/NIC_framework_document_web.pdf

infrastructure spending decisions.

The latest NIA contains 45 recommendations, summarised into the following objectives and deadlines for the UK's infrastructure priorities:[66]

1. Nationwide full fibre broadband by 2033
2. Half of the UK's power provided by renewables by 2030
3. Three quarters of plastic packaging recycled by 2030
4. £43 billion of stable long term transport funding for regional cities
5. Preparing for 100 per cent electric vehicle sales by 2030
6. Ensuring resilience to extreme drought
7. A national standard of flood resilience for all communities by 2050.

The Government is due to make a statement on how it intends to implement the recommendations of the NIA in its revised National Infrastructure Strategy (NIS). The Government has accepted 42 out of the 45 recommendations made by the NIA, so it is reasonable to expect the NIS to follow the NIA closely.[67] For now, it is worth considering how the priorities outlined by the NIA correspond to the specific manifesto commitments made by the current government. The areas in which there is clear overlap are primarily digital infrastructure, green transport, and flood resilience:

66. National Infrastructure Commission, 'National Infrastructure Assessment', July 2018, https://www.nic.org.uk/wp-content/uploads/CCS001_CCS0618917350-001_NIC-NIA_Accessible.pdf
67. Armitt, J, 'Speech to the All-Party Parliamentary Group on Infrastructure', 12 February 2020, https://www.nic.org.uk/news/sir-john-armitt-speech-to-appg-on-infrastructure/

## Table 3.8: How do NIA high-level objectives compare with the Conservative manifesto?

| NIA Objective | Deadline | Conservative manifesto commitment | Deadline |
|---|---|---|---|
| Nationwide full-fibre broadband | 2033 | **Full fibre and gigabit-capable broadband to every home and business across the UK,** with £5 billion of public funding for areas most difficult to reach. | 2025 |
| 50 per cent of the UK's power provided by renewables | 2030 | **Net zero carbon emissions by 2050,** a target which so far does not have specific commitments linked to it aside from general greening measures, but will likely require significantly exceeding this NIA objective. | 2050 |
| 75 per cent of plastic packaging recycled by 2030 | 2030 | **A new levy to increase the proportion of recyclable plastics in packaging,** in addition to extended producer responsibility for the cost of waste processing associated with their choice of packaging. | Not stated |
| £43 billion of stable long term transport funding for regional cities | N/A | **The manifesto promises which can be seen as working towards that goal include** Northern Powerhouse Rail, Midlands Rail Hub, funding for city regions to expand their own transport networks, a £28.8bn investment in strategic and local roads, and £500m investment in reversing the Beeching cuts to rail links. | Various |
| Preparing for 100 per cent electric vehicle sales | 2030 | £1bn investment in a fast-charging network, with a specific commitment to have everyone within 30 miles of a rapid electric vehicle charging point, over six years. There is also a commitment to phase out conventional petrol and diesel vehicles completely by a subsequently specified target of 2035. | 2026 |
| Ensuring resilience to extreme drought<br><br>A national standard of flood resilience for all communities | 2050 | £4bn in new funding on flood defences has been pledged as part of the overall £100bn infrastructure investment programme, however, there is as yet no mention of setting a new national flood resilience standard. | N/A |

*Source: Conservative Manifesto 2019, Conservative Manifesto Costings Document, National Infrastructure Assessment*

### How do NIC recommendations made in the NIC relate to the '£100bn Infrastructure Revolution' commitment?

The NIC has been charged with making recommendations on capital spending in specific areas within its sector remit - transport, energy, flood risk alleviation, digital communications, water, and waste sectors – and a fiscal remit of between 1 and 1.2 per cent of GDP of Gross Public Investment in infrastructure. The March Budget of 2020 makes it clear that infrastructure commitments made in the National Infrastructure Strategy (Government's implementing plan of the NIA) are to be understood as within their '£100bn over 5 years' spending envelope, as are the priorities outlined within the 2019 Conservative Manifesto, which – as in the case of items outlined in the table above – already overlap with the recommendations set out in the NIA. It is important to note, however, that in the end there are no hard and fast rules and that the final decision about spending allocations lies with the Government – as the NIC Remit Letter makes clear: "The [NIC] fiscal remit is a planning guideline, and not a commitment by government. Future investment decisions will ultimately be made by the Chancellor through fiscal event processes." Investment within the scope of the NIC is around half of government fixed capital formation. Other investment includes defence, intellectual property and procurement costs.

## 3.5 Conclusions and Recommendations : Changing infrastructure priorities after Covid-19

### 3.5.1 Opportunity of spare capacity and the advantage that the public sector currently has as the only customer in a buyer's market

The social and economic consequences of the shock presented by the Covid-19 virus provide both opportunities and challenges for an ambitious public investment programme. The immediate challenge is to attempt to identify projects that can be embarked upon – and ideally completed – swiftly. The huge loss of demand in the economy combined with high unemployment and idle resources requires a swift policy response, and therefore only projects which can reach their most labour-intensive stage (the building) quickly are most appropriate for a recovery package.

This is a challenge because much infrastructure investment and public investment as a whole takes time and planning. At any time, there are relatively few 'shovel ready' projects, though there should be opportunities to embark on the early planning of long-term projects which in many respects is often a huge undertaking in itself involving complex multidisciplinary teams. Moreover, many specialists involved in those less labour-intensive early stages of projects may themselves face redundancy as private sector activity contracts as a result of Covid-19. Additionally, there will also be opportunities for the public sector in commissioning and contracting work in investment.

In the absence of competition from the private sector, the crisis will present what is in effect a buyers' market for a public sector with the

ambition to use the financial opportunities that it has from low interest rates to buy up spare capacity as the private sector contracts. As well as offering an opportunity to make progress on an ambitious public infrastructure and investment. In many respects the adverse economic shock will make resources available for investment in infrastructure precisely because of the financial and business casualties arising from the contracting sectors such as hospitality and travel. In a period when the economy is operating at close to full capacity with very high levels of employment and little unemployment an ambitious public investment programme predicated upon the ease of finance and low cost of government debt would still encounter the constraints of scarce resources, skills and awkward opportunity costs even though finance was not a constraint.

### Hydrogen Infrastructure

Hydrogen has a potentially key role in supporting the UK's growing low-carbon economy, as analysed in Policy Exchange's 2018 report, *Fuelling the Future*. In a low-carbon economy, hydrogen could support:

- **Decarbonised transport**, particularly buses, coaches, and Heavy Goods Vehicles (HGVs).
- **Decarbonised industry**, for example to produce heat or as a feedstock.
- **Decarbonised domestic heating**, including by existing natural gas networks.
- **A low-carbon electricity system**, with a high proportion of wind and solar generation.

Low-carbon hydrogen is classed as "Green" or "Blue" depending on its production method:

1. **Green hydrogen (Electrolysis):** Using electricity to convert water into hydrogen.
2. **Blue hydrogen (Natural Gas and Carbon Capture and Storage):** Reforming natural gas to produce hydrogen and carbon dioxide. The carbon dioxide is captured and either used or stored underground.

In 2018, Policy Exchange made specific policy recommendations for low carbon hydrogen. Many of these remain appropriate today, including:

- **Enabling innovative hydrogen transport pilots:**
  - Hydrogen is a leading option to decarbonise large vehicles such as buses, coaches and HGVs. For buses in particular, hydrogen transport technology is ready to go, as demonstrated by pilots in Aberdeen, Birmingham, and London.
  - The Government could replicate the All-Electric Bus Town scheme for hydrogen. This scheme could support the UK's developing hydrogen bus manufacturing sector.

- **Developing industrial hydrogen hubs:**
  - Low carbon hydrogen has the potential to reduce carbon emissions from the chemical and refining industries, where hydrogen is already used as a feedstock. This hydrogen is typically produced from fossil fuels without Carbon Capture and Storage.
  - The Government's Industrial Clusters Mission aims to develop one net zero industrial cluster by 2040 and one low-carbon cluster by 2030. Hydrogen is likely to be central to these industrial clusters.
  - The Government could also consider using regulation or competitive procurement to incentivise the UK's refining and chemical industries to transition to low-carbon hydrogen. This could be in addition to the Industrial Clusters Mission.

- **Encouraging Green Gas:**
  - Hydrogen can be blended with natural gas in the existing gas network. This approach would deliver relatively modest carbon savings (up to 5%), but it would stimulate demand for low carbon hydrogen production that could also be used in other sectors.

**Green hydrogen is an immediate infrastructure investment opportunity**
Green hydrogen projects do not necessarily require pipeline infrastructure and do not need access to underground carbon storage. It is therefore likely that green hydrogen projects offer the most immediate infrastructure investment opportunities.

### 3.5.2 Public Health and Green De-carbonisation Agenda

The Covid-19 virus has further exposed the long-standing public health challenges that the UK has. An important part of that has been obesity and insufficient physical activity as part of everyday life. There is an important part of the public health agenda that relates to the built environment and the public realm. **This involves transport networks that enable people to walk and cycle. It also involves imaginatively reworking roads and urban environments to facilitate people walking and cycling, too many complex junctions are designed with little or no thought to how a pedestrian or a cyclist would navigate them safely and conveniently.** Part of an agenda to invest in the public realm to support more physical activity should form part of a green agenda of low carbon and environmental amenity, this should include attention to amenity such as the planning of trees to ensure that in warm weather pedestrians and cyclists are protected by shade.

As well as the transport dimension this public health community agenda should include the creation and improvement of public parks to encourage outdoor activity, recreation leisure and sport. As well as outdoor gyms and investment in parks there should be systematic investment in sports facilities and swimming pools. Proper swimming pools are expensive to support, the private sector finds it difficult to financially maintain proper swimming pools, the public sector should re-establish a network of swimming and sports facilities in our communities. National parks and facilities around them could also form a part of this agenda: the National Trust could be given a budget to revamp and revitalise their national parks, which again would need relatively little planning and would be labour-

intensive relatively quickly. It would moreover represent less complex investment opportunities that can be swiftly undertaken to employ the design, consultation, building and construction trades at a time of high unemployment and would offer training and skill opportunities as part of an ambitious active labour market agenda.

### 3.5.3 Levelling Up Economic Opportunity in a Post Covid-19 Environment

There will be opportunities to invest in road and transport projects that offer great 'amenity value' to local communities. This is more likely to work with the grain of private choice as people and businesses choose to base themselves in less congested locations that are not dependent on mass transit public transport. It is not clear yet what the long term impact of the health crisis will be but in terms of things such as distance working facilitated by technology and the shift from high street to online shopping it has probably at the very least expedited change that would have taken place by two or three years. Enhanced investment in broadband will be essential if the UK is to take advantage of the opportunities that technology has demonstrated for distance working during the health crisis.

**Next steps on digital infrastructure**

The Government is currently bound to a target of 'gigabit-capable' broadband to every home by 2025. To help achieve that target, it has also committed to providing £5bn of public funds to help complete the network in 20 per cent hardest to reach rural locations where it would be uneconomical for the private sector to lead on the provision. Otherwise, the rollout of full fibre (Fibre-To-The-Premises, FTTP) broadband (or broadband of equivalent speed, such as Fixed Wireless 5G) is the responsibility of the private sector.

As of H2 2019 (latest available data) the UK coverage of FTTP broadband is 11 per cent, up from 8 per cent on the previous year. Even with the Government underwriting the hardest to reach 20 per cent, the rate of build out would have to increase significantly for the Government to reach its targets, though 'gigabit-capable' networks can also be achieved by means other than FTTP, such as Fixed Wireless networks. Arguably, some changes to the patterns of working spurred by Covid-19 make the objective of fast, reliable internet across the country even more important.

Policy Exchange has previously recommended a set of measures to enable and speed up the rollout in its 2019 *Modernising the UK* report. These were:

1. **Tackling administrative barriers to deployment** – through granting 'right to entry' in line with rules in the energy and water sectors, placing local authorities under duty to facilitate deployment, and ensuring all new build homes are automatically connected, either by mandatory rules or incentive structures.

2. **Review the level of Increasing funding for voucher-schemes in hard to reach areas to determine what level of subsidy increase might be needed** – to amplify and accelerate the roll-out, community groups such as parish councils and local chambers of commerce should be supported to make residents and local business aware of the opportunities. They should be offered logistical support where needed by local authorities and should coordinate with infrastructure providers etc.

3. **UK government should work directly with local authorities** - where close government involvement in the rollout of full-fibre broadband is needed (for example, in the context of providing subsidies for hard to reach areas) the UK government should work directly with local authorities.

4. **5G coverage should be integrated into the full-fibre strategy** – the goal of making access to 'ultrafast' internet speeds should include not just the rollout of full-fibre infrastructure, but also be coordinated with the rollout of 5G coverage, which is at least just as important for connectivity as broadband (and in the future, even more so) and in harder to reach areas, mobile broadband may in the long run prove more economically viable.

To push this further, the UK central Government should also look to adopt best practice from local authorities and devolved Governments if there is sufficient evidence base behind them. One example might be repurposing existing publicly-owned cable ducts by granting companies concession to use and commercialise them, which reduces upfront cost of capital in building the network, in turn speeding up the rollout. Bristol City Council first experimented with this when it granted a 20 year concession to Bristol Network to build a fibre-optic network for both public sector and private sector using the council's existing cable ducts. In February of 2020, the Welsh Government signed a similar agreement with Net Support UK – NSUK will now be able to use Welsh Government-owned cable ducts in trunk roads around South Wales. If this approach is shown to increase private sector willingness to build out the network more swiftly, it should be adopted elsewhere.

