Taxes and Benefits:
Two Distinct Options to Cheat on the State?

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ABSTRACT

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Two Distinct Options to Cheat on the State?[*]

While there is an extensive literature on tax evasion a further aspect of cheating on the state, namely benefit fraud, has gained relatively modest attention in the economic literature. This paper seeks to fill this gap. We explore differences between benefit fraud and tax evasion due to differing social norms. We define the concepts of benefit morale and tax morale as the motivation to abstain from cheating on the state via these two offenses. Our multilevel analysis, based on a large micro data set of respondents from 29 OECD member countries, shows that benefit morale and tax morale have different determinants at an individual-level and respond differently to fiscal policy measures.

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1 Introduction

Economists have studied many facets of tax evasion. However, a different aspect of cheating on the state, namely benefit fraud, has gained relatively modest attention in the literature. This fact is surprising since there is a widespread concern about abuse and dishonesty in social welfare and health care programmes.[1] The relatively low levels of interest in benefit fraud by economic scholars may be caused by the fact that, from a theoretical point of view, benefit fraud may appear identical to tax evasion. In reality, the incidence and extent of these two offenses may differ substantially. Firstly, the behavioral determinants of the classical economics-of-crime approach (Becker, 1968), i.e. the probability of detection and level of fine rate, may vary. Secondly, and more importantly, citizens may consider one offense to be more severe than the other. We provide empirical evidence that these social norms evolve endogenously, and that benefit fraud and tax evasion can be ascribed to different economic factors.

Among economic scholars, it is widely accepted that individual behavior is the result of economic incentives and social norms.[2] Moreover, it is often argued that economic factors shape social norms (Frey, 1997; Lindbeck, 1997; Bowles, 1998). The idea that social norms are affected by varying price and income has insightful implications. For instance, a social norm such as tax morale may increase or decrease with income (Shleifer, 2004). In general, the feedback from economic and political decisions to preferences and behavior has to be considered.

Naturally, social norms play a major role in certain decisions that individuals make, while in other decisions economic incentives seem to be the driving force. Reviewing the economic literature on tax evasion reveals that accounting for social norms is important to better understand individuals' decision to evade (or not to evade) taxes. Recently, the quantitative prediction of the traditional model of tax evasion has been heavily criticized. To align the predicted degree of tax evasion with empirical and experimental evidence, taxpayers have to be assumed to be risk averse to an absurd degree.[3] In fact, Andreoni, Erard and Feinstein (1998, p. 855) conclude that 'more work needs to be done exploring the diverse psychological, moral and social influences on compliance

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[1]The most prominent anti-fraud measure is the US False Claims Act (FCA). The FCA dating back to 1863 is intended to encourage citizens to come forward with information and assist authorities in uncovering any kind of fraud against government, with the exception of tax evasion.

[2]In the following we use social norm and morale (motivation) synonymously. For a general discussion of social norms, see Elster (1989).

[3]Realistic audit probabilities are very low, ranging from 0.01 to 0.03. Actual observed penalty rates are between 1.5 and 2. Given these parameter values, one has to assume a coefficient of relative risk aversion of about 70 in order to get realistic estimates of tax evasion predicted by the theoretical models. Realistic magnitudes of relative risk aversion lie between 1 and 2 (Alm, McClelland and Schulze, 1992).

behavior, and integrating these factors into economic models'. There is indeed evidence from experimental (Alm, Sanchez and De Juan, 1995; Torgler, 2002) and empirical studies (Torgler, 2005; Alm and Torgler, 2006; Frey and Torgler, 2007) that citizens are not motivated purely by the rate of return on tax evasion but also by moral aspects. Therefore, social norms are closely linked to the famous question 'Why do people pay taxes?' (Alm, McClelland and Schulze, 1992).

We think that social norms are equally important in understanding the sparsely researched issue of benefit fraud, which endangers the functioning of the welfare state (Lindbeck, 1995, 1997; Lindbeck, Nyberg and Weibull, 1999). We define the concept of *benefit morale* and *tax morale* as the moral motivation to abstain from cheating on the state via benefit fraud and tax evasion, respectively. Given that benefit morale (tax morale) is a determinant of actual benefit fraud (tax evasion), we identify (based on large-scale survey data) factors which shape this social norm in society.

Building on standard consumer theory, we focus on economic factors such as income and prices. The price of behaving honestly is affected by individual-level characteristics (e. g. opportunity cost) and country-level variables, such as fiscal policy measures. Our testable hypotheses draw on factors measured on both levels. Employing a large micro data set from the European and World Values Survey, combined with information from the OECD Database we show that the two moral motivations are indeed affected by economic factors. We observe important differences. For instance, benefit morale improves with rising income while tax morale deteriorates with rising income. Fiscal policy measures have equivalent qualitative effects, however, different quantitative importance. Our results are robust to a number of alternative specifications and methods applied.

We believe that our findings add to the literature in three substantive and one methodological dimension. First and foremost, this is the first study showing that tax evasion and benefit fraud are two distinct issues. Secondly, we add to the literature on the endogeneity of social norms. Thirdly, by evaluating the relationship between fiscal policy and compliance measures, we add to the literature on tax morale. Finally, by estimating a multilevel (or hierarchical) model, that explicitly models the two-level data structure (individual and country), we provide a methodological improvement. Up to now, economists studying the effects of state polices and institutions on individual outcomes (such as tax morale) have typically used averaged data, or accounted for the presence of clustered data by calculating robust standard errors. However, neither approach is satisfactory and may bias the results.[4] On top of that, the framework of

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[4]The use of average data wipes out heterogeneity at an individual level and presupposes the assumption of

multilevel analysis will allow us to incorporate heterogenous policy effects.

The paper is organized as follows. In Section 2 we discuss the small body of related literature. In Section 3 we define our concept of benefit and tax morale and derive testable hypotheses. Section 4 and 5 describe the dependent and independent variables, respectively. Our empirical strategy is outlined in Section 6. The estimation results are presented in Section 7, and Section 8 reports on our robustness checks. Finally, in Section 9 we conclude the paper. The Data appendix provides all details on data sources and definitions.

2 Related literature

There are at least two important strands of literature, namely papers on tax evasion and papers on benefit fraud. As indicated in the introduction, the literature on tax evasion is extensive, and a review is not within the scope of this paper.[5] In contrast, the literature on benefit fraud is very scarce. Within the theoretical literature the analysis of benefit fraud is restricted to the fraudulent receipt of unemployment benefits. Yaniv (1986) and Burgess (1992) model the abuse of unemployment insurance (e. g. recipients who work or avoid job-search activities). Various penalty schemes and optimal deterrence policies are discussed. Lantto (1989) models the abuse of social insurance by capable working claimants.

The labor economics literature contains some empirical studies on income underreporting in transfer programs in the US. These studies typically examine fraud in programs that are similar to a negative-income tax plan. They find substantial income underreporting for up to 50 percent of certain subgroups of the population (Greenberg, Moffitt and Friedman, 1981; Greenberg and Halsey, 1982). Similarly Wolf and Greenberg (1986b) identify frequent overpayments in unemployment insurance systems, indicating that many claimants falsely certify that they have actively sought a job. Studies analyzing the Aid to Families with Dependent Children (AFDC) and Food Stamps entitlement programs find only modest fraud rates of 2 to 4 percent (Wolf and Greenberg, 1986a).

Heinemann (2008) is a rare exception of a study on the determinants of benefit morale. He

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homogenous policy effects. Moreover, it substantially reduces the degrees of freedom and requires cardinality of satisfaction scores. Calculating robust standard errors to account for a multilevel data structure is a much weaker form of correction than estimating a multilevel model and will result in different point estimates.

