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A paycheck half-empty or half-full? Framing, fairness and progressive taxation

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Abstract

Taxation policy is driven by many factors, including public opinion, but little research has examined the strength and stability of the public's taxation preferences. This paper demonstrates one way in which preferences for progressiveness depend on the framing of the question asked. Participants indicated how they would share a fixed tax burden between two individuals who earned different amounts of money, either by adjusting the amount of tax paid by the two individuals, or by adjusting the amount of post-tax income retained. The units in which tax was described — amount of money or percentage tax rate — were manipulated orthogonally. There was a strong metric effect: Participants favored progressiveness more when tax was described as a percentage rather than amount. However, there was also a clear interaction: for amounts, participants favored progressiveness significantly more when considering post-tax money retained rather than tax paid; for percentages, no such effect was found.

Keywords: tax, framing, psychology, judgment, heuristics, biases.

1 Introduction

Progressiveness in tax is a topical issue. Recently in the United States and United Kingdom there has been a move to increase the progressiveness of taxation: One of U.S. President Obama's campaign pledges was to increase the highest rate of income tax to just under 40%. Similarly, the United Kingdom government has recently announced it will introduce a new higher tax band of 50% for people earning over £150,000 ($225,000) a year. Conversely, several countries, like Russia, Ukraine, and the Baltic States, have in recent years introduced versions of flat taxes, where all citizens pay the same proportion of their income no matter what its absolute value. (These "flat" taxes often come with significant tax-free allowances, meaning the overall tax system is still slightly progressive. For a review of flat taxes, see Keen, Kim, & Varsano, 2008.)

The structuring of income tax systems generally has multiple — often conflicting — goals. The most obvious goal is raising revenue to spend on public services: balancing the potential extra revenue taken by high tax rates with the disincentive to work and temptation to illegally evade taxes that high tax rates induce. Another key potential of taxation is distributional: using, for example, utilitarian or egalitarian criteria to redistribute wealth between the rich and poor (see Musgrave & Musgrave, 1989, for a review).

Although the issue provokes strong opinions about the optimal progressiveness of a tax regime, one area that is often ignored is the extent to which the public believe progressive taxation is fair and appropriate, and the ways in which psychological mechanisms for representing fairness affect tax progressiveness preferences. Existing data give a mixed picture. Generally, when asked whether those on higher incomes should pay a higher marginal rate of tax, people agree (e.g., Edlund, 2003; see Kirchler, 2007, for a review). However, people's progressiveness preferences appear to depend on the way in which questions are posed. For example, Roberts, Hite, and Bradley (1994) found that when participants were asked abstract questions about progressiveness — in the form of "are progressive tax rates more or less fair than flat tax rates" — students with some tax education indicated strongly that progressive taxation was more fair, in line with other studies. However, when asked concrete questions — how much more tax somebody earning $40,000 should pay relative to somebody earning $20,000 — the same participants indicated a preference for flat taxes, in this case the dominant response being that the former should pay double. On the other hand, Edlund (2003) showed that Swedish taxpayers favored progressiveness for both abstract and concrete questions, a finding he attributed to Swedes' better awareness of the welfare state and other

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provisions paid for by taxation. Similarly, Lewis (1978) found that participants who gave preferences for taxation at different incomes favored progressiveness.

This inconsistency is perhaps not surprising given the large body of work that shows that preferences are often unstable, and the way in which options are framed can affect people's preferences in a large number of areas (e.g., Kahneman & Tversky, 1979; Tversky & Kahneman, 1981; De Martino et al., 2006). Framing effects have been specifically found in tax preferences (for reviews see McCaffery & Baron, 2005, 2006a). For example, McCaffery and Baron (2004) demonstrated several framing effects in participants who chose tax regimes for different family situations. Among other things, they found participants indicated that regimes in which the taxation system was described in terms of tax bonuses for certain groups rather than tax penalties for other groups were fairer, even though the situations were numerically identical. They also found what they called a "metric" effect in which participants favored more progressive taxation when taxation levels were described as percentages of gross income rather than absolute number of dollars. Finally, they found a modest status quo effect: Participants were drawn towards the initial taxation structure.

