

Overview of the UK tax–benefit system

ECON 3003
Advanced Public Economics

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Poll 1: What's the poverty rate in the UK?

(1) What percent of people live with less than \$2.15 a day?



Results here: (link)

Poll 2: What's the poverty rate in the UK?

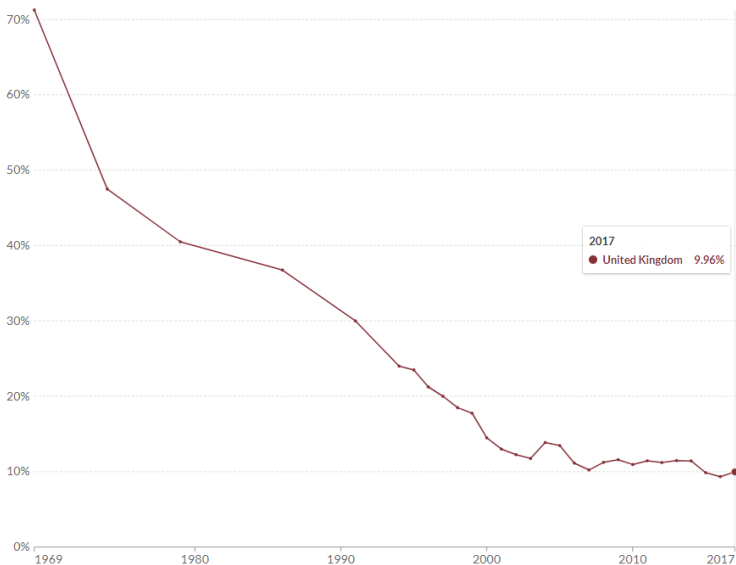
(2) What percent of people live with less than \$20 a day?



Results here: [\(link\)](#)

Poverty: Share of population living on less than \$20 a day, 1969 to 2017

This data is adjusted for inflation and for differences in the cost of living between countries.

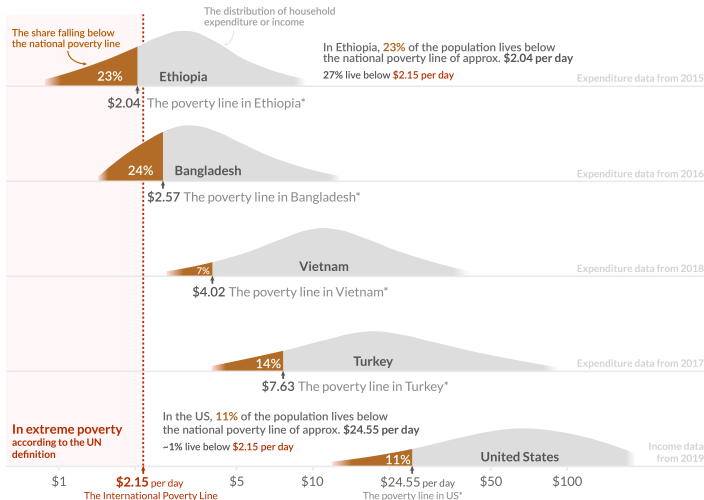


Source: World Bank Poverty and Inequality Platform

Note: This data is expressed in international-\$ at 2017 prices.

National poverty lines, poverty rates & incomes in five countries

All figures are adjusted to account for differences in the cost of living across countries.



Note: All figures are expressed in 2017 International-\$. The tails of the distribution are not shown since they tend to be poorly captured by household surveys on which this data is based.

*Poverty lines are approximations of national definitions, harmonized to allow comparisons across countries. All poverty lines are from Jolliffe et al. (2022), except for US – which we calculate from the value that in the World Bank's poverty data yields the same rate as the official US Census Bureau poverty rate in 2019.

Source: Jolliffe et al. (2022); US Census Bureau; World Bank Poverty and Inequality Platform.
OurWorldinData.org – Research and data to make progress against the world's largest problems.

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Overview of UK Taxes and Transfers

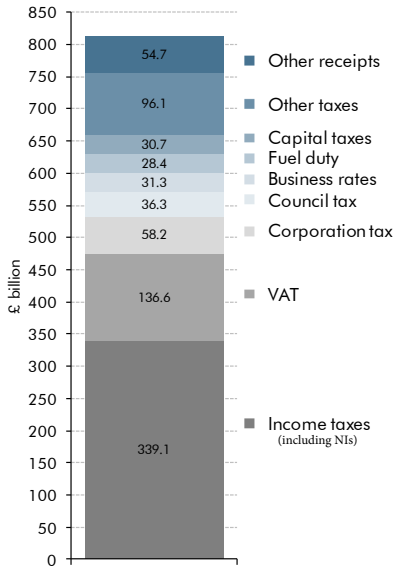
TAXATION AND REDISTRIBUTION

Key question: By how much should government reduce inequality using taxes and transfers?