[5]The development of the literature through the 1980s is surveyed by Cowell (1990). More recent literature surveys are provided by Andreoni, Erard and Feinstein (1998) and Slemrod and Yitzhaki (2002). For a review on the literature on the underground economy, which exists in part as a means of tax evasion, see Schneider and Enste (2000).

provides evidence that in the long-run an increase of government benefits and unemployment is associated with deteriorating benefit morale. Another strand of the literature discusses the phenomenon of welfare stigma. This describes a situation where citizens do not participate in a (social) welfare program although they are eligible to receive benefits (Moffitt, 1983; Besley and Coate, 1992). Yaniv (1997) argues that welfare fraud and welfare stigma may be modeled with one single aparatus.

In this paper we focus on the differences between benefit fraud and tax evasion due to differing social norms. In the next section we define the concepts of benefit morale and tax morale. To derive testable hypotheses on the determinants of benefit and tax morale we build on standard consumer theory. The compliance with benefit and tax law is regarded as a moral consumption good whose demand is determined by price and income. The price of behaving honestly is affected by individual-level characteristics and country-level variables such as fiscal policy measures.

3   Benefit and tax morale

We define benefit morale and tax morale as the moral motivation to abstain from cheating on the state via benefit fraud and tax evasion, respectively. Empirically we capture these morale motivations based on survey data. Theoretically we think of benefit morale and tax morale as moral goods.[6] Citizens who fully comply with the benefit law (tax code) consume a high level of benefit morale (tax morale). Considering a standard utility formulation, the demand is determined by price and income. Consequently, we expect different economic factors to affect the demand for benefit morale and tax morale.

A priori it is not clear whether benefit morale and tax morale are normal or inferior goods. Put differently, benefit morale or tax morale could either increase or decrease in response to an exogenous wealth shock. Likewise, it is hard to test this empirically. A change in income entails not only a wealth effect, but also a price effect. The latter effect occurs since the opportunity cost (i. e. the price) to behave honestly vary with income. Of course, a changing price itself also contains two effect, a substitution effect and a wealth effect. Fortunately, our data allows us to disentangle these effects; the sum of the wealth effects versus the substitution effect. We can examine a variation in wealth while controlling for income. That means, we can observe a wealth shock while keeping the substitution effect constant. We find strong evidence (discussed

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[6]For a discussion of moral goods in the context of cognitive dissonance theory, see Östling (2007).

below) that both goods are normal (positive wealth effect). This corresponds with the idea that wealth provides greater opportunity to behave morally (Shleifer, 2004). We therefore presume subsequently that both moral goods are normal goods.

To test the hypothesis that the demand for benefit and tax morale is affected by their prices we exploit in a first step that prices vary among subgroups of the population. In particular, we argue that labor market status provides a particularly useful and clear division. Citizens out of the labor force face a tax morale price of zero. By definition they earn no labor income and consuming a high level of tax morale (i.e. full compliance with the income tax) does not affect purchasing power. In contrast, an employed citizen incurs costs by consuming tax morale. S/he faces a price strictly larger than zero. Consequently, citizens out of the labor force will (compared to the employed) demand a higher quantity of tax morale, and we derive the following hypothesis:

> *Hypothesis 1a:* Citizens out of the labor force demand more tax morale compared to employed ones

In the case of benefit morale both groups pay a strictly positive price. By consuming an additional unit of benefit morale they clearly forgo consumption of other goods. However, it is reasonable that employed citizens face a lower price than their counterparts who are out of the labor force. For instance, being out of the labor force implies in many cases eligibility status for many types of benefits, such as housing subsidy. Given that one is eligible, the temptation to claim unjustified higher benefits may be higher (and the costs lower) than if one were not eligible in a first place. Therefore, we suppose that citizens out of the labor force will demand a lower quantity of benefit morale compared to employed citizens:

> *Hypothesis 1b:* Citizens out of the labor force demand less benefit morale compared to employed ones

What about income? As stated above a changing income entails a wealth effect and a substitution effect due to changing opportunity cost. Based on our empirical test we presume that both goods are normal goods (positive wealth effect). The substitution effect is as usually negative (i.e. demand decreases in its own price). The price of benefit morale arguably decreases with income. For instance, a high-income household has few opportunities to commit benefit fraud. Moreover, such a household faces a higher probability of being caught for benefit fraud compared to a household at the bottom of the income distribution. The rich household will typically pretend

eligibility first, while the eligible low-income household simply claims higher benefits. Further, the rich household could expect a higher fine if convicted. In other words, for high-income households benefit fraud is comparably less profitable, thus they face relatively lower cost of benefit morale. The prediction on the overall effect of income on benefit morale is therefore unambiguous (wealth and substitution effect go in the same direction) and we hypothesize that the price of benefit morale decreases with income:

Hypothesis 2a: Benefit morale increases with income

By equivalent reasoning, one can deduce that low-income households face low cost of tax morale. Therefore, the price of tax morale increases with income and the wealth and the substitution effect counteract. If the wealth (substitution) effect dominates we expect tax morale to increase (decrease) with income.

Hypothesis 2b (null): The substitution effect dominates the wealth effect and tax morale decreases with income

Hypothesis 2b (alternative): The wealth effect dominates the substitution effect and tax morale increases with income

There is a wide range of policy measures that may affect the price of benefit and tax morale. In this paper we focus on two fiscal policy measures, the tax burden and public social expenditures. Both variables are emphasized in the tax evasion literature and are available on an internationally comparable level. For both cases, we derive a hypothesis on their effect on tax and benefit morale.

Tax burden – Most of the theoretical models of tax evasion fail to provide a clear prediction regarding the effect of a changing tax rate on evasion. The presence of both income and substitution effects complicates the analysis. Theoretical predictions of the impact of tax rates on evasion are dependent on modeling assumptions.[7] The majority of empirical (e. g. Clotfelter, 1983; Crane and Nourzad, 1986) an experimental analyses (e. g. Friedland, Maital and Rutenberg, 1978; Baldry, 1987; Alm, Jackson and McKee, 1992), however, report a positive relation between tax rates and tax evasion. This result is in line with common intuition. With respect to tax morale we have a clear prediction. Since a rising tax rate increases the cost of (full) compliance, it is equivalent to an increase in the price of tax morale. In addition, there is a wealth

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[7]For instance, in the seminal paper by Allingham and Sandmo (1972), the relationship between tax rates and evasion is ambiguous, and depends on specific assumptions on the shape of risk aversion.

effect in the same direction. Therefore, we expect a lower demand for tax morale in response to increasing tax rates:

Hypothesis 3a: Higher tax rates lower tax morale

On contrary, a changing tax rate does not alter the price of benefit morale *per se*. Based on this line of reasoning we expect that the tax burden has no effect on benefit morale. However, the wealth effect is expected to lower benefit morale:

Hypothesis 3b: Higher tax rates lower benefit morale

Public social expenditures – It is often argued that not the actual tax burden but the perceived tax burden is decisive. The perception of the individual tax burden depends both on the amount of taxes paid and on the individual benefits derived from public expenditures. In other words, a tax payment can be considered as an individual's contribution to a public good. Based on this idea of fiscal exchange (Buchanan, 1976), the nature of public expenditures may influence tax evasion. Willingness to pay taxes should increase with the level of utility that government services and goods provide. This is supported by empirical (Pommerehne and Weck-Hannemann, 1996; Frey, 1997) and experimental (Alm and Jackson, 1993; Alm, McClelland and Schulze, 1999; Feld and Tyran, 2002) evidence showing that compliance is higher if tax revenues are spent on programs tax payers approve and if they actively participate in the decision process.[8] In general, it is difficult to distinguish which sub-population of citizens will benefit from a certain public good or service. However, we think that a well-functioning welfare state is generally perceived as a desirable public good. Therefore, we study the effect of public social spending on compliance through the following hypothesis.[9]

Hypothesis 4: Higher public social expenditures improve tax morale

A priori, it is not clear whether benefit morale is influenced by the perceived tax burden and we have to leave it is subject to an empirical verification.

