Willing to Pay?
An Experimental Analysis of Tax Compliance in Britain and Italy

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Abstract

Recent research shows that tax compliance varies widely across advanced industrial democracies, but exactly why this is the case remains an unresolved puzzle. In particular, scholars often have difficulty disentangling the influence of institutional factors from broader cultural values and norms in explaining citizens' willingness to pay their taxes. We address this problem by conducting laboratory experiments in two countries (UK and Italy) which exhibit significantly different rates of tax evasion. Our research design allows us to examine the determinants of tax morale while holding institutions constant. We report a surprising result: when faced with identical incentives and risks of punishment, British subjects were significantly less likely to comply than Italians. Further, we find that country-level differences are not driven by individual-level characteristics such as gender, age, or risk attitudes. Instead, we present evidence that our results may be explained by emerging cultural changes in British and Italian societies.

1 Introduction

Modern welfare states face a set of difficult challenges as they adapt to the demographic, economic and political strains of the early 21st century. States must struggle to maintain adequate support for social welfare and educational programs in the face of growing distrust of bureaucratic institutions, intense pressures to cut taxes for politically powerful constituencies, and fiscal burdens arising from an aging "core" population. The ability of governments to collect revenues in an efficient and cost-effective manner is of central importance to how successfully states meet their policy goals. And to ensure a healthy fiscal foundation, states must be able to control (or reduce) tax evasion on the part of their citizens.

Yet, while we know that the "tax gap" varies widely across societies (Alm, Martinez-Vazquez, and Schneider 2004; Edlund 1999; Schneider and Enste 2013; Svallfors 1997; Taylor-Goodby 1995), political economy scholars have yet to fully understand *why* individuals in different political systems respond differently to fiscal demands. Neither do we have a particularly clear picture of how differences in public policies and institutional context shape citizens' attitudes towards taxation.

To address these questions, the current paper reports the results from a comparative analysis of two countries: Italy and Great Britain. Using the size of the "shadow economy" (as a percentage of GDP) as a proxy for tax evasion, Schneider and Enste (2013) show that Britain lies above the median among advanced industrial economies in terms of compliance, while Italy falls near the bottom of cross-country rankings, despite possessing a formal tax system similar to Britain's. Indeed, Petrini (2005) reports that some 200 billion euros of taxable income is evaded annually, equating to a 46% evasion rate.

Intuitively, we may think of many reasons why Italians might be more prone to cheat on their taxes than Britons. For example, Italians may have different expectations about how their

tax money will be spent (or how much of it will be stolen by corrupt politicians). It is also possible that Italians have different perceptions of the fairness of the tax system, different beliefs about how consistently evaders are caught and punished, and different social norms about one's duty to pay. In trying to evaluate these multiple explanations, comparative analysts run up against a classic identification problem: simply put, we have a greater number of independent variables than cases, such that it becomes impossible to isolate the importance of any particular mechanism in explaining the difference in fiscal outcomes between the two countries.

Our project attempts to gain analytical leverage over these issues through the use of behavioral experiments, combined with a survey questionnaire written specifically for our study (we describe these in detail below). As is often noted, the main advantage of laboratory experiments is that they make it possible to hold constant important institutional features or components of the external environment, thereby allowing researchers to better understand the influence of attitudes, norms and beliefs on individual choices. At the same time, traditional survey tools can provide scholars with key insights about the larger political and social context in which these attitudes, norms and beliefs are formed. As Elinor Ostrom (2007) argues, "When political scientists use both methods related to one set of theoretical questions, advances in our understanding are multiplied."

In this paper, we report results from an experiment involving over 500 British and Italian participants, in which subjects earning real money are asked to declare their income for tax purposes. We explicitly framed our experiment using the words "income" and "tax," in order that subjects' behavior would more accurately reflect their connotations of the fiscal system *in the real world*. Our goal is to understand whether there are any differences between Italians and Britons in their willingness to comply with fiscal demands - what economists have termed "tax morale" (Alm and Torgler 2006; Posner 2000; Torgler 2012) - holding

constant the formal institutional "rules of the game" (e.g. tax rates, audit probabilities, etc.). In other words, *how would Italians and Britons behave when placed under identical tax systems?*

In light of previous findings (see Lewis et al. 2009), we anticipated that Italian subjects would be much less compliant than British subjects when presented with exactly the same set of experimental decisions. However, in contrast to our (and, we suspect, many others') expectations, our experiments produced a surprising and counterintuitive result: the compliance rate amongst British subjects is significantly *lower* than amongst Italians. As we discuss in more detail below, this result remains consistent under a variety of institutional scenarios, and has been reproduced in multiple experimental locations in the two countries. Further, our findings are robust to the inclusion of a host of individual-level demographic characteristics, suggesting that we are not simply capturing differences in the composition of our participant pools, but rather real differences in attitudes towards taxation.

Next, we leverage our survey data to test some hypotheses about why Italians may choose to comply *less* than Britons in the experiment. On the one hand, there has been a growing sense amongst Italians in recent years that tax evaders are "no longer an example to follow but an intolerable burden and a threat to society" (Povoledo 2012). The stigmatization of evasion is likely to be particularly prevalent amongst younger age cohorts (such as our experimental participants), and logically works to boost tax compliance. At the same time, much has been written about the deepening culture of individualism gripping British society (Howker and Malik 2010). In particular, Britons of all ages (but especially young people) have come to embrace the theme of individual responsibility and the idea that low earners should not receive (taxpayer funded) public benefits because they do not truly "deserve" them (Pearce and Taylor 2013). Such attitudes may well manifest themselves in greater evasion, since individuals feel more antipathy towards the redistributive aspects of the fiscal

system. Using data from our post-experimental survey, we find empirical support for both these arguments. Indeed, once we control for both sets of attitudes (seriousness of evasion and individualism), we no longer find any significant differences between the behavior of British and Italian subjects, suggesting that we have located two important factors driving cross-country variation in the willingness to comply with fiscal demands.

We conclude by discussing the discrepancy between our results and the accepted wisdom that tax compliance is higher in Britain than in Italy. We argue that this contradiction arises from a key feature of our experiment: unlike many studies that invite participants to imagine how they would behave in relation to an actual set of public institutions, we have intentionally held "the state" constant. In essence, we investigate cross-national differences in tax evasion under an ideal, abstract government. However, government quality varies tremendously in real life, and in ways that are systematically related to citizens' willingness to pay taxes (Cummings et al. 2009; Frey and Torgler 2007). We therefore suggest that future work should carefully consider how much of the cross-national variation in tax compliance is directly related to institutional differences between countries, and how much can be attributed to broader cultural factors.[1]

This paper proceeds as follows. The next section describes our methodology in greater detail, and provides an overview of the British and Italian subject pools that we analyze in the present paper. Next, we document the gap in tax compliance between British and Italian subjects, and show that cross-national differences in the willingness to pay cannot be explained (solely) by differences in the demographic composition of our participants. In Section 4, we propose our own hypotheses to explain the compliance gap, and test our arguments using data from the post-experimental survey. Section 5 concludes.

[1]For example, Torgler (2006) examines the relationship between religion and tax morale, while Alm and Torgler (2006) considers the role of national identification.

2 Methodology

Studies involving experimental methods have become more and more widespread in political science in recent years. By allowing scholars to carefully control for specific features of the decision-making environment, experiments facilitate the teasing apart of multiple causal mechanisms, and mitigate the usual concerns about endogeneity and omitted variable bias plaguing observational studies. Moreover, in research on illicit behavior such tax evasion or corruption where observational data are scarce due to the illegality of these activities, experiments have proved invaluable as tools for *data generation*.

Our goal in this study was to explore the motivations underlying individuals' tax compliance. While previous experimental work has tried to explain tax evasion in individual countries, we are - as far as we are aware - the first to run experiments in which the exact same choices and rules are offered to subjects in different societies. In doing so, we hoped to test whether cross-national variation in compliance rates can be explained by differences in general norms and values (e.g. selfishness), or whether citizens simply exhibit a different "willingness to pay" to *their own particular state*.

