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Corporation tax and investment

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6. Corporation tax and investment

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Key findings

1. **UK rates of corporate investment are among the lowest in the developed world.** In 2019 the UK had the lowest level of business investment in the G7 and the third-lowest in the OECD: 10.5% of GDP compared with an OECD average of 13.6%.

2. The UK's approach to taxing corporate investment is one of extremes. **The UK's headline corporation tax rate (19%) is one of the lowest of any advanced economy.** At the same time, however, **UK investment allowances are some of the least generous in the OECD**. As a result, effective tax rates in the UK (a measure that accounts for both the tax rate *and* the generosity of allowances) are middling by international standards.

3. Just as importantly, effective tax rates vary drastically between investments. **Investing in some assets is penalised much more than investing in others.** Meanwhile, **investments financed by borrowing can receive substantial subsidies**, encouraging firms to take on more debt and to invest in low-return projects that would otherwise be unviable.

4. **As inflation rises, these distortions are exacerbated**, increasing the premium on achieving genuine structural reform that rationalises the system and reduces such distortions.

5. Kwasi Kwarteng's dramatic September 'mini-Budget' announced the cancellation of a previously planned increase in the rate of corporation tax from 19% to 25%, a decision HM Treasury said would cost a substantial **£15 billion a year in forgone revenue** (in 2022–23 terms). Alongside this came a (more fiscally modest) **increase in the permanent level of the annual investment allowance (AIA), from £200,000 to £1 million**, allowing firms to deduct more of their investment spending from taxable profits immediately.

6. **Cutting the rate of corporation tax will reduce all of the distortions associated with the tax**. However, the tax reduction would be largest for more profitable investments: it would be less effective at reducing the tax on the borderline investments that are most likely to be discouraged by tax. While reducing the rate reduces the distortions to the level, allocation and financing of investment, unless it is reduced to zero, it cannot fully eliminate those distortions.

7. **Increasing the AIA**, meanwhile, is **more cost-effective as a way to encourage investment domestically** – it eliminates the disincentive for equity-financed investment in qualifying assets – though **not necessarily as a way to increase the UK's international competitiveness**. It **also increases subsidies for low-return investments funded by debt** – investments that come at a cost to the exchequer but do little for growth.

8. There is strong evidence that, all else being equal, such cuts to corporation tax would be expected to increase investment in the UK. But they will do so **only if they are expected to last**. Investment decisions are long-term by their nature and the current political environment – and a long history of policy instability – **will probably make it harder for the Chancellor to increase investment through the tax system** (at least in the short term).

9. While tax matters for investment, it is not all that matters. If interest rates are pushed upwards, or if the UK is seen as providing an unstable environment in which to do business, that **could easily outweigh any beneficial effects of lower corporation tax**. In other words, corporation tax changes need to be situated within a sensible and credible fiscal framework and broader policy environment if they are to be effective in boosting investment.

10. **Only genuine structural reform** of how investment is treated by the tax system – as opposed to tweaking individual features – **can eliminate distortions to the level, allocation and financing of investment.** There is more than one way to achieve this, but it must involve reforming the treatment of debt and equity finance as well as headline tax rates and capital allowances.

11. **What is needed is a coherent plan** for the future of corporation tax as part of a wider fiscal strategy, clearly communicated, that companies and investors can use as **a credible guide to what to expect in the future**. There are certainly improvements that could be made. Short of that, **some stability would be nice**.

6.1 Introduction

In front of the steps of 10 Downing Street, in her first statement after taking office as Prime Minister, Liz Truss set out a clear ambition to make use of the tax system to encourage business investment:

> As Prime Minister, I will pursue three early priorities. Firstly, I will get Britain working again. I have a bold plan to grow the economy through tax cuts and reform. **I will cut taxes to** reward hard work and **boost business-led growth and investment**.
>
> Prime Minister's Office, 2022 (emphasis added)

We have not had to wait long to see the policy tools that her government intends to use in pursuing this ambition. One of the centrepieces of Kwasi Kwarteng's dramatic September fiscal statement was the cancellation of a previously planned increase in the rate of corporation tax from 19% to 25%, a decision HM Treasury said would cost a substantial £15 billion a year in forgone revenue (in 2022–23 terms). Alongside this came a more fiscally modest increase in the permanent level of the annual investment allowance (AIA), from £200,000 to £1 million.

In this chapter, we look in detail at the incentives (and disincentives) that the corporation tax system creates for firms to invest, placing these incentives in the wider context of a level of UK business investment that is amongst the lowest in the developed world. We consider what effect corporation tax changes are likely to have on business investment in practice.

In particular, we consider how the UK's 19% corporation tax rate (extremely low by international standards) interacts with a set of investment allowances that are unusually ungenerous by international standards. To do this, we calculate *effective* tax rates for a range of example investments, analysing the biases and distortions that the current tax system creates between them. We then look at the difference that Mr Kwarteng's announcements make to these effective tax rates, and at what further reforms we might expect in the future.

The rest of the chapter proceeds as follows. In Section 6.2, we place the UK's investment performance in international and historical context. In Section 6.3, we provide an overview of the UK's current system of corporation tax and investment allowances and summarise the academic evidence on the responsiveness of private sector investment to changes in the tax system. In Section 6.4, we situate the UK's tax regime in its international context, comparing headline and effective rates of tax with those of other developed economies. In Section 6.5, we take stock of the current investment incentives in place in the UK, showing how effective tax rates on investment vary across investment classes and evaluating the likely impact of Mr

Kwarteng's recent corporation tax changes. Finally, in Section 6.6, we look towards the future of tax policy in this area, considering the possible implications of higher interest rates and inflation for investment incentives, and making the case for the structural reforms that would be required to place the UK's corporation tax on a more coherent footing. Section 6.7 concludes.

This chapter was finalised in the wake of the 'mini-Budget' delivered to the House of Commons by Kwasi Kwarteng on 23 September 2022. Since then, the main corporation tax announcement in the mini-Budget has been reversed and both Chancellor Kwarteng and Prime Minister Truss have resigned. These developments came too late to be integrated into the chapter before publication. A brief postscript, Section 6.8, acknowledges their implications.

6.2 Business investment in the UK

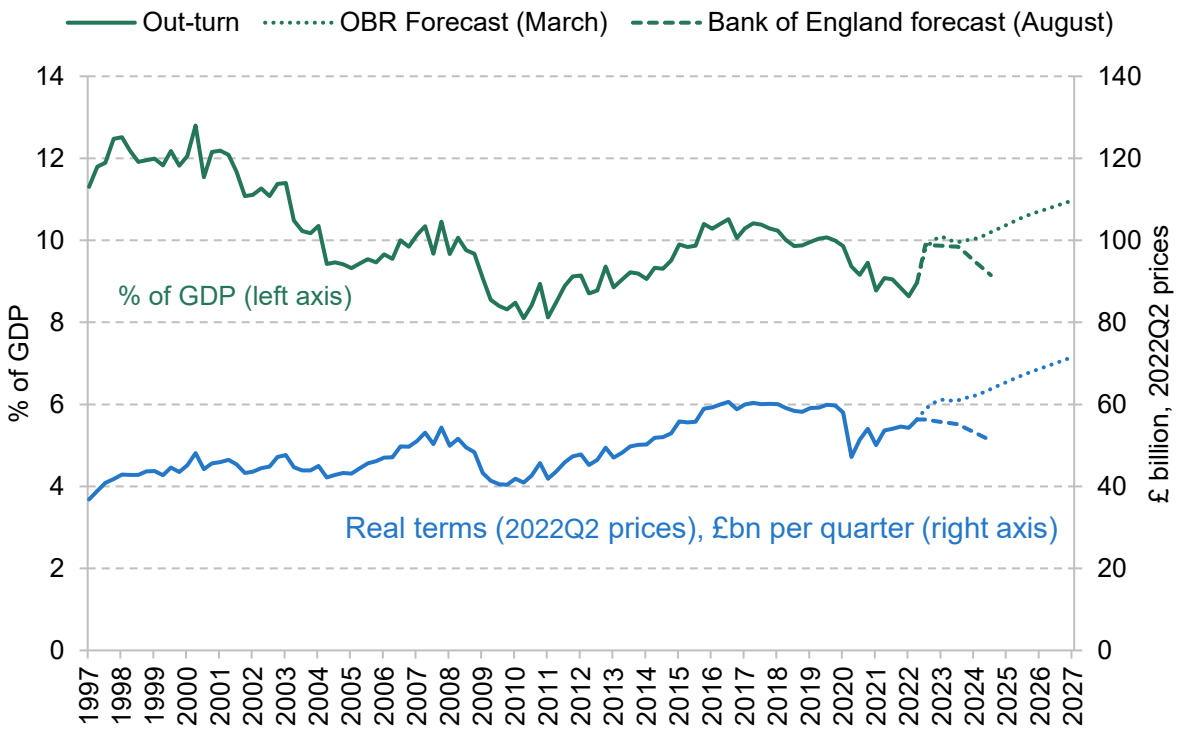
Annual business investment in the UK was about 9% of GDP or around £200 billion in 2021.[1] It is important to understand that this represents a measure of the *flow* of new investment that is being added to the total *stock* of corporate capital. Ultimately, it is the stock of capital – which is built up from investments over many years – that is a determinant in the output of the economy. Given that the stock of UK corporate capital stood at just over £2 trillion in 2020 (Office for National Statistics, 2021, table 2.1.1), it should be kept in mind that even a large proportional increase in annual investment would take a considerable period of time to be reflected in a significant growth in total capital (and therefore economic output).[2]

UK investment has followed a volatile path in recent decades, as Figure 6.1 illustrates. In the late 1990s corporate investment was consistently in the region of 12% of GDP, but by 2007 this had fallen to 10%. In the aftermath of the Financial Crisis, it fell yet further to around 8% of GDP in 2010, before gradually recovering to around 10% in 2016. After a few years of relative stability, the advent of the coronavirus pandemic marked a fresh decline in UK investment to around 9% of GDP, where it stands today.

Figure 6.1 also shows the latest published forecasts from the Office for Budget Responsibility (OBR) and the Bank of England. The Bank's forecasts are considerably lower than the OBR's, partly reflecting the fact that they are more recent – from August rather than March – and the economic outlook became less favourable for business investment in the intervening months.

1 See Figure 6.1 for source.
2 For further discussion of this point, see Wilkes (2022).

Figure 6.1. UK business investment

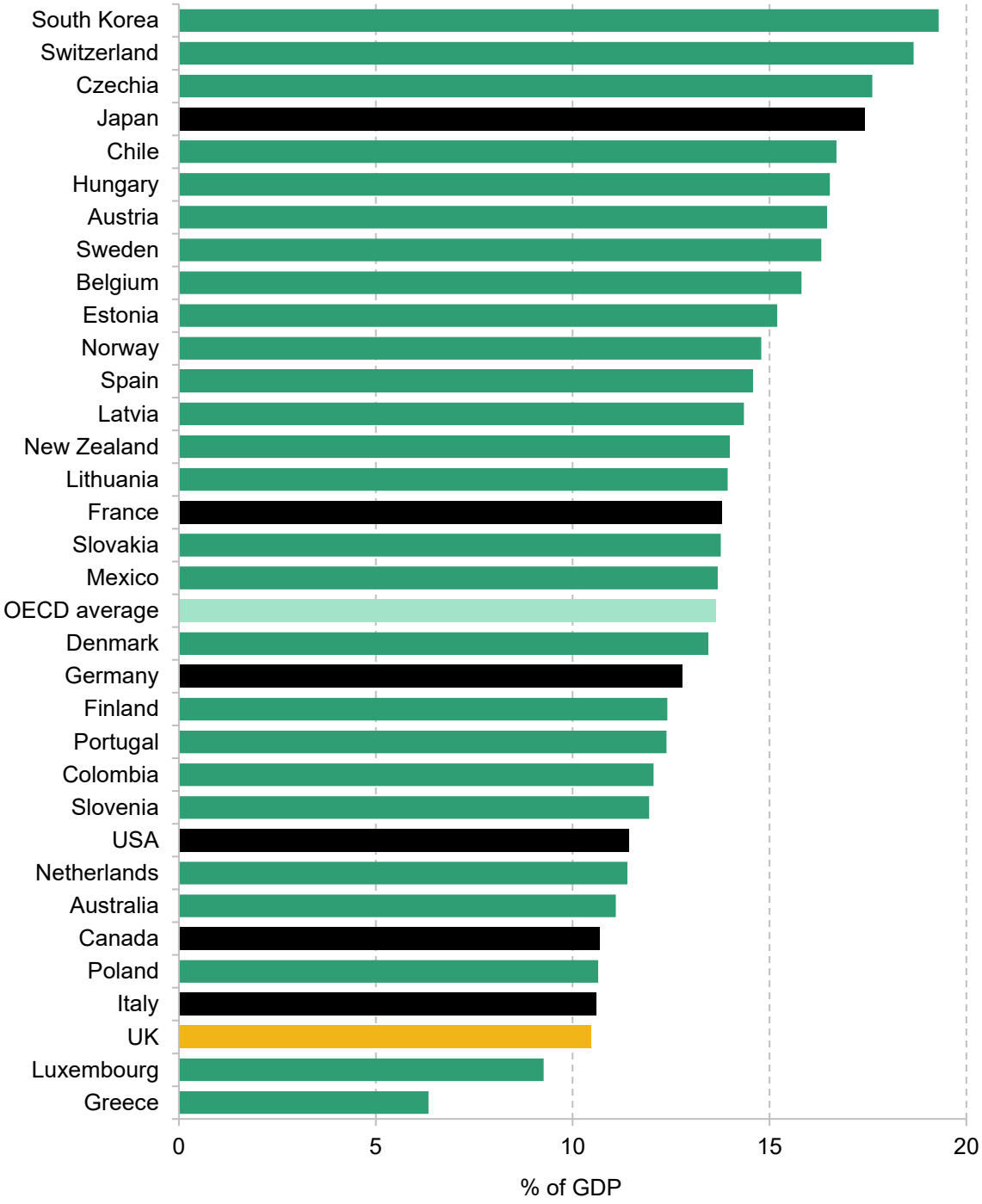


Note: Seasonally adjusted. Real-terms series use the chain-volume measure with base period 2022Q2. For percentages of GDP, out-turn is calculated as nominal business investment divided by nominal GDP and forecast as real (chain-volume measure) business investment divided by real (chain-volume measure) GDP. Value for 2005Q2 is interpolated due to an outlier caused by the reclassification of British Nuclear Fuels. OBR forecasts are quarterly from 2022Q3 to 2027Q1. Bank of England forecasts are annual from 2022 to 2024.

