

Supplementary Material for: Public Preferences over Changes to the Composition of Government Tax Revenue *

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Table of Tax Levers

Tax lever (short)	Tax lever (long)	Description of status quo	Statement of change to increase revenue	Statement of change to cut revenue
A&T duties	Alcohol & tobacco duties	Taxes are paid on the purchase of wine, spirits, beer, cider, cigarettes, and so on. The level of the tax depends on the amount of alcohol and the type of drink or tobacco product. The current tax rates are £2.23 per bottle of wine, £7.70 per bottle of spirits, 44p per pint of beer or cider, and £6.57 per pack of cigarettes.	An 8.7% increase in alcohol and tobacco duties, to new rates of £2.42, £8.47, £0.48 and £7.14, for wine, spirits, beer, and cigarettes, would increase tax revenue by £1 billion per year.	An 8.7% decrease in alcohol and tobacco duties, to new rates of £2.04, £7.11, £0.4 and £6, for wine, spirits, beer, and cigarettes, would cut tax revenue by £1 billion per year.
CGT rates	Capital gains tax rate	Capital gains taxes are paid on profits from the sale of assets (like stocks and investment properties), by individuals. No tax is due on the first £12,300 per year, and the tax is only applied to profits above this allowance. The current tax rate is 10% for basic rate income taxpayers and 20% for higher rate income tax payers.	A 17 percentage point increase in capital gains tax rates, to new rates of 27% and 37%, for basic and higher rate tax payers, would increase tax revenue by £1 billion per year.	A 17 percentage point decrease in capital gains tax rates, to new rates of 0% and 2%, for basic and higher rate tax payers, would cut tax revenue by £1 billion per year.
Council Tax	Council tax	Council taxes are paid on the value of residential property, by households. The exact amount depends on the assessed value of the property and the local council responsible for the area it is in. The current average tax rate for an average (Band D) property is £1,898 per year.	A 3.3% increase in council tax rates, to a new rate of £1,961 per year for an average Band D property, would increase tax revenue by £1 billion per year.	A 3.3% decrease in council tax rates, to a new rate of £1,835 per year for an average Band D property, would cut tax revenue by £1 billion per year.
CT rate	Corporation tax rate	Corporation taxes are paid on profits, by companies. There is no tax-free allowance, but all business expenses are excluded, and there are some other deductions (such as capital allowances and various forms of relief). The current tax rate is 19%.	A 0.3 percentage point increase in corporate income tax rates, to a new rate of 19.3%, would increase tax revenue by £1 billion per year. A 3.4 percentage point increase in corporate income tax rates, to a new rate of 22.4%, would increase tax revenue by £10 billion per year.	A 0.3 percentage point decrease in corporate income tax rates, to a new rate of 18.7%, would cut tax revenue by £1 billion per year. A 3.4 percentage point decrease in corporate income tax rates, to a new rate of 15.6%, would cut tax revenue by £10 billion per year.
Fuel duties	Fuel duties	Fuel duty is paid on the purchase of petrol, diesel, and other fuels. The tax depends on the type of fuel, and is set as a fixed amount per litre. The current tax rate for petrol and diesel fuel is 57.95 pence per litre.	A 3.3 pence increase in fuel duty, to a new rate of 60p per litre, would increase tax revenue by £1 billion per year.	A 3.3 pence decrease in fuel duty, to a new rate of 55p per litre, would cut tax revenue by £1 billion per year.

(continued)

Tax lever (short)	Tax lever (long)	Description of status quo	Statement of change to increase revenue	Statement of change to cut revenue
IHT rate	Inheritance tax rate	Inheritance taxes are paid on the value of an estate (property, money and possessions) at death, if it is above a certain allowance limit and not left to a spouse or civil partner. No tax is due on estates worth less than £500,000 including residential property, and the tax is only applied to the value of the estate above this allowance. The current tax rate is 40%.	A 6.9 percentage point increase in inheritance tax rates, to a new rate of 47%, would increase tax revenue by £1 billion per year.	A 6.9 percentage point decrease in inheritance tax rates, to a new rate of 33%, would cut tax revenue by £1 billion per year.
IHT threshold	Inheritance tax threshold	Inheritance taxes are paid on the value of an estate (property, money and possessions) at death, if it is above a certain allowance and not left to a spouse or civil partner. The tax rate above the allowance is 40%. No tax is currently due on estates worth less than £500,000 including residential property, and the tax is only applied to the value of the estate above this limit.	A 16.5% decrease in the value of the inheritance tax allowance, so that only the first £422,000 of the value of the estate is untaxed, would increase tax revenue by £1 billion per year.	A 16.5% increase in the value of the inheritance tax allowance, so that the first £578,000 of the value of the estate is untaxed, would cut tax revenue by £1 billion per year.
NI rate - Employees > PT	Social insurance contributions: main employee rate	National Insurance contributions are paid based on earnings, by individuals and their employers. No tax is due from employees on earnings below £797 per month, and the tax is due only on earnings above this allowance. The main contribution rate for employees is currently 12%.	A 0.2 percentage point increase in employee National Insurance contributions, to a new rate of 12.2%, would increase tax revenue by £1 billion per year. A 2.2 percentage point increase in employee National Insurance contributions, to a new rate of 14.2%, would increase tax revenue by £10 billion per year.	A 0.2 percentage point decrease in employee National Insurance contributions, to a new rate of 11.8%, would cut tax revenue by £1 billion per year. A 2.2 percentage point decrease in employee National Insurance contributions, to a new rate of 9.8%, would cut tax revenue by £10 billion per year.
NI rate - Employees > UEL	Social insurance contributions: higher employee rate	National Insurance contributions are paid based on earnings, by individuals and their employers. The main contribution rate for employees is 12%, but there is a lower rate applied to earnings above £4,189 per month. The contribution rate for employees' earnings above this upper limit is currently 2%.	A 0.9 percentage point increase in employee's National Insurance contributions above the upper earnings limit, to a new rate of 2.9%, would increase tax revenue by £1 billion per year.	A 0.9 percentage point decrease in employee's National Insurance contributions above the upper earnings limit, to a new rate of 1.1%, would cut tax revenue by £1 billion per year.
NI rate - Employers > ST	Social insurance contributions: main employer rate	National Insurance contributions are paid based on earnings, by individuals and their employers. No tax is due from employers on employees' earnings below £737 per month, and the tax is due only on earnings above this allowance. The contribution rate for employers is currently 13.8%.	A 0.15 percentage point increase in employers' National Insurance contributions, to a new rate of 14%, would increase tax revenue by £1 billion per year.	A 0.15 percentage point decrease in employers' National Insurance contributions, to a new rate of 13.6%, would cut tax revenue by £1 billion per year.

(continued)