To be sure, setting up experiments in which the choices made across multiple laboratories in different countries is a challenging task in and of itself. Our team spent over a year designing and re-designing our experimental tasks and survey questions in order to ensure that we were holding the experimental treatments constant across languages and cultural differences. In the end, we decided to engage our subjects in three separate tasks (which are described in full detail below). The first task consisted of a modified public goods game in which subjects first earned their monetary endowment by performing a clerical (i.e. data entry) exercise. The more efficiently they performed in this task, the more they earned. Subjects were then asked to report their income "for tax purposes" under several different

conditions. In each of these conditions, we varied whether and how the tax revenues would be redistributed, the rate of taxation, and progressivity of the tax system. Second, since we wanted to know if tax compliance is correlated with the degree of "altruism" or selfishness of subjects, we implemented a series of mini-dictator games designed by the decision theorists Ryan Murphy and Kurt Ackerman to measure "Social Value Orientation" (again, details can be found below). Finally, subjects also completed a survey in which we asked a series of questions about tax and social spending issues, beliefs about others' behavior during the experiment, perceptions of risk, and a variety of individual-level characteristics. Taken together, the responses to these three parts of our experiment allow us to test a significant number of possible hypotheses about tax compliance and tax morale.

Some of the most common criticisms of experimental analyses lie in questions about the "external validity" of the findings. Simply put, there is substantial skepticism as to whether experimental results (especially in laboratory experiments) can be used to say anything meaningful about larger social trends or behavior. After all, in most experiments, the subject pools are quite small, and are also composed mainly of university students who may not be representative of the broader population. Moreover, it can be argued that the laboratory experiment itself establishes an unrealistic environmental context in which subjects behave or respond differently than they would in "the real world."

Many of these criticisms are certainly valid. However, we would argue that to judge an experiment by its lack of "external validity" is somewhat analogous to condemning a formal model for its inability to fully capture empirical reality. In both cases, the researcher relies upon an intentional misrepresentation or abstraction of the phenomenon under study. But like a good model, a good experiment does not have to be true; instead, it must merely be useful. And we argue that our experiment, by permitting us to study a simplified version

of a tax compliance decision, is extremely useful in disentangling the attitudinal versus institutional drivers of fiscal evasion.

That being said, we also acknowledge that there are drawbacks of experimental methods which should be taken seriously and mitigated whenever possible. Therefore, in our experiments we have explicitly attempted to contextualize the treatments (through the use of explicit framing), and hold these treatments constant across multiple sessions in multiple locations. For the purposes of this paper, at least, we do not engage the debate on whether our (mostly) university student subjects are genuinely representative of the entire population.[2] While we certainly have our suspicions on this score, here we make no claim that the subjects in our study accurately represent the entire British or Italian societies. We do claim, however, that our study and subject pool - which is quite large with over 500 subjects in the two countries and specifically drawn from highly similar populations - does allow us to make inferences about the attitudes and behaviors of this important demographic group which are both interesting and worthy of further analysis.

2.1 Description of Experimental Tasks

Our experiments were conducted at six locations across the United Kingdom (Oxford, Exeter, and London) and Italy (Milan, Bologna and Rome) at various points during the academic year 2013-2014. Each of the universities in which we conducted our experiments maintains an electronic database of individuals who had expressed interest in participating in behavioral experiments.[3] The participant pools are composed mainly of undergraduates at the various universities, but also included a number of non-students and people who had already graduated. Several days prior to the actual session, individuals in the database receive

[2]For an overview of this issue, see Henrich, Heine, and Norenzayan (2010).

[3]For more details on the online recruitment system (ORSEE), see Greiner (2004).

an email informing them of the opportunity to take part in an upcoming research project, and inviting them to subscribe to an experimental session at a particular date and time. The email also includes information on the estimated length of each session, as well as the expected earnings per participant.

In all, the data we present in this paper are drawn from 31 different experimental sessions involving a total of 671 participants. Because we are interested in comparing specifically British and Italian attitudes towards tax compliance, we retain the data for only native students, whom we define as those individuals born in Britain (Italy) with also a British (Italian) father.[4] The result leaves us with a subset of 532 participants, of which 250 (47%) are from the UK and 282 (53%) are from Italy.[5] 55.6% of our subjects were male, with an average age of 23.8 years (s.d. = 7.7 years). As we discuss in more detail below, a good number (>80%) of our subjects also had previous experience with behavioral experiments, such that they were already familiar with the general features of experimental studies (e.g. interaction over computer, anonymity, payments, etc.).

Once subjects have arrived at the laboratory at the appointed date and time, they are given a randomly-drawn, anonymized ID number and assigned to a corresponding personal computer

[4]Because of a misunderstanding at the recruitment stage, one session in Oxford enrolled many immigrants. While we excluded the immigrants' data, we were also concerned that interacting with a disproportionate number of foreigners may have skewed the behavior of even native-born Britons. We therefore drop this session entirely from the analysis.

[5]Including the entire sample of 671 subjects does not substantively change our results: British subjects still comply significantly *less* than Italians.

terminal. Subjects undertake all experimental tasks via computer,[6] and the terminals are partitioned (see Figure 1) to ensure that participants could not communicate during the experiment, nor observe what other subjects are doing. Also, to ensure anonymity, we announced that decisions and payments within the experiment would be linked only to subjects' ID-numbers, and not to individual names. At this point, subjects were asked to sign a consent form specifying these details, and also informing them of their right to discontinue participation in the experiment at any time.[7]

[Figure 1 about here]

Once all participants had been seated at their individual terminals, we began the session by reading a short introductory script.[8] Subjects were informed that they would be asked to complete a number of tasks (which we would gradually describe to them) and make a number of choices. Based on their choices and the choices of the other subjects, they would earn experimental currency units (ECUs), which would be converted into real money at the end of the session.[9]

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[6]The computerized tasks are programmed using a free open-source software program called zTree (Fischbacher 2007), which is commonly employed for economic experiments of this type.

[7]Subjects who wished to leave the experiment early could elect to receive a 5 euro / pound show-up fee. In practice, all subjects remained until the end of the session.

[8]All of our experimental materials - oral scripts, software, datafiles, and Stata .do files used to produce the tables and figures - will be posted online upon publication.

[9]These units were converted into local currencies (pounds and euros) so that at the end of the experiment, the average participant would receive an income of approximately twice the average hourly wage for student employment in the local context.

Subjects begin by first completing a clerical task. In this task, subjects must copy rows of information from a sheet of paper into the computer (see Figure 2). For each correctly copied row, subjects earn 10 ECUs. Next, are asked to declare this income for taxation purposes under three different scenarios. In the terminology of the experiment, each scenario constitutes a "round." Subjects are free to declare any amount of their income - from 0% to 100% - in each round. Once subjects have made three separate declarations, this entire stage game (i.e. the clerical task plus three reporting rounds) is repeated two more times, such that by the end of the experiment, subjects will have undertaken three clerical tasks and nine rounds of tax reporting.

[Figure 2 about here]

In each round, we specify slightly different rules for the taxation and redistribution of declared income. In rounds 1 through 3, we hold tax rates constant (at a flat 30% rate), and vary how tax revenues are redistributed to all the participants, thus simulating behavior under different levels of "government efficiency" in providing public goods. In rounds 4 through 6, we hold redistribution constant, and vary the tax rate (from a flat 10% to 50%). In Rounds 7 and 8, we introduce two different progressive taxation schemes. In the first scheme, the top 10% of declared incomes pays a 50% tax rate, the bottom 10% of declared incomes pays a 10% tax rate, and everyone else pays a 30% rate.[10] In the second scheme, all income over 100 ECU is taxed at a 50% rate, income between 50 and 100 ECU is taxed at a 30% rate, and all income below 50 ECU is taxed at a 10% rate. Finally, in Round 9, we donate all tax revenues to a real world charity.[11] In all rounds, subjects face a 5% probability of being audited, in which case those who have under-reported their income must pay a fine equal to

[10]However, participants do not know exactly where they themselves fall in the overall distribution of declared incomes.

