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**DEPARTAMENT D'ECONOMIA – CREIP**  
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# **Education and tax morale**

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## **Abstract**

While the determinants of tax morale have been widely studied in the literature, surprisingly, the fundamental influence of education on tax morale has yet to be investigated. Given the insights in the psychological and political science literature about the role of education in the formation of social values, in this paper, we analyze two channels through which education shapes tax morale. We find that while the tax morale of individuals that are net receivers of welfare state benefits increases with their educational level, it decreases with educational level among those who are net contributors. Furthermore, our results indicate that the more highly educated, who have been shown to be better able to assess information in the media on public affairs, exhibit higher levels of tax morale in countries that have better quality public services, a fairer tax system and more transparent institutions.

**JEL classification:** H26; H52; I25

**Key words:** Tax morale; Tax compliance; Education; Welfare state benefits; Trust in public institutions

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# 1 Introduction

After the financial crisis in 2008 and the following sovereign debt crisis, many countries have experienced a substantial fall in their tax revenues and have been obliged to reduce the size of the public sector and to cut welfare benefits. In such a context, reducing tax evasion and increasing the tax morale of citizens has become a major objective of public fiscal policy. In a report for the European Parliament, [Murphy \(2012\)](#) estimates that in 2009 the tax revenue loss due to tax evasion in the EU exceeded €860 billion. This quantity is similar to total healthcare expenditure in the EU. Unsurprisingly, the fight against tax evasion has become one of the EU's principle concerns ([European Commission, 2016](#)).

The literature agrees that tax evasion is a complex phenomenon which, beyond the traditional cost-benefit analysis, is influenced by several other factors that together make up so-called tax morale and which consists of personal values, social norms and attitudes towards public institutions. While the relationship between an individual's tax morale and some of its determinants is already well understood (e.g., tax behavior of the individual's reference groups, age, gender, religion), the fundamental influence of education on tax morale has to date been ignored. This is all the more surprising as the psychology and political sciences literature tells us that education is an important factor in channeling individual behavior regarding social values, political attitudes and the general assessment of public affairs. On the basis of these insights, in this article we use data from the European Values Study ([EVS](#)) to explore the role of education as an indirect channel in shaping individuals' tax morale.

The results in the aforementioned literature indicate that there are two main reasons why educational level should influence tax morale. First, it is an indicator of the higher cognitive abilities that are necessary to understand the relationship between tax payments and many of the indirect benefits obtained individually in modern welfare states. Therefore, we expect individuals who are the main beneficiaries of welfare state benefits to exhibit higher tax morale. Moreover, this effect should be more pronounced among the more highly educated because they are more aware of the connection between tax payments and the benefits received from the state. Indeed, our result indicate that for unemployed and retired individuals tax morale and the educational level are positively related. By contrast, for the self-employed, who obtain comparatively lower benefits in exchange for their tax payments, tax morale and the educational level are negatively related. The second reason why we expect education to have an influence on tax morale is that more highly educated citizens are better informed and enabled to process information from the media. This affects their relationship with public institutions and, consequently, their tax morale. Our results confirm this conjecture. We find that the more highly educated exhibit higher levels of tax morale in countries that have better services, a fairer tax system and more transparent institutions.

The remainder of this paper is organized as follows. Section 2 relates our study to the literature. In Section 3 we put forward two hypotheses regarding the role of education in determining tax morale. Section 4 describes the data and the empirical model. In

Section 5 we discuss the results of our empirical model and provide some robustness checks. Section 6 concludes.

## 2 Literature review

As tax compliance is an important topic with a vast amount of literature devoted to it, this section gives only a brief review of the literature most related to our study.<sup>1</sup> We distinguish between the economic literature based on the traditional tax evasion model and the multi-discipline literature on tax morale. Furthermore, we comment more specifically on the literature that has analyzed the impact of education on tax compliance.

### 2.1 The traditional tax evasion model

The individual motives or incentives for tax evasion have been studied in the framework of the classical tax evasion model developed by [Allingham and Sandmo \(1972\)](#). This model analyzes a tax payer's decision to evade taxes as an expected-utility maximization problem where effective tax evasion depends, on the one hand, on *tax enforcement* by the tax authority (the probability of detection and the severity of fines and sanctions for tax evaders), and on the other hand, on the *benefits from tax evasion* (evaded tax payments by under-declaration). However, as this model has failed to yield good predictions of the observed tax payers' behavior in empirical studies or in laboratory experiments, the recent literature has focused on other factors to explain tax compliance. These are related to voluntary tax compliance and the concept of *tax morale* as opposed to enforced tax compliance on which the traditional tax evasion model relies.

### 2.2 Tax morale

The concept of tax morale is based on *voluntary tax compliance* and stems from the psychology and political science literature which has used the concepts of *personal and social norms*, *trust in authorities* and *socio-demographic controls* to explain tax compliance. In line with the literature we categorize the associated studies into three branches: personal and social norms, trust in authorities and further socio-demographic controls.

**Personal and social norms.** The psychology literature has distinguished between personal and social norms ([Wenzel, 2004](#); [Hofmann et al., 2008](#)). Personal norms comprise personal values, ethical reasoning, inequality aversion and religious beliefs and deal with what is generally perceived as good or bad. For example, the religious convictions of individuals have been proved to be an important factor for voluntary tax compliance ([Grasmick et al., 1991](#); [Stack and Kposowa, 2006](#); [Torgler, 2006](#)). Social norms are socially shared beliefs about how members of a group should behave and, according to [Sigala et al. \(1999\)](#), are one of the most important predictors of tax compliance. They find that

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<sup>1</sup>For more extensive literature reviews on tax evasion and tax morale see, for example, [Andreoni et al. \(1998\)](#), [Hofmann et al. \(2008\)](#), [Kirchler et al. \(2008\)](#), [Pickhardt and Prinz \(2014\)](#).

a taxpayer's compliance crucially depends on the perceived tax evasion in her reference group (friends, neighbours, or colleagues). Finally, Konrad and Qari (2012) find that patriotic persons exhibit higher levels of tax morale.

**Trust in public institutions.** As another important factor for tax morale the literature has identified citizens' trust in public sector institutions where perceptions regarding the fairness and efficiency of the welfare state play a prominent role. According to Feld and Frey (2002), the relationship between taxpayers and authorities can be understood as an implicit or 'psychological' contract. Taxpayers expect that the government provides goods and services in exchange for their tax payments. As a result, tax compliance is higher (lower) in situations in which citizens are satisfied (discontent) with the *indirect benefits* they receive through the quality and quantity of public provision (e.g., Alm and Jackson, 1993; Barone and Mocetti, 2011). Regarding the general quality of public provision it has been shown that 'trust' in political leadership and in the public administration leads to more voluntary tax compliance (e.g., Torgler, 2004, 2005b; Alm et al., 2006).<sup>2</sup> In the literature, the quality of public institutions and of service provision has been measured by the effectiveness of tax deterrence, the treatment of taxpayers by the tax authority, ethnic fractionalization, institutional transparency (corruption), and income inequality. Regarding the effectiveness of tax evasion deterrence, a clear relationship between the intensity of control and the severity of sanctions, on the one hand, and tax compliance, on the other hand, cannot be established. Following Feld and Frey (2007), these ambiguous effects of tax deterrence can be explained by the fact that while more audits reduce tax evasion they can also create an atmosphere of mistrust that reduces tax compliance (Pommerehne and Frey, 1992). With respect to the treatment of taxpayers by tax authorities, Frey and Feld (2002) and Feld and Frey (2002) show for Switzerland that an increased dialogue between tax payers and tax authorities contributes to raising tax morale. This is particularly the case in cantons that use referendums and initiatives in political decision making, whereas in cantons with a predilection for representative decision making a more authoritarian approach is found to be more effective.<sup>3</sup> Ethnic fractionalization is shown to have a negative impact on tax compliance by Lago-Peñas and Lago-Peñas (2010). Moreover, Torgler (2006) finds that a higher level of perceived corruption (less institutional transparency) lowers tax morale.<sup>4</sup> Finally, Doerrenberg and Peichl (2013) find that individuals in countries with a more progressive tax rate system are more likely to exhibit a higher general tax morale whereas, however, this effect decreases with the individual income level.

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<sup>2</sup>Different measures of trust based on individual perceptions have been used in these studies (e.g., trust in government, trust in the president, trust in the legal system, trust in officials), showing a positive relationship with tax morale

<sup>3</sup>Regarding trust in tax authorities (i.e., the relationship between taxpayers and the tax office), Kirchler et al. (2008) suggest the 'slippery slope' framework for tax compliance in which both the power of tax authorities (tax enforcement) and trust in the tax authorities are relevant dimensions for understanding enforced and voluntary compliance.

<sup>4</sup>Friedman et al. (2000) show empirically in a cross-country study that corruption and the size of the shadow economy are positively correlated.

**Socio-demographic control variables.** In addition to the two aforementioned groups of variables, most studies include a large number of socio-demographic variables such as age, gender, occupational status, marital status, income level, and educational level. Regarding the impact of these variables on tax morale it has been found that elder (e.g., Torgler, 2005b; Martinez-Vazquez and Torgler, 2009), women (e.g., Torgler and Murphy, 2004; Alm and Torgler, 2006; Torgler and Valev, 2010), retired persons (e.g., Torgler, 2005a, 2006; Konrad and Qari, 2012) and married individuals (e.g., Torgler, 2005b; Alm and Torgler, 2006) exhibit higher levels of tax morale, while the self-employed (e.g., Torgler, 2004; Alm and Torgler, 2006) manifest lower levels of tax morale. Finally, with respect to the effect of income on tax morale, the results are less clear.<sup>5</sup> For example, Torgler (2006), Alm et al. (2006) and Doerrenberg and Peichl (2013) find a negative relationship between income and tax morale, while Konrad and Qari (2012) and Torgler et al. (2008) do not find that income has a significant impact on tax morale.

### 2.3 Education and tax compliance

Despite the large number of studies that analyze the determinants of tax compliance and tax morale, none of them has comprehensively focused on the role of education in shaping tax morale. What is known about the influence of education on tax compliance stems from student questionnaires, country survey data or studies that include education as a further control. The limitations of these studies are that they have either been based on a limited number of student questionnaires or on surveys for specific countries. Furthermore, the studies that have included education merely as a further socio-economic control have obtained no unanimous result for its impact on tax morale.

Regarding the results obtained from studies based on student questionnaires, Chan et al. (2000) analyze responses from 157 students from two universities, one in the U.S. and the other in Hong Kong. They observe a negative relationship between educational level and tax compliance. McGee and Ross (2012) compare student surveys from six countries and obtain mixed results regarding the relationship between education and tax compliance. In Brazil, Russia and China the most opposed to tax evasion are individuals with a low level of education, and in India and the U.S. the more highly educated exhibit higher tax morale. In contrast, in Germany, it is those with a medium level of education who exhibit the lowest levels of tax compliance. Finally, Ahmed and Braithwaite (2005) survey 447 Australian graduates and find that the way in which tertiary education is financed influences the subsequent tax morale of the more highly educated.

The influence of education on tax morale has also been analyzed using country survey data. For the Netherlands, Groot and van den Brink (2010) examine a survey data set

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<sup>5</sup>Notice, that from the theoretical tax evasion models by Allingham and Sandmo (1972) and Yitzhaki (1974) the predicted influence of income on tax compliance is also ambiguous.

from 1996 on criminal behaviour to analyse the effects of education on offences and crimes committed. Among other results, they obtain that among the 2951 respondents of the survey the probability of committing tax fraud increases with years of education. The opposite result is obtained by [Alarcón-García et al. \(2012\)](#) who use Spanish data from a 2007 survey based on 1329 observations to analyze the relationship between gender and tax morale. They find that the level of education in general and knowledge of fiscal norms in particular are important determinants of the individual's declared attitude towards fraud. In the case of education, they obtain that the individual attitude against fraud increases with the educational level.

