

Why we Cheat: Experimental Evidence on Tax Compliance *

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Abstract

This essay reports the results for an ongoing set of experiments designed to help understand individual preferences for redistributive policies, specifically taxation. One of the central conjectures is that there exists a taxation norm that is relatively homogeneous within populations and across countries. This tax norm represents what individuals accept as an appropriate rate at which income should be taxed. We attempt to identify this tax norm by administering tax compliance experiments in which individuals are assigned to different tax rate treatments. The results for these first set of experiments suggests that our initial conjecture regarding a tax norm of approximately 20 to 30 percent is plausible although the notion that it might be homogenous within and across populations is less tenable. Hence one of our primary interests is understanding what factors might drive individuals to prefer rates of taxation that are higher (or lower) than this tax norm.

This first set of experiments included a number of features that provide preliminary insights into variation associated with both context and type. With respect to context, we have some preliminary evidence that high wage earners are more willing to pay higher taxes when there exists higher levels of income inequality. Reducing inequality may be a public good for the rich. We are exploring this contextual effect in more depth as part of a cross-national extension of this project.

Our tax compliance experiments also included a set of experiments and post-experiment survey questions that provide some insight into how these redistribution preferences vary across types of individuals in the population. Subjects also played a standard Dictator Game and we find that subjects who are other-regarding when they play the Dictator Game are more likely to report income when audit rates are low. Nevertheless, we continue to see evidence of our tax norm within low and high other-regarding types: In the case of both groups we see a significant drop in tax compliance as tax rates move from 20% to 30%.

1 Introduction

We use real effort tax compliance experiments in order to recover preferences over tax rates. There is a considerable literature on tax compliance experiments (Slemrod 2007). We employ these experiments in order to recover individuals' preferences regarding redistribution and about redistributive tax rates in particular. There is experimental evidence suggesting that tax compliance depends on features of the tax system (Alm, Jackson and McKee 1992, Spicer and Becker 1980). Some of these experimental results suggest that tax compliance is conditioned on the perceived equity of the tax system (Falkinger 1995) although some have not found such a relationship (Cowell 1990). Typically these experiments have explored whether or not compliance is affected by perceived features of the tax system.

We design the tax compliance lab experiments so that the tax system treatments vary in such a fashion that they allow us to recover preferences over tax rates and over the redistributive features of the tax system. By administering a large number of these tax compliance experiments that vary primarily in terms of the redistributive features of the tax system we generate quite precise estimates of preferences for redistribution and redistributive taxes. The idea here is that tax compliance and work effort can be behavioural indicators of preferences for redistributive features of the tax system.

2 The Redistributive Preferences Puzzle

There is strong evidence that economic inequality has risen considerably, or is rising, in a number of highly developed democratic countries. Recent studies suggest that economic inequality has risen considerably (Alvaredo et al. 2013) but particularly in the United States over the past 30 years (Gordon and Dew-Becker 2008, Piketty and Saez 2003). There is some evidence at the macro level that this rising inequality has had polit-

ical consequences – specifically an increasingly polarized electorate (McCarty, Poole and Rosenthal 2006). But the micro-level evidence that the American public would accept redistributive policies to address this inequality is weak at best (Bartels 2005, 2008). More recently, global financial shocks have resulted in serious social and economic dislocation and have clearly sharpened levels of economic inequality in many countries. A number of democratically elected governments are under pressure to implement fiscal measures that have, in many cases, dramatic redistributive effects. Yet the micro-level evidence suggests that poorer voters, who have been particularly disadvantaged by these shocks, are not demanding aggressive redistributive policies to address the resulting inequities (Duch and Sagarzazu 2013).

As many scholars have pointed out, public acceptance of or acquiescence in rising levels of inequality in developed democracies is puzzling. Most of the political economic models assume instrumental rationality will result in heterogeneous preferences. The rich are presumed to favour less redistribution and the poor are expected to want more. They are expected to make voting decisions based on these preferences which in turn, given their relative numbers, result in redistributive policies that are responsive to voter expectations. One would not expect democratic processes to tolerate policies that result in rising levels of inequality over extended periods of time.

The Meltzer-Richard model is one of the classic expressions of this argument. It posits that income inequality promotes redistribution via the preferences of the median voter. The model has had a profound impact on much of the recent comparative literature on the political economy of redistribution (Meltzer and Richards 1981). Redistribution in the Meltzer-Richard model results because all citizens benefit from an assumed universal flat-rate which is financed by a linear income tax (Meltzer and Richards 1981, Romer 1975). All citizens effectively have mean income when there is 100% taxation. It then follows that any individual with market incomes below the mean income should favour

100% taxation. But of course taxation can generate disincentive effects that reduce the mean income. These disincentive effects give rise to middle-income earners for whom the deadweight costs of taxation are higher than the benefits or transfers provided by the government, in spite of the fact that their market income falls below the mean income. Meltzer and Richards (1981) argue that the amount of redistribution preferred by the median voter will be a function of the distance between his income and the mean income (holding constant the deadweight cost of taxation). If inequality increases while the mean income remains constant, then the median voter will become more supportive of redistribution (assuming all citizens exercise their right to vote). And finally we should expect greater income inequality to be associated with more redistribution if electoral competition generates government policies which reflect the preferences of the median voter.

While these hypotheses have been highly influential, redistributive patterns have not necessarily followed those predicted by the Meltzer-Richard model. For example, why do left parties lose elections in high-income inequality countries? In democracies, we would expect that citizens turn to redistributive parties in contexts of high-income inequality. The logic is simple: if the rich are relatively richer (i.e. income inequality is higher), the median voter should demand more redistribution and therefore should support redistributive parties (Meltzer and Richards 1981). It has been frequently pointed out that, contrary to the Meltzer-Richard model, countries experiencing more unequal distributions of market income typically re-distribute less than countries with less unequal distributions of market income (Pontusson and Rueda 2010). In fact in countries with relatively high earnings inequality, left parties get lower vote and seat shares, and they are more seldom elected to govern. A variety of explanations have been proposed, including models in which the distribution of market income and redistributive policy are jointly determined by other variables, such as government partisanship, union power, strategic

electoral behaviour of political parties, and electoral rules (Bradley et al. 2003, Iversen and Soskice 2009, Pontusson and Rueda 2010)

Efforts to measure individual attitudes about redistribution and redistributive policies directly have not, for the most part, produced results consistent with the classical model and hence the puzzle persists. This is particularly the case with respect to voters' preferences regarding redistributive policies. There might be heterogeneity in abstract preferences for redistribution – such as the poor think that rich should pay more. Based on the European Social Survey, (Leon 2012), for example, finds considerable agreement with statements calling for more redistribution and there is the kind of heterogeneity in attitudes we expect – the poor are more demanding of such redistribution and the rich less so. But with respect to preferences for specific redistributive policies there appears to be a distinct absence of heterogeneity – often the poor and the rich have similar expressed preferences. Or the poor are more resistant – see Kuziemko and Norton (2011) who speculate that this resistance might result from “last place aversion”.

Confounding factors likely play a role here. In particular, individuals might simply be poorly informed (for a range of reasons) about the distribution of income and their relatively location in the income distribution. A number of recent studies document the discrepancies between the objective state of income inequality and individual perceptions of the distribution of incomes. Norton and Ariely (2011) demonstrate that for the U.S. case there are significant discrepancies between actual and perceived levels of inequality. Since much of the evidence is based on survey data it is difficult to establish the importance of these confounding factors in explaining redistribution preferences (Alesina and Giuliano 2009). Cruces and Tetaz (2013) attempt to address this problem by embedding experimental treatments within a household survey and, while there is some evidence that exaggerating ones income distribution rank depresses support for redistributive measures, the effects are weak.