[11]We selected Oxfam for UK participants, and the UNICEF for Italian participants.

twice the amount of uncollected taxes. Table 1 summarizes the order of experimental tasks, as well as the rules in each round.

[Table 1 about here]

Importantly, subjects were *not* informed of the outcome of their decisions at the conclusion of each round, but only at the end of the entire experimental session. In other words, when making their decisions, participants had no knowledge of whether they had been audited in the past, or whether their fellow subjects were honestly declaring their own incomes. Thus, we can be fairly certain that behavior in the game is not the product of reciprocity, reputation or wealth effects.

By comparing how income is reported across nine identical taxation and redistribution scenarios, we are able to investigate cultural differences in tax compliance across a range of parameters. Furthermore, because other researchers have also employed similar experimental designs to test *inter alia* the effect of raising tax rates or increasing the efficiency of redistribution (see Alm, Jackson, and McKee 1992; Bosco and Mittone 1997; Torgler 2002), we are able to use previous studies as an external check on the validity of our results.

In the second part of the experiment, subjects participated in a series of mini-dictator games to measure what Murphy and Ackermann (2014) have termed *Social Value Orientation*. We describe the procedures for this part of the experiment in full detail in the Appendix, but essentially the goal is to capture the extent to which participants are willing to engage in purely instrumental, selfish behavior, which may also reflect upon their propensity to treat tax evasion as a strategic gamble. We elaborate upon the relationship between social value orientation and tax morale in Section 4 below.

[Table 2 about here]

Lastly, participants answer an online questionnaire designed to capture a host of demographic variables and attitudes towards taxation, public spending, risk tolerance, and beliefs about others' behavior. In Table 2 we present some descriptive statistics of our overall subject population, and also break down the means by country. Column (8) in Table 2 also reports how the two populations differ. In particular, we see that British subjects were significantly more likely to be *Employed*, to study *Economics*, and to report a higher tolerance for *Risk*. In addition, British subjects were almost twice as likely to believe that other participants in the session would make honest income declarations during the experiment (*Others Report Total*). On the other hand, we detect no significant differences across the two populations in terms of the percentage *Male* participates, *Age*, or previous *Participation* in experiments.

In summary, even though we tried to recruit comparable groups of university students, the two populations are not identical. To the extent that any differences in personal characteristics also predict tax compliance, they will bias our estimates of national-level differences. Accordingly, we control for these covariates in the individual-level regression models reported in the following section. First, however, we turn to a broad look at the British and Italian gap in tax compliance.

3 Tax Experiment Results

3.1 Documenting the UK-Italy Gap in Tax Compliance

Figure 3 displays the average percentage of earned income that is reported in each of the nine rounds, broken down between British and Italian subjects. The vertical axis displays the *average tax compliance rate*, defined as the percentage of total earned income that is truthfully declared for tax purposes in each round. Several points stand out from the graph.

First, tax compliance responds positively to the efficiency of redistribution: individuals are more willing to declare a larger percentage of their income when they know that tax revenues produce more public goods. Secondly, individuals respond to higher tax rates by evading their fiscal obligations: compliance falls as we move from Rounds 4 through 6. These results are in line with previous studies (see Alm, Jackson, and McKee 1992; Bosco and Mittone 1997; Torgler 2002), and provide us with some assurance about the validity of our experimental design.

[Figure 3 about here]

We also document a surprising result: on average, British participants reported a smaller share of their total income *in every round* as compared to Italians. As shown in Figure 4, this finding is fairly consistent across all six experimental locations.

[Figure 4 about here]

We can further evaluate the British-Italian gap by investigating the components of the average compliance rate. Figure 5 displays the distribution of compliance decisions, pooled across all nine rounds of the experiment. Looking at the data in this fashion, we see that a statistic like the average compliance rate can be misleading because it aggregates three different outcomes:

1. **Complete Compliance:** In over 40% of all decisions, participants honestly declared 100% of their earned income.
2. **Partial Compliance:** In around 30% of all decisions, participated under-reported their income to some degree, with the mode at 50%.
3. **Complete Evasion:** In slightly under 30% of all decisions, participants reported that they earned 0 income.

Table 3 examines how each of these three components differs across the UK and Italy. Columns (1) through (3) estimate the probability that a participant will be completely *dishonest* when reporting his income. We see that in almost all rounds (except 50% Tax Rate and Charity), a significantly greater percentage of Britons declare 0 income. The gaps are substantively large, ranging from about 8% in Round 7 to almost 18% in Round 2.

[Table 3 about here]

In columns (4) through (6), we see the corresponding totals for the proportion of individuals who were completely *honest* in each round. Here, the data tell a similar story: in the majority of rounds, significantly more Italians reported their entire income. The cross-country gaps range from 9% to 18%. Finally, in columns (7) through (9) we consider the partial compliance decisions: given that people cheat (but not to the maximum extent possible), by how much do they under-report? Interestingly, with the exception of the very first round, here we detect almost no statistically significant differences between Italian and British subjects in the percentage of their total income that partial compliers report. In other words, it appears that the Italy-UK compliance gap is almost entirely driven by differences in *complete compliance* and *complete evasion* between the two countries.

Of these two components, we argue that only *complete compliance* falls within the substantive scope of this paper, which aims to examine why tax morale differs between countries. Our interest therefore lies in explaining why people comply honestly with fiscal demands, rather than why people choose to cheat by a little versus a lot. By contrast, we believe the latter phenomenon may be the product of a multitude of psychological and cognitive factors (see Ariely 2012), only some of which (e.g. risk aversion) we are able to measure. Accordingly, for the remainder of this paper, we confine our attention to cross-national differences in the degree of *complete compliance*, while reserving a full discussion of *complete evasion* for later work.

Our main dependent variable consists of the *count* of the total number of decisions characterized by complete compliance made by each participant during the experiment. Figure 6 shows the distribution of counts across countries. We see that many more Britons than Italians tend to be low compliers, declaring 100% of their income in none or only one out of nine possible decisions. By contrast, many more Italians than Britons tend to be high compliers, declaring 100% of their income in six or more of their decisions.

[Figure 6 about here]

3.2 Individual Level Models with Demographic Controls

To what extent is cross-country variation in complete compliance explained by differences in individual-level characteristics between the two subject populations? For example, British subjects may be less compliant because they are more risk-taking, and are therefore less likely to be deterred by the threat of audits. We address this question by estimating individual-level models for *complete compliance* with a host of participant characteristics as regressors.

Because our dependent variables consists of count data, we employ a negative binomial model:

$$Log(Y_i) = \alpha + \beta_1 UK_i + \Theta X_i + \epsilon_i$$

where Y represents the number of decisions characterized by complete compliance made by participant i, UK is a dummy variable for British subjects, X represents a vector of individual characteristics, and ϵ represents an individual-specific error term clustered within experimental sessions.

The first column of Table 4 confirms the significant negative association between British nationality and complete compliance. The UK coefficient implies that British nationality

is associated with an decrease of 25.6 log points, or approximately 22.5% percent, in the count of decisions characterized by complete compliance. Column (2) adds controls for gender, age, and employment status, but the estimated effect of the British dummy remains robust.[12]

[Table 4 about here]

In column (3), we include a control for risk attitudes, as measured by a survey item which asks subjects to rank themselves on a 10-point scale, with 1 signifying a person who "normally tries to avoid taking risks" and 10 signifying someone who is "completely willing to take risks." For ease of interpretation, we have standardized respondents' answers to have mean = 0 and s.d. = 1. We see that higher risk aversion is significantly correlated with complete compliance (perhaps because risk-loving individuals are less deterred by the fear of being audited), and also help to explain the Italy-UK gap. In particular, British subjects tend to be more accepting of risks, so controlling for such attitudes increases the expected British complete compliance count from about 77.5% to about 84.5% of the Italian count.