Finally, education has been used as a socio-economic control in numerous studies to explain tax morale. Studies that identify a positive relationship between education and tax morale are, for example: [Torgler \(2005a\)](#), who analyzes the relationship between direct democracy and tax morale for Switzerland; [Torgler \(2005b\)](#), who analyzes the determinants of tax morale in Latin American countries; [Konrad and Qari \(2012\)](#), who explores the relationship between patriotism and tax morale; [Torgler et al. \(2008\)](#), who investigate the effect of tax morale on tax compliance for the U.S. and Turkey; and [Torgler \(2012\)](#), who explores differences in tax morale in 10 eastern European countries. Examples of studies that find a negative relationship are: [Torgler \(2006\)](#), who analyzes the role of religiosity on tax morale; [Frey and Torgler \(2007\)](#), who study how perceptions of other taxpayers' behaviour influence an individual's tax morale; [Lago-Peñas and Lago-Peñas \(2010\)](#), who explore the determinants of tax morale in European countries; and [Doerrnberg and Peichl \(2013\)](#), who investigate the effect of tax progressivity on tax morale.

### 3 Hypotheses: Education and tax morale

The previous literature review shows that while educational level has been included in different studies as an explanatory control variable, its fundamental influence on tax compliance behaviour has been completely ignored. This is all the more surprising as we know from numerous studies in the fields of psychological and political sciences that the level of education is an important factor that channels individuals' behaviour regarding social values, political attitudes and the general assessment of public affairs. There are two main reasons why educational level should have a substantial influence on tax compliance behaviour. First, a higher educational level is an indicator of higher cognitive abilities [Arrow \(1973\)](#) which are essential for understanding the functioning of modern welfare states and the relationship between its general (indirect) benefits and individual tax compliance. For example, [Lewis \(1978, 1982\)](#) and [Niemirowski et al. \(2003\)](#) find that having obtained a certain educational level is a necessary condition for understanding tax laws, which in turn is important for generating trust in authorities. Second, information from media is a key factor in shaping citizens' valuation of government performance (e.g., [Keohane and Nye, 1998](#); [Newton and Norris, 2000](#); [Norris, 2000](#)) and education is paramount for processing this information. As formulated by [Sniderman et al. \(1993\)](#), "Citizens acquired through formal schooling not simply relevant information they required to reason about political

choices, but more fundamentally the ability to manipulate information efficiently and to gather it effectively after they had left school". Thus, the knowledge gap theory proposed by Tichenor et al. (1970) states that a higher educational level leads to a greater acquisition of knowledge from news, which entails that more highly educated citizens are better informed even when all citizens are exposed to exactly the same information. Eveland and Scheufele (2000) show that this knowledge gap between the low and high educated becomes even bigger among light media users. In the same vein, Price and Zaller (1993) argued that prior knowledge is a key factor for assessing new information. Furthermore, it has been shown that the more highly educated pay more attention to political mass media (e.g., McCombs and Shaw, 1972; Freedman and Goldstein, 1999) and are generally less inclined towards holding a passive attitude to mass media. For example, Johnson and Kaye (2003) use survey data gathered in the context of the US presidential elections in 1996 and 2000 and find that the amount of time in seeking political information online is positively associated with the educational level. Finally, education also motivates general interest in public affairs and civic engagement to the extent that the more highly educated are more prone to be politically active (Dalton, 2005).

Summarizing both arguments, more highly educated citizens are better able to understand the functioning of modern welfare states and are more informed about the performance of governments and public administrations. Both aspects are essential for shaping individuals' tax compliance decisions. The decision to voluntarily comply with tax obligations is a complex and multifaceted issue where individuals, when assessing the performance of the public sector, have to consider both the personal (direct) benefits from public service delivery and general (indirect) benefits from a well-organized welfare state (general quality of public provision, effective deterrence, transparency of public institutions, income redistribution, etc.). Therefore, educational level should influence an individual's tax compliance behavior because it affects both the quality of information obtained about government and public sector performance, and the understanding of the relationship between individual compliance and the quality of general public services. In the following we formulate two hypotheses regarding the influence of educational level on tax morale.

Our first hypothesis regarding the influence of education on tax morale considers the link between tax morale and individual *direct benefits* from tax compliance. According to the definition by Feld and Frey (2007), tax morale can be understood as the individual's intrinsic motivation to pay taxes which is the result of a 'psychological tax contract' between citizens and the state where citizens receive goods and services in exchange for their tax payments. However, the amount of goods and services that an individual receives from the state is not the same for all. Thus, individuals with children benefit from public education, the retired from public pensions, and the unemployed from public unemployment benefits. Therefore, tax morale should vary across individuals according to their personal situation. Moreover, these considerations should lead us to expect that education is an important channel that makes citizens conscious of the link between tax payments and individual (direct) benefits from the tax system. Accordingly, the first hypothesis we formulate is:

**Hypothesis 1:** Larger *direct benefits* from the welfare state positively affect an individual's tax morale and the effect increases with the educational level.

The second hypothesis considers the more complex relationship between tax payments and the general benefits that citizens obtain from a well-organized welfare state. Examples of these *indirect benefits* are the general quality of public services, the fairness of the tax system and the transparency of public institutions. Again, education plays a crucial role in assessing these indirect benefits which ultimately affect an individual's intrinsic motivation to pay taxes. For example, given that assessing public sector performance requires individuals to pay attention to political mass media and to process the information received, more highly educated citizens will be better able to make a less-biased evaluation. Furthermore, given that evaluating the *indirect* benefits from tax payments requires higher cognitive abilities and that these are correlated with educational level, we also expect this to be a key factor in shaping tax morale. On the basis of these considerations, the second hypothesis we formulate is:

**Hypothesis 2:** The educational level positively (negatively) affects tax morale when the *indirect benefits* from the welfare state are large (small).

Figure 1 displays the general structure of the determinants of tax compliance, as discussed in Section 2, and summarizes our hypotheses regarding the channels through which education shapes individuals' tax morale.

*Insert Figure 1 about here.*

## 4 Empirical approach

### 4.1 Data

The micro-level data is from the 2008 wave of the [EVS](#), which is a commonly used database in the tax morale literature.<sup>6</sup> The [EVS](#) particularly suites our aims as it enables the study of a representative group of individuals for a large set of relatively homogeneous countries. Out of 47 European countries included in the survey, 29 were finally included in the analysis, namely, Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.<sup>7</sup> Our macro-level data stems from differ-

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<sup>6</sup>We limit the analysis to the 2008 wave as some of our variables are only available for this year.

<sup>7</sup>The country selection criterion responds to data availability. Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Georgia, Kosovo, Macedonia, Moldova, Montenegro, the Netherlands, Northern Ireland, the Russian Federation, Serbia and Ukraine have not been included because of either lack of observations (in most of the cases) or missing data for some of our country-level variables (this is the case of the Netherlands and Malta).

ent sources which can be consulted in Table 1. Table 2 and Table 3 display the descriptive statistics for our dichotomous and continuous variables, and for our categorical variables, respectively.

#### 4.1.1 Dependent variable: tax morale

Our dependent variable (*tax morale*) stems from the EVS and has been constructed on the basis of the respondents' answers to the following question:

*Please tell me for each of the following whether you think it can always be justified, never be justified, or something in between, using this card: ‘Cheating on tax if you have the chance’*

Respondents were asked to assess this issue on a ten-point scale, from 1 (never) to 10 (always). As is common in the literature, the answers were recoded into a four-point scale where we used the following criterion: responses 7 through 10 were combined into a value 0 (low tax morale), while the remaining responses were combined in groups of two (1 and 2 into 3; 3 and 4 into 2; and 5 and 6 into 1). However, to check the robustness of our results from the chosen categorization, in Section 5.2 we also use the original ten-point scale.

The question of whether the responses to this question really provide unbiased data has been widely discussed in the literature. Following Doerrenberg and Peichl (2013), the general conclusions of the literature are that such a bias exists (Elffers et al., 1987); that this bias, however, is lower if one asks about tax morale instead of tax compliance (Frey and Torgler, 2007); and that for developed countries tax morale (as obtained from the EVS) and actual tax compliance are highly correlated (Richardson, 2006; Torgler et al., 2008). Consequently, we consider that this question allows us to obtain an appropriate measure of tax morale.

#### 4.1.2 Explanatory variables

Our main explanatory variable is *education* which is separated into three categories: low, medium and high.<sup>8</sup> Low education indicates that an individual has completed (compulsory) elementary education or has inadequately completed it. Medium education indicates that an individual has some sort of secondary school education. Finally, high education captures those individuals with university studies (completed or uncompleted). The remaining variables are grouped into four classes: personal and social norms, direct benefits, indirect benefits and control variables.

**Personal and social norms.** As variables that indicate personal and social norms we consider whether an individual is *religious*, whether she is *patriotic*, and whether she is

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<sup>8</sup>The details on the measurement and definition of the variables and the sources from which the data has been retrieved are in Table 1.

*inequality averse*. All these variables are defined as dummy variables where 1 indicates a positive attitude (religious, patriotic, inequality averse) and 0 a negative attitude (non-religious, non-patriotic, inequality non-averse). As discussed in Section 2.2, we expect these variables to be positively related to tax morale.

**Direct benefits.** As mentioned before, an individual's intrinsic motivation for voluntary tax compliance stems from a psychological tax contract between citizens and the state where citizens counterbalance their tax obligations with the goods received in exchange. As formulated in Hypothesis 1, we expect that an individual that directly benefits more from public goods provision will have a stronger belief in a moral obligation for tax compliance. To test this hypothesis, as direct benefits we consider the following variables: the *number of children*, *employed*, *unemployed*, *self-employed*, *retired*, and *other*. As public goods and transfers benefit individuals with children, unemployed individuals, and retired individuals more than proportionally, we expect both variables to have a positive relationship with tax morale. In contrast, employed and self-employed individuals are expected to exhibit lower tax morale as they obtain comparatively lower benefits from the state in exchange for their tax payments.

**Indirect benefits.** To test Hypothesis 2, we consider the ‘indirect benefits’ that modern welfare states offer and that are expected to influence an individual’s tax morale. As indicators of these indirect benefits we consider *public social expenditure*, *ethnic fractionalization*, *transparency*, *income inequality*, *relative redistribution*, and *deterrence*. *Public social expenditure* is measured as the share of the sum of public health, education and social benefits expenditure in GDP.<sup>9</sup> *Ethnic fractionalization* (from Alesina et al., 2003) is used as an indicator of the match of public goods provided by the state and the preferences for public goods of citizens (Alesina et al., 1997). Thus, a higher fractionalization indicates a larger mismatch which should lower tax morale. *Transparency* measures “the perceived levels of public-sector corruption in a given country on a scale from zero (highly corrupt) to ten (highly clean)” (Transparency International, 2008). *Income inequality* is measured as the pre-tax Gini index of inequality in equivalized household market income, which has been found, as mentioned before, to be negatively related to tax morale in some studies. *Relative redistribution* is the percentage reduction in market-income inequality due to taxes and transfers and, therefore, indicates the effectiveness of the public sector in reducing income inequality. Finally, *Deterrence* measures the effort and effectiveness of tax authorities in fighting tax evasion. According to Hypothesis 2 we expect that the more highly educated, who are supposed to be better informed about government performance, to exhibit higher tax morale as a response to positive performance (more social expenditure, low income inequality, high relative redistribution, low fractionalization, high transparency, effective deterrence) and vice versa.

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<sup>9</sup>Missing 2008 values on public education expenditure for Greece, Luxembourg, Romania, and Turkey are imputed with data from 2005, 2007, 2007 and 2006, respectively. The missing 2008 value on public health expenditure for Croatia is imputed with the 2012 value.

**Controls.** Finally, as further control variables we include variables commonly used in the literature, namely *Income*, *Age*, *Gender*, *Marital status*, and *Natural-born citizen*. The expected impact of these variables on tax morale has already been extensively commented in Section 2.