The essay reports on a project that attempts to address this puzzle. The Meltzer Richards model and the various permutations we have seen are premised on a particular decision-making heuristic: individuals locate themselves on the income distribution and then, based on self-interest, make a calculation as to which redistributive measures (for the most part taxation) would make them better off. Any deviation is then attributed to poor heuristics, misinformation, last place aversion, altruism, etc. Without necessarily dismissing these factors as inputs into the voter’s utility function, we propose an additional heuristic or what you might call a reflex on the part of voters. We argue that individuals deploy a very simple heuristics when they evaluate redistributive policies. Essentially they employ a fairness principle divorced from redistributive considerations: “What is a reasonable ‘tax’ for all citizens?” Our conjecture is that: 1) this basic reflex ignores the redistributive consequences of the redistributive measure; and 2) the heuristic is similar across income categories.

3 A Tax Norm and other Hypothesized Explanations

Our project aims to provide a better understanding of the role played by public preferences in explaining policies that promote or tolerate rising levels of inequality. The literature on redistribution makes clear that there is a multiplicity of factors that very plausibly enter into the individuals utility function for redistributive taxation. Any one, or a combination of these, might explain why public attitudes seem inconsistent with the classic Meltzer-Richard hypotheses. We begin by defining these critical hypotheses, a number of which are clearly prominent in the existing literature. Experimental treatments incorporating the most plausible explanations will enable us to draw defensible conclusions about public preferences for redistributive taxation.

The conventional wisdom expressed in Meltzer-Richardss classic theories of redistribution may be borne out if preferences for redistributive taxation prove to be strongly

related to the individuals income relative to average income in the population. However, we hypothesise that a simple heuristic may enter into the policy utility function: specifically, that individuals condition their preferences for redistributive policies on norms regarding fair rates of taxation. Individuals may express preferences for very aggressive redistributive outcomes, but these preferences are not necessarily correlated with the redistributive policies they find acceptable. Empirical studies examining redistributive preferences have frequently found this to be the case. Often differences emerge between the rich and the poor in their preferences for redistributive outcomes, and yet the rich and poor often respond similarly to specific policies that promote redistribution (Bartels 2005). Our explanation is that the rich and poor share very similar preferences regarding redistributive policies in spite of having preferences, possibly even strong ones, regarding redistributive outcomes.

Our conjecture rests upon preliminary empirical evidence drawn from experimental vignettes administered to large-N samples of the UK population. UK respondents were provided descriptions of different household configurations (for example, single versus married with one child) and incomes (the incomes varied between £8,000 and £80,000). Respondents were asked to indicate what they considered to be the appropriate taxes each of these households should pay. Duch and Rueda (2013) report that the preferred rates of taxation were relatively low on average about 25 per cent. The study found that average tax rates varied relatively little over the households earning a low of £8,000 to a high of £80,000. There was also relatively little variation across types of households, and the income of the respondents had no significant effect on the taxes rates they reported. Further lab experiments again suggest that there is a taxation norm: we find average preferred tax rates, in their mobility treatment, that range between 23 and 31 percent while they are at 20 percent when subjects do not know their income condition.

We conjecture that there is a taxation norm which significantly constrains individuals

preferences for redistributive taxation, and as a consequence, preferences for redistributive taxation are relatively homogeneous in any particular population and do not vary across cultural contexts. Individuals deploy a very simple heuristic when they evaluate redistributive taxation, essentially employing a fairness principle divorced from redistributive considerations: What is a reasonable ‘tax for all citizens? We hypothesise that: 1) this basic reflex ignores the redistributive consequences of taxation; and 2) the heuristic is similar across income categories.

The fairness principle could generate a quite different outcome. There is an extensive experimental literature documenting the prevalence of other-regarding preferences in the population (Camerer 2003, Fehr and Gächter 2000, Fehr and List 2004, Falk, Fehr and Fischbacher 2006). Preferences for redistributive taxation may be determined by these other-regarding preferences. Notions of fairness may not refer to the proportion of income being taxed by the state but rather to outcomes. Other-regarding attitudes might lead individuals to prefer a fair distribution of income after taxes (?). The important point here though, is that there is no other-regarding preference uniformly distributed over the population. There are other-regarding types and there are non-other-regarding types. To the extent that other-regarding preferences are uncorrelated with income (or even positively correlated) then this variable would probably confound any simple Meltzer-Richards relationship between income and redistribution preferences. Additionally, or possibly interactively, redistributive preferences may be conditioned on the perceived levels of inequality in any particular context as is argued by Piketty (1995), Benabou and Tirole (2006), Fong (2001), Alesina and Ferrara (2005), among others.

There are risks of job loss, income loss, downward mobility, and such, in any market economy. An important body of literature argues that anticipation of falling income or risk aversion (possibly induced by experiences with unemployment) can shape one's preferences for redistributive taxation. Individuals who anticipate job loss or are risk averse

might appreciate the insurance provided by redistributive policies, such as unemployment insurance provided by the government. There is evidence based on survey data to this effect, particularly for the US (Alesina and Ferrara 2005, Benabou and Ok 2001, Piketty 1995). Experimental evidence also suggests that risk aversion helps explain why some subjects favour more egalitarian distributions (Frignani and Ponti 2012, Horisch 2010).

A utilitarian perspective on redistribution recognizes the societal benefits of transferring income to the poor, for whom the marginal utility of consumption is high. Nevertheless, utilitarians recognize the costs of redistributive taxation (Mankiw 2013). These include the deadweight costs associated with government administration of these redistributive efforts and the lost revenues associated with the work disincentives for high income taxpayers. This suggests two conditions that may shape preferences for redistributive taxation. Preferences for redistributive taxation may be conditioned on efficient outcomes or on the deadweight loss associated with the provision of collective goods. Outcomes specifically, how income is redistributed as a result of taxation may also determine preferences for redistributive taxation.

Cultural norms shape perceptions of acceptable levels of inequality. Alesina and Glasser (2004) argue that the US and European historical experiences have produced very different conceptions of acceptable levels of inequality. Luttmer and Singhal (2011) argue that redistributive preferences may be culturally determined making them quite stable over time but varying across country. Preferences for redistribution may be reciprocal or conditional on the cooperative or altruistic behaviour of others in the population (Leon 2012). Some studies have demonstrated that preferences for redistributive policies are very sensitive to the framing of these initiatives (Bartels 2003; Huber and Paris 2013).

There are various cultural scenarios with respect to redistributive preferences. We conjecture that the taxation norm is common across cultures. One can imagine that

culture shapes the taxation norm, so it might be homogeneous in any particular population yet vary across cultural contexts. Culture may also be a conditioning variable for the hypothesized causal effects associated with heterogeneity in the population. Culture could condition the effect of other-regardingness on redistributive policy preferences. Other-regarding preferences might matter in some contexts but not in others. For example, this might reflect cultural variations in norms regarding inequality. Culture might also condition the importance of insurance in shaping preferences for redistributive taxation.