Column (4) looks at beliefs about whether other participants were likely to cheat in the tax experiment. Previous studies have shown that individuals are willing to evade their fiscal obligations if they believe that their fellow citizens will do the same (Frey and Torgler 2007; Hallsworth et al. 2014).[13] Accordingly, we include a variable measuring whether a subject thought his counterparts in the experiment reported their entire earned incomes. We see that

[12]Torgler and Valev (2010) have previously studied the relationship between compliance and gender, while Torgler and Valev (2006) study the relationship between age and ethical judgments.

[13]More generally, social norms theory tells us that individuals will be more likely to violate standards of honesty if they believe that other people are also behaving dishonestly (Bicchieri 2005; Bicchieri and Xiao 2009; Elster 1989).

beliefs about the honesty of others are statistically significant and correctly signed: whereas people who expected others to be honest fully complied in 6.3 decisions, this number falls to 3.7 for people who believed that others reported "less" or "much less" than their full incomes. Further, because British subjects tend to hold relatively more *optimistic* beliefs about their fellow subjects, the inclusion of this variable slightly increases the size of the complete compliance gap.

In column (5) we control for the effects of economics training and past participation in experiments. Previous works have suggested that economists are more likely to cheat in tax compliance experiments, in part because they have been trained to look for the profit-maximizing choice (here: under-reporting) (Cullis, Jones, and Lewis 2006; Lewis et al. 2009). Further, this mentality may also have been learned by subjects with extensive previous experience in behavioral economics experiments. We find both variables to be statistically significant and in the expected direction. Moreover, because a greater number of Italian subjects were economics majors, the inclusion of this variable also increases the size of the UK dummy. Finally, in column (6) we report a full model in which we simultaneously enter all of the above regressors. We see that, with the exception of age and employment status, all variables retain statistical significance, and the size of the estimated UK-Italy compliance gap is virtually identical to that reported in column (1).

In summary, the data show that, when presented with identical institutional environments, British subjects are significantly more likely to evade their fiscal obligations than Italians. The results are robust to a host of individual-level controls. We take this (surprising) result as *prima facia* evidence of cultural-level differences in tax morale between the two countries. In the next section, we attempt to explain why this gap exists.

4 Explaining the Tax Gap

Italian and British Attitudes towards Taxation

As we discuss in the Introduction, one reason for the the higher compliance displayed Italian participants in the experiment may be that Italians view the under-reporting of income as a much more serious social problem. Italy may be a country racked by tax evasion, but this does not necessarily mean that citizens prefer it that way. In fact, public opinion surveys conducted by the Bank of Italy since the early 1990s have shown that a substantial percentage of Italians regard tax evasion as a serious source of concern (Cannari and D'Alessio 2007, pp.29-30).

By all accounts, the fiscal problems exposed by the recent financial crisis have only hardened public sentiment against tax evaders (Day 2012). According to recent polls conducted by the survey firm Demopolis in 2011/2012, more than 80% of Italians consider combating tax evasion as key to getting Italy "back on track," with 73% demanding tougher action against perpetrators (Faiola 2011; Povoledo 2012). Moreover, these attitudes found expression in the rise of several grassroots initiatives including a Facebook group where customers could report businesses for failing to issue receipts (which is against the law in Italy because such unofficial transactions often constitute ways to evade VAT). A smartphone app designed for the same purpose counted over 50,000 downloads in the first year after its release (Povoledo 2012). The popularity of these social media solutions suggests that young people (who do not benefit from tax leniency as most do not own their own businesses) are particularly engaged in the campaign against tax dodgers. Logically, individuals who are opposed to evasion should also exhibit higher willingness to pay.

We show that concerns about the seriousness of tax evasion do indeed differ between our cross-national participant pools. In particular, we asked subjects the following 4-point

agree/disagree questions, with 1 representing complete agreement and 4 representing complete agreement:

1. Paying taxes is a *Fundamental Duty* of citizenship.
2. Not paying taxes is one of the *Worst Crimes* a person can commit because it damages the entire community.

In addition, we also administered a 10-point scale question about the *Justifiability of Cheating* on taxes, with 0 equal to "Always justifiable" and 10 equal to "Never justifiable." From these three items, we created a composite **Serious Crime Index**, which ranges from -2.391 to 1.036, with a mean of 0 and s.d. of 0.762. The top panel of Table 5 reports the average responses for each survey item and composite indexes by country. The cross-country difference is displayed in column (8). We see that on every single survey item, Italians subjects are less accepting of tax evasion.

[Table 5 about here]

We also hypothesized that British subjects may be less compliant because they place less value on the spending side of the fiscal system, especially in relation to the provision of benefits to low earners. As many commentators have noted, British society has become progressively more individualistic over the past 30 years, with both traditional conservatives and "new Labourites" embracing Margaret Thatcher's ideas about personal responsibility (Ball and Clark 2013; Harris 2013; Herrmann 2013; Howker and Malik 2010). We want to be clear: the evidence does not show that Britons have become less *altruistic* (in the sense of "being generous for a good cause"), nor more disinclined to participate in community associations (Hall 1999). Rather, British Social Attitudes survey data over the past 30 years shows quite clearly this growing individualism and lower pride in the welfare state manifests itself in the belief that those who are in a worse economic position can only fault their own choices and / or lack of initiative, and further, that these individuals should not be helped

through the fiscal system because doing so would only breed dependency (Pearce and Taylor 2013). In this sense, more individualistic participants in our experiments should be less compliant because they are less likely to support redistribution towards their "undeserving" (poorer) counterparts.

We present two pieces of evidence in support of this claim: one positive and one negative. The positive evidence consists of an analysis of survey responses measuring attitudes towards individual responsibility. In particular, we asked participants to place themselves on a 10-point scale with 0 representing complete agreement with the statement: "Individuals should take more responsibility for providing for themselves," and 10 denoting complete agreement with the statement: "The state should take more responsibility to ensure that everyone is provided for" (*State vs. Individual*). Because more individualistic people are also likely to oppose government spending, we also asked respondents to place themselves on a 1 to 4 scale with regards to the following areas of government expenditure, where 1 equals a preference for much greater spending, and 4 denotes a preference for much less spending:[14]

1. *Environment*
2. *Health care*
3. *Education*
4. *Unemployment* benefits
5. *Culture* and the arts

Because these variables all tap into a common belief in a larger role for the individual vs. government, we have standardized and aggregated them into a single **Individual Responsibility Index**. Index scores range from -1.449 to 1.905, with a mean of -0.001 and s.d. of

[14]We also asked about attitudes towards spending on the police and the military, but responses to these items likely reflect hostility to these particular institutions, as opposed to hostility towards the idea that government should play a larger role in public life.

0.635. In the second panel of Table 5, we again report the average responses for each survey item and composite indexes by country. The cross-country difference is displayed in column (8). We see that on every single survey item, British subjects are more likely to favor a larger role for the individual viz. government.

The negative evidence consists of showing that British subjects are not less altruistic than Italians *per se*. Here we consider evidence from the aforementioned social value orientation task. Recall that the social value orientation consists of a series of dictator games between paired participants, where each subject has the option of giving up some of his own endowment in order to increase the payoffs of his partner (see Appendix 2). The results from the entire series of decisions can be aggregated into a single social value orientation angle, with lower values indicating less altruistic behavior (i.e. care about maximizing own payoffs), and higher values indicating a greater concern for the payoffs of one's partner.

We might expect that less altruistic individuals would also cheat more in the tax experiment, and this is indeed what we find (ρ = -0.341**). However, as shown in Table 5, British subjects are not, on average, less altruistic than Italians. In other words, while British participants do cheat more often on their taxes in the experiment, their behavior cannot be explained by the fact that they are somehow inherently more greedy. Rather, as we demonstrate shortly, this result is much more closely linked to attitudes specific to the tax system.

