Public Preferences over Changes to the Composition of Government Tax Revenue [*]

Lucy Barnes *University College London*
Julia de Romément *University College London*
Benjamin E Lauderdale *University College London*

How governments raise revenue through taxes is at the core of domestic political conflict. While public opinion towards taxation is measured in general by many surveys, previous research has not closely linked public preferences to the budget problem faced by governments of how best to raise or cut a marginal quantity of revenue. We present results from a novel tax preference experiment in which respondents are given choices over different tax 'levers' that are expected to raise or cut equal revenue. We find that in the UK there are substantial differences in public preferences for different tax levers, preferences are largely symmetric over tax increases and cuts, and there is remarkably little partisan difference in which tax levers are preferred. The current tax equilibrium can be be understood in terms of political forces outside of public opinion that resist relatively popular taxes being raised and relatively unpopular taxes being cut.

Introduction

> "The art of taxation consists in so plucking the goose as to obtain the largest possible amount of feathers with the smallest possible amount of hissing."

> — Attributed to Jean-Baptiste Colbert[1]

Decisions over the composition and levels of different tax instruments can be thought of as the search for the 'hissing frontier', where political and economic efficiency are jointly optimised. To reach this frontier, it is important for policy makers to know which tax levers are popular and which ones are not. Existing scholarship on the political determinants of the tax structure has

---

[*] **This draft version**: August 26, 2022.

[1] There is some debate as to whether this quote can actually be credited to Colbert. In 1766, French economist, and later Controller-General of Finances under King Louis XVI, Jacques Turgot sent a letter to David Hume in which he wrote the following: "You know, also, as well as I do, what is the great aim of all the governments of the earth: obedience and money. The object is, as the saying goes, to pluck the hen without making it cry out [...]" (as translated from French by William J. Ashley in 1898). It is possible that the two statesmen were confused with one another (see https://quoteinvestigator.com/2018/04/16/tax/).

focused more on the role of institutional constraints and partisan and interest group politics within them, as well as globalisation (Kiser and Karceski, 2017). Yet public opinion remains an important aspect of the politics of taxation. The Conservative party's U-turn during the 2017 campaign after facing backlash against the proposed 'dementia tax'[2], or French President Emmanuel Macron's decision to abandon fuel tax rises in the face of the *gilets jaunes* movement[3] are dramatic examples of the political consequences that unpopular taxes can have. However, public preferences over the tax mix are difficult to disentangle from preferences over spending and the overall size of government.

In this paper, therefore, we study preferences over different tax levers while holding the level of revenue change constant. We present a survey experiment in which respondents were asked to choose between randomly paired possible changes to two different tax levers with equivalent revenue implications. We model respondents' choices following a generalised Bradley-Terry model framework to estimate the relative popularity of different changes to the tax structure.

Our main contributions are threefold. First, we show that there is a good deal of variation in the popularity of using different existing tax levers to achieve explicitly revenue-equivalent changes. In theoretical terms the existence of these differences implies that the status quo tax mix is likely not *politically* efficient: there are ways of recalibrating the tax mix that would be generally preferred by voters. In practical terms, our evidence shows which taxes politicians might cut so as to reduce the amount of hissing they face, and where revenues might be found with less popular backlash.

Second, we find relatively low levels of heterogeneity across different types of individuals in terms of their preferences over tax levers. In these revenue-equivalent contrasts, Labour voters generally prefer similar changes to Conservatives, and the differences across groups defined by material interest characteristics (income, education) or other political differences (Leave, Remain) are even smaller. The politics of the tax mix exhibit a level of consensus that is often obscured by the association of changes in tax levers to increases or decreases in the overall level of taxation, or to specific spending priorities. This consensus also stands in contrast to

---

[2]https://www.theguardian.com/society/2017/may/22/theresa-may-u-turn-on-dementia-tax-cap-social-care-conservative-manifesto

[3]https://www.theguardian.com/world/2018/dec/05/france-wealth-tax-changes-gilets-jaunes-protests-president-macron

the implicit assumption underpinning partisan accounts of the tax mix, that different socioeco-nomic groups, or the voters of different parties, have strongly divergent preferences over types of taxation.

Finally, we can interpret the relative popularity of specific tax levers through the more abstract lenses typically applied by political science scholars in the study of tax structure. Four of the five most popular taxes would typically be conceived of as progressive. Alcohol and tobacco taxation is the remaining highly-popular lever. Equally, all of the tax levers associated with capital taxation are in the more popular half of the levers. Taxes falling on labour and consumption (in various ways) tend to be less popular (including Council Tax, which is designed as a housing consumption rather than a housing capital tax and which is the least popular lever in the survey).

In the conclusion, we discuss why unpopular taxes survive when there are alternative sources of revenue which would be more popular. National public preferences are not the only force acting on governments when they engage with the political economy of taxation. Countervail-ing forces from international political economy, from concentrated domestic interests, and from multi-level governance all potentially contribute to enabling political equilibria where there are opportunities for governments to make themselves more popular with the general public (in the short run) by changing the tax mix but nonetheless choose not to do so.

Public Tax Preferences

Although the subject of how to raise revenues with the highest level of public support is pre-sumably of substantial interest to policymakers, considering public opinion over different types of taxes, as we do here, is relatively rare. Treatments of the tax mix have rarely examined public attitudes directly, even when the logic of the arguments rely implicitly on voter support. Studies of public tax preferences more commonly focus on the overall level of taxation, or preferences for emergent features of the specific policy choices made, especially the degree of progressivity.

The central theoretical intuition motivating the study of public opinions over (incremental changes to) the tax mix comes from a simple model outlining the government's problem (Hettich and Winer, 1984). Assuming voters would prefer to keep their money, rather than pay it over to the government in taxes, the policymaker's problem is that of how to raise a given amount of revenue

while minimizing political costs.[4] In the original public choice model, the pain of a pound paid in tax is assumed equal across taxes, but political costs may also depend on the administrative burden imposed on the payers of a particular tax, so differential administration costs would lead to different political costs. Moreover, assuming a fixed cost of organising resistance to a tax, the marginal political costs of raising revenues from one given tax base are increasing. Even without the collective action angle, increasing economic costs at the margin (in terms of deadweight losses, for example) could drive increasing political costs. With increasing marginal costs of revenue collection from a given source, the efficient tax structure will be relatively diversified. Indeed, to minimize political costs the government must adjust the composition of revenues (and the structure of individual taxes) until the marginal political cost of raising additional revenue is equal for all tax sources.

While this analysis assumes a narrowly self-interested aversion to paying taxes which is generally not empirically observed (Williamson, 2017), the idea that governments need to balance the capacity of a tax change to raise necessary revenue with the political consequences is a more general one (Rivlin, 1986). Whatever level of revenue a government wants to achieve, a politically efficient tax mix is one which is located on the frontier of a tradeoff between revenue raised and political support: between feathers and hissing, in Colbert's words. This will be achieved where the marginal pound in revenue 'costs' the same in political support across taxes. Empirical description of this efficient frontier, however, has been little pursued by social scientists, falling between the disciplines of economics, political science, and sociology.

This is not to say that questions of the tax mix in general have gone unexplored, as variations in the ways in which revenues are raised across countries are a central question in the comparative politics of taxation (Kiser and Karceski, 2017). There is cross-national variation in tax mixes (Peters, 1991), and these differences have important economic and political consequences. The OECD report that revenue-neutral changes to the tax mix can have important effects on growth, recommending labour and corporate income tax cuts at the expense of property tax increases

---

[4]To the extent that the political costs of taxation depend on the benefits that it goes to finance, focusing on the tax side alone is a potentially consequential simplification. However, it mirrors the reverse simplification of considering expenditure alone, which has not prevented the study of preferences over public spending allocations. Moreover, assuming that the status quo spending profile will not change with a change in tax policy is both realistic and implicit in our application here.

(Akgun, Cournede and Fournier, 2018). Given the differential responsiveness of different types of tax revenues to the business cycle, the tax mix also affects the degree to which counter-cyclical stabilisation is built in the tax system (Maravalle and Rawdanowicz, 2020). Via more political mechanisms, the tax mix has been seen to drive the size of the welfare state (Kato, 2003) and the available responses to economic shocks, privileging right- or left- parties in times of crisis (Truchlewski, 2020).

The tax mix has been cited as an explanatory factor in cross-national variation in backlash against the welfare state as a consequence of the visibility and politicisation of the revenues it relies upon (Wilensky, 2002). The belief that visible taxes are more politically costly, and that direct taxes in general and progressive direct taxes in particular are more visible, has driven the expectation that progressive tax mixes are politically inefficient (Prasad, 2006). However, the empirical evidence here is mixed (Martin and Prasad, 2014). In fact, studies of tax backlash find that it is specific indirect taxes – excises and customs duties – provoke the most protest, followed by income and general sales taxes (Martin and Gabay, 2018). Even here, however, specific public attitudes underlying the efficient political bargain have tended to be inferred from protest or acquiescence rather than empirically investigated.

For example, "[p]oorer voters as net beneficiaries of public redistribution should favor a more progressive tax system, whereas richer voters should reject tax progressivity'' (**?**). That different actors prefer different taxes – and in particular that left-party voter prefer taxes on capital, and right-party voters prefer taxes on labour or consumption (Timmons, 2010), has often been inferred from the stereotypical economic profiles of these different groups. The fact that public views about taxation are shaped by views of fairness as well as self-interest (Williamson, 2017; Campbell, 2018; Stiers et al., 2022) should also caution us against making these inferences too readily.

The most detailed examinations in "the continuing search for a popular tax" (Rivlin, 1986) come from analyses of votes on municipal taxation in California (Martin, Lopez and Olsen, 2019; Martin and Harper, 2021), which examine a large number of quite heterogeneous tax proposals to differentiate popular from unpopular proposals. However, the characteristics predicting popularity (taxes levied on visitors rather than residents, for example) are not necessarily transferable

to national tax politics.