One intriguing finding of Roberts et al. (1994) was that participants were less inconsistent between abstract and concrete questions when concrete questions were framed in terms of the amount of money left after tax rather than the amount of tax paid. Furthermore, the authors note in passing that their pattern of results "indicates that changing the reference point from taxes to residual income produced a shift away from regressive taxes and toward flat and progressive taxes" (p. 182), although the assertion was not tested statistically.

This framing effect deserves further investigation, for at least two reasons. First, although asking people about the amount of tax that should be paid by people on different incomes seems the most direct way to assess preferences, asking people about money left after tax may be more grounded in people's experience of paying tax, and hence have a greater stability and validity: It is likely that people are more able to report how much money they take home after tax — not least because that amount appears on their bank statements — than the amount of money they pay in tax in a given month. Second, psychological wellbeing appears to be associated with the — relative or absolute – amount of consumption that a person is able to do, or, crudely, the amount of money they have left after tax and other unavoidable drains on resources are met (e.g., Alpizar, Carlsson, & Johansson-Stenman, 2005). This suggests that attempts to determine people's preferences for taxation should use a frame in which residual income is foregrounded.

The experiment reported here examines the effects of two variables, in a completely between-subjects factorial design: the effect of "tax paid" versus "money left" framing; and the effect of describing tax as percentages or amounts — the "metric effect" investigated by McCaffery and Baron (2004), and interactions between the two variables. The surface features of the task are similar to those used by Roberts et al. (1994), using two taxpayers who have different gross incomes. However, the response method is different. In Roberts et al.'s paper, people were asked about ratios of taxes, in the form "if Andy earns \$80k and Bob earns \$40k, how much more tax should Andy pay than Bob?", and then marking on a scale with labels of "the same amount," "twice as much," and so on, which may bias people towards responding heuristically with "twice as much," the most available and justifiable ratio. What I do is introduce a similar scenario, but inform participants that the total amount of money to be taken from Andy and Bob together will be fixed, and have participants move a slider to indicate how the tax burden should be split.

2 Method

2.1 Participants

A total of 384 participants were recruited using the ipoints scheme (www.ipoints.co.uk), a UK-based internet rewards scheme in which members accrue points for making purchases and completing surveys. These can be exchanged for products — such as CDs and DVDs — and services — such as cinema and theme park tickets. A subset of members who had opted-in to complete surveys received an email from ipoints with a link to the experiment. Participants were paid 50 ipoints (which had a value of approximately 25 pence / USD 0.40 to the respondent) for completing the two-minute experiment.

2.2 Design and procedure

The experiment was written in Adobe Flash (Reimers & Stewart, 2007) and run online. The progressiveness question was described in one of four ways, with a 2-factor, 2-levels-per-factor between-subjects design. The factors were framing (money left after tax vs. money paid in tax) and units (tax/residual income described as a percentage vs. tax/residual income described as an amount). Each participant completed a single trial, which used one of the four possible descriptions, randomly allocated to each participant. In all conditions, participants were told that Andy earned £50,000 before tax and Bob earned £20,000 before tax, and that the total amount of tax to be paid between the two of them would be £19,000. (This is close