3.1 Determining the Relative Importance of Different Hypothesized Effects

Each of the arguments described above is certainly plausible and all are buttressed by support from empirical typically observational data. Our challenge is to identify research strategies which help us assess the relative importance of each hypothesized effect in the typical individual's utility function for redistributive taxation. Understanding the relative importance of these effects has significant implications for public policy. If there exists a widely internalized tax norm, then efforts to promote redistributive taxation on the basis of an assumed relationship between a voter's income and preferences for tax rates, in the Meltzer-Richards tradition, would be futile. Similarly, although for different reasons, such an appeal would be pointless if other-regarding preferences shape preferences for redistributive taxation.

This project's ultimate objective is to tease out the relative importance of different factors that shape redistributive preferences. Experiments represent a promising method for accomplishing this goal. The tax compliance lab experiments that we have conducted over the past year have made important advances in the design of protocols for recovering redistributive tax preferences. We have also made progress in assessing the relative

importance of the factors shaping redistributive preferences, with some evidence for the taxation norm argument and perhaps more surprising for the notion that redistributive tax preferences are very much shaped by other-regarding preferences. Accordingly, the project, focuses on preferences for redistributive taxation, addressing the following hypotheses:

- There is a taxation norm that significantly constrains individuals' preferences for redistributive taxation, and as a result, preferences for redistributive taxation are relatively homogeneous in any particular population and do not vary across cultural contexts.
- Preferences for redistributive taxation conform to classic theories of redistribution and hence are strongly related to the individual's income relative to average income in the population.
- Preferences for redistributive taxation are determined by other-regarding preferences.
- Insurance considerations shape preferences for redistributive taxation.
- Culture shapes the "taxation norm" and hence while it might be homogeneous in any particular population there is variation in levels of the "taxation norm" across cultural contexts.
- Culture conditions the effect of other-regardingness on redistributive policy preferences. For example, this might reflect cultural variations in norms regarding inequality.
- Culture conditions the importance of insurance in shaping preferences for redistributive taxation.

- Preferences for redistributive taxation are conditioned on efficient outcomes or on the deadweight loss associated with the provision of collective goods.

4 Experimental Design for Recovering Redistributive Preferences

This essay reports the results for six treatments designed to provide insight into which of these factors actually shape tax compliance and hence preferences for redistributive taxation. The experiment consists of four modules. Subjects are paid for all four modules at the end of experiment, and do not receive feedback about earnings until the end of the experiment. Participants receive printed instructions at the beginning of each module, and instructions are read and explained aloud.

The second and third module consist of ten rounds each. Table 1 summarises the treatments that are implemented in these two modules of the experiment. At the beginning of the second module participants are randomly assigned to groups of four and we follow a partner matching. Thus, the composition of each group remains unchanged for the two modules. Each round of these two modules is divided in two stages. In the first module subjects perform a real effort task. This task consist of computing a series of additions in one minute. Their Preliminary Gains depend on how many correct answers they provide, getting 150 ECUs for each correct answer.

Tax Rate Treatments. In the second module, once subjects have received information concerning their Preliminary Gains, participants are asked to declare these gains. A certain percentage or “tax” (that depends on the treatment) of these Declared Gains is then deducted from their Preliminary Gains. We conduct a total of twenty-two different sessions that are summarised in Table 1. Note that in each session the tax rate is consistent and it does not vary from the second to the third module. The tax treatments are the

following: 10%, 20%, 30%, 40%, and 50%. We also have an endogenously determined tax – one that is determined by majority vote.

Table 1: Summary of Tax Compliance Experimental Treatments

Session	Participants	Groups	Tax Rate	AR 1	Block	AR 2	Block	Treatment
1	24	6	10%	0%		100%		Equal Salary
2	24	6	20%	0%		100%		Equal Salary
3	24	6	30%	0%		100%		Equal Salary
4	24	6	40%	0%		100%		Equal Salary
5	24	6	50%	0%		100%		Equal Salary
6	20	5	10%	30%		70%		Equal Salary
7	24	6	20%	30%		70%		Equal Salary
8	20	5	30%	30%		70%		Equal Salary
9	24	6	40%	30%		70%		Equal Salary
10	24	6	10%	30%		70%		Different Salary
11	24	6	20%	30%		70%		Different Salary
12	20	5	30%	30%		70%		Different Salary
13	24	6	Endogenous	0%		100%		Equal Salary
14	20	5	Endogenous	30%		70%		Equal Salary
15	24	6	10%	0%		100%		Different Salary
16	12	3	20%	0%		100%		Different Salary
17	16	4	20%	0%		100%		Different Salary
18	20	5	30%	0%		100%		Different Salary
19	24	6	10%	0%		100%		Different MPCR
20	20	5	20%	0%		100%		Different MPCR
21	20	5	30%	0%		100%		Different MPCR
22	20	5	40%	0%		100%		Different MPCR

Inequality and Redistribution Treatments. We also included treatments that were designed to determine whether subjects conditioned their compliance behaviour on the impact of the tax revenues on redistribution. Accordingly in the first equal salary treatment subjects get the same payment for correct answers to the real effort test (10 cents). This represents the least redistributive of the salary treatments. In the different salary treatment (Inequality) the two low performing subjects get 5 cents per correct answer

and the high performing subjects get 15 cents per correct answer. The distribution of tax revenues in this treatment result in a moderately higher degree of redistribution. Finally in a third “Diff MPCR” treatment (Redistribution) the two participants per group with the lower income (each round) receive 35% of the pooled deductions, while the two with higher income receive 15% – in case of ties on the number of additions computed (income), the division is decided at random. This represents the treatment in which the redistributive use of the tax revenues is the most aggressive.

Audit Rate (AR) Treatments. In each module there is a certain probability that the Declared Gains are compared with the actual Preliminary Gains in order to verify these two amounts correspond. In the second module (in sessions 1 through 5) the probability is 0%, while this probability changes to 100% in the third module (in sessions 1 through 5). In sessions 6 through 12, the audit rate is 30% in the second module and 70% in the third module. If the audit finds a discrepancy between the Preliminary and Declared gains an extra amount is deducted from the Preliminary Gains. In both modules the amount correspond to 50% of the observed discrepancy. In addition, the regular deduction applies to the Preliminary Gains and not to the declared amount. Deductions applying to the four group members are then pooled and equally distributed amongst those members.

At the end of each round participants are informed of their Preliminary and Declared gains; whether these two amounts have been audited; the amount they receive from the deductions in their group; and the earnings in the round. At the end of each module one round is chosen at random, and their earnings are based on their profit for that round. Participants are only informed of their earnings for each module at the end of the experiment.

Dictator Game. In order to evaluate arguments regarding other-regarding preferences and attitudes about redistributive taxation we included in the first module a Dictator Game. Subjects are asked to allocate an endowment of 1000 ECUs between them and

another randomly selected participant in the room. Participants are informed that only half of them will receive the endowment, and the ones who receive the endowment will be randomly paired with those who don't. However, before the endowments are distributed and the pairing takes place, they may allocate the endowment between themselves and the other person as they wish if they were to receive the endowment.

Risk Aversion. Concern about job or status security is hypothesized to shape redistribution preferences. Risk averse subjects should be most enthusiastic about redistributive taxation. The fourth and last module of the experiment consists of a lottery-choice test consisting of ten pairs, which is based in the low-payoff treatment studied in (Holt and Laury 2002). The lottery choices (shown in Table 2) are structured so that the crossover point to the high-risk lottery can be used to infer the degree of risk aversion. Subjects indicate their preferences, choosing Option A or Option B, for each of the ten paired lottery choices, and they know one of these choices would be selected at random ex post and played to determine the earnings for the option selected.