In contrast, most treatments of public attitudes towards taxation explore preferences over highly abstract aggregates of specific tax policy choices, particularly the overall level and progressivity of the tax system (Beramendi and Rehm, 2016; Berens and Gelepithis, 2021). But the general finding that people tend to prefer higher levels of progressivity, and lower levels of taxation overall (Barnes, 2014) provides only a vague guide to the concrete politics of tax reform, or to practical action. Even if progressivity is a central conceptual feature of tax systems that results from choices about the tax mix (Kemmerling and Truchlewski, 2021), policymakers cannot directly tune the progressivity of the system, instead acting on specific policy levers. The impact of many of these levers on progressivity is also quite complex.[5]

The closest existing treatment of tax policy preferences to the one we adopt here is equally oriented towards ascertaining views over the progressivity of taxation, in this case within the U.S. federal income tax. Ballard-Rosa, Martin and Scheve (2017) use a conjoint experiment varying the taxes paid at different points in the income distribution in proposals that raise equivalent levels of revenue. In contrast to the more generally expressed support for progressive tax structures, they find that raising rates on the rich generates little additional support for income tax proposals. However, while the internal structure of the income tax is a good place to examine preferences over progressivity cleanly, it is relatively limited as an investigation of preferences over taxation more broadly (Barnes, 2018). Thus we broaden the scope of the investigation to incorporate all major sources of tax revenue.

However, the innovation in Ballard-Rosa, Martin and Scheve (2017) of focusing on revenue-equal propositions with different tax structures is important. It mirrors recent work on trade-off sensitive allocations of public spending (Bonica, 2015; Barnes, Blumenau and Lauderdale, 2022) which has no existing counterpart on the revenue side. This is important because otherwise the tax-mix and tax-structure effects of a given change (consider an increase in the top rate of personal income tax, for example) also has revenue effects which may drive support for the proposal: resistance to higher overall levels of taxation may mask support for the greater reliance

---

[5]Moreover, views on overall progressivity may not necessarily help understand public responses to specific tax proposals, which may be perceived as progressive or otherwise with little relationship to the fiscal realities. Many Americans, for example, dislike the federal income tax (the mainstay of progressivity within the US system) due to a perception that it does not impose an effective burden on the rich (Williamson, 2017; Campbell, 2018).

on the tax proposed to increase. It also more closely mirrors a relevant policy choice: the problem to be solved will not usually whether to increase some given tax, or not, in isolation; but rather that some new revenue is needed (or can be rebated in the form of a tax cut), and the question is how best to choose among tax instruments to do so.

Empirical Approach

Our empirical task is a descriptive one, then, to systematically pursue the "search for a popular tax" (cf. Rivlin, 1986). This is (to our knowledge) the first direct empirical examination of the politically efficient tax mix highlighted in the theoretical literature. Specifically, preferences for large deviations from the status quo tax mix indicate space for popular tax policy reforms. As well as aggregate political efficiency, we can examine patterns in the types of people who may hold divergent views on the appropriate tax mix. As such we can map the contours of political conflict over the structure – as opposed to the level – of taxation which underpin much of the macro-comparative expectations of partisan effects on the tax mix. From a practical and policy-oriented point of view, we seek to provide an answer to the question facing policymakers needing to increase revenues without adverse consequences in public opinion (or to maximise the popularity boost associated with tax cuts).

Survey Design

Since October 2013, the UK Revenue and Customs (HMRC) department has been publishing and regularly updating statistics about the direct revenue effect of illustrative tax changes. These statistics cover Income Tax, Corporation Tax, Capital Gains Tax, Inheritance Tax and National Insurance contributions, as well as Stamp Duty Land Tax, duties on alcohol, tobacco and fuel, and VAT rates.[6] Where possible, the revenue estimates incorporate estimates of taxpayers' behavioural responses (HMRC, 2021, see methodology note 4) and can, in most cases, be scaled up or down to provide a rough guide to the potential effects (HMRC, 2021, see section 2).

With the status quo as baseline, we used the figures from June 2021 to calculate the changes specific to 24 tax levers implied by the same revenue change.[7] Thus we presented 9713 respon-

---

[6]HMRC also provides estimates for Tax Credits, which we do not consider in this paper.
[7]A list of these and the description of the status quo (as used in the experiment) can be found in the appendix.

dents with one pairwise choice between tax changes that have the same revenue consequences. Our survey was fielded by YouGov to a nationally representative sample of UK adults between the 4th to the 14th of October 2021. Each pair of proposals contains two reforms relative to the pre-existing baseline, along with a brief description of the tax lever involved.

YouGov

As you may know, UK taxes have recently been in the news. Imagine that, before any recent changes were made, you were given the following choice of two different ways to <u>cut</u> taxes.

According to HMRC estimates, both of the changes below would <u>cut</u> tax revenue by <u>£1 billion</u> per year.

If the government was only going to make one of these changes, which would you prefer?

Option A	Option B
A decrease in the income level at which employees' National Insurance contributions go down.	A decrease in the rate of National Insurance paid by the self-employed.
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.	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 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.	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.

◯ Option A
◯ Option B
◯ I think both of these changes are equally good or bad.
◯ Don't know

›

Figure 1: Survey Experiment Prompt Example

Figure 1 shows an example choice, as delivered to respondents. While we had been preparing our experiment for many months, the UK government unexpectedly introduced and quickly voted through several tax changes.[8] Because this meant that some of the tax baselines had changed from the HMRC documents we used for our treatment calculations, we elected to frame the question to respondents in terms of what they would have preferred "before any recent changes were made". Within the general form of the prompt illustrated in the Figure, we randomly varied a

---

[8] https://theconversation.com/autumn-budget-2021-experts-react-170741

number of elements.

1. Whether a respondent was shown changes that would increase or decrease revenue (with a 0.5 probability each);

2. Whether respondents were asked about £1 or £10 billion revenue changes (with a 0.8/0.2 probability ratio);

3. The specific pair of tax levers that was shown to each respondent. This was created by first sampling option A and then option B without replacement;

4. Whether respondents were shown both proposed changes with supporting or opposing or no arguments (with a $\frac{1}{3}$ probability each).

We collected 9713 responses, of which 1728 involved £10b changes and 7985 involved £1b changes. The statements in support of or in opposition to the changes consisted of one-sentence arguments about the possible consequences of these changes, reflecting as best as possible those arguments found in political discourse. For instance, in the case of the the taxes on alcohol and tobacco, we had the following:

- **Pro increase**: "One argument in favour of this change is that increasing costs of alcohol and tobacco can encourage people to make healthier choices."
- **Pro decrease**: "One argument in favour of this change is that decreasing costs of alcohol and tobacco can lift a burden on people who are already facing tough times."
- **Con increase**: "One argument against this change is that increasing costs of alcohol and tobacco can fall on people who are already facing tough times.
- **Con decrease**: "One argument against this change is that decreasing costs of alcohol and tobacco can encourage people to make less healthy choices."

Of the 9713 responses to our experiment, 2565 are preferences for proposal A, 2528 are preferences for proposal B, and 4620 are neutral responses. Of the neutral responses, 2911 are cases where the respondent chose "I think both of these changes are equally good or bad" while 1709 are cases where the respondent chose "Don't know".[9] The latter response may include respondents who failed to engage with the task, but of course in real politics many individuals fail to

---

[9]That is, the overall shares of choices expressing a substantive choice (choosing one of the two proposals), indicating that the two are equal, or saying they don't know are 52%, 30% and 18%, respectively.

engage with the task also.[10] In most of our analyses below, in order to maintain representative-ness, we treat both of these neutral responses as equivalent rather than dropping respondents. If particular taxes are more likely to confuse or to fail to engage respondents, that is relevant for assessing whether changes in those taxes relative to others are likely to command public support, engender public opposition, or have little effect on the public at all.

The extent of the neutral responses is understandable in the context of the quite complex nature of the question that our respondents were posed. Should we worry that the question is too complicated? Unfortunately, the survey presentations are not differentially complicated relative to the underlying policies they are trying to elicit attitudes about. Tax changes – like many other areas of policy – are complex. However, what we ask of respondents is still less complicated than many applications in the literature (for example on the spending side, e.g. Bonica (2015)), and allowing the neutral and don't know responses allows explicitly for the absence of a strong preference that might be caused by respondents feeling that they cannot handle the difficult details.[11]

Complexity aside, these presentations of the tax proposals are different to the form in which citizens encounter tax proposals in the wild. In public debate, there is almost always less ex-planation of how the tax works and the status quo situation, and certainly no counterfactual budget-neutral option to increase or decrease another tax instead. However, this 'unrealistic' presentation is a feature, rather than a bug, in our design. First, presentations of tax changes in real world presentations almost always conflate the size of taxation with the question of the specific tax mix. Consider two headline responses to Rishi Sunak's October 2021 budget: "Big spender Sunak takes tax burden back to 1950s" (from the *i* newspaper), and "Cheers! Rishi on a mission to cut taxes" (from the *Daily Express*). Second (as also illustrated by the newspaper headlines), tax change information is typically given a more obvious (and less technical) slant

---

[10]The rate of "Don't know" responses was 32% among 2019 non-voters versus 16% among 2019 voters.

[11]Indeed, the shares of neutral and don't know responses are higher in comparisons that include the plausibly complicated National Insurance tax levers, and relatively low for comparisons that include the simpler (e.g. alcohol and tobacco tax) or more familiar (e.g. fuel duties, basic rate of personal income tax) levers. Levers with a high share of don't know responses also have a higher share (on average) of neutral responses, which is consistent with a higher level of complexity driving both types of response. While the don't know responses are on average given with a shorter response time, the levers with higher shares of don't know responses also have longer average response times for those respondents who give substantive or neutral responses – again consistent with these being the harder to understand propositions.

and framing versus the kinds of explanations we provided. But it is not our concern here to ascertain whether (and which) framing effects matter for the popularity of tax reforms (there is evidence that they do: **?, ?**). Rather we try to elicit any views the public may have on the underlying budget problem. Similarly, the presentation of the budget-equivalent alternative proposal does not reflect the way tax proposals are typically presented to the public. But they very much do reflect the structure of the government's problem.

A different kind of question about what we can learn from our design is rooted in scepticism as to whether survey research on public opinion is useful as a whole. The information we gather in our survey is less directly tied to policy outcomes than the characteristics of the California taxes identified in Martin and Harper (2021), for example. But if we think that survey approaches taken as a whole can provide some useful insights, then the approach here is sensible. We gain more information than asking "is an inheritance tax increase good?", because we can calibrate with the counterfactual (good compared to what?). Moreover, in comparisons of different types of survey-experimental approaches to behavioural benchmarks, paired choice designs (akin to our setup) perform the best (**?**).

Models for Tax Preference Choices

We build a series of models for respondents' choices over pairs of revenue-equivalent tax changes to aid interpretation of our experimental findings. 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 (N). We code these as follows, so that we can interpret differences on the scale of proportions of respondents preferring one tax option to another, in a context where we allow neutral responses.