- 1) Governments use **taxes** to raise revenue
- 2) This revenue funds **transfer** programs:
 - a) Universal Transfers: Public Education, Health Care (NHS), Retirement and Disability, Unemployment
 - b) Means-tested Transfers: In-kind (public housing, free childcare hours, free school meals) and cash benefits (WTC, UC)

Modern governments raise large fraction of GDP in taxes (30-45%) and spend significant fraction of GDP on transfers

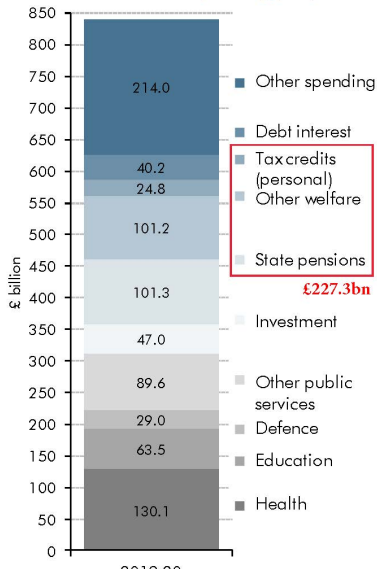
Public sector receipts (UK)



Source: OBR

2019-20

Public sector spending (UK)



Source: HMT, OBR

2019-20

FACTS ON UK TAXES AND TRANSFERS

References: Comprehensive description in:

“A brief guide to the public finances” (OBR)

[<https://www.gov.uk/browse/tax>]

[<https://www.gov.uk/browse/benefits>]

A) Taxes: (1) individual income tax, (2) payroll taxes on earnings (funds Social Security benefits, e.g. state pensions), (3) corporate tax, (4) VAT + excise taxes, (5) property taxes (council tax + stamp duty)

B) Means-tested Transfers: (1) refundable tax credits, (2) in-kind transfers: public housing, free meals, education, council tax support (3) cash welfare: pension credit, income support

The devil is in the details

A good public economist needs to know the institutional details. It's not boring. It's crucial.

It would be weird to understand optimal tax theory and ignore how the income tax works in practice.

The tax system reflects:

- i) social judgements made by people and policy makers, and
- ii) lobbying, political economy, interest groups.

You must understand implicit social judgements behind the tax system.

Question them! Which constraints are truly “irremovable”?

UK INCOME TAX

A tax on an **individual's** income (not family income) over the course of a **tax year** (6 April to 5 April of the following year). UK Government's largest single source of tax revenue

Tax is paid on the amount of **Taxable Income** remaining after allowances have been deducted

Personal Allowance (PA) is £12.5k (no tax on first 12.5k earned); PA may be bigger in specific cases (Marriage Allowance, Blind)

1. Add up gross income (wages, pensions, rental income, bank interest, etc.)
2. Adjusted Net Income (ANI) = Deduct tax-free allowances (private pension contributions, Gift Aid charity donations)
3. Use ANI to work out Personal Allowance
4. Taxable Income = $ANI - \text{Personal Allowance}$

Note: National Insurance contributions are not deductible

5. Income Tax Liability: Apply the tax schedule to your Taxable Income

UK Income Tax: Tax Brackets/Bands

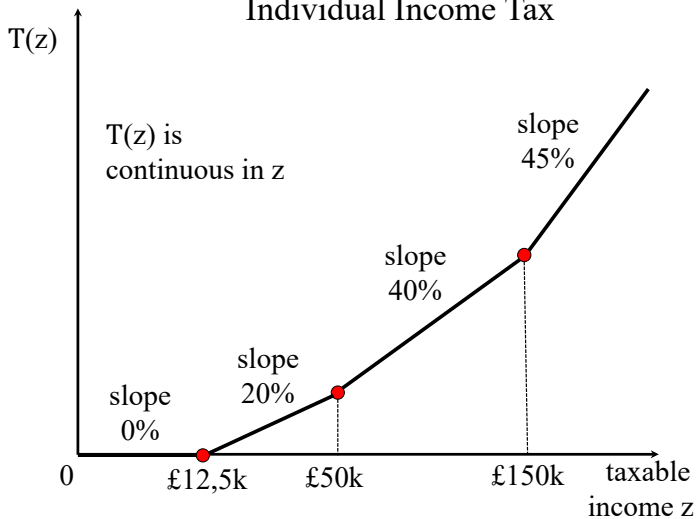
Tax $T(z)$ is a piecewise linear and continuous function of taxable income z with constant marginal tax rates (MTR) $T'(z)$ by bands