Source: Out-turn from ONS, 'Business investment by industry and asset', tables 1 and 4 (https://www.ons.gov.uk/economy/grossdomesticproductgdp/datasets/businessinvestmentbyindustryandasset). OBR forecast from Office for Budget Responsibility, *Economic and Fiscal Outlook March 2022*, supplementary economic table 1.1 (https://obr.uk/efo/economic-and-fiscal-outlook-march-2022/). Bank of England forecast from Bank of England, *Monetary Policy Report August 2022*, table 1.E (https://www.bankofengland.co.uk/monetary-policy-report/2022/august-2022).

This level of investment is low by international standards. According to the OECD, in 2019 the UK had the lowest level of business investment in the G7 and the third-lowest in the OECD: 10.5% of GDP compared with an OECD average of 13.6% (Figure 6.2). The UK's low position can be partly explained by the greater importance of the service sector in the UK's economy: services are less capital intensive, and, amongst developed countries, countries with larger service sectors tend to have lower levels of investment (Office for National Statistics, 2018).

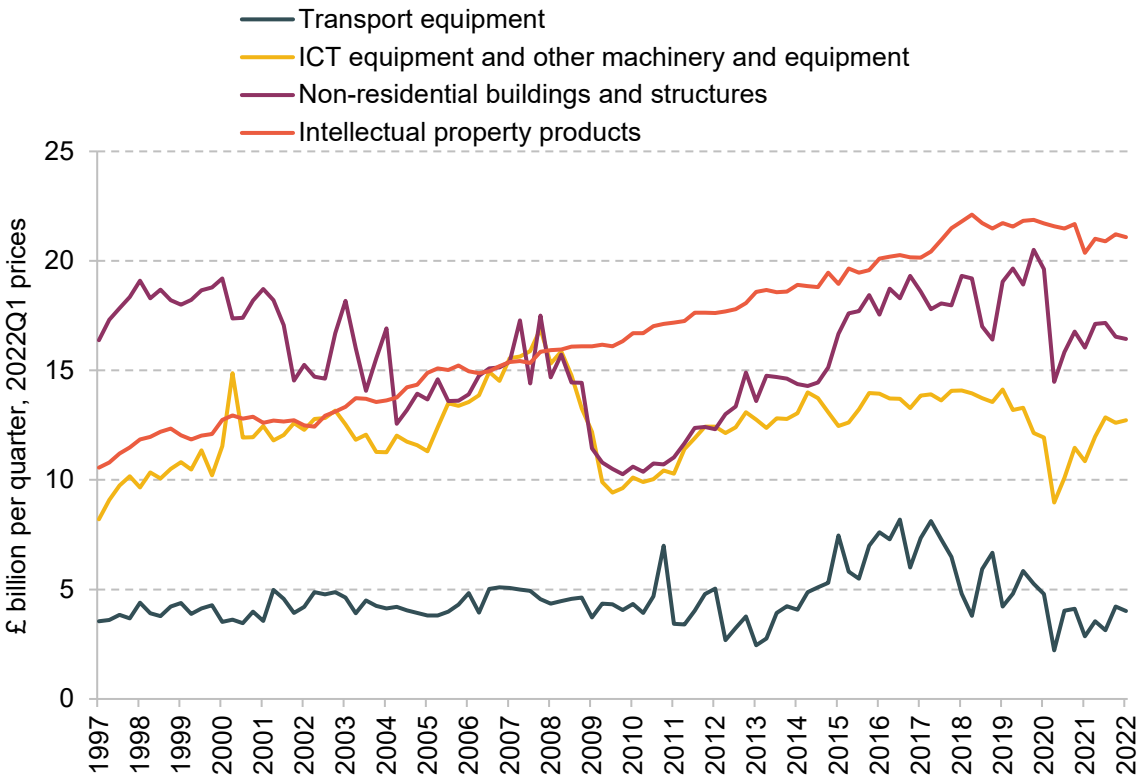
Figure 6.2. Corporate investment in OECD countries, 2019



Note: Ireland is excluded due to the large volatility of its investment statistics. OECD average is the unweighted average of OECD countries for which data are available (excluding Ireland). G7 countries, other than the UK, are shown in black.

Source: OECD, 'Investment by sector', https://doi.org/10.1787/abd72f11-en.

Figure 6.3. Composition of real business investment in the UK



Note: Seasonally adjusted and expressed in 2022Q1 prices using the chain-volume method. See Office for National Statistics (2017) for a description of what falls into each category.

Source: Office for National Statistics, 2022a, table 1.

While measured investment has historically been dominated by buildings and physical equipment, intangible assets have become increasingly important. Figure 6.3 shows the official statistics, with intellectual property products (such as purchases of software and investment in research and development) accounting for 40% of total business investment in 2022Q1. Defining and measuring investment in intangibles is difficult,[3] and experimental statistics that attempt to include a broader measure of intangible assets (such as branding, design, organisational capital, financial product innovation and firm-specific training) give intangibles an even bigger share, though these wider forms of 'uncapitalised' intangible investment have not grown as quickly.[4]

[3] One example that illustrates the difficulty of measuring intangibles is the case of research and development. R&D is a subcategory of the category 'intellectual property products' in Figure 6.3. The measure is derived from a business survey conducted by the ONS. This survey had historically under-sampled R&D done by small and medium-sized businesses, and by large businesses that do not engage in substantial R&D (Office for National Statistics, 2022b), partly because when the survey was developed in the 1980s, R&D was mostly conducted by large, R&D-intensive businesses. This is not a small issue: a recent change in the methodology led to R&D expenditure being revised upwards from £27 billion to £43 billion, or by 60%, in 2020. These numbers have not yet been incorporated into the business investment statistics used to calculate Figure 6.3.

[4] https://www.ons.gov.uk/economy/economicoutputandproductivity/productivitymeasures/datasets/experimentalestimatesofinvestmentinintangibleassetsintheuk.

6.3 Corporation tax and investment

In this section, we turn to the tax treatment of corporate investment in the UK, which is one factor affecting the trends in investment described above, and offer an overview of the academic evidence for the responsiveness of these investments to the structure of the tax system.

How does corporation tax work? What are capital allowances?

Corporation tax is the fourth biggest source of revenue for the UK Treasury and in March 2022 was forecast to raise around £65 billion in 2022–23, 6.6% of total government revenue. It is levied on the profits of companies operating in the UK.

In broad terms, profit is revenue minus costs.

Deductible costs include day-to-day expenses (known as 'current' or 'revenue' expenditure), which include wages, raw materials and interest payments on borrowing.

Unlike current expenditure, investment (or capital) spending on things such as machinery and buildings is not automatically deductible when calculating taxable profits. Instead, capital allowances can be used by companies to deduct their capital expenditure from taxable profits over a number of years.

The capital allowances available for investment depend on the type of asset bought. Some capital allowances can be thought of as crudely allowing for depreciation, the decline in an asset's value over time (e.g. as a result of wear and tear). Others are clearly more generous than that and can better be thought of as treating the asset purchase itself as a business expense, or as encouraging certain kinds of investment over others.

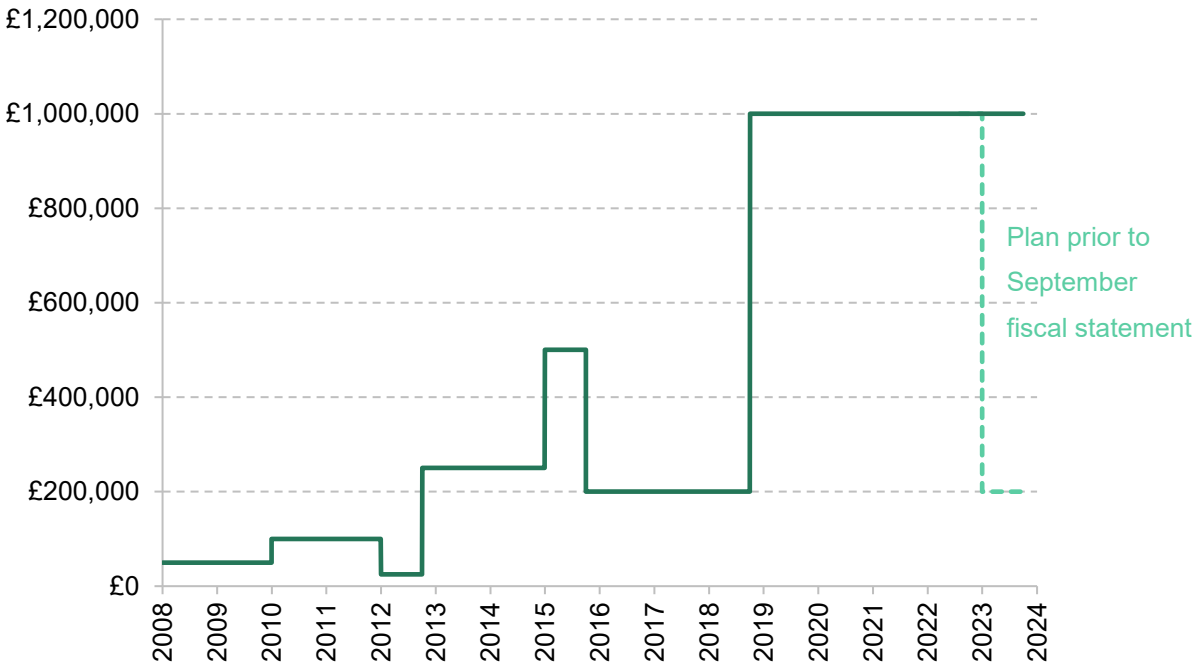
For ordinary plant and machinery – the biggest category of investment, covering everything from computers and desks to lorries, industrial equipment and other tools of the trade:

- The annual investment allowance (AIA) allows businesses to deduct investment immediately up to a certain limit each year. (This is known as 'expensing', since firms can deduct the outlays immediately in the same way as with current expenses.) The amount that can be deducted under the AIA has varied a lot over time (see Figure 6.4). It had been 'temporarily' increased from £200,000 to £1 million in 2019 and was due to fall back to £200,000 in April 2023, but in the fiscal statement of 23 September 2022 it was announced that this reduction would be cancelled and the AIA fixed at £1 million permanently. For most businesses, this is more than enough to cover all of their plant and machinery investment. But a small number of giant businesses account for most UK investment, and

this means that most plant and machinery investment will continue to fall outside the AIA. In 2019–20, just under £23 billion of investment was carried out under the AIA.[5]

- Investment in excess of the AIA is deducted on an 18% 'declining-balance' basis, meaning that for each £100 of investment, taxable profits are reduced by £18 in the first year (18% of £100), £14.76 in the second year (18% of the remaining balance of £82) and so on. All of the investment spending can be deducted eventually, but the delay makes the deduction less valuable. How much less valuable depends on the market interest rate, since that is the rate of return the firm could earn (or save in debt interest) in the meantime if it received the money earlier.
- For a two-year period – 1 April 2021 to 31 March 2023 – a temporary 'super-deduction' is in place which allows companies to deduct 130% of the cost of their total (uncapped) plant and machinery investment. In other words, for each £1 a company spends on an eligible investment, its taxable profits are reduced by £1.30.