Public social expenditures are a type of public good where the individual utility derived varies with income. Citizens at the top of the income distribution will typically benefit less from a

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[8]Bordignon (1993) provides a theoretical model with a predicted effect of public expenditures that is in line with empirical end experimental evidence.

[9]Public social expenditures are also quantitatively important. They account for the largest percentage of total public expenditures among OECD-member countries.

well-functioning welfare state. As a consequence, we expect that the positive impact of higher public spending on tax morale decreases as we move up the income distribution. To test this, we extend our multilevel model and include cross level interactions to explore so-called causal heterogeneity (Western, 1998):

> *Hypothesis 4a:* The positive effect of higher public social expenditures on tax morale decreases with income

4 Dependent variables

We observe data from the first four waves of the European and World Values Survey (E/WVS).[10] This survey contains information on basic attitudes, beliefs and human values covering religion, morality, politics, work and leisure. In particular respondents are asked to evaluate on a ten-point scale whether they think 'claiming state benefits which you are not entitled to can always be justified, never be justified, or something in between'. The same question was asked for 'cheating on tax if [they] have the chance' [...]. We use these two questions to construct our measure of benefit morale and tax morale. Information about more than $75,000$ respondents from 29 OECD member countries from 1982 to 2001 is available.[11] An overview of the number of observations over years and countries is given in Table 1.

Overall, citizens show a slightly higher level of benefit morale (8.84) than of tax morale (8.48). Figures 1 and 2 show the average level of benefit morale and tax morale by countries. Most of the large economies, such as the United States, Great Britain and Japan, show values above the OECD average in both cases. Turkey, with means of 9.77 and 9.83, exhibits the highest level of both benefit morale and tax morale in the OECD area. Other top ten countries in both categories are Denmark, Czech Republic and Iceland. In contrast, Greece, Portugal and Luxembourg are at the bottom of the list in both rankings. Citizens in Greece have the lowest level of benefit morale (7.03), and Belgians perform worst in tax morale (7.18).

The Spearman's rank correlation between benefit morale and tax morale (based on individual data) is 0.44 and indicates that the issues are closely connected (see also the scatter-plot in Figure 3). Nevertheless, we obtain systematic differences on a country-level. Whereas the average

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[10]Wave 1 was carried out between 1981 and 1984, Wave 2 between 1989 and 1993, Wave 3 between 1994 and 1999 and Wave 4 between 1999 and 2004.

[11]The Republic of Korea is the only OECD-member country we do not have any information for.

level of benefit morale is above that of tax morale in the majority of the countries we obtain six countries (Greece, Mexico, Japan, France, Slovakia and Turkey) where the reverse is true (see Figure 4). The largest differences in average levels (in absolute terms) can be observed in Norway (1.52), the Netherlands (1.43) and Belgium (1.41).

For the majority of the countries we can observe the development of benefit morale and tax morale cover time. Figure 5 depicts the evolution of average benefit morale for countries with four and three available observations separately. An equivalent depiction for tax morale is given by Figure 6.[12] In most of the countries benefit morale and tax morale are fairly stable over time. The average range of fluctuation (i.e. the difference between the within country maximum and minimum) in benefit morale for the depicted countries is 0.47. The largest fluctuation (minus 1.11) is observed for Slovakia between the second wave (1991) and the third wave (1998). This time span includes the transition of Slovakia as a part of the Czechoslovak Socialist Republic to a separate sovereign state in 1993. The average range of fluctuation in tax morale across countries is somewhat higher (0.57). Mexico accounts for the largest fluctuation range of 1.36 between the second wave (1990) and the fourth wave (2000). In our empirical analysis we will account for the differences across countries and across time.

Altogether, the descriptive statistics indicate that citizens conceive benefit fraud and tax evasion as related but not equal offenses.

5   Independent variables

In order to test our hypotheses we use information on individuals' labor market status, income, the tax burden and on public social expenditures. Moreover, we need a reasonable set of control variables. The E/WVS provides a wide range of socio-economic characteristics measured on an individual level. It contains information on labor market status (employed, self-employed, unemployed or out of the labor force) and on household income (measured on a ten-point scale). This allows us to test *Hypothesis 1* and *2*.

The survey does not provide information on individuals' tax burden or a measure for the utility derived from public social expenditures. We therefore have to rely on average tax rates and public expenditures measured on a country level in order to test *Hypothesis 3* and *4*. To measure the

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[12]For the remaining 13 countries we have only two or one observations in time. Mexico and Slovakia are suppressed in Figure 5 and Figure 6, respectively.

tax burden we calculate effective average tax rates, which are based on a methodology inspired by Lucas (1990), developed by Mendoza, Razin and Tesar (1994) and refined by Volkerink and de Haan (2001). This is a well-known approach to measure the tax burden on labor, capital and consumption on an internationally comparable level (OECD, 2000). It is based on aggregate data drawn from Revenue Statistics and National Accounts (see Table 2). In order to test *Hypothesis 4* we opt for public social expenditure derived from the OECD *Social Expenditure Database*. See the Data appendix for details.

On an individual level we control for further socio-economic characteristics such as age, sex, marital status, number of children, education (captured by school leaving age) and size of place of residence (measured on a three-point scale). The set of country-level control variables comprises population information (size of the population and fertility rates) as well as macroeconomic indicators (GDP per capita, inflation and unemployment rates).

6 Multilevel model

Citizens in our data are clustered in countries in which they share a specific mix of fiscal policy, political institutions, and macroeconomic conditions. Since we observe benefit and tax morale on an individual level and fiscal policy on a country-level, we exploit information on both levels to explain determinants of the moral motivation to comply.

This data structure is in fact very common. Whenever researchers are interested in the effects of state polices and institutions on individual outcomes (such as subjective measures) the presence of such multilevel data poses a challenge to statistical analysis. Economists typically meet this challenge by calculating Huber-White (also called Sandwich or robust) standard errors or by using averaged data. However, neither approach is satisfactory, and the more appropriate technique of *multilevel modelling* – heavily used in other disciplines – is easily available.[13]

Multilevel models do not only account for intraclass correlation, but explicitly model the association between individuals in the same cluster (country). It is a much stronger form of correction than simply calculating robust standard errors. In contrast to the method of correcting standard errors, a multilevel analysis corrects the denominator degrees of freedom for the number of

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[13]The terms hierarchical model, mixed-effect model and mixed model are often used as synonyms for multilevel models. This class of models has a long tradition in educational science and bio-statistics. Steenbergen and Jones (2002) give an excellent overview and illustrate why such models are valuable for empirical research in economics and political science. Rice and Jones (1997) present an introductory account of multilevel models and describe how health economics research may benefit from their use.

clusters and will therefore give different point estimates (UCLA: Academic Technology Services, 2008).