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

Following a generalised 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 $\pi_{iA} = \pi_{iB}$.[12]

Within this framework, we can consider a series of models based on different specifications for the popularities π_{ij} as a function $f(X_i, Z_j)$ of both the experimentally varied features of the tax change proposals Z_j, and of the observational variation in characteristics of the respondents X_i. This model 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, holding constant or averaging over the opposing proposals. In other words, the difference between the estimates π_{iA} and π_{iB} can be interpreted as the predicted difference between the share of respondents preferring A over B and the share of those preferring B over A.[13]

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
- $S_i = -1$ 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.

---

[12]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.

[13]Note that because the modelled probabilities are not very close to 0 or 1 for any A or B for any respondent or tax comparison, none of the results are very sensitive to this choice of a linear functional form versus limited dependent variable alternatives. Similar results can be obtained using an ordered logistic/probit framework with equivalent specifications of the deterministic component of the models.

Results

Preferences over Proposal A versus B

As a starting point for our analysis, we fit the null model $E[Y_i] = \alpha$ where respondents' choices do not depend on the content of the proposals, but may be biased with respect to which proposal is presented as A versus B, independent of their content.

If we do this, we find that the mean response is $\hat{\alpha} = 0.504$ (95%: 0.497 - 0.511), which is not significantly different from 0.5. Respondents were not biased towards A or B to an extent that we could detect in an experiment with about 10,000 responses. This simply indicates that there is no strong order effect, as both proposals A and B are randomised over the same distribution of tax proposals.

Preferences over Tax Levers

The simplest model that we can use to assess the relative popularity of different levers for changing tax revenue is one where we assume that the same proportion of people who prefer increasing tax A to increasing tax B will also prefer cutting tax B to cutting tax A. We will relax this symmetry assumption in the next section, but it is useful for generating parsimonious estimates of which tax levers are generally preferred and which are generally not. Under this assumption, we define $\pi = S_i\nu_j$ so that $\pi = \nu_j$ as the popularity of increasing tax l and $\pi = -\nu_j$ as the popularity of cutting tax l. Greater values of ν_j correspond to taxes j that tend to be preferred as a source of revenue.
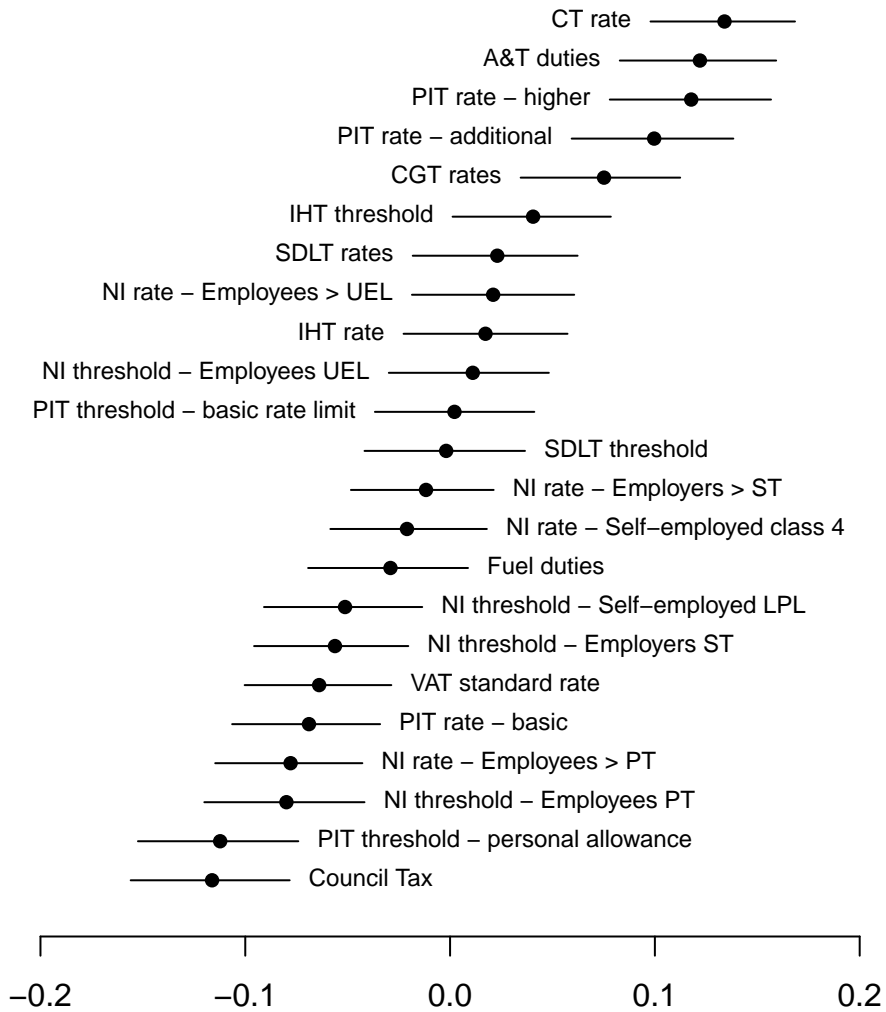
Figure 2: Relative public preference for tax levers, in units of probability of supporting taxation via a given lever versus others in pairwise comparisons of revenue-equivalent increases and decreases.

Figure 2 shows the estimates of the relative preferences for each tax lever relative to the others (averaging over all comparisons in the experiment). The differences in support implied by this are substantial. In a pairwise comparison, the estimates imply that increasing (or not decreasing) the corporate tax rate ("CT rate") is preferred to increasing (or not decreasing) the council tax rate by 0.25. Given the way we have defined our variables, and picking a representative level of intermediate responses, this corresponds to a population-level response distribution for this comparison where 47.5% of respondents prefer the corporate tax rate increase, 22.5% prefer the council tax increase, and the remaining 30% are not sure or indifferent between the two.

These estimates are based on all of the pairwise comparisons in the data plus functional form assumptions, however if we extract the limited number of pairwise comparisons where respondents saw this specific comparison, we see that 20 (57%) preferred the corporate tax increase and 5 (14%) preferred the council tax increase, while 10 (29%) were not sure or indifferent. As is the case in most pairwise comparison experiments, while we have relatively little data about any given comparison, in the aggregate we have a lot of information about each tax lever through the fact that we compare each one with all of the alternatives.

Preferences over Tax Increases Versus Decreases

To what extent are public preferences over tax increases and decreases symmetric? In the last section, our analysis assumed that if respondents preferred raising tax A as opposed to raising tax B, they would prefer cutting tax B as opposed to cutting tax A by the same amount. This need not be the case empirically, but when we relax the symmetry assumption we find that preferences over increases and cuts are largely symmetric with a few small deviations.

Here, we define $\pi = S_i \nu_{l,inc}$ as the relative popularity of tax l in a tax increase prompt and $\pi = S_i \nu_{l,cut}$ as the relative popularity of tax l in a tax cut prompt. Note that the inclusion of S_i here means that we define relative popularity in terms of preferring that tax is used versus another, so that in tax increase prompts higher popularity taxes are those that are more frequently selected by respondents and in tax cut prompts higher popularity taxes are those that are less frequently selected by respondents.

We implement this model using a more general framework that is employed in subsequent analyses in this paper, where we define $\pi = S_i (\beta_l X_i)$ in terms of vector values of β_l per tax lever and appropriately defined X_i matrices that incorporate features of the respondent giving response i and/or features of the prompt given to that respondent. These X_i matrices are defined analogously to linear regression, so for assessing asymmetry in responses to increases versus cuts, we define an X_i matrix with rows $1, S_i$. Thus, $\pi = \nu_{l,inc} = \beta_{l1} + \beta_{l2}$ for tax increases and $\pi = -\nu_{l,cut} = \beta_{l1} - \beta_{l2}$ for tax decreases.

This regression framework allows us to address one statistical challenge in making subgroup comparisons of individuals and/or experimental conditions, which is that we are potentially test-

ing a large number of comparisons with decreasing number of responses, and random sampling/assignment variability will create spuriously large differences in point estimates. To address this, we regularise the coefficients with a normal prior $\beta_{lk} \sim N(0, \sigma_k)$ that shrinks all tax-specific coefficients towards zero according to their common variance by "feature". Thus all intercepts are shrunk towards zero according to the overall estimated variability in tax preferences across tax levers, and (in this section) the deviations from symmetry are similarly shrunk towards zero according to the overall estimated variability in those deviation. This "random effects" / "hierarchical model" analysis ensures that if our data exhibit the amount of variability that we would expect to see in the response data even if there were no population-level differences by feature, we estimate near-zero effects of those features.
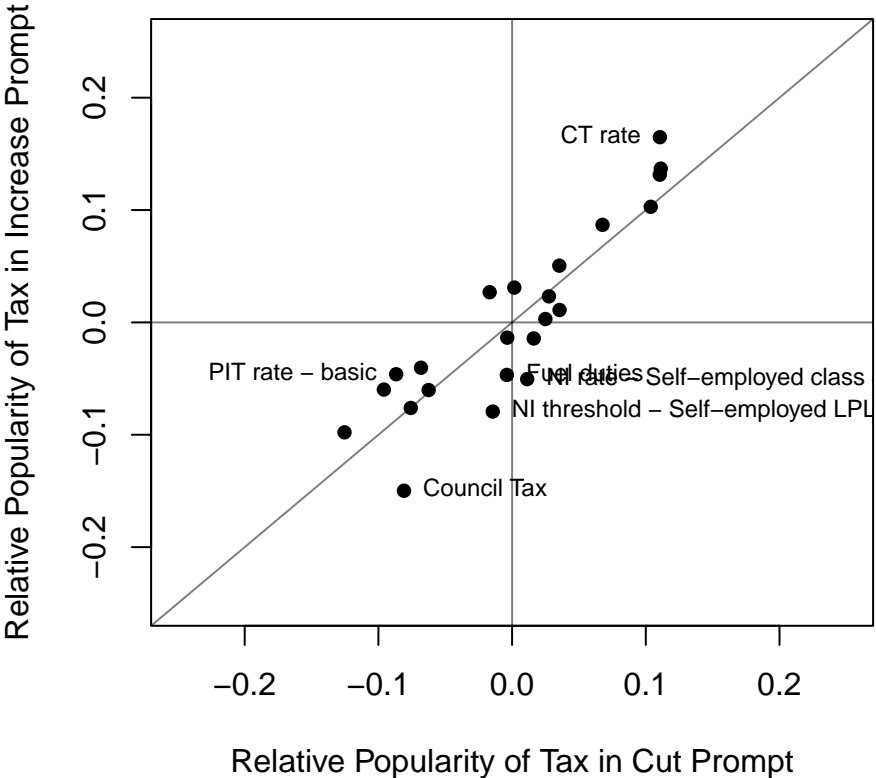

Figure 3: Relative popularity of a given tax in tax increase prompts as a function of the relative popularity of the same tax in tax cut prompts. Text labels provided for tax levers where 95% intervals for the differences exclude zero.