Table 2: Lottery Choices

	Option A	Option B
1	10% of 2.00£, 90% of 1.60£	10% of 3.85£, Bs. 90% of 0.10£
2	20% of 2.00£, 80% of 1.60£	20% of 3.85£, Bs. 80% of 0.10£
3	30% of 2.00£, 70% of 1.60£	30% of 3.85£, Bs. 70% of 0.10£
4	40% of 2.00£, 60% of 1.60£	40% of 3.85£, Bs. 60% of 0.10£
5	50% of 2.00£, 50% of 1.60£	50% of 3.85£, Bs. 50% of 0.10£
6	60% of 2.00£, 40% of 1.60£	60% of 3.85£, Bs. 40% of 0.10£
7	70% of 2.00£, 30% of 1.60£	70% of 3.85£, Bs. 30% of 0.10£
8	80% of 2.00£, 20% of 1.60£	80% of 3.85£, Bs. 20% of 0.10£
9	90% of 2.00£, 10% of 1.60£	90% of 3.85£, Bs. 10% of 0.10£
10	100% of 2.00£, 0% of 1.60£	100% of 3.85£, Bs. 0% of 0.10£

At the end of the experiment their earnings in ECUs are converted to sterling at the exchange rate $300\text{ECUs} = 1\text{£}$. While the earnings are computed and payoffs prepared participants are asked to answer a questionnaire, which consists on an Integrity Test, and a series of socio-demographic questions.

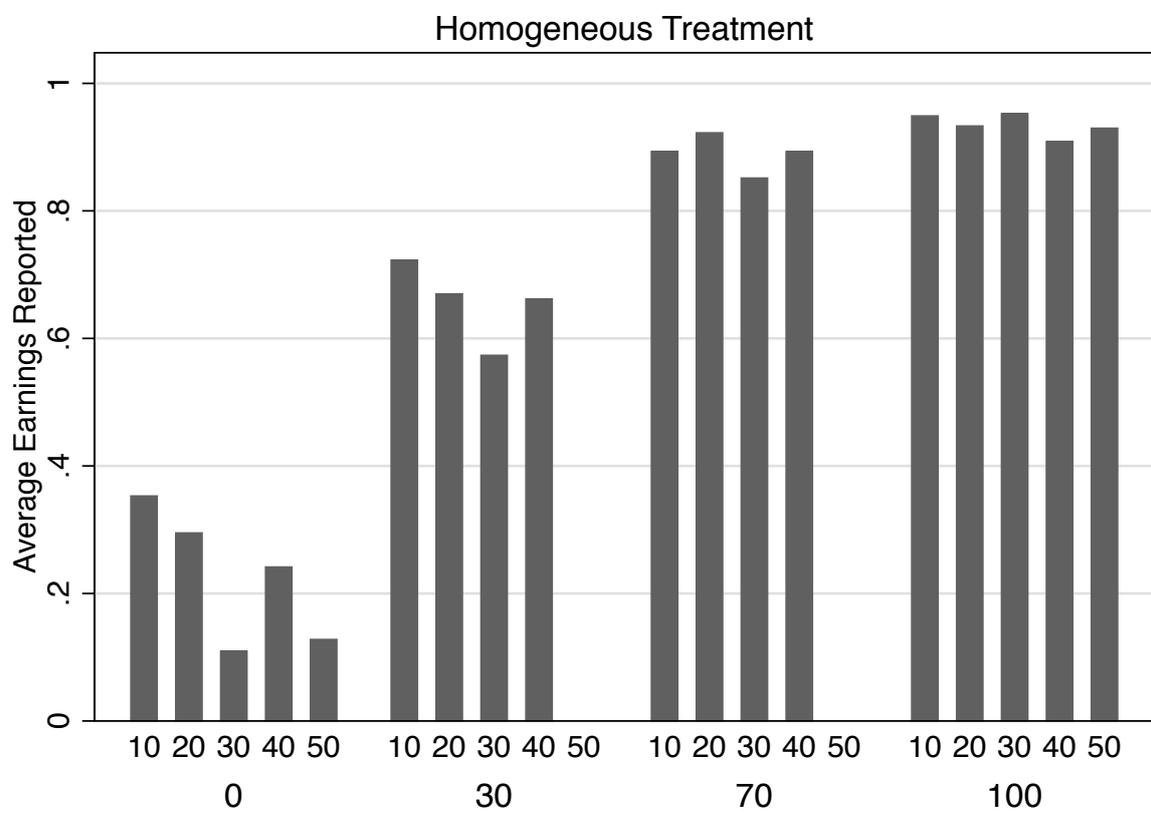
All of the sessions were conducted at CESS (Center for Experimental Social Sciences), a research facility of Nuffield College, at the University of Oxford. Either 20 or 24 subjects participated in each session. Subjects were recruited from undergraduate and graduate courses of that university. Some of the subjects had participated in previous experiments, but all of them were inexperienced in this particular type of experiment. No subject participated in more than one session of the study. On average, a session lasted around 90 minutes, including instructions and payment of subjects, and the average payment was around 17£. The experiment was computerized using ZTREE (Fischbacher 2007). A copy of the instructions can be found in the Appendix.

5 Results

Tax Norm. Figure 1 summarizes the annual earnings reported over the two principal treatments – tax and audit rates. Audit rates clearly matter in the fashion we would expect. When the audit rate is zero subjects report a small fraction of their income. At a 30 percent audit rate subjects are reporting, on average, more than 50 percent of their income. In the 70 and 100 percent audit treatment subjects report almost all of their income.

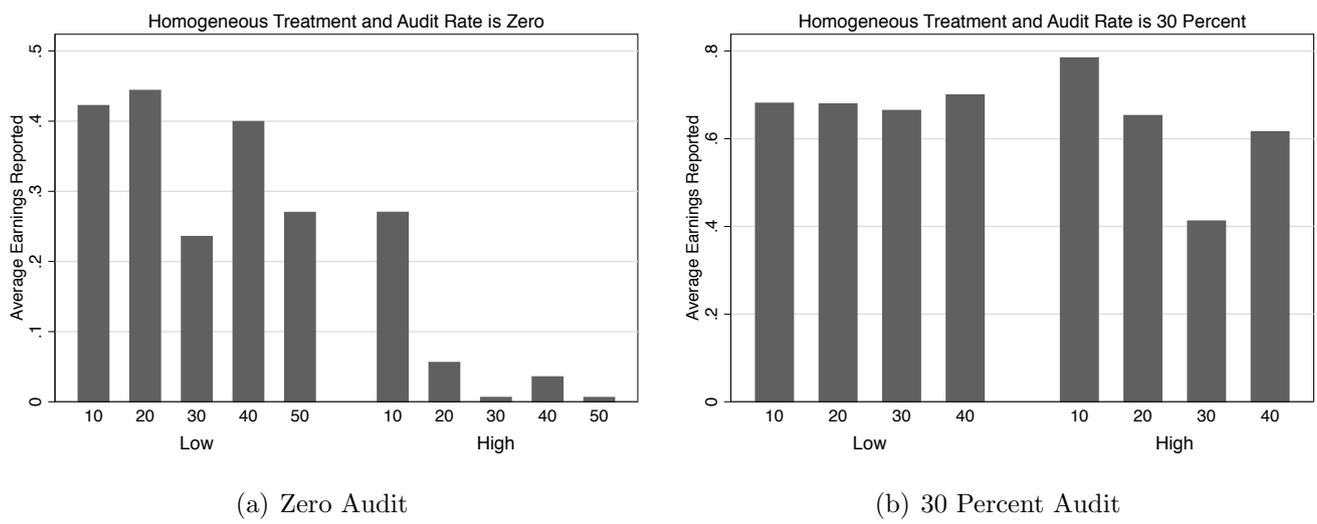
Of particular interest for our conjecture are the cases in which there is no audit. Recall that one of our goals in this project is to identify a “tax norm,” that is a broad agreement in the population on what constitutes an appropriate level of redistributive taxation. Of particular interest to us is the threshold tax rate that clearly deters reporting of income. Results for both the zero and 30 percent audit rates are suggestive although hardly definitive. In both cases average reported earnings are highest when the tax rates is 10 percent: almost 40 percent with zero audit and about 70 percent with 30 percent audit. And in both cases we see steep declines when the tax rate rises from 20 to 30 percent.