In particular, we consider a random intercept model, which is the simplest multi-level model to account for the dependence among individuals nested in countries:

$$
\begin{aligned}
morale_{ij} &= \beta_1 + \beta_2 x_{ij} + \zeta_{1j} + \varepsilon_{ij} \\
&= (\beta_1 + \zeta_{1j}) + \beta_2 x_{ij} + \varepsilon_{ij},
\end{aligned}
\tag{1}
$$

where $\zeta_{1j} \sim (0, \psi)$ and $\varepsilon_{ij} \sim (0, \theta)$, the permanent error component ζ_{1j} varies only between countries j, and the transitory error component ε_{ij} varies over citizens i and countries j. The sum of these two terms, $\xi_{ij} = \zeta_{1j} + \varepsilon_{ij}$, is the total residual. The random intercept model can be viewed as a model with a country-specific intercept $\beta_1 + \zeta_{1j}$, where ζ_{1j} is called a 'random parameter'. A parameter of special interest is the so-called intraclass correlation,

$$
\rho = \frac{Var(\zeta_{1j})}{Var(morale_{ij})} = \frac{\psi}{\psi + \theta}.
\tag{2}
$$

This within-country correlation measures the 'closeness' of citizens from the same country relative to the closeness of individuals from different countries. It is straightforward to include country-level covariates, such as w_j:

$$
\begin{aligned}
morale_{ij} &= \beta_1 + \beta_2 x_{ij} + \beta_3 w_j + \zeta_{1j} + \varepsilon_{ij} \\
&= (\beta_1 + \zeta_{1j}) + \beta_2 x_{ij} + \beta_3 w_j + \varepsilon_{ij},
\end{aligned}
\tag{3}
$$

Apart from methodological reasons there are also good substantive reasons to use multilevel analysis in our case. Most notably, it allows to explore causal heterogeneity (Western, 1998). We will specify cross-level interactions, and check whether the effect of certain fiscal policy measures on moral motivation to comply varies across the income distribution.[14]

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[14]Our two dependent variables are measured on a ten-point scale. Strictly speaking these are ordinal measures. Therefore, we have also estimated a multilevel proportional-odds model (to be discussed in detail below). Since the qualitative results are equivalent and the scale is rather large we will for the ease of presentation focus on the conventional multilevel model throughout the paper. As pointed out by Ai and Norton (2003); Norton, Wang and Ai (2004) the interpretation of interaction effects in nonlinear models is quite cumbersome and not fully demonstrative.

7   Estimation results

Before we proceed to the estimation results of the main hypotheses, we report an auxiliary empirical test to determine whether benefit and tax morale are normal or inferior goods. The E/WVS includes, in addition to the income, information on family savings which serves as our measure of wealth. Survey respondents are asked 'During the past year, did your family save money, just get by, spent some savings, or spent savings and borrowed money'. Based on this question we generate a four-point scale variable to capture wealth-shocks during the last year. Subsequently we observe the impact of these wealth shocks on benefit and tax morale while controlling for income. As our results in Table 3 show, in both cases benefit morale and tax morale improve in response to a positive wealth shock. Therefore, we conclude that both moral goods are normal goods. Unfortunately, the information on wealth shocks is only available for a sub-sample (12 countries with 18, 344 observations). We infer from this sub-sample that normality of benefit and tax morale is generally given and exclude the wealth shock variable in our analysis below in order to exploit the information on the full sample. This is taken into account when we interpret the results of income.

Our main estimation results are summarized in Table 4.[15] We find clear evidence in favor of *Hypothesis 1a* and *1b*. Compared to employed citizens, those out of the labor force have a statistically significant lower level of benefit morale (minus 0.05 points). For tax morale the reverse is true where citizens out of the labor force exhibit a significantly higher willingness to comply (plus 0.05 points). In both cases demand decreases with price, and we interpret this as first evidence that moral motivation to comply is an endogenous dimension.[16] Notably, the results are robust across all different specifications.

Let us turn to *Hypotheses 2a* and *2b* on the effect of income. Under the presumption that moral goods are normal goods, the prediction on the effect of income on benefit morale is unambiguous. Wealth and substitution operate in the same direction, and we expect benefit morale to increase with income. As predicted, our estimation shows that a one point higher income (measured on a ten-point scale) is associated with an improvement of benefit morale of about 0.03 points. In the case of tax morale the wealth and the substitution effect have opposite signs. Our estimation

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[15]The intraclass correlation ρ varies in our eight models from 0.063 to 0.246; the mean is equal to 0.130. That means, that on average 13 percent of variation can be explained by country-factors. This substantial intraclass correlation indicates high clustering of morale in countries and, therefore, a strong country influence on individual morale.

[16]With respect to the quantitative effect one has to keep in mind that the sample mean is in both cases rather high (8.84 and 8.48).

results suggest that the substitution effect dominates. This is evidence in favor of *Hypotheses 2a (null)*. A one point increase in income reduces tax morale by 0.02 points. The comparably smaller effect in the case of tax morale (compared to benefit morale) corroborates the result on the normality of both goods. Again, this is clear evidence that moral motivation is determined by prices. In other words, citizens rationalize their own deviant behavior. High-income households have comparably more opportunities to commit tax evasion, probably exploit them and consequently develop and report the attitude that cheating on taxes is more or less justifiable. Since endeavors to fraudulently collect benefits may be too risky, they abstain and develop/report the attitude that claiming state benefits to which one is not entitled, is a serious offense. The same reasoning – but *vice versa* – applies to low-income households.

In Table 4 (specification II) we consider the effects of taxation (*Hypothesis 3*). With respect to tax morale we have a clear prediction. An increase in the tax rate is equivalent to an increase in the price of tax morale. Since the wealth effect is in the same direction, tax morale should decrease with an increasing tax burden. The strongest result is with respect to the taxation of labor. As expected, higher taxes on labor reduce tax morale. A one percentage point increase in the tax rate on labor (sample means is equal to 32 percent) decreases tax morale by 0.07 points, see Specification II. For the consumption tax we also find a negative effect on tax morale, however, this is statistically significant only in Specification II and III. The tax rate on capital exerts no robust statistically significant impact. This may be explained by the fact that the taxation of capital is typically more complicated, and the average citizen may not be aware, or can not accurately assess the implicit tax rate on capital.

With respect to the effect of tax rates on benefit morale, we have an equivalent prediction, but based on the wealth effect only. Our empirical results show that citizens respond in a similar manner as with tax morale. Higher taxes on labor and consumption decrease benefit morale. Reasonably, we observe a smaller quantitative effect of taxation of labor for benefit morale than for tax morale. This may indicate the sole impact of the wealth effect. Interestingly, The effect of the consumption tax is more robust. We interpret thes results as evidence in favor of *Hypothesis 3*. If the tax burden is perceived to be, high citizens adjust their moral motivation to comply and seem to view both tax evasion and benefit fraud as tools to restore purchasing power. This has important policy implications. For instance, increasing the tax rate as a strategy to increase tax revenues can be counterproductive in that citizens might respond with low compliance. Tax revenues may decrease by less than the amount hoped for and increased (unjustified) benefit

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claims might aggravate the budget crisis.

In specification II we introduce the level of aggregate public social spending (*Hypothesis 4a*) as an additional explanatory variable. We show that tax morale, on average, improves with higher aggregate public social spending. An increase in public social spending by one percentage point (sample mean is equal to 19.44 percent) is associated with an increase in tax morale by 0.02 points. This result supports *Hypothesis 4a* and rejects the classical supposition that taxpayers perceive their relationship with the state only as one of coercion. Citizens seem to recognize the important role of exchange; they forgo private purchasing power in return for publicly provided goods, such as a social welfare state. With respect to benefit morale we do not find a statistically significant effect, however, we will explore this issue in more detail below.

Citizens at the top of the income distribution will, in expectation, benefit less from a well-functioning welfare state. Therefore, we expect that the positive impact of higher public spending on tax morale will decrease as we move up the income distribution (*Hypothesis 4b*). To test this, we extend our multilevel model and include cross-level interactions (Western, 1998) in specification III. To operationalize causal heterogeneity with respect to public social spending, we interact our measure of individual income with the share of GDP spent on social issues. The central hypothesis here is that the positive effect of higher public spending should decrease in absolute terms with income. Econometrically, we expect a negative sign for the interaction term. Specification III indeed reveals that an increase in public social expenditure of one percent of GDP increases citizens' tax morale at the bottom of income distribution by about 0.04 points (see Figure 7). When we move up the income distribution, citizens benefit less and accordingly the effect decreases. For citizens in the highest income group an equivalent increase of public social expenditure has practically no effect on their tax morale (see Figure 7). In contrast, with respect to benefit morale there is no effect of higher public spending discernable along the whole income distribution – the effects are not statistically significant different from zero.

In a final step we deepen the analysis in specification IV where we include the composition of public social expenditures in the estimation. We follow the OECD terminology of social purpose and distinguish between nine policy areas: old age, survivors, incapacity-related benefits, health, family, active labor market policies, unemployment, housing and other social policy areas.[17] The quantitatively most important functional categories are old age (32.9 percent of total spending), health (29.4 percent) and incapacity-related benefits (11.1 percent).