Figure 3 illustrates that respondents react to tax cuts and increases largely symmetrically. The taxes for which cuts are more popular tend to be those for which increases are less popular; the taxes for which cuts are less popular tend to be those for which increases are more popular.

16

Two taxes are significantly more popular in increase prompts than cut prompts, and four are significant more popular in cut prompts than increase prompts. The corporate tax rate and the basic rate of personal income tax (which applies to income above the £12,570 p.a. personal allowance and below the onset of the higher rate at £50,270 p.a.) were the two cases of the former. What this means is that the tendency of respondents to choose to increase these taxes, was higher than the tendency of respondents to choose to decrease other taxes over these, across all alternatives in pairwise comparisons. That is, people were more keen to increase corporation tax to avoid other tax rises than they were keen to choose other tax cuts instead of a corporation tax cut. The same is true of the basic rate of personal income tax, but in the context of a relatively unpopular tax lever whereas the corporation tax is among the most popular.

The reverse pattern holds for fuel duties, council tax, and two of the levers associated with National Insurance for the self-employed. So, people were more keen to avoid increasing these taxes than they were to cut them. With respect to the NI contribution for the self-employed, this could be due to the lower familiarity respondents may have with these levers. With little knowledge about who this may affect and how, people may rely on psychological heuristics such as loss aversion when making their choice (Kahneman and Tversky, 1979).[14]

While we can make sense of these asymmetries and we have statistical evidence that they exist in the broader UK population, it is important to recognise that they are not large relative to the differences in the overall popularity of the different tax levers. Council tax is the most unpopular tax increase and, while not the most popular tax cut, it is not far off from being so. Similarly, the other taxes with significant asymmetry are not very different in relative popularity as ways to raise revenue in the tax increase versus tax cut prompts. While respondents might assess tax increases and cuts asymmetrically in absolute terms, being more upset by tax increases than pleased by tax cuts, our findings suggest that any such asymmetry across gains versus losses does not translate into much asymmetry in the *kind*s of gains versus losses that are preferred.

---

[14]It is noteworthy that slightly more respondents (about 54.35%) gave neutral or don't know answers than on average across all levers (about 47.57%) whenever any of these two tax levers were part of the treatment.

Preferences for Larger versus Smaller Tax Changes

To this point, we have treated the cases where we proposed £1b changes as equivalent to those where we proposed £10b changes. We can test this directly by estimating a model where we estimate different popularities for small and large changes. Note that these were never tested directly against one another, so this is a test of whether relative rather than absolute popularities of different taxes are different when we propose large versus small changes. We use the same regression framework described above with the model allowing different preferences across tax levers for increases and cuts, and then further interacting these with the magnitude of the proposed change. We find that there is little evidence of substantial differences in public preferences for small versus large changes in the taxes that we tested at both £1b and £10b changes. The relative preferences for large changes are correlated with relative preferences for the corresponding small change in the same direction and in the same tax lever at 0.986.
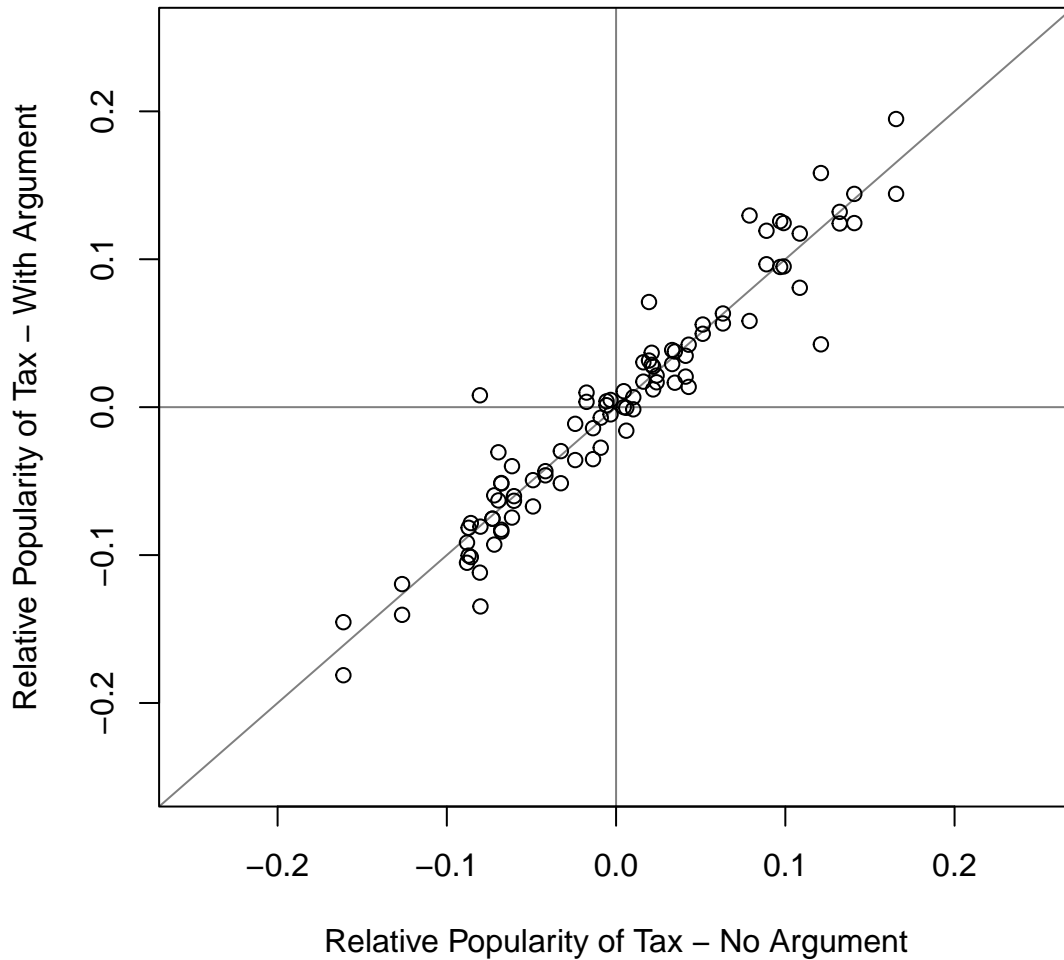
Figure 4: Relative popularity of changing a given tax lever in a given direction, in the baseline condition (x-axis) versus with pro or con argument texts provided (y-axis).

Does presenting the taxes with versus without supporting or opposing arguments change relative preferences for different tax levers? We don't know how strongly respondents hold the views they express. If we could change relative preferences for different taxes easily by presenting arguments for or against them, that would indicate that public preferences are very weakly held and perhaps we should not take them very seriously. However this seems not to be the case. As Figure 4 shows, the relative popularity of different tax levels are highly correlated across different presentations of the comparisons with and without arguments. The overall correlation across all 92 comparisons of a tax change on a given lever in a given direction, with a particular argument

versus no argument, is 0.962 This indicates that our results are generally robust to variation in the presentation of the tax levers.

Overall, we see substantial differences in popularity across different tax levers that could be used to raise revenue or provide tax relief. Preferences are generally symmetric between tax increases and cuts. There is little evidence that people respond very differently when presented with larger versus smaller changes, or when provided with arguments in favour of or against each change. In sum, these patterns seem to reflect mostly consistent attitudes towards taxation that are not easily moved by reframing the choice task.

Differences in Preferences Across Types of People

Conservative vs Labour Voters

The tax increases for 2022-23 versus 2021-22, that had just been announced by the Conservative UK government when the experiment was fielded, consisted in changes to multiple tax levers in our experiment. The changes involved slight cuts to revenue due to adjusting both the "NI threshold - Employees PT" and "NI threshold - Self-employed LPL" from £9,568 to £9,880. At the same time, the changes involved substantial increases in revenue due to increasing the rates of "NI rate - Employees > PT" and "NI rate - Self-employed class 4" from 12% to 13.25% as well as "NI rate - Employees > UEL" from 2% to 3.25%. Note that we did not ask about the equivalent self-employed rate above the upper income limit, which also increased from 2% to 3.25%, because raising £1b from that lever required excessively large changes in rates due to the small number of self-employed earning money above that threshold.
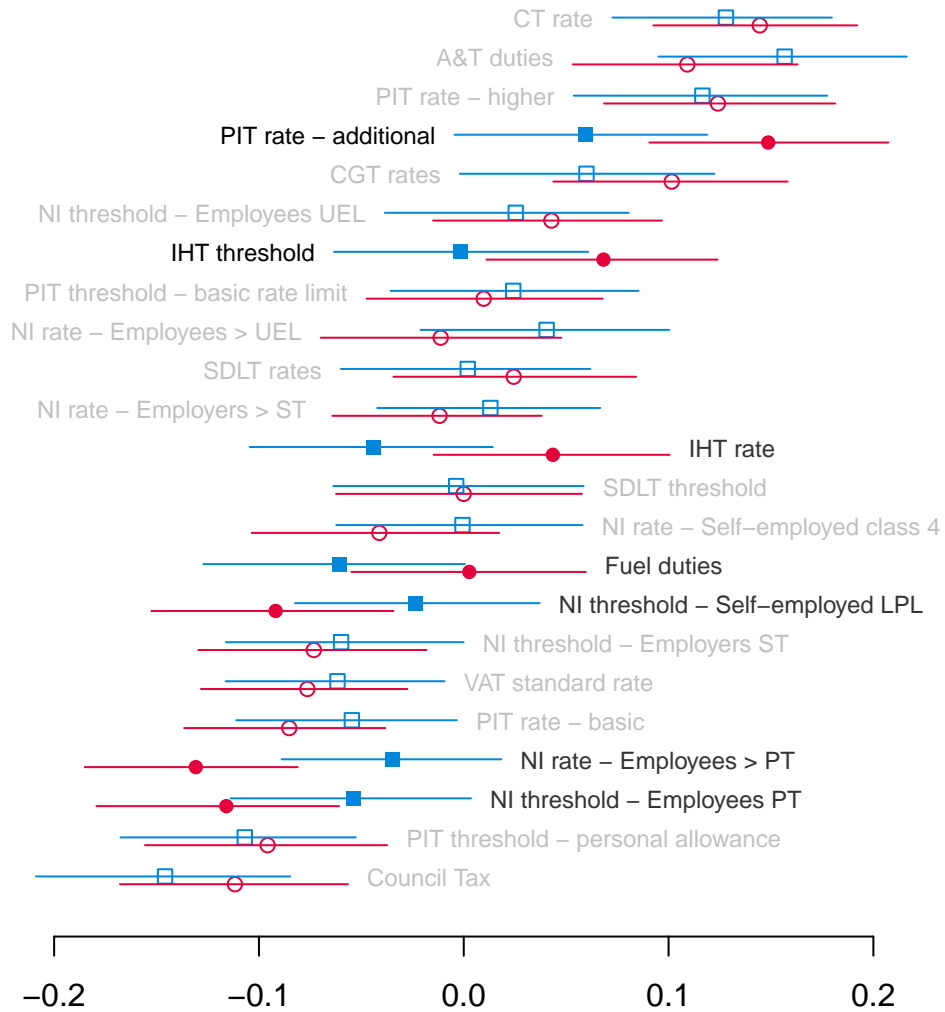
Figure 5: Relative public preference for tax levers for 2019 Conservative (blue squares) versus 2019 Labour (red circles) voters, in units of probability of supporting taxation via a given lever versus others in pairwise comparisons of revenue-equivalent increases and decreases. Solid points and black label text indicate tax levers where the 95% interval for the party difference excludes zero.