Tax lever (short)	Tax lever (long)	Description of status quo	Statement of change to increase revenue	Statement of change to cut revenue
			A 1.5 percentage point increase in employers' National Insurance contributions, to a new rate of 15.3%, would increase tax revenue by £10 billion per year.	A 1.5 percentage point decrease in employers' National Insurance contributions, to a new rate of 12.3%, would cut tax revenue by £10 billion per year.
NI rate - Self-employed class 4	Social insurance contributions: main self-employed rate	National Insurance contributions are paid based on earnings, by individuals and their employers. For the self-employed, the main class of contributions ("Class 4") are due on profits above £9,568 per year, and this tax is applied only to profits above this allowance. The Class 4 contribution rate is currently 9%.	A 3.6 percentage point increase in Class 4 National Insurance contributions for the self-employed, to a new rate of 12.6%, would increase tax revenue by £1 billion per year.	A 3.6 percentage point decrease in Class 4 National Insurance contributions for the self-employed, to a new rate of 5.4%, would cut tax revenue by £1 billion per year.
NI threshold - Employees PT	Social insurance contributions: employee allowance	National Insurance contributions are paid based on earnings, by individuals and their employers. No tax is due on employees' earnings below a certain level. Employees pay at a rate of 12% on earnings above the allowance. The current tax allowance is £797 per month.	A 4.1% decrease in the tax allowance for employee contributions, so that only the first £760 of earnings per month is untaxed, would increase tax revenue by £1 billion per year.	A 4.1% increase in the tax allowance for employee contributions, so that the first £830 of earnings per month is untaxed, would cut tax revenue by £1 billion per year.
NI threshold - Employees UEL	Social insurance contributions: higher employee rate threshold	National Insurance contributions are paid based on earnings, by individuals and their employers. The main contribution rate for employees is 12%, but a lower rate of 2% applies above a certain earnings threshold. The current threshold for the lower rate is £4,189 per month.	A 5.4% increase in the earnings threshold for lower rate contributions, so that the 2% rate applies to earnings above £4,420 per month, would increase tax revenue by £1 billion per year.	A 5.4% decrease in the earnings threshold for lower rate contributions, so that the 2% rate applies to earnings above £3,960 per month, would cut tax revenue by £1 billion per year.
NI threshold - Employers ST	Social insurance contributions: employer allowance	National Insurance contributions are paid based on earnings, by individuals and their employers. No tax is due on employees' earnings below a certain level. Employers pay contributions at a rate of 13.8% on earnings above the allowance. The current tax allowance is £737 per month.	A 3.2% decrease in the tax allowance for employer contributions, so that only the first £710 of earnings per month is untaxed, would increase tax revenue by £1 billion per year.	A 3.2% increase in the tax allowance for employer contributions, so that the first £760 of earnings per month is untaxed, would cut tax revenue by £1 billion per year.
NI threshold - Self-employed LPL	Social insurance contributions: self-employed allowance	National Insurance contributions are paid based on earnings, by individuals and their employers. For the self-employed, the main class of contributions ("Class 4") are due on profits above a certain allowance, at the rate of 9%. The current tax allowance is £9,568 per year.	A 43.5% decrease in the tax allowance for self-employed profits, so that only the first £5,410 of profits per year is untaxed, would increase tax revenue by £1 billion per year.	A 43.5% increase in the tax allowance for self-employed profits, so that the first £13,730 of profits per year is untaxed, would cut tax revenue by £1 billion per year.

(continued)

Tax lever (short)	Tax lever (long)	Description of status quo	Statement of change to increase revenue	Statement of change to cut revenue
PIT rate - additional	Income tax: top rate	Personal Income Tax is paid on most forms of income (like earnings, pensions, rental income, and benefits), by individuals. The additional rate of income tax applies to income above £150,000 per year. The current tax rate is 45%.	A 6.1 percentage point increase in the additional rate of income tax, to a new rate of 51%, would increase tax revenue by £1 billion per year.	A 5 percentage point decrease in the additional rate of income tax, to a new rate of 40%, would cut tax revenue by £1 billion per year.
PIT rate - basic	Income tax: main rate	Personal Income Tax is paid on most forms of income (like earnings, pensions, rental income, and benefits), by individuals. No tax is due on the first £12,570 per year, and the basic rate is applied only to	A 0.2 percentage point increase in the basic rate of income tax, to a new rate of 20.2%, would increase tax revenue by £1 billion per year. A 1.7 percentage point increase in the basic rate of income tax, to a new rate of 21.7%, would increase tax revenue by £10 billion per year.	A 0.2 percentage point decrease in the basic rate of income tax, to a new rate of 19.8%, would cut tax revenue by £1 billion per year. A 1.7 percentage point decrease in the basic rate of income tax, to a new rate of 18.3%, would cut tax revenue by £10 billion per year.
PIT rate - higher	Income tax: higher rate	Personal Income Tax is paid on most forms of income (like earnings, pensions, rental income, and benefits), by individuals. The higher rate of income tax applies to income above a threshold of £50,270 per year (and below the additional rate band). The current tax rate is 40%.	A 0.7 percentage point increase in the higher rate of income tax, to a new rate of 40.7%, would increase tax revenue by £1 billion per year.	A 0.7 percentage point decrease in the higher rate of income tax, to a new rate of 39.3%, would cut tax revenue by £1 billion per year.
PIT threshold - basic rate limit	Income tax: higher rate threshold	Personal Income Tax is paid on most forms of income (like earnings, pensions, rental income, and benefits), by individuals. The main income tax rate is 20% above the tax-free personal allowance but below the higher rate threshold, and 40% above the threshold. The current higher rate threshold is £50,270 per year.	A 2.7% decrease in the income threshold for higher rate taxation, so that the 40% rate applies to income above £49,130 per year, would increase tax revenue by £1 billion per year.	A 2.7% increase in the income threshold for higher rate taxation, so that the 40% rate applies to income above £51,647 per year, would cut tax revenue by £1 billion per year.
PIT threshold - personal allowance	Income tax: personal allowance	Personal Income Tax is paid on most forms of income (like earnings, pensions, rental income, and benefits), by individuals. The main income tax rate is 20%, and applies to income above the tax-free personal allowance (and below the higher rate threshold). The current personal allowance is £12,570 per year.	A 1.1% decrease in the personal income tax allowance, so that only the first £12,430 per year is untaxed, would increase tax revenue by £1 billion per year.	A 1.1% increase in the personal income tax allowance, so that the first £12,707 per year is untaxed, would cut tax revenue by £1 billion per year.
SDLT rates	Property transaction tax rates	Residential Stamp Duty Land Tax ("Stamp Duty") is paid on the purchase of residential property. No tax is due on properties worth less than £125,000, and the tax is only applied to the value of the property above this allowance. The current rates range between 2% and 12%, with higher rates for more expensive properties.	A 0.9 percentage point increase in all the Stamp Duty rates, to new rates ranging from 2.9% to 12.9%, would increase tax revenue by £1 billion per year.	A 0.8 percentage point decrease in all the Stamp Duty rates, to new rates ranging from 1.2% to 11.2%, would cut tax revenue by £1 billion per year.

(continued)

Tax lever (short)	Tax lever (long)	Description of status quo	Statement of change to increase revenue	Statement of change to cut revenue
SDLT threshold	Property transaction tax threshold	Residential Stamp Duty Land Tax ("Stamp Duty") is paid on the purchase of residential property. Stamp Duty rates are on a sliding scale between 2% and 12%, with higher rates for more expensive properties. No tax is currently due on properties worth less than £125,000, and the tax is only applied to the value of the property above this limit.	A 9.1% decrease in the tax allowance for Stamp Duty, so that only the first £114,000 of the property purchase price is untaxed, would increase tax revenue by £1 billion per year.	A 9.5% increase in the tax allowance for Stamp Duty, so that the first £137,000 of the property purchase price is untaxed, would cut tax revenue by £1 billion per year.
VAT standard rate	VAT standard rate	Value Added Tax (VAT) is paid on the purchase of most goods and services. No tax is due on some items (like food and children's clothes), and some goods and services are taxed at a reduced rate.	A 0.2 percentage point increase in the standard VAT rate, to a new rate of 20.2%, would increase tax revenue by £1 billion per year. A 1.4 percentage point increase in the standard VAT rate, to a new rate of 21.4%, would increase tax revenue by £10 billion per year.	A 0.2 percentage point decrease in the standard VAT rate, to a new rate of 19.8%, would cut tax revenue by £1 billion per year. A 1.4 percentage point decrease in the standard VAT rate, to a new rate of 18.6%, would cut tax revenue by £10 billion per year.