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[17]For details please refer to the Data appendix.

The qualitative results hardly change when we control for the composition of expenditure, with the exception of the effect of an increase in public social spending on benefit morale along the income distribution (see Figure 7). We now observe a statistically significant pattern similar to that of tax morale. In addition specification IV reveals that citizens on average dislike spending on the category old age (the base group). An increase in spending on all other groups (survivor, incapacity, health family, ALMP and on the residual category) at the expense of old age improves the average citizen's benefit and tax morale. A focus on housing improves tax morale, but exerts no effect on benefit morale. The only category which is less popular than old age is unemployment. Shifting resources from old age to unemployment related expenditures worsens citizens' benefit morale.

The results on the individual-level control variables are robust across different specifications. All the results concerning tax morale are in accordance with earlier studies (e.g. Torgler and Schaltegger, 2006). Moreover, they are supported by empirical (Clotfelter, 1983; Dubin and Wilde, 1988; Feinstein, 1991) and experimental (Friedland, Maital and Rutenberg, 1978; Spicer and Becker, 1980; Spicer and Hero, 1985; Baldry, 1987) studies on tax evasion. We find some revealing differences between benefit and tax morale. It turns out that some control variables equivalently influence both variables, while another group exerts a statistically significant impact on only one outcome.

For instance, both outcomes rise with age. The estimated quantitative effect suggests that an additional year of age increases both levels of morale by about 0.02 points.[18] Females tend to have both a higher level of benefit morale and of tax morale. In both cases the effect is quantitatively important too, with a higher effect of tax morale (plus 0.32) as compared to benefit morale (plus 0.21).[19] Marital status is decisive too. Being married is associated with both a higher level of benefit morale (plus 0.26) and tax morale (0.18). The honest behavior of married people can either be explained by a true causal effect of marital status or by self-selection into marriage. The size of the place of residence has also similar effects on both outcomes: The bigger the place

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[18]It is often argued that older people are expected to be more honest than younger ones since they have acquired more social capital (Tittle, 1980) and they are often more attached to their community, which may impose higher social costs of sanction (Pommerehne and Weck-Hannemann, 1996). The criminological literature typically describes an age-crime curve which is characterized by an increase throughout the adolescent years, reaching a maximum in late adolescence or early adulthood and a steady decline thereafter (e.g. Hirschi and Gottfredson, 1983; Tittle and Ward, 1993; Tittle and Grasmick, 1997). In order to allow for such a functional form we have included the variable age-squared. However, it turned out to be statistically insignificant.

[19]In general males show higher probabilities and frequencies of committing criminal acts than females (e.g. Smith and Visher, 1980; Steffensmeier, Anderson and Streifel, 1989; Elliot, 1994).

of residence the lower is the level of benefit and tax morale.[20]

The level of education exerts a statistically significant effect on benefit morale but not on tax morale. An additional year of schooling increases the level of benefit morale by about 0.01 points. Self-employed citizens exhibit a substantially lower level of tax morale compared to employees (minus 0.24 points). This can be explained by extensive opportunities to evade taxes (i. e. high cost of tax morale) among the self-employed. This result mirrors Feinstein (1991) who analyzed tax audit data and found that self-employed citizens were more likely to evade than the average taxpayer.[21] The direction of causality between low tax morale and being self-employed remains an open question. In any case, this information is relevant to (tax) policy makers. Why do we not observe a statistically significant different level of benefit morale between the two groups? The results suggest that opportunities of self-employed citizens to commit benefit fraud may not differ from those of a wage earner.

8   Sensitivity analysis

We tested the sensitivity of our results to a number of alternative specifications and methods. Firstly, we estimated a fixed-effects model by introducing country fixed-effects. Thereby, we control for unobserved time-invariant heterogeneity at the country-level. It turns out that our results (see Table 6) are robust. We do not observe any important differences compared to results discussed above at the individual nor at the country level. Secondly, we accounted for the ordinal nature of the two dependent variables. In particular, we have estimated a multilevel proportional-odds model (Rabe-Hesketh and Skrondal, 2005). The qualitative results are equivalent to those of the conventional multilevel model presented above (estimation results are available upon request). Finally, one might be concerned about potential endogeneity of income. In particular, given our finding that tax morale deteriorates with income, one could argue that this relation might be due to reversed causality namely, that after-tax income increases if tax morale decreases. To check for this sort of endogeneity one can employ an instrumental variable approach. Therefore,

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[20]Again, based on social psychological considerations one could argue that citizens living in rural areas have a stronger dependency on the reactions from others due to different social structure in rural areas as compared to large cities. Moreover, one would generally expect a stronger corporate attitude in rural areas.

[21]This observation is typically explained by the following reasons: (i) Self-employed citizens report their income to the taxing authority, while employees typically have their employers forward the information to the tax authority. The existence of an intermediary decreases the opportunities to evade taxes; (ii) The less visible income of self-employed citizens and their more complex tax return (including deductibles) may offer more opportunities to conceal income. There is suggestive empirical evidence that citizens enter into self-employment in order to exploit associated tax evasion opportunities (Bruce, 2000).

a variable is needed which only affects income but is not related to tax morale. We utilize a robust empirical finding from the labor economics literature (Oi and Idson, 1999) stating that earnings are higher in larger firms. We instrument income by the number of employees in the tax morale equation. Controlling for other observable characteristics it is plausible that the number of co-workers is not related to individual tax morale. One drawback of this empirical strategy is that it applies to the employed citizens only and that the information on the number of co-workers is available only for a subset of observations. However, given the fact that it is usually hard to find such a credible instrument, we accept this trade-off. Our two-stage least square estimation procedure in Table 5 supports our finding from above. Again, we find that tax morale deteriorates with income.

9 Summary & conclusions

Are taxes and benefits two distinct options to cheat on the state? Hitherto the economic literature seems to treat these two offenses to be symmetric. We identify an important difference between tax evasion and benefit fraud. There seems to be a discrepancy in citizens' moral attitude towards these two offenses. Our multilevel analysis shows that the moral motivation to abstain from cheating on the state has different determinants in the two circumstances.

Our results suggest that moral values evolve endogenously and are determined by prices (i.e. the cost of acting morally). Citizens who have comparably more opportunities and low cost to commit a certain offense, develop the attitude that it is a minor offense. This suggests that citizens excuse or rationalize their own deviant behavior. Put differently, they self-servingly adjust their moral values. From a policy perspective it is beneficial to know which groups of citizens view benefit fraud as a minor offense and which sub-population is reluctant to pay taxes. This allows policy makers to predict how cheating behavior will evolve over time in response to socio-demographic changes.

Moreover, we have identified country-factors which are more amenable to policy interventions. Fiscal policy measures broadly affect benefit and tax morale in the same manner, although some quantitative differences can be observed. This type of analysis provides information of how citizens react to certain policy measures. Our findings point at a more general phenomenon which policy makers should be aware of when attempting to increase (decrease) the demand of goods with positive (negative) externalities. In each case they have to account for the impact of

policy on citizens' moral motivation. For instance, consider the topical case of the environment. An effective environmental policy is clearly in dire need of citizens' moral motivation to behave pro environmentally.

Finally, our results can be interpreted on the basis of the motivation crowding theory, which suggests that individuals differentiate between two different sources of motivation: incentives applied from outside (extrinsic motivation) and their 'inner feelings' (intrinsic motivation). Intrinsic motivation is an endogenous dimension, and a change in the level of the extrinsic motivation may alter the level of intrinsic motivation as well. In general, it is not clear in which way an external intervention will affect intrinsic motivation. We have shown that in the context of benefit fraud and tax evasion the intrinsic motivation to comply (benefit morale and tax morale) is indeed altered by extrinsic factors, such as tax rates.