Figure 6.4. The annual investment allowance over time



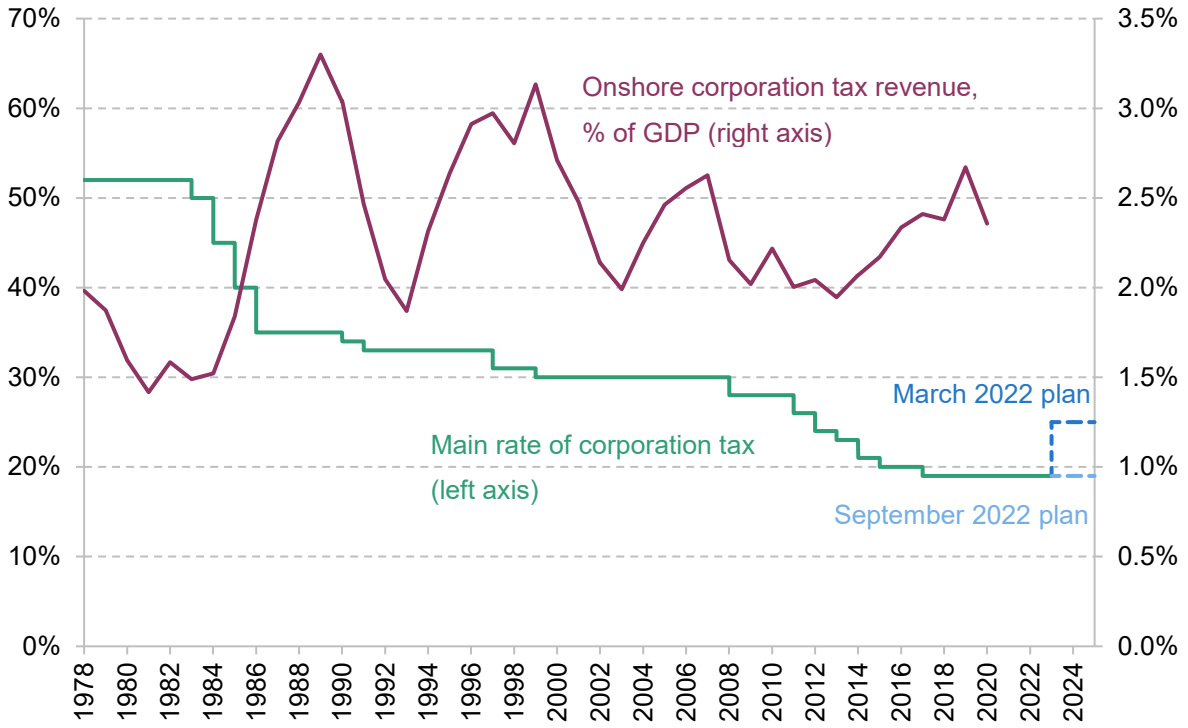
Note: The horizontal axis has April of each year marked; as shown in the chart, some changes took effect in January.

Source: https://www.gov.uk/capital-allowances/annual-investment-allowance.

[5] https://www.gov.uk/government/statistics/corporation-tax-statistics-2021.

However, ordinary plant and machinery accounts for a minority of all investment. A range of different allowances is available for investment in other assets: long-life plant and machinery, cars, buildings, intangible assets, assets used for R&D, and certain environmentally friendly investments.[6] The incentive to invest in different assets is affected by the capital allowances available as well as the underlying commercial attractiveness of the investment.

Figure 6.5. The main rate of, and revenue from, UK corporation tax



Note: The horizontal axis has April of each year marked.

Source: IFS Fiscal Facts, https://ifs.org.uk/taxlab/data-item/ifs-fiscal-facts and OBR Public Finances Databank August 2022, https://obr.uk/data/.

As noted above, the main rate of corporation tax levied on taxable profits is currently 19%. Former Chancellor Rishi Sunak put in place plans for this rate to increase to 25% in April 2023 for companies making large profits,[7] but this increase was cancelled in the new Chancellor's fiscal statement of 23 September 2022. The proposed rise was a substantial one. It would have increased the main rate of corporation tax by 6 percentage points, from 19% to 25%. It would have been a different direction of travel from that taken by successive previous governments: the

[6] The detailed rules on capital allowances are complicated. For a brief introduction, see https://ifs.org.uk/taxlab/taxlab-taxes-explained/corporation-tax-explained. There are no capital allowances for financial assets (such as shares in other companies) or other 'non-depreciable' assets.

[7] The higher rate was to apply in full to companies with annual profits above £250,000 and in part to companies with profits between £50,000 and £250,000.

first rise in the main rate of corporation tax for half a century. At the same time, we should not exaggerate the size of the change: at 25%, the rate would still have been lower than it was in 2011, let alone the 52% peak it reached in the 1970s and early 1980s (see Figure 6.5).

However, the main rate does not apply to all taxable profits. Profits from North Sea oil and gas, banking and patents are subject to different tax regimes. And even where the main rate is payable, it must be understood in conjunction with the changing measure of profits to which it applies. That is one reason the revenue line in Figure 6.5 does not show the same downward trend as the main rate: while the main rate has been steadily reduced, the base has also been broadened, including by making capital allowances less generous. Other factors include changes in the level of corporate profits, whether due to wider economic developments or in response to tax reforms.

Does corporation tax matter for investment?

How does corporation tax affect investment incentives?

Corporation tax – including features such as capital allowances and the treatment of borrowing as well as headline rates – affects the financial incentives companies face to invest. Economic theory identifies two measures of effective tax rates that are relevant for different kinds of decision:[8]

- The **effective average tax rate** (EATR) is the proportion by which tax reduces the rate of return on an investment.
- The **effective marginal tax rate** (EMTR) is the proportion by which tax reduces the rate of return on a *marginal* investment: that is, one that is only just worthwhile. It measures how much lower the *cost of capital* (the rate of return investors require) would be in the absence of taxation.[9] The higher the EMTR, the greater the required pre-tax rate of return, and hence the weaker is the incentive to invest.

The EMTR is therefore a special case of the EATR for a marginal investment. In fact, the EATR is a weighted average of the EMTR and the statutory tax rate, where the weights reflect the profitability of the investment. Put simply, for any given investment, the EATR will be equal to the EMTR if the investment only just breaks even (in present-value terms), and will get gradually closer to the statutory tax rate for more profitable investments.

[8] These measures were developed by Hall and Jorgenson (1967), King and Fullerton (1984) and Devereux and Griffith (1998 and 2003). For a fuller description and discussion, see Devereux and Griffith (2003), Auerbach, Devereux and Simpson (2010) and the chapters by Sørensen and Devereux in Sørensen (2004).

[9] The cost of capital, a standard measure across economics, finance and accounting, is the pre-tax rate of return an investment must generate in order to provide, after tax, the rate of return that investors require.

For investment that is confined to the UK, economic theory suggests that the EMTR is what should influence the scale of investment. Marginal investments – those that are only borderline worthwhile – are those whose viability might be affected by a tax reform. Investments that are highly profitable will still be worthwhile and go ahead even if slightly more of the return is taken in tax; the EATR determines how much tax is paid on the project, but not whether it goes ahead. In a domestic context, it would therefore be economically efficient to have a low EMTR but a high EATR in order to raise as much revenue as possible without discouraging investment.

However, in an international context, the EATR is relevant for determining where investment happens. A highly profitable project might be sure to go ahead, but a company may decide where to locate it based on (among other things) the tax treatment it would get in different countries: a country's EATR is the relevant measure for that. In an international context, therefore, there is a trade-off between wanting a low EATR to attract investment (and therefore tax revenue) to the UK and wanting a high EATR to maximise tax revenue from those investments that will happen in the UK anyway.

In short, the EMTR is relevant for the *scale* of investment and the EATR is relevant for the *location* of investment.[10]

EMTRs and EATRs can vary widely across investments, based not only on features of the tax system (such as statutory tax rates, capital allowances and the treatment of finance costs) but also on the nature of the particular investment (such as the rate at which the asset depreciates and how the investment is financed) and the economic environment (interest rates and inflation rates). But, other things equal, reducing corporation tax rates or increasing capital allowances reduces EMTRs and EATRs – albeit to varying degrees. In the rest of this chapter, we will show EMTRs and EATRs for a number of example investments and explain how they would be affected by various reforms. These function as summary statistics for how corporation tax, and reforms to it, influence incentives to invest.

Does investment respond to tax incentives?

It is sometimes claimed that taxes are not a significant consideration in companies' decisions, or that decision-makers in companies pay attention only to headline tax rates, not details such as capital allowances.

[10] For location decisions that do not involve real activity / investment – shifting paper profits between jurisdictions, for example by manipulating the 'transfer prices' that different parts of a multinational company charge each other for inputs or the interest rate on intra-company loans – it is the statutory tax rate (rather than the EMTR or EATR) that matters, along with any legal restrictions designed to prevent such behaviour. This is a third kind of tax rate for a third kind of decision.

Empirical evidence does not support such claims. Of course, tax is rarely the driving factor: decisions about whether, where and how much to invest are taken for a wide variety of reasons, many more important than tax. But where a decision is a close call for other reasons, tax can be one factor tipping the balance of competing considerations, and across the economy as a whole that can add up to a significant effect. There is now a large academic literature estimating the effects of corporate taxes on investment and other business decisions. While results of individual studies vary and not all align perfectly with simple theory, overall, surveys and meta-analyses of that literature (Hassett and Hubbard, 2002; Devereux and Maffini, 2007; de Mooij and Ederveen, 2008) reveal overwhelming evidence that higher corporate taxes in general – and headline rates, EMTRs and EATRs specifically – have substantial effects in terms of reducing investment.[11] More recent individual studies, such as Bond and Xing (2015), reinforce that finding. One important example, Maffini, Xing and Devereux (2019), looked specifically at the effect of capital allowances in the UK, showing that more generous allowances for medium-sized firms from 2004 led to a large increase in the amount they invested, with qualifying companies increasing their investment rate by 2.1–2.5 percentage points relative to those that did not qualify.[12]

It is hard to distil simple, precise rules from a complex literature, but as a rough guide, one leading expert has suggested that 'a consensus estimate from the academic literature is that a one percentage point rise in the EATR leads to a 2.5% reduction in inward flows of foreign direct investment', while a 1 percentage point rise in the EMTR would tend to reduce investment by about 7% (Devereux, 2021).

There is also, however, some evidence – albeit less, and therefore more tentative – that the effects of corporate tax on investment are weaker when firms are facing economic downturns (Edgerton, 2010) and/or greater uncertainty (Guceri and Albinowski, 2021) – a good description of the current climate.

[11] Effects of corporation tax on economic growth are harder to detect directly. A number of studies have tried, and some claim to succeed – one from the OECD (Arnold et al., 2011) is perhaps the best known, finding that corporate profits taxes reduce economic growth more than personal income taxes, consumption taxes or (least damaging of all) property taxes. However, it is not clear how robust that evidence is, and findings elsewhere vary. One recent meta-analysis (Gechert and Heimberger, 2022) did not find clear evidence of an effect, though it depended exactly what was being estimated in the underlying studies. However, empirically disentangling the effects of corporation tax on growth is inherently difficult, and it might be more productive and convincing to break it down into steps: for example, we can be confident that corporation tax affects investment and therefore the capital stock, and that the capital stock affects productivity and therefore GDP.

[12] A swathe of studies similarly show substantial effects of more generous capital allowances in the US (House and Shapiro, 2008; Zwick and Mahon, 2017; Ohrn, 2018 and 2019). Other studies looking specifically at the UK include Bond, Denny and Devereux (1993), Ellis and Price (2014), Barnes, Price and Sebastiá Barriel (2008), Brockmeyer (2014) and Wallis (2016). The details and quality of these studies vary, but all find a strong effect of tax rates or the cost of capital on investment.

Incentives to invest depend on expectations of future tax rates, not just on current ones. The effective tax rates we calculate in this chapter assume that whatever tax regime is chosen remains in place permanently. But that might not happen.

- First, a government might announce an explicitly temporary measure (such as the super-deduction in place from April 2021 to April 2023) or pre-announce a future reform (such as Rishi Sunak's planned rise in the rate from 19% to 25%, which was announced in the March 2021 Budget to be implemented in April 2023). We examine some of the implications of temporary measures and pre-announcements for understanding the effects of the super-deduction in Box 6.1.
- Second, even when a policy is announced as permanent, people might think that the government – or a future one – is liable to change it. Experience with the repeated yo-yoing in the level of the AIA shown in Figure 6.4, and the announcement of a rate increase (after years of reductions) followed by its cancellation – and experience of instability elsewhere in the tax system – make it harder to be confident in the future stability of any system that is announced.

Companies will base their investment decisions on how they expect the resulting profits to be taxed in future. And risk-averse companies may be deterred from investing by the sheer uncertainty of future tax treatment: business groups consistently emphasise that certainty and stability in the tax system are as important as the competitiveness of the system itself.

Box 6.1. Has the super-deduction failed?