For 2020/21 tax year, 4 bands with MTR 0% (**personal allowance**), 20% (**basic rate**), 40% (**higher rate**), 45% (**additional rate**)

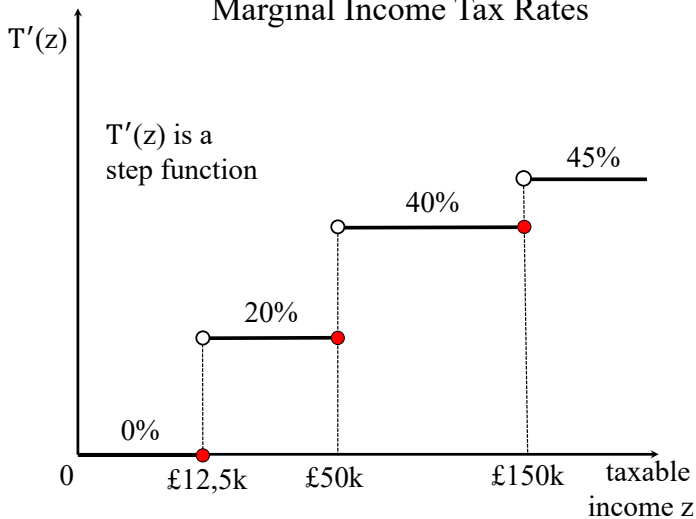
Note: **Marginal** bands mean you only pay the specified MTR on that portion of income. E.g., if your salary puts you in the 40% tax bracket, then you only pay 40% on that segment of earnings. For the lower part of your earnings, you'll still pay 20% and 0%.

Lower preferential rates (up to a max of 38.1%) apply to dividends, realized capital gains [in part to offset double taxation of corporate profits]

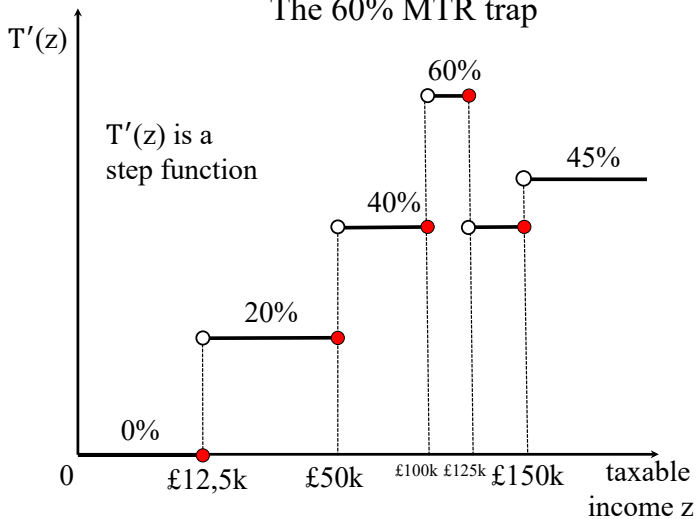
Individual Income Tax



Marginal Income Tax Rates



The 60% MTR trap



Example: How MTRs work

(1) If you earn £30,000 (gross) per year, you will pay:

- Nothing on the first £12,500
- 20% (£3,500) on the next £17,500
- Total annual income tax = £3,500
- Take-home pay = £26,500

(2) If you earn £55,000 (gross) per year, you will pay:

- Nothing on the first £12,500
- 20% (£7,500) on the next £37,500
- 40% (£2,000) on the next £5,000
- Total annual income tax = £9,500
- Take-home pay = £40,500

The £100k tax trap

Since 2010-11, Personal Allowance drops by 50p for every £1 earned over £100k (so, for PA of £12.5k, no PA on taxable income over £125k)

Withdrawal of PA effectively creates extra tax rates in the system:

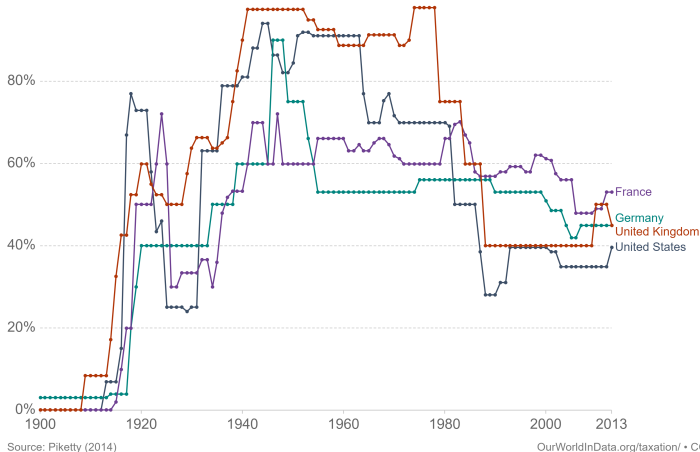
★ For each extra £1 of income, 50p of previously untaxed income is now taxed at 40% (so, an extra 20p of tax on that marginal pound) \Rightarrow MTR is 60% not 40% (on incomes up to £125k);

