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**Research Report**

## How do other countries raise more in tax than the UK?

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# How do other countries raise more in tax than the UK?

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# Key findings

## Key findings

**The UK's current tax take is high by historical UK standards, but below average among OECD countries.** The UK government raises around 35% of national income in tax revenue, a share that has been edging up in recent decades and is now at its highest point since the late 1960s. The average among OECD countries is higher and many countries in Europe raise substantially more as a share of national income.

**All OECD economies raise the majority of their tax revenues from three broad-based taxes on income, earnings and consumption.** Income tax, social security contributions (SSCs) and value added tax (VAT) / general sales tax (GST) account for over 50% of revenues in all advanced economies, and significantly more than that in most.

**The UK raises a below-average share of national income from income tax and SSCs.** It raises much less than many European countries from SSCs (National Insurance contributions) and from employer contributions in particular. The UK's lower revenues from these taxes more than explain the UK's below-average tax take – the UK raises more than average from taxes excluding income tax and SSCs.

**Individuals at both the median and top of the UK income distribution pay less income tax and SSCs than they would if the UK adopted the tax system of a higher-tax country.** In most cases, average tax rates would be higher for both median and high-income earners if the UK implemented the income tax and SSC system from one of the EU15 countries that raise more tax than the UK. The UK is more of an outlier at the median, especially for SSCs, than it is for top earners.

**The UK has one of the more progressive income tax and SSC systems in the EU15 in the sense that average rates are high at the top relative to the median.** Average tax rates rise more quickly with income in the UK, and are higher at the top relative to the median, than in most of the European countries that raise more revenue overall.

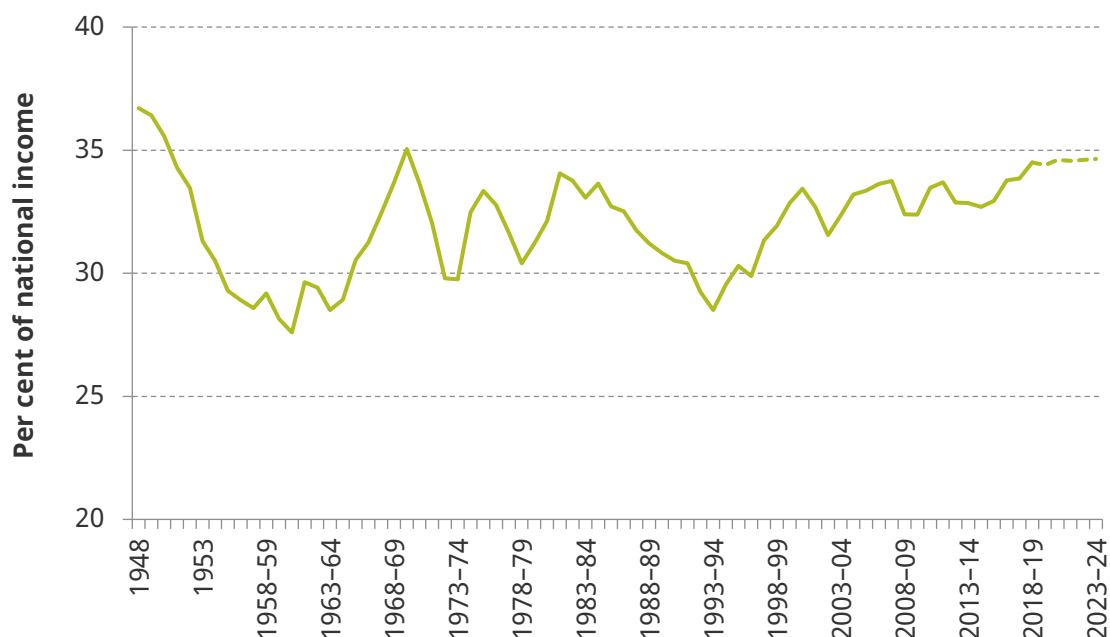
# 1. Introduction

The UK raised 35% of national income in tax in 2018–19. Figure 1 shows that tax as a share of national income has fluctuated between around 30% and 35% of national income since the end of the second world war and been rising since the early 1990s. Tax revenues are now, just, higher as a share of national income than at any point since the late 1960s.

An ageing society is increasing pressure on health, social care and pension systems such that maintaining the same quality and scope of public services in the future will likely require higher taxes as a share of national income.<sup>1</sup> Tax increases have been on the public policy agenda. For example, in the 2017 general election, the Labour party proposed a package of tax measures that it expected to raise £50 billion (2% of national income) a year.<sup>2</sup> This would have taken tax revenues to 37% of national income.

Figure 1 shows that the UK has not previously raised more than 35% of national income in tax on a sustained basis. This highlights that significant tax increases (such as those set out in the Labour party's manifesto) would take the UK into unprecedented territory, and suggests that raising additional revenues sufficient to meet future public service demands may be challenging. However, many other advanced economies already raise substantially

**Figure 1. UK national accounts taxes, 1948 to 2023–24**



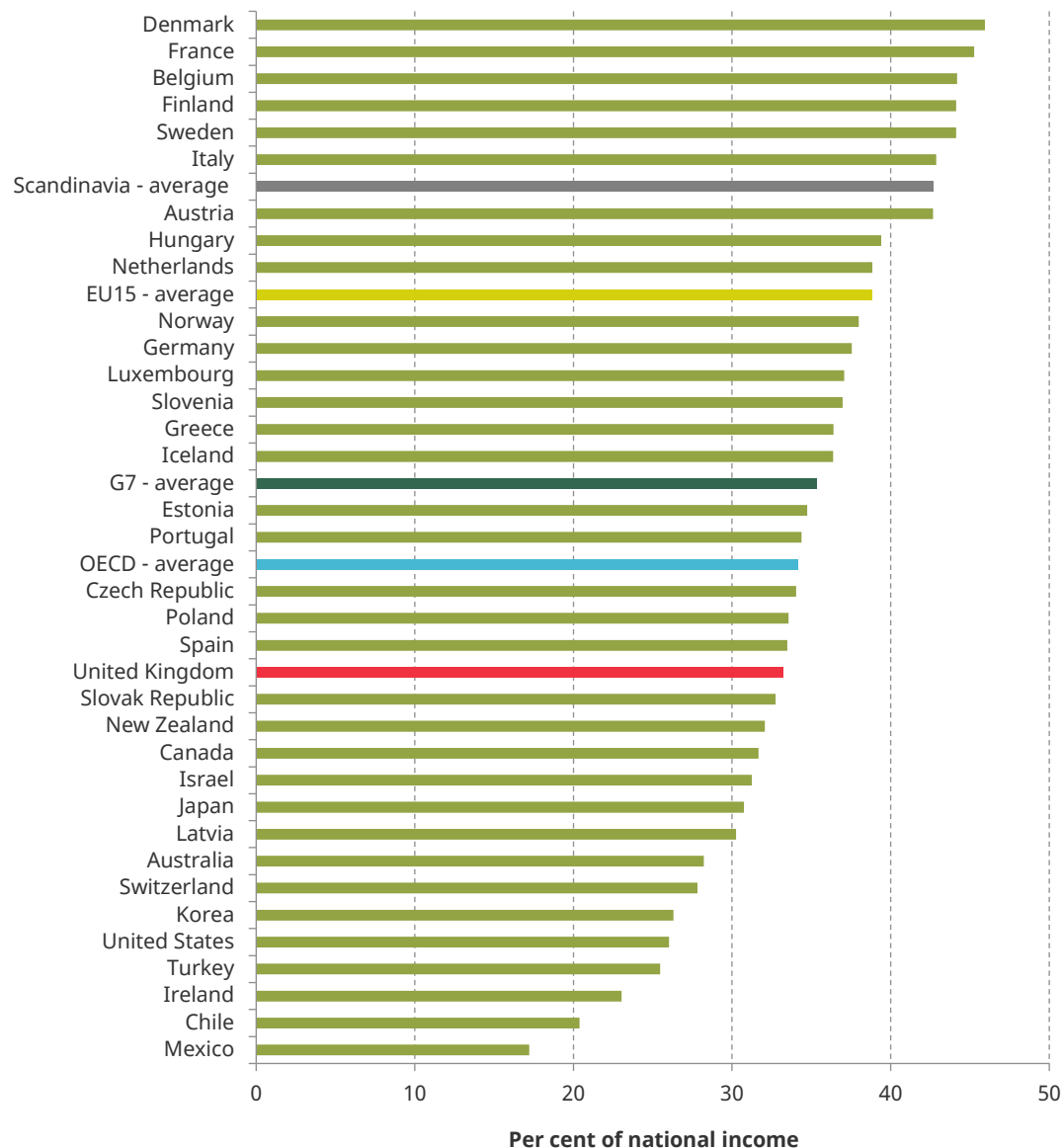
Note: Data are calendar year up to 1953 and financial year thereafter. Dotted line from 2019–20 onwards is the Office for Budget Responsibility forecast accompanying the Spring Statement in March 2019. Public sector current receipts (not shown) is national accounts taxes plus other revenues, including the gross operating surplus of public sector corporations and interest on government assets.

<sup>1</sup> See A. Charlesworth and P. Johnson (eds), *Securing the Future: Funding Health and Social Care to the 2030s*, IFS Report R143, 2018, <https://www.ifs.org.uk/publications/12994>.

<sup>2</sup> Labour Party, *Funding Britain's Future*, 2017, <http://labour.org.uk/wp-content/uploads/2017/10/Funding-Britains-Future.pdf>.

Source: Office for Budget Responsibility, Public Finances Databank, <https://obr.uk/data/>.

**Figure 2. Tax revenues as a share of national income, OECD countries, 2016**



Note: Scandinavia includes Denmark, Sweden and Norway. For Australia, Greece and Japan, data are shown for 2015 as 2016 values were unavailable at the time of download. Precise definition of tax revenue here differs from that in Figure 1 – for example, because items such as environmental levies are classified as taxes for national accounts purposes but are not included as tax revenues on the OECD definition. However, the revenue streams included in Figure 1 and this figure are mostly the same.

Source: OECD, Global Revenue Statistics Database, <http://www.oecd.org/tax/tax-policy/global-revenue-statistics-database.htm>, extracted 2 August 2018.

more than the UK. Figure 2 shows that UK revenue as a share of national income is in the middle of the pack when compared with other advanced economies (and would remain middle of the pack if tax were 2% of national income higher). It is slightly below the OECD average, significantly below many EU15 countries and even further below the average among Scandinavian countries.

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This report provides context to the debate about the size of the UK tax take by setting out how different countries raise tax (Section 2). We show that the UK stands out mainly in raising less from income tax and social security contributions (SSCs). We then explore *who* would pay more tax on their earnings if the UK were to adopt other European countries' tax systems (Section 3).