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10 Data appendix

Individual level responses on benefit morale, tax morale, age, sex, marital status, children, education (captured by the school leaving age), household income (measured on a ten-point scale), size of the place of residence (measured on a three-point scale) and employment status (employed, self-employed, unemployed and out of labor force) were taken from the *European and World Values Survey* (E/WVS). In particular, we used the *European and World Values Surveys Four-wave Integrated Data File, 1981-2004*. We selected all OECD-member countries for which benefit morale and tax morale is available, except South Korea. We have decided to exclude South Korea since no information on labor market status was available. Our sample consists of all observations from respondents from these OECD-member countries for which information on these basic individual characteristics was available. (Table 1 shows the number of observations over years and countries.) Note that the E/WVS includes two questions on education: (i) 'What is the highest educational level that you have attained?' and (ii) 'At what age did you (or will you) complete your full time education?'. While the former question would be preferred to measure the level of education, there are considerably more missing answers compared to the latter one. In order to exploit all the available information on education and to save observations we constructed a variable capturing the actual or the regular school leaving age. In particular, if information on the second question was available we used it. In cases where the answer on the second question was missing, but information on the first question was available, we imputed the regular school leaving age at the respective educational level. Thereby we distinguished two cases: (i) If there was information on both questions for other respondents from the same country and year available, we imputed the average school leaving age among those with the same highest educational level attained. (ii) If there were no respondents from the same country and year available with information on both questions we imputed the regular school living age of the respective educational level. (Details are available upon request.)

The primary source for the **macroeconomic variables** (GDP per capita, GDP-deflator and unemployment rate) are the *OECD Factbook 2007* and various issues of the *OECD Economic Outlook*. However, for the Czech Republic (1991), Mexico (1996), Poland (1990) and Slovakia (1991) no information on unemployment rates was available and we retrieved this information from the *Database of the International Labour Organization*. Information for Hungary (1991), Poland (1990) and Slovakia (1991) on the GDP-deflator is from the *World Bank's World Development Indicators*.

Data on **public social expenditure** are from the *OECD Social Expenditure Database*. This classifies an expenditure item as social if the benefits are intended to address one or more social purposes, and if programmes regulating the provision involve either an inter-personal redistribution, or a compulsory participation. The OECD groups benefits with a social purpose in nine policy areas: (i) old-age (pensions, early retirement pensions, home-help and residential services for the elderly), (ii) survivors (pensions and funeral payments), (iii) incapacity-related benefits (care services, disability benefits, benefits accruing from occupational injury and accident legislation, employee sickness payments), (iv) health (spending on in- and out-patient care, medical goods, prevention), (v) family (child allowances and credits, child-care support, income support during leave, sole parent payments), (vi) active labor market policies (employment services, training, youth measures, subsidized employment, employment measures for the disabled), (vii) unemployment (unemployment compensation, severance pay, early retirement for labor market reasons), (viii) housing (housing allowances and rent subsidies) and (ix) other social policy areas (non-categorical cash benefits to low-income households, other social services). For further details please refer to OECD (2007).

11   Appendix
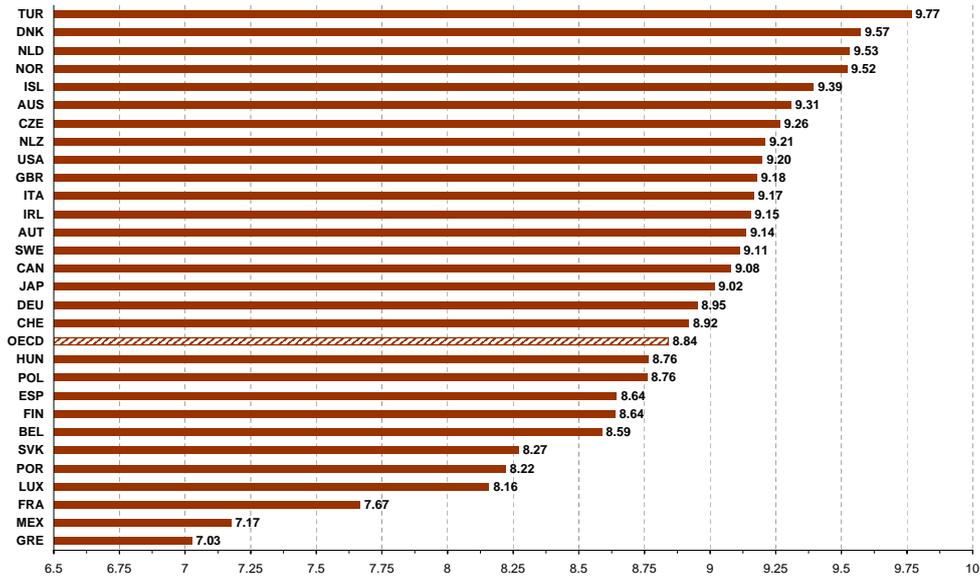
Figure 1: **Average benefit morale in the OECD member countries.**
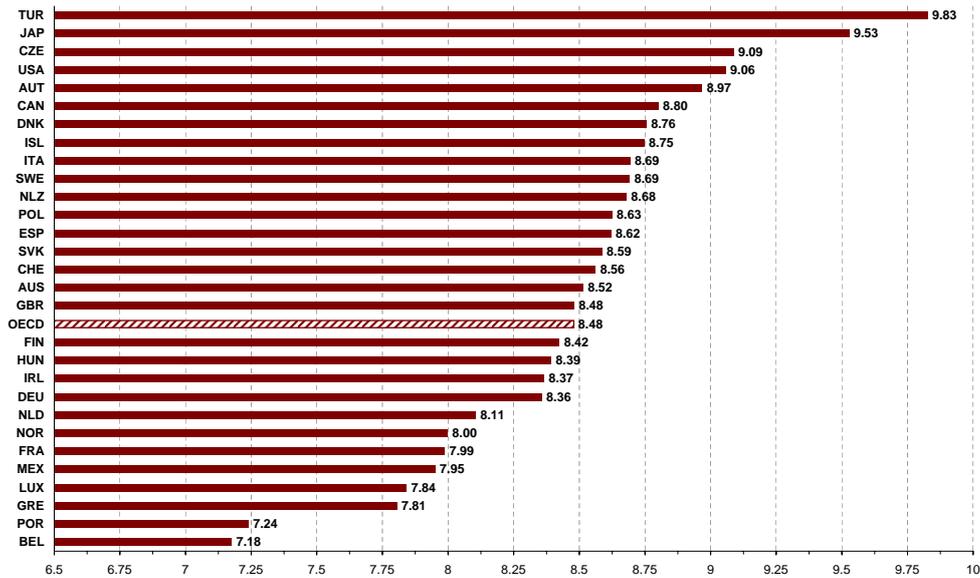
Figure 2: **Average tax morale in the OECD member countries.**