## 4.2 Empirical model

As is common in the literature, we use an ordered probit model to account for the ranking information of our four-point scale dependent variable (tax morale). Due to the non-linear form of the ordered probit estimation the size of the coefficients should not be directly interpreted, but the focus should be on the sign and the significance of the estimates. In all specifications the model includes individual and country level variables (with Germany as the reference country). Clustered standard errors by country are reported to avoid an underestimation of standard errors because of intra-group error correlation. Accordingly, our estimation model is:

$$y_{i,c}^* = \beta' x_{i,c} + \varepsilon_{i,c} \quad (4.1)$$

where  $y^*$  is a latent variable (tax morale of individual  $i$  in country  $c$ ), and  $x$  is a vector of explanatory variables. The latent variable  $y_{i,c}^*$  is only observable when it crosses thresholds:

$$y_{i,c}^* = j \quad \text{if} \quad \alpha_j < j \leq \alpha_{j+1}, \quad j = 0, 1, 2, 3,$$

and the probability that  $y_{i,c}^* = j$  is:

$$P(y_{i,c}^* = j) = F(\alpha_{j+1} - \beta' x_{i,c}) - F(\alpha_j - \beta' x_{i,c})$$

where  $F$  denotes the standard normal cumulative distribution function. The four categories for our tax morale variable  $y^*$  are: low ( $j = 0$ ), medium low ( $j = 1$ ), medium high ( $j = 2$ ), and high ( $j = 3$ ).

To test our first hypothesis, we include interactions between the educational level and the *direct benefits* variables. Country dummies are used to account for unobserved country effects. More specifically, our first hypothesis is estimated with the following model (Models I and II):

$$\beta' x_{i,c} = Edu_{i,c} + PS_{i,c} + DB_{i,c} + DB_{i,c} \times Edu_{i,c} + CL_{i,c} + \nu_c + \eta_j + \varepsilon_{i,c} \quad (4.2)$$

where  $Edu$  indicates educational level dummies (medium, high) with their corresponding coefficients;  $PS$  is a vector of personal and social norms dummies (Religious, Patriotic, Inequality averse) with their corresponding coefficients;  $DB$  is a vector of direct benefits dummies (Number of children, Unemployed, Self-employed, Retired, Other) with their corresponding coefficients;  $CL$  is a vector of control variables (two income dummies (medium, high), Age, Gender, Married, Widowed, Divorced, Natural-born citizen);  $\nu_c$  is a vector of country dummies; and  $\eta_j$  is a vector of three intercepts for each tax morale category (middle low, middle high, high as compared to the base category of low). The individual-level variables used in our empirical models can be considered as uncorrelated.

Notice, that this is also case for education and income whose correlation coefficient is 0.30.<sup>10</sup>

To test the second hypothesis of whether the educational level acts as an indirect channel in shaping tax morale when individuals assess the indirect benefits of the welfare state, we substitute the country-fixed effects in equation 4.2 with different country-level variables which we interact with the educational level. That is, we estimate the following models (Models III-VIII):

$$\beta' \mathbf{x}_{i,c} = Edu_{i,c} + PS_{i,c} + DB_{i,c} + DB_{i,c} \times Edu_{i,c} + CL_{i,c} + IB_{i,c} + IB_{i,c} \times Edu_{i,c} + \eta_j + \varepsilon_{i,c} \quad (4.3)$$

where  $IB$  are the indirect benefit variables (Public social expenditure (Model III), Ethnic fractionalization (Model IV), Transparency (Model V), Income inequality (Model VI), Relative redistribution (Model VII), and Deterrence (Model VIII)). The reason for including these country-specific variables in alternative model specifications is that some them are highly correlated with each other.

As mentioned before, we test our first hypothesis by including interactions between the variables that account for the direct benefits from tax compliance (*Number of children*, *Unemployed*, *Self-employed* and *Retired*) and dummies indicating the respondents' educational levels. Thus, hypothesis 1 is tested with 15 (13) different estimates in Specification I (II).<sup>11</sup> The problem of testing hypothesis 1 is that with 15 independent variables the chance of finding at least one significative effect is arround 80%.<sup>12</sup> There are different methodologies to adjust the p-values allowing to reduce the chance of Type I errors due to multiple hypothesis testing (see [Newson \(2003\)](#) for a thorough description of these methods). Following [Elkins et al. \(2017\)](#), we use a variety of these methods and consider the impact of a variable as statistically significant if it remains significant for the majority of the employed adjustment methods whose results are reported in the Appendix. For our main results, variable estimates that are significant after adjusting the p-value for multiple hypothesis testing are highlighted in bold Table 4.

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<sup>10</sup>As can be expected this is not the case for the correlation coefficients of some of control variables *Age* with *Retired* (0.70), or *Age* with *Widowed* (0.43). The exclusion of one of these variables, however, does not change our results qualitatively. More details on correlations can be found in the correlation matrix which is in the supplementary material to this article.

<sup>11</sup>Notice, that multiple hypothesis testing in case of hypothesis 2 is a minor problem as there are only three interactions in each specification.

<sup>12</sup>The probability of having at least one significant effect with a significance level of  $\alpha = 0.10$  and  $m = 15$  variables is  $1 - (1 - \alpha)^m$ .

## 5 Results

### 5.1 Regression results

The estimation results are displayed in Table 4. As the interpretation of the estimated coefficients in the ordered probit estimation model is not straight forward, in the discussion of the results we concentrate on the significance and the sign of the estimated coefficients. Specifications I and II contain country fixed effects while specifications III-VIII include different country contextual-level variables that allow us to test Hypothesis 2. By contrast, as cross-country differences are best accounted for in specifications I and II we consider these to be most suitable for testing Hypothesis 1 which is related to the individual characteristics of the respondents.

Specifications I and II differ with respect to the inclusion of education interaction terms with the variable *Number of children*. As can be seen from Table 4, in specification I these interactions turn out to be non-significant. However, in specification II without these interactions, the *number of children* has a significant positive impact on tax morale. The direct (non-interacted) effect of *education* on tax morale turns out to be non-linear. Thus, while individuals with a medium level of education exhibit lower levels of tax morale, there is no significant difference between individuals with a low level of education and those with a high level of education. With respect to the influence of personal and social norms, our results are in line with what has been found in the literature. *Religious*, *Patriotic* and *Inequality averse* individuals are more likely to manifest higher tax morale.

*Insert Table 4 about here.*

We check our first hypothesis by examining the interaction between educational levels and the variables indicating the direct benefits from tax compliance. As mentioned before, with regard to the *number of children* education shows no distinguishable influence on tax morale. In contrast, for the *Unemployed*, *Self-employed*, and *Retired* variables, educational level is an important channel for assessing the individual beneficiary status in the context of the psychological tax contract. Thus, unemployed individuals with a medium or a high educational level are more likely to exhibit higher tax morale than those with a low educational level. We take this as evidence for the fact that the more highly educated are more conscious of the benefits they receive from general tax compliance. The same is true for retired individuals. In line with this argument, self-employed individuals, who generally obtain comparably fewer benefits from the state, exhibit lower tax morale when their educational level is medium or high. Considering these results together, we accept Hypothesis 1 that education plays an important role in shaping individuals' tax morale according to their beneficiary status in the welfare state.

With respect to the controls used in models I and II, generally, the sign and significance of the estimates are in line with the previous empirical studies which are summarized in

Section 2. For the income level dummies, as in Konrad and Qari (2012), we find no significant influence on tax morale.<sup>13</sup> Notice, that *Natural-born citizen*, which to our knowledge has not been used in previous studies as a determinant of tax morale, is negatively related to tax morale. According to the ‘psychological tax contract’, one reason for this may be that citizens who are nationals by birth expect to receive more and better goods and services from the state in exchange for their tax payments than citizens who are not nationals by birth.

As mentioned before, we use specifications III-VIII to test the validity of Hypothesis 2. We expect that the individuals with a higher level of education, who are supposed to be better informed about general public sector performance and the indirect benefits from the welfare state, will increase (lessen) their tax compliance in response to good (bad) performance. We use *Public social expenditure* to carry out our first measurement of this performance in Specification III. We find that higher public social expenditure leads to higher tax morale among the medium and highly educated in comparison to the low educated. *Ethnic fractionalization*, as a measure of the mismatch between the public goods received and desired by citizens, causes tax morale to fall as level of education increases. For the impact of our third and fourth measure, *Transparency* and *Income inequality*, respectively, we find no significant differences between the various educational levels. Our fifth measure of general public sector performance, *Relative redistribution*, has a generally negative impact on tax morale, but tax morale increases with educational level. Finally, for the impact of *Deterrence* on tax morale we find no significant differences between the various educational levels. Taken together, these results lead us to accept Hypothesis 2; that is, the educational level of individuals affects the extent to which their tax morale is impacted by the indirect benefits that they obtain from the welfare state. Good performance (more social expenditure, higher transparency, better relative income redistribution) increases the tax morale of individuals with a high level of education more than that of individuals with a low level of education, while bad performance (more fractionalization) decreases the tax morale of individuals with a high level of education more than that of individuals with a low level of education.

## 5.2 Robustness checks

To check the robustness of our results we perform three alternative estimations. Firstly, to test whether the results are sensitive to the categorization of our dependent variable tax morale, we estimate models I-VIII with the original ten-point scale from the questionnaire. The results are displayed in Table 5, which shows that the results do not change qualitatively.

Secondly, we use the generalized linear model (GLM) as an alternative estimation method. For this purpose, we rescale our dependent variable from the four-point scale

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<sup>13</sup>See also Section 5.2, where the relationship between income and tax morale is further discussed.

to take values between 0 and 1. As shown in Table 6, this also does not lead to any substantial changes to the results we obtained before.

Finally, even if income and education are only weakly correlated, one might argue that some of the effects of education on tax morale described in Section 5 stem from income and not from education.<sup>14</sup> To analyze this question, we perform two additional robustness checks in which income level dummies replace our educational level dummies as interaction terms. In the first one, we replace all education interactions with income interaction, while in the second one, we substitute only education interactions with country-level variables. The results are displayed in Table 7 and Table 8, respectively. As can be observed, at the individual level, none of the interaction coefficients are significant. With respect to the interactions between income and the country-level variables, although some of the interaction coefficients are significant (*Ethnic fractionalization* with high income, and *Relative redistribution* with medium income), we observe that the explanatory power of these models is below that of the corresponding models in Section 5. In conclusion, we take these results as evidence that the aforementioned impacts on the relationship between direct and indirect benefits and tax morale are mainly channeled through education and not income.

## 6 Conclusions

This study analyzes the role of education in shaping tax morale, a fundamental question that has been totally ignored by the existing literature. Given the results in the psychological and political science literature, where it is well understood that education is an important factor in channeling individual behavior regarding social values, and given that an individual's intrinsic motivation to pay taxes is the result of a psychological tax contract, we derive two hypotheses. First, we expect that individuals who obtain higher direct benefits from the state exhibit higher tax morale and that this effect is more pronounced for the more highly educated because they are more aware of the connection of between tax payments and benefits received from the state. Our results indicate that education, indeed, has an important impact on tax morale for those individuals that are beneficiaries of the welfare state (i.e., the unemployed, the retired, etc.). Second, as the more highly educated are better informed, we expect that educational level positively (negatively) affects tax morale when the indirect benefits that citizens obtain from the welfare state are large (small). Our results confirm this hypothesis. We find that the more highly educated exhibit higher levels of tax morale in countries with better quality services, a fairer tax system and more transparent institutions.

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<sup>14</sup>The income level variable has been introduced as the harmonized household income level categorized into 3 intervals where the data is directly provided by the EVS. Alternatively, we have used the original twelve-point scale variable for two additional robustness checks in which *Income* has been measured either by dummy variables or as a continuous variable. The results obtained from these two robustness checks (not reported) do not differ from those obtained using the harmonized variable provided by the EVS.

Some important policy implications can be derived from these findings. First, as some of the influence of education on tax morale is channeled through better information about public affairs, it is particularly important to increase information about direct and indirect benefits of a tax-financed welfare state, especially in the case of the less well educated. Second, increasing the educational level of the population would be a good instrument for increasing tax morale and reducing tax evasion. However, this is only the case when individuals perceive that what they receive in exchange for their tax payments from the state is of high quality. Otherwise, increasing the educational level of the population would have just the contrary effect and reduce tax morale. Therefore, the impact on tax morale of the observed tendency of a steadily increasing mean educational level among the populations of many European countries should be assessed in the light of the cuts in social benefits introduced in many of these countries since the financial crisis of 2008. The next [EVS](#) wave might allow us to assess how both tendencies have affected overall tax morale in European countries.