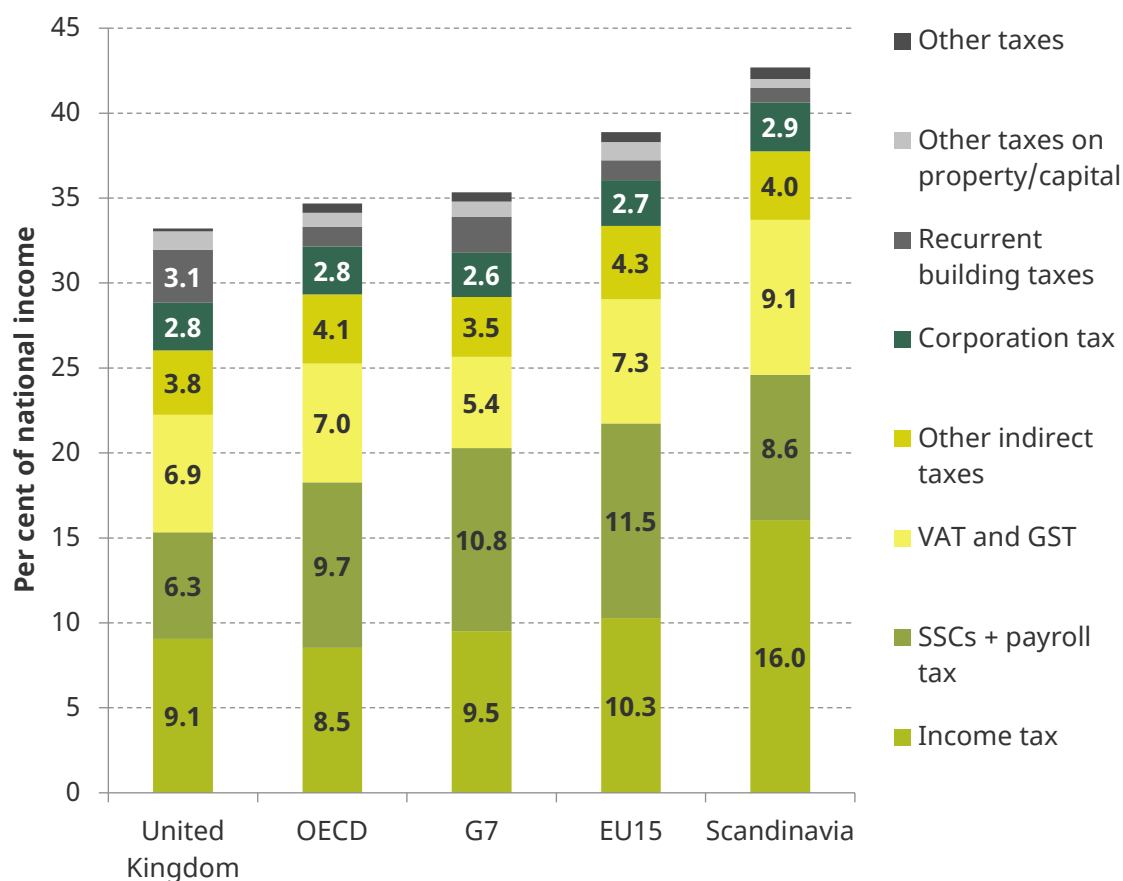
International examples do not set a prescription for UK tax policy. There are many reasons why countries raise different amounts of tax and from different individuals, including, among others, different economic structures, the chosen scope and quality of public services, and the desire for redistribution.

## 2. Which taxes do revenues come from?

Figure 3 breaks down the UK's tax take into revenues from different types of tax and shows how this compares internationally.

Differences in the share of national income raised by different taxes in different countries can be informative about the different choices that countries make. However, it is important to note that differences will arise for a number of reasons. Tax revenues will differ if taxes are designed differently – either because the tax base is different (e.g. different sources of income being liable for income tax or different goods being zero-rated in VAT) or because tax rates are different. Differences will also arise from differences in the structure of the economy. That is, even if two countries had identical tax systems,

**Figure 3. Tax revenues as a share of national income, 2016**



Note: SSCs is social security contributions. VAT is value added tax. GST is general sales tax. The tax categories have the following OECD identifying numbers: income tax (1100), SSCs + payroll tax (2000 and 3000), VAT and GST (5111 and 5112), other indirect taxes (5113, 5120, 5130, 5200 and 5300), corporation tax (1200), recurrent building taxes (4100), other taxes on property/capital (4200, 4300, 4400, 4500 and 4600), other taxes (1300, 6000 and custom duties collected for the EU). The OECD average excludes Mexico, for which a tax-by-tax breakdown is unavailable.

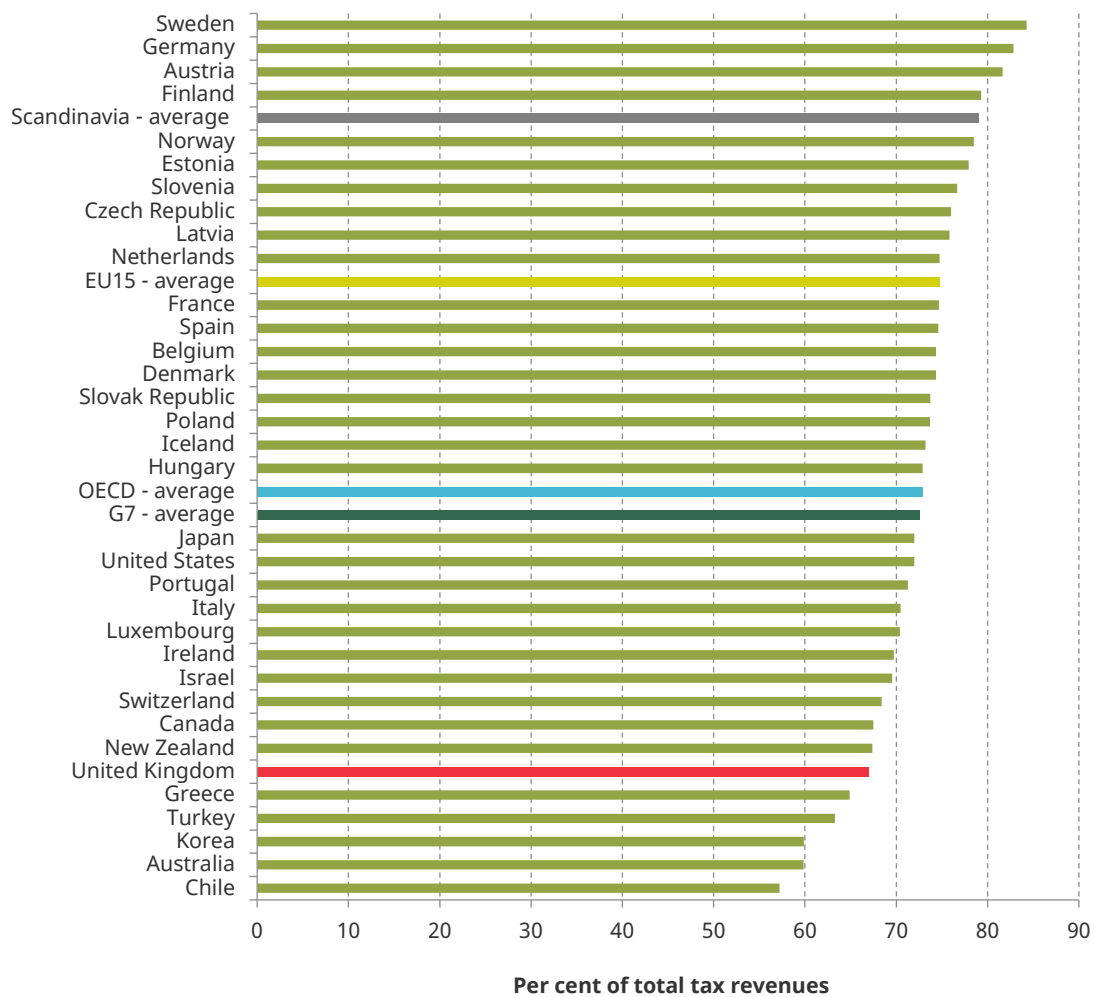
Source: OECD, Global Revenue Statistics Database, <http://www.oecd.org/tax/tax-policy/global-revenue-statistics-database.htm>, extracted 2 August 2018.



they would raise different amounts of revenue if, for example, the income distribution were more unequal in one country than the other.

In the following subsections, we consider differences in the main groups of taxes in more detail. We note that among ‘other taxes’, no advanced economy raises substantial sums from taxes on net wealth stocks or wealth transfers (gift and estate taxes).<sup>3</sup> Taxes on net wealth stocks are much less prevalent now than they were three decades ago – 13 OECD countries have abolished them in that time.<sup>4</sup>

**Figure 4. Share of total tax revenues accounted for by income tax, SSCs, VAT and GST, OECD countries, 2016**



Note: See Figure 2.

<sup>3</sup> With the exception of Luxembourg (2.7% of national income) and Switzerland (1.3% of national income), no OECD country raises more than 1% of national income from taxes on stocks of wealth, and many have no such tax. No OECD country raises more than 0.7% of national income from taxes on wealth transfers. In the UK, inheritance tax raises 0.2% of national income.

<sup>4</sup> For a further discussion of wealth taxes, see M. Drometer, M. Frank, M. Hofbauer Pérez, C. Rhode, S. Schworm and T. Stitteneder, ‘Wealth and inheritance taxation: an overview and country comparison’, *ifo DICE Report*, 2018, 16/2, 45–54, <https://www.cesifo-group.de/DocDL/dice-report-2018-2-drometer-frank-hofbauer-p%C3%A9rez-rhode-schworm-stitteneder.pdf>.

## **All advanced economies raise the bulk of their tax revenues from three broad-based taxes**

Figure 3 shows that income tax, social security contributions and payroll taxes (which in the UK are called National Insurance contributions (NICs)) and VAT/GST account for the majority of revenues across each of the country groups considered. Figure 4 shows that this is not just true on average. In all OECD countries, these three taxes account for more than half of revenues, and in most they account for more than 70%. In the UK, income tax, (employee, self-employed and employer) NICs and VAT account for two-thirds of tax revenues – a significant share, but somewhat less than for many other advanced economies.

There are differences in the design of these three taxes across countries but they are broad-based, first in the sense that income tax, SSCs and VAT apply to most income, earnings and consumption respectively. As a result, they are also broad-based in the sense that most adults will pay at least some of these taxes in a year, and certainly over their lifetime.

## **Lower revenues from taxes on incomes and earnings largely explain why the UK raises less than other European countries**

Figure 3 shows that the UK raises less from income tax and SSCs combined than the average among OECD and G7 economies, and significantly less than the EU15 and Scandinavian averages. These differences are almost entirely driven by differences in revenues from SSCs and payroll taxes (NICs in the UK). Most other EU15 countries, the exceptions being Denmark and Ireland,<sup>5</sup> raise more from SSCs and payroll taxes than from income tax, while the opposite is true in the UK. The amount raised from income tax is significantly higher in Scandinavian countries than elsewhere.

Differences in revenue from income tax and SSCs more than explain the difference in revenue as a share of national income between the UK and the OECD, G7 and EU15 averages – the UK raises a higher-than-average share of national income from other taxes. The UK even raises a similar share, on average, from taxes other than income tax and SSCs to the much higher-tax Scandinavian countries.