A massive boost in fibre capacity and digital skills is needed, and the government's ambitious pre Covid-19 plans in this area should be pursued. Before the Covid-19 crisis, the UK had an ambitious digital strategy, planning for the roll-out of improved broadband, and a move towards a digitally enhanced economy by 2025. Given that, and the importance of this area for the economy, it is important not to dilute such plans.

Crowding-in private sector investment is possible through overcoming regulatory barriers and avoiding delays to government spending priorities post Covid-19. There are a number of areas for the government to focus its attention on, remaining committed to full fibre infrastructure and gigabit-capable connectivity across cities. Improved access to vouchers, enhanced access to digital skills and changes to planning to improve access and ensure it is possible to achieve better deals with landlords. Physical constraints, too, can be addressed, such as best practice from Wales, as noted in the report, on the laying of fibre along roads. Within this there is a need to ensure that there is no trade-off between those areas now seen as in greater need of better connectivity versus improvements needed in commercially viable areas.

The Government should also consider the opportunity and need to invest in business resource centres throughout the country, particularly in disadvantaged areas. These should support people looking for work, people running their own businesses, consultants and established businesses that are thinking of making greater use of remote working. Business resource centres should offer data bases, business directories, access to professional and academic journals with support and advice on how to make use of what is available. These resource centres should be part of the levelling up agenda in terms of regional economic activity and part of the social mobility agenda that not only helps people into work but helps to enable people to make progress once they are in employment. As a result of the economic crisis there will be a protracted period when many individuals will need help to rebuild their working lives and it will be imperative to provide them with the resources to do so.

### 3.5.4 Labour Intensive Projects where swift progress can be made

In a period of economic recession where the public sector is looking for opportunities to stimulate the economy immediately through infrastructure investment many of investments would have long lead times. There are however several areas of public investment that respond the wider public health and green agenda of de-carbonisation that do offer short term and labour-intensive opportunities

- **Walking and cycling paths and transport treatments,** including support for local authorities, national parks and landowners such as the National Trust in improving opportunities to walk and cycle.
- **Improving public parks, sport, leisure and swimming facilities.**
- **Making progress is the roll out of electric charging points for electric vehicles,** as only 3 per cent of the UK car fleet is electric.
- **Funding local authorities and social landlords to take the measures to make their buildings energy efficient,** the National Infrastructure Commission has suggested that £2.9 billion should be spent on this.
- **Making further progress on the agenda for flood defence** this would contribute to the green agenda and offers opportunities to get labour intensive projects off the ground.

#### Electric Vehicle charging infrastructure

Electric vehicles (EV) are central to the UK's commitment to reaching Net Zero carbon emissions by 2050. The Government is currently consulting on ending the sale of petrol, diesel and hybrid cars and vans by 2035[68]. Electric vehicles are currently the leading option to replace these fossil fuelled vehicles, and EV charging infrastructure is a key enabler of their roll out. There are many "shovel ready" EV charging infrastructure projects under development by both private developers and Local Authorities. By expanding competitive procurement of EV charging infrastructure, the Government can unlock private sector investment and provide a sustained boost to the UK's Electric Vehicle sector.

**Role for Government**

There are three areas where the Government can support EV charging infrastructure:

- **Ensuring minimum service provision:** The Government can ensure minimum levels of service provision for EV charging infrastructure, particularly in rural areas and along major strategic inter-city routes.
- **Coordination:** EV charging infrastructure projects are typically developed by private companies and by local authorities. EV charging infrastructure should be developed first in places where it will be most valued by EV owners. There is a role for Government in coordinating private sector and local authority investment plans, for example through planning and information sharing.
- **De-risking private investment:** Investors in EV charging infrastructure generate revenue when EV drivers charge their vehicles. In the UK's nascent EV market, this revenue is often uncertain, which raises the financing costs for investors. There is a role for Government to play in "de-risking" this investment through guaranteed annual minimum payments. This would reduce the cost of capital for EV infrastructure projects, thus lowering costs, similar to the Government's support for the UK's offshore wind industry.

68. https://www.gov.uk/government/consultations/consulting-on-ending-the-sale-of-new-petrol-diesel-and-hybrid-cars-and-vans

**Current Government support can be expanded**

The Government currently supports EV charging infrastructure on major routes through the Rapid Charging Fund[69] and supports home and workplace charging through the EV Homecharge Scheme, the Workplace Charging Scheme, the On-street Residential Chargepoint Scheme, and the Ultra Low Emissions Taxi Infrastructure Scheme[70].

The Government can expand all of these schemes almost immediately, with the potential for the first new projects to be completed within 12 months. If the Government does choose to expand the schemes, then competitive procurement should be used wherever possible to help to minimise costs and to aid price discovery. When this approach was applied in the electricity sector, the costs of offshore wind fell rapidly. The Government should also consider amending these grant-making schemes, so that they instead provide a minimum guaranteed annual revenue. This would reduce the financing costs of EV infrastructure providers, whilst maintaining incentives for EV charging infrastructure developers to locate projects where they are most needed.

The On-street Residential Chargepoint Scheme has been allocated £20m of funding for 2020/21 to on-street EV charging projects in residential areas. This scheme could be expanded, for example by running a competition for "Electric Towns". This would build on the UK's Government's *All-electric bus town*[71] scheme, the *London Mini Hollands*[72] scheme to promote cycling infrastructure, and the Scottish Government's *Switched on Towns and Cities Challenge Fund*[73] for EV infrastructure.

The next chapter considers whether current financial realities support the idea that infrastructure can be built at historically low costs and we should take advantage of this opportunity. Even if the financial environment is favourable, decisions still need to be made on whether capital spending is more beneficial than current expenditure for improving economic competitiveness or satisfying a more general need for cheap and available travel, energy and telecommunications. If the decision is to build extra infrastructure questions of value for money and accurate cost predictions will remain important.

69. https://www.gov.uk/government/publications/government-vision-for-the-rapid-chargepoint-network-in-england/government-vision-for-the-rapid-chargepoint-network-in-england
70. https://www.gov.uk/government/collections/government-grants-for-low-emission-vehicles
71. https://www.gov.uk/government/publications/apply-for-the-all-electric-bus-town-scheme
72. https://www.gov.uk/government/case-studies/london-mini-hollands
73. https://www.transport.gov.scot/our-approach/environment/carbon-reduction-on-roads/switched-on-towns-and-cities-challenge-fund/

# Chapter 4 - Financing Public Expenditure

It is now time to turn more closely to the question of methods of paying for infrastructure investment – as discussed in Chapter 3, the selected method has an impact on the economic performance of the project. This chapter explores the way the public sector should respond to an entirely changed economic environment, both in terms of the impact of the Covid-19 virus but also due to more longstanding changes relating to inflation, interest rates and demand for Government debt, and argues that it strongly suggests issuing central Government debt is currently the most simple and cost-effective method of financing infrastructure.

What is this changed economic environment? It is one where monetary policy can no longer be a reliable source of economic stimulus, where growth is modest, and prices are stable. The risks associated with debt service charges and inflation arising from a growing stock of public debt and its monetization by the central bank are fundamentally different than the position in the previous century. All of this contributes to a situation where the overall cost of debt is falling despite overall stock of debt increasing. UK policy makers and economic commentators are currently behind the curve. The UK should recognise the role of fiscal policy in macro-economic management and the scope to use debt to finance both investment and current expenditure. As part of this, the current fiscal framework should be reviewed with a view to relax the strong distinction between current and capital spending – a distinction which is not helpful and leads to adverse incentives – and shift focus from arbitrary fiscal targets to factors which actually matter to debt sustainability, such as its costs.

Moreover, as the chapter argues the changed agenda should embrace much more than an enhanced public sector capital expenditure programme and should avoid naïve assertions about the economic role of public sector infrastructure investment. It should recognise the benefits of coherent public sector spending programmes that bring together current and investment spending in a manner that maximises economic efficiency and accepts that there are reasons to invest in infrastructure for wider social and amenity purposes that go beyond economic and financial returns.

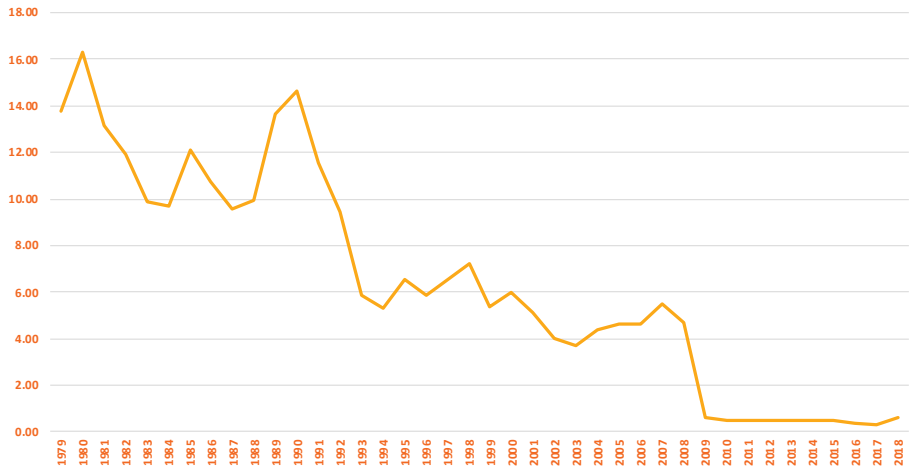
The UK needs a new macro-economic framework that offers and audacious direction of travel and takes account of the fundamentally changed economic circumstances that policy makers are operating it. It should use the opportunities provided by cheaper borrowing costs for investment and to provide flexibility to accommodate adjustment to

shocks and to finance changes in the tax system to enhance incentives and the supply performance of the economy.

## 4.1 Monetary Policy has become Ineffective. Fiscal Policy Should be Revived

The context and role of fiscal policy in the contemporary economy is fundamentally different from the position over the last forty years. The economic environment of the 21st century has turned the defining features of the 20th century economy on its head. A world of reliable unprecedented economic growth where we could more than double our living standards in a generation has been replaced by an environment of muted growth and stagnant measured productivity growth. Unstable and rising inflation matched by rising interest rates and bond yields has been replaced by anchored prices where rate of inflation remain stubbornly below inflation targets no matter how hard central banks work through monetary policy and the expansion of their own balance sheets to increase prices. The era of the reverse yield gap where yields on equities were exceeded by the yield on government bonds has itself been fully reversed. Portfolio managers have looked to equities for income and bonds for capital growth. More than anything we now live in an era of low interest rates.

### Chart 4.1 Short term Interest Rate in the UK




### 4.1.1 Cost of public debt transformed by very low interest rates

Low costs of borrowing and the high demand for government bonds has transformed the prudential calculus of the public finances, making borrowing more attractive. The timing and the manner in which expenditure is financed has always been a second order question. The choice was always between meeting the full cost today through taxation or delaying the cost and spreading it over time through borrowing and running budget deficits. Provided the borrowing did not involve an underlying increase in debt service costs that was greater than the growth

in the economy, and its taxable capacity on broadly unchanged policy, borrowing did not present a problem.

In an environment where interest rates in real and nominal terms are very low, and investors in practice will even pay to lend to the government, the trade-off between taxation and borrowing is fundamentally changed and borrowing is safer. A stable monetary environment with little or no inflation and a ready institutional demand for government debt also contributes to a benign environment where there are few potential adverse risks to using debt to finance public expenditure.

The circumstances that have led to this are not properly understood by economists. There have been attempts to account for this changed environment by the effects of an integrated global economy, a surplus of international savings searching for yields and revival of interest in the secular stagnation thesis. Whatever the explanation the economy that most advanced countries have today is fundamentally different from the second half of the 20th century.

### 4.1.2 Monetary policy has run out of road as a source of economic stimulus

Monetary policy that dominated macro-economic management for over forty years is now much weaker. It lacks the capacity to stimulate economic activity in the event of an adverse shock to demand, like the current Covid-19 virus epidemic, while retaining its bite in terms of its ability to slow economic activity down when monetary conditions are tightened. Very low rates of interest, and hugely expanded central bank balance sheets as a result of unconventional monetary policy exemplified by quantitative easing and credit easing, have come up against their limits.

Recent attempts by central banks to take unconventional monetary policies further by moving into the territory of negative interest rates have yielded disappointing results and may have had the effect of aggravating the anxiety about demand rather than supporting confidence and demand in the economy. The central bank that has explored the use of negative interest rates to the greatest extent the Swedish Riksbank has decided to abandon the innovative experiment. The Bank for International Settlements recognises that monetary policy has run out of road as a source of stimulus and two former chairs of the US Federal Reserve Board Ben Bernanke and Janet Yellen have told the annual meeting of the American Economic Association that in terms of macro-economic management policy makers must now make use of fiscal policy.

This changed macro-economic environment requires a different approach to macro-economic demand management. Co-ordination between monetary policy and fiscal policy is needed to ensure that when fiscal policy is used to stimulate economic activity it is not vitiated by a non-accommodating monetary policy.