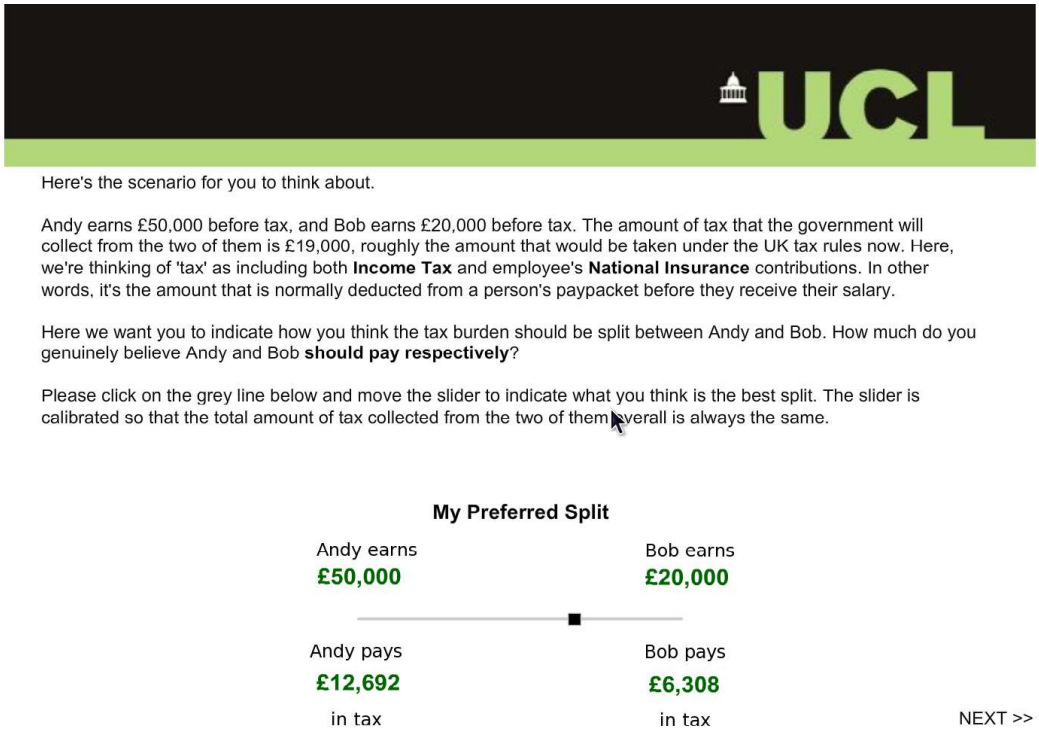

Figure 1: Screenshot from the Experiment. In this case the taxation situation was described in terms of tax paid, not residual income, and amount, not percentage.

to the actual amount of tax they would pay between them in the UK.) A screenshot from one condition is shown in Figure 1, and the experiment itself is available to try at http://www.newresearchshows.co.uk/tax.html. Instructions for the task were the same in all conditions, except for the penultimate paragraph. Participants in the "money left" framing condition were given the following line:

> How much do you genuinely believe Andy and Bob should each have once they've paid tax?

Participants in the "tax paid" framing condition were given the following line:

> How much do you genuinely believe Andy and Bob should pay respectively?

In all 4 conditions, participants responded in the same way, by moving a slider to set the distribution of tax burden between Andy and Bob (as shown in Figure 1). In the "money left" framing condition, "Andy pays ... in tax" and "Bob pays ... in tax" were replaced with "Andy keeps ... after tax" and "Bob keeps ... after tax", displayed in the same way, and numbers were recalculated appropriately. In the "percentage" units condition amounts in pounds were replaced with integer percentages, representing the same tax take. All other text remained the same.

Participants were instructed to click and drag on a 250-pixel gray bar. To avoid anchoring effects based on the initial position of the slider, the slider was initially invisible: participants clicked on the grey bar to make the slider, which moved along the bar, visible at the location where they first clicked. They could then drag the slider between the extremes. At the left extreme, Bob paid all of the £19,000 tax, and Andy nothing; at the right extreme, Andy paid all of the tax and Bob nothing. The scale was linear, and values updated as the slider was dragged. Across all conditions a given position of the slider represented the same tax split. Only the description of the split varied.

3 Results

The following data were excluded: Duplicate submissions (2 cases); participants who spent less than 45 seconds in total reading the instructions for the scenario and choosing their response (63 cases). Exploratory data analyses conducted separately for each condition identified total of 8 data points which were more than 3 in-

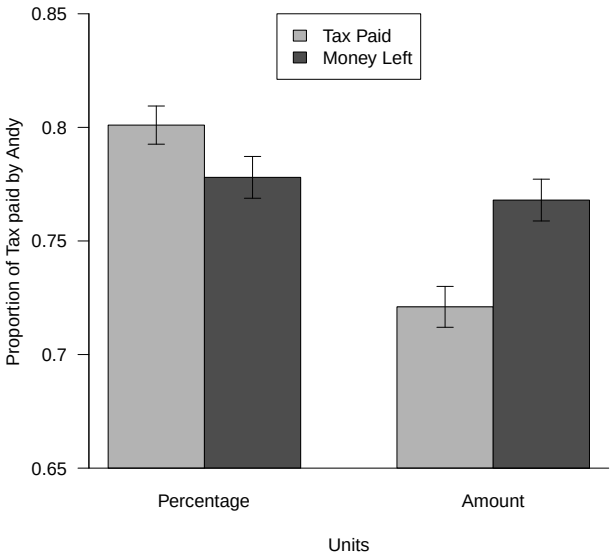

Figure 2: Proportion of tax paid by Andy in participants' preferred split, as a function of the units used to describe Andy and Bob's contribution (percentage of income or amount in pounds), and framing (tax paid or money left after paying tax). In a flat tax regime, Andy would pay 71.4% of the total tax (i.e., 5/7ths of the total). In the UK, Andy would actually pay 76.8% of the total. Error bars represent standard errors of the mean.