MTR drops back to 40% above £125k

Example: Someone on £100k who receives a £1k pay rise must pay £400 in income tax, but will also lose £500 of her PA. That extra £500 is taxed at 40%, costing the person an extra £200. So from the £1k, she loses £600 in tax, an effective 60% tax rate. [More here: The £100k tax trap]

Top marginal income tax rate, 1900 to 2013

Top marginal tax rate of the income tax (i.e. the maximum rate of taxation applied to the highest part of income)



Tax rates change frequently over time. Top MTRs have declined drastically since 1970s (as in many OECD countries)

Historically, high MTRs above 80% not unusual (See)

UK Income Tax: National Insurance

In addition to income tax, most UK workers also have **National Insurance (NI) contributions** deducted from their pay

NI kicks in based on your earnings from the age of 16, and you usually stop paying when you reach state pension age

There are different 'classes' of NI. The type people pay depends on their employment status and how much they earn. Rates for most employees for the 2020/21 tax year:

Your pay	Class 1 NI rate
£183-£962 a week (£792-£4,167 a month)	12%
Over £962 a week (£4,167 a month)	2%

See the [HMRC website](#) for full rates. More info [here](#).


UK Income Tax: Tax Filing

(1) **Pay As You Earn (PAYE)**: Is the system employers or pension providers use to withhold Income Tax and NI contributions before paying wages/pension

An individual's **tax code**, provided by HMRC, tells the employer how much to deduct; normally starts with a number and ends with a letter (e.g., 1250L used for most people with 1 job)

(2) **Self Assessment**: You must fill in a tax return if your financial affairs are more complex (e.g., you're self-employed, have rental income, earn more than 100k)

Most taxpayers in the UK are taxed at source through PAYE and so do not need to complete a Self-Assessment Tax Return

ASSIGNMENT NUMBER [REDACTED]		EMPLOYEE NAME [REDACTED]			LOCATION [REDACTED]		
DEPARTMENT [REDACTED]		JOB TITLE Nursing Assistant			PAYSACLE DESCRIPTION Review Body Band 3		
		SAL/WAGE 21142.00		INC. DATE 18 MAR 2020		STANDARD HRS. 37.5	
		PT SAL/WAGE 21142.00		TAX OFFICE NAME [REDACTED]		TAX OFFICE REF [REDACTED]	
		TAX CODE 1250L CUMUL		NI NUMBER [REDACTED]			
PAY AND ALLOWANCES (- = MINUS AMOUNT)					DEDUCTIONS (R INDICATES REFUND)		
DESCRIPTION	WKD/EARNED	PAID/DUE	RATE	AMOUNT	DESCRIPTION	AMOUNT	BALANCE C/F
Basic Pay	162.95	162.95	10.8124	1761.83	PAYE	339.40	
Night Duty EN	99.00	33.00	10.8124	356.78	NI A	211.54	
Saturday EN	8.00	2.67	10.8124	28.84	NHS Pension 9.3%	223.32	
Sunday EN	26.00	17.33	10.8124	187.41			
WTD Pay				66.41			
Year To Date Balances (This Employment Only)					This Period Summary		
GROSS PAY 14732.94		TAXABLE PAY		13362.78	PENSIONABLE PAY 2401.27	TAXABLE PAY	2177.95
NI LETTER		A		TAX PAID 2089.00	TAX PERIOD 6	NON-TAXABLE PAY	0.00
NI PAY 15664.51	OTHER NI PAY -931.57	PREVIOUS TAXABLE PAY		0.00	FREQUENCY Monthly	TOTAL PAYMENTS	2401.27
NI CONTS 1309.50	OTHER NI CONTS	PREVIOUS TAX PAID		0.00	PERIOD END DATE 30 SEP 2020	TOTAL DEDUCTIONS	774.26
PENSIONABLE PAY 14732.94		PENSION CONTS		1370.16	PAY DATE 25 SEP 2020	NET PAY	1627.01
SD REF NUMBER [REDACTED]		EMPLOYEE NO. [REDACTED]			PAY METHOD BACS		

Pay slip example

Worker earns an annual salary of £21,142 (1761.83 per month)

Falls in the “basic rate” band with MTR of 20% on the portion of salary between 12.5k and 50k:

- No tax is paid on the first £12,500 (Tax code: 1250L)
- Pays 20% (£1728.4) on the next ($21,142 - 12,500 = 8,642$)

Total annual income tax = £1728.4

Take-home pay = £19413.6

Exact withholding of income tax and NICs by employers (monthly) – see lines “PAYE” and “NI A”

Wage components: (i) Basic Pay (more rigid); (ii) Night and weekends (more flexibility). (ii) could be more respondent to income taxation

UK Income Tax: A timely and controversial topic

- ▶ Mini-budget: £45bn in tax cuts with the goal of boosting growth
 - Reversal of NICs increase of 1.25 p.p.
 - Reduces the basic MTR from 20% to 19%
 - Abolishes the top 45% MTR on income above £150k
 - Removes the cap on bankers' bonuses ($2\times$ salary)
 - Other provisions...
- ▶ Biggest tax cut in 50 years; rewards the rich more
- ▶ Puzzling estimates by Advani, Burgherr, and Summers (2022)



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- Kwarteng's £45bn tax cut package sends pound crashing to lowest level against dollar in 37 years
- Tory MPs left aghast as Treasury admits it has no forecasts for how its plan will promote growth

A budget for the rich

**Larry Elliott
Rowena Mason**

Kwasi Kwarteng has been accused of delivering a reckless mini-budget for the rich after his £45bn tax cutting package sent the pound crashing to its lowest level against the US dollar in 37 years.

In a high-risk strategy designed to revive Britain's stagnant economy, the new chancellor announced more than £400bn of extra borrowing over the coming years to fund the biggest giveaway since Anthony Barber's ill-fated 1972 budget.

Kwarteng said tax cuts – worth more than £55,000 a year to someone receiving £1m a year and described

as “class war” by some Labour MPs – were part of a new direction for the economy and were designed to help boost growth to 2.5% a year.

But the Treasury admitted there were no forecasts for the impact of the measures on growth, and the gamble received a hostile reception not just from the markets and from opposition politicians, but from economic thinktanks and many Conservative MPs, some of whom were aghast at the announcements.

Paul Johnson, the director of the Institute for Fiscal Studies, said: “Today, the chancellor announced the biggest package of tax cuts in 50 years without even a semblance of an effort to make the public finance numbers add up. Instead, the plan

seems to be to borrow large sums at increasingly expensive rates, put government debt on an unsustainable rising path, and hope that we get better growth. Mr Kwarteng is not just gambling on a new strategy, he is betting the house.”

The shadow chancellor, Rachel Reeves, described the mini-budget as “casino economics”.

Kwarteng scrapped the 45% rate of income tax paid by those getting more than £150,000 a year, abolished the cap on bankers' bonuses, reversed the rise in national insurance contributions and brought forward by a year the reduction in the basic rate of income tax from 20% to 19% pencilled in by the former chancellor Rishi Sunak for 2024.

**Tax cuts Super-rich
'laughing all the way
to the actual bank'**

Page 8

**The numbers
What it will
mean for you**

Page 15



**Jonathan Freedland
The Tories have made a
declaration of class war**

Journal, page 1

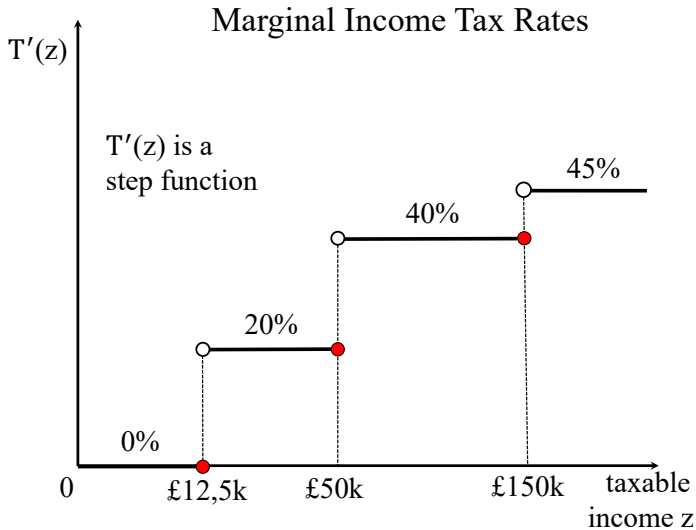
The income tax changes do not apply to Scotland.

The chancellor also announced a doubling of the £125,000 threshold for stamp duty on home purchases, a freezing of alcohol duties, and ditched the planned increase in corporation tax from 19% to 25% that had been due to come into force in April. An estimated £60bn will be spent capping energy bills for households and businesses during the coming winter.