### 4.1.3 Fiscal policy as a necessary tool of modern macro-economic policy

This changed economic environment has implications for:

- the conduct of policy in event of an adverse economic shock to demand,
- for the manner in which finance ministries and central banks co-ordinate their polices and
- for the approach taken to the financing of public expenditure.

The changed environment also has implications for the commissioning and financing of public sector infrastructure investment and the accumulation of public sector capital assets. It also transforms the pieties that economists have constructed about borrowing, deficits, investment and current spending. For a generation economists have argued that government borrowing for investment could be permitted because it generated an economic return that enhanced future productivity of both the private and public sector and for reasons of intergenerational equity the burden of its cost could be shared with future taxpayers who would benefit from it.

### 4.1.4 Active fiscal policy goes beyond a focus on borrowing for public infrastructure

This encouraged a myopic approach to public sector debt. Investment was deemed to be good and borrowing for current expenditure was deemed to be bad. It gave an incentive for policy makers to score what was functionally current expenditure as capital investment in order to give policy makers greater scope to borrow. It ignored the difficulty of identifying beneficial public sector investment projects that would yield economic benefits. It also encouraged a misunderstanding of the benefits of current expenditure. Current spending plays a critical role in maintaining and getting the most out of a given public sector capital stock and can directly influence economic competitiveness for example through the role of education in R&D for example. It also encouraged an overly prescriptively 'economic' perception of public sector investment and capital.

### 4.1.5 Artificial rules should not confine public borrowing to capital investment alone

There are also social and amenity reasons when policy makers may choose to engage in acquiring new infrastructure or capital asserts that will not yield a properly scored economic or financial return. Yet the projects can be worthwhile in themselves for the communities that benefit from them. Sport, leisure and arts may or may not offer direct economic benefits to a community yet they play a significant part in the welfare of the communities that benefit from them. It is important to be clear about the function and purpose of public expenditure. Capital expenditure is different from current expenditure and expenditure with an expressly and narrowly defined economic purpose is different from spending with a wider and on occasions more diffuse purposes.

### 4.1.6 Growing demand for public sector debt in modern economies

The recognition that public sector borrowing can finance current expenditure as well as investment spending enables policy makers to make use of public debt markets in a manner that gives them both flexibility and opportunity. It is important to note that government bond markets play a hugely important role in modern finance and the functioning of modern economies. The creation of a steady stream of risk free (in terms of credit risk) bonds that market practitioners and wider economic agents can invest is crucial to the function of our savings, insurance, pension and credit markets. In contemporary advanced economies such as the UK and the US the concern is about having sufficient bonds to meet the demand of institutions for long-term secure public debt.

### 4.1.7 UK is well placed to make use of fiscal policy

The UK is well placed to use debt instruments as part of an active fiscal policy. It has a developed government bond market that is liquid and would benefit from a flow of additional bonds to maintain market liquidity. There is significant domestic and international demand for the UK's domestic debt. In the context of integrated world capital markets one country has little impact on real long-term interest rates so that additional UK borrowing will not change the yield curve significantly in the short term. If interest rates and the demand for UK debt were to change, the UK Government benefits from the relatively long duration of its public debt, which means that it is less exposed to a sudden change in borrowing costs.

The time has come to recognise the limits of monetary policy in contemporary economic circumstances and accept the positive role that fiscal policy has to play in economic management. This is the burden of economic advice from the international economic community. The debate in the UK and USA on monetary versus fiscal policy is summarised in annex 2.

In the event of a significant adverse shock policy makers should make active use of fiscal policy to stimulate domestic demand in the UK economy. To ensure that fiscal policy and monetary policy cohere, the central bank should accommodate as fiscal stimulus in those circumstances. It would be a mistake to maintain monetary conditions that vitiate a potential fiscal stimulus. This would involve an extension of the policies that have expanded central bank balance sheets over the last twelve years as part of quantitative easing. It will be important to ensure that fiscal and monetary policy cohere as part of an overall macro-economic agenda to stabilise the economy. This will require a change in the institutional approaches of both the central bank and the finance ministry and may involve more active central bank approaches to issues such as prudential risk and the distribution of credit in the economy.

### 4.1.8 Fiscal policy risks are modest while the prize of more conventional monetary conditions is great

If economies, such as the UK, make more use of active fiscal policies and government debt and the result is an increase in interest rates and yield curves this would represent a beneficial return towards a more normal level interest rates and borrowing costs. If increased demand led to some upward pressure on prices central banks are well placed to use the bite of monetary policy to prevent a return to the sort of unstable inflationary spirals that disfigured economic policy in the middle of the 20th century. Tighter domestic monetary conditions with more normal and higher interest rates would improve the functioning of credit markets enabling different credit risks to be priced more accurately. It would contribute to the natural change that takes place in market economies as different sectors and firms expand and contract and would diminish the problem of zombie firms that central bankers such as Otmar Issing have identified where unsuccessful enterprises are able to operate unchanged because they do not face the challenge of earning sufficient profits to cover normal costs of capital, because rates are so low.

Higher interest rates and more normal investment returns would diminish the aggressive search for yield that has been the distinguishing feature of international financial markets in the first two decades of the 21century contributing to distorting asset price bubbles and aggravating international system financial risk. Furthermore, it would ease the challenge of financing occupational pension funds that has become a significant constraint on many company balance-sheets. The very low level of risk-free interest rates has increased pension liabilities that many large firms have to provide for. Higher interest rates would mitigate these challenges.

### 4.1.9 Taxation v borrowing

A key advantage of deficit-financed public capital investment is that in the context of a fiscal stimulus, it has much higher multipliers than non-deficit investment. This is because it creates new demand, rather than transferring demand from elsewhere – an investment financed by tax increases and spending cuts will suppress demand in areas touched by those policies. Research from the IMF supports this view – an increase of deficit-financed public investment of 1 per cent of GDP has been found to increase output by 0.9 per cent in the first year and 2.9 per cent after four years, but found no significant effects when investment was deficit neutral.[74]

This absolutely does not mean that in order to be effective, public investment *has to* be financed by borrowing. Productivity improvements resulting from relieving transport bottlenecks or lowering the cost of production in any other ways is not impacted. Rather, it relates to situations when governments want to pursue infrastructure projects as stimulus spending. Since such spending works best when there is slack in the economy, resources are lying idle and there is a need to create additional demand, financing infrastructure through tax rises or spending cuts will have an offsetting effect to the stimulus, as demand is depressed

*74. Supra* note 74

in sectors affected by tax rises and spending cuts. A key implication for policy, therefore, is that choosing a mode of financing for infrastructure depends on what reason for public investment is pursued.

The key negative effect of deficit-financed spending to manage is the danger of "crowding out" rather than "crowding in" private sector investment. Crowding out is most likely to occur when the extra demand created by fiscal stimulus is not met by extra supply due to supply constraints in the economy – in other words, there is no 'slack.' Instead, the demand is met by diverting resources from elsewhere. This tends to have a net negative effect, as private investment tends to be more efficient, and is particularly important in the UK context – as previously mentioned in the first section, it is private sector investment that is particularly lagging behind.

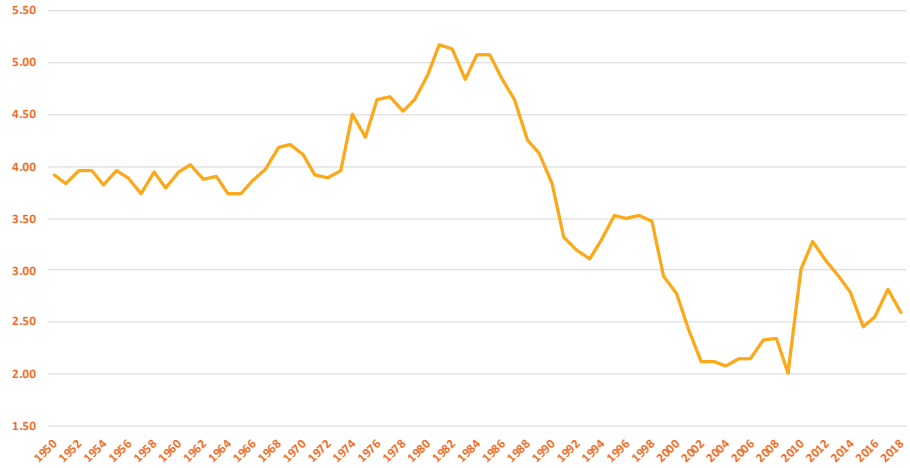
## 4.2 Implications of a Changed Context for Borrowing

Historically in relatively closed financial economies of the sort that operated between 1945 and the 1980s, closed capital markets and foreign exchange controls segmented capital markets. That is to say, they limited the influence of international capital on the economy while amplifying the influence of domestic capital. A national government borrowing in its own currency in its own domestic bond market could be a sufficiently large influence on the supply of debt in relation to the flow of investment funds to provoke a portfolio effect resulting in higher interest rates and higher government bond yields. These could have a malign effect crowding out private sector economic activity and private sector investment in particular.

However, in an environment of globally integrated capital markets the actions of a single borrower, even a sovereign borrower, have much less impact on the interest rates given that they are modest in relation to the flow of funds available to international investors. Governments in very large economies such as the US may have the potential to provoke an increase in bond yields and the cost of borrowing but governments in most medium sized market economies would not influence credit markets in that manner today in contrast to the kind of effect that they used to exert in closed domestic bond markets before capital accounts were fully liberalised.

The opportunity to increase capital expenditure in the UK, and indeed to increase any public spending, has been transformed by the changed climate in key determinants of the cost of Government borrowing. This is because all three key determinants of the cost of Government borrowing – *interest rates, demand for UK government debt in financial markets* and *monetary conditions. have improved. They have improved* both in terms of nominal cost to the Exchequer and deadweight cost to the economy – which in turn is the fundamental determinant of sustainability of the size of the state. Indeed, the single most illustrative point is that despite historically increasing overall stock of debt, costs of borrowing are low (Chart 4.2). This suggests that the usual constraint of taking on more and more debt – rapidly rising cost of servicing – could be absent.

### Chart 4.2 UK General Government Debt Interest as a % of GDP

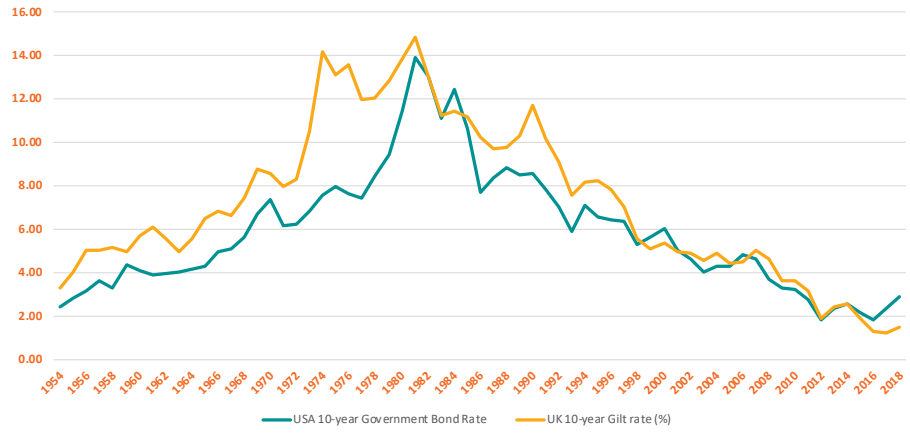



*Source of data: ONS National Accounts 2019*

### 4.2.1 Low interest rates in the context of government debt

The first reason for this unique opportunity is low interest rates. Interest payments on government debt are closely aligned with the Bank of England Base Rate – the official term of what is meant by the commonly used term 'interest rates.' Historically low and anchored interest rates, especially in the context of an absence of any suggestion from the Federal Reserve or the Bank of England that an increase in the short or medium term is likely, mean that a key determinant of the cost of borrowing through issuing Government debt is low and will stay low for the foreseeable future. Ten-year bond yields In the UK and USA (Chart 4.3) are lower than any past year and other long-yielding bonds have a similar time profile.

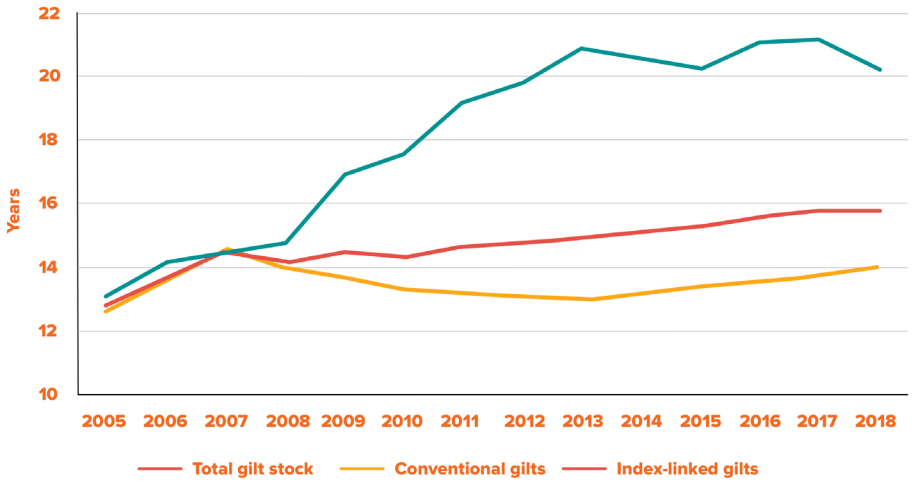
### Chart 4.3 Ten Year Bond Yields In the UK and USA




One of the considerations in assessing the prudence of public borrowing is the question of what would happen if interest rates were to unexpectedly rise, with the result that maturing debt would be more expensive to refinance. The implication of this is that the Government should lock into low interest rates by borrowing in the longer maturities of the debt

market. The UK is already well placed in relation to the risks that arise from maturing public debt because a significant proportion of its debt has maturities of fifteen years or more. The relatively long maturity of the total stock of Government debt additionally means that even if the rates do go up, they will affect a relatively low proportion of the total stock of debt.