The design of SSC systems differs considerably across countries (see Box 1). As in the UK, most systems include taxes paid by both employers and employees and a regime for self-employed people. But unlike NICs in the UK, many other countries' systems maintain a substantive contributory link between the amount an individual pays into the system and the receipt of payments from the state in future (either during a spell of unemployment

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<sup>5</sup> Denmark has an atypical system: its SSCs and payroll tax revenues account for only 0.4% of national income, while its income tax revenues are very high at 24.4% of national income. This is because SSCs are levied as a flat amount that does not depend on earnings and this amount is quite low even as a share of median earnings.

or, most importantly, during retirement). The UK's system has become less 'contributory' over time, and now more or less resembles a second income tax.<sup>6</sup>

### Box 1. Differences in SSC systems

SSC systems vary across countries in their design. In many EU countries, SSCs are genuinely contributory, such that the size of payments is directly linked to the degree of entitlement to state-funded benefits, usually including unemployment insurance and, most importantly, a state pension income. In the UK, NICs no longer have a significant contributory link. While eligibility to the state pension depends on the number of years of NICs payments, beyond a minimum level, paying more NICs will not mean higher entitlements in the future. To some extent, the patterns of contributions made and benefits received in the UK continue to resemble the outcomes of a contributory system because those who earn more (and therefore pay more NICs) also tend to live longer (and therefore receive the state pension for more years).<sup>a</sup>

One difference between the UK system and a truly contributions-based system is that the latter is likely to have smaller effects on work incentives because, from a worker's perspective, higher tax payments are directly associated with higher benefits in future. That is, the economic effects of raising SSCs will likely differ between the UK and other countries. Raising higher revenues from SSCs may also be more publicly acceptable in those countries with contributory systems. Both factors are a reminder that the way that other countries raise additional tax revenues does not necessarily provide a blueprint for how the UK could raise equivalent amounts.

<sup>a</sup> See J. Creedy, R. Disney and E. Whitehouse, 'The earnings-related state pension, indexation and lifetime redistribution in the UK', *Review of Income and Wealth*, 1993, 39, 257–78 and, more recently, R. Crawford, S. Keynes and G. Tetlow, 'From me to you? How the UK state pension system redistributes', IFS Working Paper W14/20, 2014, <https://www.ifs.org.uk/publications/7324>.

## The UK's VAT and corporation tax revenues are average internationally, even though their designs are not

The UK's tax take from the other two largest taxes – VAT and corporation tax – is broadly in line with the OECD and EU15 averages (Scandinavian countries raise more in VAT). For both VAT and corporation tax, this similarity in revenue shares masks important differences in the design of these taxes in the UK relative to other countries.

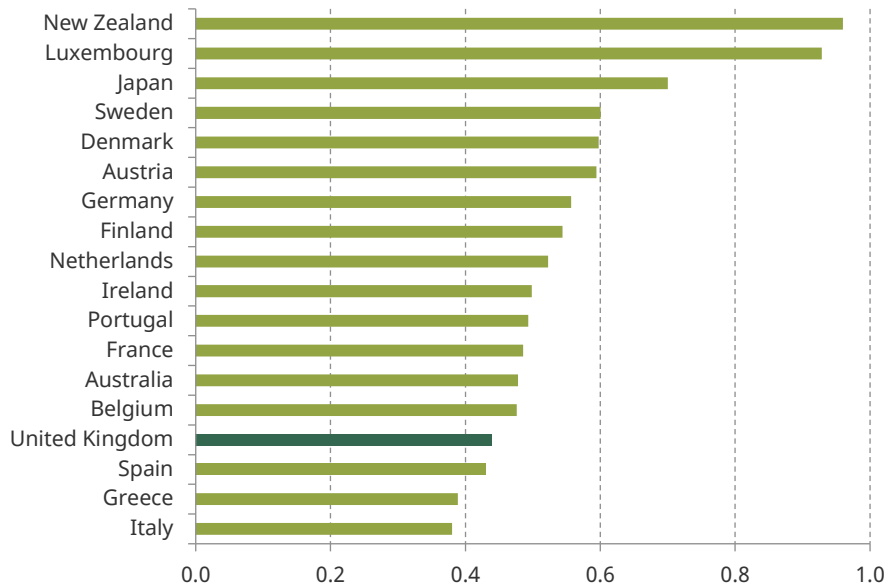
The UK's VAT regime is unusual internationally due to its widespread use of zero and reduced rates; the UK's main VAT rate (20%) is in the middle of the pack, but the main rate applies to a relatively low fraction of expenditure.<sup>7</sup> For example, the UK applies a zero rate of VAT to most foodstuffs, books and children's clothes among other items.

<sup>6</sup> S. Adam and G. Loutzenhiser, 'Integrating income tax and National Insurance: an interim report', IFS Working Paper W07/21, 2007, <https://www.ifs.org.uk/publications/4101>.

<sup>7</sup> See table 2.A2.2 of OECD, *Consumption Tax Trends 2016, VAT/GST and Excise Rates, Trends and Policy Issues*, 2016, [https://read.oecd-ilibrary.org/taxation/consumption-tax-trends-2016\\_ctt-2016-en#page89](https://read.oecd-ilibrary.org/taxation/consumption-tax-trends-2016_ctt-2016-en#page89).

The VAT revenue ratio (VRR) is a measure used to compare how broad different countries' VAT bases are. Specifically, the VRR compares actual VAT revenues with the revenues that would be raised if VAT were applied to all final consumption expenditure. The VRR will be lower than 1 for two reasons: zero and reduced rates on some items, and evasion. Figure 5 shows that the UK has a low VRR relative to most other advanced economies. Estimates

**Figure 5. VAT revenue ratio, selected countries, 2016**



Note: The VRR is calculated by dividing VAT revenues by the product of the potential tax base and the standard VAT rate. The potential tax base is measured by final consumption expenditure net of VAT (for more detail, see chapter 3 of OECD, *Consumption Tax Trends 2016, VAT/GST and Excise Rates, Trends and Policy Issues*, 2016, [https://read.oecd-ilibrary.org/taxation/consumption-tax-trends-2016\\_ctt-2016-en#page104](https://read.oecd-ilibrary.org/taxation/consumption-tax-trends-2016_ctt-2016-en#page104)). Countries chosen are either EU15, G7 or anglophone countries. Canada is excluded because VAT revenues include provincial taxes. The US has no VAT.

Source: OECD sources (<https://stats.oecd.org/>) and authors' calculations. VAT revenue data are taken from the 2016 OECD Revenue Statistics (2015 data for Australia, Greece and Japan); final consumption expenditure is taken from the 2016 OECD Gross Domestic Product Statistics (code P3); and VAT 2016 rates data are taken from the OECD Tax Database, <http://www.oecd.org/tax/tax-policy/tax-database.htm>, extracted 2 August 2018.

from the European Commission suggest that levels of VAT evasion in the UK are similar to those in other European countries with higher VRRs,<sup>8</sup> implying that we can attribute the UK's low ranking here to the UK's narrow VAT base.

The UK's zero and reduced rates in VAT are expensive, and they are inefficient ways to redistribute towards poorer households.<sup>9</sup> HMRC estimates that in 2018–19 the combined cost of zero and reduced rates was £53 billion.<sup>10</sup> Were the UK to scrap these zero and

<sup>8</sup> Center for Social and Economic Research (CASE) et al., *Study and Reports on the VAT Gap in the EU-28 Member States: 2017 Final Report*, TAXUD/2015/CC/131, 2017, [https://ec.europa.eu/taxation\\_customs/sites/taxation/files/study\\_and\\_reports\\_on\\_the\\_vat\\_gap\\_2017.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/study_and_reports_on_the_vat_gap_2017.pdf).

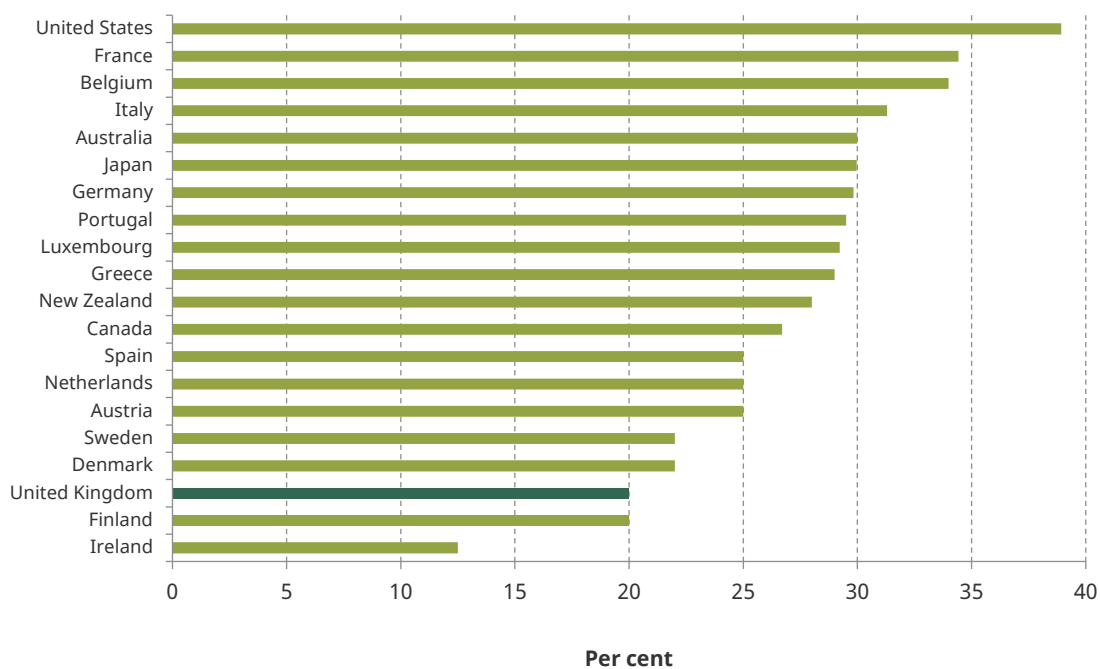
<sup>9</sup> For a detailed discussion, see chapter 9 of J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba (eds), *Tax by Design*, 2011, Oxford University Press, <https://www.ifs.org.uk/publications/5353>.

<sup>10</sup> HM Revenue and Customs, 'Estimated cost of principal tax reliefs (January 2019)', <https://www.gov.uk/government/statistics/main-tax-expenditures-and-structural-reliefs>.

reduced rates, and to redistribute more effectively using the direct tax and benefit system, it would raise significantly more than average from VAT (around 9% of national income, rather than 7%).

In recent years, the UK's main corporation tax rate has been cut considerably. In 2007–08 it stood at 30%, in 2016–17 it was 20%, in 2019–20 it is 19% and from 2020–21 it will be 17%.

**Figure 6. Combined corporation tax rate, selected countries, 2016**



Note: Where relevant, this measure includes the average local corporate tax rate combined with the national statutory tax rate. Countries chosen are either EU15, G7 or anglophone countries.

Source: OECD Tax Database, <http://www.oecd.org/tax/tax-policy/tax-database.htm>, extracted 2 August 2018.

Corporate tax rates have been cut substantially in many advanced economies across the last four decades.

Despite the UK corporate tax rate being one of the lowest among advanced economies (see Figure 6), corporate tax revenues as a share of national income are average internationally. This indicates that the tax base (taxable corporate profit) is larger in the UK than in other countries. In part, this reflects the fact that the tax base as defined by tax law is relatively broad in the UK – in particular, the UK's capital allowances, which determine whether and how quickly investment expenditures can be deducted from corporate profit, are less generous than in most other advanced economies.<sup>11</sup> However, revenues will also be affected by the profitability of the corporate sector. There is evidence that an increasingly profitable financial sector was one reason why early cuts in the UK corporate tax rate did not lead to a fall in corporate tax revenues.<sup>12</sup>

<sup>11</sup> See figure 5 of H. Miller, 'What's been happening to corporation tax?', IFS Briefing Note BN206, 2017, <https://www.ifs.org.uk/publications/9207>.