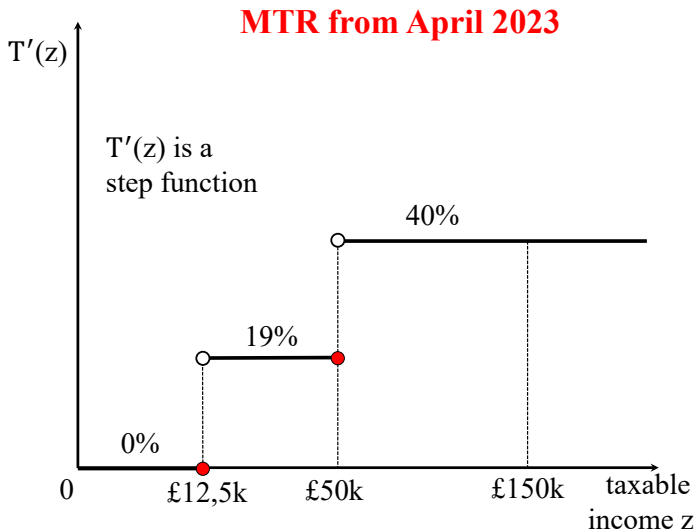
In the absence of independent scrutiny of the package from the Office for Budget Responsibility, it was left to thinktanks and the financial markets to pass judgment on the new government's “plan for growth”.



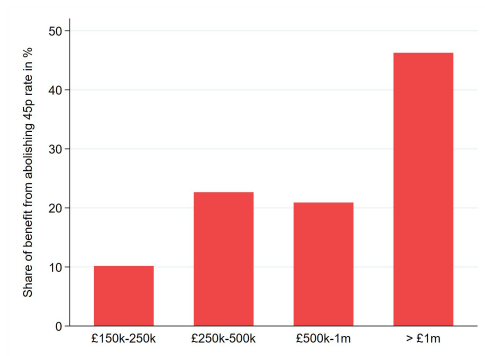
How does the income tax schedule change?



How does the income tax schedule change?

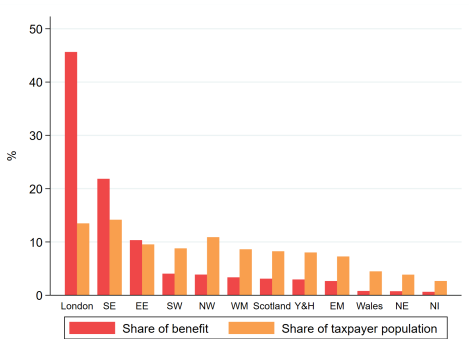


Tax savings by income brackets



- Only 10% of the gain from cutting the 45p rate goes to people with incomes of £150-250k
- Almost *half* of total tax saving goes to 'income millionaires'
- Gives £1bn in tax savings to just 2,500 people (>£3.5m in income); an extra £400k for each of them, every year...

Big regional differences in who gains from 45p cut



- Nearly *half* of tax saving goes to those in London
- Another 20% to South East
- The remaining 1/3 shared across the UK

Will big tax cuts for high earners boost growth?

Tax Cuts for Whom? Heterogeneous Effects of Income Tax Changes on Growth and Employment

Owen Zidar

Princeton University and National Bureau of Economic Research

This paper investigates how tax changes for different income groups affect aggregate economic activity. I construct a measure of who received (or paid for) tax changes in the postwar period using tax return data from NBER's TAXSIM. Variation in the income distribution across US states and federal tax changes generate variation in regional tax shocks that I exploit to test for heterogeneous effects. I find that the positive relationship between tax cuts and employment growth is largely driven by tax cuts for lower-income groups and that the effect of tax cuts for the top 10 percent on employment growth is small.

- Evidence from US shows tax cuts for the rich have small effect and lead to less employment growth than tax cuts for lower income
- So, unlikely to be a miracle in the UK... but worth analysing

Will big tax cuts attract and retain “top talent”?

Taxation and Migration by the Super-Rich

Arun Advani*

David Burgherr†

Andy Summers‡

September 26, 2022

Abstract

Using administrative data on the globally connected super-rich in the UK, we study the effect of a large tax reform on migration behaviour. Prior to 2017, offshore investment returns for ‘non-doms’ – individuals tax resident in the UK but with connections to other countries – were untaxed. Average offshore investment returns for these individuals exceeded £420,000; even without considering other types of income, this puts them in the top 0.2% of the population. A reform in 2017 brought long-stayers and UK-born non-doms into the standard tax system, reducing their effective net of average tax rate by between 8.8% and 13.0%. We find that migration responses were limited: our central estimate of the migration elasticity is 0.02, and across a range of specifications we can rule out elasticities larger than 0.5. Using reforms for the UK-born super-rich who were living abroad, we find that migration elasticities are limited even for recent arrivals, for whom our central estimate is 0.18. Assuming similar elasticities for all non-doms, abolition of the preferential regime would increase tax revenue collected from non-doms by £3.2bn (84%).