Figure 1: Average Earnings Reported by Tax Rate



Income. One of the puzzles in the empirical work on redistribution is the evidence that voters' redistributive preferences are weakly correlated with their income and with prevailing levels of inequality. As Figure 7 indicates when we control for audit rates there is a relationship between earnings and tax compliance. The zero audit rate is most revealing. Here we see that compliance drops as the tax rate increases from 20 to 30 percent – again with the 40 percent tax rate anomaly. But for the high earners the effect of taxes on compliance is much more dramatic – there is about 40 percent compliance at the 10 percent tax rate but this declines to almost zero for tax rates greater than 10 percent. We also see differences between the low and high earners in the 30 percent audit rate treatment although they are much more moderate. Tax rates have very little impact on compliance for the low earners but amongst high earners compliance declines with rising tax rates.

Figure 2: Earnings Reported by High and Low Earnings



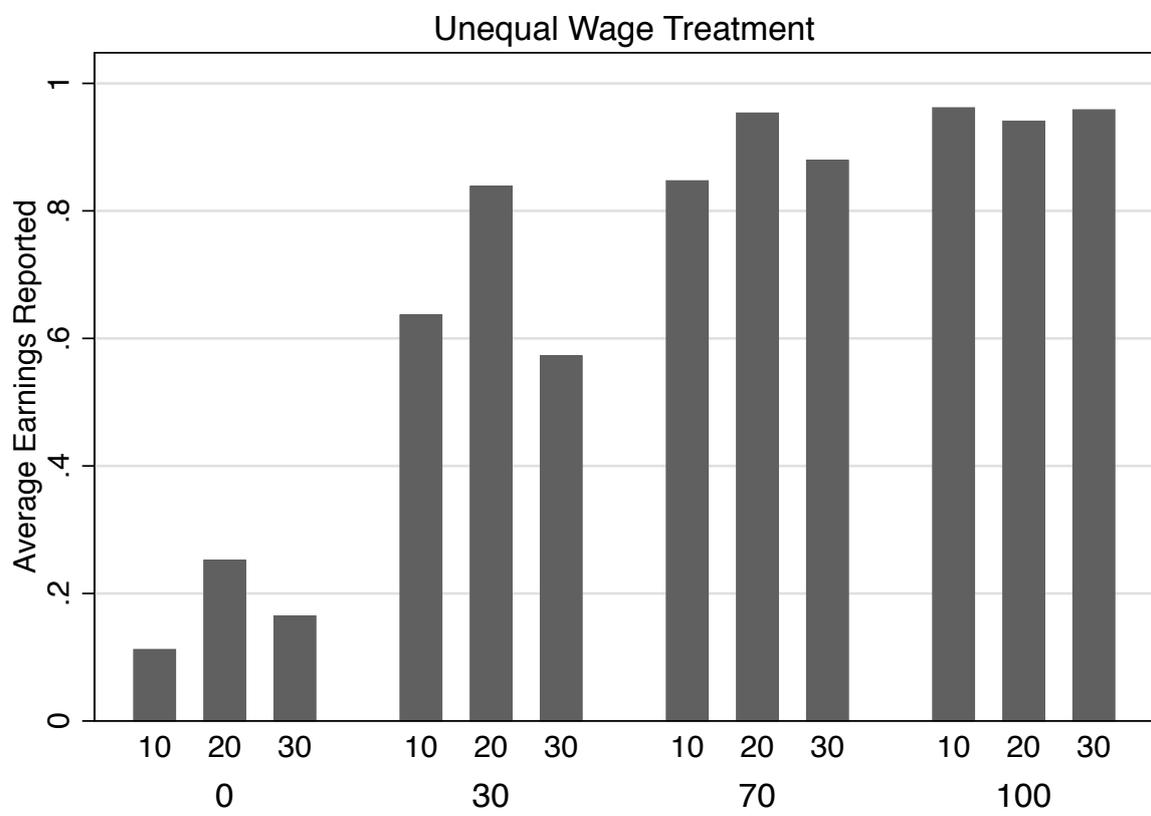
Inequality Treatment. In what we are calling the equality treatments, subjects earn similar “wages” for their real effort tasks and “tax” revenues are distributed equally amongst the subjects. Tax compliance behaviour in these treatments is consistent with our argument regarding a “tax norm“ in the neighbourhood of 20-30 percent. It is frequently argued though that preferences for redistributive taxation are conditioned on whether tax expenditures reduce inequality via redistribution. If individuals value equality or have preferences for “social insurance” then one would expect their tolerance for tax rates to rise when these taxes result in a reduction in income inequality. Compliance should be conditioned on the redistributive effects of tax revenues raised.

To explore this notion that redistributive preferences are conditioned on existing levels of inequality we developed a second set of treatments that induce greater levels of inequity into the resulting wages earned in each of the groups. Two members are randomly allocated to a low wage category (they earn 100 ECU for each correct answer for their real task efforts) and two others are randomly allocated to a high wage category (they earn 200 ECUs for each correct answer). The distribution of earnings in each group will now be much more inequitable. If concern with prevailing levels of inequity shapes preferences for redistributive taxes we would expect that the average earnings reported by subjects would be higher in this treatment.

We conducted inequality treatment sessions for the three tax rates (10%, 20%, and 30%). Each of these sessions included a 0%, 30%, 70% and 100% audit treatment. The overall findings, summarised in Figure 3, suggest that redistributive tax preferences may in fact be conditioned on prevailing levels of inequity. In the earlier tax treatments that included more equitable wages, average reported wages did respond quite distinctly to rising tax rates – particularly in the zero and 30% audit treatments. In the results reported in Figure 3, where the distribution of wage earnings is more inequitable, average reported wages do not seem to vary much over tax rates. It may be the case that