Statistics on Respondent Attention

Response Time by Response Category

Answer	Median Response Time (in seconds)
Option A	54.67
Option B	55.84
Neutral	54.73
Don't know	29.33

Response Time and Share of Neutral Responses by Tax Lever

Tax Lever	Median response time (seconds)		Share of ...	
	All responses	Excluding DK's	Neutral	Don't know
A&T duties	48.60	51.23	0.26	0.13
CGT rates	49.50	53.41	0.27	0.20
Council Tax	50.92	54.22	0.27	0.15
CT rate	46.44	50.19	0.26	0.16
Fuel duties	45.57	47.48	0.30	0.16
IHT rate	49.36	55.76	0.29	0.16
IHT threshold	52.67	56.44	0.30	0.19
NI rate - Employees > PT	48.82	52.36	0.33	0.18
NI rate - Employees > UEL	51.89	56.43	0.33	0.22
NI rate - Employers > ST	51.99	54.29	0.34	0.17
NI rate - Self-employed class 4	50.03	54.11	0.34	0.20
NI threshold - Employees PT	56.98	62.80	0.30	0.20
NI threshold - Employees UEL	59.87	62.80	0.35	0.20
NI threshold - Employers ST	56.45	60.58	0.31	0.20
NI threshold - Self-employed LPL	55.42	61.92	0.32	0.22
PIT rate - additional	51.84	55.82	0.30	0.18
PIT rate - basic	52.31	56.64	0.28	0.17
PIT rate - higher	52.15	56.64	0.30	0.17
PIT threshold - basic rate limit	58.58	62.54	0.32	0.19
PIT threshold - personal allowance	53.17	58.81	0.28	0.19
SDLT rates	46.07	50.84	0.30	0.17
SDLT threshold	53.75	59.52	0.28	0.19
VAT standard rate	47.81	50.28	0.28	0.13

Relationship between Don't Knows and Neutral Responses by Tax Lever

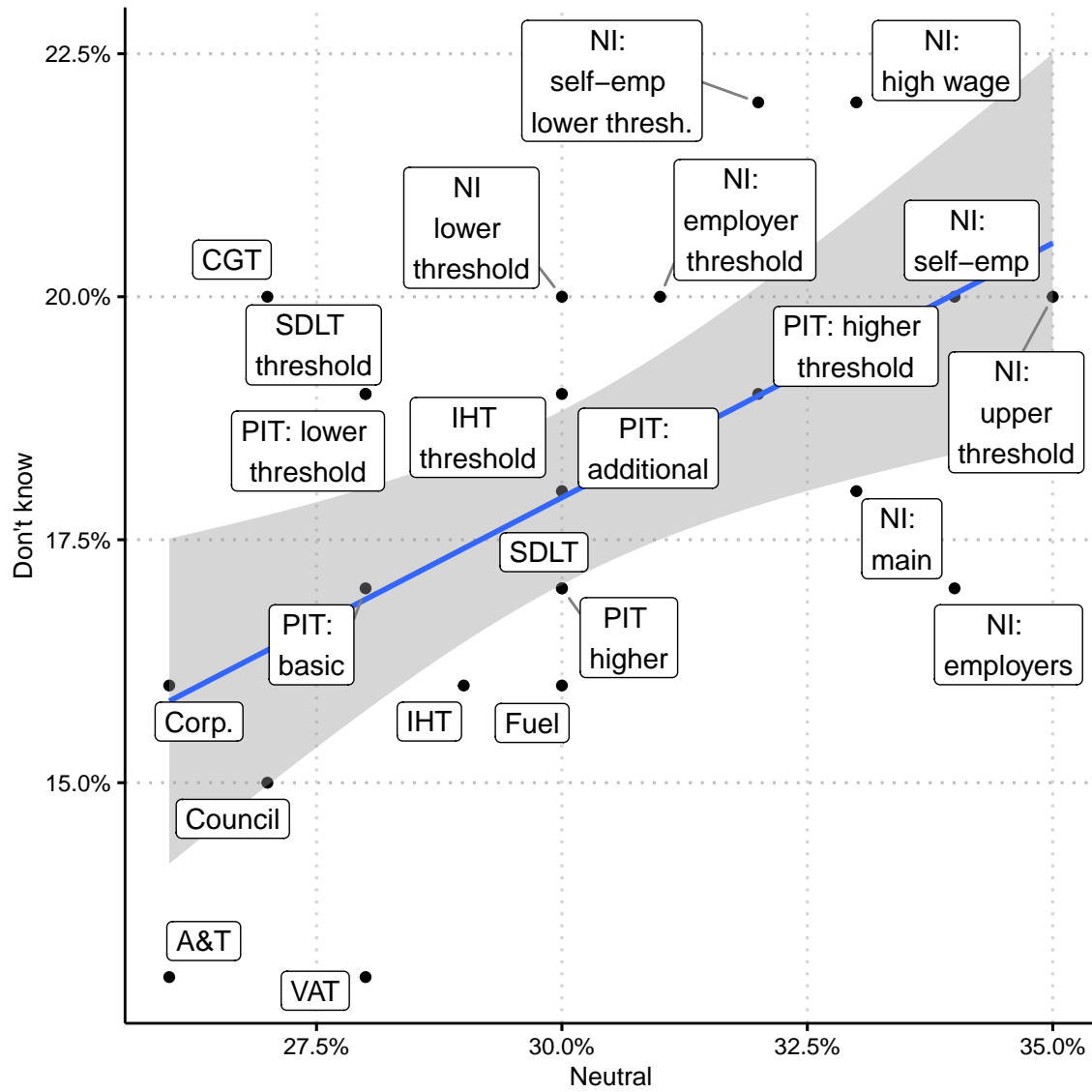


Figure 1: Share of neutral and don't know responses by tax lever.

Model Specification, Identification, and Estimation

Specification

Each respondent i makes a choice between two alternative two proposals $j \in A, B$, with an option to to give a neutral response if they are not sure or view both alternatives as equally attractive/unattractive.

- $Y_i = 1$ if Respondent prefers A
- $Y_i = 0.5$ if Respondent gives neutral response
- $Y_i = 0$ if Respondent prefers B

Following a generalized Bradley-Terry model framework, we model the expected value of Y_i as a function of the competing “popularities” π_j of different tax change proposals j . With proposals A and B , this can be written formally as:

$$E [Y_i] = \alpha + \pi_{iA} - \pi_{iB}$$

where α is the expected value of Y_i when the two proposals are equally popular, i.e. if $\pi_{iA} = \pi_{iB}$.¹

Within this framework, we can specify the popularities π_{ij} as a function $f(X_i, Z_j)$ of the experimentally varied features of the proposals Z_j , and observational characteristics of the respondents X_i . This yields a probability-scale model where additive forms of $f(X_i, Z_j)$ can be interpreted as the additive effects on the net support for a proposal with a given feature versus an alternative feature, or for one group of respondents relative to another group, averaging over the opposing proposals. The difference between π_{iA} and π_{iB} is the predicted difference between the proportion of respondents preferring A over B and the share of those preferring B over A .²

Many of our models additionally involve a variable S_i which describes the sign of the proposed tax change:

- $S_i = 1$ if prompt describes a choice between tax increases

¹ α can be thought as the order effect ‘advantage’ of a proposal being presented as option A vs option B , irrespective of their content. If $\alpha = 0.5$, there is no advantage.

²Because the modelled probabilities are not close to 0 or 1 for any A or B , the results are not sensitive to this choice of a linear functional form. Similar results can be obtained using an ordered logistic/probit framework with equivalent specifications of the deterministic component.

- $S_i = -1$ if prompt describes a choice between tax cuts

Models that incorporate S_i in different ways enable us to either (a) combine responses from choices over increases and choices over cuts to estimate which tax levers the respondent would generally prefer to use to raise marginal revenue or (b) to disaggregate responses from choices over increases and choices over cuts to consider possible patterns of asymmetry in how respondents would prefer to raise marginal revenue.

Our initial analysis defines $\pi_{ij} = S_i \nu_j$ where $S_i = 1$ for tax increase prompts and -1 for decrease prompts, pooling our data such that greater values of ν_j correspond to taxes j that tend to be preferred as a source of revenue. The model presented in Figure 2 in the paper plots ν_j parameter for each tax lever j estimated using the model equation:

$$E[Y_i] = \alpha + S_i \nu_A - S_i \nu_B$$

under the identification assumption that $\nu_j \sim N(0, \sigma)$, where σ is the estimated standard deviation of the lever popularities around their mean.

The models presented in Figures 3 and 4 in the paper, plot ν_j parameter for each tax lever j estimated using the model equation:

$$E[Y_i] = \alpha + S_i (\beta_A X_i) - S_i (\beta_B X_i)$$

where we estimate a vector of β_j per tax lever and define X_i matrices that have an intercept (column of ones) plus some number of features k of the respondent giving response i . We regularize the coefficients with a normal prior $\beta_{jk} \sim N(0, \sigma_k)$ that shrinks all tax-specific coefficients towards zero according to their common variance by feature k . This avoids spuriously large differences due to limited samples and the number of comparisons being considered.