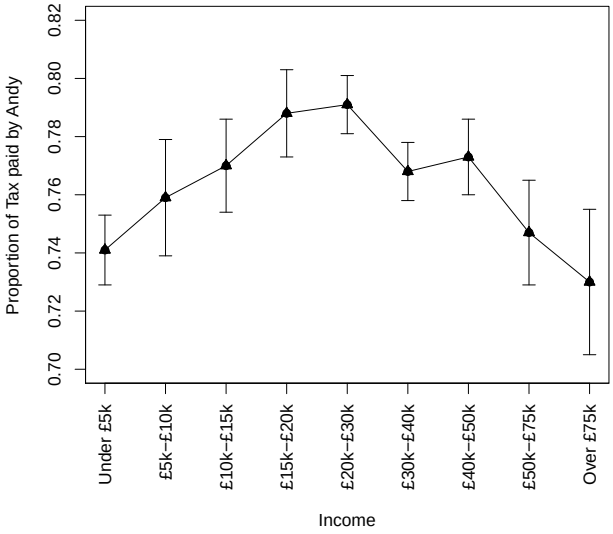

Figure 3: Preference for progressiveness as a function of participant household income. Error bars represent standard errors of the mean. The categories £75k-£100k and Over £100k have been combined, as there were only 4 participants in the latter group.

terquartile ranges away from the median for that condition, which were excluded as outliers. Of the remaining participants, 34.8% were male, and mean age was 42.2 years (SD = 13.1 years).

Overall, participants favored a mildly progressive tax regime, with mean tax rate for Andy of 29% (£14,600 of £50,000) and for Bob of 22% (£4,400 of £20,000). This is almost exactly the current rate of tax Andy and Bob would pay under the current UK regime, perhaps demonstrating a status quo bias. Means and standard errors for participants across conditions can be seen in Figure 2. A two-factor ANOVA, with factors units (percentage, amount) and framing (money left, tax paid) revealed a main effect of units, $F(1, 307) = 24.3$, $p < .001$, with participants' preference for more progressive taxation stronger when taxes were described as percentages rather than sums of money. There was no significant effect of framing, but there was an interaction between framing and units, $F(1, 307) = 15.0$, $p < .001$.

An analysis of simple main effects showed a marginal effect of framing for tax rates described as percentages $F(1, 307) = 3.60$, $p = .059$, with progressiveness favored slightly more in the "tax paid" condition. But there was a highly significant effect of framing for tax rates described as amounts $F(1, 307) = 12.4$, $p = .001$, in which participants favored significantly more progressiveness when the tax regime was described as money left after tax than amount of tax paid.

This analysis emphasizes the "tax paid" nature of the task. An alternative analysis could emphasize money retained, for example by using the ratio of income remaining between Bob and Andy, as a dependent measure, with higher values indicating more progressiveness (in other words, Bob's post-tax income gets closer to Andy's as the ratio increases). The two dependent variables, (1) proportion of tax paid by Andy and (2) ratio of Bob's income remaining to Andy's income remaining, are monotonically but not linearly related.

Unsurprisingly, the pattern of results obtained using ratio of residual income is similar to that for proportion of tax paid by Andy: the amount of money Bob retains after tax, as a proportion of the amount of money Andy retains after tax, is .469 (Tax Paid/Percentage), .451 (Money Left/Percentage), .407 (Tax Paid/Amount), and .443 (Money Left/Amount). A two-factor ANOVA using this measure as a dependent variable, rather than proportion of tax paid by Andy, as above, showed the same pattern of significant results: A main effect of units, $F(1, 307) = 24.7$, $p < .001$, no significant effect of framing, and an interaction between framing and units, $F(1, 307) = 14.6$, $p < .001$. The simple main effects were also as before: A marginally significant effect of framing for percentages, $F(1, 307) = 3.50$, $p = .062$, and a highly significant effect of framing for amounts $F(1, 307) = 12.0$, $p = .001$.