In April 2021 the then-Chancellor Rishi Sunak introduced a significant temporary increase to the generosity of the UK capital allowance regime. The so-called 'super-deduction' provides all firms with an uncapped 130% allowance for investment in ordinary plant and machinery between April 2021 and April 2023. In other words, for every £1 that a firm invests in plant and machinery, £1.30 can be deducted from its taxable profits. All else being equal, one would expect this to represent a substantial subsidy to investment, allowing firms to invest in projects whose returns would be too low to be viable in the absence of tax.

The lack of a significant spike in investment by the first part of 2022 has led some to argue that the super-deduction has disappointed (e.g. Romei, 2022). We should be cautious about what conclusions we draw, however, for a number of reasons:

- First, to assess the effect of the super-deduction, we would need to know what would have happened to investment in its absence. It is hard to know, for example, how much of a rebound from COVID-19 we would have expected during this period, or to disentangle the effects of Brexit. It is not clear how far investment has underperformed given what has been happening to GDP and the wider economic

environment. More narrowly, the introduction of the super-deduction cannot be divorced from the plans announced by Mr Sunak to increase the main rate of corporation tax from 19% to 25% in April 2023. In the absence of any mitigating policy, a pre-announced rate increase of this kind provides a major incentive for firms to delay investments until the new rate comes into force. That is because deducting investment spending (through capital allowances) from profits that will be taxed at 19% is less valuable than deducting it from profits that will be taxed at 25%. For investments that fall within the AIA, the 130% super-deduction is designed to offset this effect almost exactly.[a] While it is true that for investments falling above the AIA the super-deduction represents an increase in the generosity of allowances (essentially equivalent to having an uncapped AIA), the fact that much of the increase in generosity is merely offsetting the effects of the pre-announced rate rise make the super-deduction considerably less generous than it appears. Put simply, in the absence of a super-deduction, it would have been reasonable to expect a fall in investment. The fact that this has not occurred could to a large extent be seen as the policy operating as intended: to bridge the period between the announcement of the rate rise and its implementation.

- Second, the period covered by the super-deduction has not yet come to an end. Investments take time to plan and implement; it would therefore not be surprising for investments taking advantage of the increased generosity of the super-deduction (at least above the AIA) to be more feasible towards the end of the super-deduction period than towards the start. Furthermore, in so far as the super-deduction acts as an incentive to bring investments planned for after April 2023 forwards (so as to benefit from the more generous allowance), it seems reasonable to expect these investments will be brought forward only as much as needed to qualify for the super-deduction: thus, again, taking place towards the end of the super-deduction period. With investment data for the final quarters of the policy's lifespan not yet available, it is therefore too soon to assess its impact properly.
- Third, as we discuss above, there is tentative evidence from the academic literature that investment incentives are less effective during periods of economic downturn and uncertainty. Even if the effect of the super-deduction is modest in the period that it is in place, that does not necessarily imply that tax incentives for investment are ineffective more generally.

In short, we might expect the super-deduction to have a more modest effect in the current environment; we would expect its effects to be biggest towards the end of the period, which we have not yet reached; and estimating its effects would require a careful assessment of what would have happened to investment in its absence, given not only the broader economic environment but also the fact that the pre-announcement of a tax rate rise would otherwise have been expected to depress investment over the same period.

[a] A 130% capital allowance under a 19% rate is equivalent to a 100% allowance under a 24.7% rate (19% × 1.3 = 24.7%). In other words, the super-deduction makes investing within the AIA while the 19% rate is in place roughly as attractive as investing within the AIA when the 25% rate comes into force.

The value of stability extends beyond tax. As noted above, tax is only one factor affecting investment decisions, and not necessarily the most important. Some of the other factors are things the government can do little about, such as the English language and time zone. Others can certainly be affected by government policy, such as infrastructure, skills, regulations and trade barriers, some of which the new government has proposed to address. But perceptions of stability in the political and macroeconomic environment are crucial, and have not been helped by recent international and domestic events. More narrowly, it is important to emphasise that, while tax can affect investment incentives, even a 1 percentage point rise in market interest rates would increase firms' cost of capital by more than a rise in the corporation tax rate from 19% to 25%.

Partly because of these other factors affecting investment and growth, the effects of corporation tax (or any other tax) rises depend on whether we just look at the direct effect of the tax change or also at the effect of whatever change in borrowing or in public spending it pays for (though of course not all public spending is growth-enhancing and it can be hard to link particular tax changes to particular spending changes). Our focus in this chapter is just on the direct effect of corporation tax changes themselves.

The effects of corporation tax on investment – and therefore economic output – imply that cutting corporation tax costs the government less than a simple mechanical calculation would imply: part of the up-front cost of the tax cut would be recouped in future through higher tax revenue from the additional output (as well as from more profit-shifting into, or less profit-shifting out of, the UK). However, while precise estimates vary, the strong consensus is that the magnitude of these effects would be nowhere near enough to recoup the full cost of cutting the main UK corporation tax rate (or of leaving it at 19% rather than 25%). The disincentive effects of taxation are much more than proportional to the tax rate, so the tax rate we are starting from is a crucial determinant of how far cutting the tax rate 'pays for itself': it would be much more plausible that a tax cut would be self-financing if we were starting from the 52% rate of the 1970s and early 1980s. In other words, it is much more plausible that the Laffer curve peaks somewhere below 52% than that it peaks somewhere below 25%.

This contrasts with the impression given by Liz Truss's repeated claim that 'last time we cut corporation tax, we saw the revenues increase'.[13] It is true that Chancellor George Osborne announced a series of cuts in the main rate of corporation tax during the 2010s, and that (onshore) corporation tax revenue rose during that period (see Figure 6.5). But the rate

[13] Interview on BBC1's 'Sunday with Laura Kuenssberg', 4 September 2022 (available at https://www.youtube.com/watch?v=8IWRvi2_nwQ). Ms Truss repeated the claim on 7 September, at her first Prime Minister's Questions: 'The last time we cut corporation tax we attracted more revenue into the exchequer because more companies wanted to base themselves in Britain, more companies wanted to invest in our country' (see https://www.channel4.com/news/factcheck/factcheck-did-cutting-corporation-tax-raise-money).

reductions did not *cause* the increase in revenue. There are at least two other factors to consider (Adam, 2019):

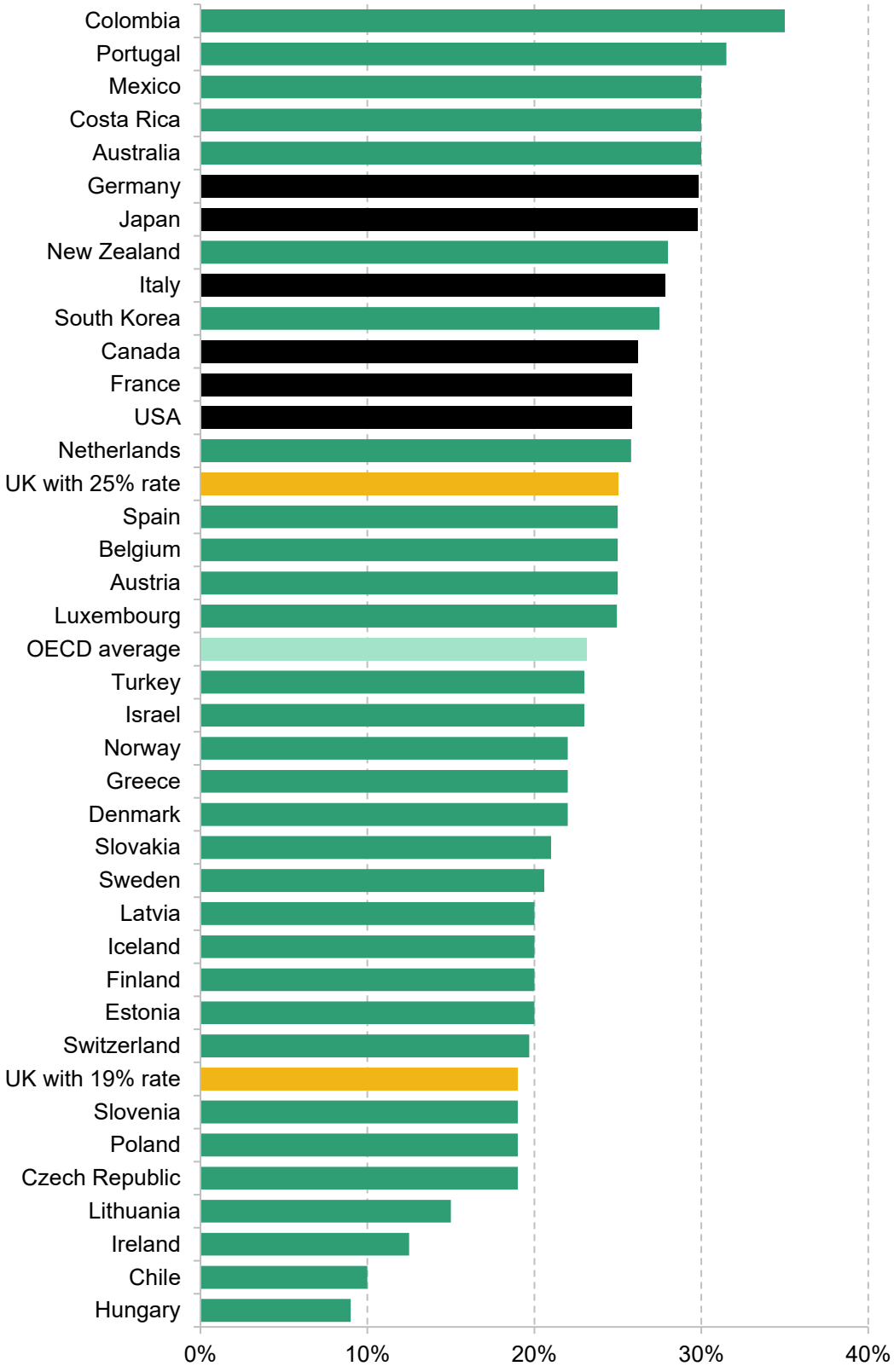
- First, corporation tax revenue at the start of the 2010s was depressed by the financial crisis and associated recession; we would have expected a recovery in profits, and therefore revenue, even if the tax rate had not been cut. Corporation tax revenue as a share of GDP did not return to levels seen in the years leading up to the financial crisis until 2021; starting the clock in 2010 just means we are making comparisons with a particular low point.
- Second, while the government reduced the headline rate of corporation tax, at the same time it increased corporation tax in other (less eye-catching) ways, including reducing capital allowances, introducing the bank surcharge, restricting companies' ability to offset past losses against future profits, capping deductible interest costs, and a raft of anti-avoidance measures. These measures recouped most of the cost of reducing the headline rate, and help to explain why revenue held up: the government simply did not cut corporation tax overall by as much as the headline rate might suggest. Analysis by Adam (2019) found that around 75% of the cost of cuts to the headline corporation tax rate since 2010 had been offset by these measures.

Factors such as these are among the reasons academic studies go to considerable lengths to disentangle the causal effects of policy changes. The results of those studies are clear: behavioural responses to corporation tax cuts do help to reduce their cost to the exchequer, but not so much that cutting tax rates increases revenue. Revenue would be higher, not lower, if the main rate of corporation tax had not been cut. The September 'mini-Budget' estimated that cancelling the rate rise would cost around £15 billion a year in today's terms. That allows for an effect of the rate rise on profit-shifting, but not for an effect on investment, so we would expect the long-run cost to be lower – though still positive.

6.4 The UK in international context

The UK's headline rate of corporation tax is among the lowest in the OECD (see Figure 6.6). Even at a rate of 25% the UK would be only slightly above the OECD average and would still be the lowest in the G7 (once subnational taxes are taken into account) – if other countries did not change their own tax rates.