<sup>12</sup> See R. Griffith and H. Miller, 'Taxable corporate profits', *Fiscal Studies*, 2014, 35, 535–57.

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## The UK raises an above-average share of national income through recurrent and transaction taxes on property

There are some smaller taxes from which the UK raises more revenue than international comparators. Two of the notable cases are taxes levied on property – specifically, taxes on property transactions (stamp duty land tax) and annual taxes on buildings (council tax and business rates).

The UK raises 3.1% of national income through council tax and business rates, almost three times the OECD average for recurrent buildings taxes. In particular, the UK system stands out as raising more revenue from business rates, a tax on business property (business rates receipts are 1.5% of national income in the UK, compared with 0.5% on average in the OECD).<sup>13</sup>

Taxes on transactions account for 0.8% of national income in the UK (most of which is from stamp duty land tax, rather than stamp duty on shares), higher than the OECD average<sup>14</sup> (0.5%), the EU15 average (0.6%) and the Scandinavian average (0.3%). Taxes such as stamp duty land tax lead to properties that change hands more often being more heavily taxed than otherwise-similar properties that are transacted less often. Economists generally consider transaction taxes to be especially damaging because, by preventing mutually beneficial trades from taking place, they lead to an inefficient allocation of assets across the economy.<sup>15</sup>

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<sup>13</sup> This average is across the 16 OECD countries for which recurrent buildings tax revenue is split between those levied on households and those levied on others.

<sup>14</sup> This excludes Estonia and the Slovak Republic (which do not levy such taxes) and Mexico (for which no data are available).

<sup>15</sup> See section 6.1.2 of J. Mirrlees, S. Adam, T. Besley, R. Blundell, S. Bond, R. Chote, M. Gammie, P. Johnson, G. Myles and J. Poterba (eds), *Tax by Design*, 2011, Oxford University Press, <https://www.ifs.org.uk/publications/5353>.

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### 3. Who pays more under different tax systems?

We have shown that tax revenue as a share of national income is lower in the UK than in many other advanced economies, and that this is explained by lower-than-average revenues from income tax and – in particular – SSCs.

In this section, we consider which types of individuals pay more or less income tax and SSCs in the UK compared with those systems that generate higher revenues.<sup>16</sup>

Revenues from income tax and SSCs will differ across countries both because the structure of tax systems differ (the same person would be treated differently under different systems) and because the structure of economies – in particular, the distribution of (pre-tax) incomes – differ. In this analysis, we isolate differences in the structure of the tax system by **comparing how the tax paid by an example individual would differ in different countries' tax systems**. Specifically, we compare the taxes paid by people at particular points in the UK earnings distribution under different European countries' tax systems.<sup>17</sup>

This analysis is informative about whether individuals at particular earnings levels would pay more or less income tax and SSCs if the UK were to adopt another country's tax system. It does not speak to whether or not that individual would be *better off* in one country or another, since that will also be affected by other taxes and the transfers and public services funded by tax revenues. Nor does it provide information on whether or not different countries raise a higher share of their revenues from, for example, the top 1% of taxpayers or from median earners, because this is a function of both the tax system and the distribution of income (e.g. the cut-off for being in the top 1% varies across countries).

#### Income tax and National Insurance revenues are top-heavy in the UK

In the UK, income tax payments are highly concentrated among a relatively small group of high-income taxpayers (Figure 7). In 2018–19, the top 1% of UK income tax payers earned 12% of the pre-tax income (of income taxpayers) and contributed 28% of income tax receipts.<sup>18</sup> The top 10% of income tax payers paid 60% of income tax, while the bottom half of income tax payers accounted for less than 10% of tax receipts. 42% of adults pay no

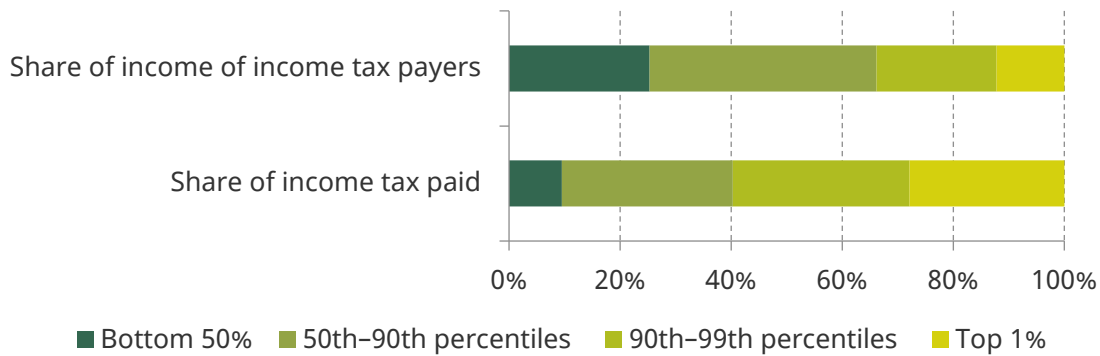
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<sup>16</sup> The person who is made worse off by a tax need not necessarily be the same person who is legally liable for the tax (i.e. the actual incidence of the tax can differ from the statutory incidence). In the long run, the majority of the burden of income tax and SSCs is likely to be borne by employees (see, for example, Institute for Advanced Studies (IHS) et al., 'Study on the effects and incidence of labour taxation', European Commission Taxation Papers, Working Paper 56, TAXUD/2014/DE/313, 2015, [https://ec.europa.eu/taxation\\_customs/sites/taxation/files/resources/documents/taxation/gen\\_info/economic\\_analysis/tax\\_papers/taxation\\_paper\\_56.pdf](https://ec.europa.eu/taxation_customs/sites/taxation/files/resources/documents/taxation/gen_info/economic_analysis/tax_papers/taxation_paper_56.pdf)).

<sup>17</sup> This choice of comparison is driven by our use of the EUROMOD microsimulation model, which only contains information on EU tax systems.

<sup>18</sup> In 2018–19, someone needed to have income of at least £177,000 to be in the top 1% of taxpayers. This is higher than the amount required to be in the top 1% of the population because 42% of adults do not pay income tax.

**Figure 7. Shares of total income and total income tax paid, 2018–19**



Source: HMRC table 2.4, <https://www.gov.uk/government/statistics/shares-of-total-income-before-and-after-tax-and-income-tax-for-percentile-groups>.

income tax at all, a share that has grown from 39% in 2010–11.<sup>19</sup> NICs (SSCs) payments are less concentrated, but still rely disproportionately on higher-income people.<sup>20</sup> Both income tax and NICs are progressive, meaning that the *average* tax rate rises as income rises. That is, higher-income people pay a greater share of their income in income tax and NICs.<sup>21</sup>

## Taxing UK earners under different tax systems

We use EUROMOD, a microsimulation model of EU tax systems, to compare how different ‘example households’ taken from the UK income distribution are treated under different countries’ income tax and SSC systems. We present the tax payments for employees<sup>22</sup> earning at the median, 90<sup>th</sup>, 95<sup>th</sup> and 99<sup>th</sup> percentiles of the earnings distribution of full-time UK employees, as well as for someone earning at ten times mean earnings (a level significantly above even the 99<sup>th</sup> percentile and chosen in order to capture the treatment of very-high-income employees). Figure 8 plots these points of the UK (full-time) earnings distribution. An individual earning over £132,318 would be in the top 1% of the earnings distribution. Someone earning ten times mean earnings (£344,470) would, if they had no other source of income, be in the top 0.5% of income tax payers, and would be even further up the employee earnings distribution. An important caveat to this analysis is that we do not consider forms of income other than employee earnings.

We compare tax treatments under 10 EU15 countries’ systems – the chosen countries all raise a significantly higher share of national income in tax than the UK. The results shown

<sup>19</sup> Authors’ calculations using Office for National Statistics (ONS) population estimates and HMRC tables 2.4 and 2.1, <https://www.gov.uk/government/statistics/shares-of-total-income-before-and-after-tax-and-income-tax-for-percentile-groups> and <https://www.gov.uk/government/statistics/number-of-individual-income-taxpayers-by-marginal-rate-gender-and-age>.

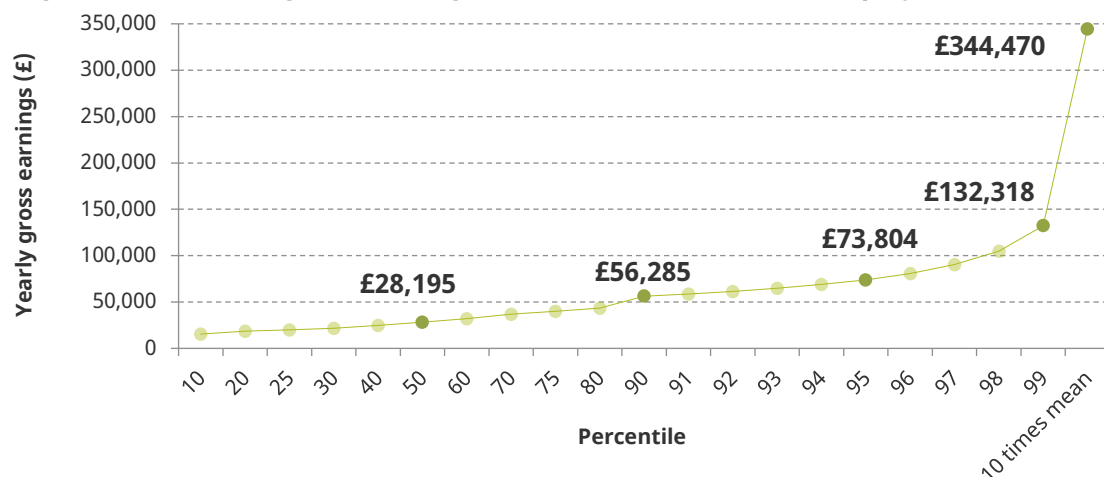
<sup>20</sup> H. Miller and B. Roantree, ‘Tax revenues: where does the money come from and what are the next government’s challenges?’, IFS Briefing Note BN198, 2017, <https://www.ifs.org.uk/publications/9178>.

<sup>21</sup> See P. Bourquin and T. Waters, ‘The effect of taxes and benefits on UK inequality’, IFS Briefing Note BN249, 2019, <https://www.ifs.org.uk/publications/14127>.

<sup>22</sup> Similar findings to the ones we show here apply for self-employment income.