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## Appendix

*Insert Table 1 here.*

*Insert Table 2 here.*

*Insert Table 3 here.*

*Insert Table 5 here.*

*Insert Table 6 here.*

*Insert Table 7 here.*

*Insert Table 8 here.*

*Insert Table 9 here.*

*Insert Table 10 here.*

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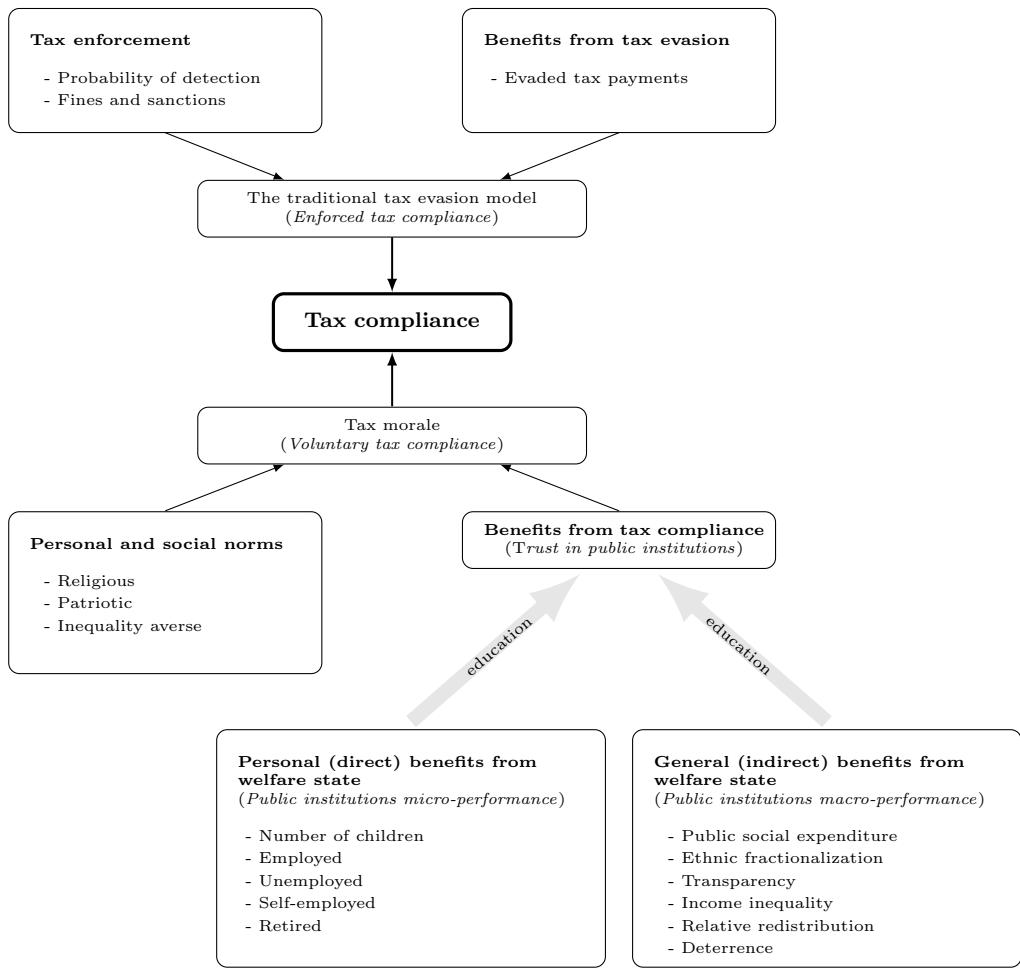


Figure 1: Education and tax compliance.

Variable	Definition	Measurement	Source
Tax morale	Respondents' tax morale	Rescaled into a four-point scale. Responses 7 through 10 were combined into a value 0 (low tax morale), while the remaining responses were combined in groups of two (5 and 6 into 1; 3 and 4 into 2; 1 and 2 into 3).	<a href="#">EVS (2011)</a> .
Education	Respondents' educational level	Three dummy variables (low, medium and high) accounting for whether the respondent has adequately or inadequately completed primary (compulsory), secondary or tertiary education respectively.	<a href="#">EVS (2011)</a> .
Religious	Respondents' religious beliefs	Dichotomous variable taking value 1 if the respondent declares to be a religious person and 0 if otherwise (not religious or convinced atheist).	<a href="#">EVS (2011)</a> .
Patriotic	Respondents' patriotic feelings	Dichotomous variable taking value 1 if the respondent declares to be very or quite proud of being a citizen of the country and 0 otherwise (not very or not at all proud).	<a href="#">EVS (2011)</a> .
Inequality averse	Respondents' inequality-aversion inclination	Dummy variable taking value 1 for the first two points in a ten-point scaled answer in which the respondents indicate their views on income equality (where value 1 stands for "incomes should be made more equal", and 10 "there should be greater incentives for individual effort").	<a href="#">EVS (2011)</a> .
Number of children	Respondents' number of children at home	Continuous variable accounting for the individuals' number of children at home.	<a href="#">EVS (2011)</a> .
Unemployed	Respondents' employment status	Dichotomous variable taking value 1 if the respondent is currently unemployed and 0 if otherwise.	<a href="#">EVS (2011)</a> .
Self-employed	Respondents' employment status	Dichotomous variable taking value 1 if the respondent is currently self-employed and 0 if otherwise.	<a href="#">EVS (2011)</a> .
Retired	Respondents' employment status	Dichotomous variable taking value 1 if the respondent is retired/pensioned and 0 if otherwise.	<a href="#">EVS (2011)</a> .
Other	Respondents' employment status	Dichotomous variable taking value 1 if the respondent is (military service, housewife not otherwise employed, student, not working because of disability, other reasons) and 0 if otherwise.	<a href="#">EVS (2011)</a> .
Income	Respondents' income level	Three dummy variables (low, medium and high) accounting for the respondent's income level.	<a href="#">EVS (2011)</a> .
Age	Respondents' age	Respondent's age calculated using the year of birth.	<a href="#">EVS (2011)</a> .
Gender	Respondents' gender	Dichotomous variable taking value 1 for female and 0 for male.	<a href="#">EVS (2011)</a> .

Table 1: Data definitions and sources.

Variable	Definition	Measurement	Source
Married	Respondents' marital status as married	Dichotomous variable taking value 1 if the respondent is currently married or in a partnership and 0 if otherwise.	<a href="#">EVS (2011)</a> .
Widowed	Respondents' marital status as widowed	Dichotomous variable taking value 1 if the respondent is currently widowed and 0 if otherwise.	<a href="#">EVS (2011)</a> .
Divorced	Respondents' marital status as divorced	Dichotomous variable taking value 1 if the respondent is currently divorced or separated and 0 if otherwise.	<a href="#">EVS (2011)</a> .
Natural-born citizen	Country citizenship obtained by birth	Dichotomous variable taking value 1 if the respondent obtained the country citizenship by birth and 0 if otherwise.	<a href="#">EVS (2011)</a> .
Public social expenditure	Public healthcare, education and social expenditure	Measured as the share of public health, education and social benefits expenditure in GDP.	<a href="#">EUROSTAT (2016)</a> . Health expenditure data for AUT, GRE, IRL, ITA, TUR, UK is from <a href="#">OECD (2016)</a> .
Ethnic fractionalization	Fractionalization index of ethnic groups by country	$Fractionalization_j = 1 - \sum_{i=1}^n s_{ij}^2$ with $s_{ij}$ being the share of group $i$ in country $j$	<a href="#">Alesina et al. (2003)</a> .
Transparency	Corruption Perceptions Index	Measures the perceived levels of public-sector corruption in a given country on a scale from zero (highly corrupt) to ten (highly clean).	<a href="#">Transparency International (2008)</a> .
Income inequality	Pre-taxes Gini index	Estimate of Gini index of inequality in equivalized (square root scale) household market (pre-tax and pre-transfer) income	<a href="#">Solt (2014)</a> .
Relative redistribution	The percentage reduction in market-income inequality due to taxes and transfers	The difference between the post-tax gini and pre tax gini, divided by pre-tax gini, multiplied by 100	Own construction using data from <a href="#">Solt (2014)</a> .
Deterrence	Deterrence power of the administration	Number of tax administration staff as a proportion of the total labor force multiplied by the value of completed audits as a proportion of total net collections	Own construction using data from <a href="#">OECD (2009, 2011)</a> . Total labor force has been taken from the <a href="#">World Bank (2016)</a> .

Table 1: Continued. Data definitions and sources.

Variable	Mean	Std. Dev.	Min	Max
<i>Individual-level variables</i>				
Religious	0.653	0.476	0	1
Patriotic	0.886	0.318	0	1
Inequality averse	0.232	0.422	0	1
Natural-born citizen	0.958	0.201	0	1
Number of children	0.926	1.349	0	13
Age	48.505	17.557	16	108
Gender	0.548	0.498	0	1
<i>Country-level variables</i>				
Public social expenditure	32.718	7.892	18.760	46.590
Ethnic fractionalization	0.255	0.162	0.047	0.587
Transparency	6.252	1.718	3.600	9.300
Income inequality	46.685	5.105	33.752	58.393
Relative redistribution	35.398	11.697	3.626	48.858
Deterrence	0.839	0.732	0.007	3.045

Table 2: Descriptive statistics of dummy and continuous variables

<b>Variable</b>	<b>Value</b>	<b>Frequency</b>	<b>Percent</b>
<b>Tax morale</b>	Low (0)	1,710	5.96
	Medium Low (1)	2,543	8.86
	Medium High (2)	3,932	13.69
	High (3)	20,530	71.50
	<i>Total</i>	28,715	100
<b>Educational level</b>	Low	4,334	15.09
	Medium	17,924	62.42
	High	6,457	22.49
	<i>Total</i>	28,715	100
<b>Occupational status</b>	Employed	13,677	47.63
	Unemployed	1,734	6.04
	Self-employed	1,514	5.27
	Retired	7,345	25.58
	Other	4,445	15.48
	<i>Total</i>	28,715	100
<b>Income level</b>	Low	9,522	33.16
	Medium	10,641	37.06
	High	8,552	29.78
	<i>Total</i>	28,715	100
<b>Marital status</b>	Never married	6,665	23.21
	Married / partnership	16,160	56.28
	Widowed	3,118	10.86
	Divorced / separated	2,772	9.65
	<i>Total</i>	28,715	100

Table 3: Descriptive statistics of categorical variables.