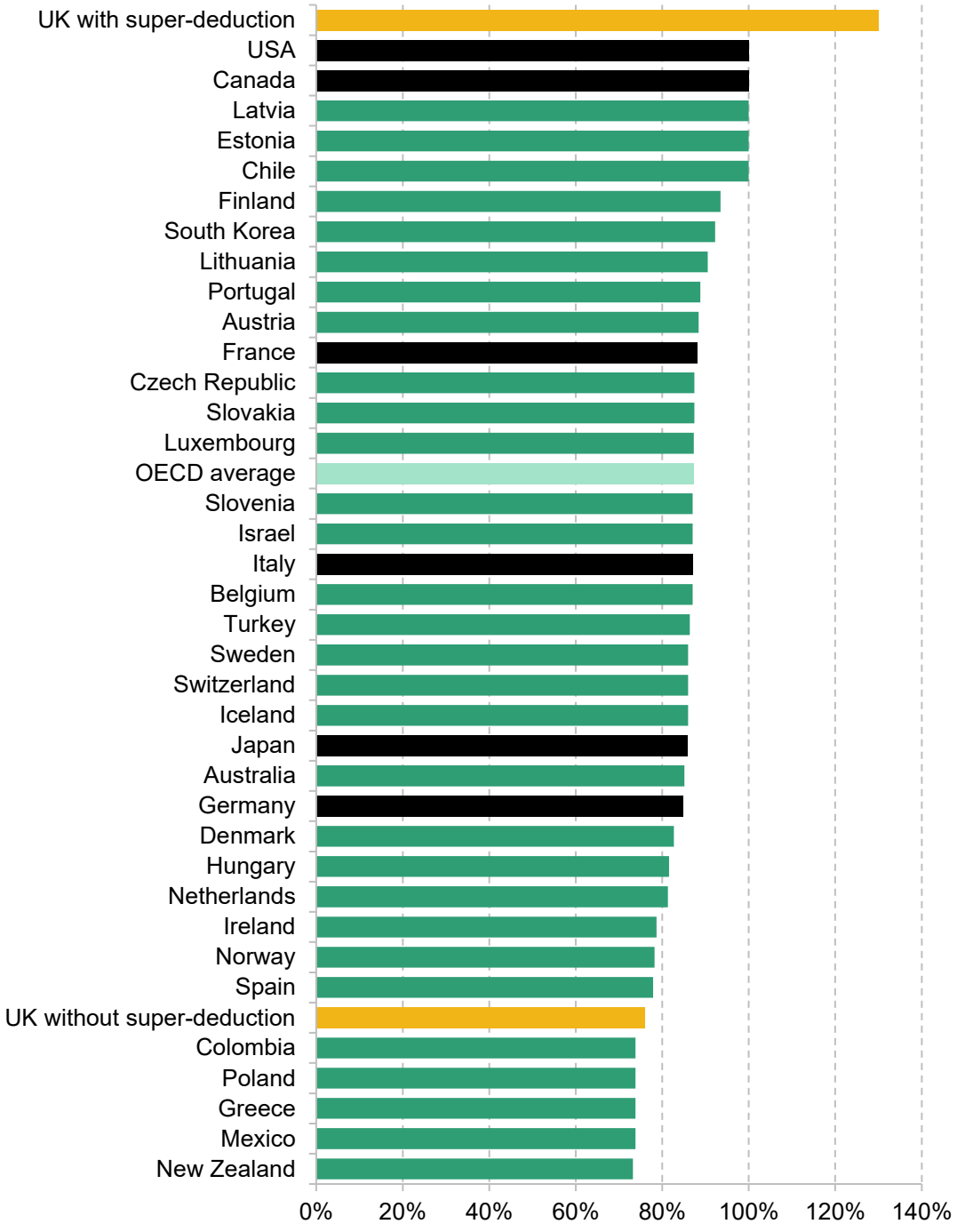
Figure 6.6. Headline corporate income tax rates, 2022



Note: Includes subnational taxes. G7 countries, other than the UK, are shown in black.

Source: OECD.

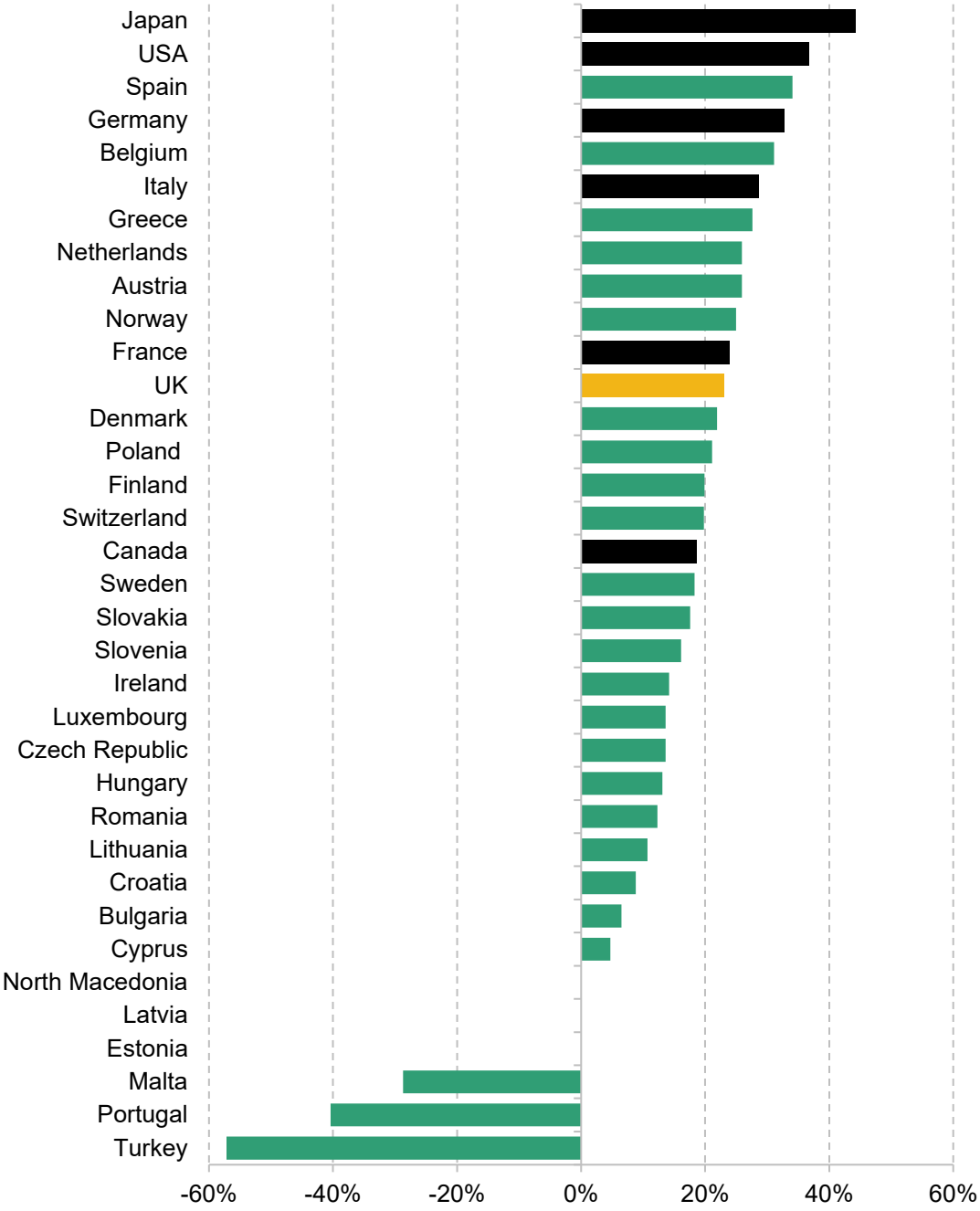
Figure 6.7. Net present value of capital allowances for plant and machinery investment, 2021 (100% = full expensing of investment)



Note: Applies to investment above any allowances such as the annual investment allowance in the UK. Includes the effect of, for example, the temporary full expensing in place in the US and Canada. G7 countries, other than the UK, are shown in black.

Source: Tax Foundation (https://taxfoundation.org/capital-allowances-cost-recovery/, except UK figure without super-deduction from https://taxfoundation.org/capital-allowances-capital-cost-recovery-2021).

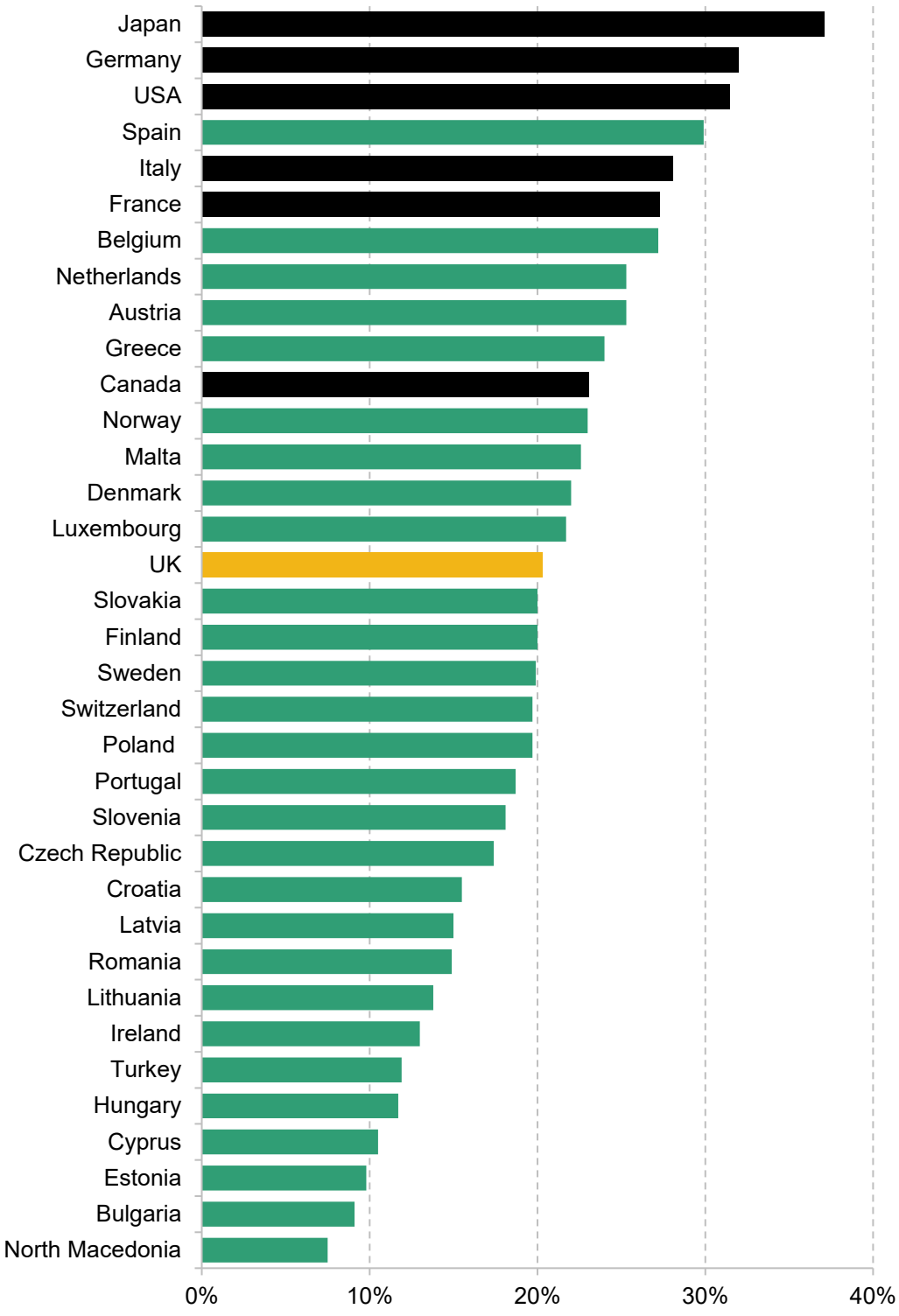
Figure 6.8. EMTRs on equity-financed investments in plant and machinery, 2021



Note: Applies to investment above any allowances such as the annual investment allowance in the UK. Excludes the effect of, for example, the temporary 'super-deduction' in the UK and temporary full expensing in place in the US and Canada. G7 countries, other than the UK, are shown in black.

Source: European Commission (https://taxation-customs.ec.europa.eu/system/files/2022-03/final_report_2021_effective_tax_levels_revised_en.pdf).

Figure 6.9. EATRs on equity-financed investments in plant and machinery, 2021



Note: Applies to investment above any allowances such as the annual investment allowance in the UK. Excludes the effect of, for example, the temporary 'super-deduction' in the UK and temporary full expensing in place in the US and Canada. G7 countries, other than the UK, are shown in black.

Source: European Commission (https://taxation-customs.ec.europa.eu/system/files/2022-03/final_report_2021_effective_tax_levels_revised_en.pdf).

However, the UK looks less internationally competitive once the whole of the corporation tax regime, rather than just the headline rate, is taken into account. The UK taxes an unusually broad measure of profits; in particular, capital allowances are ungenerous by international standards. For example, except while the temporary 'super-deduction' is in place – due to end in April (see Box 6.1 for details) – the UK's allowances for plant and machinery investment beyond the annual investment allowance (AIA) are among the least generous in the OECD (see Figure 6.7). As a result, effective marginal and average tax rates on such investment – taking into account both the headline rate and capital allowances – are towards the middle of the pack internationally, though still low by G7 standards. Figures 6.8 and 6.9 illustrate this for an example investment in plant and machinery (outside the AIA and super-deduction), financed by equity (whether new equity, i.e. issuing new shares, or retained earnings, which is how most investment is financed) under certain conventional assumptions about expected inflation, interest rates, depreciation and, in the case of the EATR, profitability of investment (see figure notes for the specific assumptions).