We use this same model setup for the analyses presented in appendix figures. In the figure comparing preferences in tax increase versus tax decrease prompts, we use S_i as our X_i variable, which creates an interaction between levers and the tax change direction, yielding separate estimates for both tax change direction for each lever.

Identification

By assuming that $\nu_j \sim N(0, \sigma)$, we set the zero point for our interval-level quantity of interest as the average of the popularities for the tax levers we tested. As noted in the main text, this kind of experimental design cannot yield estimates of absolute popularity of tax levers. Our identification restriction here is analogous to the one used in “random effects” models, as opposed to the “fixed effects” restriction of setting a single level to zero and estimating all others relative to that one. Thus, the interval estimates in our figures should be understood as describing uncertainty about a given lever relative to the average level, which is presented as a dotted vertical line in each plot.

Estimation

We estimate our models using Stan ([Carpenter et al., 2016](#)), with full code available in our replication package.

Robustness Checks

Preferences over Tax Increases Versus Decreases

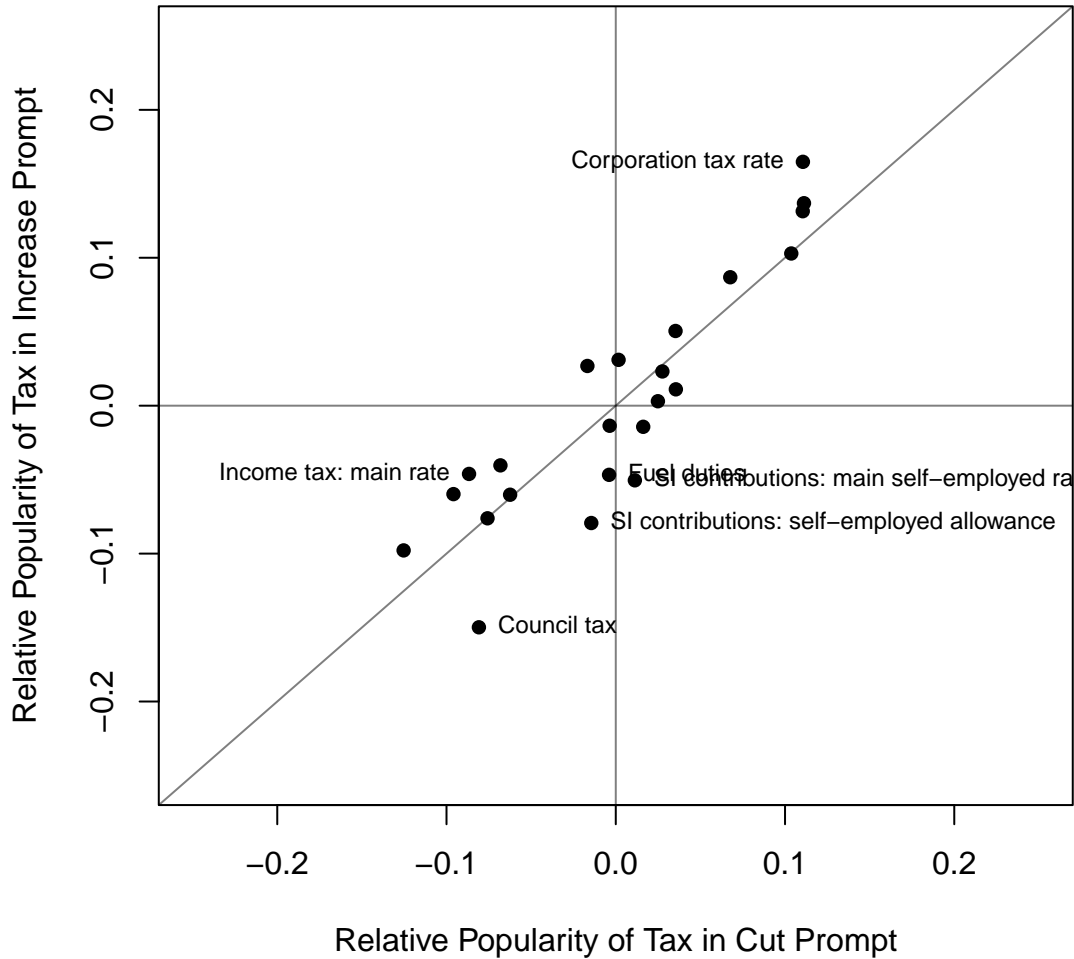


Figure 2: Relative popularity of a given tax in tax increase prompts as a function of the relative popularity of the same tax in tax cut prompts. Text labels provided for tax levers where 95% intervals for the differences exclude zero.

Preferences for Larger versus Smaller Tax Changes

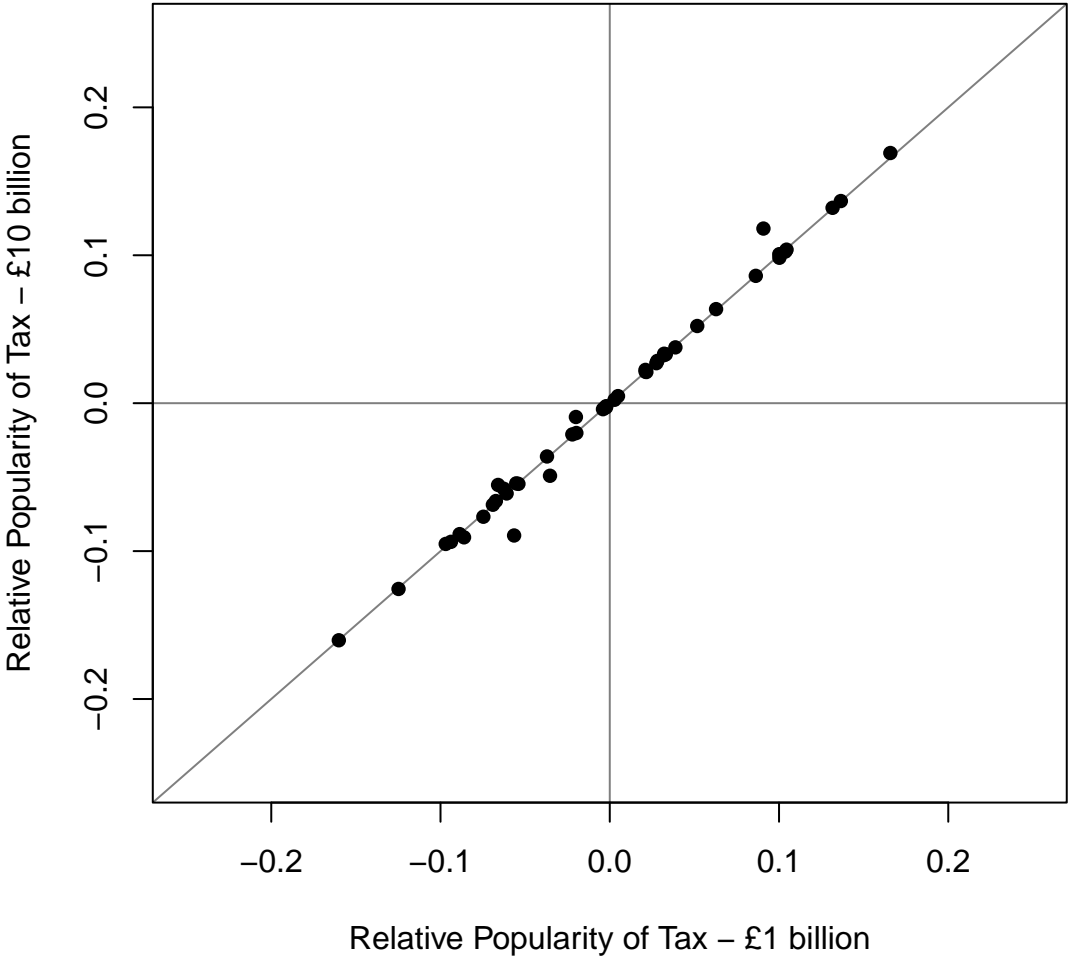


Figure 3: Relative popularity of changing a given tax lever in a given direction, to change revenue by £1 billion (x-axis) versus £10 billion (y-axis). There are no tax levers where 95% intervals for the differences exclude zero.