- Recent work in the UK studies the impact of a big tax increase on non-doms in 2017
- Result: hardly any non-doms left the UK
- So, new tax cut is unlikely to bring people to the UK

UK BENEFIT SYSTEM

The largest single area of government spending. Current system consists of many components:

- ★ **Tax credits** (Working Tax Credit, Child Tax Credit); **Families with children** (Child Benefit, Guardian's Allowance, etc); **On low income** (Income Support, Housing Benefit, Council Tax Reduction); **Unemployed** (Jobseeker's Allowance); **Sick and disabled** (Employment and Support Allowance, Disability Living Allowance); **Older people** (Retirement pensions, Winter Fuel Payment); **Bereaved people**; and many other

Recipients can be *in-work* or *out-of-work*; some are *means-tested*

Universal Credit is gradually replacing 6 means-tested benefits (CTC, HB, IS, JSA, ESA, WTC) by one single payment

Overall, very complex system (govt **calculators** available)

A complete review is beyond the scope of this course

UK TAX CREDITS

Working Tax Credit (WTC) & Child Tax Credit (CTC)

Unlike income tax, based on *family income* from year $t - 1$

You may qualify for just one, both, or neither [More info]

- (1) **WTC**: in-work support for those on a low income
Hours-per-week requirement: E.g., lone parents (16+ hours),
childless aged 25-59 (30+ hours), couples (24+ hours btw them &
one partner 16+ hours)
- (2) **CTC**: supports families with children, not an in-work credit

Benefit amount: comprises several elements (see table below)

It depends on your income. Max award tapered away by 41p for every
£1 of income above a threshold (41% phase-out rate)

Two tax credits:

Apr-20

Child Tax Credit

Family element	£545*
Child element (per child)	£2,830
Disabled child element	£3,415
Severely disabled child element	£4,800

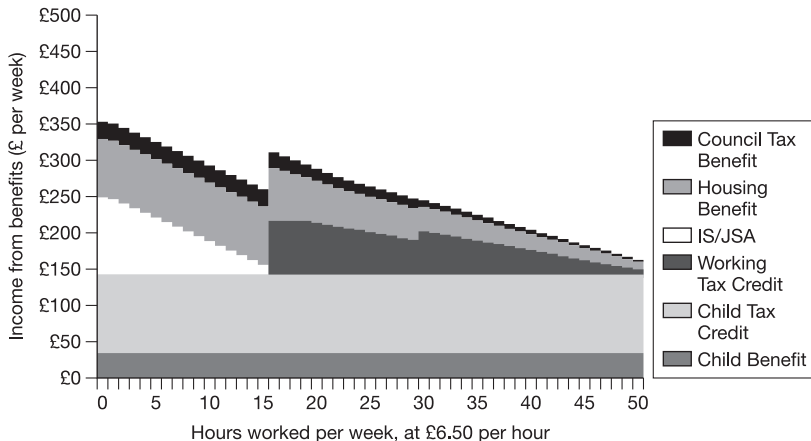
Working Tax Credit

Basic element	£3,040
Couple/lone parent element	£2,045
30 hour element	£825
Disabled worker element	£3,220
Severe disability element	£1,390
Childcare element: Max eligible cost for 1 child	£175 pw
Childcare element: Max eligible cost for 2+ children	£300 pw
Eligible childcare costs covered (%)	70%

Income thresholds and withdrawal rates

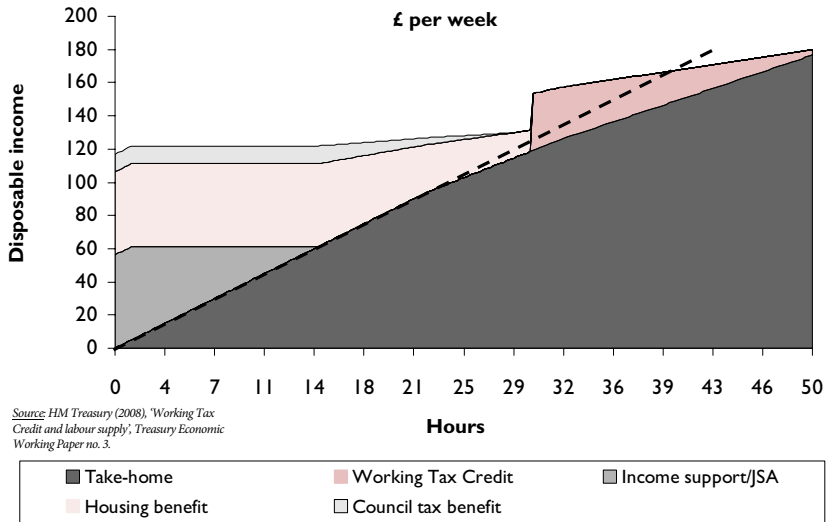
Threshold for max CTC where neither partner gets WTC	£16,385
Threshold for families who meet conditions for both tax credits	£6,530
Withdrawal rate (% of income >threshold taken off the credit)	41%