6.5 Where do recent announcements leave the UK corporation tax?

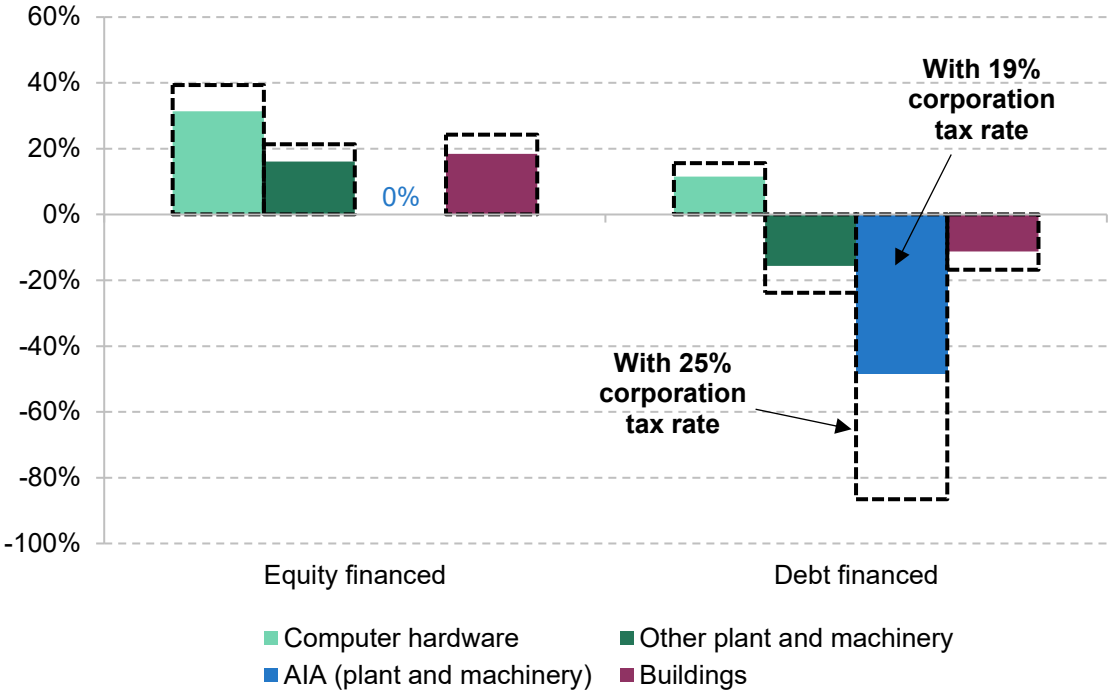
Figures 6.8 and 6.9 showed EMTRs and EATRs for one example investment under particular assumptions. But a central problem with UK corporation tax is that it treats different investments differently, distorting the choice of assets to invest in and the way that investments are financed. Figures 6.10 and 6.11 show EMTRs and EATRs in the UK for a range of different investments, still under particular assumptions (see figure notes). They also show how these effective tax rates would be different under a 25% tax rate. They illustrate a number of features of the system:

- **Effective tax rates vary between assets, depending how high capital allowances are relative to the rate at which the asset depreciates.** This means incentives to invest can be different not only for buildings versus plant and machinery, but also for different kinds of plant and machinery and even different individual items. For illustration, we assume that computer hardware depreciates at 37% per year, while other plant and machinery depreciates at 12.6% per year (following OECD (2020)). But both qualify for the same 18%-a-year capital allowances, so effective tax rates on computers are higher than those on other machinery (and would be higher on some computer hardware than others, and so on): the tax system creates a bias towards investing in assets that depreciate less quickly relative to the capital allowances available for them. Since modern technology tends to depreciate more quickly than traditional machinery, this typically implies an anti-tech bias within each capital allowance category.
- **For equity-financed investment that can be fully expensed (under the AIA), the EMTR is zero: the tax system neither encourages nor discourages investment in that asset.** In

fact, this is true regardless of the tax rate (provided it is expected to remain constant) and regardless of the rates of inflation, interest or depreciation. The intuition is that the company is taxed immediately on all receipts but can immediately deduct all outgoings at the same rate: with a 19% tax rate, the government covers 19% of the investment cost and takes 19% of the return, essentially becoming a compulsory silent partner in the project. If the revenue is worth more than the cost, 81% of the revenue will be worth more than 81% of the cost, so any project that is worthwhile before tax will be worthwhile after tax. Note that the EATR is still positive, however: while projects that were profitable before tax will be profitable after tax, if the investment is highly profitable (as in this example) then the company might prefer to do it in another country where it did not have to share as much of it with the government.

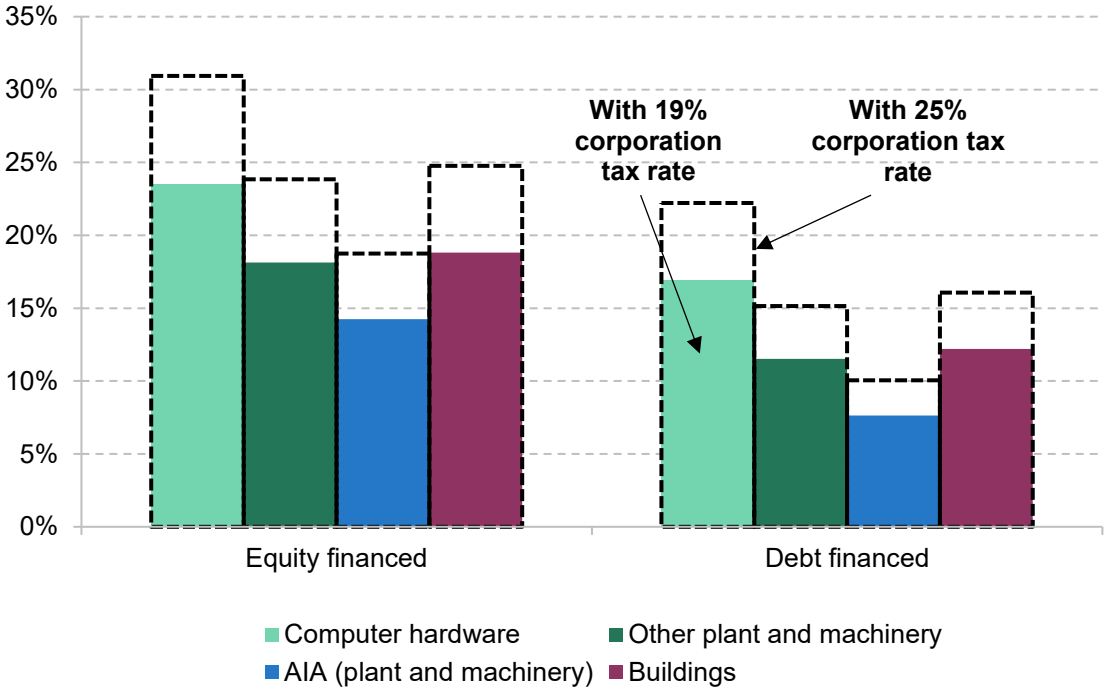
- **Effective tax rates are lower for debt-financed investment than for equity-financed investment, biasing the market towards debt finance.** This is because there is a deduction for the interest costs on debt, but no corresponding deduction for the implicit (opportunity) cost of equity finance: the returns that shareholders require given that they could put their money elsewhere. Indeed, EMTRs are negative – debt-financed investment is subsidised – where capital allowances exceed the asset's depreciation rate as well as debt interest being deductible.
- **EATRs are generally higher than EMTRs.** More precisely, EATRs are closer to the 19% statutory tax rate than EMTRs are: as explained above, the EATR is a weighted average of the EMTR and the statutory tax rate. The more profit is made relative to the amount invested, the less capital allowances matter and the closer profits come to just being taxed at the headline rate. This means that the EATR will be higher than the EMTR unless the EMTR is higher than the statutory rate, as in our example of equity-financed investment in computer hardware, where a capital allowance less generous than depreciation drives the EMTR above 19%.
- **All of the distortions to investment incentives are worse when the headline tax rate is higher.** The penalties for equity-financed investment, the subsidy for (some) marginal debt-financed investment, and the differentials between different assets and different sources of finance are all bigger with a 25% tax rate than with a 19% tax rate. (Of course, if the statutory tax rate were zero, the EMTRs and EATRs on all these investments would be zero: there would be no distortions to the scale, allocation or financing of investment.) An advantage of keeping the tax rate low is that it makes the flaws in the structure of corporation tax less important – although conversely, as we discuss in Section 6.6, if the structure of corporation tax were less flawed the imperative to keep the rate low would be less pressing.

Figure 6.10. EMTRs on example investments, with a 19% rate or a 25% rate (2023–24)



Note: Calculations assume a 5% real interest rate, a 2% rate of inflation, and depreciation rates of 37% for computer hardware, 17.5% for plant and machinery against which the AIA is claimed, 12.6% for other plant and machinery, and 3.1% for buildings.

Figure 6.11. EATRs on example investments, with a 19% rate or a 25% rate (2023–24)



Note: Calculations assume a pre-tax real return of 20%, a 5% real interest rate, a 2% rate of inflation, and depreciation rates of 37% for computer hardware, 17.5% for plant and machinery against which the AIA is claimed, 12.6% for other plant and machinery, and 3.1% for buildings.

Figures 6.10 and 6.11 still show just a small range of examples, all subject to the main rate of corporation tax: they do not cover investments in intellectual property or North Sea infrastructure, for example, where different regimes apply. But they show that, even ignoring variation in headline tax rates, the structure of the current corporation tax distorts both the choice of asset to invest in and the source of finance.

Furthermore, the extent of disincentives (or subsidies) for investment and the distortions between asset types and sources of finance are highly sensitive to (expected) interest rates and inflation rates, a point we return to in detail in Section 6.6. This is particularly important in the current environment. In line with the methodology of the European Commission (2021), the examples in these figures assume (expected) inflation of 2% and a real interest rate of 5%.[14] Inflation is currently much higher than 2%, of course, but the issue is what inflation is expected to be in future, over the lifetime of the investment. We assume that the Bank of England succeeds in returning inflation to its 2% target; in Section 6.6, we present results assuming annual inflation of 5% instead, which is (at the time of writing) roughly what financial markets expect over the next five years.[15]

Similarly, a real interest rate of 5%, while standard in the literature, is much higher than risk-free assets such as government bonds have offered in recent years. An unresolved question is what (if any) risk premium is appropriate to include in the interest rate used in these calculations – corporate investments typically offer a substantially higher expected return than government bonds – but in Section 6.6 we present results assuming a real interest rate of 1% instead.

The key point to take from this analysis is not which results are 'right', but that the results are sensitive to these factors: the disincentives (or subsidies) for investment created by corporation tax, and the distortions to asset allocations and financing methods, vary as interest rates and inflation rates change. The distortions are generally worse when interest rates and inflation rates are higher – an era we might be returning to, after 30 years when these once-widespread concerns could fade somewhat into the background.

A low rate and a high AIA

The government is aware that capital allowances matter as well as the headline rate of tax. In February 2022 Mr Sunak, the then Chancellor, argued that it was 'unclear' that recent cuts to the

[14] More broadly, these assumptions – and those we make for depreciation rates and investment returns – are the same as, or similar to, those used in most past literature using this methodology, such as OECD (2020), Oxford University Centre for Business Taxation (2017), Devereux and Griffith (1998 and 2003) and Tax Foundation (https://taxfoundation.org/capital-allowances-cost-recovery/).

[15] Source: Financial Times Global Inflation Tracker, https://www.ft.com/content/088d3368-bb8b-4ff3-9df7-a7680d4d81b2.

corporation tax rate had led 'to a step change in business investment'[16] and that increasing capital allowances would be better targeted at promoting investment – a clear change in direction from previous Chancellors over several decades, who had tended to reduce the headline rate while also reducing the generosity of capital allowances. The Spring Statement in March suggested various specific options for increasing capital allowances for plant and machinery investment, and a policy paper in May sought views on them (HM Treasury, 2022). The options were presented as being under consideration for an Autumn 2022 Budget, to take effect in April 2023 when the temporary super-deduction (and the, then temporary, increase in the AIA) were due to expire and the increase in the tax rate to 25% was due to take effect.

When Chancellor Kwasi Kwarteng cancelled the increase in the headline rate rise, he nonetheless chose to increase the generosity of the capital allowance regime in one of the ways suggested in the Spring Statement, setting the AIA at £1 million on a permanent basis rather than allowing it to fall back to £200,000. This allows firms to deduct more of their plant and machinery investment immediately.

The long-run cost of increasing the AIA will be much lower than the £1.3 billion a year shown in the government's costings, because deducting the cost of investment immediately rather than gradually means that businesses will pay less tax in the year they invest but correspondingly more tax in later years. Most of the cost is thus delaying revenue rather than reducing the cash amount, though there will still be some long-run cost to the exchequer. For comparison, the government estimated that cancelling the rate increase will reduce revenue by £15 billion a year in 2022–23 terms (albeit before allowing for any effect on investment, as discussed in Section 6.3). In revenue terms, increasing the AIA is a much smaller change than cancelling the rate increase.

The effect of increasing the AIA is essentially to move some investment from the (light and dark) green bars to the blue bars in Figures 6.10 and 6.11: more plant and machinery investment will qualify for the AIA.