Data source: E/WVS
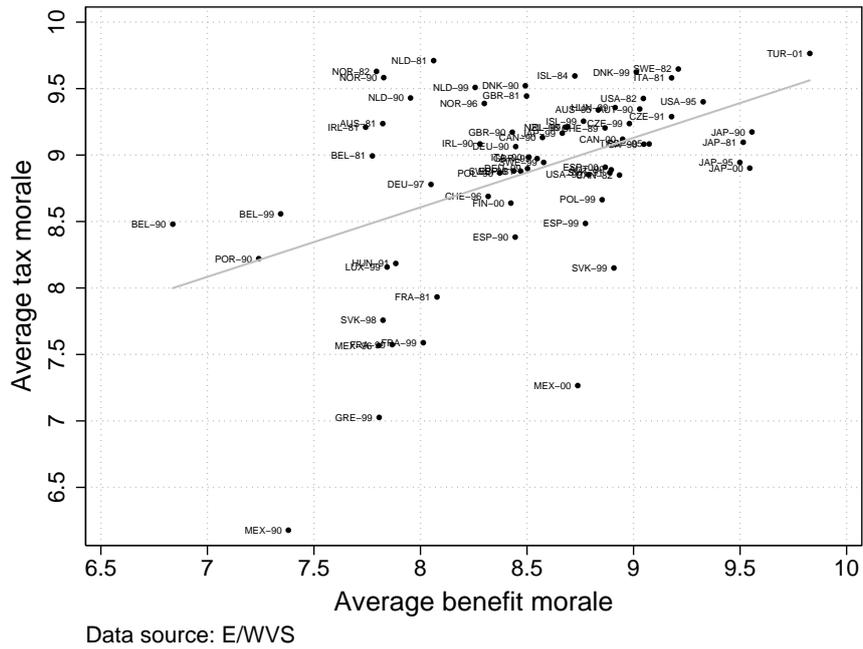
Figure 3: Relationship between benefit morale and tax morale.
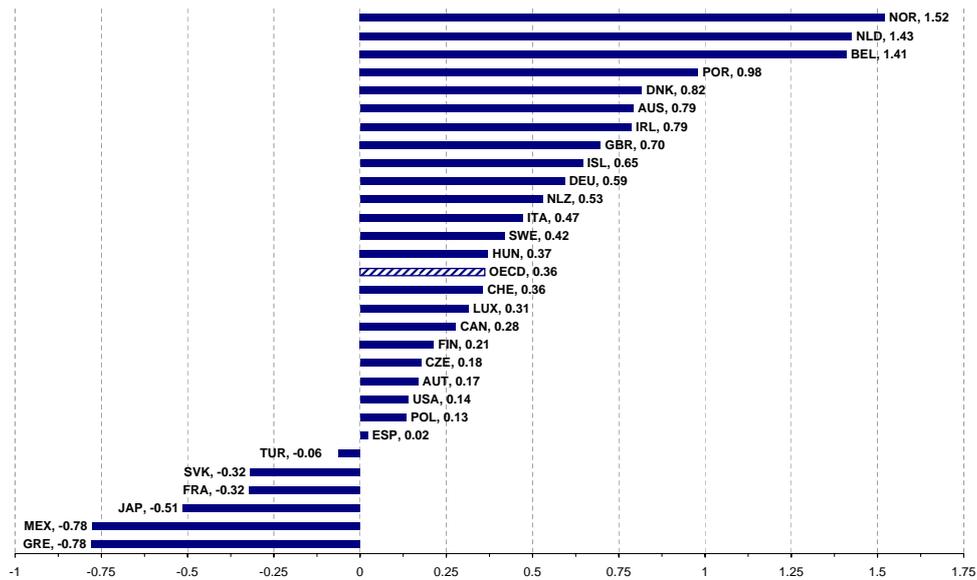
Figure 4: Average difference between benefit morale and tax morale.
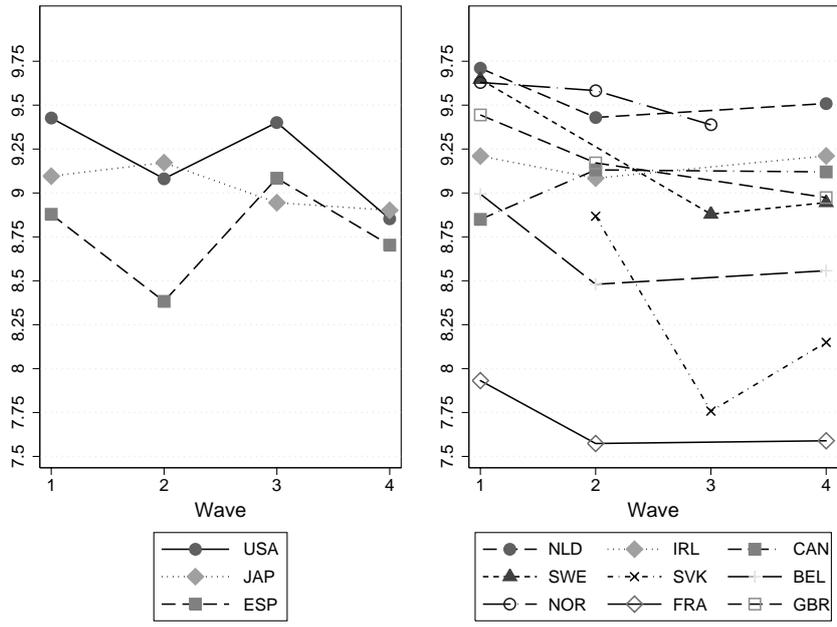
Figure 5: Development of benefit morale over time.
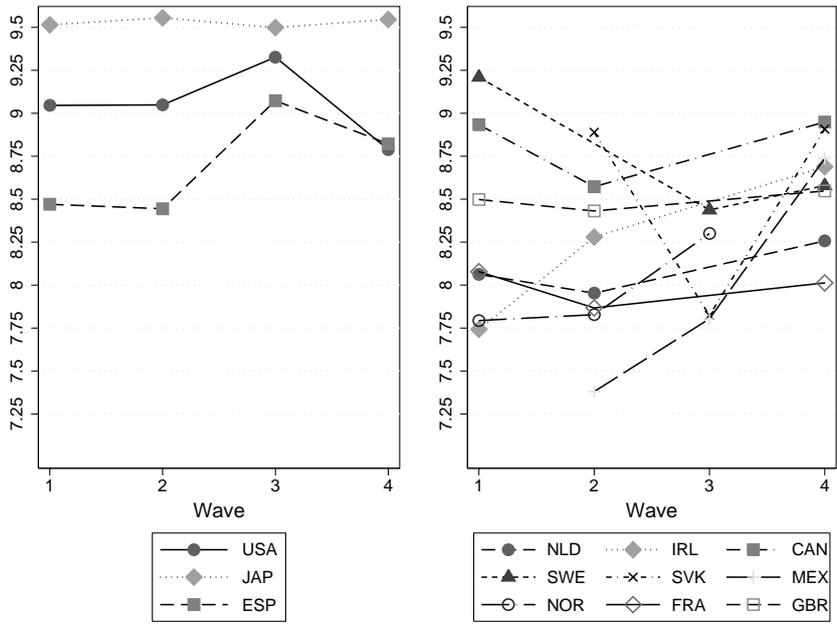
Figure 6: Development of tax morale over time.

27

Table 1: Number of observations per country and year.

	1981	1982	1984	1989	1990	1991	1995	1996	1997	1998	1999	2000	2001	
Australia	823						1,789							2,612
Austria					1,387						1,179			2,566
Belgium	532				1,646						1,435			3,613
Canada		632			1,439							1,670		3,741
Czech Republic						1,994					1,676			3,670
Denmark					875						897			1,772
Finland												817		817
France	601				692						1,234			2,527
Germany					3,175				1,637		1,515			6,327
Greece											860			860
Hungary						941					922			1,863
Iceland			601								876			1,477
Ireland	276				880						772			1,928
Italy	605				1,373						1,393			3,371
Japan	928				648		816					1,054		3,446
Luxembourg											573			573
Mexico					723			1,647				835		3,205
Netherlands	531				749						903			2,183
New Zealand										980				980
Norway		688			988			1,034						2,710
Poland					910						1,015			1,925
Portugal					1,093									1,093
Slovakia						1,019				909	1,204			3,132
Spain	1,235				2,915		846				771	818		6,585
Sweden		600						928			641			2,169
Switzerland				723				899						1,622
Turkey													1,179	1,179
United Kingdom	520				1,080						648			2,248
United States		1,374			1,538		1,246				1,119			5,277
	6,051	3,294	601	723	22,111	3,954	4,697	4,508	1,637	1,889	19,633	5,194	1,179	75,471

Table 2: Implicit tax rates on labor, capital and consumption.[a]