**Figure 8. UK annual gross earnings distribution for full-time employees, 2016**



Source: Annual Survey of Hours and Earnings,  
<https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/bulletins/annualsurveyofhoursandearnings/2017provisionaland2016revisedresults>.

here are for single employees with no children. The appendix provides full details of the simulations and shows that similar results hold for different household structures.<sup>23</sup>

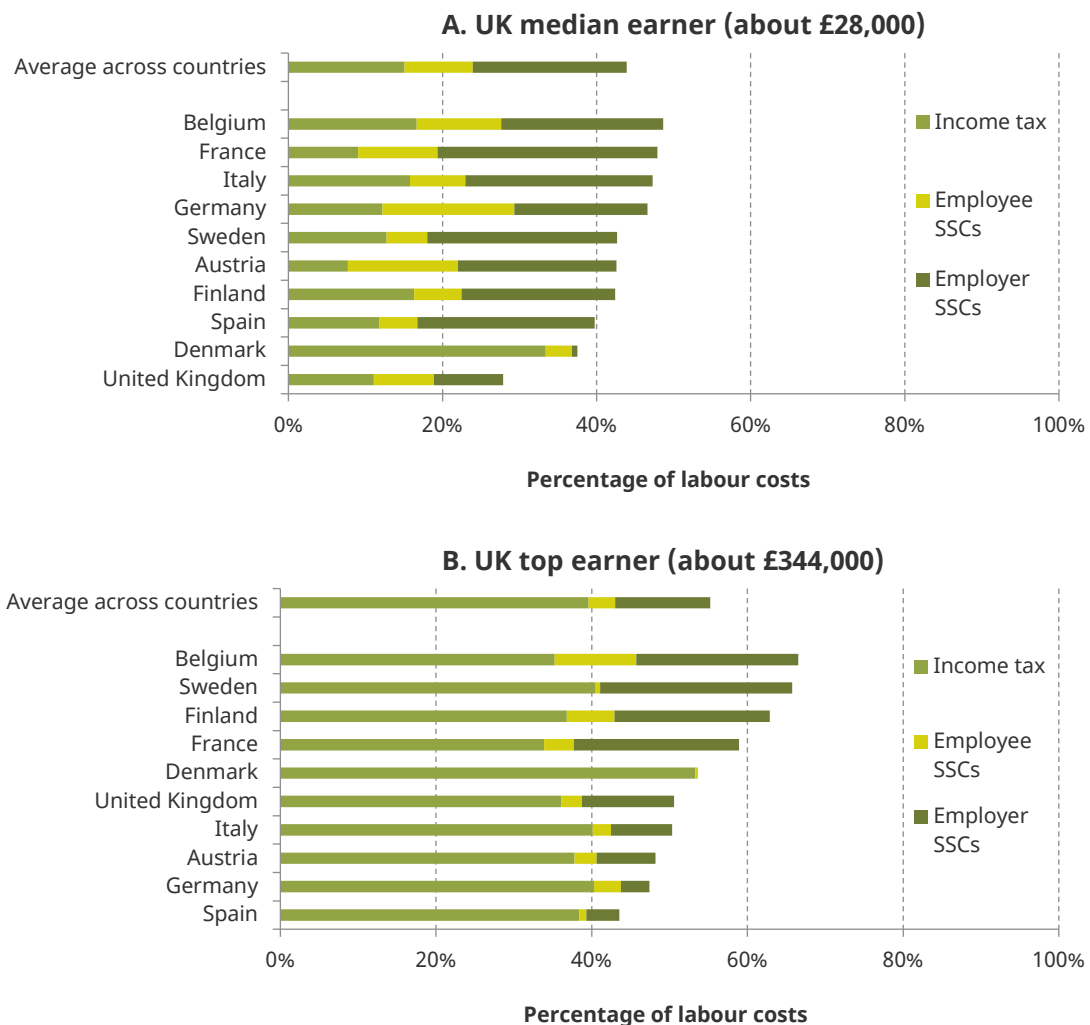
### Income tax and SSC payments under the UK system are relatively low

It is not surprising, given the differences in revenue shown in Section 2, that average income tax and SSC rates are lower under the UK system than in many other European countries.

Figure 9 reports average tax rates for someone with median UK earnings (panel A) and for a top earner, defined as someone earning ten times mean UK earnings (panel B). The average tax rate is defined as the amount of income tax and employee and employer SSCs paid as a share of total labour costs (i.e. the sum of pre-tax earnings and employer SSCs). Box 2 discusses the inclusion of employer contributions in this analysis. The average tax rate on median earnings in the UK is 28%. This is much lower than it would be under the tax systems of other countries; the average across the countries we consider is 44%. Since 2016–17 (the year for which this analysis is undertaken), the personal allowance in income tax has been increased more quickly than inflation, which will further reduce income tax payments at the median in the UK. For top earners, the UK system produces one of the lowest average tax rates (51%, compared with an average of 55% across the countries considered). For both median and top earners, there are other systems that produce significantly higher tax rates than the UK system. This is true for both income tax and SSCs.

<sup>23</sup> We are not the first people to use EUROMOD to compare the tax treatment of hypothetical households across European countries. A recent example is K. Gasior and P. Recchia, 'The use of hypothetical household data for policy learning: EUROMOD HHoT baseline indicators', EUROMOD Working Paper EM6/18, 2018, <https://www.euromod.ac.uk/sites/default/files/working-papers/em6-18.pdf>. Our analysis differs as we use fixed points in the UK distribution (including at much higher income levels), rather than multiples of average income. We focus specifically on income taxes and include employer SSCs in our analysis.

**Figure 9. Average income tax and SSCs rates, 2016**



Note: Earnings levels are converted into local currency using purchasing power parity (PPP) exchange rates. Average tax rates are calculated as the sum of income tax, employer SSCs and employee SSCs paid as a share of labour costs (earnings and employer SSCs paid). The average excludes the UK.

Source: EUROMOD simulation using ONS data from the Annual Survey of Hours and Earnings and OECD PPP exchange rates.

At the median, 90th and 95<sup>th</sup> percentiles, lower UK average tax rates are mostly determined by lower SSCs. For example, at the median, the average income tax rate in the UK (11%) is 4 percentage points below the average across countries (15%), but the overall SSCs rate in the UK (17%) is 12 percentage points lower than the average across countries (29%) (panel A). Much of the difference arises as a result of differences in employer based SSCs, which are substantially higher in many other countries.

SSCs in all countries tend to be less progressive than income tax and therefore account for a relatively larger share of the average tax rate for lower earners than for those at the top of the distribution. However, for top earners (panel B), those countries with higher average rates than the UK almost all achieve this largely through higher SSCs.

## Box 2. The inclusion of employer SSCs as a tax on employees

We include employer SSCs when comparing tax at different income levels. While the statutory (legal) incidence of employer SSCs is on the employer, rather than the employee, we include these payments for two reasons.

First, economic theory suggests that, at least in the long run, the incidence of tax (and therefore the effect on post-tax outcomes) should not depend on whether a tax is paid by the employer or the employee (because wages can adjust). The broad consensus from the empirical evidence is that wages do adjust such that the majority of employer SSCs are incident on employees.<sup>a</sup> We treat employee and employer SSCs in the same way, and make the further assumption that the incidence is fully on the employee.

Even if the incidence of employer SSCs is different from that of employee SSCs, these taxes still require tax payments associated with conducting an employment relationship. Comparing this across tax systems is of interest in and of itself. If the incidence falls (at least in part) on the employer, the interpretation of our results would be somewhat different because, rather than the tax reflecting *who* pays, it would reflect *which employment relationships* are taxed more or less heavily.

Our findings (which we present with and without SSCs) are not sensitive to the inclusion of employer SSCs. Our conclusions would be similar if we considered only employee SSCs.

<sup>a</sup> See A. Melguizo and J. González-Páramo, 'Who bears labour taxes and social contributions? A meta-analysis approach', *SERIEs – Journal of the Spanish Economic Association*, 2013, 4, 247–71, <https://link.springer.com/article/10.1007/s13209-012-0091-x>.

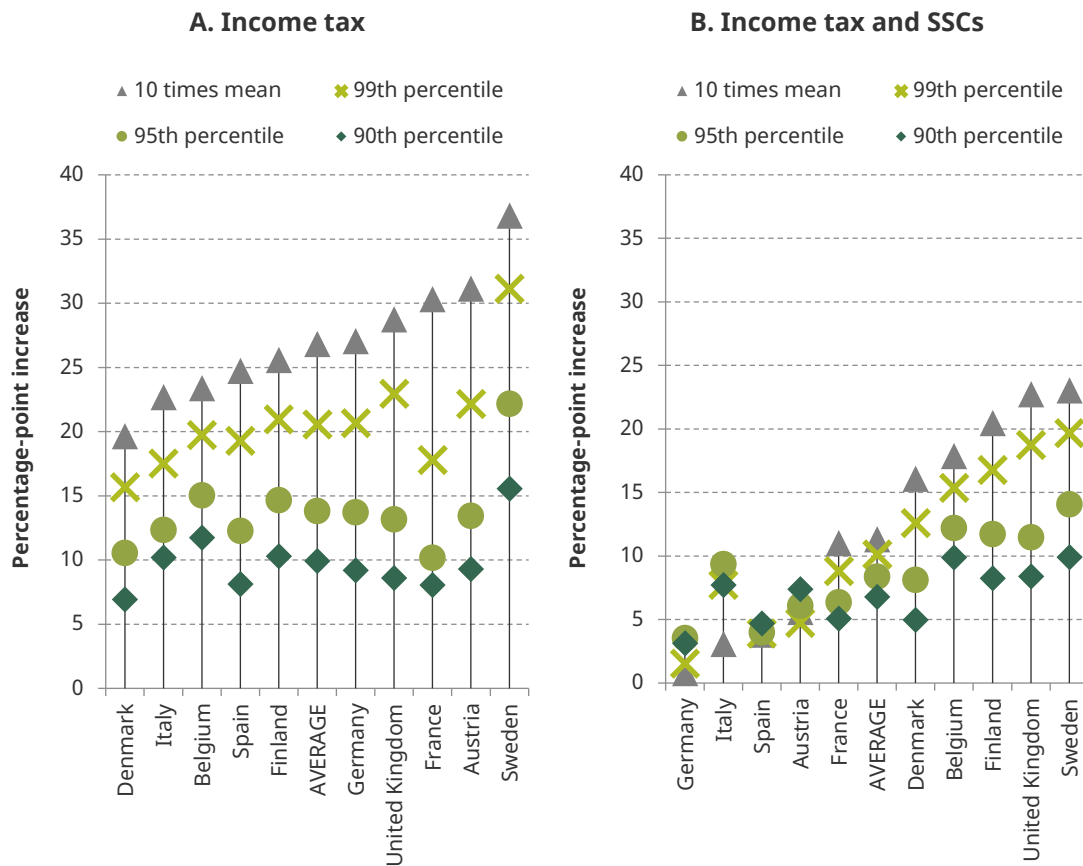
## The UK system taxes higher earners relatively more than someone at the UK median

We have shown that average income tax and SSC rates at the median and at the top of the UK earnings distribution are low relative to the average tax rates that would be produced by other countries' tax systems. We now consider how the tax treatment of those with the highest incomes compares with the tax treatment of those at the median, and how this compares across countries' tax systems. This provides one measure of the progressivity of different systems (i.e. a measure of how average tax rates increase as income increases).<sup>24</sup>

We compare the income tax and SSC treatment of a UK median earner and of those on high earnings in two ways.