All three of the tax levers which the Conservative government had just used to significantly raise revenue show Conservative voters more favourable towards using that lever to raise revenue. However, we note also that we see the same pattern for the two National Insurance income thresholds that were adjusted for inflation in a way that slightly cut revenue. Our experiment was not designed to study the effect of the Conservative tax changes, and as noted earlier we were at the point of fielding the experiment when the changes were announced. As a consequence,

either of two interpretations of these patterns are tenable. First, that the Conservative government targeted the tax increases in three areas where their supporters were more favourable than those of the opposition. Second, that the fact that the Conservative government raising tax through these levers induced a partisan gap in support for raising tax through those levers (through Conservative voters supporting more, Labour voters supporting less, or both). Against the first interpretation is that the key levers employed were actually unpopular in an absolute sense: there is no sense in a government targeting tax levers that are more popular among their own supporters than among the supporters of the opposition if those levers are still relatively unpopular among their own supporters compared to other tax levers. In particular, the NI rate for employees above the personal threshold raises the most revenue of all the changes and is not very popular even among Conservative voters. We suspect, but cannot prove, that the partisan differences were induced by the policy announcements and may not have been present previously.

But notably, even with the likelihood that there was an immediate pre-experiment partisan shock to attitudes over several of the tax levers we examined, the partisan differences are not very large across the full set of levers.[15]

Other Respondent-Level Heterogeneity

In the appendix, we report analogous models by EU referendum vote, 2019 general election turnout, gender, income and degree status. All of these show smaller differences than 2019 general election vote. The EU referendum vote patterns mirror the 2019 election vote differences, but with weaker differences between Leave and Remain voters than between Conservative and Labour voters. 2019 general election voters and non-voters have similar relative preferences, with differences between levers attenuated for non-voters relative to voters because non-voters are more likely to give neutral responses. High income voters do not systematically prefer broad-based as opposed to progressive tax levers relative to low income voters, which is in line with recent findings that progressive taxation has become increasingly popular across the board (Berens and Gelepithis, 2021, p.378). Rather, we see a similar pattern to voters versus non-voters, with

---

[15]The correlation between the preference estimates for Labour vs Conservative voters is 0.82.

high income voters tending to have the same ordering of preferences over tax levers but bigger differences between those levers. We see a similar difference for degree holders versus non-degree holders and negligible difference between men and women.

The Politics of the Tax Mix

Thus, tax popularities vary across supporters of the Labour and Conservative parties less than one might think. This is surprising in the context of what we know about the politics of taxation more broadly. Conservative versus Labour supporters can be readily differentiated in terms of their attitudes to the overall levels of taxation that they are willing to support (Barnes, Blumenau and Lauderdale, 2022). Given the conflation of increases to the overall burden of taxation with increases in any given lever in tax politics in the real world, politicised cues may attach more readily to the levels question. Of course, different levers have different material consequences for different groups of taxpayers, but in terms of the particular incidence and burden of different types of taxation, these material interests seem also to be either hard for people to recognise, or to not be the decisive factor in preferences over the tax mix (as indicated by the similarity of preference across income and education groups). The relative political consequences of adjustments to tax levels compared to adjustments to the tax mix is an obvious new line of inquiry opened up by the systematic analysis of public opinion over the latter which we have attempted in this paper.

A second question arising from the lack of partisan division over the tax mix is whether this is a consequence of a current mismatch in the sorting of tax attitudes into the major UK political parties. That is, is this general consensus, or economic de-alignment? Again, the weak material cleavages over the tax mix are indirect indicators of the former rather than the latter.

The particular partisan differences in attitudes towards National Insurance also highlight a more general question about these results and the underlying approach to estimating tax-mix preferences. Specifically, they highlight the context specificity of the responses that the public may have towards different types of tax. Another way of saying this is that it is not our claim that the preferences we recover here are universal and unchanging: they are a contingent feature of the political (and economic) landscape. However, in order to investigate which parts of public

opinion over the tax mix might be more or less malleable, and more or less variable across contexts, we need to be able to distinguish preferences over tax composition from preferences over the level of taxation in general. Moreover this points to the possibility that the current consensus be due to limited prior political conflict over the tax mix, which could be mobilised in other contexts.

Characteristics of Popular vs. Unpopular Levers

The mapping of the demand side of taxation that we attempt here suggest that the popular taxes are the more progressive ones, and the unpopular taxes are the regressive ones. This is consistent with much of the previous literature on public opinion on taxation (Barnes, 2014, Campbell (2018)), The popularity of the two higher rates of tax on personal income, in particular, runs counter to the revenue-sensitive analysis of the US federal income tax that comes closest to our design (Ballard-Rosa, Martin and Scheve, 2017), where more progressive rate structures within the income tax yielded no greater support. But equally, we find that presumed-progressive taxes on capital (corporation taxation and the taxation of capital gains) are among the most popular tax levers. Indeed, among the top half of the tax levers, by popularity, only alcohol and tobacco taxation is a tax that does not fall on capital or labour income, and the popular levers increasing the tax burden on labour are all rates and thresholds for high income earners. Meanwhile, the broad based labour levers, and taxes on consumption (other than alcohol and tobacco) comprise the less popular half of revenue raising levers.

Assuming a Meltzer and Richard (1981) style model of politics, tax policy would reflect the preferences of the median voter. Identifying the tax levers which are popular but not raised, or unpopular, but not cut, helps identify the countervailing forces that contribute to the political equilibrium for the tax mix diverging from the mix that would maximise public satisfaction.

First, the substantive tax-mix preferences of those with the power to set policy may differ from public preferences. This may be because they are economically unrepresentative of the broader public. It also may be because political elites have more awareness (or beliefs) about the real economic constraints of specific tax changes, especially with respect to globalisation. Countries do not set tax policy in a vacuum, it matters what other countries are doing. Governments may

therefore be inclined to undercut other countries' tax standards in order to attract capital (Lierse, 2021). For instance, high rates of corporate taxes can shift some corporate activities out of, while low rates can shift corporate activities into a country. These considerations may not be fully internalised by the general public in the short run. To the extent that these constraints apply more to the more progressive taxes, an unmet public preference for greater progressivity would arise.

At the other end of the popularity spectrum, in our results, is the Council Tax. This is a tax on residential property, and is notable in that while the framework for the council tax system is set nationally, the rates are set by local government. Local government gains the revenue, and uses it to fund local services. The council authorities face a trade-off between levels of taxation and local service provision, but many local councils each making the optimal local trade-off under constraints can lead to a very unpopular level of local taxation, because councils cannot shift their revenue onto other tax levers. That rebalancing of the sources of local government revenue would require national government action to increase grants to councils, or change the structure of the system. However, to some degree it is in the national government's interest to set up a taxation framework that shifts tax dissatisfaction onto local authorities.

Finally, many of the levers which we identify as popular – relative to the status quo – can be characterised as having concentrated groups who would be bear the costs of increases (Kemmerling and Truchlewski, 2021, pp.84-88). Corporations for CT rate, alcohol and tobacco producers and pubs for A&T duties, and affluent people in general for the higher and additional rates of Personal Income Tax, Capital Gains Tax, and Inheritance Tax levers. This is consistent with the approach to explaining tax policy outcomes which has historically focused more on organised interests than popular opinion. Indeed we do not argue that public preferences ought to (fully) explain the tax mix. However, the popularity (or lack of) of specific changes to different tax levers has led to policy u-turns, and anticipating public responses constrains proposals.

Conclusion

This paper does not directly answer questions as to why mismatches between public preferences over taxes and the tax system in the UK exist. Moreover, it remains unknown whether similar mis-

matches exist in different countries where policy-makers face different institutional constraints, or may hold different beliefs about the incidence of tax reforms. Nonetheless, our paper makes an important contribution by being one of the first of such explorations of the 'hissing frontier' of taxation and by making some headway in "the search for a popular tax". An important step towards better understanding the political tensions that are being balanced in tax system design is to document the tax levers on which there is currently most force being applied by the public.

First, we use the control supplied by experimental manipulation to isolate preferences over specific tax levers in isolation from the accompanying revenue change which otherwise makes the measurement of preferences about the tax mix very difficult. Second, we rely on respondents' ability to make comparisons between concrete proposals – such that they do not need to articulate a full preference ordering, nor the details of what they might like or dislike about specific tax levers – which is a more feasible task in a highly technical area. The revenue-equivalent changes also bring the policy choice much closer to the politicians' (or Treasury civil servants') policy problem.

In doing so we identify the levers that might plausibly be involved in a welfare-enhancing tax reform, increasing (or maintaining) revenue levels without increasing (or actually decreasing) public dissatisfaction with taxation. Paying for reductions in Council Tax through national tax increases, particularly in the Corporate Income tax, alcohol and tobacco duties, and the higher and additional rates of income taxation, for example, would constitute a positive change, by our estimates. Moreover, given the partisan (and socio-demographic) consensus over the tax mix that we find, there are no major electoral cleavages blocking this kind of reform.

Appendix

Table of Tax Levers

Tax lever	Description of status quo
A&T 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.
CGT rates	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.
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.
CT 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%.
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.
IHT 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%.
IHT 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.
NI rate - Employees > PT	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%.
NI rate - Employees > UEL	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%.
NI rate - Employers > ST	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 contribution rate for employers is currently 13.8%.