For affected investment, this has a much more dramatic effect on EMTRs than changing the headline tax rate. For equity-financed investment, it reduces the EMTR to zero – and, as noted above, it has this attractive feature regardless of the rates of tax, inflation, interest or depreciation. For debt-financed investment, it creates a large negative EMTR: a significant subsidy for investments that would not be viable in the absence of tax.

For EATRs, on the other hand, the impact of changing capital allowances (in this case to 100% up front) and that of changing the tax rate are closer; which will have the bigger impact (per £1

[16] https://www.gov.uk/government/speeches/chancellor-rishi-sunaks-mais-lecture-2022.

of exchequer cost) depends on a number of factors, notably including the profitability of the investment: the more profitable the investment, the more important the headline rate relative to capital allowances (remember that the EATRs shown in Figure 6.11 are for investments earning 20% pure profit; for marginal investments, the EATR equals the EMTR shown in Figure 6.10).

This mirrors our discussion of EMTRs and EATRs in Section 6.3. In a domestic context, increasing capital allowances is, as Mr Sunak suggested, better targeted than reducing tax rates at reducing EMTRs and ensuring that investment is not discouraged by tax. Most of the cost of a lower headline rate goes on projects that are highly profitable and would go ahead in any case; more generous capital allowances directly reward and encourage investment, irrespective of the profit made. But in an international context, the headline rate and EATR matter relatively more, because the government wants to attract those highly profitable projects to the UK.

The relative importance of having low tax rates and having high capital allowances is thus finely balanced. But in practice the lower rate and higher allowances announced by Mr Kwarteng would not affect incentives for all the same investments. As noted above, a rise in the headline rate would not have affected profits subject to special regimes such as the patent box, and it would only have applied to companies, whereas the AIA is available to unincorporated businesses as well (self-employed sole traders and partnerships, which we do not discuss further in this chapter). On the other hand, the increase in the AIA applies only to ordinary plant and machinery, and only to investment between £200,000 and £1 million: allowances for investment above £1 million are not changing. For companies that would have invested more than £1 million in plant and machinery anyway, the increased AIA is a giveaway but not an incentive for additional investment. As we noted earlier, most investment in plant and machinery falls outside the AIA as it is done by a relatively small number of firms investing very large amounts. A low headline rate of tax is more relevant for these firms' decisions than a higher AIA. There is thus a certain logic to the combination of changes announced by Mr Kwarteng. International location decisions, and therefore keeping the statutory tax rate and EATRs low, are more relevant for multinational giants; mid-sized businesses are more likely to be domestic and therefore the AIA and keeping EMTRs low are more important for them. (The smallest firms are not affected by either of these announcements: the tax rate was not due to increase for companies with profits below £50,000 anyway, and firms that are never going to invest more than £200,000 in a year are not affected by a rise in the AIA beyond that level.)

As noted above, a further advantage of reducing the headline rate is that it reduces the distortions to choices between different assets and between different sources of finance. This is not true of increasing the AIA, which reduces EMTRs for equity-financed and debt-financed investments similarly (reducing the penalty for equity-financed investment but increasing the subsidy for debt-financed investment). Since the AIA applies only to ordinary plant and machinery, increasing it brings the treatment of qualifying investment more into line with investment that

can already be fully expensed (such as R&D) but increases a distortion relative to assets 'left behind' (such as buildings and long-life plant and machinery).

Both of the changes announced by Mr Kwarteng involve welcome simplifications:

- It is simpler for companies to be able to deduct their investment spending immediately under the AIA than to claim capital allowances over several years. By treating qualifying investment spending like current expenses, it also takes pressure off the appropriate categorisation of particular items of spending.
- Cancelling the tax rate increase for companies with large profits would mean the government continuing to apply the same rate of corporation tax to all levels of profit. The March 2022 plan would have entailed not only the reintroduction of a 'small profits rate' (of 19% when the main rate was 25%) on profits below £50,000, but also a system of 'marginal relief' on profits between £50,000 and £250,000, in effect a *marginal* tax rate of 26.5% on profits in that range, which increases the *average* tax rate gradually from 19% at £50,000 until it reaches 25% at £250,000. Operating a small profits rate and a marginal relief system adds unnecessary complexity and creates unnecessary economic distortions: why have a stronger disincentive to increase profits between £50,000 and £250,000 than above or below that range? Nor can it be justified on distributional grounds. Companies are not real people: the burden of corporation tax is ultimately felt by a combination of companies' shareholders, customers and employees (depending on how profits, prices and wages change in response to the tax), and the people associated with big companies are not necessarily richer than those associated with smaller companies. Applying the same tax rate – however high or low – to all levels of profit is preferable.

Finally, we should emphasise again that the effects of these reforms will depend on whether companies and investors expect them to last. Mr Kwarteng's announcement was the ninth change to planned rates of the AIA since it was first introduced in the 2007 Budget, which does not inspire confidence that the £1 million level at which it has been set will really be 'permanent'. Major investments have long time horizons. If companies and investors expect the tax system to change, they will behave accordingly. And instability and uncertainty themselves will have an off-putting effect.

6.6 Looking forward

A period of stability would be welcome. Or, if reform is planned, a sense of direction and end goal that provide a basis on which companies can plan. There is precedent for that: the 2010 Corporate Tax Road Map was widely and rightly praised, though the 2016 Business Tax Road Map was less good.

Improvements are certainly available.

Both Mr Sunak and Mr Kwarteng focused on using tax policy to increase business investment. But it is also important that investment is directed as efficiently as possible. Except where there are specific reasons to do so, it would be better if investments in different assets were not discouraged to different extents by the tax system – as they are currently, distorting the mix of assets in the economy. Indeed, not all investment is good: where debt-financed investment is currently subsidised – encouraging investment that would be economically unviable in the absence of tax – further increasing that subsidy, encouraging even more unproductive investment, would not be desirable. And artificially encouraging greater reliance on debt is not desirable, as we have been warned by the financial crisis of the late 2000s and by worries about the consequences of recent rises in interest rates.

It would not be a surprise to see further changes to tax rates or capital allowances. As set out in Chapter 3, the UK's public finances look increasingly unsustainable, particularly in the wake of the Chancellor's September fiscal statement. On the other hand, given Ms Truss's stated focus on low taxes to boost investment, the supply side and growth, the government may choose to cut corporation tax. In his 2016 Budget, then Chancellor George Osborne announced that the rate of corporation tax would be reduced to 17% in April 2020. While that reduction was cancelled by Boris Johnson during the 2019 general election campaign, the new government may yet choose to take up Mr Osborne's mantle. Similarly, the 2022 Spring Statement included a number of more generous options for capital allowances than the increase in the AIA recently adopted by Mr Kwarteng. The most generous of these was full expensing for plant and machinery, the cost of which (according to tentative Treasury estimates) would peak at £11 billion a year, compared with £1.3 billion for the recent AIA change – although (as discussed above) both would be much less expensive in the long term.

It is notable that all options set out in the Spring Statement and the May policy paper apply only to investments in plant and machinery. Were the Chancellor minded to seek out more generous options for capital allowance reductions, a further option would be to extend the scope of reform to other asset classes – for example, by broadening the scope of the AIA to include a broader range of investments.

The relative merits of increasing the generosity of allowances versus reducing the corporation tax rates have already been well rehearsed in this chapter. To recap:

- Cutting the rate of corporation tax would reduce the tax on equity-financed investment and lessen the distortions between debt and equity finance and between different assets. However, the tax reduction would be largest for more profitable investments and would be less effective at reducing the tax on marginal investments. While reducing the rate reduces

the distortions to the level, allocation and financing of investment, unless it is reduced to zero, it cannot fully eliminate those distortions.

- Increasing capital allowances would reduce the tax on marginal equity-financed investment, but would increase the subsidy to marginal debt-financed investment – alleviating one distortion at the cost of exacerbating another. It is more cost-effective than reducing the rate as a way to encourage investment domestically, though not necessarily as a way to increase the UK's international competitiveness.

Reducing the tax rate and increasing capital allowances for plant and machinery can both help to increase investment in the UK. But on their own, neither can eliminate the distortions to the level, allocation or financing of investment. That would require more fundamental structural reform. There are several possible models for this, which achieve somewhat different outcomes, but they all involve taking a view on what the corporation tax should look like from first principles. This could have a number of aspects:

- a consistent view of how capital allowances for different assets should be set: for example, to aim to set capital allowances for different assets equal to the rate at which the asset depreciates, or to have full expensing of all investment;
- directly addressing the treatment of debt and equity finance: this might mean radical reform of the treatment of interest costs (and interest income), or introducing an equivalent allowance for the imputed (opportunity) cost of equity finance;
- to achieve consistent investment incentives, some approaches would also require complicated features such as indexing the corporation tax system for inflation and recognising capital gains on assets when they accrue (rather than when the assets are sold) – although other (better) approaches do not require these;
- a clear approach to how the personal and corporate tax systems interact with each other, and how UK and foreign tax systems interact with each other.

We do not discuss the details, properties and merits of different models here.[17] We would favour one of two options – a cash-flow corporation tax or an allowance for corporate equity (ACE) – which can remove distortions to the level, allocation and financing of domestic investment without the need to account accurately for inflation, depreciation or accrued capital gains. Others could reasonably take a different view. But it is clear that recent discussions of corporation tax policy – in policy papers and political debates – have not involved such first-principles thinking about what kind of corporation tax we want: they have been limited to tweaking isolated features

[17] For discussions, see IFS Capital Taxes Group (1991), Auerbach, Devereux and Simpson (2010), Mirrlees et al. (2011) and Adam and Miller (2021).

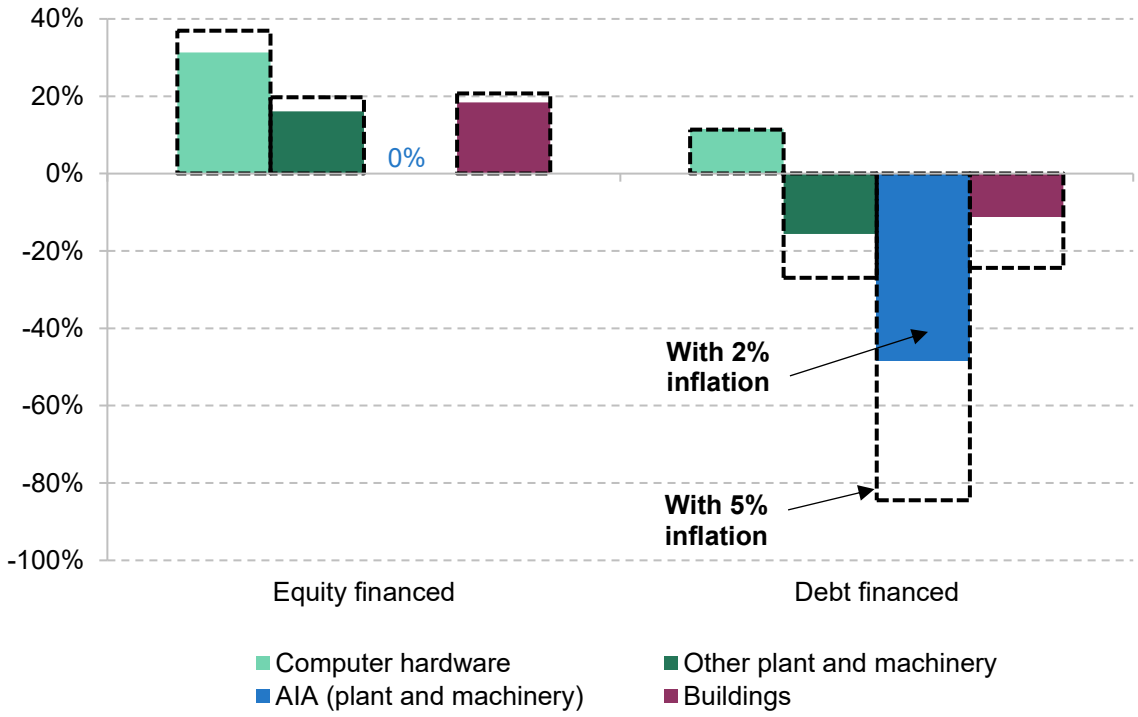
of the system with no clear end goal beyond a general desire to increase business investment. A strategic approach is needed.

Corporation tax policy at a time of higher inflation and interest rates

Inflation is now running at a higher rate than for many years. Higher inflation exacerbates all of the distortions associated with corporation tax. Figures 6.12 and 6.13 show how the effective tax rates on the example investments we looked at in Figures 6.10 and 6.11 change if inflation is expected to be 5% rather than 2%. The penalty for equity-financed investment, subsidy for marginal debt-financed investment, differential between debt and equity finance, and differentials between different assets are all bigger when inflation is higher.