	I (H1)	II (H1)	III (H2)	IV (H2)	V (H2)	VI (H2)	VII (H2)	VIII (H2)
Medium education (Ref.: low)	-0.132** (0.055)	-0.107** (0.048)	-1.061** (0.361)	-0.044 (0.104)	-0.680 (0.428)	-1.212 (0.798)	-0.662** (0.143)	-0.121 (0.079)
High education (Ref.: low)	0.004 (0.064)	0.013 (0.051)	-1.296** (0.410)	0.226** (0.112)	-0.930** (0.451)	-0.927 (0.798)	-0.784** (0.216)	-0.028 (0.099)
<b>Personal and social norms</b>								
Religious (Ref.: non religious)	0.160** (0.031)	0.160** (0.031)	0.107** (0.034)	0.118** (0.049)	0.120** (0.041)	0.120** (0.045)	0.081* (0.036)	0.098* (0.045)
Patriotic (Ref.: non patriotic)	0.259** (0.037)	0.259** (0.037)	0.280** (0.051)	0.259** (0.049)	0.275** (0.050)	0.269** (0.042)	0.288** (0.053)	0.285** (0.051)
Inequality averse	0.092** (0.034)	0.092** (0.034)	0.123* (0.048)	0.109* (0.046)	0.125** (0.047)	0.118** (0.045)	0.127** (0.047)	0.116* (0.049)
<b>Direct benefits</b>								
Number of children	0.009 (0.013)	<b>0.023**</b> (0.006)	0.023** (0.006)	0.026** (0.007)	0.026** (0.006)	0.025** (0.006)	0.023** (0.006)	0.029** (0.006)
x medium education	0.022 (0.017)							
x high education	0.006 (0.022)							
Unemployed (Ref.: employed)	-0.280* (0.111)	<b>-0.286**</b> (0.107)	-0.093 (0.146)	0.029 (0.187)	-0.012 (0.165)	-0.070 (0.156)	-0.189 (0.127)	0.001 (0.169)
x medium education	<b>0.309**</b> (0.113)	<b>0.314**</b> (0.110)	0.199 (0.125)	0.082 (0.145)	0.124 (0.130)	0.181 (0.128)	0.272* (0.117)	0.094 (0.129)
x high education	0.337* (0.141)	<b>0.346*</b> (0.137)	0.217 (0.151)	0.086 (0.157)	0.153 (0.151)	0.188 (0.151)	0.293* (0.148)	0.106 (0.150)
Self-employed (Ref.: employed)	0.146 (0.100)	0.142 (0.103)	0.227* (0.110)	0.334* (0.168)	0.273* (0.133)	0.247 (0.133)	0.136 (0.103)	0.295 (0.161)
x medium education	<b>-0.322**</b> (0.108)	<b>-0.317**</b> (0.110)	-0.353** (0.099)	-0.477** (0.147)	-0.397** (0.115)	-0.375** (0.120)	-0.277** (0.107)	-0.432** (0.149)
x high education	<b>-0.431**</b> (0.130)	<b>-0.428**</b> (0.133)	-0.461** (0.127)	-0.607** (0.169)	-0.487** (0.143)	-0.476** (0.137)	-0.371** (0.131)	-0.555** (0.170)
Retired (Ref.: employed)	-0.070 (0.063)	-0.062 (0.061)	-0.101 (0.098)	-0.120 (0.090)	-0.132 (0.087)	-0.142 (0.088)	-0.108 (0.090)	-0.137 (0.088)
x medium education	<b>0.216**</b> (0.073)	<b>0.203**</b> (0.071)	0.269* (0.109)	0.313** (0.113)	0.325** (0.114)	0.309** (0.103)	0.251** (0.093)	0.313** (0.108)
x high education	0.184 (0.097)	0.180 (0.094)	0.282* (0.134)	0.325* (0.135)	0.338* (0.135)	0.338** (0.128)	0.269* (0.119)	0.323** (0.125)
Other (Ref.: employed)	-0.065 (0.069)	-0.066 (0.069)	0.088 (0.073)	0.221 (0.151)	0.181 (0.119)	0.103 (0.104)	-0.009 (0.068)	0.194 (0.145)
x medium education	0.137 (0.075)	0.137 (0.076)	-0.008 (0.066)	-0.144 (0.127)	-0.101 (0.096)	-0.025 (0.093)	0.084 (0.075)	-0.117 (0.122)
x high education	-0.015 (0.087)	-0.011 (0.088)	-0.109 (0.092)	-0.259* (0.120)	-0.203* (0.093)	-0.148 (0.094)	-0.034 (0.095)	-0.242* (0.116)
<b>Controls</b>								
Medium income (Ref.: low)	-0.001 (0.030)	-0.000 (0.030)	0.008 (0.039)	0.023 (0.036)	0.013 (0.041)	0.010 (0.040)	0.000 (0.037)	0.020 (0.041)
High income (Ref.: low)	-0.033 (0.050)	-0.033 (0.050)	-0.037 (0.052)	-0.027 (0.053)	-0.031 (0.054)	-0.038 (0.056)	-0.047 (0.051)	-0.030 (0.054)
Age	0.009** (0.001)	0.009** (0.001)	0.008** (0.001)	0.007** (0.002)	0.007** (0.002)	0.007** (0.002)	0.009** (0.001)	0.008** (0.002)
Gender (Ref.: male)	0.185** (0.027)	0.186** (0.027)	0.165** (0.033)	0.165** (0.037)	0.162** (0.037)	0.166** (0.032)	0.170** (0.028)	0.162** (0.036)
Married (Ref.: never married)	0.018 (0.022)	0.020 (0.023)	0.020 (0.026)	0.036 (0.029)	0.028 (0.027)	0.021 (0.027)	0.000 (0.028)	0.016 (0.031)
Widowed (Ref.: never married)	-0.047 (0.037)	-0.045 (0.038)	-0.080* (0.033)	-0.035 (0.047)	-0.062 (0.041)	-0.067 (0.047)	-0.105* (0.043)	-0.070 (0.055)
Divorced (Ref.: never married)	-0.121** (0.033)	-0.120** (0.034)	-0.131** (0.040)	-0.113** (0.037)	-0.123** (0.042)	-0.117** (0.037)	-0.140** (0.042)	-0.130** (0.045)
Natural-born citizen	-0.166** (0.048)	-0.166** (0.048)	-0.131* (0.056)	-0.145* (0.059)	-0.122* (0.053)	-0.127* (0.055)	-0.151** (0.056)	-0.154** (0.055)

	I (H1)	II (H1)	III (H2)	IV (H2)	V (H2)	VI (H2)	VII (H2)	VIII (H2)
<b>Indirect benefits</b>								
Public social expenditure			<b>-0.027*</b> (0.014)					
x medium education			<b>0.027*</b> (0.011)					
x high education			<b>0.036**</b> (0.013)					
Ethnic fractionalization				0.184 (0.501)				
x medium education				-0.697 (0.406)				
x high education				<b>-1.321**</b> (0.434)				
Transparency					-0.068 (0.073)			
x medium education					0.075 (0.060)			
x high education					0.128 (0.066)			
Income inequality						-0.036 (0.019)		
x medium education						0.020 (0.016)		
x high education						0.017 (0.016)		
Relative redistribution							<b>-0.025**</b> (0.005)	
x medium education							<b>0.015**</b> (0.004)	
x high education							<b>0.021**</b> (0.006)	
Deterrence								0.241 (0.144)
x medium education								-0.132 (0.129)
x high education								-0.094 (0.131)
Constant cut1	-1.202** (0.115)	-1.179** (0.107)	-1.922** (0.496)	-1.058** (0.153)	-1.477** (0.526)	-2.794** (0.949)	-1.859** (0.213)	-0.888** (0.110)
Constant cut2	-0.644** (0.114)	-0.622** (0.107)	-1.389** (0.496)	-0.522** (0.153)	-0.944 (0.527)	-2.260* (0.951)	-1.324** (0.212)	-0.355** (0.112)
Constant cut3	-0.124 (0.118)	-0.102 (0.111)	-0.893 (0.500)	-0.024 (0.160)	-0.449 (0.533)	-1.763 (0.953)	-0.826** (0.213)	0.142 (0.119)
Observations	28,715	28,715	28,715	28,715	28,715	28,715	28,715	28,715
Countries FE	YES	YES	NO	NO	NO	NO	NO	NO
Pseudo R2	0.0598	0.0597	0.0277	0.0304	0.0268	0.0291	0.0313	0.0285

Table 4: Estimation results. Ordered probit with clustered standard errors by country (29 clusters). Robust standard errors in parentheses where \*\* indicate  $p < 0.01$ , and \*  $p < 0.05$ , respectively. Estimates in bold denote significant effects after adjusting the p-value for multiple hypothesis testing by different methods using 0.1 level as false discovery rate (see Table 10).

	I (H1)	II (H1)	III (H2)	IV (H2)	V (H2)	VI (H2)	VII (H2)	VIII (H2)
Medium education (Ref.: low)	-0.073 (0.059)	-0.053 (0.055)	-1.066** (0.302)	0.009 (0.091)	-0.636 (0.400)	-1.147 (0.714)	-0.566** (0.130)	-0.119+ (0.071)
High education (Ref.: low)	0.040 (0.067)	0.045 (0.058)	-1.235** (0.352)	0.204* (0.095)	-0.834* (0.418)	-0.995 (0.718)	-0.671** (0.211)	-0.043 (0.090)
<b>Personal and social norms</b>								
Religious (Ref.: non religious)	0.150** (0.027)	0.151** (0.027)	0.117** (0.032)	0.128** (0.047)	0.129** (0.039)	0.128** (0.044)	0.092** (0.033)	0.107* (0.042)
Patriotic (Ref.: non patriotic)	0.243** (0.033)	0.243** (0.033)	0.266** (0.049)	0.246** (0.047)	0.262** (0.047)	0.257** (0.040)	0.274** (0.050)	0.273** (0.048)
Inequality averse	0.123** (0.029)	0.123** (0.029)	0.152** (0.043)	0.139** (0.041)	0.154** (0.041)	0.149** (0.039)	0.157** (0.042)	0.145** (0.043)
<b>Direct benefits</b>								
Number of children	0.009 (0.013)	0.019** (0.006)	0.018** (0.005)	0.023** (0.006)	0.023** (0.006)	0.021** (0.005)	0.019** (0.005)	0.025** (0.006)
x medium education	0.017 (0.016)							
x high education	0.002 (0.019)							
Unemployed (Ref.: employed)	-0.179 (0.127)	-0.183 (0.123)	-0.023 (0.156)	0.103 (0.193)	0.065 (0.174)	0.015 (0.167)	-0.099 (0.141)	0.083 (0.179)
x medium education	0.198+ (0.119)	0.202+ (0.115)	0.119 (0.127)	-0.004 (0.145)	0.035 (0.132)	0.085 (0.131)	0.172 (0.121)	-0.002 (0.133)
x high education	0.244+ (0.137)	0.252+ (0.133)	0.157 (0.146)	0.030 (0.156)	0.079 (0.147)	0.115 (0.148)	0.213 (0.141)	0.035 (0.146)
Self-employed (Ref.: employed)	0.209* (0.103)	0.207* (0.103)	0.289* (0.123)	0.394* (0.181)	0.335* (0.151)	0.317* (0.150)	0.208+ (0.116)	0.359* (0.174)
x medium education	-0.354** (0.103)	-0.350** (0.104)	-0.381** (0.099)	-0.503** (0.157)	-0.426** (0.129)	-0.414** (0.131)	-0.315** (0.108)	-0.465** (0.159)
x high education	-0.476** (0.122)	-0.474** (0.123)	-0.500** (0.122)	-0.636** (0.170)	-0.529** (0.150)	-0.526** (0.143)	-0.423** (0.128)	-0.599** (0.172)
Retired (Ref.: employed)	0.015 (0.065)	0.020 (0.063)	-0.022 (0.093)	-0.044 (0.077)	-0.055 (0.072)	-0.061 (0.080)	-0.027 (0.087)	-0.060 (0.072)
x medium education	0.128+ (0.067)	0.117+ (0.066)	0.190* (0.094)	0.238** (0.092)	0.249** (0.091)	0.232** (0.087)	0.172* (0.082)	0.237** (0.086)
x high education	0.126 (0.092)	0.125 (0.090)	0.229+ (0.119)	0.277* (0.115)	0.287* (0.113)	0.281* (0.111)	0.214* (0.107)	0.272** (0.104)
Other (Ref.: employed)	-0.039 (0.059)	-0.040 (0.059)	0.112+ (0.067)	0.247+ (0.135)	0.211* (0.104)	0.148 (0.096)	0.028 (0.064)	0.225+ (0.126)
x medium education	0.098 (0.062)	0.098 (0.062)	-0.036 (0.056)	-0.176 (0.109)	-0.136+ (0.077)	-0.074 (0.082)	0.041 (0.064)	-0.154 (0.100)
x high education	-0.013 (0.086)	-0.010 (0.086)	-0.105 (0.093)	-0.253* (0.114)	-0.205* (0.088)	-0.163+ (0.096)	-0.045 (0.094)	-0.244* (0.108)
<b>Controls</b>								
Medium income (Ref.: low)	-0.027 (0.028)	-0.027 (0.028)	-0.014 (0.035)	0.002 (0.034)	-0.009 (0.037)	-0.011 (0.036)	-0.022 (0.034)	0.000 (0.035)
High income (Ref.: low)	-0.071 (0.044)	-0.071 (0.044)	-0.069 (0.046)	-0.058 (0.047)	-0.063 (0.048)	-0.068 (0.050)	-0.079+ (0.045)	-0.060 (0.047)
Age	0.008** (0.001)	0.008** (0.001)	0.007** (0.002)	0.006* (0.003)	0.006** (0.002)	0.007** (0.002)	0.008** (0.001)	0.007** (0.002)
Gender (Ref.: male)	0.174** (0.025)	0.174** (0.025)	0.153** (0.032)	0.153** (0.036)	0.149** (0.035)	0.153** (0.031)	0.157** (0.027)	0.151** (0.035)
Married (Ref.: never married)	0.034+ (0.020)	0.036+ (0.020)	0.037 (0.025)	0.053+ (0.028)	0.045+ (0.026)	0.039 (0.027)	0.019 (0.028)	0.034 (0.030)
Widowed (Ref.: never married)	-0.050 (0.035)	-0.049 (0.035)	-0.082* (0.035)	-0.038 (0.046)	-0.064 (0.046)	-0.070 (0.040)	-0.107* (0.044)	-0.070 (0.052)
Divorced (Ref.: never married)	-0.094** (0.028)	-0.093** (0.029)	-0.102** (0.037)	-0.084* (0.034)	-0.096* (0.039)	-0.091** (0.035)	-0.111** (0.039)	-0.099* (0.042)
Natural-born citizen	-0.156** (0.045)	-0.156** (0.045)	-0.119* (0.051)	-0.131* (0.056)	-0.112* (0.047)	-0.114* (0.051)	-0.138** (0.052)	-0.145** (0.051)