Sensitivity to Arguments

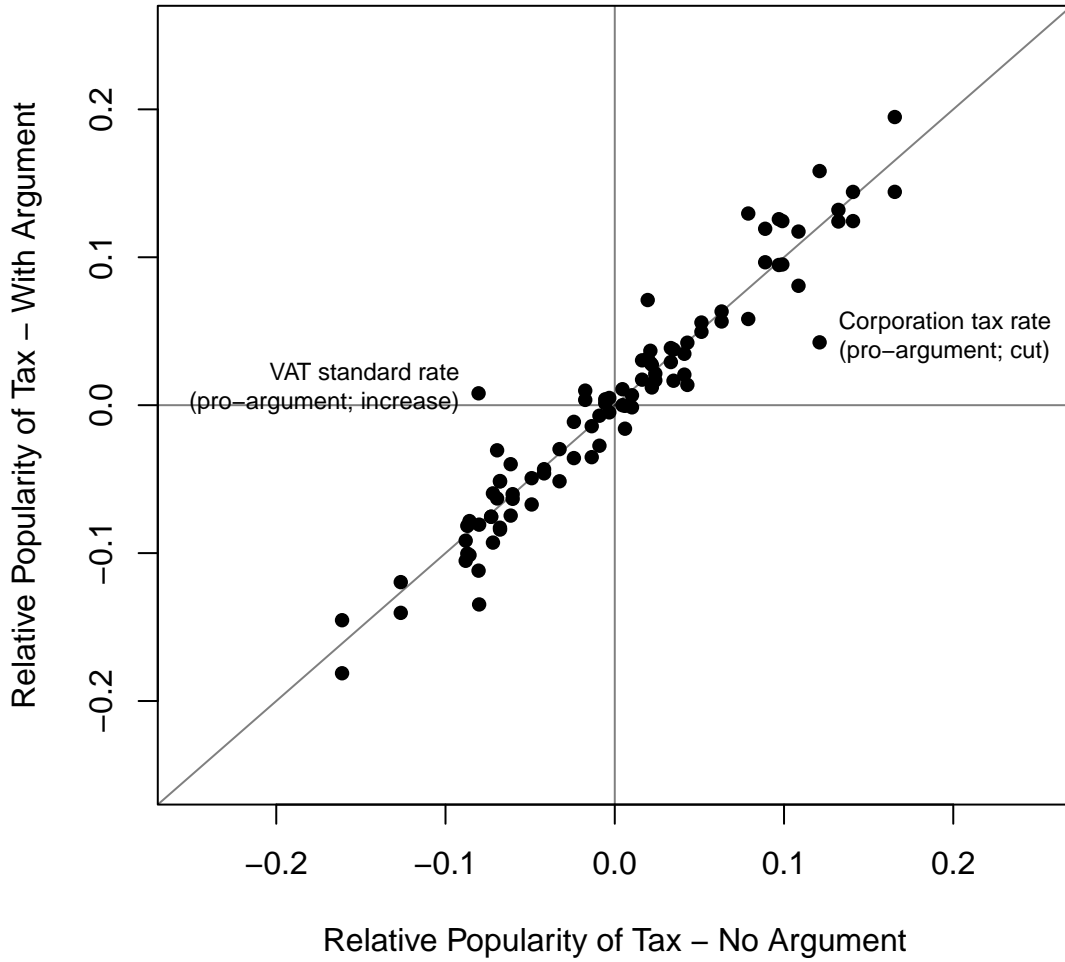


Figure 4: Relative popularity of changing a given tax lever in a given direction, in the baseline condition (x-axis) versus with pro or con argument texts provided (y-axis). Text labels provided for tax levers where 95% intervals for the differences exclude zero.

Estimated Preference by Covariates

In this appendix, we report estimates examining tax lever preferences by EU referendum vote, 2019 general election turnout, gender, income and degree status.

Preferences by EU Referendum Vote

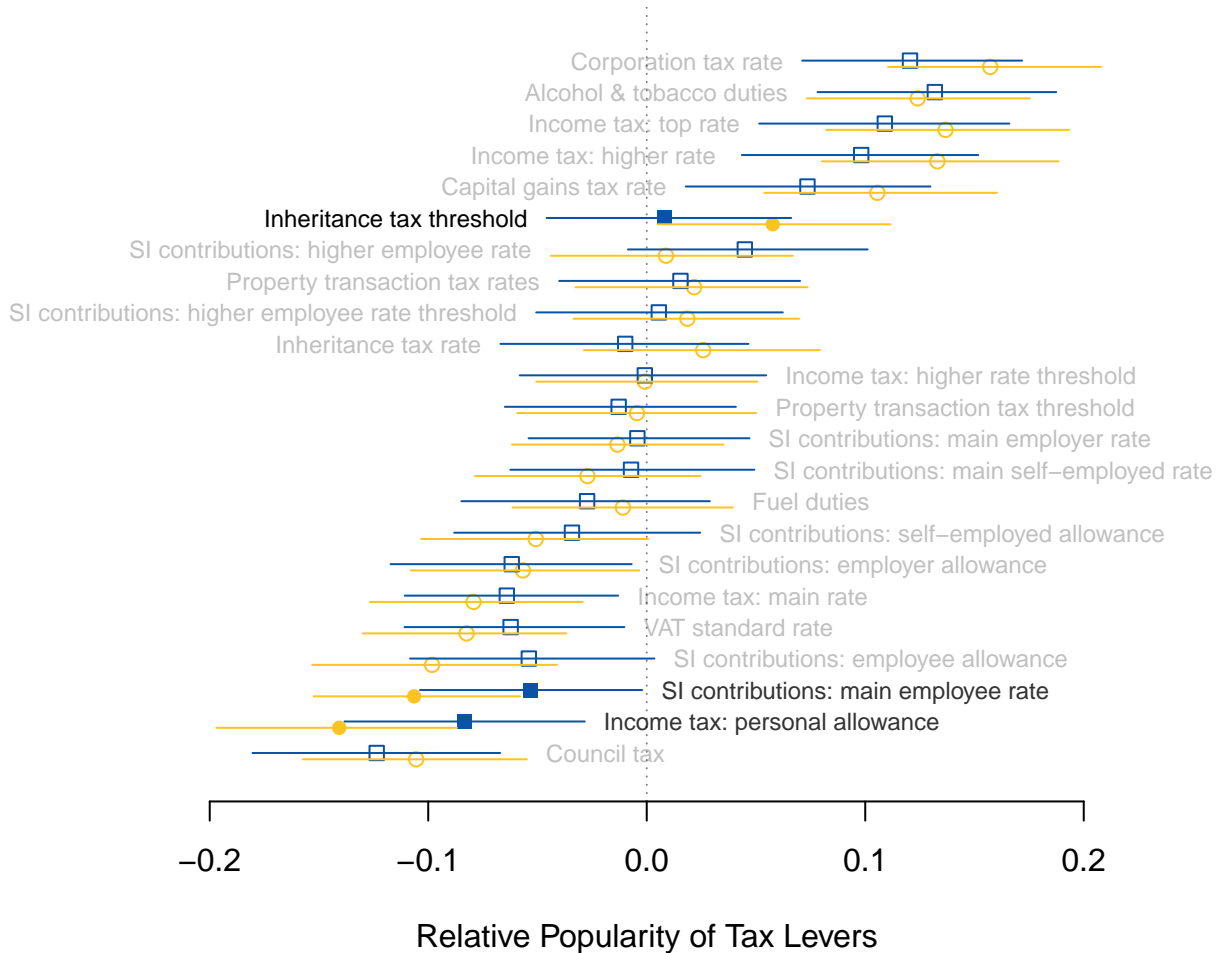


Figure 5: Relative public preference for tax levers for Leave (blue squares) versus Remain (yellow circles) voters in the 2015 EU Referendum, in units of probability of supporting taxation via a given lever versus others in pairwise comparisons of revenue-equivalent increases and decreases. Solid points and black label text indicate tax levers where the 95% interval for the difference excludes zero.