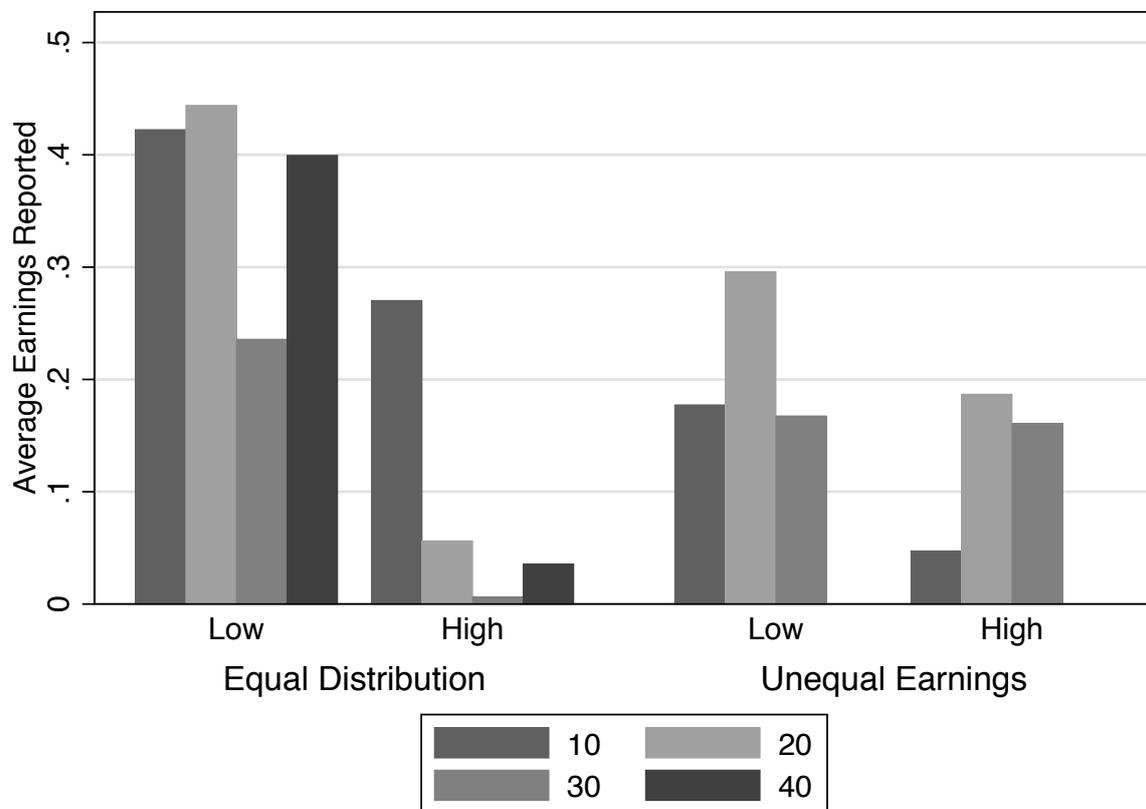
individuals are more willing to pay higher rates of taxation (in our case report higher wage earnings) when levels of inequality are high.

Figure 3: Average Earnings Reported in Inequality Treatment



The compliance behaviour of high earners though is of particular interest here because their decision to comply can contribute to the redistributive affect of the taxes revenues raised in each round. Figure 4 compares high and low wage earners for the equality and inequality wage treatments with an audit rate of zero. The graph on the left of Figure 4 suggests that subjects earning high wages in the treatment with equal wage rates are resistant to tax rates that rise much above 10 percent. A different picture emerges in the graph on the right hand side of Figure 4 which presents the results for the unequal wage treatment, i.e., the treatment with a resulting distribution of wages that is much more unequal. In the inequity treatment the average wage reporting behaviour of high wage earning subjects does not vary much across tax rates (again 40% is an outlier here) – they are not responding to higher tax rates by reducing their reported earnings which was the case for the equal wage treatment.

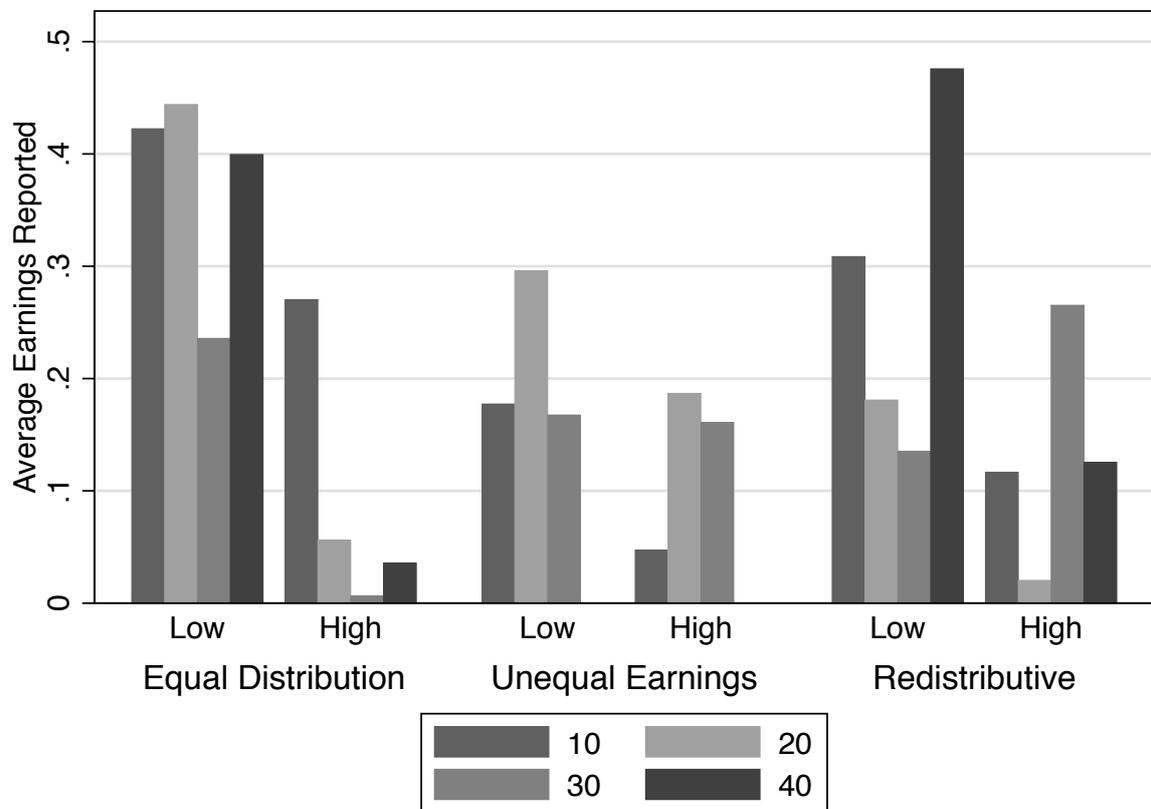
Figure 4: Average Earnings Reported in Equality and Inequality Treatments (Zero Audit Rate)



Redistributive Treatment. One of the explanations put forward to explain the puzzle of the median voter's acquiescence to rising levels of inequality (in the U.S. at any rate) is that they do not perceive clearly the redistributive effects of taxation. One implication of this argument is that individuals would prefer a tax system that redistributes (from high earners to low earners) over one that does not redistribute. The conjecture implies that when subjects are made aware of the redistributive effects of taxes collected on their earnings they will be more likely to comply and report higher percentages of their actual earnings (Kuziemko et al. 2013).

We implemented a treatment designed to be more explicitly redistributive. In sessions 19 to 22 (Diff MPCR) the two participants per group with the lower income (each round) receive 35% of the pooled deductions, while the two with higher income receive 15%. In case of ties on the number of additions computed (income) its decided at random. Figure 5 compares high and low wage earners for the redistributive treatment with the equality and inequality wage treatments described in Figure 4, again for the audit rate of zero. For the high earners we see a pattern similar to the one for the inequality treatment – compliance is not sensitive to tax rate. In fact there is some evidence of higher compliance for the higher tax rates.