<sup>24</sup> There are several ways to measure whether or not one system is more progressive than another. One common alternative is the Kakwani index, which measures the change in the Gini coefficient measure of inequality pre- and post-taxes. This will incorporate both differences in the structure of the economy across countries and differences in tax systems and benefit systems. On this measure, the UK (and other lower-tax countries) often measure as being more progressive than higher-tax ones. See, for example, OECD, 'Income inequality and growth: the role of taxes and transfers', OECD Economics Department Policy Note 9, 2012, <https://www.oecd.org/eco/public-finance/49417295.pdf>.

**Figure 10. Average tax rates, percentage-point increase over median, 2016**



Note: In all cases, percentiles refer to percentiles of the UK full-time earnings distribution converted into local currency using PPP exchange rates. In panel A, average tax rates are calculated as the income tax due divided by salary income. In panel B, average tax rates are calculated as income tax, employer SSCs and employee SSCs paid as a share of labour costs (salary income plus employer SSCs paid).

Source: EUROMOD simulation using ONS data from the Annual Survey of Hours and Earnings and OECD PPP exchange rates.

First, we show the percentage-point difference between the average tax rate of a UK median earner (where this is taken as a baseline) and the average tax rates for those at the 90<sup>th</sup>, 95<sup>th</sup> and 99<sup>th</sup> percentiles and at 10 times mean earnings. This is shown in Figure 10. For example, panel A (which considers only income tax) shows that an earner at the 90<sup>th</sup> percentile in the UK would have an average income tax rate 8.6 percentage points above the rate at the UK median (which is 12.2%).<sup>25</sup> The average tax rate at the 95<sup>th</sup> percentile would be a further 4.6 percentage points higher (i.e. at 12.2+8.6+4.6=25.4%), the average tax rate at the 99<sup>th</sup> percentile a further 9.8 percentage points higher and the average tax rate at ten times the mean a further 5.8 percentage points higher.

In all cases, average tax rates are increasing as income increases (i.e. these income tax systems are all progressive). Under the UK system, the differences between the average tax rate at the median and at the 90<sup>th</sup> and 95<sup>th</sup> percentiles are below average (i.e. over this range, average tax rates rise less quickly in the UK system than under other systems).

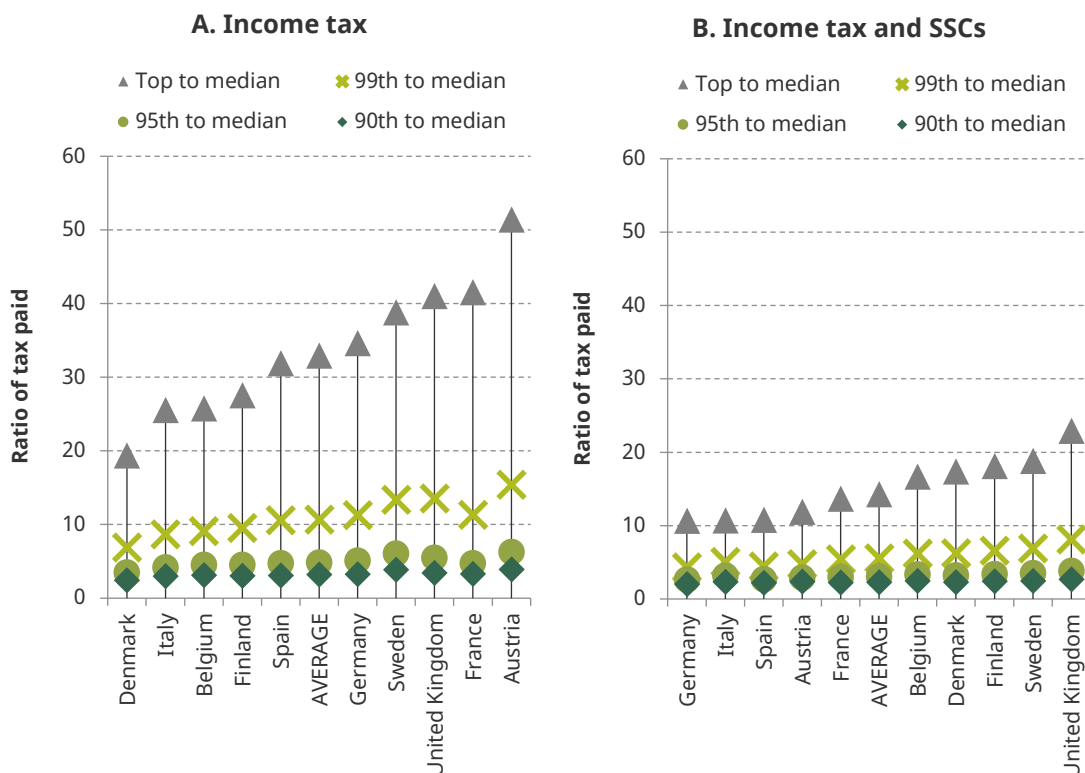
<sup>25</sup> This is different from the 'income tax' bar in Figure 9 because this tax rate is expressed as a fraction of earnings rather than employer cost (which is earnings plus employer SSCs).

However, the differences between tax paid at very high income levels (the 99<sup>th</sup> percentile and ten times the mean) and at the median are slightly above average. This indicates that the UK income tax system taxes those individuals at the very top of the earnings distribution relatively (i.e. relative to lower earners) more heavily than most of the other European countries' systems studied.

Panel B shows the combined effect of income tax and SSCs. Because SSCs are less progressive, the overall differences in average tax rates are smaller. Indeed, some countries, such as Germany, have virtually no increase in average tax rates, a phenomenon explained by SSCs, which are only paid up to an earnings ceiling and not levied beyond that. Considering income tax and SSCs combined, the UK system has average tax rate increases (between the median and top earners) that are far higher than would be produced by other countries' systems; only Sweden has a larger increase in the average tax rate between the median and a top earner. While SSCs are less progressive than income taxes, the UK SSCs (NICs) are more progressive than those in other higher-tax European countries.

The second way that we compare the tax treatments of a UK median earner and of those on high earnings is to compare the relative size of cash tax payments (Figure 11). That is, rather than consider differences in average tax rates (as above), we consider the extent to which alternative systems would rely on different individuals for raising revenue by

**Figure 11. Ratio of tax paid at higher income levels to the UK median, 2016**



Note: In all cases, percentiles refer to percentiles of the UK full-time earnings distribution converted into local currency using PPP exchange rates. Tax paid at the UK median is normalised to 1.

Source: EUROMOD simulation using ONS data from the Annual Survey of Hours and Earnings and OECD PPP exchange rates.

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comparing the relative size of tax payments in cash terms at different income levels. We normalise tax paid at the UK median to 1.

Similar patterns emerge. In the UK and elsewhere, a large amount of revenue is raised from top earners and income tax is more top-heavy than SSCs. But whether considering income tax alone or including SSCs, the UK system has among the largest increases in tax payments as income increases, especially at the highest income levels considered.

These findings suggest that the UK income tax and SSC system is more of an outlier (compared with higher-tax European countries) in terms of tax levied on someone at the UK median than it is for higher earners. The tax levied under the UK system is relatively low at the median and at higher earnings levels, but higher earners pay relatively more tax (both in cash terms and as a share of income) than an individual at the UK median than would be the case under other countries' systems. In this sense, the UK income tax and SSC system is more progressive than European counterparts, even though tax levied on top earners is below average.

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## 4. Conclusion

Many advanced economies raise a greater share of national income in tax than the UK. Countries differ in both how much revenue they raise and how they raise it for a number of reasons, including that they have different economic structures and make different choices about the size and shape of the state. In coming years, the UK may wish to raise more tax revenue to cover the costs associated with an ageing population that demands more and more expensive health and social care. Sustained levels of higher taxation would be unusual for the UK by historical standards but would not be unusual internationally. The choices of other countries should not be viewed as a prescription for the UK; even if the UK decided to raise higher taxes, there are many ways this could be achieved. However, there are some commonalities among those countries that already raise more tax than the UK.

All advanced economies raise the bulk of their revenue from three broad-based taxes – income tax, social security contributions (SSCs) and VAT. These three taxes, which are broad-based in the sense that they apply to most income, earnings and consumption respectively, account for two-thirds of tax revenue in the UK and over 70% on average across the OECD. Given that the three largest taxes relate to the largest tax bases, it is not surprising that they account for the largest share of revenue. It would be difficult to raise very substantial additional revenue without increasing one of these large taxes.

The UK VAT raises an internationally average amount of revenue but from an unusually narrow tax base. The UK VAT has many more zero and reduced rates than the VAT systems in most other European countries. The UK's narrow base is expensive – the combined cost of zero and reduced rates is over £50 billion – and is an inefficient way to redistribute towards poorer households. Were the UK to scrap all zero and reduced rates, VAT revenue would be significantly higher than the OECD average.

The UK stands out relative to higher-tax countries in raising less from income tax and SSCs. Most notably, UK NICs, which have only a nominal 'contributory link' between payments and subsequent entitlements, raise significantly less than more contributory systems in other European countries. Income tax and SSCs together account for 15% of national income in the UK, 18% on average in the OECD and 22% on average in the EU15. These taxes fully explain the UK's below-average tax revenues as a share of national income. That is, the UK already raises relatively more than other OECD and EU15 countries from other taxes, including those on companies and properties.

The UK has lower average tax rates on top earners relative to higher-tax countries. Specifically, we show that average rates of income tax and SSCs (combined) are lower in the UK than they would be if the UK implemented a tax system from a higher-tax European country. For example, a person earning ten times the mean UK income (around £344,000 in 2016) would face an average tax rate (accounting for income tax and SSCs) of 51%. At the same level of income, the French system would produce an average tax rate of 59% and the Swedish system a rate of 66%.

The UK also has lower average tax rates on median earners relative to higher-tax countries. For example, a person earning the median UK income (around £28,000 in 2016) would face an average tax rate of 28%, whereas the same income would be taxed at a rate of 43% or 48% under the Swedish and French systems respectively. The UK is actually

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more of an outlier at the median than it is for top earners. When comparing tax rates of top earners with those of median earners, the UK ranks relatively highly compared with higher-tax European countries. That is, the UK income tax and SSC system is more progressive (in the sense that average tax rates rise more quickly with income) than the system in most of the European countries that raise more revenue overall. NICs especially stand out here – while SSC rates are lower in the UK than in other countries, NICs are raised in a more progressive way than under many other SSC systems that have a stronger contributory link. A large part of the difference in SSCs across countries arises from employer contributions. That is, if the UK were to implement a system more like one of the higher tax EU countries, it would imply higher contributions from both employees and employers. The former would be felt directly by individuals (because employee contributions are deducted directly from wages) but we would expect employer contributions to also affect employee incomes by affecting the wages employers were willing to offer. To the extent that higher employer contributions were not passed onto workers (in the form of lower wages), they would act to increase the cost of employing someone relative to the cost in other countries and to the cost of contracting with a self-employed worker (because in the UK the self-employed are not subject to the equivalent of employer NICs).

This analysis does not speak to whether other countries choose to raise more from, for example, the top 1%. This will be a function of both the design of the tax system and the income distribution. Here, we isolate the effect of the tax system and conduct the thought experiment of how payments would change if other countries' systems were introduced in the UK. Further, the analysis does not support the conclusion that the UK cannot raise more from those at the top of the distribution. It does, however, highlight that countries that raise more revenue than the UK choose to do so not only by having higher taxes on top earners but also by having higher taxes across the earnings distribution.