Preferences by 2019 Voter Turnout

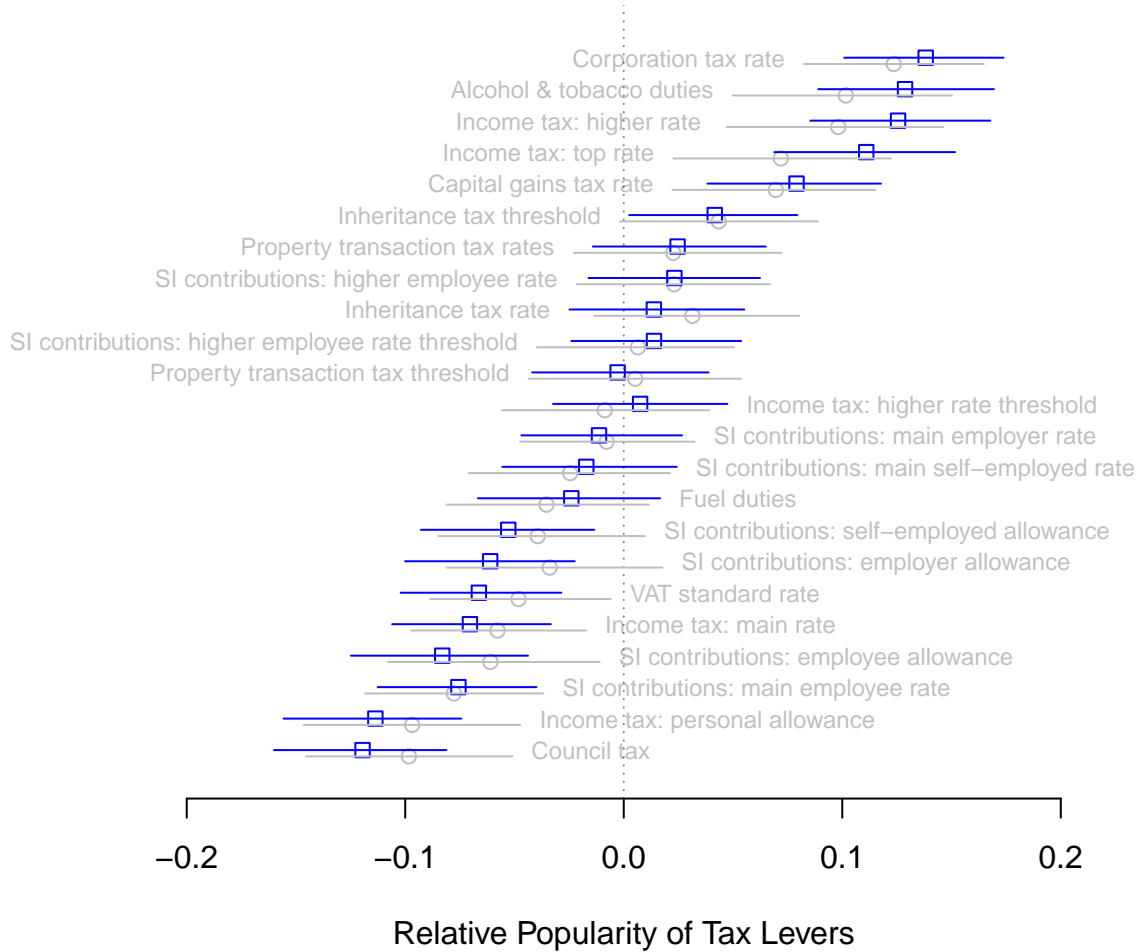


Figure 6: Relative public preference for tax levers for 2019 non-voters (grey circles) versus 2019 voters (blue squares) voters, in units of probability of supporting taxation via a given lever versus others in pairwise comparisons of revenue-equivalent increases and decreases. Solid points and black label text indicate tax levers where the 95% interval for the difference excludes zero.

Preferences by Party Choice (additional categories)

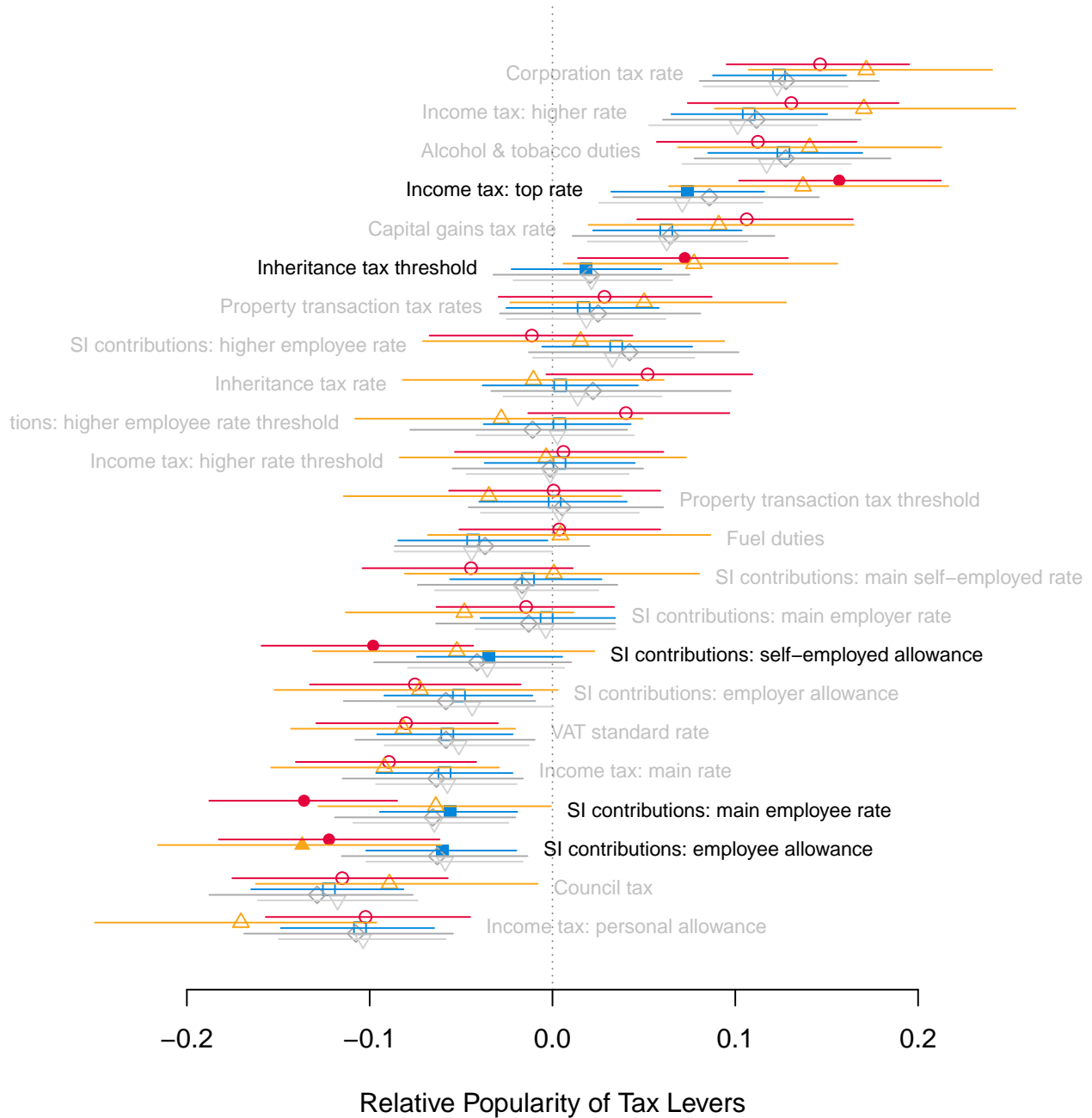


Figure 7: Relative public preference for tax levers for Conservative (blue squares), Labour (red circles), Liberal Democrat (yellow triangles) voters, voters of other parties (dark gray diamonds) and non-voters (light gray inverted triangles) in the 2019 General Election in units of probability of supporting taxation via a given lever versus others in pairwise comparisons of revenue-equivalent increases and decreases. Solid points and black label text indicate tax levers where the 95% interval for the party difference excludes zero.