Tax lever	Description of status quo
NI rate - Employers > ST	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%.
NI rate - Self-employed class 4	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%.
NI threshold - Employees PT	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.
NI threshold - Employees UEL	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.
NI threshold - Employers ST	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.
NI threshold - Self-employed LPL	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.
PIT rate - additional	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%.
PIT rate - basic	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 income above this allowance (and below the higher rate band). The current tax rate is 20%.
PIT rate - higher	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%.
PIT threshold - basic rate limit	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.
PIT threshold - 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.

Tax lever	Description of status quo
SDLT 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.
SDLT 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.
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. The current standard rate of VAT is 20%.

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 DKs	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

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.
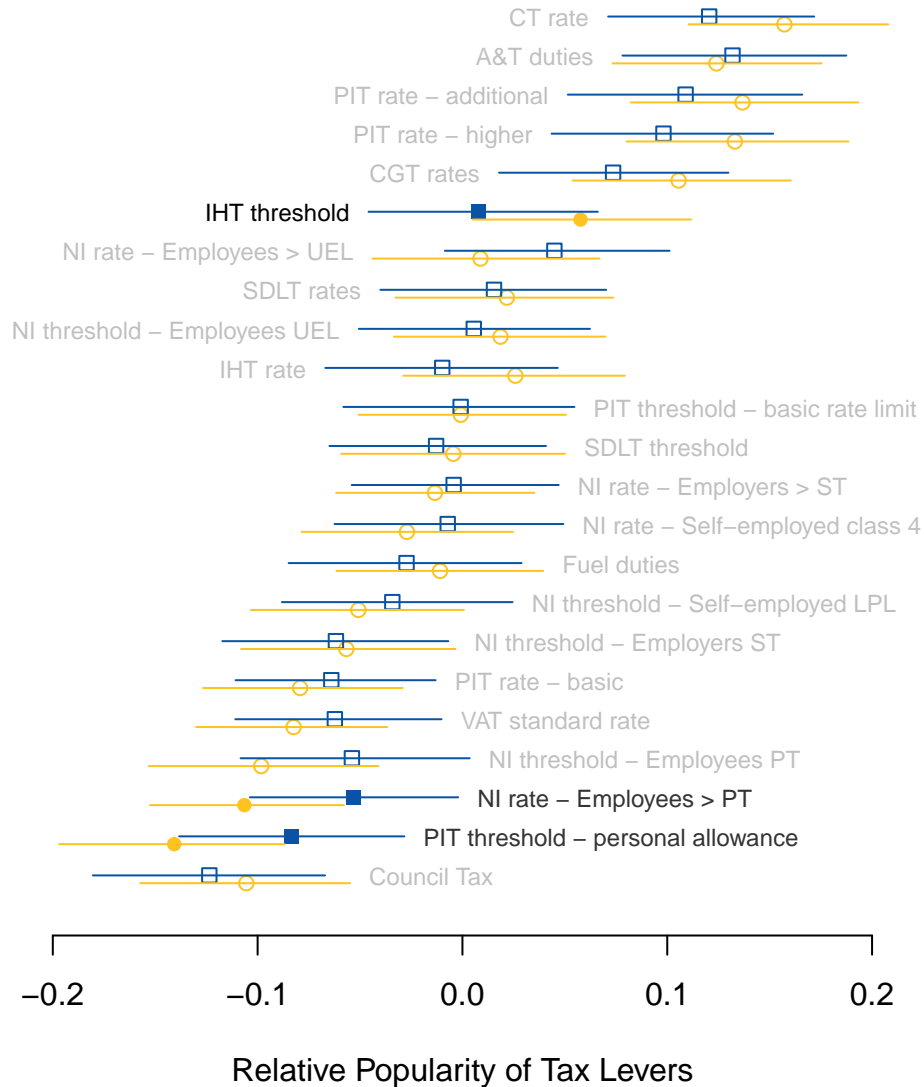
Preferences by EU Referendum Vote