4.1 Testing for Cultural Effects

Can the difference in values relating to individual responsibility and the serious of tax evasion as a crime explain the cross-country gap in compliance? Unfortunately, these survey items were not administered in Milan, so the addition of these variables to the full model (shown in the last column from Table 4) necessitates dropping close to 100 subjects. To

facilitate comparability, in column (1) of Table 6 we first run the full model after excluding the Milanese subjects. We see that the coefficient on the UK dummy does not change substantially between Tables 4 and 6. Column (2) adds the Individual Responsibility Index to our model, which is statistically significant and correctly signed. We also see that controlling for the degree of individualism reduces the size of the UK coefficient by about 2/3, such that it is no longer significant. In other words, a large portion of the UK-Italy compliance gap is accounted for by the fact that Britons tend to hold more individualistic values, and individualistic subjects tend to evade more often, for the reasons we outline above.

[Table 6 about here]

Column (3) examines the effects of including the Serious Crime Index in the baseline model. Our substantive conclusions are very similar: the coefficient on the Index variable is significant and correctly signed, suggesting that individuals who consider tax evasion a grave offense are more likely to comply completely in our tax experiment. We also see that the coefficient on the UK dummy again falls by over 50%, and again loses statistical significance. Finally, in column (4) we simultaneously include both indexes. We now estimate the coefficient on the UK dummy to be almost precisely zero. In other words, once we control for attitudes concerning individual responsibility and the seriousness of tax evasion, we find that British and Italian subjects behave in pretty much the same way, suggesting that it is these two sets of values which are explaining the cross-country compliance gap we find in our experimental results.

5 Conclusion

We conclude by addressing the white elephant in the room: our data are surprising because they directly contradict the common wisdom that Italians will readily cheat on their taxes,

while Britons are in some sense "more honest." Italians are notorious for their antagonism towards the fiscal system: as Berti and Kirchler (2001) report, Italian respondents frequently associated taxation with injustice and a loss of personal freedom in a free-association task. In addition, Lewis et al. (2009) conducted a survey experiment in which Britons and Italians were presented similar hypothetical cheating opportunities, and find that Italian respondents consistently favor reporting less income to the state. How do we explain our findings in light of these previous results?

[Table 7 about here]

The answer may lie in a a unique feature of our work: in our experiments, we replicate the exact same institutional parameters across multiple locations. In essence, we have intentionally held "the state" constant, whereas many other studies invite participants to imagine how they would behave in relation to the *actual state* under which they live. This distinction matters because we know that the willingness to pay taxes is related to citizens' evaluations of how efficiently and honestly their tax money is being spent (Cummings et al. 2009; Frey and Torgler 2007; Pommerehne, Hart, and Frey 1994). Further, as shown in Table 7, we know that evaluations of institutional quality differ tremendously between countries, with Britain falling around the middle amongst advanced industrial states, and Italy ranking near the very bottom. It should therefore be no surprise that Italians display greater antagonism towards *their* state, as manifested in studies finding lower tax morale (Lewis et al. 2009).

However, in our experiments, we measure individual behavior with respect to an *ideal state* that can be expected to tax and spend as it promises, without corruption or waste. Under these abstract conditions, we find that Italians are more compliant for two reasons: first, Italians are less likely to believe that low earners do not deserve help, and secondly, they are more likely to see evasion as a serious social problem. These results highlight the need to

separate institutional from values-driven components in the study of why tax morale differs across societies, a theme which we hope to explore in future work.

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Figure 1: Example of Computer Terminal

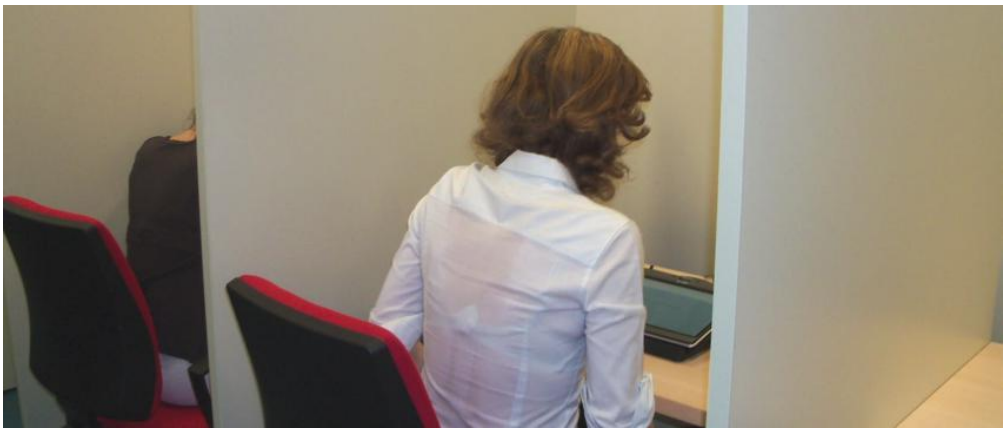

Figure 2: Example of Information to be Transcribed in the Clerical Task

Row	*ID number*	*Last name*	*First name*	*Vote*
101	957302	Iklmqy	Dglpqtwy	0
102	023568	Zsefgwt	Ipdbzycx	6
103	469217	Ginvxy	Zuexfkja	8
104	528196	Tmqczu	Zjpvwks	9
105	816593	Bcdhknoy	Klprswx	9
106	125678	Bhmoqsuy	Bcglnvwx	1
107	012468	Amnsux	Cfiloy	0
108	912065	Ysjzmucl	Cgiltvw	7
109	432970	Bdqnsx	Wbzaqv	7
110	234567	Vzbnjp	Zmfbgo	6
111	391586	Fijkln	Zwmvojn	5
112	957168	Agjmnqt	Bcijktw	3