## Chart 4.4 Average maturity of UK gilt stock (end-December values)

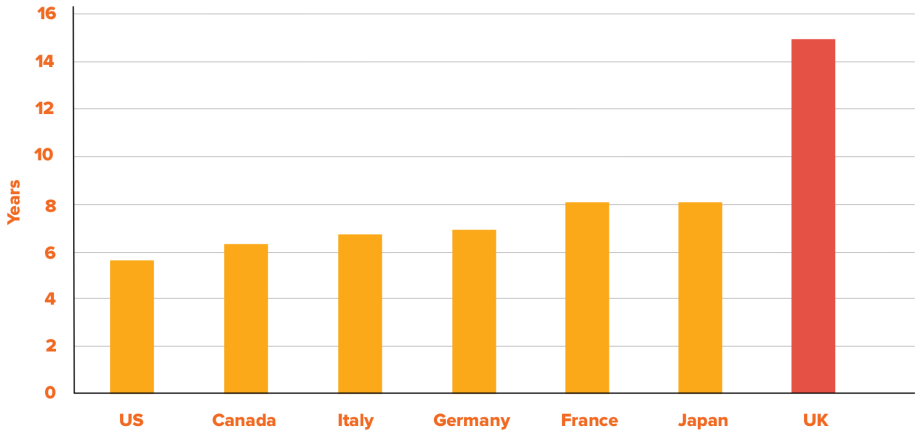



*Source: DMO*

The UK also has the longest maturities of government debt of any major country (Chart 4.5). This in turn means a low requirement to refinance existing debt. The Debt Management Office (DMO) comments in its annual report that:

> *'A long average maturity of debt significantly reduces the UK government's exposure to refinancing risks. The chart above shows the expected gross financing requirement as a share of GDP for all G7 countries in 2014 and 2018. Further, according to the IMF, on average since 2010, the UK government has refinanced debt equivalent to 6.% of GDP each year. This is the lowest across the G7, with the comparable figure at 7.0% in Germany, 17.6% in the US, 20.8% in Italy, and 46.1% in Japan. This illustrates the supportive impact that the long average maturity of the UK's debt stock has on the UK's gross financing requirement, thereby lowering refinancing risk'.*

### Chart 4.5 Average maturity of the debt stock by country (end-December 2018)




Governments in very large economies such as the US may have the potential to influence bond yields and the cost of borrowing as a result of their operations in domestic bond markets. This is because the amount of debt they can issue or buy is a relatively small proportion of private sector debt from both home and foreign companies already present there. This is especially true in an environment where – partly as a result of ultra-low interest rates – companies have been choosing debt finance over equity finance for a long time, resulting in high increases in the level of corporate debt while shrinking the size of equity markets. However, governments in most medium-sized market economies would not influence credit markets in that manner today in contrast to the kind of effect that they used to exert in closed domestic bond markets before capital accounts were fully liberalised.

Since interest rates are unlikely to rise monetary policy will also not offset the stimulus effect of higher infrastructure spending. This of course depends on a continuing low level of price Inflation. It seems likely that moderate Increases In public expenditure, including spending on Infrastructure, will have little Impact on Inflation. In this context there Is limited upward pressure on Interest rates and hence little scope for private Investment to be crowded out by additional public expenditure.

### 4.2.2 High investor demand for UK government debt

The second reason is consistently high investor demand for Government debt. A high appetite for UK government issued bonds means that their yields have been low, as lots of investors bidding for them pushes up the price. Low yields mean low cost of borrowing because high demand means investors are willing to accept lower interest rates on the bonds, yet are willing to pay high amounts for them, meaning relatively high amounts of money lent on a relatively low interest.

Contemporary governments in advanced economies have great scope to borrow and use debt finance. Interest rates are low, prices are stable and there is significant demand for high quality 'risk free' government

bonds. Historically since the 1980s there has been huge demand for medium and long dated gilt-edged securities in the UK. This reflects the need for insurance companies and pension funds to actuarially match their long-term liabilities with appropriate assets in order to immunise their portfolios against risk. The regular complaint of financial institutions for over thirty years has been a lack of liquid long maturity gilts. This historic demand has been amplified by the demand for government bonds from banks to meet the more rigorous demands of the latest iteration of the Basel regime's rules on capital requirements.

The relative standing of the UK Government as a borrower in international markets has been maintained. This reflects the effort that the UK has made in the years following the end of the Great Recession to eliminate its then structural deficit. Ten-year gilt yields generally mirrored comparable 10-year US Treasury yields since the mid-1990s but have been lower over the last three years as US yields rose In the face of President Trump's fiscal expansion.

### 4.2.3 Low and anchored inflation

The main reason that interest rates are so low is historically low and anchored inflation. There is little suggestion that increased Government borrowing and spending might result in an unsustainable inflationary spike. A key traditional worry has been too much Government debt, especially monetised debt – debt that is sold to the central bank – will result in inflationary pressure. This is because the central bank purchases the debt with the money it 'printed', therefore injecting more money into the economy, causing 'too much money chasing too few goods' – a phenomenon perhaps most commonly associated with increased inflation.

Although not relevant to current circumstances we need to be aware that in extremis Inflation and other forms of monetary instability are key dangers to consider when setting public spending and borrowing. Why? A large stock of debt that has regularly to be rolled over is vulnerable to investors losing confidence in debt and refusing to buy it. Some economists felt this might be an issue in the context of the large spending increases indicated in the Labour manifesto of 2019. An investment strike can cause currency depreciation which creates Inflation. If government debt Is monetised (I.e. sold to the central bank instead of to the public Inflation can escalate towards hyper-Inflation as In Zimbabwe or Venezuela. The broad lesson of these episodes is that in normal circumstances, to avoid unstable monetary conditions and inflation, governments should sell their debt to the public, in strict terms to the non-bank private sector the debt in itself will not become a source of inflation.

The main Influences on UK inflation are Import prices, themselves heavily Influenced by the trade-weighted sterling exchange rate, and domestic wage costs. Recent import cost Inflation was low until the post-Brexit referendum depreciation of Sterling pushed prices up. Even then consumer price Inflation remained below 2% per annum until full employment since 2016 has led to rising wage inflation. Consumer price

Inflation peaked at 2.5% In 2018 but has subsequently fallen back below 2%.

Since the banking crisis circumstances have been far from normal and monetised debt has prevented deflation rather than generating Inflation. Central banks have responded to the challenges of zero bound interest rates by developing unconventional tools. Among them the principal instrument has been the acquisition of government and other debt and financial instruments, known as quantitative easing (QE). This has hugely expanded the balance sheets of central banks and for all practical purposes represented the monetisation of public and other debt – in other words, the turning of the value of Government-issued debt into money injected into the economy. Despite some expectations to the contrary, this has not resulted in an unstable and rising price level, i.e. inflation. If anything, central banks have had difficulty in achieving the inflation targets set of them or the inflation targets they set themselves. The rate of inflation has fallen sharply over the last thirty years and inflation remains low.

Since 2009 the UK Government has purchased £515 billion of bonds, mainly UK government bonds, and since 2013 has ceased to pay Interest on Its bonds held by the Bank of England. This amounts to funding public expenditure by printing money, but In the deflationary circumstances of the last decade excessive Inflation has not been an Issue.

## 4.3 Are the government's fiscal rules fit for purpose?

The critical question in deciding whether to finance public spending through taxation or borrowing is the government's debt service charge and the speed at which the government is incurring debt service costs in relation to potential growth of its tax base and future tax revenue based on broadly unchanged tax policies. *The key is realistic judgements about the future cost of borrowing, the trend rate of growth, inflation and the revenue yield of the tax system.* These determine whether the stock of public debt is growing at a faster rate than the public finances and the economy can sustain.

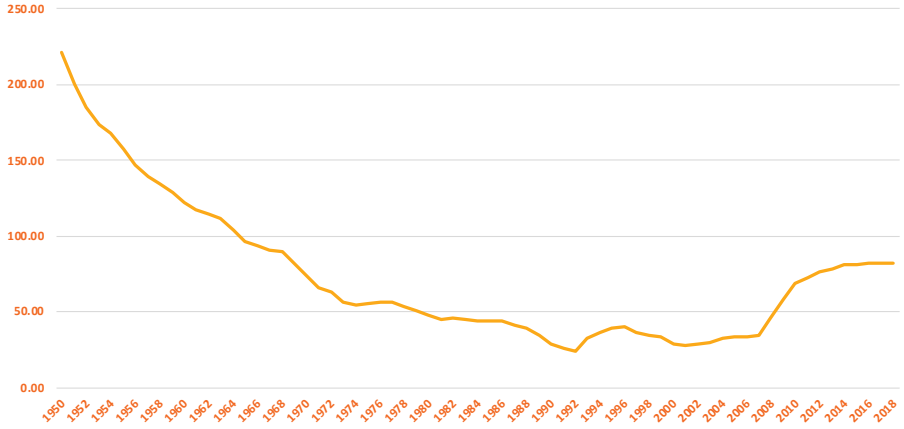
The clearest illustration is that since 2007 the UK's stock of public debt has risen while the cost of servicing it has come down. Since the banking crisis the UK has run substantial annual budget deficits. These have resulted in a significant rise in the stock of public debt in relation to GDP. Yet debt service charges in relation to national income are very low in historical terms and debt can be easily financed. This is because interest rates and bond yields are at their lowest point since the formation of the Bank of England in 1694. This reflects both stable and potentially deflating prices, high levels of international savings and international monetary conditions that have been very loose

The Government should therefore review, at the nearest opportunity, its approach to spending and borrowing, including its fiscal rules. This review of future spending and borrowing should form part of a radical review of the role of fiscal rules within public finance. Fiscal rules are made to establish fiscal plans that are sustainable and credible. As well as assessing the cost of borrowing in financing public sector spending, such

a review should look at the merits of fiscal rules that emphasise limits on government borrowing and target a specific debt-to-GDP ratio or specify a time period over which that ratio should be improving in favour of GDP.

Governments in the UK have used fiscal rules as a presentational device to distract public attention from more economically significant matters in public finance. They have drawn on the public's distaste for debt in peoples' private lives to set out borrowing rules in order to convey an impression of probity and fiscal prudence. Such rules were to give cover to an increase in discretionary public spending rather than to restrain public expenditure and the tax burden. They have resulted in a public debate that focuses on artificial questions such as the extent to which borrowing may be for capital spending as opposed to current spending. It has also obscured more important questions in public finance such as the deadweight costs of public spending and the challenge of calibrating capital investment with current spending so that there are the resources to maintain and operate new investment.

## Chart 4.6 General Government Net Debt (% of GDP)




*Source of data: ONS National Accounts*

The central question that should determine government borrowing and the trade-off between financing expenditure through taxation or debt is the cost of debt service charges. This which turns in nominal interest rates and the rate of inflation and the extent that the real value of debt may be eroded by inflation. These are the issues that determine the sustainability of public debt and are therefore the issues which should be targeted by Government fiscal rules, if at all.

The current position of these parameters suggests that contemporary governments in advanced economies such as the UK have much greater scope to finance expenditure through borrowing. Interest rates are historically low. There is significant demand for medium and long term high quality public debt, which means the cost of borrowing is low. This has been a consistent feature of the UK gilt market since the 1980s. For almost thirty-five years insurance companies and pension funds have generated huge demand for gilt-edged securities. They are needed by

financial institutions to match their actuarial liabilities and to immunise their portfolios. Given these conditions, there is ample room for a fiscal expansion.

As previously outlined, fiscal rules targeting specific debt to GDP ratios fail to take account of real constraints on spending. They are not sensitive to macroeconomic indicators relating to the cost of borrowing and deadweight cost of spending and borrowing. Instead, they target relative stock of debt, a figure which outside of the macroeconomic context says little or nothing about the sustainability of the debt burden. This results in fiscal guidance which does not take account of the things that matter.