	I (H1)	II (H1)	III (H2)	IV (H2)	V (H2)	VI (H2)	VII (H2)	VIII (H2)
<b>Indirect benefits</b>								
Public social expenditure			-0.028*					
			(0.012)					
x medium education			0.028**					
			(0.009)					
x high education			0.035**					
			(0.011)					
Ethnic fractionalization			0.259					
			(0.486)					
x medium education			-0.795*					
			(0.386)					
x high education			-1.250**					
			(0.407)					
Transparency			-0.067					
			(0.069)					
x medium education			0.073					
			(0.057)					
x high education			0.114+					
			(0.062)					
Income inequality			-0.033+					
			(0.017)					
x medium education			0.020					
			(0.015)					
x high education			0.018					
			(0.015)					
Relative redistribution			-0.023**					
			(0.004)					
x medium education			0.013**					
			(0.003)					
x high education			0.018**					
			(0.005)					
Deterrence			0.221+					
			(0.131)					
x medium education			-0.094					
			(0.115)					
x high education			-0.066					
			(0.118)					
Constant cut1	-1.754**	-1.737**	-2.533**	-1.641**	-2.067**	-3.234**	-2.379**	-1.504**
	(0.120)	(0.120)	(0.443)	(0.146)	(0.514)	(0.872)	(0.205)	(0.101)
Constant cut2	-1.623**	-1.606**	-2.405**	-1.513**	-1.939**	-3.106**	-2.251**	-1.376**
	(0.114)	(0.113)	(0.438)	(0.142)	(0.509)	(0.869)	(0.198)	(0.099)
Constant cut3	-1.368**	-1.350**	-2.158**	-1.264**	-1.691**	-2.859**	-2.004**	-1.128**
	(0.106)	(0.103)	(0.433)	(0.139)	(0.503)	(0.866)	(0.189)	(0.097)
Constant cut4	-1.146**	-1.129**	-1.944**	-1.049**	-1.478**	-2.646**	-1.791**	-0.914**
	(0.105)	(0.102)	(0.432)	(0.141)	(0.503)	(0.865)	(0.186)	(0.101)
Constant cut5	-0.944**	-0.927**	-1.750**	-0.854**	-1.284*	-2.451**	-1.596**	-0.720**
	(0.107)	(0.104)	(0.434)	(0.142)	(0.505)	(0.865)	(0.187)	(0.103)
Constant cut6	-0.591**	-0.574**	-1.412**	-0.514**	-0.946+	-2.113*	-1.257**	-0.381**
	(0.103)	(0.100)	(0.432)	(0.139)	(0.504)	(0.867)	(0.185)	(0.102)
Constant cut7	-0.389**	-0.372**	-1.219**	-0.320*	-0.753	-1.919*	-1.063**	-0.188+
	(0.105)	(0.102)	(0.434)	(0.142)	(0.506)	(0.867)	(0.185)	(0.105)
Constant cut8	-0.072	-0.055	-0.916*	-0.016	-0.451	-1.616+	-0.759**	0.115
	(0.105)	(0.102)	(0.435)	(0.145)	(0.509)	(0.869)	(0.184)	(0.108)
Constant cut9	0.311**	0.328**	-0.549	0.352*	-0.084	-1.248	-0.390*	0.483**
	(0.108)	(0.104)	(0.433)	(0.149)	(0.507)	(0.867)	(0.181)	(0.109)
Observations	28,715	28,715	28,715	28,715	28,715	28,715	28,715	28,715
Countries FE	YES	YES	NO	NO	NO	NO	NO	NO
Pseudo R2	0.0421	0.0421	0.0206	0.0220	0.0196	0.0209	0.0230	0.0215

Table 5: Estimation results. Ordered probit with clustered standard errors by country (29 countries). Robust standard errors in parentheses where \*\* indicate  $p < 0.01$ , \*  $p < 0.05$  and +  $p < 0.1$  respectively. The independent variable is tax morale in a ten-point scale.

	I (H1)	II (H1)	III (H2)	IV (H2)	V (H2)	VI (H2)	VII (H2)	VIII (H2)
Medium education (Ref.: low)	-0.108* (0.048)	-0.079 (0.043)	-0.908** (0.332)	-0.017 (0.093)	-0.568 (0.388)	-0.980 (0.746)	-0.588** (0.134)	-0.090 (0.073)
High education (Ref.: low)	0.028 (0.057)	0.040 (0.046)	-1.130** (0.374)	0.238* (0.101)	-0.801* (0.409)	-0.666 (0.741)	-0.681** (0.191)	0.003 (0.092)
<b>Personal and social norms</b>								
Religious (Ref.: non religious)	0.144** (0.028)	0.144** (0.029)	0.091** (0.031)	0.101* (0.045)	0.105** (0.037)	0.101* (0.041)	0.067* (0.033)	0.082* (0.041)
Patriotic (Ref.: non patriotic)	0.253** (0.035)	0.253** (0.035)	0.272** (0.048)	0.252** (0.045)	0.267** (0.046)	0.262** (0.039)	0.279** (0.049)	0.277** (0.047)
Inequality averse	0.060* (0.030)	0.060* (0.030)	0.088 (0.045)	0.075 (0.043)	0.090* (0.044)	0.084 (0.043)	0.091* (0.045)	0.082 (0.046)
<b>Direct benefits</b>								
Number of children	0.003 (0.012)	0.020** (0.006)	0.020** (0.006)	0.023** (0.006)	0.023** (0.006)	0.023** (0.006)	0.020** (0.006)	0.026** (0.006)
x medium education	0.026 (0.016)							
x high education	0.008 (0.020)							
Unemployed (Ref.: employed)	-0.250** (0.092)	-0.256** (0.088)	-0.077 (0.126)	0.037 (0.159)	-0.000 (0.142)	-0.054 (0.132)	-0.165 (0.109)	0.006 (0.143)
x medium education	0.275** (0.094)	0.281** (0.090)	0.171 (0.109)	0.061 (0.122)	0.100 (0.111)	0.152 (0.108)	0.240* (0.101)	0.076 (0.108)
x high education	0.264* (0.124)	0.275* (0.121)	0.151 (0.135)	0.030 (0.136)	0.089 (0.133)	0.124 (0.134)	0.223 (0.133)	0.053 (0.132)
Self-employed (Ref.: employed)	0.133 (0.098)	0.128 (0.099)	0.210 (0.114)	0.303 (0.164)	0.254 (0.138)	0.230 (0.135)	0.129 (0.105)	0.266 (0.155)
x medium education	-0.295** (0.099)	-0.288** (0.101)	-0.327** (0.096)	-0.437** (0.140)	-0.369** (0.117)	-0.352** (0.117)	-0.260** (0.100)	-0.394** (0.139)
x high education	-0.404** (0.126)	-0.400** (0.127)	-0.438** (0.126)	-0.569** (0.163)	-0.462** (0.145)	-0.455** (0.137)	-0.358** (0.127)	-0.517** (0.162)
Retired (Ref.: employed)	-0.046 (0.060)	-0.037 (0.057)	-0.078 (0.090)	-0.095 (0.083)	-0.103 (0.080)	-0.113 (0.081)	-0.083 (0.083)	-0.110 (0.081)
x medium education	0.182** (0.067)	0.166* (0.065)	0.232* (0.100)	0.270** (0.104)	0.281** (0.104)	0.266** (0.095)	0.215* (0.085)	0.270** (0.098)
x high education	0.145 (0.091)	0.140 (0.088)	0.239 (0.124)	0.277* (0.125)	0.288* (0.125)	0.287* (0.120)	0.226* (0.112)	0.276* (0.117)
Other (Ref.: employed)	-0.050 (0.068)	-0.051 (0.068)	0.076 (0.072)	0.194 (0.142)	0.158 (0.112)	0.092 (0.100)	-0.011 (0.068)	0.165 (0.134)
x medium education	0.116 (0.073)	0.116 (0.073)	-0.006 (0.066)	-0.127 (0.122)	-0.089 (0.092)	-0.023 (0.091)	0.077 (0.075)	-0.097 (0.115)
x high education	-0.048 (0.079)	-0.044 (0.080)	-0.123 (0.083)	-0.255* (0.112)	-0.207* (0.083)	-0.165 (0.088)	-0.057 (0.089)	-0.237* (0.106)
<b>Controls</b>								
Medium income (Ref.: low)	0.005 (0.029)	0.005 (0.029)	0.013 (0.038)	0.028 (0.035)	0.017 (0.039)	0.013 (0.038)	0.006 (0.036)	0.024 (0.038)
High income (Ref.: low)	-0.023 (0.046)	-0.024 (0.046)	-0.026 (0.049)	-0.015 (0.049)	-0.020 (0.051)	-0.028 (0.052)	-0.035 (0.048)	-0.020 (0.050)
Age	0.008** (0.001)	0.008** (0.001)	0.007** (0.001)	0.006** (0.002)	0.006** (0.002)	0.007** (0.002)	0.008** (0.001)	0.007** (0.002)
Gender (Ref.: male)	0.175** (0.026)	0.176** (0.026)	0.160** (0.030)	0.161** (0.034)	0.158** (0.033)	0.162** (0.029)	0.164** (0.026)	0.159** (0.033)
Married (Ref.: never married)	0.013 (0.021)	0.016 (0.022)	0.014 (0.024)	0.029 (0.028)	0.022 (0.026)	0.015 (0.026)	-0.004 (0.027)	0.010 (0.030)
Widowed (Ref.: never married)	-0.044 (0.035)	-0.042 (0.036)	-0.075* (0.032)	-0.034 (0.044)	-0.057 (0.039)	-0.064 (0.044)	-0.098* (0.041)	-0.067 (0.051)
Divorced (Ref.: never married)	-0.122** (0.030)	-0.121** (0.031)	-0.129** (0.036)	-0.113** (0.034)	-0.124** (0.038)	-0.118** (0.033)	-0.138** (0.038)	-0.130** (0.041)
Natural-born citizen	-0.144** (0.044)	-0.144** (0.044)	-0.112* (0.053)	-0.127* (0.055)	-0.103* (0.049)	-0.110* (0.051)	-0.131* (0.052)	-0.134** (0.052)

	I (H1)	II (H1)	III (H2)	IV (H2)	V (H2)	VI (H2)	VII (H2)	VIII (H2)
<b>Indirect benefits</b>								
Public social expenditure			-0.024 (0.013)					
x medium education			0.023* (0.010)					
x high education			0.033** (0.012)					
Ethnic fractionalization				0.124 (0.455)				
x medium education				-0.622 (0.363)				
x high education				-1.192** (0.391)				
Transparency					-0.055 (0.067)			
x medium education					0.064 (0.055)			
x high education					0.114 (0.060)			
Income inequality						-0.031 (0.018)		
x medium education						0.016 (0.015)		
x high education						0.012 (0.015)		
Relative redistribution							-0.022** (0.005)	
x medium education							0.014** (0.003)	
x high education							0.019** (0.005)	
Deterrence								0.216 (0.135)
x medium education								-0.116 (0.119)
x high education								-0.083 (0.123)
Constant	0.599** (0.108)	0.573** (0.102)	1.199** (0.455)	0.452** (0.148)	0.786 (0.479)	1.919* (0.884)	1.157** (0.206)	0.293** (0.108)
Observations	28,715	28,715	28,715	28,715	28,715	28,715	28,715	28,715
Countries FE	YES	YES	NO	NO	NO	NO	NO	NO
AIC	.734568	.7345047	.7686598	.7653929	.7694225	.7672753	.7653959	.7678534
BIC	-278892	-278910.4	-277913.1	-278006.9	-277891.2	-277952.8	-278006.8	-277936.2

Table 6: Estimation results. GLM with clustered standard errors by country (29 clusters). Robust standard errors in parentheses where \*\* indicate  $p < 0.01$ , and \*  $p < 0.05$ , respectively.