Figure 3: British-Italian Compliance Gap

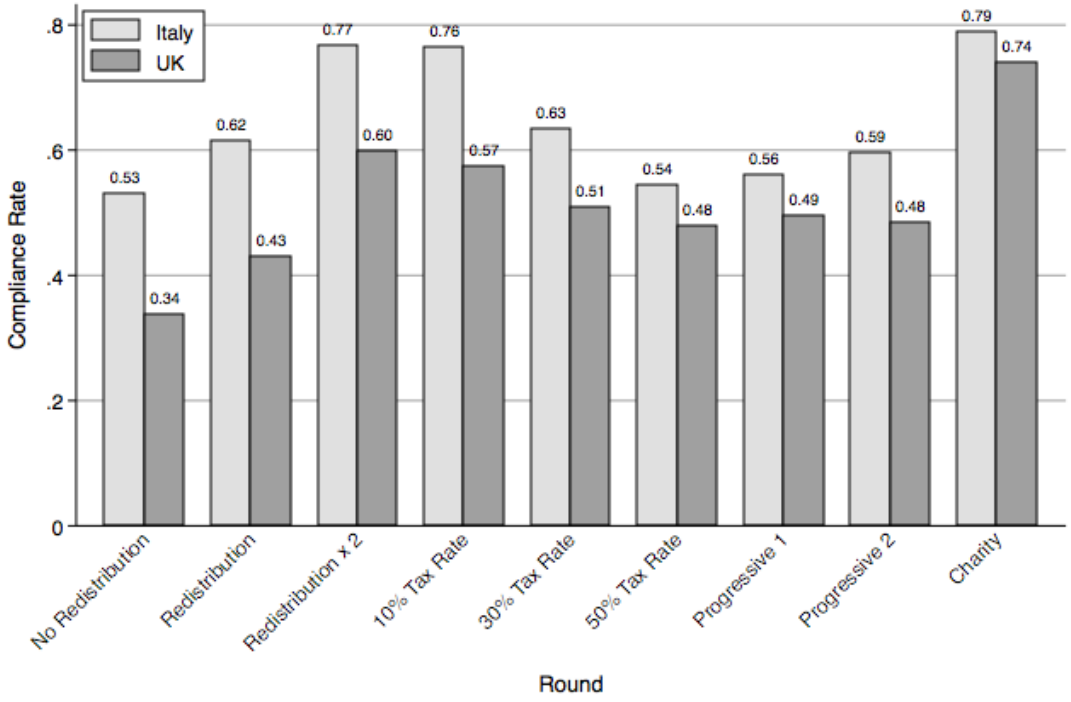

Figure 4: Compliance Rate Across All Locations

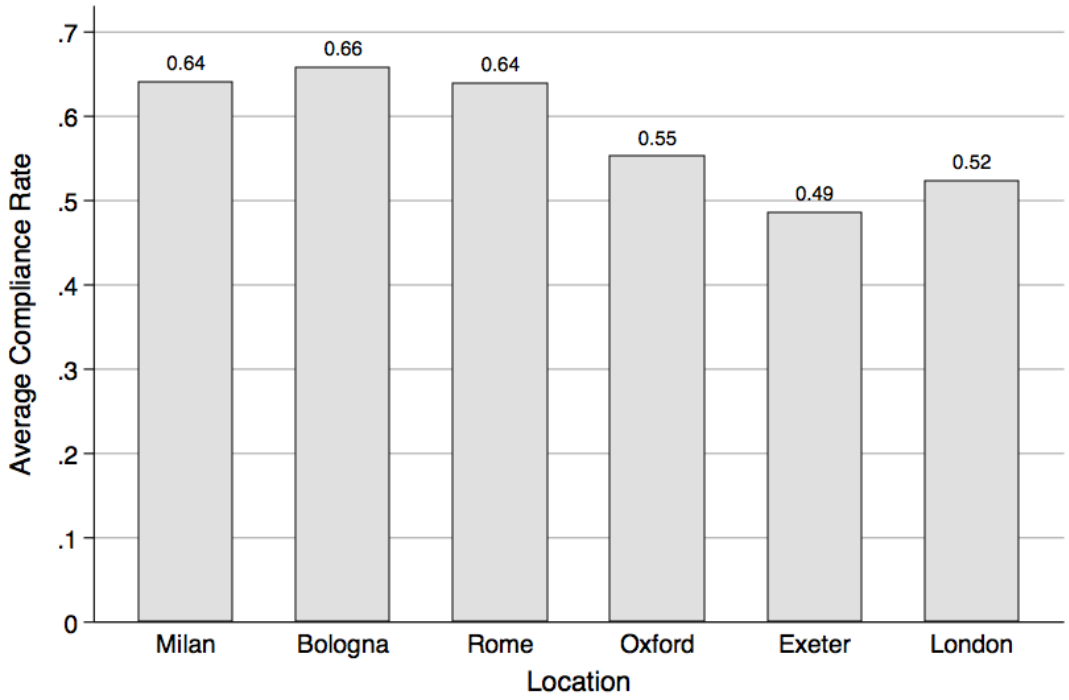

Figure 5: Distribution of Income Declarations by Country: 9 Rounds Pooled

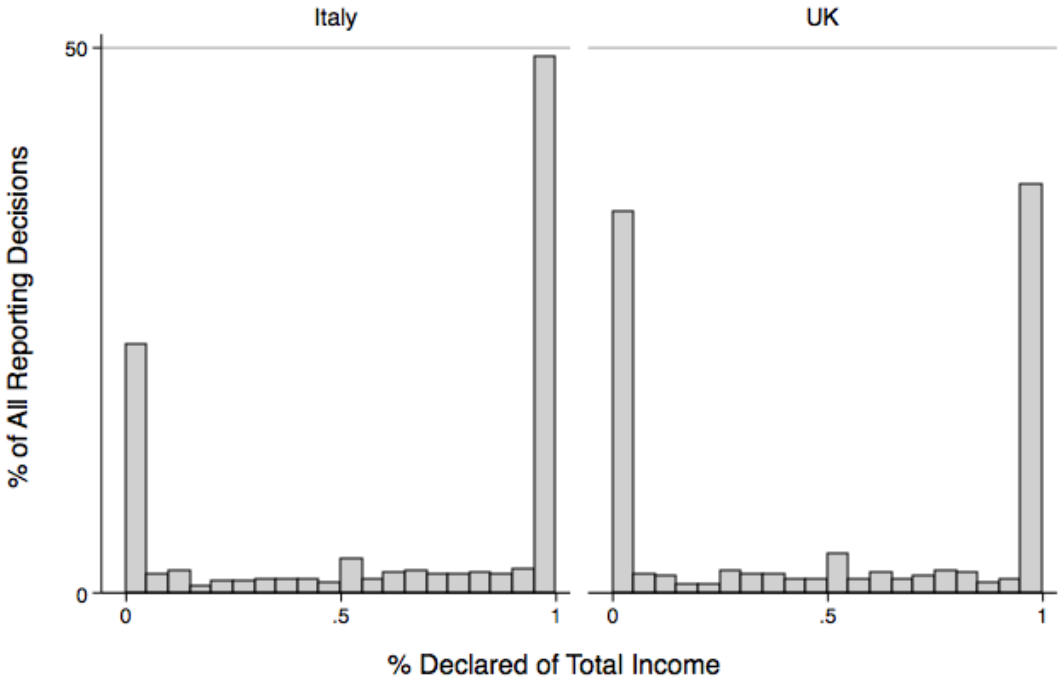

Figure 6: Counts of Complete Compliance, by Country

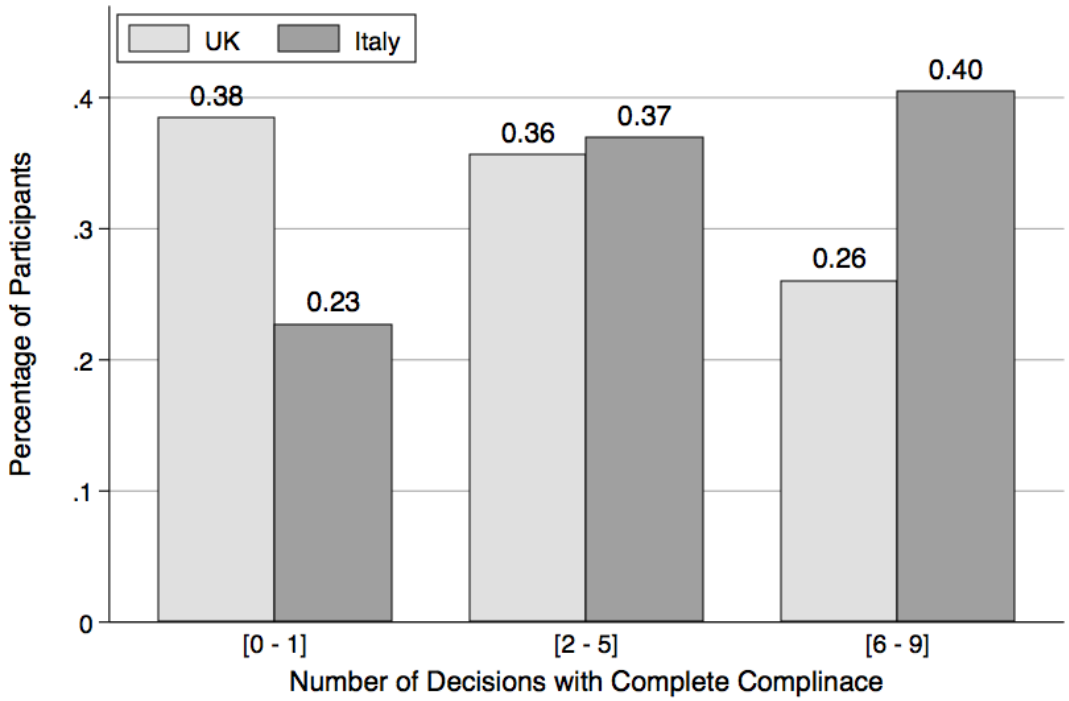

Table 1: Summary of Tax Reporting Rounds

Task	**Description**
Clerical 1	Earn income that is reported in Rounds 1 through 3
Round 1: No Redistribution	Flat tax rate of 30% on all reported income Tax revenues are not redistributed
Round 2: Redistribution	Flat tax rate of 30% on all reported income Tax revenues are collected into a common fund, which is redistributed on an equal per capita basis to all subjects
Round 3: Redistribution x 2	Flat tax rate of 30% on all reported income Tax revenues are collected into a common fund, the amount in the fund is doubled, and then redistributed on an equal per capita basis to all subjects
Clerical 2	Earn income that is reported in Rounds 4 through 6
Round 4: 10% Tax Rate	Flat tax rate of 10% on all reported income Tax revenues are collected into a common fund, the amount in the fund is doubled, and then redistributed on an equal per capita basis to all subjects
Round 5: 30% Tax Rate	Flat tax rate of 30% on all reported income Tax revenues are collected into a common fund, the amount in the fund is doubled, and then redistributed on an equal per capita basis to all subjects