Preferences by Income (additional categories)

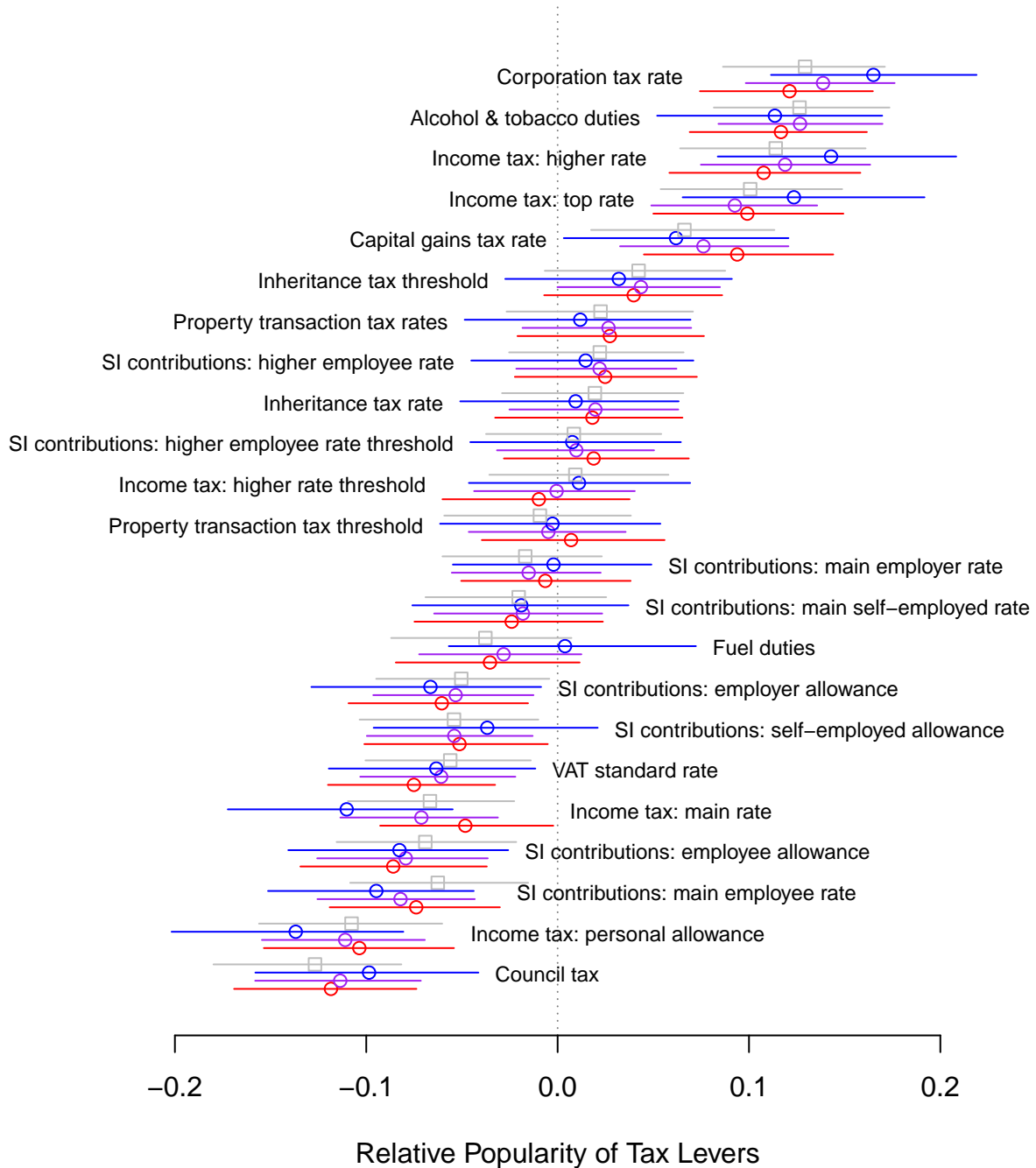


Figure 8: Relative public preference for tax levers for respondents with household incomes above 60k (blue circles), between 25k and 60k (purple circles), below 25k (red circles), and those who did not answer the income item (grey circles), in units of probability of supporting taxation via a given lever versus others.

Preferences by Gender

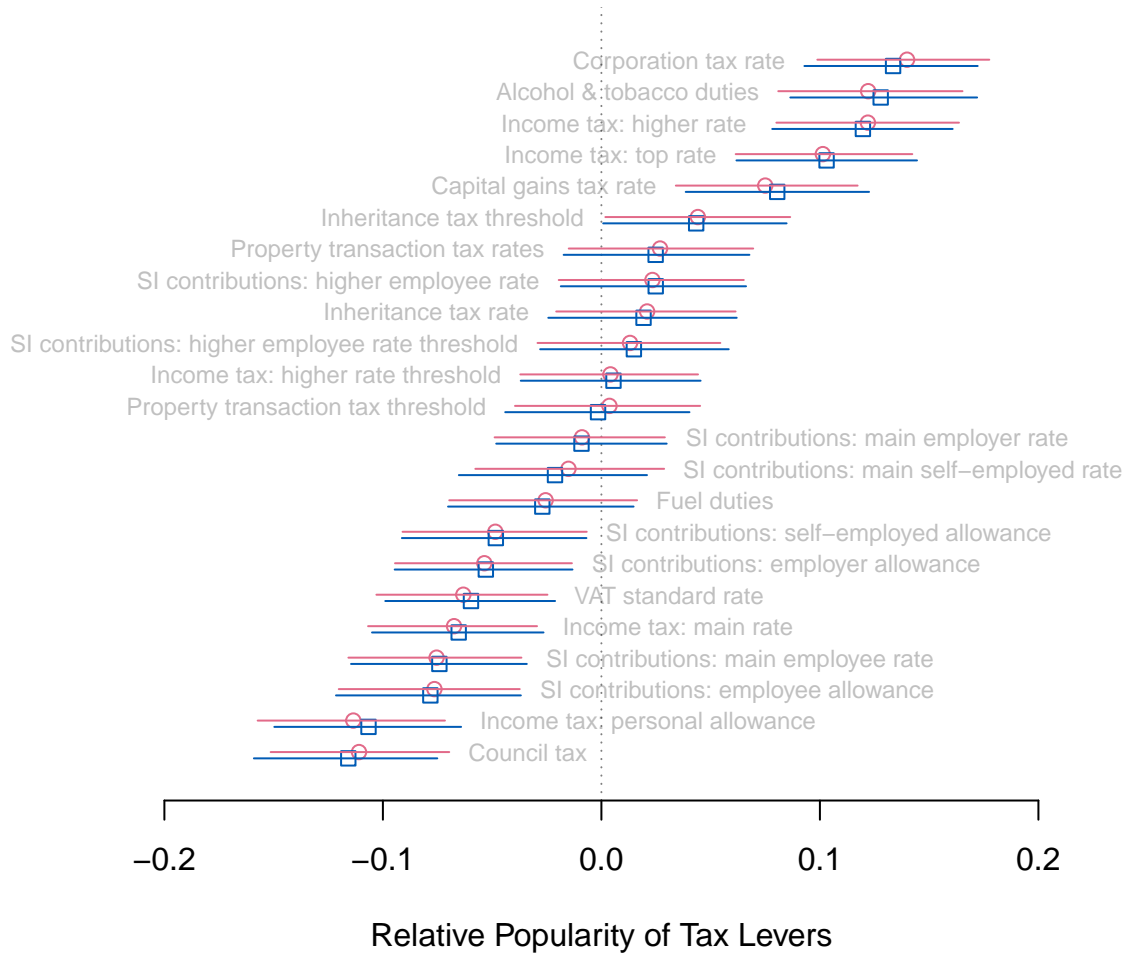


Figure 9: Relative public preference for tax levers for men (pink circles) versus women (blue squares), in units of probability of supporting taxation via a given lever versus others in pairwise comparisons of revenue-equivalent increases and decreases. Solid points and black label text indicate tax levers where the 95% interval for the gender difference excludes zero.