The second part of the analysis was to examine the effects of gender, age, education, and income on tax preferences. One unexpected but notable trend was a quadratic relationship between income and tax preference (Figure 3), suggesting that people on incomes significantly below those of both Andy and Bob, had less of a preference for progressiveness than those whose income is approximately that of Bob's, or between that of Andy and Bob.

To examine the significance of this effect, a multiple regression analysis was used, with proportion of tax paid by Andy as the dependent variable, and gender, age, education, income, and income-squared as the independent variables. To account for group differences across the 4 framing-units cells, experimental condition was recoded as a 4-level dummy independent variable. The model was a significant fit, $F(8,281) = 6.76$, $p < .001$, and as well as significant effects of the experimental conditions, there was a significant effect of income, (β = -0.60, t = 2.57, p = .01), income-squared, (β = -0.71, t = -3.05, p = .002), and a marginal effect of age (β = 0.09, t = 1.67, p = .096), suggesting older participants favored more progressiveness.

One potential explanation for unexpected effect of income might be due to other factors being confounded with income. Most saliently, many of the people on low incomes might be retired, and so have significant assets, and a history of high earning, yet with a current low income. To examine this, the analysis was repeated excluding all participants aged 60 or over (in the UK few people retire before the age of 60). The same general pattern of results was seen, and most importantly, the effect of income-squared in the regression remained significant. This suggests retirement is not what drives the curvilinear association between income and progressiveness preferences. However, there may be other variables, which were not examined in this post hoc analysis, that could underlie this result, so conclusions from this relatively uncontrolled sample must be tentative.

4 Discussion

People's preferences for tax progressiveness were affected both by framing the scenario in terms of income retained versus tax paid, and by describing the tax paid by individuals as percentages versus amounts. People preferred more progressive taxation when the scenario was described as percentages of income rather than absolute amounts of money. There was also an interaction: When taxation was described as absolute amounts of money, people preferred more progressiveness when thinking about post-tax income retained rather than amount of tax paid. There was no such effect for taxes described as percentages.

The metric effect — people preferring more progressiveness when tax is described as percentages of income rather than amounts — replicated previous work by McCaffery and Baron (2004), and reflects the fact that describing tax as an amount can give the impression of progressiveness even when the percentage tax rate is low. For example, if Andy and Bob in the experiment each paid 20% tax, Andy would pay £10,000 a year and Bob would pay £4,000.

The framing effect for amounts was perhaps the most important novel finding of this experiment, building on the observation of Roberts et al. (1994). Participants preferred more progressive taxation when the magnitude of tax burden was described in terms of amount of money Andy and Bob had left after tax rather than the amount of money paid in tax.

One possible explanation is that different framing conditions activate different notions of fairness. Framing the task as "tax paid" could lead participants to consider what constitutes a fair contribution to society. Framing the task as "money left" could lead participants to consider what is a fair amount of money for an individual to live on. It may also affect reference points: "Tax paid" framing could plausibly make people evaluate post-tax income relative to gross income, whereas "money left" could make people evaluate post-tax income relative to zero income.

Another interesting finding was the fact that the metric effect was substantially smaller in the money left condition than the tax paid condition. Clearly this may be a finding specific to the values used in this experiment. On the other hand, if people are more consistent across units in the money left condition, it might be because they find that condition easier to represent, and exhibit more stable and firmly-held preferences in that condition.

Research on attitudes towards progressiveness has largely used questions focusing on the amount of tax paid. There are obvious reasons for this, but if what matters to people — and what is most readily represented — is the amount of money they have in their pay check after tax has been deducted, it may suggest that asking about people's preferences described as money left rather than tax paid may reduce "isolation" effects (McCaffery & Baron, 2006b), focusing attention on the bottom line implications of different degrees of progressiveness, grounded in experience, rather than activating an abstract notion of what a fair amount of tax to pay is. Using "money left" framing could give a better insight into genuine preference, and possibly reduce metric effects and other framing or contextual biases.

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