Fiscal rules which target debt-to-GDP ratio can also be said to be pro-cyclical. This is to say, they run the risk of exacerbating rather than smoothing fluctuations of the business cycle. This is because during a downturn debt-to-GDP ratio worsens and the amount of borrowing the rule allows shrinks, when in fact that is precisely when the economy would most benefit from a Keynesian boost. There are examples of UK fiscal rules trying to get around that problem, the most notable one of which is Gordon Brown's 'Golden Rule', which said that the government will only borrow to invest 'over the economic cycle'. However, given when an economic cycle begins and ends is contestable, this renders it a poor practical guideline. In 2008, as the economy slid into recession and debt-to-GDP ratio rose sharply, the rule was in the end explicitly relaxed to allow for higher spending and borrowing as part of the post-2008 stimulus package.[75]

However, this does not mean that an agreed limit on spending and borrowing is always a bad thing. On the contrary, it is rare for a country to not have some sort of agreed target of where it thinks public finances are in a healthy state. Such targets can also be useful political devices. Within government, at any point in time, there is a near-constant pressure for more spending. Every government is elected on a mandate of numerous priorities, and different people within a single administration will be engaged in an institutional battle for placing their personal priorities as high up the list as possible. But money is limited and not everything can be a priority – it is the job of the finance ministry to impress that upon the rest of government. A fiscal rule can be a helpful 'credible commitment' device – essentially a mechanism for credibly saying 'no' to continued demands for money.

The answer could be to have a fiscal rule that targets the thing that matters, namely cost of debt servicing – a Debt Service Rule. This would be a rule which instead of a debt-to-GDP ratio it targets something related to the cost of debt servicing. The most obvious measure would be a percentage of total debt interest service payments to GDP. Such a rule could have a number of advantages over conventional rules, the main one of which is that it would incorporate forward-looking market signals, since over the time the cost of debt servicing is a reflection of things such as investor confidence in the domestic economy and bond yields. By contrast, a stock of debt is backward looking, reflecting past operations of

75. Bingham J, 'Gordon Brown signals that the so-called "Golden Rule" on borrowing is to be scrapped', *The Telegraph*, 28 October 2008, https://www.telegraph.co.uk/finance/financialcrisis/3267763/Gordon-Brown-signals-that-golden-rule-on-borrowing-is-to-be-scrapped.html

the Government in the financial markets.

It has been suggested by others that this could be supported by a commitment to lengthen the average maturity of UK government debt. This is because every new gilt is issued reflecting market conditions at the time of issue, including the prevailing interest rates. It therefore makes sense to issue long-maturity debt when conditions are advantageous for the issuer, and *vice versa*. It is worth mentioning that, as discussed earlier on in this section, average maturities within the overall stock of UK debt are already relatively long.

### 4.3.1 Current Fiscal Rules

The Conservative government has abandoned its previous fiscal consolidation targets, first put in place by George Osborne, and introduced a new, three-part rule.

- a balanced current budget within three years (and presumably thereafter)
- Net public investment limited to 3% of GDP
- Reassessment of spending plans in debt interest reaches 6% of tax receipts.

The previous rule aimed for a balanced current budget by 2014-15, a target which was achieved in 2017-18.[76] The new rule, set out in a speech by Sajid Javid in Manchester on 7 November 2019, significantly relaxed fiscal constraints.[77]

- Firstly, the Government has committed itself to running a current budget surplus – later on, Conservatives pledged in the 2017 election manifesto to achieve that current budget surplus within three years.[78] It is worth pointing out that the current budget has already been balanced since 2017/18 and the OBR is not currently forecasting it going back into deficit, so this could be intentional leeway for discretionary increases in current spending, but this is difficult to square with the second commitment.
- Secondly, only borrowing to invest, with total investment capped at 3 per cent of GDP.[79] This means that all spending classified as day-to-day 'current' such as the public sector payroll, delivery of social policy programme or public procurement of everyday 'non-fixed' items (i.e. intermediate goods destroyed or consumed in the production process) such as medicines for the NHS or stationary for government departments will have to be covered from tax revenue. Only spending on 'fixed' capital such as buildings, plants and machinery (i.e. intermediate goods which are NOT destroyed or consumed in the production process, at least not immediately) will be financed from borrowing.
- Thirdly, if the costs of borrowing (defined as interest payments) rise to above 6 per cent of government revenue, those rules will be

76. Giles C, 'George Osborne austerity target hit – 2 years late', *Financial Times*, 1 March 2018, https://www.ft.com/content/3f7db634-1cac-11e8-aaca-4574d7dabfb6
77. Parker G et al, 'Sajid Javid tears up borrowing rules but blocks big tax cuts', *Financial Times*, 7 November 2019, https://www.ft.com/content/e2310878-014c-11ea-b7bc-f3fa4e77dd47
78. Giles C, 'Javid to focus on north and Midlands', *Financial Times*, 7 January 2020, https://www.ft.com/content/27daa4ee-3099-11ea-a329-0bcf87a328f2
79. Notably, it is not clear whether that means 3 per cent in any given year or the duration of Parliament or something else – for example, Gordon Brown's 'Golden Rule' stated that government should only borrow to invest 'over an economic cycle'.

re-assessed. There is also a softer promise that 'borrowing levels would be lower at the end of the next five-year parliament than they are now.'[80]

Following the resignation of Sajid Javid as Chancellor of the Exchequer, there is currently a degree of uncertainty about the strength of these commitments. The Government is reportedly actively considering easing the rules to allow for more spending on public services and more capital investment as part of its 'levelling up' agenda.[81] It has also refused to confirm whether the new Chancellor, Rishi Sunak, will stick to Javid's fiscal framework outlined in the manifesto.[82] For the purposes of the calculations contained in this section of the report, it will be assumed that the Government will not relax the fiscal framework, however, since the Covid-19 crisis and the unprecedented rises in the level of borrowing, it should be expected that a far more relaxed approach will be adopted.

These new rules are arguably less stringent than the rules of the previous Chancellor, Philip Hammond, under which the government aimed at a balanced budget by 2025 and a falling debt to GDP ratio from 2020. The idea of balanced budgets was little more than a fiscal fad, but one widely adopted internationally, most notably in Germany where it forms part of the constitution (with damaging consequences for the Eurozone).

The Javid rules are close to existing practice and easily attainable under normal conditions (which exclude a Covid-19 virus epidemic). The 6% ceiling on debt interest is close to the current level but there is little prospect of any significant rise in interest rates. The rules would lead to a falling ratio of debt to GDP but without making this mandatory. The rigid distinction between current and capital spending is however unhelpful as we have argued above.

**Our recommendation is that the rules be revised to remove the rigid distinction between current and capital spending and that a new distinction focussing on national competitiveness be introduced.** This would say that borrowing to raise national competitiveness should be permitted. The elasticity of this concept would of course be problematic, but some independent assessment of what expenditure should be included could be established. While a low debt to GDP ratio provides more financial security than a large one the costs of attempting to reduce the ratio should be kept well in mind.

*80. Supra* note 16

81. Boscia S, 'Boris Johnson considers tearing up Sajid Javid's fiscal rules', *City A.M.*, 16 February 2020, https://www.cityam.com/boris-johnson-considers-tearing-up-sajid-javids-fiscal-rules/

82. Hughes L, 'UK Budget may be delayed, says cabinet minister', *Financial Times*, 16 February 2020, https://www.ft.com/content/8d844d80-50b6-11ea-8841-482eed0038b1

# Chapter 5 - Macro-economic impact of higher spending

## 5.1 Introduction

Any discussion of potential future levels of public expenditure on infrastructure or current spending requires an estimate of how much the Conservative Government is likely to have available to spend, both in the context of the targets it sets itself and in the context of prospective economic growth. As we know, government spending has been heavily constrained over the last decade by a need to cut the annual level of borrowing and to prevent the public debt spiralling out of control. This is a process that – even without the Covid-19 pandemic – would have been likely to go on for years as governments aspired to get debt to fall from its peak of 85% of GDP, perhaps eventually back down to the low pre-banking-crisis levels of around 40% of GDP.

Now, with debt-to-GDP ratio is likely to exceed 100 per cent this year and economic growth prospects are uncertain, these targets will not be as relevant as they were prior to the Covid-19 pandemic. Indeed, as Policy Exchange argued in *A Pro-Growth Economic Strategy*, it is crucially important to future growth prospects that fiscal consolidation is *not* pursued in the immediate aftermath of the crisis, and the Government should allow higher debt and borrowing levels to take the strain of higher spending.

The Government's fiscal rules still keep a reasonably tight control on borrowing, although these are under review and in any case the response to the Covid-19 virus emergency may strain borrowing limits this year.

Even with the virus and the extra spending in the March 2020 budget, the public finances are under reasonable control and the ratio of GDP has begun to fall. It is the consequence of a decade of austerity that it has become possible for the Government to begin planning for future increases in public spending, or alternatively reductions in taxation. The purpose of this chapter is to estimate whether there is more money that could be made available for even more spending, or in the jargon 'how large is the fiscal headroom?'

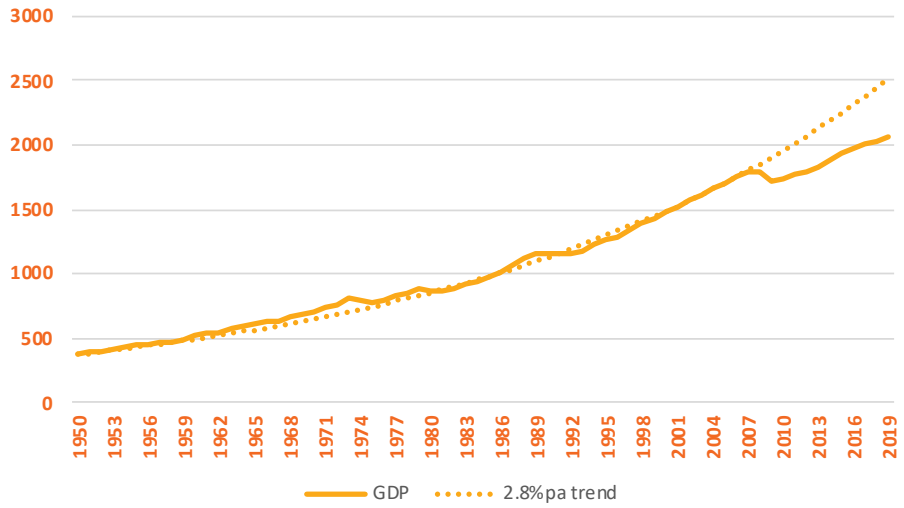
The scope for further increases in public expenditure current or capital depends on four things:

1. The growth of the UK economy
2. The scope for increasing the ratio of public spending to GDP
3. The balance of capital spending within total public spending
4. Arguments for using fiscal headroom to cut taxes rather than raise spending

## 5.2 Pressures on public services are due to slow economic growth

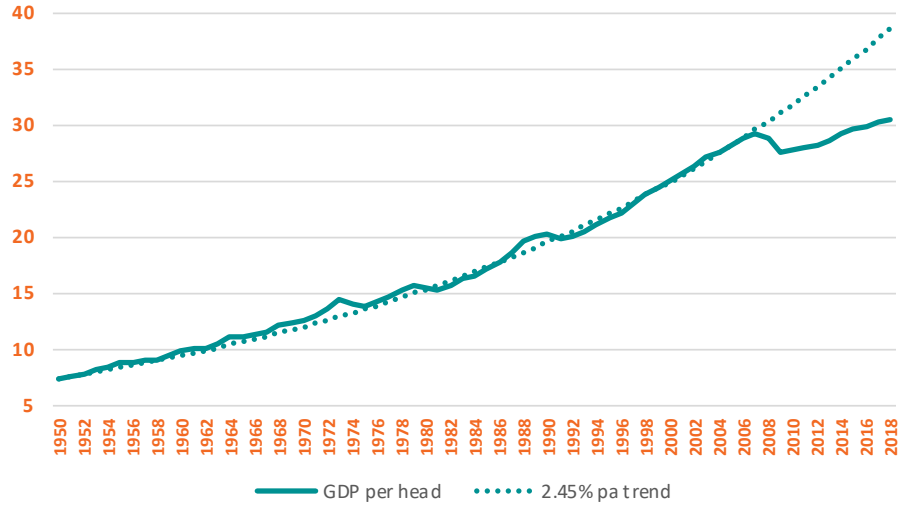
The popular conception is that current pressures on government services and public infrastructure is mainly a consequence of austerity, but this is wrong. In fact, the real reason is the dramatic and apparently permanent slowdown in UK economic growth since the banking crisis of 2008/9.

### Chart 5.1: Growth In Real GDP (£Billions) Is well below the long-term trend




The UK economy has grown slowly since the banking collapse with a trend growth rate for GDP since 2007 at 1.1% per annum compared with 2.75% per annum before the crisis. Even excluding the recession years of 2008/9 average growth has been below 2% per annum (Chart 5.1). Growth has also been achieved largely through expanding the labour force involving high rates of net immigration, with the consequence that per capita GDP has grown at the unimpressively slow rate of 0.4% since 2007 (Chart 5.2).

## Chart 5.2: Growth In Real Per Capita GDP further below its long-term trend




*Source of data: ONS National Accounts and fitted trend*

If the pre-crisis trend in economic growth had continued since 2007 GDP in 2019 would be close to 20% higher than its current level. This, in turn, means that with a constant ratio of public spending to GDP, real public spending could now be up to 20% higher than the current level. Even if we assume that the faster trend for growth started after the 2008/9 recession then GDP would be 17% higher in 2019 than the observed level. The slowdown in tax revenues is even more marked. Tax revenues had grown in real terms at close to 3.5% per annum for six decades up to 2008. Had this trend continued since 2008 revenues would be 28% higher now than the current level.