Preferences by Education Level

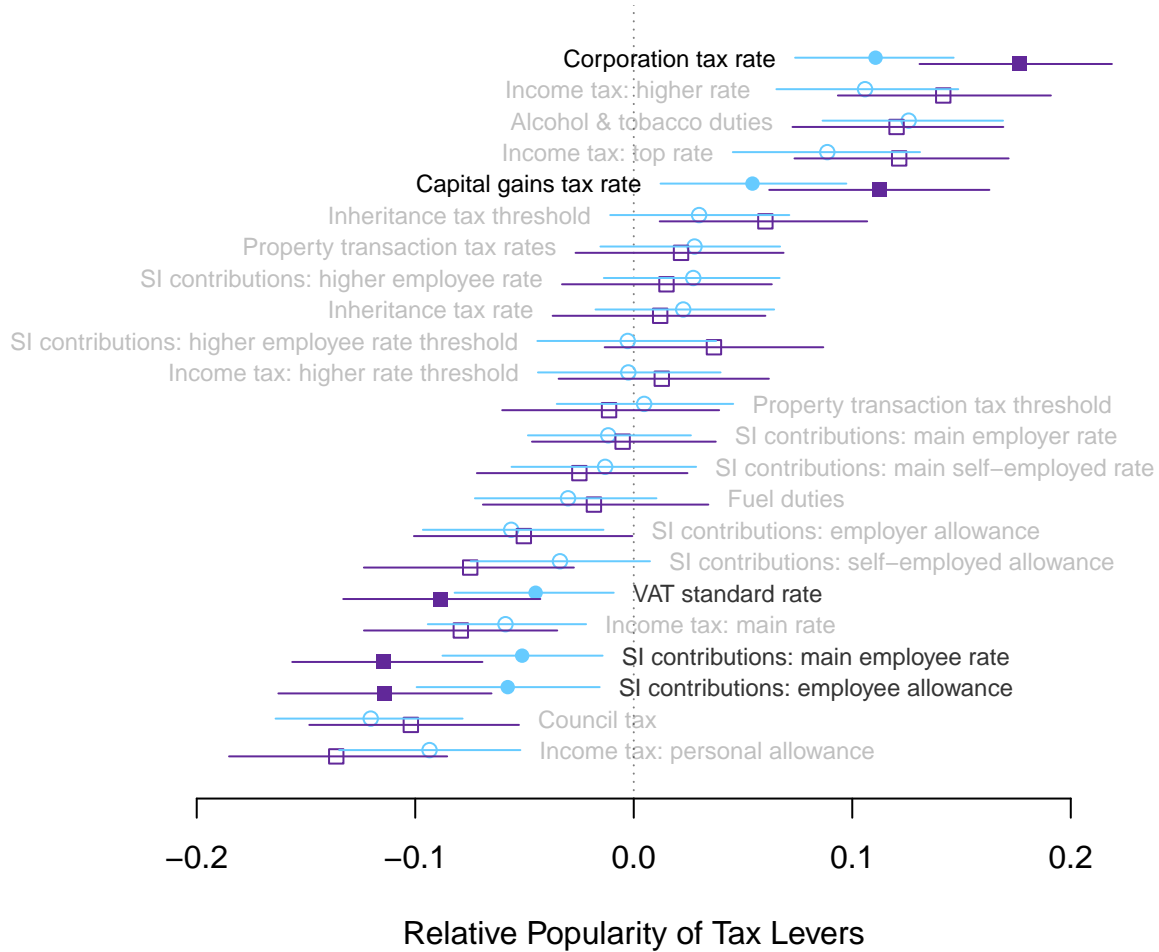


Figure 10: Relative public preference for tax levers for respondents without (blue circles) versus with university degree (purple squares), in units of probability of supporting taxation via a given lever versus others in pairwise comparisons of revenue-equivalent increases and decreases. Solid points and black label text indicate tax levers where the 95% interval for the difference excludes zero.

Preference Multivariate Analysis

tax	intercept	over45k	refused	degree	female	leave	lab	ld	other	none
A&T duties	0.120	0.009	0.001	-0.004	0.005	0.005	-0.010	0.012	0.002	-0.007
CGT rates	0.049	-0.009	-0.008	0.050	0.005	-0.002	0.031	0.017	0.002	0.000
Council Tax	-0.125	0.032	-0.009	0.010	-0.004	-0.004	0.001	0.022	-0.006	0.005
CT rate	0.111	0.022	-0.003	0.054	-0.005	-0.008	0.008	0.025	0.003	0.000
Fuel duties	-0.043	0.014	-0.007	0.002	-0.002	0.001	0.042	0.034	0.005	-0.001
IHT rate	0.022	-0.017	-0.001	-0.013	-0.002	-0.018	0.044	-0.011	0.017	0.008
IHT threshold	0.025	-0.004	0.000	0.019	-0.001	-0.021	0.045	0.039	0.002	0.001
NI rate - Employees > PT	-0.050	-0.009	0.013	-0.046	0.002	0.014	-0.062	0.006	-0.008	-0.008
NI rate - Employees > UEL	0.032	-0.019	0.000	-0.003	0.001	0.013	-0.038	-0.012	0.007	-0.001
NI rate - Employers > ST	-0.009	-0.001	-0.003	0.012	0.000	0.004	-0.009	-0.038	-0.009	0.001
NI rate - Self-employed class 4	-0.009	-0.007	-0.002	-0.008	-0.006	0.007	-0.024	0.013	-0.003	-0.003
NI threshold - Employees PT	-0.057	0.003	0.008	-0.043	-0.001	0.013	-0.046	-0.051	-0.002	0.002
NI threshold - Employees UEL	-0.005	-0.017	-0.002	0.038	0.002	-0.001	0.028	-0.030	-0.014	-0.001
NI threshold - Employers ST	-0.054	-0.002	0.003	0.010	0.001	-0.006	-0.023	-0.020	-0.006	0.007
NI threshold - Self-employed LPL	-0.030	-0.001	-0.001	-0.030	0.000	0.005	-0.051	-0.005	-0.004	0.000
PIT rate - additional	0.063	0.003	0.006	0.024	0.002	0.004	0.074	0.049	0.012	-0.002
PIT rate - basic	-0.051	-0.025	0.000	-0.012	0.002	0.000	-0.025	-0.024	-0.004	0.001
PIT rate - higher	0.102	0.018	-0.003	0.026	-0.002	-0.011	0.016	0.042	0.004	-0.005

(continued)

tax	intercept	over45k	refused	degree	female	leave	lab	ld	other	none
PIT threshold - basic rate limit	-0.008	0.017	0.010	0.012	0.001	-0.001	-0.002	-0.007	-0.004	-0.004
PIT threshold - personal allowance	-0.108	-0.002	0.002	-0.031	0.006	0.020	0.009	-0.040	-0.001	0.002
SDLT rates	0.024	0.000	-0.003	-0.007	-0.001	-0.005	0.012	0.024	0.007	0.001
SDLT threshold	0.013	-0.009	-0.005	-0.012	-0.005	-0.009	-0.003	-0.030	0.004	0.002
VAT standard rate	-0.047	0.002	0.005	-0.039	0.003	-0.002	-0.017	-0.015	-0.001	0.004
Correlation with bivariate estimates		0.964	0.995	0.989	0.993	0.865	0.993	0.987	0.997	0.988

References

Carpenter, Bob, Andrew Gelman, Matt Hoffman, Daniel Lee, Ben Goodrich, Michael Betancourt, Michael A. Brubaker, Jiqiang Guo, Peter Li and Allen Riddell. 2016. "Stan: A probabilistic programming language." *Journal of Statistical Software* .