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# Appendix

## EUROMOD simulation and methodology

We simulate the tax payments of ‘example households’ using the EUROMOD tax and benefit simulator. Specifically, we take the median, 90<sup>th</sup>, 95<sup>th</sup> and 99<sup>th</sup> percentiles from the UK’s 2016 full-time employee earnings distribution, as well as ten times mean earnings,<sup>26</sup> and convert these earnings levels into local currency using purchasing power parity (PPP) exchange rates (using the average PPP conversion rate in 2016). We simulate the example households’ taxes using the EUROMOD simulator and calculate the average tax rate at each point as the simulated amount of income tax, employee SSCs and employer SSCs as a fraction of ‘employer cost’ (which we define as earnings plus employer SSCs).

Throughout, we focus only on taxes paid and ignore any benefits received.

All tax systems we use are those that apply as of 30 June 2016.

This experiment can be thought of as what would happen to the tax payments of these households if the UK were to adopt another country’s income tax and SSC system, assuming no behavioural response on the part of the household.

## Robustness checks for alternative household types

In the main paper, we present results for a single full-time employee with no dependants. Here, we present the same figures for:

- one-earner households with two children, where the earner is a full-time employee;
- two-earner households with two children, where the second earner is earning the median wage (again, earners are full-time employees).

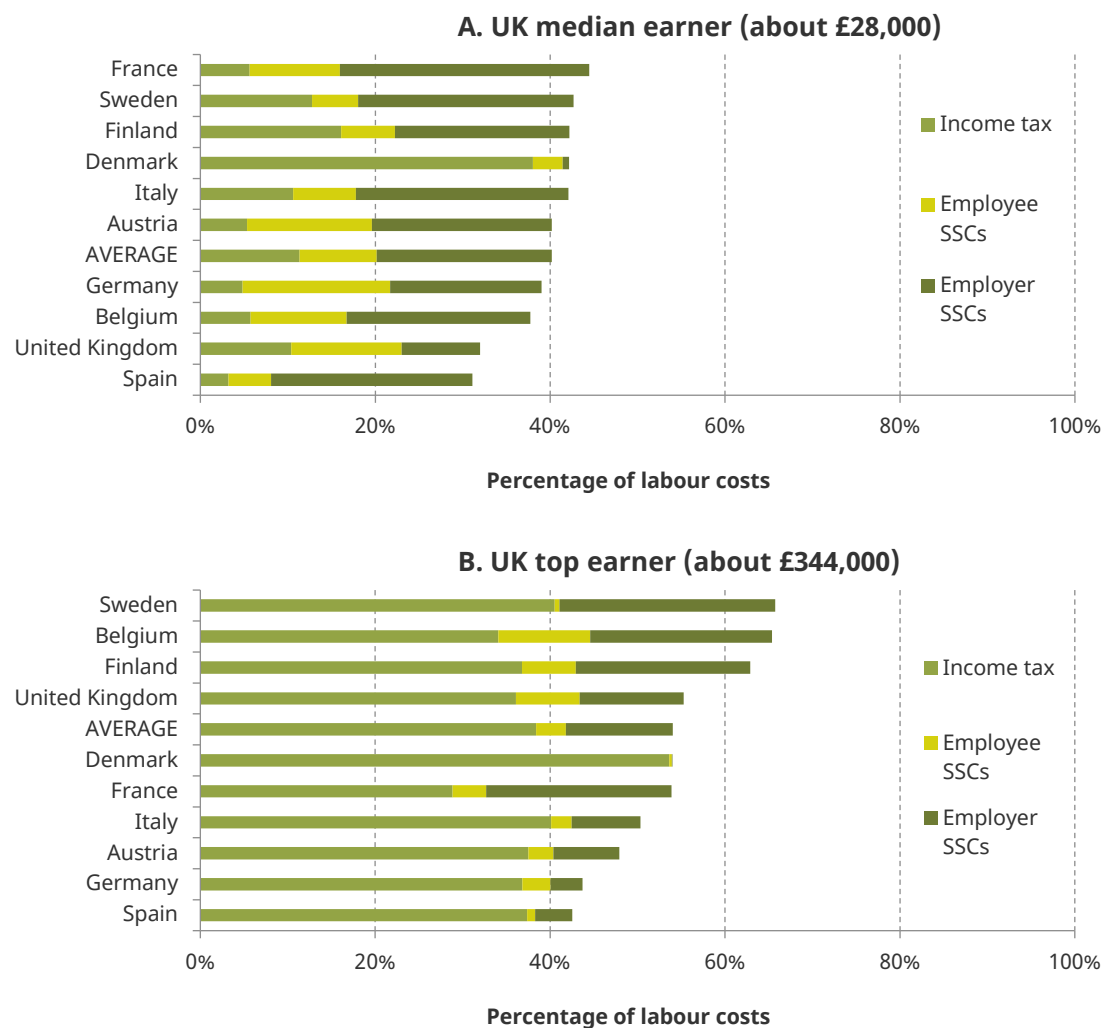
The main reason why tax payments might differ is if the tax system assesses couples jointly and/or provides extra tax allowances that depend on having children. However, we find that the broad story continues to hold. The results are presented in Figures 12–17.

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<sup>26</sup> The earnings distribution is based on the Annual Survey of Hours and Earnings. We use publicly available statistics produced by the Office for National Statistics (ONS). See <https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/earningsandworkinghours/bulletins/annualsurveyofhoursandearnings/2017provisionaland2016revisedresults>.

## One-earner households

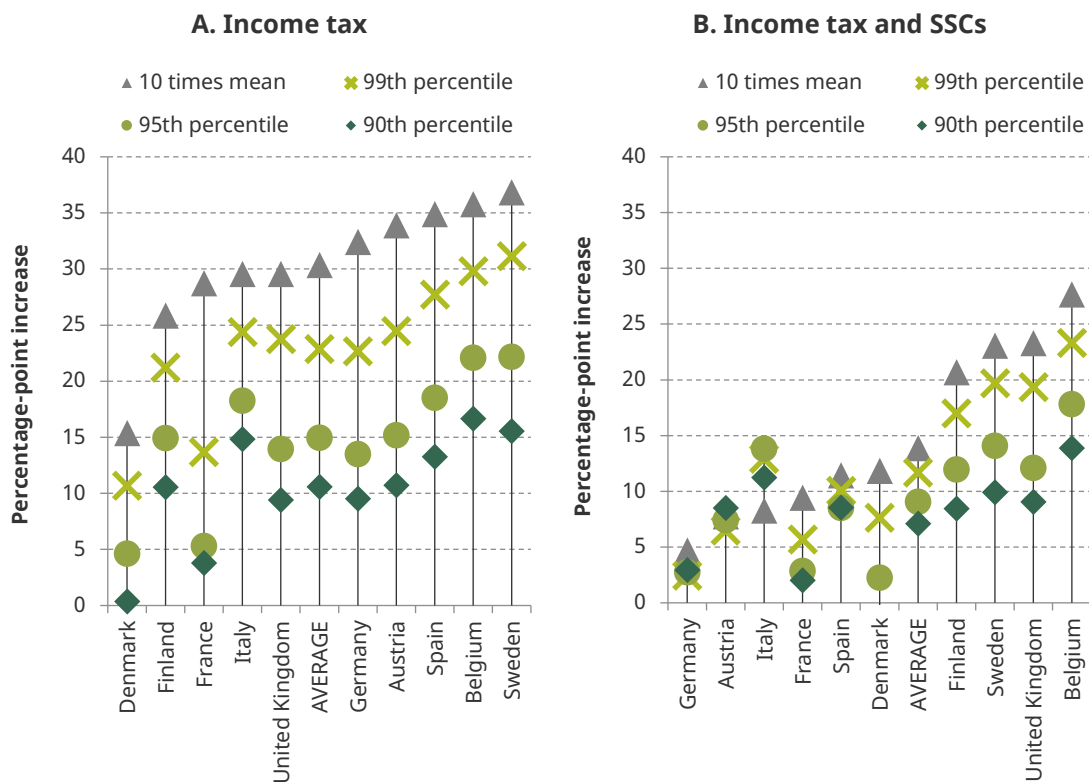
**Figure 12. Average income tax and SSCs rates, one-earner household with two children, 2016**



Note: Earnings levels are converted into local currency using purchasing power parity (PPP) exchange rates. Average tax rates are calculated as the sum of income tax, employer SSCs and employee SSCs paid as a share of labour costs (earnings and employer SSCs paid). The average excludes the UK.

Source: EUROMOD simulation using ONS data from the Annual Survey of Hours and Earnings and OECD PPP exchange rates.

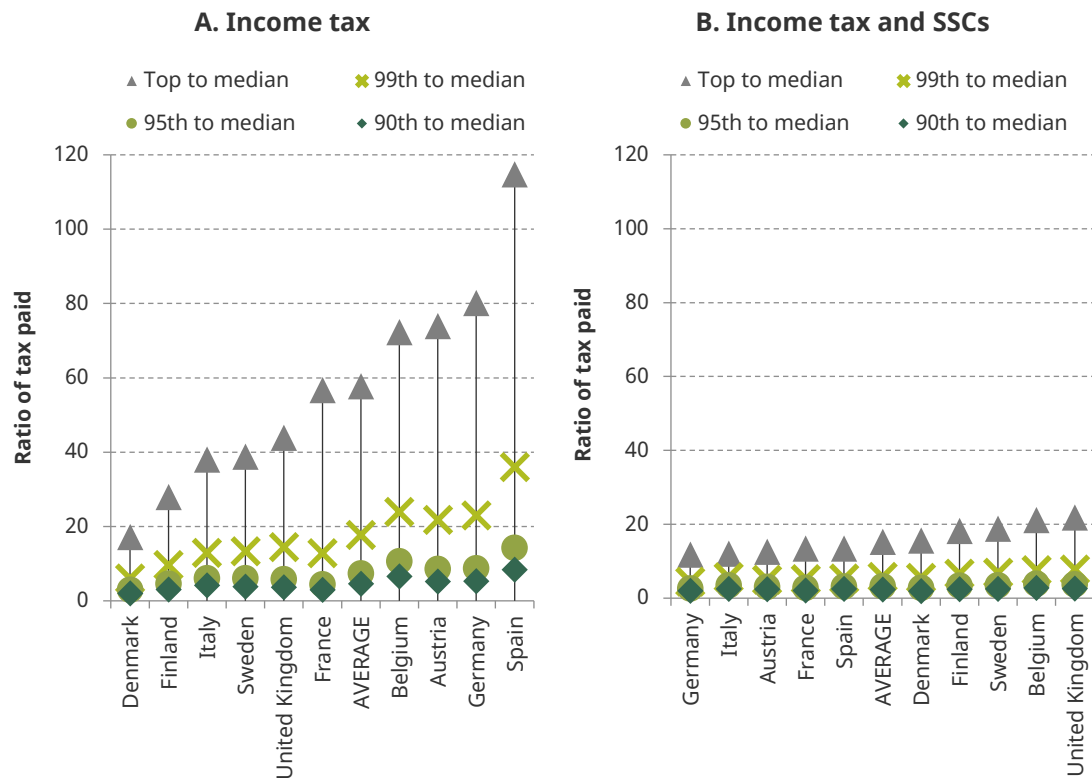
**Figure 13. Average tax rates, percentage-point increase over median, one-earner household with two children, 2016**



Note: In all cases, percentiles refer to percentiles of the UK full-time earnings distribution converted into local currency using PPP exchange rates. In panel A, average tax rates are calculated as the income tax due divided by salary income. In panel B, average tax rates are calculated as income tax, employer SSCs and employee SSCs paid as a share of labour costs (salary income plus employer SSCs paid).