It is this slow growth rather than austerity which is the source of current pressures on public spending. Austerity refers to the reduction in spending from the inflated levels induced by the recession of 2008/9 and by the reduction in tax revenues occasioned by the recession. The public sector deficit rose rapidly in the crisis to 10% of GDP in 2009 and has been slowly pared back, mostly by expenditure cuts, to the current level below 2% of GDP. Meanwhile public sector debt continued to rise until 2017, reaching a peak of just under 85% of GDP[83] but is now falling.

Austerity was needed to reduce the public sector deficit to a level which would stop the rising ratios of debt to GDP and eventually allow this ratio to begin falling back towards pre-recession levels. The main burden in achieving this, was borne by spending which slowed its growth in real terms but did not decline. Total managed expenditure is now back to its pre-crisis level of 40% of GDP. Spending cuts since 2009 have largely consisted of reductions in current spending as a proportion of GDP. Real current spending, i.e. on the provision of public goods and services was maintained within slow-growing financial settlements by cuts in real wages of public sector employees. Expenditure on social security benefits, which constituted half of the recession-induced additional spending,

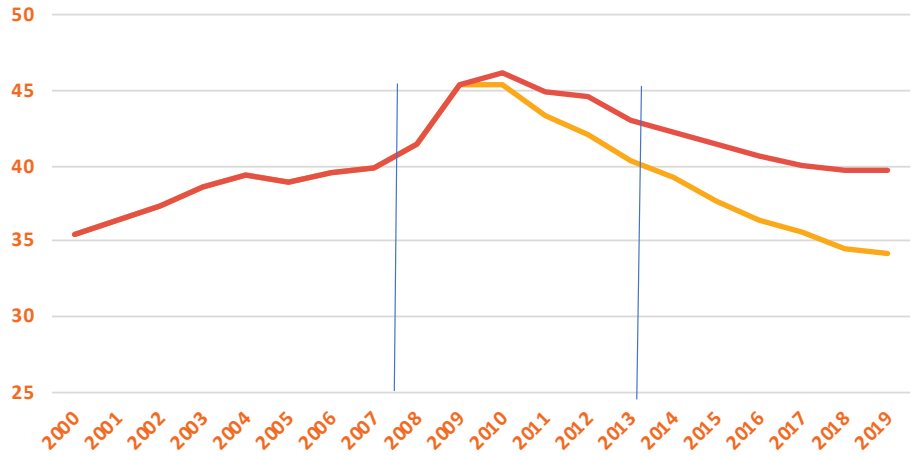
83. The rise in government debt was partly due to reclassifications including counting student debt unlikely to be repaid as grants (and hence as public expenditure) rather than loans as was previously the case.

has now returned to its pre-crisis level relative to GDP. Similarly, debt repayments remain close to their pre-crisis level despite the doubling in the ratio of debt to GDP. In this this case, the very low interest rates since 2008 have been responsible, allowing the government to restructure its debt towards low yielding bonds.

Public capital spending continued to grow after the banking crisis and is higher in 2018 than in 2008. Of course, real reductions in many services did occur but some major programmes including health continued to grow in real terms. Because total managed expenditure had returned to its 2007 level of 40% by 2018, and tax and other revenues had meanwhile remained close to their 2007 level as a percentage of GD, the government annual deficit was also back to its 2007 level of 1.7% of GDP by 2018.

Had real GDP continued to grow at the pre-crisis trend rate of 2.75% per annum after the 2008/9 recession then the level of real terms spending would have returned to a pre-crisis ratio of expenditure to GDP (40%) much earlier. In fact, a 40% target could have been achieved by the Coalition government as early as 2013. This is shown in Chart 5.3.

### Chart 5.3: Government Spending, Actual and Predicted (% of GDP)

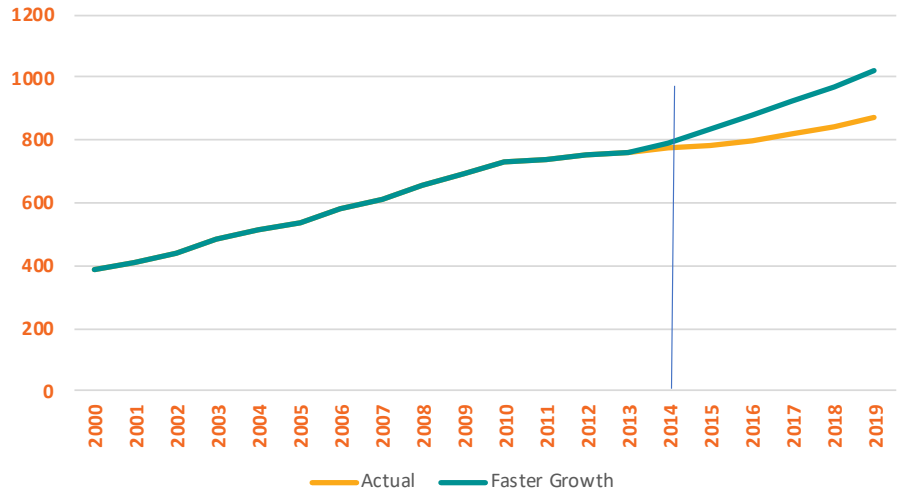



*Source: ONS National Accounts and CBR model Predictions*

How high could public spending have been in this faster growth scenario. For illustrative purposes we can assume that government policy held public spending at a constant 40% of GDP from 2014. With faster growth in GDP and a fixed ratio for public spending, spending could have been £140 billion higher by 2019 than the actual outturn (Chart 5.4). Note that this increase has nothing to do with a relaxation of austerity. We have assumed that the target for expenditure is the same (at 40% of GDP) in both scenarios. It is slower economic growth that has depressed the amount that the UK government has to spend. If we assumed that the difference in GDP growth was sustained through the next decade then the extra spending available to a government spending a fixed 40% of GDP would be £430 billion per annum by 2030 in constant prices. By 2030 the government would have enjoyed a cumulative additional spend over 15 years of £3.7 trillion, again in constant prices. This is equivalent to four

years extra current and capital spending at 2019 spending levels. If the extra spending was wholly on capital it would be equivalent to an extra 60 years expenditure at the 2018 level.

**Chart 5.4: Government Spending. Actual and Predicted (£ billion)**




The extra £140 billion which we estimate would have been available for public spending (or tax cuts) in 2019 if economic growth had been faster since 2010 is equivalent to 17% of current government spending. This means that every government programme, current or capital, could in principle have been 17% larger in real terms. The damage done to service provision and infrastructure availability in a range of programmes might have been avoided if economic growth had been faster even if no increase in the proportion of GDP being spent by government.

For the future, the financial resources available to any government will depend firstly on the growth of the economy and secondly within the context of realised growth how much will be available to improve service provision and public infrastructure, i.e. how much of GDP is raised through taxation or is borrowed. To assess the scope for extra resources, we first need to assess how rapidly the UK economy is likely to grow.

## 5.3 Predicted economic growth

Economic forecasting is an imprecise art and the degree of uncertainty is compounded by the fact that economists use a range of contrasting methods to generate their forecasts. Economic models are based on estimated relationships and data that would not capture the extraordinary character and extent of the economic shock generated by the public health response to the Coronavirus. This paper draws on analysis undertaken by the OBR that looks at the medium-term trend rate of growth to assess the scope for public investment. In response to the shock the OBR have replaced their economic forecasts with a scenario approach which projects after a severe shock to output and a sharp recovery a broad return to previous trends in output and capacity. The previous OBR work forecasting

the economy provides a useful starting point for clarifying the issues to be examined.

Therefore, in this report we focus firstly on the official government forecasts generated by the Office for Budget Responsibility. The arbitrary nature of some of the OBR's methods mean that we also need alternatives. For this purpose we use the UKMOD model developed at the Cambridge University Centre for Business Research (CBR). This is a standard data-based econometric model similar to that of the OBR but without its arbitrary assumptions on productive capacity. It is also similar to models used by commercial forecasters like Oxford Economics[84]. The CBR model enables us to generate scenarios for the macro-economic impact of different assumed levels of public spending.

The forecasts of the Government are generated and published by the independent Office for Budget Responsibility (OBR) and this has been the case since 2010 when the OBR took over what had previously been the forecasting functions of the Treasury. The OBR had intended to publish updated forecasts in conjunction with the planned Budget on November 6th, following its normal practice. When that Budget was cancelled after the announcement of a General Election for December 12th, the OBR intended to publish its forecasts anyway. However, despite its ostensible independence this publication was prevented by the Cabinet Secretary who declared it incompatible with government procedures during a general election campaign.

Revised OBR forecasts were finally published on March 11th 2020 in conjunction with the first Budget of the Johnson government. Whereas the OBR long-term forecast for GDP had previously been an annual growth rate of 1.6% closely following the post-recession trend since 2008, the new March 2020 forecast is more pessimistic with long term growth at 1.4%. This is despite the boost from higher planned government spending. Factors include a 0.25% per annum loss of GDP growth due to Brexit (the OBR assume a free trade agreement with the EU is in place from the beginning of 2021)[85]. Lower migration and a deterioration in the growth of world trade. The OBR's long-term forecasts can be described as more assumptions than econometric forecasts. The OBR assumes that productive capacity in the UK grows at the rate of expansion of the labour force multiplied by the growth in labour productivity. It is the latter that is assumed. Currently the assumption is that output per hour expands at the slow rate of just over 1% per annum.

The OBR's short-term forecasts for GDP growth in 2020 and 2021 published in 2019 (respectively were 1.4 and 1.6%) were based on a number of assumptions that now look optimistic. Since the latest OBR forecasts were finalised in February there is no assumption about the economic impact of the Covid-19 virus. Assessing the impact of the virus is guesswork at present but assessments suggest that GDP growth in 2020 will be between 0.7% and zero in place of the OBR's estimate of 1.1%. This is likely to be followed by a strong recovery in 2021. The new GDP forecasts for 2020 and 2021 (1.1% and1.8%) reflect deteriorating external

84. The UKMOD model is a system of econometric equations estimated using ONS data over the period since 1950 and sub-periods. It is described at: https://www.cbr.cam.ac.uk/fileadmin/user_upload/centre-for-business-research/downloads/working-papers/wp472.pdf

85. OBR EFO March 2020 pp2529.

factors including slower expected growth of UK export markets in 2019 and 2020 due to such factors as the US-China trade disputes and higher oil prices following the bombing of a Saudi oil production site. Helpful factors are lower domestic and US bond yields than previously assumed and a low sterling effective exchange rate. The latest collapse in oil prices is not in the OBR forecast.

The OBR forecasts are summarised in the following tables. GDP, household and government consumption are all now projected to grow at what the OBR view as the new reduced trend rate for the UK (table 4.1). Public sector investment has a similar average but a more erratic path reflecting government plans. Government consumption, and especially investment, are predicted to grow rapidly following the decisions made in the March 2020 Budget. Investment was previously expected to recover with faster growth following two years of falling investment perhaps partially reflecting uncertainty about Brexit but now has a new policy boost. The OBR is even more pessimistic about exports and imports than it was a year ago. Deteriorating conditions for world trade are one factor but another is greater clarity that the UK will leave the EU customs union and single market by January 2021.

## Table 5.1 OBR Economic Forecasts (March 2020)(% per annum)

| | Household Consumption | Government consumption | Fixed Investment: Government | Fixed Investment: Business | Exports | Imports | GDP at market prices |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| **2020** | 1.1 | 3.7 | 1.9 | 0.0 | -0.6 | -0.2 | 1.1 |
| **2021** | 1.2 | 2.8 | 10.9 | 1.8 | -0.5 | 0.4 | 1.8 |
| **2022** | 1.3 | 2.1 | 4.6 | 3.0 | -0.6 | 0.2 | 1.5 |
| **2023** | 1.4 | 1.9 | 2.4 | 2.4 | -1.1 | 0.2 | 1.3 |
| **2024** | 1.4 | 2.2 | 1.8 | 2.3 | -1.0 | 0.2 | 1.4 |

***Source: OBR Economic and Fiscal Outlook March 2020***

## Table 5.2 Previous OBR Economic Forecasts (March 2019) ( % per annum)

| | Private Consump-tion | Government Consumption | Fixed Investment *General Government* | Fixed Investment *Business* | Exports | Imports | GDP at market prices |
|---|---|---|---|---|---|---|---|
| 2020 | 1.5 | 1.7 | 1.8 | 2.3 | 1.7 | 2.1 | 1.4 |
| 2021 | 1.6 | 1.6 | 2.2 | 2.3 | 0.2 | 0.6 | 1.6 |
| 2022 | 1.6 | 1.6 | 0.9 | 2.4 | -0.3 | 0.0 | 1.6 |
| 2023 | 1.6 | 1.7 | 2.0 | 2.4 | -0.5 | 0.1 | 1.6 |

***Source: OBR Economic and Fiscal Outlook March 2019***

The small public sector annual deficit envisaged by the OBR a year ago (table 4.4) has swelled in the latest forecasts to remain close to the

Government's limit of 3% of GDP (table 4.3). Negotiations between the Treasury and the OBR in the lead up the Budget ensured that the fiscal rule would not be broken. The starting point for public sector debt in the latest OBR forecast is lower than before at 77.4% of GDP in 2020 (table 4.3) due to a number of reclassified financial assets and liabilities.