	I (H1)	II (H1)	III (H2)	IV (H2)	V (H2)	VI (H2)	VII (H2)	VIII (H2)
Medium income (Ref.: low)	-0.031 (0.044)	-0.017 (0.040)	0.094 (0.196)	0.078 (0.061)	0.110 (0.150)	0.498 (0.311)	0.175 (0.091)	-0.043 (0.056)
High income (Ref.: low)	-0.064 (0.069)	-0.054 (0.059)	-0.262 (0.226)	0.104 (0.104)	-0.124 (0.181)	0.371 (0.485)	0.060 (0.098)	-0.107 (0.068)
<b>Personal and social norms</b>								
Religious (Ref.: non religious)	0.161** (0.031)	0.161** (0.031)	0.108** (0.035)	0.118* (0.050)	0.124** (0.043)	0.125** (0.046)	0.079* (0.037)	0.102* (0.046)
Patriotic (Ref.: non patriotic)	0.261** (0.037)	0.260** (0.037)	0.286** (0.054)	0.261** (0.050)	0.278** (0.051)	0.270** (0.042)	0.295** (0.053)	0.289** (0.051)
Inequality averse	0.093** (0.035)	0.093** (0.035)	0.129** (0.050)	0.112* (0.048)	0.129** (0.048)	0.122** (0.046)	0.128** (0.048)	0.118* (0.050)
<b>Direct benefits</b>								
Number of children	0.012 (0.013)	0.022** (0.007)	0.030** (0.006)	0.028** (0.008)	0.031** (0.007)	0.027** (0.007)	0.029** (0.006)	0.030** (0.007)
x medium income	0.018 (0.015)							
x high income	0.013 (0.017)							
Unemployed (Ref.: employed)	-0.011 (0.059)	-0.013 (0.059)	0.116 (0.084)	0.125 (0.090)	0.129 (0.091)	0.121 (0.088)	0.098 (0.077)	0.112 (0.090)
x medium income	0.018 (0.101)	0.022 (0.100)	-0.069 (0.093)	-0.064 (0.088)	-0.075 (0.096)	-0.063 (0.091)	-0.080 (0.089)	-0.064 (0.087)
x high income	-0.086 (0.099)	-0.084 (0.100)	-0.080 (0.119)	-0.098 (0.118)	-0.082 (0.118)	-0.119 (0.113)	-0.132 (0.107)	-0.092 (0.114)
Self-employed (Ref.: employed)	-0.166 (0.090)	-0.169 (0.089)	-0.066 (0.106)	-0.072 (0.115)	-0.058 (0.110)	-0.070 (0.106)	-0.089 (0.092)	-0.084 (0.115)
x medium income	-0.038 (0.086)	-0.034 (0.086)	-0.075 (0.081)	-0.091 (0.086)	-0.084 (0.084)	-0.082 (0.081)	-0.081 (0.076)	-0.072 (0.089)
x high income	0.009 (0.109)	0.013 (0.110)	-0.039 (0.109)	-0.052 (0.115)	-0.039 (0.111)	-0.044 (0.113)	-0.038 (0.104)	-0.043 (0.114)
Retired (Ref.: employed)	0.069 (0.045)	0.073 (0.044)	0.055 (0.045)	0.066 (0.048)	0.066 (0.045)	0.054 (0.047)	0.052 (0.046)	0.052 (0.051)
x medium income	0.064 (0.069)	0.057 (0.068)	0.092 (0.074)	0.086 (0.075)	0.085 (0.074)	0.088 (0.075)	0.081 (0.073)	0.085 (0.075)
x high income	0.042 (0.068)	0.037 (0.066)	0.082 (0.085)	0.063 (0.082)	0.081 (0.084)	0.078 (0.077)	0.063 (0.075)	0.062 (0.080)
Other (Ref.: employed)	0.024 (0.072)	0.023 (0.071)	0.058 (0.082)	0.058 (0.085)	0.060 (0.086)	0.053 (0.079)	0.053 (0.075)	0.059 (0.083)
x medium income	0.004 (0.087)	0.006 (0.087)	0.039 (0.093)	0.062 (0.096)	0.048 (0.095)	0.046 (0.088)	0.013 (0.087)	0.045 (0.091)
x high income	0.047 (0.085)	0.048 (0.086)	0.098 (0.093)	0.102 (0.096)	0.100 (0.095)	0.074 (0.091)	0.051 (0.087)	0.076 (0.092)
<b>Controls</b>								
Medium education (Ref.: low)	0.023 (0.051)	0.024 (0.051)	-0.126 (0.117)	-0.133 (0.148)	-0.140 (0.135)	-0.137 (0.122)	-0.054 (0.057)	-0.135 (0.133)
High education (Ref.: low)	0.116 (0.059)	0.117* (0.059)	-0.030 (0.110)	-0.042 (0.145)	-0.053 (0.127)	-0.033 (0.121)	0.051 (0.066)	-0.032 (0.132)
Age	0.009** (0.001)	0.009** (0.001)	0.008** (0.002)	0.007** (0.002)	0.007** (0.002)	0.008** (0.002)	0.009** (0.002)	0.008** (0.002)
Gender (Ref.: male)	0.187** (0.027)	0.187** (0.027)	0.164** (0.033)	0.166** (0.036)	0.163** (0.035)	0.169** (0.031)	0.169** (0.028)	0.166** (0.034)
Married (Ref.: never married)	0.021 (0.024)	0.022 (0.024)	0.032 (0.027)	0.046 (0.034)	0.043 (0.031)	0.035 (0.032)	0.016 (0.028)	0.029 (0.036)
Widowed (Ref.: never married)	-0.044 (0.037)	-0.042 (0.037)	-0.068* (0.034)	-0.033 (0.049)	-0.045 (0.044)	-0.055 (0.050)	-0.093* (0.043)	-0.061 (0.055)
Divorced (Ref.: never married)	-0.119** (0.033)	-0.119** (0.033)	-0.125** (0.041)	-0.107** (0.039)	-0.119** (0.043)	-0.108** (0.040)	-0.133** (0.041)	-0.123** (0.046)
Natural-born citizen	-0.168** (0.048)	-0.167** (0.048)	-0.123* (0.058)	-0.133* (0.062)	-0.112* (0.055)	-0.124* (0.056)	-0.145* (0.057)	-0.146** (0.057)

	I (H1)	II (H1)	III (H2)	IV (H2)	V (H2)	VI (H2)	VII (H2)	VIII (H2)
<b>Indirect benefits</b>								
Public social expenditure			-0.003 (0.010)					
x medium income			-0.003 (0.005)					
x high income			0.006 (0.007)					
Ethnic fractionalization				-0.253 (0.331)				
x medium income				-0.327 (0.182)				
x high income				-0.652* (0.285)				
Transparency					0.018 (0.035)			
x medium income					-0.020 (0.021)			
x high income					0.008 (0.026)			
Income inequality						-0.013 (0.011)		
x medium income						-0.011 (0.007)		
x high income						-0.009 (0.011)		
Relative redistribution							-0.009 (0.008)	
x medium income							-0.005* (0.003)	
x high income							-0.004 (0.003)	
Deterrence								0.093 (0.082)
x medium income								0.049 (0.053)
x high income								0.058 (0.070)
Constant cut1	-1.077** (0.107)	-1.068** (0.103)	-1.068* (0.433)	-1.079** (0.183)	-0.857** (0.318)	-1.579** (0.593)	-1.212** (0.347)	-0.904** (0.174)
Constant cut2	-0.520** (0.102)	-0.511** (0.098)	-0.537 (0.435)	-0.544** (0.183)	-0.326 (0.321)	-1.046 (0.596)	-0.679* (0.345)	-0.372* (0.174)
Constant cut3	-0.000 (0.108)	0.009 (0.103)	-0.044 (0.444)	-0.048 (0.192)	0.168 (0.330)	-0.550 (0.600)	-0.182 (0.349)	0.124 (0.182)
Observations	28,715	28,715	28,715	28,715	28,715	28,715	28,715	28,715
Countries FE	YES	YES	NO	NO	NO	NO	NO	NO
Pseudo R2	0.0591	0.0591	0.0242	0.0277	0.0241	0.0275	0.0288	0.0266

Table 7: Estimation results. Ordered probit with clustered standard errors by country (29 clusters). Robust standard errors in parentheses where \*\* indicate  $p < 0.01$ , and \*  $p < 0.05$ , respectively.