Source: EUROMOD simulation using ONS data from the Annual Survey of Hours and Earnings and OECD PPP exchange rates.

**Figure 14. Ratio of tax paid at higher income levels to the UK median, one-earner household with two children, 2016**

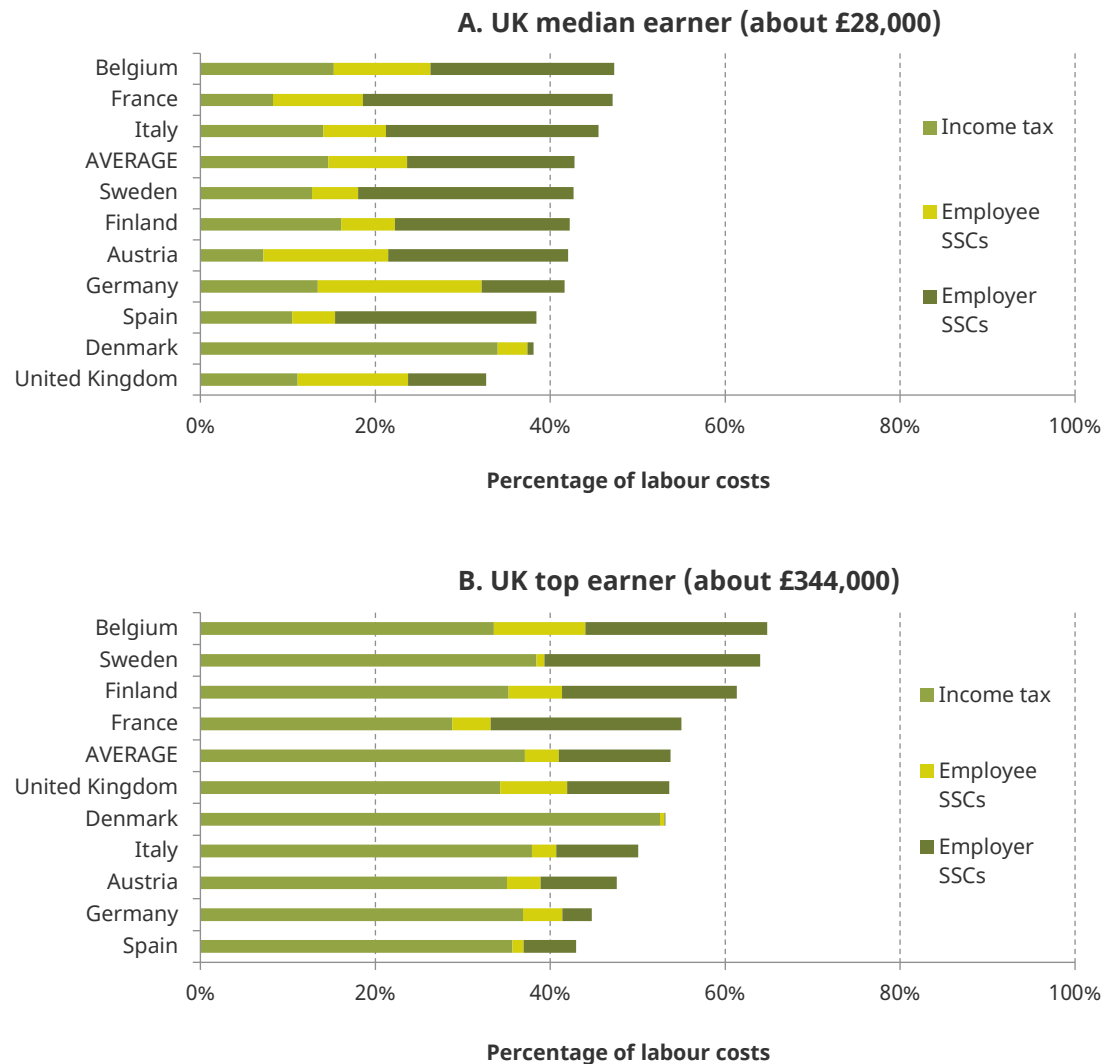


Note: In all cases, percentiles refer to percentiles of the UK full-time earnings distribution converted into local currency using PPP exchange rates. Tax paid at the UK median is normalised to 1.

Source: EUROMOD simulation using ONS data from the Annual Survey of Hours and Earnings and OECD PPP exchange rates.

## Two-earner households

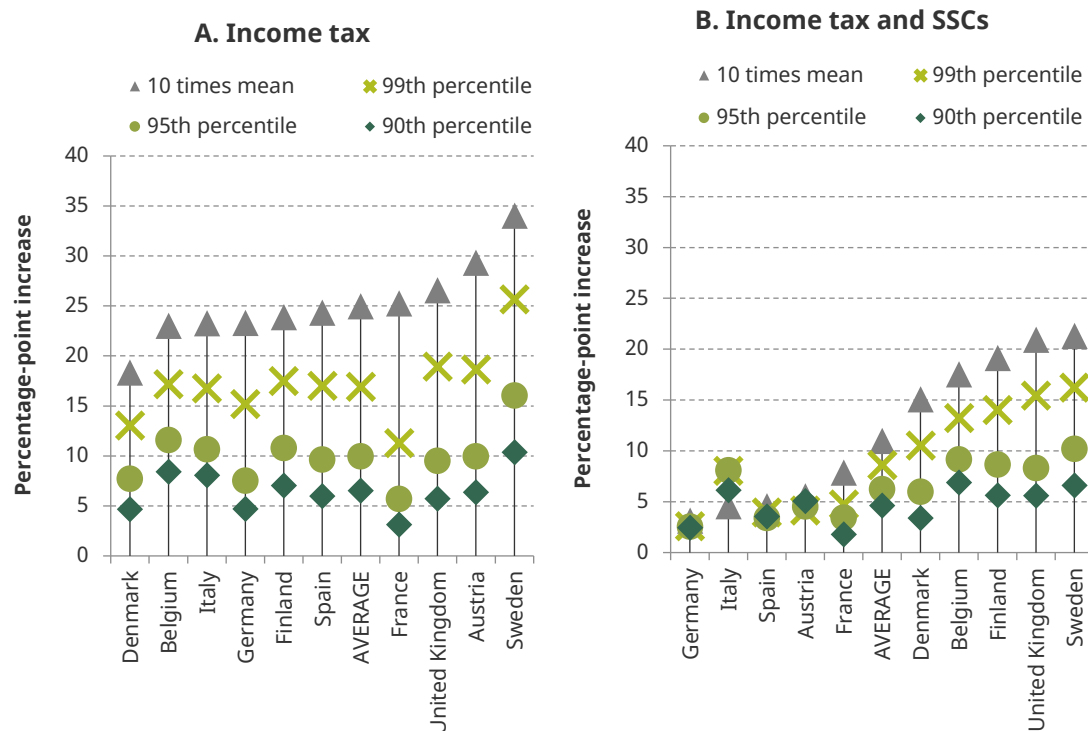
**Figure 15. Average income tax and SSCs rates, two-earner household with two children, second earner at the UK median, 2016**



Note: Earnings levels are converted into local currency using purchasing power parity (PPP) exchange rates. Average tax rates are calculated as the sum of income tax, employer SSCs and employee SSCs paid as a share of labour costs (earnings and employer SSCs paid). The average excludes the UK.

Source: EUROMOD simulation using ONS data from the Annual Survey of Hours and Earnings and OECD PPP exchange rates.

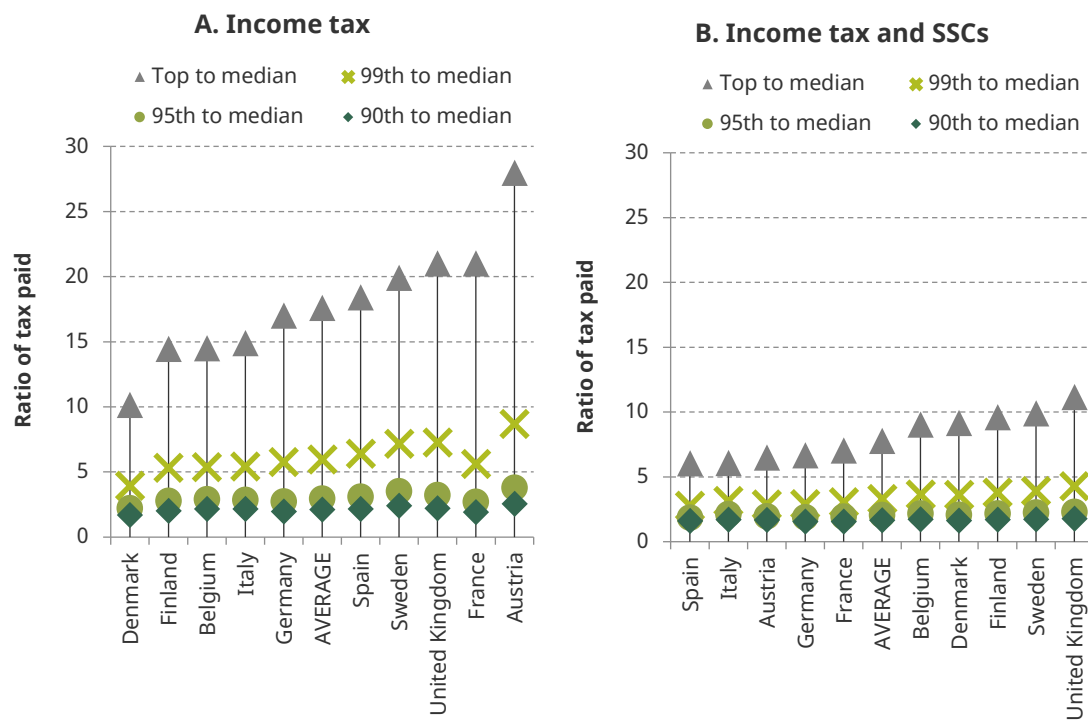
**Figure 16. Average tax rates, percentage-point increase over median, two-earner household with two children, second earner at the UK median, 2016**



Note: In all cases, percentiles refer to percentiles of the UK full-time earnings distribution converted into local currency using PPP exchange rates. In panel A, average tax rates are calculated as the income tax due divided by salary income. In panel B, average tax rates are calculated as income tax, employer SSCs and employee SSCs paid as a share of labour costs (salary income plus employer SSCs paid).

Source: EUROMOD simulation using ONS data from the Annual Survey of Hours and Earnings and OECD PPP exchange rates.

**Figure 17. Ratio of tax paid at higher income levels to the UK median, two-earner household with two children, second earner at the UK median, 2016**



Note: In all cases, percentiles refer to percentiles of the UK full-time earnings distribution converted into local currency using PPP exchange rates. Tax paid at the UK median is normalised to 1.

Source: EUROMOD simulation using ONS data from the Annual Survey of Hours and Earnings and OECD PPP exchange rates.