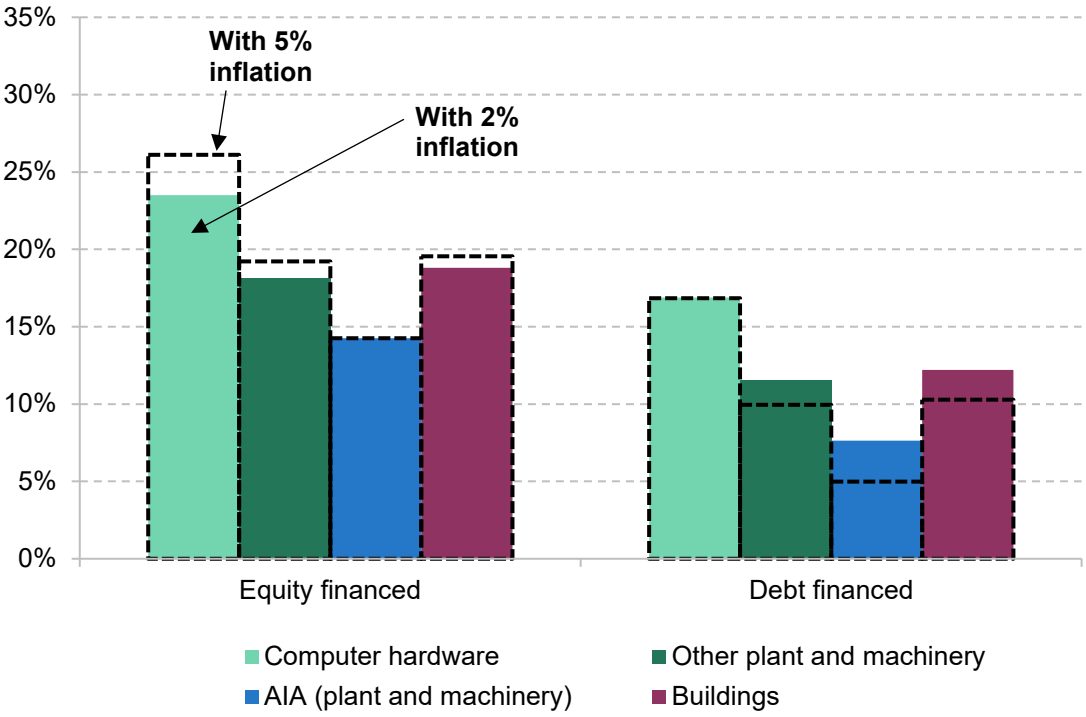
This has two implications for tax policy. First, it puts an added premium on pursuing fundamental structural reforms of the kind mentioned above which can alleviate these distortions: options such as a cash-flow corporation tax or an allowance for corporate equity can remove (or almost remove) the distortions to investment incentives regardless of what happens to inflation.

Figure 6.12. EMTRs on example investments, at different rates of inflation



Note: Calculations assume a 5% real interest rate, a 19% corporation tax rate, and depreciation rates of 37% for computer hardware, 17.5% for plant and machinery against which the AIA is claimed, 12.6% for other plant and machinery, and 3.1% for buildings.

Figure 6.13. EATRs on example investments, at different rates of inflation



Note: Calculations are for an investment with a pre-tax real return of 20%. We assume a 5% real interest rate, a corporation tax rate of 19%, and depreciation rates of 37% for computer hardware, 17.5% for plant and machinery against which the AIA is claimed, 12.6% for other plant and machinery, and 3.1% for buildings.

Second, in the absence of such structural reforms, it changes the balance of considerations associated with different incremental reforms. As noted above, reducing the headline tax rate mitigates (without eliminating) all the distortions associated with corporation tax. The benefits of that are greater when inflation is making those distortions worse. Increasing capital allowances does not do that. On the other hand, it is more efficient at mitigating one particular distortion: high EMTRs for equity-financed investment (the majority), which inflation makes more of a problem. So if our primary concern is minimising discouragement for marginal investments, higher inflation makes the case for increasing capital allowances stronger; if we are more concerned about the broader set of distortions to investment decisions, inflation strengthens the case for a low headline rate.

Interest rates

In addition to high levels of inflation, recent months (and indeed weeks) have witnessed substantial increases in market expectations of the path (including the long-term path) of future interest rates.[18] This has potentially substantial implications for investment incentives.[19]

The future path of real interest rates (that is, interest rates after accounting for inflation) represents the minimum return (after tax) that an investment must make to be viable. When real interest rates rise, the result is that investments that were previously worthwhile become unviable.[20] This can be seen explicitly in Figure 6.14, where we show the real interest rate at two different levels (represented by the dashed horizontal lines): 1% and 5%. As a result of being taxed (or subsidised), the minimum pre-tax rate of return – known as the cost of capital – that an investment must yield may be higher (or lower) than the prevailing real interest rate.[21] The cost of capital for various investments is shown for both a 1% real interest rate (the coloured bars) and a 5% real interest rate (the hollow bars).

As one would expect, Figure 6.14 shows that when the real interest rate increases, the cost of capital for each investment shifts upwards too. It is worth emphasising, however, just how big this effect can be. Take, for example, an equity-financed investment in computer hardware (the left-most bar of Figure 6.14). With a 1% real interest rate, the minimum return required (the cost of capital) is 2.0%, while with a 5% real interest rate this rises to 7.3%. To put these numbers into perspective, the impact of increasing the headline rate of corporation tax from 19% to 25% would be to increase the cost of capital for computer hardware investments from 2.0% to 2.5%. In other words, movements in real interest rates have the potential to alter investment incentives far more drastically than changes to the tax system.

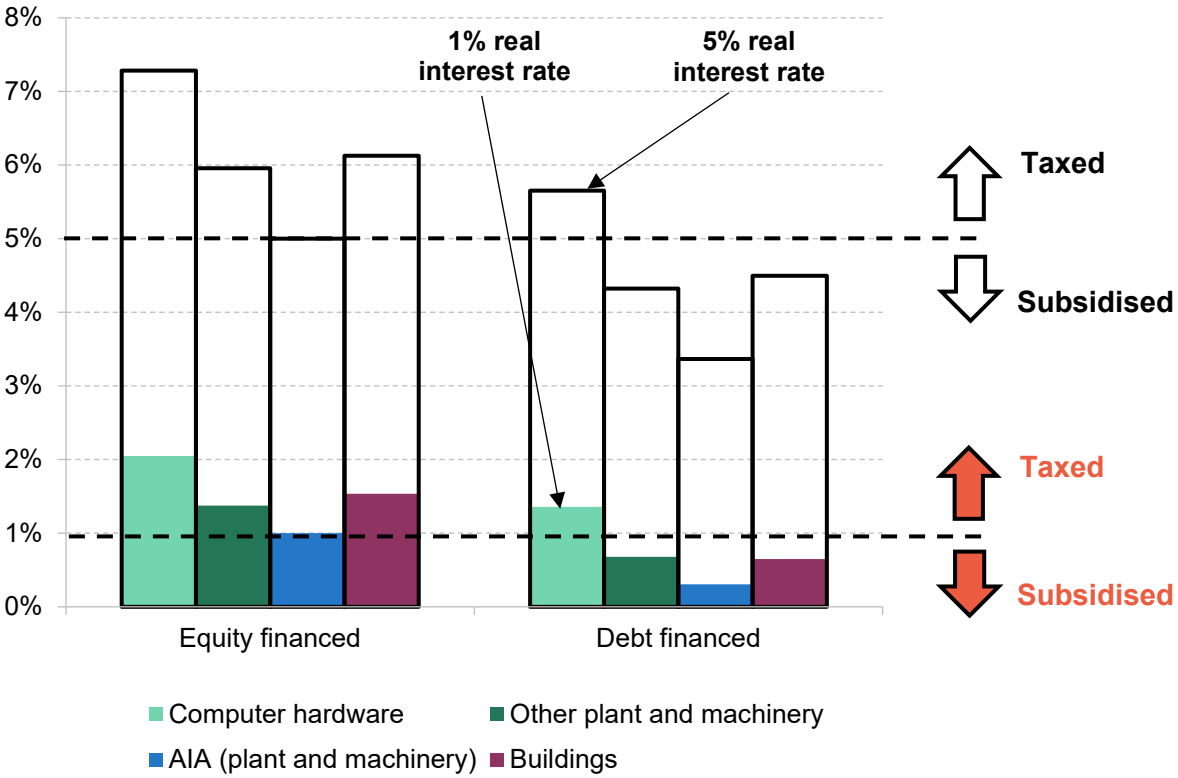
[18] According to the Bank of England ('UK instantaneous OIS forward curve', https://www.bankofengland.co.uk/statistics/yield-curves), the expected risk-free nominal interest rate over a 20-year horizon has increased from 2% in mid August to over 3% at the time of writing. In the short run, upward revision of expected rates has been even more substantial.

[19] It should be kept in mind throughout this section that the effects discussed here relate to the *real* rate of interest – that is to say, the rate of interest after accounting for inflation. If increases in market interest rates are accompanied by increases in inflation, this could lead real interest rates to remain the same or even fall.

[20] Investors, of course, cannot know for certain what the real interest rate will be in the future. Investment decisions will therefore be determined on the basis of what investors expect the future path of real interest rates to be.

[21] As noted in Section 6.3, the effect of tax on the cost of capital is summarised by the EMTR. To be precise, the EMTR measures how much lower the cost of capital would be in the absence of taxation: the gap between the bar and the corresponding dashed line in Figure 6.14, as a percentage of the height of the bar.

Figure 6.14. Cost of capital for example investments under current policy, real interest rates of 1% and 5% (2023–24)



Note: Calculations assume either a 5% real interest rate (hollow bars) or a 1% real interest rate (solid bars), a 2% rate of inflation, a 19% corporation tax rate, and depreciation rates of 37% for computer hardware, 17.5% for plant and machinery against which the AIA is claimed, 12.6% for other plant and machinery, and 3.1% for buildings.

6.7 Conclusion

The cancellation of the planned rise in corporation tax from 19% to 25% was the single biggest tax cut in Mr Kwarteng's September 2022 'mini-Budget' – accounting for around 40% of what was, by historical standards, an extremely large package of tax reductions. Taken together with the more fiscally modest, but welcome, decision to fix the Annual Investment Allowance permanently at £1 million, this suggests that the new government sees corporation tax policy as a central tool in its ambition to boost economic growth.

Cuts to corporation tax can help to increase investment, productivity and economic output. However, caution is needed before expecting too much of these policies, for several reasons.

First, even in the best of circumstances, the beneficial effects of these corporation tax reductions would not be enough for the policy to pay for itself. And their effects are likely to be smaller in the current context of expected economic downturn and heightened uncertainty.

Second, for a lower corporation tax rate to boost investment, people must expect it to last. Since investment decisions are long-term by their nature, it matters whether people believe that the changes will be reversed by this or a future government. The current political environment – and a history of policy instability – must cast some doubt on this in investors' minds.

Third, while corporation tax can affect investment decisions, other factors matter too, and sometimes more. If interest rates rise, or if the UK is seen as providing an unstable environment, that could outweigh any beneficial effects of lower corporation tax on investment. This highlights the importance of situating corporation tax changes within a sensible and credible fiscal framework and broader policy environment.

Finally, the current corporation tax creates damaging distortions to the form and financing of investment, as well as its level, which cannot be solved by simply adjusting the headline rate of tax or increasing capital allowances in one area. More fundamental changes are needed.

What is needed is a coherent plan for the future of corporation tax as part of a wider fiscal strategy, clearly communicated, that companies and investors can use as a credible guide to what to expect in the future. There are certainly improvements that could be made. Short of that, some stability would be nice.

6.8 Postscript: latest developments

This chapter was finalised in the wake of the 'mini-Budget' delivered to the House of Commons by Kwasi Kwarteng on 23 September 2022. Since the then Chancellor delivered his speech, things have moved fast. Both Mr Kwarteng and Liz Truss have been forced to resign and the mini-Budget has largely been reversed. The rise in corporation tax that Mr Kwarteng had planned to cancel is now once more scheduled to go ahead in April 2023 – although the plan for a permanent £1 million annual investment allowance remains in place (at least at the time of writing). These changes happened too late to be reflected in the chapter before publication.

Despite these developments, we hope that this chapter remains relevant and of interest. The implications of a 19% versus a 25% tax rate remain important to examine, albeit for slightly different reasons from when we wrote this chapter. The patterns of distortions to investment incentives that we illustrate in the chapter remain just as present (indeed more so) with a corporation tax rate of 25% as with one of 19% – a fact that we make explicit in Figures 6.10 and 6.11.

The stress that our chapter places on the importance of stability, meanwhile, seems if anything more relevant now than when we wrote it. Cuts to corporation tax will increase investment only in so far as businesses expect them to last. As recent weeks have shown, businesses have every

reason to doubt that tax reductions built on unsound fiscal foundations will offer the permanence that long-term investment decisions demand.

But while we believe that the broad analysis and conclusions of this chapter remain as true today as they were when it was first conceived, we must beg readers' indulgence for its many now-outdated references to Chancellor Kwarteng and Prime Minister Truss. If there is any defence to be offered it is that, in the past few weeks, who occupies which great office of state has not always been an easy thing to keep track of.

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