Figure 6: 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.
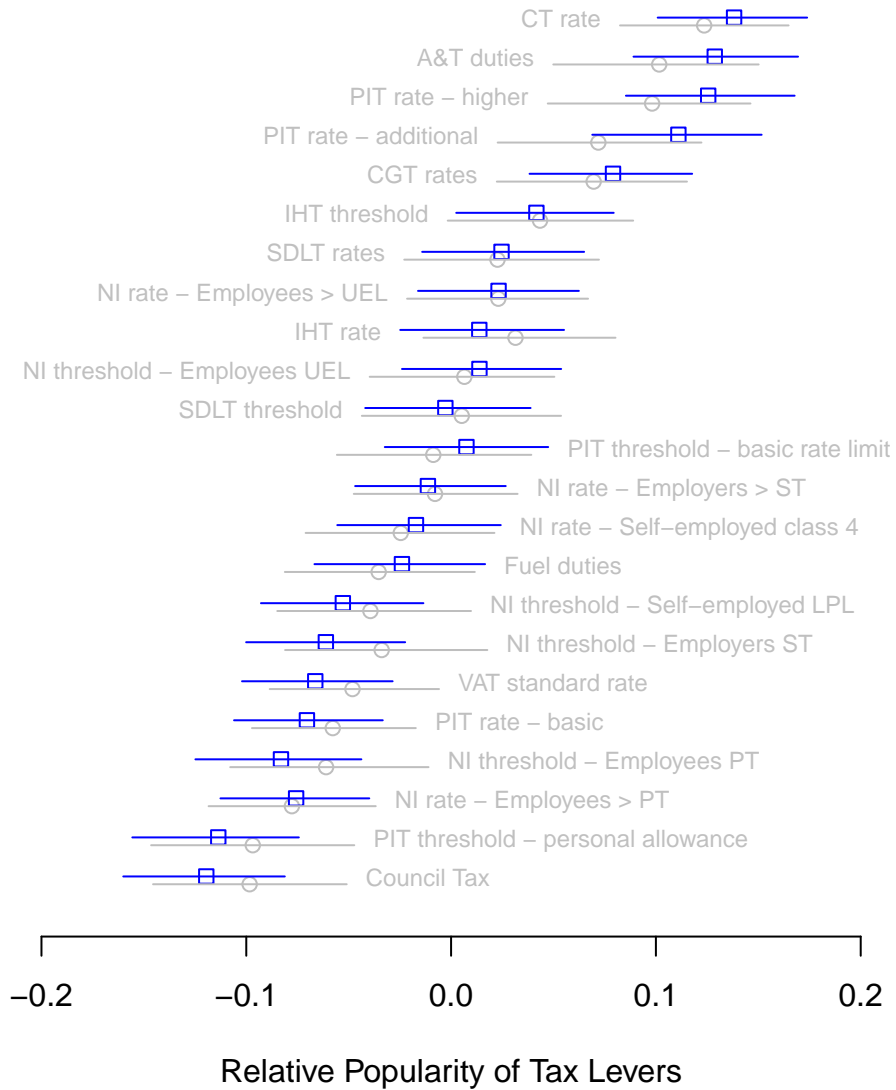
Figure 7: Relative public preference for tax levers for 2019 non-voters (grey circles) versus 2019 voters (blue squares) voters, in units of probability of supporting taxation via a given lever versus others in pairwise comparisons of revenue-equivalent increases and decreases. Solid points and black label text indicate tax levers where the 95% interval for the difference excludes zero.
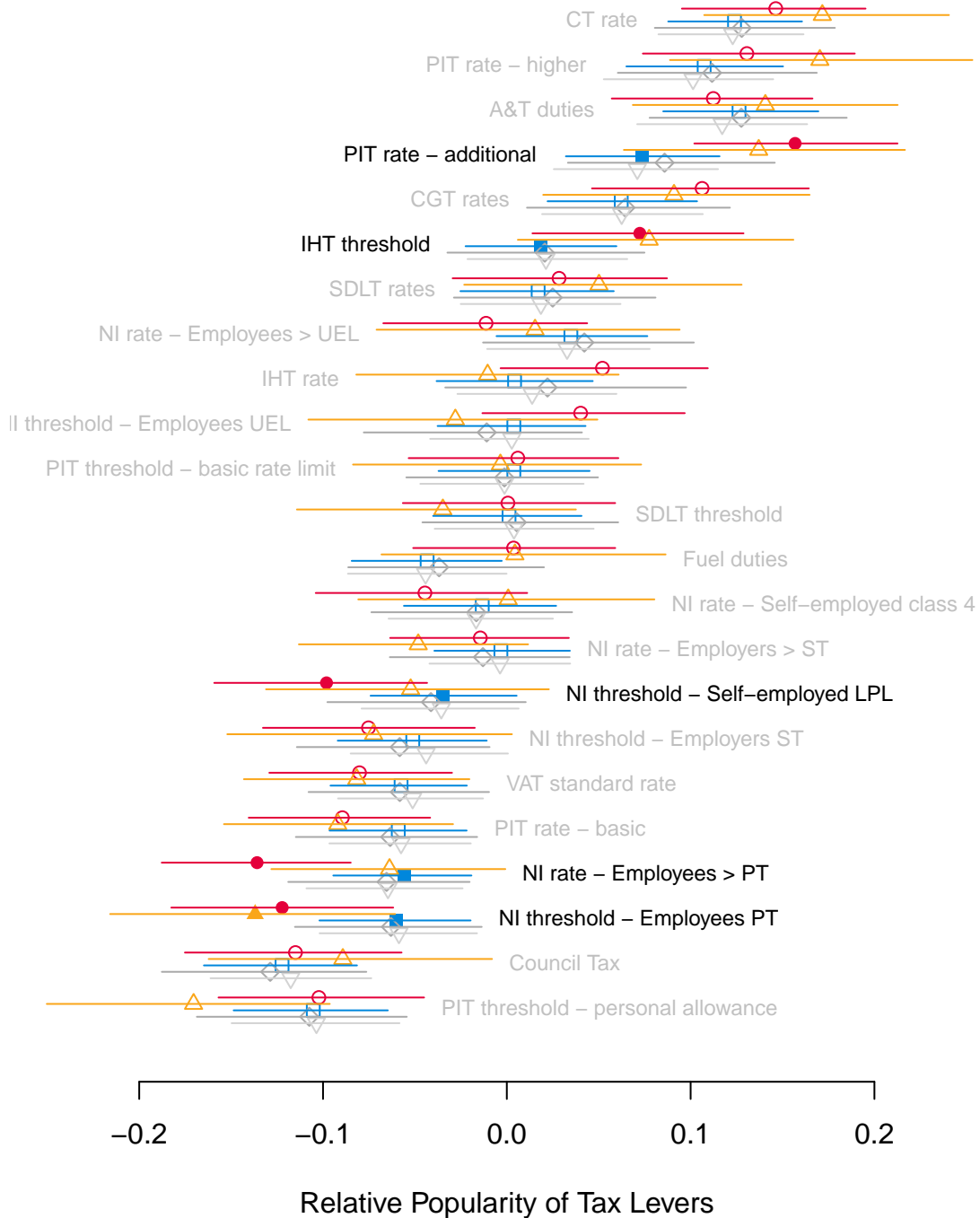
Figure 8: Relative public preference for tax levers for Conservative (blue squares), Labour (red circles), Liberal Democrat (yellow triangles) voters, voters of other parties (dark gray diamonds) and non-voters (light gray inversed triangles) in the 2019 General Election in units of probability of supporting 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.
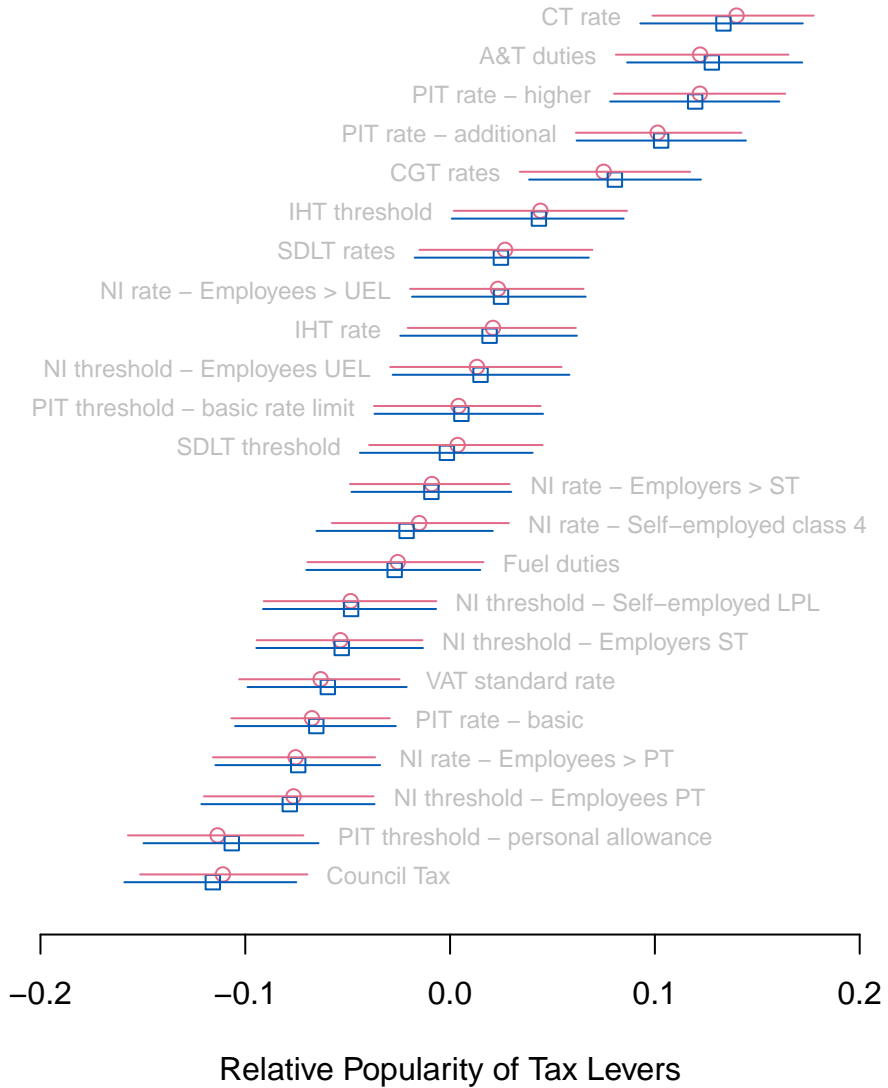
Figure 9: Relative public preference for tax levers for men (pink circles) versus women (blue squares), in units of probability of supporting taxation via a given lever versus others in pairwise comparisons of revenue-equivalent increases and decreases. Solid points and black label text indicate tax levers where the 95% interval for the gender difference excludes zero.
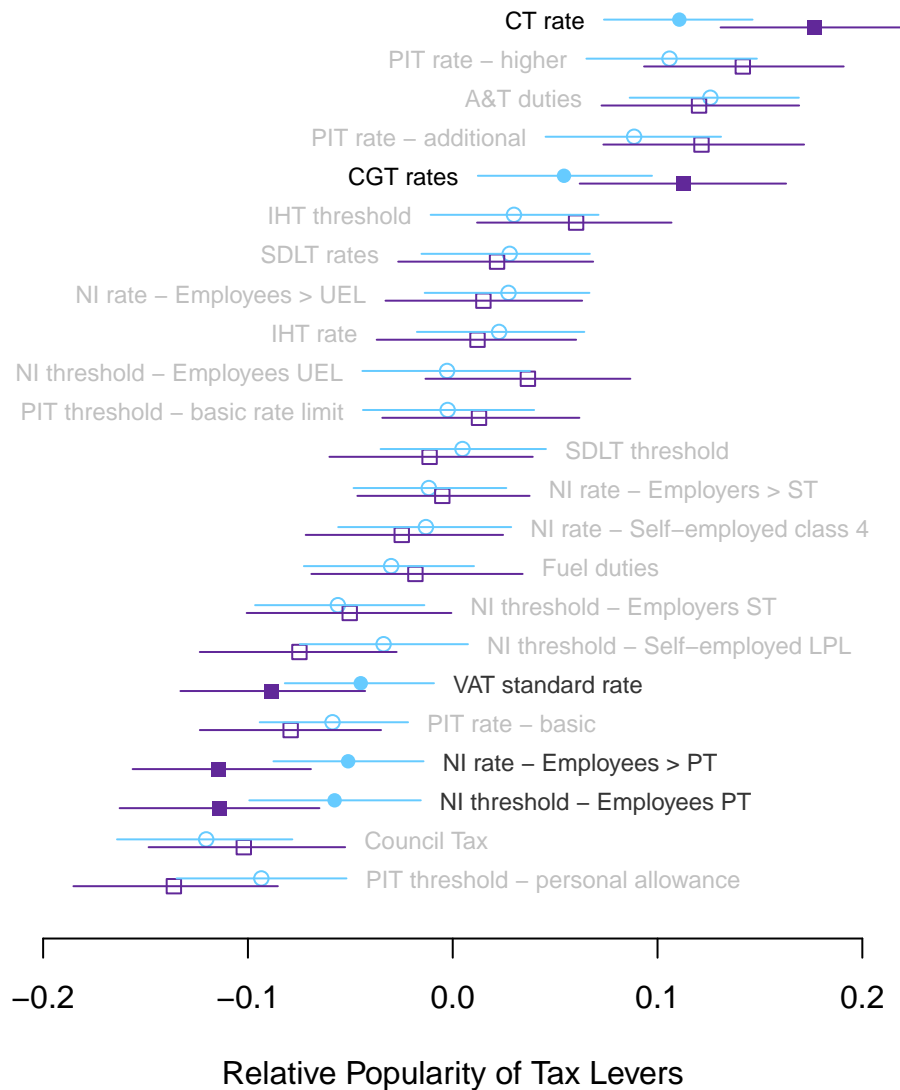
Preferences by Education Level