Continued on next page

Table 1 – *Continued from previous page*

Task	**Description**
Round 6: 50% Tax Rate	Flat tax rate of 50% on all reported income Tax revenues are collected into a common fund, the amount in the fund is doubled, and then redistributed on an equal per capita basis to all subjects
Clerical 3	Earn income that is reported in Rounds 7 through 9
Round 7: Progressive 1	Top 10% of earners in Clerical 3 pay 50% tax on reported income Bottom 10% of earners in Clerical 3 pay 10% tax on reported income Everyone else pays 30% tax on reported income Tax revenues are collected into a common fund, the amount in the fund is doubled, and then redistributed on an equal per capita basis to all subjects
Round 8: Progressive 2	Subjects pay tax of 10% on all reported income under 50 ECU Subjects pay tax of 30% on all reported income between 50 and 100 ECU Subjects pay tax of 50% on all reported income over 100 ECU Tax revenues are collected into a common fund, the amount in the fund is doubled, and then redistributed on an equal per capita basis to all subjects
Round 9: Charity	Flat tax rate of 30% on all reported income Tax revenues are collected into a common fund, the amount in the fund is doubled, and then donated to charity

Table 2: Summary of Participant Characteristics: UK and Italy

	Obs. (1)	Mean (2)	Std. Dev. (3)	Min. (4)	Max. (5)	Italy Mean (6)	UK Mean (7)	Diff. in Means (8)
Male	527	0.556	0.497	0	1	0.534	0.581	-0.047
								(-1.095)
Age	527	23.780	7.675	18	73	23.875	23.671	0.205
								(0.289)
Employed	526	0.270	0.444	0	1	0.214	0.333	-0.119*
								(-3.069)
Participated	525	0.821	0.384	0	1	0.817	0.825	-0.008
								(-0.239)
Economics	527	0.349	0.477	0	1	0.399	0.293	0.106*
								(2.544)
Risk	517	-0	1	-2.070	-1.886	-0.194	0.215	-0.410*
								(-4.781)
Others Report Total	524	0.092	0.289	0	1	0.065	0.122	-0.058*
								(-2.294)

Appropriate z-statistics (for dummy variables) and t-statistics (for continuous variables) are reported in parentheses.
* indicates whether differences between countries are statistically significant at the 5% level.

Table 3: Compliance Gap: Italy and UK

	Pr(Compliance = 0)			Pr(Compliance = 1)			Compliance Rate | 0 <Compliance <1		
	(1) Italy	(2) UK	(3) Diff.	(4) Italy	(5) UK	(6) Diff.	(7) Italy	(8) UK	(9) Diff.
Round 1: No Redistribuiton	0.330	0.504	-0.174*	0.333	0.192	0.141*	0.586	0.474	0.112*
			(-4.075)			(3.678)			(2.617)
Round 2: Redistribution	0.259	0.440	-0.181*	0.479	0.308	0.171*	0.520	0.484	0.036
			(-4.389)			(4.014)			(0.805)
Round 3: Redistribution x 2	0.131	0.304	-0.173*	0.660	0.480	0.180*	0.507	0.546	-0.039
			(-4.863)			(4.182)			(-0.712)
Round 4: 10% Tax Rate	0.156	0.324	-0.168*	0.642	0.476	0.166*	0.599	0.488	0.111
			(-4.561)			(3.850)			(1.928)
Round 5: 30% Tax Rate	0.230	0.344	-0.114*	0.468	0.368	0.100*	0.545	0.488	0.056
			(-2.898)			(2.334)			(1.357)
Round 6: 50% Tax Rate	0.309	0.380	-0.071	0.390	0.348	0.042	0.512	0.483	0.029
			(-1.735)			(1.003)			(0.718)
Round 7: Progressive 1	0.270	0.348	-0.078*	0.394	0.352	0.042	0.497	0.472	0.024
			(-1.960)			(0.990)			(0.590)
Round 8: Progressive 2	0.198	0.320	-0.122*	0.385	0.292	0.093*	0.501	0.492	0.009
			(-2.853)			(2.043)			(0.247)
Round 9: Charity	0.135	0.168	-0.033	0.695	0.632	0.063	0.552	0.531	0.021
			(-1.071)			(1.538)			(0.386)

Appropriate z-statistics for columns (3) and (6) and t-statistics for column (9) are reported in parentheses.
* indicates whether differences between countries are statistically significant at the 5% level.

Table 4: Negative Binomial Regressions: Complete Compliance

	Dependent Variable: Number of Times Declared 100% of Income					
	(1)	(2)	(3)	(4)	(5)	(6)
UK	-0.256**	-0.238**	-0.168**	-0.308**	-0.324**	-0.233**
	(0.056)	(0.050)	(0.048)	(0.054)	(0.053)	(0.046)
Age		0.014**				0.006
		(0.004)				(0.005)
Male		-0.395**				-0.309**
		(0.055)				(0.050)
Employed		-0.193**				-0.115
		(0.094)				(0.083)
Risk			-0.224**			-0.161**
			(0.034)			(0.033)
Others Report Total				0.575**		0.479**
				(0.072)		(0.074)
Economics					-0.395**	-0.283**
					(0.063)	(0.063)
Participation					-0.222**	-0.207**
					(0.080)	(0.070)
Constant	1.494**	1.406**	1.418**	1.447**	1.821**	1.696**
	(0.034)	(0.106)	(0.036)	(0.036)	(0.066)	(0.101)
N	532	526	517	524	525	513
Log-Likelihood	-1299	-1261	-1241	-1266	-1265	-1197

Standard errors (in parentheses) clustered at the session level.
** p<0.01, * p<0.05

Table 5: Survey Attitudes and Social Value Orientation: UK and Italy (excluding Milan)

	Obs. (1)	Mean (2)	Std. Dev. (3)	Min. (4)	Max. (5)	Italy Mean (6)	UK Mean (7)	Diff. in Means (8)
Justifiability of Cheating	432	7.916	2.561	0	10	8.351	7.587	0.763*
								(2.927)
Fundamental Duty	432	3.438	0.614	1	4	3.565	3.341	0.223*
								(3.884)
Worst Crimes	432	2.674	0.962	1	4	3.172	2.297	0.875*
								(9.486)
Serious Crime Index	432	0	0.762	-2.391	1.036	0.298	-0.226	0.524*
								(7.510)
State vs. Individual	432	4.551	3.010	0	10	3.247	5.537	-2.289*
								(-7.841)
Environment	428	2.262	0.839	1	5	2.054	2.420	-0.366*
								(-4.517)
Health	430	2.051	0.904	1	5	1.870	2.188	-0.317*
								(-4.108)
Education	429	1.860	0.808	1	5	1.524	2.115	-0.590*
								(-8.252)
Unemployment	427	3.279	1.183	1	5	2.577	3.800	-1.223*
								(-10.565)
Culture	427	2.740	1.138	1	5	2.049	3.258	-1.209*
								(-11.417)
Individual Responsibility Index	432	-0.001	0.635	-1.449	1.905	-0.414	0.312	-0.726*
								(-14.255)
Social Value Orientation	437	15.910	14.240	-16.260	45.395	15.372	16.318	-0.940
								(1.378)

Appropriate z-statistics from Wilcoxon Ranksum tests are reported in parentheses.
* indicates whether differences between countries are statistically significant at the 5% level.