Figure 5: Average Earnings Reported in Equality, Inequality and Redistributive Treatments (Zero Audit Rate)



We implement two treatments designed to increase the redistributive effects of the tax revenues raised in each round of the tax compliance games. The results suggest that compliance by subjects, particularly high earners, is less sensitive to tax rates when the taxes raised are more likely to result in reductions in earnings inequality. Hence there is some evidence here that preferences for redistributive taxation are conditioned on prevailing levels of inequality. If individuals believe there is income inequality that will be addressed by tax revenues, they are inclined to tolerate high levels of tax rates.

Other-regarding Preferences. Our interpretation of the results in Figure 1 is that reporting compliance at different levels of taxation in the zero audit treatment provides some insight into generally accepted levels of redistributive taxation. Compliance seems to differ rather dramatically between a 10 and 30 percent level of taxation. An alternative argument that we explored earlier is that any expression of redistributive preference is contingent upon some underlying other-regarding preference. Hence reporting compliance under any tax regime will only occur primarily for other-regarding types in the population. In order to explore this possibility subjects in our experiment also played a Dictator Game in which they were allocated a sum of 300 ECUs (1 £) and then were given the opportunity to share any amount of this with a randomly selected recipient from the other subjects.

Figure 6 compares average earnings reported across tax regimes for low other-regarding types and for high other-regarding types. First, it is clear that reporting of earnings is much higher amongst high other-regarding types compared to low other-regarding types. For any given tax rate, high other-regarding types have much higher reported average earnings. But even amongst both groups, we do see evidence of the hypothesised “tax norm” effect. For both types we do see a significant drop in reported earnings between the 20% and 30% tax treatments. For the low other-regarding types we see reporting fall to very small percentages for both the 30% and 50% tax treatments – and as we saw earlier the 40% treatment is an outlier. Although average earnings reported are much higher for

the other-regarding types, we see nevertheless the same pattern, i.e., a significant drop of in reported earnings between the 20% and 30% tax treatments (and again the 40% tax treatment confounds a strictly linear relationship).

Figure 6: Misreporting of Earnings by Other-regarding Preferences

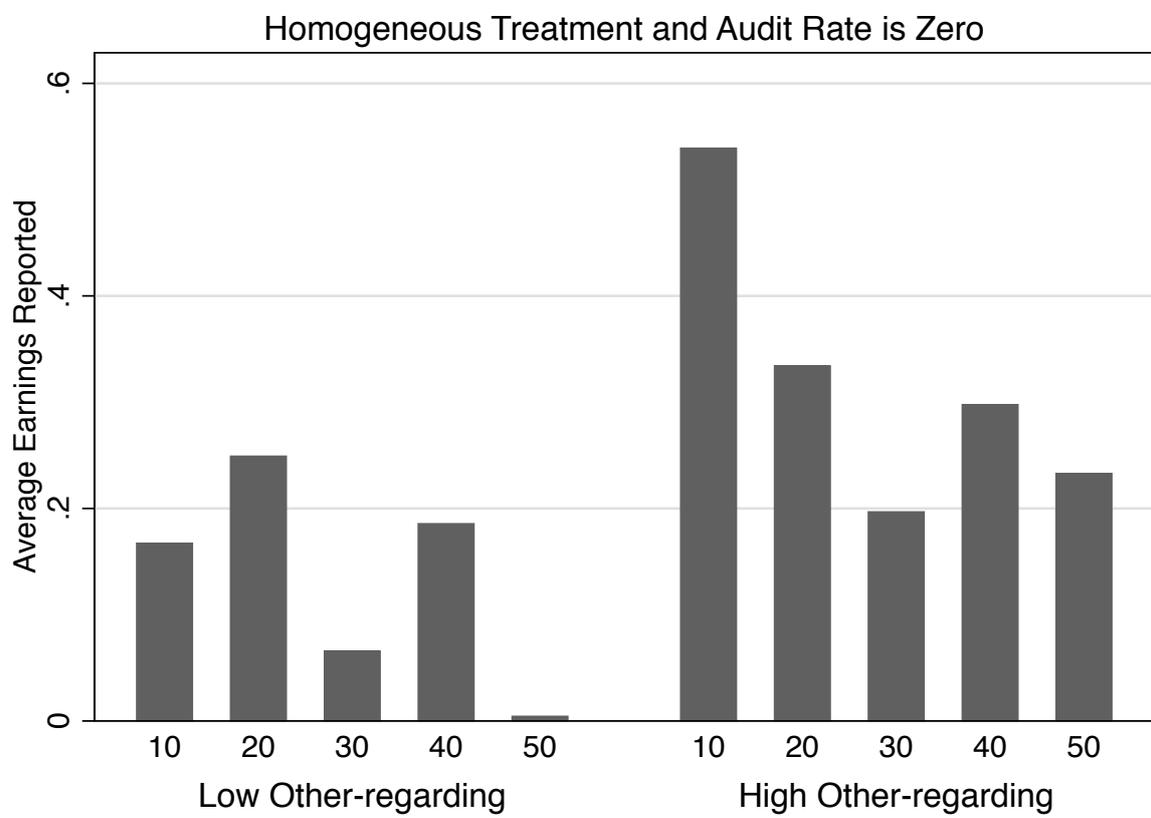
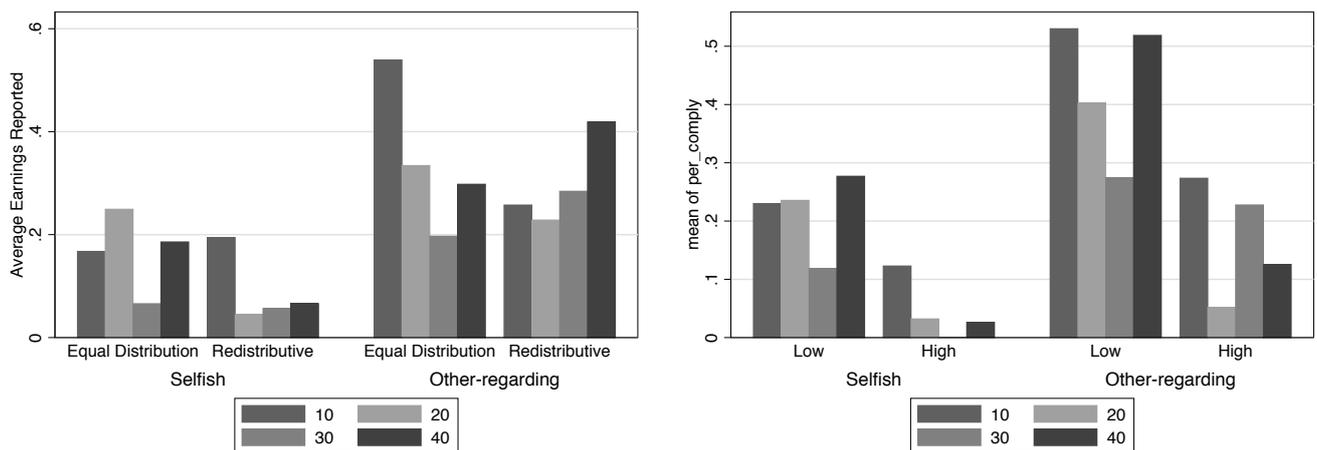


Figure 6 suggests that preferences for redistribution taxation are strongly related to other-regarding preferences. This one individual characteristic seems to dominate explanations for heterogeneity in redistributive preferences. Figure 7 presents the high versus low earner effects and the equality versus the redistributive treatment, controlling for other-regarding types in both cases. There is evidence that the effects are conditioned to some extent on other-regarding type. In both cases, there is some evidence that treatment effects are more pronounced for the selfish types. Note that for the equality versus redistribution treatments, there is a marked difference for the selfish types – while for the other-regarding types there is essentially no treatment effect. Figure 7 also compares tax compliance for low versus high earners amongst the selfish subjects with low versus high earners amongst the other-regarding subjects. As we noted earlier there is no tax treatment effect amongst low wage earners (of either type). And while there is a tax treatment effect for both selfish and other-regarding subjects, its magnitude is much stronger for the selfish subjects.