	I (H1)	II (H1)	III (H2)	IV (H2)	V (H2)	VI (H2)	VII (H2)	VIII (H2)
Medium education (Ref.: low)	-0.132* (0.055)	-0.107* (0.048)	-0.214* (0.108)	-0.202 (0.132)	-0.223 (0.119)	-0.246* (0.107)	-0.159* (0.066)	-0.222* (0.111)
High education (Ref.: low)	0.004 (0.064)	0.013 (0.051)	-0.104 (0.106)	-0.096 (0.132)	-0.121 (0.118)	-0.127 (0.109)	-0.036 (0.077)	-0.101 (0.113)
<b>Personal and social norms</b>								
Religious (Ref.: non religious)	0.160** (0.031)	0.160** (0.031)	0.107** (0.034)	0.115* (0.049)	0.122** (0.042)	0.121** (0.045)	0.077* (0.036)	0.098* (0.045)
Patriotic (Ref.: non patriotic)	0.259** (0.037)	0.259** (0.037)	0.282** (0.052)	0.258** (0.049)	0.275** (0.050)	0.268** (0.042)	0.292** (0.053)	0.286** (0.051)
Inequality averse	0.092** (0.034)	0.092** (0.034)	0.127** (0.049)	0.109* (0.047)	0.127** (0.047)	0.120** (0.045)	0.126** (0.047)	0.116* (0.049)
<b>Direct benefits</b>								
Number of children	0.009 (0.013)	0.023** (0.006)	0.029** (0.006)	0.027** (0.007)	0.030** (0.006)	0.027** (0.006)	0.029** (0.006)	0.029** (0.006)
x medium education	0.022 (0.017)							
x high education	0.006 (0.022)							
Unemployed (Ref.: employed)	-0.280* (0.111)	-0.286** (0.107)	0.023 (0.179)	0.057 (0.182)	0.040 (0.190)	-0.014 (0.188)	-0.041 (0.158)	0.020 (0.187)
x medium education	0.309** (0.113)	0.314** (0.110)	0.080 (0.141)	0.050 (0.136)	0.073 (0.149)	0.122 (0.152)	0.119 (0.137)	0.074 (0.144)
x high education	0.337* (0.141)	0.346* (0.137)	0.096 (0.161)	0.068 (0.150)	0.085 (0.165)	0.126 (0.173)	0.121 (0.158)	0.089 (0.160)
Self-employed (Ref.: employed)	0.146 (0.100)	0.142 (0.103)	0.326* (0.151)	0.348 (0.183)	0.344* (0.162)	0.285 (0.155)	0.250* (0.118)	0.316 (0.172)
x medium education	-0.322** (0.108)	-0.317** (0.110)	-0.452** (0.134)	-0.493** (0.161)	-0.466** (0.144)	-0.418** (0.140)	-0.393** (0.115)	-0.455** (0.157)
x high education	-0.431** (0.130)	-0.428** (0.133)	-0.551** (0.154)	-0.600** (0.180)	-0.566** (0.166)	-0.514** (0.157)	-0.493** (0.135)	-0.574** (0.178)
Retired (Ref.: employed)	-0.070 (0.063)	-0.062 (0.061)	-0.118 (0.091)	-0.106 (0.097)	-0.112 (0.084)	-0.139 (0.088)	-0.118 (0.087)	-0.133 (0.089)
x medium education	0.216** (0.073)	0.203** (0.071)	0.304** (0.112)	0.303* (0.122)	0.310** (0.113)	0.314** (0.105)	0.276** (0.095)	0.309** (0.110)
x high education	0.184 (0.097)	0.180 (0.094)	0.323* (0.136)	0.314* (0.142)	0.326* (0.134)	0.339** (0.129)	0.295* (0.121)	0.318* (0.129)
Other (Ref.: employed)	-0.065 (0.069)	-0.066 (0.069)	0.219 (0.134)	0.264 (0.170)	0.238 (0.159)	0.159 (0.143)	0.122 (0.085)	0.212 (0.161)
x medium education	0.137 (0.075)	0.137 (0.076)	-0.140 (0.110)	-0.185 (0.142)	-0.158 (0.133)	-0.083 (0.126)	-0.052 (0.080)	-0.136 (0.137)
x high education	-0.015 (0.087)	-0.011 (0.088)	-0.261* (0.119)	-0.299* (0.134)	-0.278* (0.125)	-0.205 (0.116)	-0.193* (0.098)	-0.262* (0.128)
<b>Controls</b>								
Medium income (Ref.: low)	-0.001 (0.030)	-0.000 (0.030)	0.141 (0.187)	0.092 (0.064)	0.130 (0.143)	0.564 (0.325)	0.185 (0.097)	-0.017 (0.047)
High income (Ref.: low)	-0.033 (0.050)	-0.033 (0.050)	-0.173 (0.227)	0.124 (0.102)	-0.074 (0.177)	0.456 (0.480)	0.093 (0.101)	-0.079 (0.066)
Age	0.009** (0.001)	0.009** (0.001)	0.007** (0.002)	0.007** (0.002)	0.007** (0.002)	0.007** (0.002)	0.008** (0.002)	0.007** (0.002)
Gender (Ref.: male)	0.185** (0.027)	0.186** (0.027)	0.159** (0.036)	0.161** (0.039)	0.158** (0.037)	0.164** (0.033)	0.165** (0.029)	0.162** (0.036)
Married (Ref.: never married)	0.018 (0.022)	0.020 (0.023)	0.022 (0.026)	0.034 (0.029)	0.032 (0.028)	0.026 (0.028)	0.009 (0.028)	0.018 (0.032)
Widowed (Ref.: never married)	-0.047 (0.037)	-0.045 (0.038)	-0.073* (0.035)	-0.040 (0.047)	-0.053 (0.043)	-0.064 (0.047)	-0.099* (0.043)	-0.070 (0.054)
Divorced (Ref.: never married)	-0.121** (0.033)	-0.120** (0.034)	-0.130** (0.041)	-0.113** (0.038)	-0.126** (0.042)	-0.115** (0.038)	-0.137** (0.042)	-0.130** (0.045)
Natural-born citizen	-0.166** (0.048)	-0.166** (0.048)	-0.128* (0.057)	-0.141* (0.060)	-0.117* (0.054)	-0.128* (0.055)	-0.148** (0.057)	-0.153** (0.056)

	I (H1)	II (H1)	III (H2)	IV (H2)	V (H2)	VI (H2)	VII (H2)	VIII (H2)
<b>Indirect benefits</b>								
Public social expenditure			-0.001 (0.009)					
x medium income			-0.004 (0.005)					
x high income			0.004 (0.007)					
Ethnic fractionalization			-0.306 (0.316)					
x medium income			-0.281 (0.180)					
x high income			-0.601* (0.277)					
Transparency			0.020 (0.035)					
x medium income			-0.019 (0.021)					
x high income			0.006 (0.027)					
Income inequality			-0.011 (0.011)					
x medium income			-0.012 (0.007)					
x high income			-0.011 (0.010)					
Relative redistribution			-0.008 (0.007)					
x medium income			-0.005 (0.003)					
x high income			-0.004 (0.003)					
Deterrence							0.094 (0.082)	
x medium income							0.044 (0.051)	
x high income							0.058 (0.069)	
Constant cut1	-1.202** (0.115)	-1.179** (0.107)	-1.108** (0.386)	-1.177** (0.180)	-0.938** (0.284)	-1.617** (0.558)	-1.298** (0.324)	-1.003** (0.159)
Constant cut2	-0.644** (0.114)	-0.622** (0.107)	-0.576 (0.389)	-0.641** (0.182)	-0.406 (0.288)	-1.083 (0.561)	-0.764* (0.323)	-0.469** (0.162)
Constant cut3	-0.124 (0.118)	-0.102 (0.111)	-0.081 (0.397)	-0.144 (0.191)	0.088 (0.297)	-0.586 (0.564)	-0.266 (0.327)	0.027 (0.169)
Observations	28,715	28,715	28,715	28,715	28,715	28,715	28,715	28,715
Countries FE	YES	YES	NO	NO	NO	NO	NO	NO
Pseudo R2	0.0598	0.0597	0.0259	0.0295	0.0259	0.0290	0.0300	0.0284

Table 8: Estimation results. Ordered probit with clustered standard errors by country (29 clusters). Robust standard errors in parentheses where \*\* indicate  $p < 0.01$ , and \*  $p < 0.05$ , respectively.

	1	2	3	4	5	6	7	8	9	10	11	12
1 Tax morale	1.00											
2 Education	-0.05	1.00										
3 Religious	0.08	-0.15	1.00									
4 Patriotic	0.09	-0.07	0.11	1.00								
5 Inequality averse	0.04	-0.13	0.03	-0.02	1.00							
6 Number of children	0.03	-0.06	0.09	0.03	0.02	1.00						
7 Unemployed	0.00	-0.07	-0.01	-0.04	0.06	0.05	1.00					
8 Self-employed	-0.04	0.03	0.00	0.01	-0.02	0.05	-0.06	1.00				
9 Retired	0.10	-0.18	0.10	0.04	0.05	-0.20	-0.15	-0.14	1.00			
10 Other	0.01	-0.17	0.06	0.01	0.03	0.06	-0.11	-0.10	-0.25	1.00		
11 Income	-0.05	0.30	-0.08	0.00	-0.10	0.12	-0.14	0.07	-0.28	-0.06	1.00	
12 Age	0.13	-0.21	0.13	0.05	0.03	-0.08	-0.13	-0.04	0.70	-0.23	-0.25	1.00
13 Gender	0.08	-0.04	0.14	0.02	0.02	0.06	-0.03	-0.11	0.00	0.20	-0.08	0.02
14 Married	0.06	-0.01	0.10	0.05	0.01	0.32	-0.05	0.06	-0.01	-0.04	0.27	0.13
15 Widowed	0.06	-0.18	0.10	0.03	0.03	-0.09	-0.06	-0.06	0.39	-0.06	-0.28	0.43
16 Divorced	-0.03	0.05	-0.06	-0.05	-0.01	-0.03	0.02	0.00	-0.03	-0.06	-0.12	0.05
17 Natural-born citizen	-0.02	-0.03	-0.02	0.03	0.00	-0.03	-0.02	0.01	0.00	0.01	0.02	-0.02
18 Public social expenditure	-0.02	0.18	-0.19	0.01	-0.03	-0.11	-0.06	0.01	0.02	-0.12	0.01	0.06
19 Ethnic fractionalization	-0.09	0.00	0.01	-0.06	-0.06	0.00	0.01	-0.04	-0.01	0.02	0.02	-0.02
20 Transparency	0.00	0.20	-0.23	0.01	-0.05	-0.08	-0.07	-0.02	-0.03	-0.08	0.03	0.04
21 Income inequality	-0.08	0.06	0.01	-0.04	-0.03	-0.07	-0.01	-0.01	0.01	-0.05	0.00	0.02
22 Relative redistribution	-0.09	0.24	-0.17	-0.01	-0.03	-0.11	-0.08	-0.03	0.03	-0.15	0.01	0.06
23 Deterrence	0.07	-0.07	0.07	-0.01	0.05	0.03	0.04	0.03	0.01	0.04	-0.05	-0.02

	13	14	15	16	17	18	19	20	21	22	23
1 Tax morale											
2 Education											
3 Religious											
4 Patriotic											
5 Inequality averse											
6 Number of children											
7 Unemployed											
8 Self-employed											
9 Retired											
10 Other											
11 Income											
12 Age											
13 Gender	1.00										
14 Married	-0.07	1.00									
15 Widowed	0.17	-0.40	1.00								
16 Divorced	0.05	-0.37	-0.11	1.00							
17 Natural-born citizen	-0.02	-0.02	0.00	-0.02	1.00						
18 Public social expenditure	-0.05	-0.04	-0.07	0.05	-0.04	1.00					
19 Ethnic fractionalization	0.03	-0.01	0.04	0.01	-0.04	-0.48	1.00				
20 Transparency	-0.04	-0.05	-0.08	0.08	-0.06	0.74	-0.24	1.00			
21 Income inequality	0.02	-0.05	0.01	0.06	-0.02	0.25	-0.19	0.17	1.00		
22 Relative redistribution	-0.02	-0.07	-0.02	0.07	-0.05	0.66	-0.34	0.56	0.49	1.00	
23 Deterrence	-0.01	0.03	-0.01	-0.02	0.06	-0.01	-0.23	-0.31	0.13	-0.01	1.00

Table 9: Correlation matrix

	Specification I (# p-values: 15)		Specification II (# p-values: 13)		Specification III (# p-values: 3)		Specification IV (# p-values: 3)		Specification V (# p-values: 3)		Specification VI (# p-values: 3)		Specification VII (# p-values: 3)		Specification VIII (# p-values: 3)	
	# Reject	p-value	# Reject	p-value	# Reject	p-value	# Reject	p-value	# Reject	p-value	# Reject	p-value	# Reject	p-value	# Reject	p-value
Bonferroni (1)	4	0.00667	6	0.00769	2	0.03333	1	0.03333	0	0.03333	0	0.03333	3	0.03333	0	0.03333
Sidak (1)	4	0.00700	6	0.00807	2	0.03451	1	0.03451	0	0.03451	0	0.03451	3	0.03451	0	0.03451
Holm (2)	4	0.00909	7	0.01667	3	0.1	1	0.05000	0	0.03333	0	0.03333	3	0.1	0	0.03333
Holland (2)	4	0.00953	7	0.01741	3	0.1	1	0.05132	0	0.03451	0	0.03451	3	0.1	0	0.03451
Liu 1 (2)	5	0.01612	7	0.03988	3	0.3	1	0.07805	0	0.03451	0	0.03451	3	0.3	0	0.03451
Liu 2 (2)	5	0.015	7	0.03611	3	0.3	1	0.07500	0	0.03333	0	0.03333	3	0.3	0	0.03333
Hochberg (3)	4	0.00833	7	0.01429	3	0.1	1	0.03333	0	0.03333	0	0.03333	3	0.1	0	0.03333
Rom (3)	4	0.00874	7	0.01492	3	0.1	1	0.03417	0	0.03417	0	0.03417	3	0.1	0	0.03417
Simes (3)	6	0.04	8	0.06154	3	0.1	1	0.03333	0	0.03333	0	0.03333	3	0.1	0	0.03333
Yekutieli (3)	4	0.00804	7	0.01693	3	0.05455	1	0.01818	0	0.01818	0	0.01818	3	0.05455	0	0.01818
Krieger (3)	8	0.08081	10	0.18182	3	0.09091	2	0.09091	0	0.03030	0	0.03030	3	0.09091	0	0.03030

Table 10: Robustness check for multiple hypothesis testing with 11 different methods of p-value adjustment. The numbers in the first column denote the existing three different approaches: (1) one-step (2) step-down and (3) step-up. The p-value adjusted for a False Discovery Rate or a Family Wise Error Rate is 0.1.