Table 6: Negative Binomial Regressions: Complete Compliance (excluding Milan)

	Dependent Variable: Number of Times Declared 100% of Income			
	(1)	(2)	(3)	(4)
UK	-0.202**	-0.064	-0.080	0.020
	(0.042)	(0.060)	(0.049)	(0.058)
Individual Responsibility Index		-0.216**		-0.172*
		(0.072)		(0.069)
Serious Crime Index			0.259**	0.238**
			(0.045)	(0.044)
Constant	1.790**	1.720**	1.655**	1.610**
	(0.070)	(0.068)	(0.083)	(0.079)
Controls	Yes	Yes	Yes	Yes
N	431	431	431	431
Log-Likelihood	-998.1	-993.6	-988.0	-985.0

Standard errors (in parentheses) clustered at the session level.
** p<0.01, * p<0.05

Table 7: Percentage of Citizens Rating Institutions as "Corrupt" or "Very Corrupt"
24 Advanced Industrial Countries

Rank	Country	Year	Education	Judiciary	Health	Police	Civil Service	Average
1	Denmark	2013	6%	5%	13%	9%	11%	9%
2	Sweden	2007	5%	13%	12%	14%	(n.a.)	11%
3	Finland	2013	7%	9%	17%	5%	25%	13%
4	Austria	2010	11%	15%	(n.a.)	17%	22%	16%
5	Switzerland	2013	11%	14%	22%	13%	23%	17%
6	Norway	2013	13%	9%	33%	16%	29%	20%
7	Netherlands	2010	11%	23%	(n.a.)	17%	30%	20%
8	New Zealand	2013	16%	20%	17%	24%	25%	20%
9	Iceland	2010	16%	27%	(n.a.)	10%	51%	26%
10	Canada	2013	20%	25%	24%	27%	38%	27%
11	Australia	2013	19%	28%	20%	33%	35%	27%
12	Luxembourg	2013	21%	24%	21%	29%	40%	27%
13	**UK**	2013	18%	24%	19%	32%	45%	**28%**
14	Ireland	2010	17%	24%	(n.a.)	35%	45%	30%
15	Spain	2013	11%	51%	14%	37%	42%	31%
16	Germany	2013	19%	20%	48%	20%	49%	31%
17	South Korea	2013	30%	38%	21%	35%	36%	32%
18	France	2013	16%	34%	28%	41%	48%	33%
19	Belgium	2013	17%	43%	22%	41%	51%	35%
20	US	2013	34%	42%	43%	42%	55%	43%
21	**Italy**	2013	29%	47%	54%	27%	61%	**44%**
22	Portugal	2013	35%	66%	36%	38%	46%	44%
23	Japan	2013	55%	29%	47%	61%	66%	52%
24	Greece	2013	45%	66%	73%	56%	66%	61%

Source: Transparency International Global Corruption Barometer Reports (various years).

Appendix: Measuring Social Value Orientation

To measure social value orientation (SVO), each subject is randomly matched to another participant in the session, and makes a series of allocation decisions between herself and this "other" (see Figure A.1). For example, in Item 6 in Figure A.1, the participant can forego up to 15 units of income in order to increase her counterpart's income by a maximum 35 units.

The results from each of these allocation decisions can be arrayed on a coordinate plane, with the x-axis measuring the average allocation to self, and the y-axis measuring the average allocation to the other (see Figure A.2, with the six blue lines corresponding to the six items in Figure A.1). From this analysis, we can distinguish the following "ideal types" of individual motivations:

- **Individualists** prefer to maximize their own income
- **Pro-social** people prefer to maximize joint income between themselves and the other
- **Altruists** prefer to maximize the other's income
- **Competitive** people prefer to maximize the *relative distance* between the their own income and the other's

Of course, in reality, individuals' motivations lie somewhere between these ideal types. This information is captured in a single social value orientation angle given by:

$$SVO^\circ = arctan(\frac{\bar{P}s - 50}{\bar{P}o - 50})$$

where $\bar{P}s$ is the mean payoff allocated to the self and $\bar{P}o$ is the mean payoff allocated to the other.

Figure A.1: SVO Mini-Dictator Games

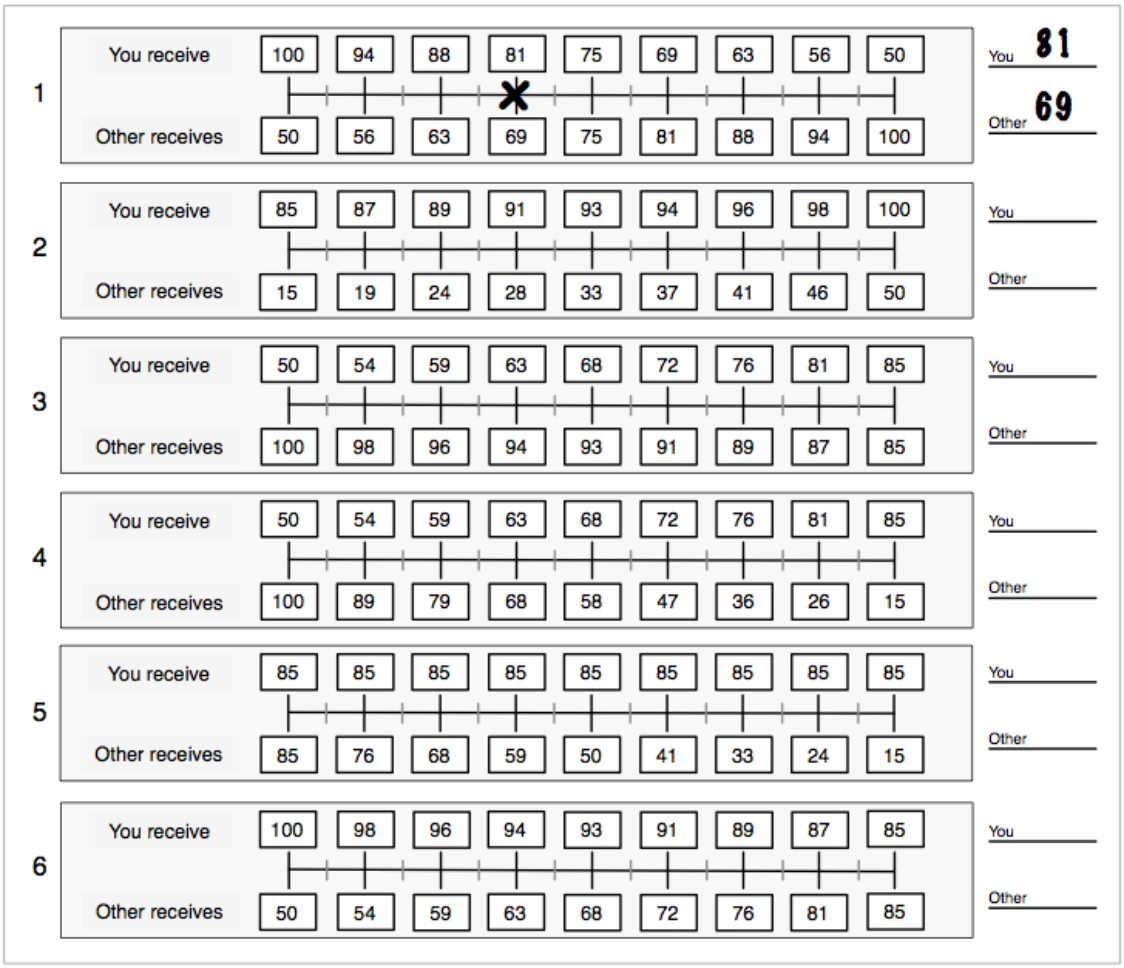

Figure A.2: Constructing the SVO Angle