Figure 7: Earnings Reported by Other-regarding Preferences (Zero Audit)



(a) Equal versus Redistributive Treatment

(b) High versus Low Earners

We can draw three general conclusions from these these simple presentations of the treatment effects from the tax compliance experiments. There is some support here for the notion of a tax norm – tax compliance drops quite precipitously beyond about a 20 percent tax regime. The tax treatment is much stronger for high, as opposed to, low wage earners – compliance for the former is much more sensitive to tax rates than it is for the latter. The redistributive effects of tax revenues does condition compliance – when taxes have a higher redistributive effect, tax compliance is higher. Finally, and most impressively, the tax treatments are very much conditioned on other-regarding preferences. Tax compliance is much lower overall for selfish types. And in addition, the treatment effects seem to be more pronounced amongst selfish, as opposed to other-regarding, types.

5.1 Multivariate Results

In an effort to disentangle the relative importance of these different treatments and subject attributes we have estimated a simple subjects' fixed effects model for percentage of declare income. We estimated a separate equation for each of the three income treatments – equal, unequal, and redistributive – and also a equation that combined the three and included a dummy variable representing the three income treatments. These are all for the zero audit treatment. Table 3 presents the results. Each equation includes a term for the amount subjects donated in the Dictator Game (high values indicate more other-regarding preferences); a measure of how much money each subject earned in the real-effort task they undertook; dummy variables for the tax rates; and tax treatments interacted with a dummy variable for amount given in the Dictator Game (the variable assumes a value of 1 for amounts greater than 200 ECUS – the median amount given).

Table 3: Fixed Effect Regression Model for Percent of Earnings Reported (Zero Audit)

	(1) Equal	(2) Unequal	(3) Redistribute	(4) Total
Dictator Game Offer	0.000850* (2.52)	0.00116* (2.40)	0.000841* (2.45)	0.000953*** (4.37)
Earnings	-0.000225*** (-12.24)	-0.000132*** (-6.52)	-0.000187*** (-8.49)	-0.000182*** (-15.67)
DG Offer X 10% Tax	0.0504 (0.29)	-0.340 (-1.39)	-0.323 (-1.72)	-0.193 (-1.66)
DG Offer X 20% Tax	-0.333 (-1.95)	-0.268 (-1.25)	-0.0978 (-0.56)	-0.234* (-2.18)
DG Offer X 30% Tax	-0.0804 (-0.53)	-0.539** (-2.59)	-0.0456 (-0.26)	-0.196 (-1.93)
DG Offer X 40% Tax	-0.211 (-1.34)		-0.0900 (-0.43)	-0.196 (-1.57)
DG Offer X 50% Tax	-0.156 (-0.90)			-0.191 (-1.29)
20% Tax Rate	0.104 (0.96)	0.0575 (0.54)	-0.146 (-1.29)	0.0028 (0.04)
30% Tax Rate	-0.0972 (-0.98)	0.0928 (0.92)	-0.151 (-1.18)	-0.0502 (-0.79)
40% Tax Rate	0.0472 (0.44)		-0.110 (-0.79)	-0.0075 (-0.09)
50% Tax Rate	-0.111 (-1.02)			-0.146 (-1.44)
Unequal Earnings				-0.0318 (-0.67)
Redistributed Earnings				-0.048 (-1.09)
Constant	0.523*** (6.23)	0.296*** (3.54)	0.510*** (5.86)	0.477*** (8.32)
Standard Deviation Constant	-1.372*** (-20.14)	-1.265*** (-14.49)	-1.265*** (-15.80)	-1.257*** (-28.43)
Standard Deviation Residual	-1.708*** (-79.36)	-1.821*** (-65.45)	-1.765*** (-68.62)	-1.753*** (-123.51)
N	1200	720	840	2760
Log Likelihood	165.8	165.4	150.2	461.1

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

In each of the three equations, two variables essentially dominate the explanation of tax compliance. As subjects' earnings in the real-effort tasks rise the actual earnings they report declines. Subjects appear to be responding to the absolute amounts of earnings that get transferred by the tax regime – as these increase, the percent of actual earnings reported declines. When there are no costs to misreporting, the "poor" report greater percentages of their earnings than do the "rich". The second variable that has an important effect on compliance is other-regarding preferences. Subjects who contribute more in the Dictator Game report a higher percentage of their actual earnings, i.e., are more likely to comply with prevailing tax rates. Selfish subjects in the Dictator Game report a lower percentage of their actual earnings. There is no support in the multivariate estimates for the notion of a tax norm. Similarly there is no support for the notion that subjects condition their compliance behaviour on the extent to which tax revenues are used for redistributive ends.

6 Conclusion

This essay reports the results for an ongoing set of experiments designed to help understand individual preferences for redistributive taxation. Our initial working conjecture is that there exists a taxation norm that is relatively homogeneous within populations and across countries. This tax norm represents what individuals accept as an appropriate rate at which income should be taxed. We attempt to identify this tax norm by administering tax compliance experiments in which individuals are assigned to different tax rate treatments. The results for these first set of experiments suggests that our initial conjecture regarding a tax norm of approximately 20 to 30 percent is plausible although the notion that it might be homogenous within and across populations is less tenable. Moreover the effect is not significant in the multivariate estimation.

We included treatments designed to assess whether subjects condition their tax com-

pliance on the extent to which tax revenues are used for redistributive purposes. There is weak evidence of a redistribution effect. In particular, we find that high wage earners seem more willing to pay higher taxes when their tax revenues are employed for reducing levels of inequality. Reducing inequality may be a public good for the rich. But again, these results do not hold up in the multivariate estimation.

Two factors stand out in accounting for compliance which we are treating as an indicator of preferences for redistributive taxation. High wage earners are significantly less compliant than low wage earners. As earnings increase, subjects are more likely to cheat – and this is for the zero audit treatment which means subjects incur no cost from cheating. This result is very robust and holds up in the multivariate analysis. In addition to playing the tax compliance games, subjects also played a standard Dictator Game. We find that subjects who are other-regarding when they play the Dictator Game are more likely to report income when audit rates are low. This is also a very strong result that is confirmed in the multivariate analysis.

These results are preliminary but they do provide some interesting insights into the puzzle that motivated this research project. On one hand the results seem to confirm the classic representation of the citizen-taxpayer. As subjects earn more income they are less willing to voluntarily comply with prevailing tax rates. This suggests that as one's overall wealth increases one becomes increasingly antagonistic to redistributive taxation. Now there is some evidence that both the rich and poor become less acceptance of redistributive taxation once rates exceed about 20 percent although the statistical significance of this relationship is weak.

The second strong finding, on the other hand, is not consistent with classic representations of the citizen-taxpayer. A large segment of the participating subjects exhibit other-regarding preferences – a finding consistent with a large body of work in behavioural economics. This characteristic is one of the strongest predictors of the percentage of ac-

tual income reported by subjects. Simply knowing a subject's earning will result in a misleading prediction of their preferences for redistributive taxation – one obtains a much more accurate prediction if this information is combined with whether the subject is a selfish or other-regarding type.

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