### Table 5.3 OBR Forecasts for Sector Deficits (% of GDP)

| | Public Sector Deficit | Balance of Payments | Public sector Debt |
|---|---|---|---|
| **2020** | 2.6 | -3.8 | 77.4 |
| **2021** | 2.9 | -3.9 | 75.0 |
| **2022** | 3.0 | -4.0 | 75.4 |
| **2023** | 3.0 | -4.0 | 75.6 |
| **2024** | 3.0 | -4.1 | 75.2 |

*Source: OBR EFO March 2019*

### Table 5.4 OBR Forecasts for Sector Deficits (% of GDP)

| | Public Sector Deficit | Balance of Payments | Public sector Debt |
|---|---|---|---|
| **2020** | 1.2 | -5.2 | 79.0 |
| **2021** | 1.1 | -5.1 | 74.9 |
| **2022** | 1.1 | -4.9 | 74.0 |
| **2023** | 1.0 | -4.8 | 73.0 |

*Source: OBR EFO March 2019*

The additional spending announced in the Budget and the associated higher annual deficits, however, lead to a much slower change in the debt ratio. The ratio is now projected to fall by only 2 percentage points during the current parliament rather than the 6 points which were expected a year ago. All of the projected decline in the ratio now occurs in 2021. Beyond that debt rises slightly as a share of GDP. This projection and the associated annual deficit projection of 3% of GDP will have formed the upper limit of how much public expenditure could be allowed to rise. Unavoidable increases in current spending due to pension increases, and public sector wage and pensions agreements, further squeezed the headroom available for raising the level of public investment. This is as far as the government could go at this stage. The fiscal rules are now being reconsidered and may create additional headroom for further increases in investment.

## 5.4 The CBR Model Forecasts

The CBR model assumes that the UK leaves the EU's customs union and single market with a basic free-trade agreement at the end of 2020. This involves an immediate loss of 10% of EU markets for UK exports and a similar reduction in imports from the EU offset by a partial rise in imports

from non-EU sources[86]. Baseline assumptions for government current and capital spending are the official projections taken from the OBR's March 2020 Economic and Financial Outlook with 2% per annum growth beyond the OBR's final date of 2024. The additional £13 billion of public spending announced by the Chancellor in November 2019 plus the extra £3 billion referred to in the Conservative manifesto for the 2019 general election are all now included in the spending estimates announced in the March 2020 Budget. Capital spending is assumed to remain a little above 3% of GDP in the baseline beyond 2024.

### 5.4.1 How much fiscal headroom?

With the assumptions listed above the CBR model generates a baseline prediction of average growth in real GDP at 1.1% pa over the decade to 2030, a little slower than the OBR's March 2020 assumption for long-term growth of 1.4% pa[87]. Both current and capital spending by the public sector rise by 2% pa in real terms after 2024. The consequence is a government current surplus rising from 1% of GDP to 3.4% by 2030, but with overall public sector borrowing (net lending) falling from the current 2.8% of GDP to 0.9% of GDP by 2030. Although low, this relatively low level of borrowing is not low enough to permit public sector debt to fall much. The reason is the slow rate of growth in GDP. We thus view the OBR's forecast on debt levels as a little optimistic.

These forecasts would not break the fiscal rule announced in the Conservative manifesto that "*we will not borrow to fund day to day spending but will invest thoughtfully and responsibly in infrastructure right across our country*". Previous targets for a balanced budget and a steadily falling ratio of debt to GDP have now been abandoned. Sajid Javid had already dropped a target date for a balanced budget. George Osborne had earlier targeted 2015 for budget balance and Philip Hammond relaxed this to 2025. The target was always an exercise in political machismo rather than having any solid economic rationale. It is helpful that it has gone. On the other hand, the aim of balancing the current budget stated in the manifesto also lacks a rationale and we suggest that current and capital spending be assessed side by side for their contribution to UK growth.

Our estimate is that there is a greater degree of headroom for additional capital (or current) spending by the public sector than might be anticipated. For instance, we have generated a scenario in which capital spending rises by 5% per annum from 2023 instead of the 2% pa rise in the baseline. This generates an additional real terms capital spending of £12 billion in the first five years and £25 billion over 10 years with a cumulative addition over ten years of £140 billion. This would of course break the Chancellor's rule that government capital spending should be less than 3% of GDP. By 2030 it would be just over 4% of GDP, but hardly excessive by international standards.

This level of additional spending would be sustainable and would not 'break the bank'. Since the extra spending is mildly reflationary real GDP is projected to grow a little faster than in the baseline and by 2030 would

86. The trade impacts are based on Policy Exchange's gravity model work at: https://policyexchange.org.uk/wp-content/uploads/2017/06/Defying-Gravity-A-critique-of-estimates-of-the-economic-impact-of-Brexit.pdf/

87. OBR EFO March 2020 table 2.2

be 0.7% higher. The current fiscal deficit would be much the same as in the baseline, with faster economic growth offsetting the impact of higher spending. Public sector debt falls only slightly more slowly. Even after 10 years of this extra spending the ratio of debt to GDP is projected to be only 2 percentage points of GDP higher than the baseline in 2025 (at 80%). The balance of payments current account deficit, bond yields and consumer price inflation are projected to be only very slightly more adverse than in the baseline. Since the UK economy is currently close to full employment any acceleration in the construction of infrastructure might require more labour and higher immigration. If this was not forthcoming the result could be higher inflation.

## 5.5 Conclusion – How Much Fiscal Headroom?

The trade-off is thus a public sector debt ratio at 2 percentage points of GDP higher after ten years than would otherwise be the case in return for an additional £140 billion of public expenditure over 10 years. With a debt to GDP ratio of 80%, the UK would be more exposed to rising debt in a future recession than was the case in the 2008 recession when the starting point for debt was 40% of GDP. However, the UK economy would be in a substantially similar position under new Budget proposals in which we project the debt to GDP ratio to be 77% by 2030. A cautious Chancellor might prefer the lower level of debt but if additional spending is focussed on projects which are likely to enhance UK economic competitiveness then the more sensible path might well be to spend more.

# Conclusions

This paper offers an analysis of the role of public investment and infrastructure investment. **Its central conclusion is that very low interest rates make an ambitious public investment programme worthwhile.** The environment of low inflation and very low interest rates has radically modified the financial context that should shape decisions on public investment. It has been careful not to exaggerate the potential wider economic benefits of infrastructure investment. It has tried to avoid the naïve optimism bias that distorts much public comment about the merits of public investment and ambitious individual projects. It recognises that some of the highest economic and social returns come from smaller local projects and maintaining properly the infrastructure assets a community already possess.

**The paper also recognises that there can be powerful and persuasive arguments for public investment that do no turn on strict financial or economic benefits but the amenity benefits that a project may offer a community.** The paper has explored the role of fiscal rules in UK public policy and its conclusion is that it is sceptical of their benefit and application. Rules that emphasise that borrowing for capital spending is good while implying that current spending should be solely in normal circumstances be financed out of current taxation neglect the changing trade-off between borrowing and taxation in a low interest rate environment and contribute to a distortion in public expenditure decision making. Much public investment and infrastructure needs current spending to manage it and to achieve the most from it. An artificial divide between capital and current spending would be mistaken. School laboratories without physics teachers and hospital operating theatres without surgeons illustrate the point. An appropriate balance has to be struck.

The Government's levelling up agenda and the investment programme set out in the Conservative Manifesto coheres with the financial opportunity presented by low public borrowing costs. The economic crisis that has arisen from the shock generated by the corona virus has amplified the context where public investment and borrowing was already justified. In many respects the corona virus has crystallised and exposed trends that were already in place and partly generated by imbalances and the excesses built up in the financial and the real economy in the long-period of economic expansion in the years after the financial crisis and Great Recession. The economic shock has further reduced interest rates and inflationary expectations.

The shock has also created the economic circumstances where there

is a lack of demand and a need for a macro-economic policy that uses fiscal measures to stimulate demand and economic activity. Monetary policy has lost its traction as a source of reliable stimulus. The scale of this shock invites audacious short and medium terms measures to stimulate economic activity. Increased public investment should form part of the necessary policy response to support demand in the economy.

There is moreover more scope for an ambitious public investment programme given that there is now spare capacity in the economy. When an economy is operating at close to full capacity with very high levels of employment even with low borrowing costs there will be real resource constraints. Spare capacity will facilitate a change in national priorities with people and other resources moving from sectors that have been adversely affected by the coronavirus shock. The shock by illustrating the ease of distance working with modern technology will change the choices that individuals make about how they work and where they live. Of course it's premature to come to a judgement about what the permanent impact of the response to the Covid-19 virus will be, but at the very least it's likely to speed up by 2 or 3 years changes associated with distance working that would have other wise taken place. This is likely to widen the range of locations that attract households and businesses. Local and regional economies that were perceived as being disadvantaged will be able to exploit their cost bases, potential quality of life and amenity in attracting economic activity. In that context a public investment programme that adds to the convenience and amenity of communities that in the past have generated relatively low rates of value added will contribute to making them more attractive locations. Many of the investment and infrastructure projects that would respond to those local opportunities will conform to our understanding that often the highest return to public infrastructure investment are modest specific projects rather than grandiose large scale plans that are predicated on expected wider economic returns that often fail to materialise, exemplifying the so-called optimism bias. The welcome news is that an ambitious investment programme that is led by local decision makers that addresses particular local challenges is likely to yield the greatest benefits and goes with the broader national interest in greater devolution of economic decision making.

# Annex 1 - Difficulties in Measuring Capital Stocks

Government statisticians put huge efforts into measuring capital stocks, not only in the UK but also in most advanced nations. Yet there are major difficulties. The standard approach to compiling capital stock statistics is the perpetual inventory method. This involves depreciating a proportion of the previous period's stock and adding the current period's new investment. This can be undertaken in either current prices or constant prices, but the concept is most natural for constant prices which represent real or volume stocks.

The problems arise in several respects. Firstly, the time series needs a starting value. This can be estimated in current values and then converted to real values through multiplying by a price deflator. None of this is easy particularly when the assets are not marketable. The value of historic roads, railways or ports must be approximate, although the value of incremental additions to the stocks can be evaluated at cost. The investment data needed to construct a time series for capital stocks is maintained and updated by ONS only as far back as 1987 as is required under EU rules. For earlier data older time series have to be spliced on to the current data. Hence values before 1987 are less reliable.

Another issue is the size and coverage of public sectors in different countries. In the UK some school, health and other infrastructure is owned by the private sector in PFI schemes. In the USA the government owns little health infrastructure. Some countries, including Germany have small defence sectors. In this report we have excluded capital spending by public corporations and in any case the UK privatisation programme means that public corporations are much more limited than in the past. In other countries the boundary between public corporations and general government may differ from that in the UK. A particular example is state-owned housing which in the UK has been fully transferred to the private sector but which in other countries may remain in government ownership. Some countries, including Germany include the value of land in their valuation of buildings and other structures, unlike the UK. As a result, ONS excludes Germany from its international comparisons of capital stocks[88]. In other words, international comparisons of government infrastructure are difficult to interpret, and low spending should not be automatically taken to indicate that countries have a deficiency of infrastructure.

ONS have recognised this issue and have recently revised their assumptions for asset lifetimes in an attempt to bring them closer in line with other

88. https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/articles/experimentalcomparisonsofinfrastructureacrosseurope/may2019

major countries. The old assumptions were in many cases very old, dating back to the 1950s in some cases. The new assumptions are used in the 2019 National Accounts and are shown in the table below. As can be seen, large reductions in asset lifetimes have been made for other buildings and other structures, the two categories which dominate government assets. As a result, the stock of government assets in the 2019 data was reduced by 29% from the 2018 version.

https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/articles/nationalaccountsarticles/changestothecapitalstockestimationmethodsforbluebook2019

## Table 1: Blue Book 2018 UK asset lives compared with other countries

| Asset | Asset life used by country (Years) | | | | | |
|---|---|---|---|---|---|---|
| | United Kingdom | Germany | France | Netherlands | New Zealand | South Korea |
| Dwellings | 59 | 40 - 95 | - | 75 | 70 | 55 |
| Other buildings | 19 - 100 | 15 - 100 | 25 - 30 | 30 - 50 | 45 - 65 | 47 - 55 |
| Other structures | 19 - 100 | 25 – 150 | 60 | 25 - 55 | 25 - 110 | 30 - 65 |
| Land improvements | 19 - 100 | - | - | 1 | 30 - 58 | 17 |
| Machinery and equipment | 10 - 30 | 5 – 30 | 9 - 21 | 5 - 35 | 4 - 33 | 5 - 15 |
| Transportation equipment | 9 - 25 | 8 – 25 | 7 - 15 | 5 - 30 | 5 – 32 | 6 -30 |
| Computer software and databases | 5 | 5 - 30 [1] | 5 | 3 | 4 | 6 |
| R&D | 4 - 12 | 5 - 30 [1] | 10 | - | 10 | 9 -11 |

***Source: ONS[89]***

This means that any analysis using data on government capital stocks produced before 2019 will show an exaggerated volume of capital although the pattern over time will change much less. Also, international comparisons undertaken with pre-2019 data will tend to show a smaller difference between the UK and other countries than will be the case with the new data. This includes the IMF's Investment and capital stock data series.