Current system of welfare entitlements for an example family



Notes: The entitlements are based on an assumed couple with two children. Only one person in the couple is in work, and they can choose how many hours to work at a given wage rate, £6.50 per hour. The family has no disabled members and no unearned income. Its Local Housing Allowance (LHA) or eligible rent is £80 per week and its council tax liability is £24 per week. *Source: Brewer, Browne, and Jin (2012), Universal Credit: A Preliminary Analysis. Fiscal Studies, 33: 39-71.*

Example: 25-yo single childless min-wage earner in 2004-05



U.S. INCOME TAX CREDITS

Earned Income Tax Credit (**EITC**) and Child Tax Credit (**CTC**): major in-work tax credits for low income working families

Eligibility: taxpayer's earned income and # of qualifying children
Benefit schedule (3 regions): phase-in, plateau, phase-out

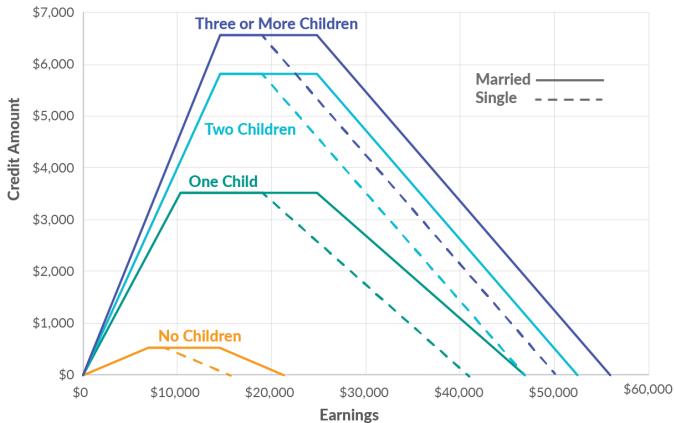
[EITC provides up to \$3.5k, \$5.7k, \$6.5k for families with 1, 2, 3+ kids; CTC up to \$2k per kid]

US vs UK: EITC/CTC aligned with the income tax system; paid as an annual lump sum; no hours requirement; CTC phased out high in the income distribution; EITC has a high phase-in rate and weak out-of-work safety net; UK provides more generous cash benefits to non-working families; much higher phase-out rate in the UK [See Brewer & Hoynes (2019) for more detail]

★ EITC: useful benchmark to learn optimal theory; many studies

The Phase-In and Phaseout of the EITC

Credit Amount by Marital Status and Number of Children

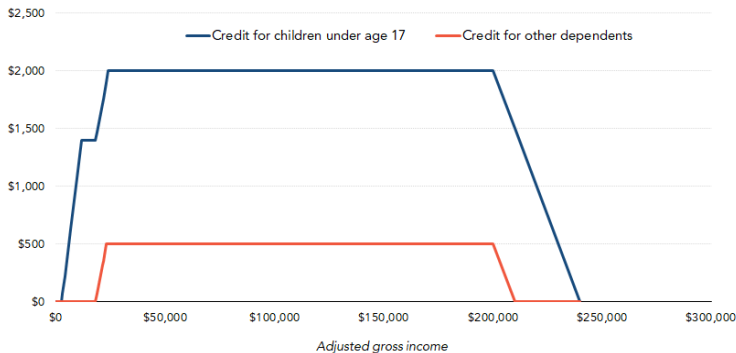


Source: Amir El-Sibaie, "2019 Tax Brackets," Tax Foundation, Nov. 28, 2018.

TAX FOUNDATION

@TaxFoundation

FIGURE 1
Child Tax Credit, Single Parent
For one child, tax year 2020



Source: Urban-Brookings Tax Policy Center calculations.

Notes: Assumes all income comes from earnings, and child meets all tests to be a CTC-qualifying dependent. Credit for married parents begins to phase out at \$400,000 of income. Only citizen children qualify for the \$2,000 CTC for children under 17. Noncitizens under age 17 who meet the dependency tests of eligibility can qualify for the credit for dependents over age 17.

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