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.
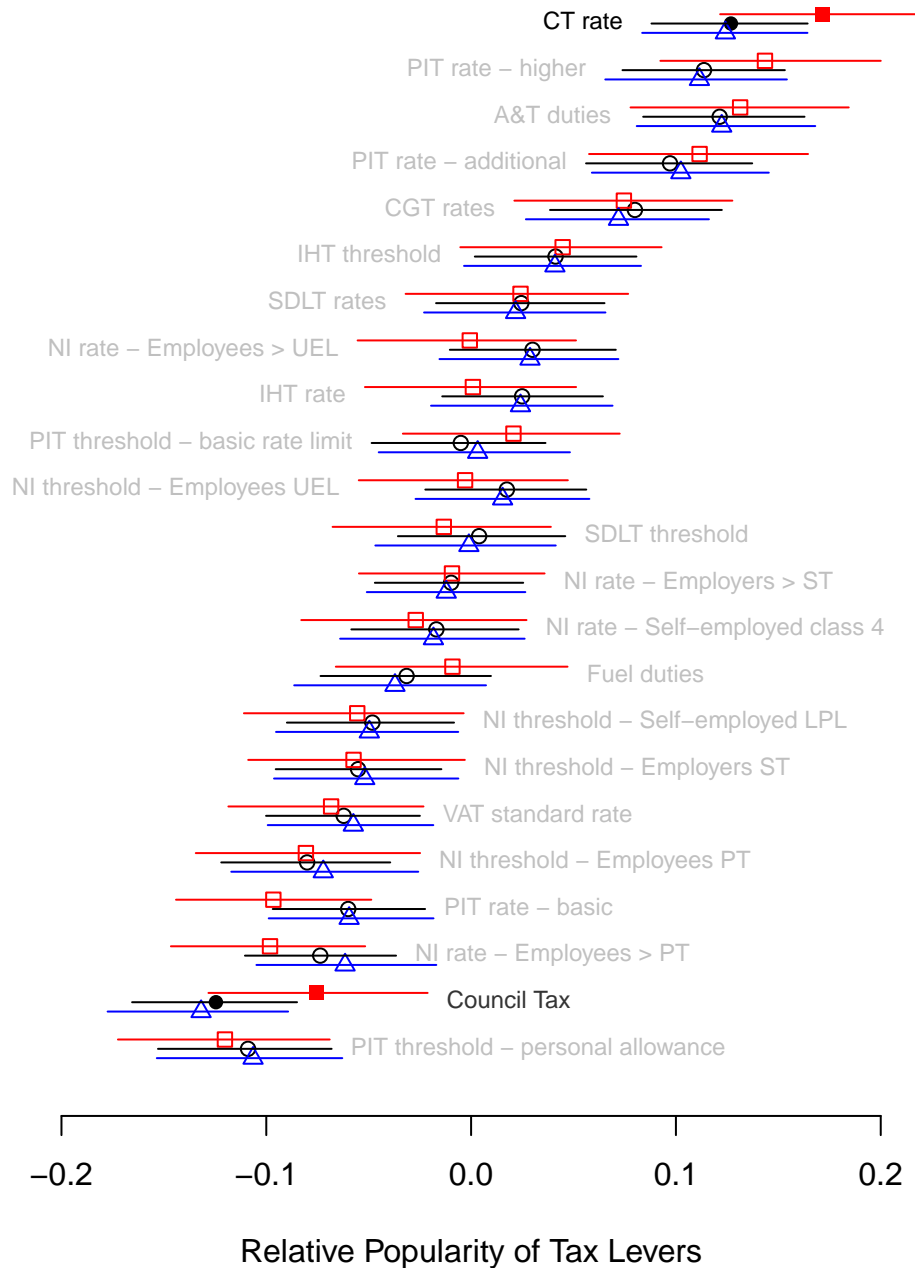
Figure 11: Relative public preference for tax levers for respondents with household incomes above 45k (red squares), below 45k (black circles) and those who did not answer the income item (blue triangles), in units of probability of supporting taxation via a given lever versus others in pairwise comparisons of revenue-equivalent increases and decreases. Solid points and black label text indicate tax levers where the 95% interval for the difference between those below 45k and the respective other group 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		0.965	0.995	0.989	0.993	0.865	0.993	0.987	0.997	0.988
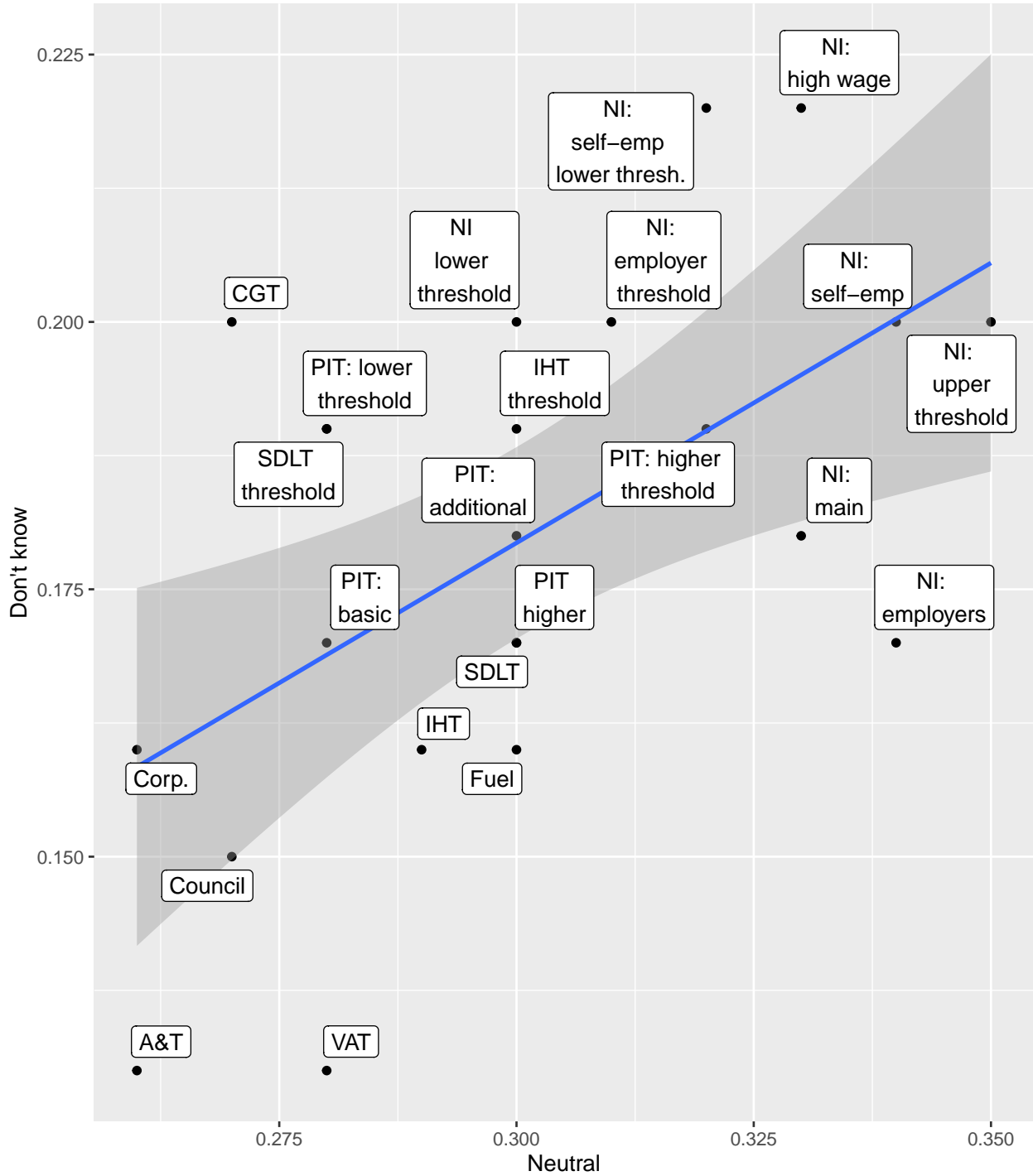
Figure 12: Share of neutral and don't know responses by tax lever.

References

Akgun, Oguzhan, Boris Cournede and Jean-Marc Fournier. 2018. "The Effects of the Tax Mix on Inequality and Growth." *OECD Economics Department Working Papers* 1447.

Ballard-Rosa, Cameron, Lucy Martin and Kenneth Scheve. 2017. "The Structure of American Income Tax Policy Preferences." *The Journal of Politics* 79(1):1–16.

Barnes, Lucy. 2014. "The size and shape of government: Preferences over redistributive tax policy." *Socio-Economic Review* 13(1):55–78.

Barnes, Lucy. 2018. The Politics of Domestic Taxation. In *Oxford Research Encyclopedia of Politics.*

Barnes, Lucy, Jack Blumenau and Benjamin E. Lauderdale. 2022. "Measuring Attitudes toward Public Spending Using a Multivariate Tax Summary Experiment." *American Journal of Political Science* 66(1):205–221.

Beramendi, Pablo and Philipp Rehm. 2016. "Who Gives, Who Gains? Progressivity and Preferences." *Comparative Political Studies* 49(4):529–563.

Berens, Sarah and Margarita Gelepithis. 2021. What do people want? Explaining voter tax preferences. In *Handbook on the Politics of Taxation*, ed. Lukas Hakelberg and Laura Seelkopf. Edward Elgar Publishing chapter 24, pp. 374–387.

Bonica, Adam. 2015. "Measuring public spending preferences using an interactive budgeting questionnaire." *Research & Politics* 2(2):1–9.

Campbell, Andrea Louise. 2018. "Tax designs and tax attitudes." *The Forum* 16(3):369–397.

Hettich, Walter and Stanley Winer. 1984. "A positive model of tax structure." *Journal of Public Economics* 24:67–87.

HMRC. 2021. "Direct effects of illustrative tax changes bulletin (June 2021) - [ARCHIVED CONTENT].". **URL:** *https://webarchive.nationalarchives.gov.uk/ukgwa/20211006004542/https://www.gov. uk/government/statistics/direct-effects-of-illustrative-tax-changes/direct-effects-of-illustr ative-tax-changes-bulletin-june-2021*

Kahneman, Daniel and Amos Tversky. 1979. "Prospect Theory: An Analysis of Decision under Risk." *Econometrica* 47(3):263–291.

Kato, Junko. 2003. *Regressive Taxation and the Welfare State: Path Dependence and Policy Diffusion.* Cambridge University Press.

Kemmerling, Achim and Zbigniew Truchlewski. 2021. The domestic determinants of tax mixes. In *Handbook on the Politics of Taxation*, ed. Lukas Hakelberg and Laura Seelkopf. Edward Elgar Publishing chapter 6, pp. 82–97.

Kiser, Edgar and Steven M. Karceski. 2017. "Political Economy of Taxation." *Annual Review of Political Science* 20:75–92.

Lierse, Hanna. 2021. A race to the bottom? The politics of tax competition. In *Handbook on the Politics of Taxation*, ed. Lukas Hakelberg and Laura Seelkopf. Edward Elgar Publishing chapter 11.

Maravalle, Alessandro and Łukasz Rawdanowicz. 2020. "How effective are automatic fiscal stabilisers in the OECD countries?" *OECD Economics Department Working Papers* 1635:28.

Martin, Isaac William and Heather Harper. 2021. "What Makes a Tax Policy Popular? Predicting Referendum Votes from Policy Text." *Socius: Sociological Research for a Dynamic World* 7:1–17.

Martin, Isaac William, Jane Lilly Lopez and Lauren Olsen. 2019. "Policy Design and the Politics of City Revenue: Evidence from California Municipal Ballot Measures." *Urban Affairs Review* 55(5):1312–1338.

Martin, Isaac William and Monica Prasad. 2014. "Taxes and Fiscal Sociology." *Annual Review of Sociology* 40:331–345.

Martin, Isaac William and Nadav Gabay. 2018. "Tax policy and tax protest in 20 rich democracies, 1980–2010." *British Journal of Sociology* 69(3):647–669.

Meltzer, Allan H and Scott F Richard. 1981. "A rational theory of the size of government." *Journal of Political Economy* 89(5):914–927.

Peters, B. Guy. 1991. *The Politics of Taxation: A Comparative Perspective*. Blackwell.

Prasad, Monica. 2006. *The Politics of Free Markets: The Rise of Neoliberal Economic Policies in Britain, France, Germany, and the United States*. Chicago ;: University of Chicago Press.

Rivlin, Alice M. 1986. "The Continuing Search for a Popular Tax." *The American Economic Review* 79(2):113–117.

Stiers, Dieter, Marc Hooghe, Silke Goubin and Michael S. Lewis-Beck. 2022. "Support for progressive taxation: self-interest (rightly understood), ideology, and political sophistication." *Journal of European Public Policy* 29(4):550–567.
URL: *https://doi.org/10.1080/13501763.2020.1866054*

Timmons, Jeffrey F. 2010. "Taxation and representation in recent history." *Journal of Politics* 72(1):191–208.

Truchlewski, Zbigniew. 2020. "'Oh, what a tangled web we weave': How tax linkages shape responsiveness in the United Kingdom and France." *Party Politics* 26(3):280–290.

Turgot, Anne Robert Jacques. 1898. *Reflections on the formation and the distribution of riches [1770 - translated by William J. Ashley]*. Economic Classics Macmillan.
URL: *https://oll.libertyfund.org/titles/turgot-reflections-on-the-formation-and-distribution-of-riches*

Wilensky, Harold L. 2002. *Rich Democracies: Political Economy, Public Policy, and Performance*. University of California Press.

Williamson, Vanessa S. 2017. *Read My Lips: Why Americans are Proud to Pay Taxes*. Princeton and Oxford: Princeton University Press.