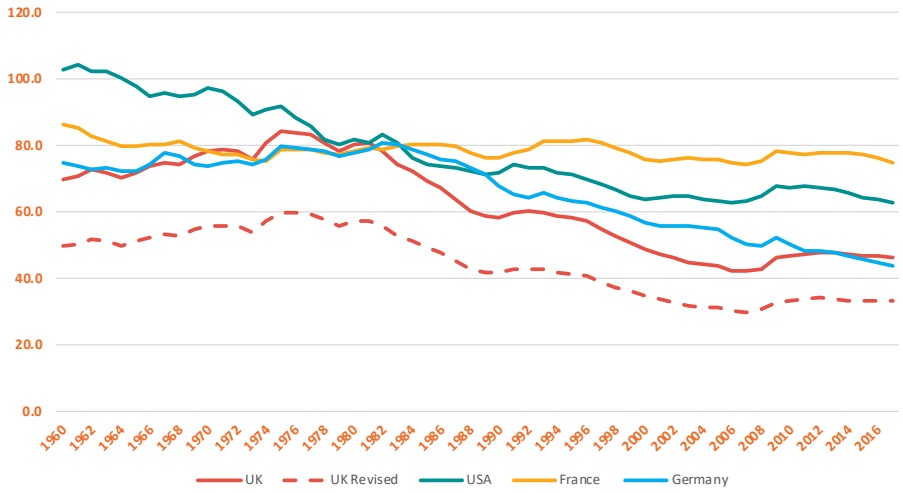
89. https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/articles/nationalaccountsarticles/changestothecapitalstockestimationmethodsforbluebook2019

## Table 2: Comparison between the old and the new asset lives

| Asset description | Last estimation | Weighted old lives (years) | Weighted new lives (years) | New-old life (years) |
|---|---|---|---|---|
| Dwellings | Dean, 1964 | 59 | 50 | -9 |
| Other buildings | Dean, 1964 | 65 | 37 | -28 |
| Other structures | Dean, 1964 | 65 | 48 | -17 |
| Land improvements | Dean, 1964 | 65 | 20 | -45 |
| Transport equipment | Dean, 1964 | 11 | 15 | 4 |
| Telecommunication equipment | NIESR, 1993 | 9 | 18 | 9 |
| Computer hardware | Vaze, 2001 | 5 | 5 | 0 |
| Machinery and equipment | Dean, 1964 and NIESR, 1993 | 26 | 21 | -5 |
| Weapons systems | Based on other countries, 2014 | 20 | 20 | 0 |
| Cultivated Biological Resources | ONS | 10 | 6 | -4 |
| Computer software and databases | Vaze, 2001 | 5 | 5 | 0 |
| Entertainment, literary and artistic originals | Goodridge, 2008 | 15 | 10 | -5 |
| Research & Development | ONS, 2014 | 7 | 9 | 2 |
| Mineral exploration and evaluation | ONS | 10 | 15 | 5 |

*Source: Office for National Statistics*

The Chart below shows international comparisons using IMF data. This data was compiled before the most recent ONS revisions. An additional series has been added (the red pecked line) to indicate the revised UK data, which the ONS say brings the UK in closer alignment with international comparators. The Chart suggests that with standardised asset lifetimes the UK lags further behind other major economies in the provision of public capital than was hitherto realised.




*Source: IMF*[90]

90. https://www.imf.org/external/np/fad/public-investment/#5

# Annex 2 - The Debate Over Fiscal and Monetary Policy in the UK and USA

In the 1980s and 1990s when the UK and US exhibited temporary public sector surpluses it created profound market anxieties about the future of credit markets, pensions and reliable benchmarks for risk. Since the 2000 the appetite for public debt has grown. This is reflected in exceptionally low long-term government bond yields and the appetite that investors have exhibited for accepting negative interest rates. Since the 17th century reliable public debt markets have facilitated economic innovation and development The Dutch Republic pioneered public debt. The British financial revolution that marked the creation of the Bank of England and a funded public debt in 1694 following the Glorious Revolution when British financial institutions were remodelled on the Dutch model that lead to the commercial success of Britain in the 18th century. The first Treasury Secretary of the US Alexander Hamilton learnt these lessons and sought to replicate them in his Report of Credit transmitted to Congress in 1790.

## Tight fiscal stances can be both inconvenient and can yield disappointing macro-economic results

In the last decades of the 20th century the benefits of public debt were demonstrated again by the Reagan administration. In the 1980s President Reagan used deficits to finance an ambitious programme of rearmament that contributed to the end of the Cold War and an equally ambitious agenda of cuts in marginal tax rates that improved the functioning of the US economy. In contrast the Thatcher administration in the UK was much more reticent about using debt to finance expenditure and improvements in the structure of incentives in the economy. In the 1980s both the UK and US enjoyed a long period of expansion, but it was the UK that had created significant budget surpluses which experienced an unambiguously hard landing at the end of the economic cycle. In the same manner that the budget surpluses that the Clinton administration presided over at the end of the 1990s did not prevent the equity market bubble – the *Techwreck* and recession in 2000.

## The revival of interest in active fiscal policies after 2000 among American economists

The recession that followed the *Techwreck* in 2000 resulted in a fundamental change in the perception of the role of fiscal policy as part of macro-economic management in the US. The broad consensus among economists in 2000 was that the key policy instrument for managing demand over the economic cycle was monetary policy. Decisions on interest rates taken by central banks in shaping monetary conditions touch every economic decision to consume, save and invest.

Monetary policy was perceived as much more powerful than fiscal policy and timelier in its effects. This reflected earlier episodes when the US attempted variously to manage inflationary and balance of payments problems through monetary and fiscal policies in the 1960s and 1970s the settled judgement was that monetary policy was the key macro-economic instrument. The lags and delays in the effects of fiscal policy meant that active fiscal policies to stabilise the economy had the potential to be pro-cyclical rather than anti- cyclical. The classical example being when Ford Administration's tax rebate in the 1970s. It arrived as a cheque to tax payers from the IRS after the economy had started to recover. It was pro-cyclical rather than anti-cyclical.

President Bush agreed to tax rebates as part of a wider supply side orientated tax cut as an insurance against recession in 2001. Many economic commentators ridiculed it as a stabilisation measure. Yet when economists at the University of Pennsylvania investigated its effects, they demonstrated that it helped to stabilise consumption at the point in the economic cycle when it was needed. This stimulated a wide-ranging debate among American economists and policy-makers and it became broadly agreed that active fiscal policy should play a role in stabilisation. Economists and policy makers across the intellectual and political spectrum formed part of this changed view of the role of fiscal policy. They included Alan Auerbach, Michael Boskin, Martin Feldstein, Robert Rubin and Lawrence Summers.

## IMF changed its advice in 2008: and fiscal stimulus played an important role in stabilising output

When the Great Recession deepened in 2008 the IMF in its Word Economic Outlook in November 2008 shifted its advice to include active fiscal stimulus as part of the advised policy response. OECD countries engaged in active fiscal stimulus polices, as part of the process of stabilising output over the Great Recession, that represented 2.5 per cent of GDP. The UK economic and policy making establishment has been parochial in the context of this change in international economic opinion. Most of its focus has been on whether the UK Government will or not meet a particular iteration of its changing fiscal rules rather than an engagement with the principal economic issues involved.

Monetary and fiscal policy became fused in practice during and after the economic crisis in 2008. Taxpayers had to underwrite the financial

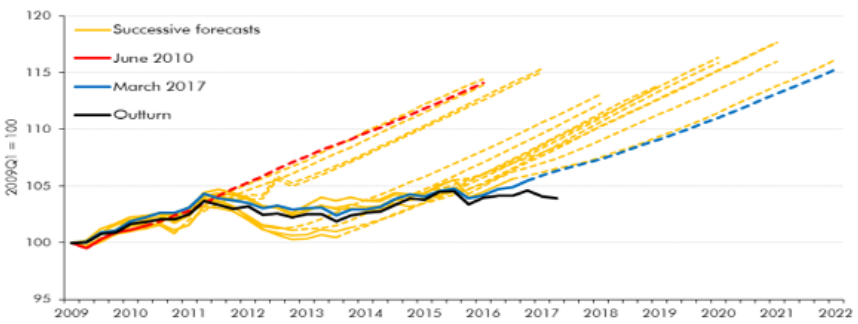
risks that central banks were exposed to as a result of unorthodox monetary policies that they turned to in the context of low interest rates. With the huge expansion of central bank balance sheets, the neat separation of fiscal and monetary policy went. Ten years after the crisis monetary policy remains highly constrained. There have moreover been adverse consequences arising from both very low interest rates and low bond yields. There are huge micro-economic distortions to the pricing of credit. The shape of the yield curve has been inverted between interest rates paid on short maturity borrowing and long-term borrowing. It is not clear that economic agents would react in a positive manner to a further loosening in monetary conditions. Savers fear very low rates of interest and negative interest rates. While low borrowing costs in the context of tax privileged debt finance relative to equity invite asset price bubbles and other distortions.

# Annex 3 - Accuracy of OBR and CBR Forecasts?

## OBR Forecasts

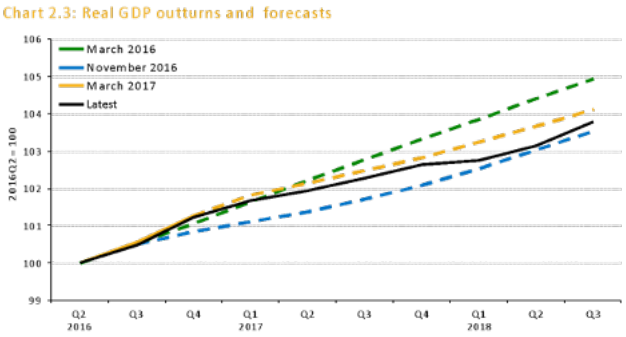
Because the OBR forecasts are dominated by somewhat arbitrary assumptions on future growth of labour productivity they have in the past tended to be considerably over optimistic. After the 2008/9 recession the OBR assumed for several years that pre-crisis productivity growth rates would resume. This led to the poor forecast shown in the Chart below which was drawn up by the OBR themselves.

Chart 1: Successive OBR productivity forecasts (output per hour)




Note: Solid lines represent the outturn data that underpinned the forecasts at the time (the dashed lines).
Source: ONS, OBR

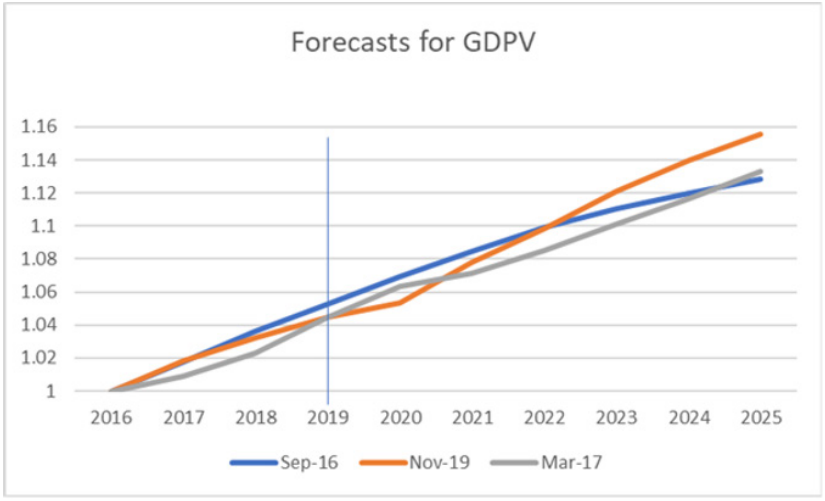
More recently the productivity assumption has been slower and more realistic. The OBR's short-term forecasts are dominated by an assumption that the economy will return to full capacity utilisation within a few years followed by a longer period of growth at the assumed growth rate for productive capacity. Since the economy has been close to full-capacity utilisation (including full-employment) in recent years, the OBR forecasts for GDP, whether short-term or long-term, are substantially the same as the assumed growth of productive capacity. The Chart below shows that since 2016 the forecasts have been more realistic.




*Source: OBR*

## Forecast Accuracy of the CBR Model

The CBR model has a supply side in which adapts to levels of demand and hence avoids arbitrary assumptions about the growth of productive capacity. Short-term forecasts using this model have been reasonably accurate in the past although Brexit adds further uncertainties on top of the usual model variability. The chart below shows CBR forecasts for GDP generated in 2016 and 2017 compared with the orange line which shows actual GDP up to 2019 plus our latest forecasts beyond 2019. The 2016 forecast was slightly optimistic on the impact of uncertainty up to 2019 but the 2017 forecast was accurate.



£10.00
ISBN: 978-1-913459-31-4

Policy Exchange
8 – 10 Great George Street
Westminster
London SW1P 3AE

www.policyexchange.org.uk