WAVE[b]	Labor				Capital				Consumption			
	1	2	3	4	1	2	3	4	1	2	3	4
Australia	20.28		21.22		46.56		48.59		13.62		12.70	
Austria		36.43		40.71		51.11		60.12		20.17		18.83
Belgium	36.05	40.81		41.74	52.13	43.82		54.67	16.96	17.42		17.78
Canada	23.03	28.24		30.30	46.87	58.56		53.00	17.67	14.14		13.96
Czech Republic				41.60				30.29				17.44
Denmark		35.78		42.91		76.04		78.66		27.06		27.96
Finland				45.55				48.29				23.86
France	34.99	40.16		40.58	54.07	47.33		62.93	18.34	18.59		18.72
Germany			36.28	36.25			34.16	36.42			14.96	15.18
Greece				39.23				22.13				17.96
Hungary		43.37		42.35				16.58		22.14		24.98
Iceland	18.10			28.21	23.25				22.89			20.38
Ireland	20.33	26.20		25.29	29.59	21.79		23.78	18.76	21.37		21.05
Italy	29.01	34.81			28.56	36.91			12.19	16.07		
Japan	19.93	25.63	24.34	31.77	41.90	53.48	51.97	47.65	6.88	6.76	6.61	12.24
Luxembourg				34.25				48.11				19.36
Mexico		8.62	9.23	10.25			0.53	0.52		12.27	12.53	12.61
Netherlands	39.11	38.01		32.58	49.46	49.43		54.69	16.04	17.58		18.71
New Zealand			23.41				40.72				17.71	
Norway	35.28	36.72	36.16		51.42	43.61	37.36		25.33	24.37	26.66	
Poland				37.28				12.75				19.13
Portugal		21.61				22.66				19.10		
Slovakia			42.20	41.54			12.78	10.44			15.40	15.35
Spain	28.58	30.65	30.45	30.21	15.67	27.79	26.06	34.35	7.66	14.22	13.98	15.74
Sweden	46.01		49.80	52.40	53.64		53.89	73.90	17.89		18.00	17.53
Switzerland		27.62	32.49			55.50	49.50			9.26	9.42	
Turkey				51.12				9.23				15.96
United Kingdom	25.05	22.06		24.16	87.13	62.62		55.11	15.62	15.52		14.97
United States	22.78	22.48	22.98	24.86	41.10	38.58	39.59	39.45	6.90	6.20	6.58	6.32

[a] Own calculations following Mendoza, Razin and Tesar (1994); Volkerink and de Haan (2001) based on Revenue Statistics and National Accounts. [b] Wave 1 was carried out between 1981 and 1984, Wave 2 between 1989 and 1993, Wave 3 between 1994 and 1999 and Wave 4 between 1999 and 2001.

Table 3: **Testing the normal good assumption of benefit and tax morale.**[a]

DEPENDENT VARIABLE	BM		TM	
Wealth	0.079***	(0.017)	0.100***	(0.018)
Income	0.031***	(0.006)	-0.016**	(0.006)
Constant	8.423***	(0.180)	8.386***	(0.150)
No. of observations	18,344		18,344	
No. of countries	12		12	

[a] Method of estimation is a random intercept model. Standard errors in parentheses. *, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level, respectively.

Table 4: Determinants of benefit morale and tax morale.[a]

Dependent variable	Specification I TM	Specification I BM	Specification II TM	Specification II BM	Specification III[b] TM	Specification III[b] BM	Specification IV[b] TM	Specification IV[b] BM
Hypotheses 1a & 1b								
Out of labor force	0.052** (0.023)	-0.053*** (0.020)	0.050** (0.024)	-0.060*** (0.021)	0.047* (0.024)	-0.063*** (0.021)	0.047* (0.024)	-0.062*** (0.021)
Hypotheses 2a & 2b								
Income	-0.019*** (0.004)	0.034*** (0.003)	-0.018*** (0.004)	0.037*** (0.003)	-0.018*** (0.004)	0.038*** (0.003)	-0.019*** (0.004)	0.040*** (0.003)
Hypotheses 3a & 3b								
Tax rate on labor			-0.069*** (0.007)	-0.020*** (0.006)	-0.067*** (0.007)	-0.019*** (0.006)	-0.046*** (0.010)	-0.037*** (0.010)
Tax rate on capital			-0.002 (0.002)	0.006*** (0.002)	-0.002 (0.002)	0.006*** (0.002)	0.003 (0.003)	0.004 (0.003)
Tax rate on cons.			-0.036*** (0.011)	-0.035*** (0.010)	-0.036*** (0.011)	-0.035*** (0.010)	-0.001 (0.015)	-0.037*** (0.013)
Hypotheses 4a & 4b								
Social exp.			0.024** (0.010)	-0.003 (0.009)	0.023** (0.010)	-0.004 (0.009)	0.016 (0.014)	0.022* (0.012)
Social exp.*income					-0.004*** (0.001)	-0.002*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Composition of social expenditures								
Survivor							0.090*** (0.025)	0.050** (0.021)
Incapacity							0.026** (0.013)	0.018* (0.011)
Health							0.048*** (0.010)	0.030*** (0.009)
Family							0.160*** (0.015)	0.025** (0.012)
ALMP							0.063*** (0.021)	0.039** (0.018)
Unemployment							0.002 (0.009)	-0.039*** (0.008)
Housing							0.125*** (0.039)	0.026 (0.032)
Other							0.038** (0.017)	0.060*** (0.014)
Individual level controls								
Age	0.018*** (0.001)	0.018*** (0.001)	0.019*** (0.001)	0.019*** (0.001)	0.019*** (0.001)	0.019*** (0.001)	0.019*** (0.001)	0.019*** (0.001)
Female	0.376*** (0.017)	0.178*** (0.015)	0.387*** (0.018)	0.181*** (0.016)	0.387*** (0.018)	0.180*** (0.016)	0.384*** (0.018)	0.179*** (0.016)
Married	0.242*** (0.019)	0.222*** (0.016)	0.244*** (0.020)	0.227*** (0.017)	0.248*** (0.020)	0.229*** (0.017)	0.251*** (0.020)	0.229*** (0.017)
No. of children	-0.004 (0.006)	-0.012** (0.005)	0.001 (0.007)	-0.007 (0.006)	0.003 (0.007)	-0.006 (0.006)	0.002 (0.007)	-0.006 (0.006)
School leaving age	0.003 (0.002)	0.010*** (0.002)	0.002 (0.002)	0.008*** (0.002)	0.002 (0.002)	0.008*** (0.002)	0.003 (0.002)	0.008*** (0.002)
Unemployed	-0.202*** (0.039)	-0.300*** (0.034)	-0.228*** (0.041)	-0.307*** (0.036)	-0.229*** (0.041)	-0.308*** (0.036)	-0.217*** (0.041)	-0.307*** (0.036)
Self-employed	-0.310*** (0.034)	-0.050* (0.030)	-0.307*** (0.037)	-0.047 (0.033)	-0.309*** (0.037)	-0.048 (0.033)	-0.311*** (0.037)	-0.047 (0.033)
Town size	-0.096*** (0.011)	-0.081*** (0.010)	-0.091*** (0.012)	-0.070*** (0.011)	-0.093*** (0.012)	-0.071*** (0.011)	-0.094*** (0.012)	-0.074*** (0.011)
Survey wave controls	yes		yes		yes		yes	
Population controls	yes		yes		yes		yes	
Macroeconomic controls	yes		yes		yes		yes	
Constant	7.525*** (0.120)	7.842*** (0.130)	11.830*** (0.430)	9.657*** (0.400)	12.110*** (0.440)	9.720*** (0.400)	5.543*** (0.820)	9.054*** (0.680)
ψ/ρ	0.322/0.063	0.393/0.096	0.496/0.093	0.561/0.132	0.488/0.092	0.560/0.132	1.565/0.246	0.812/0.182
No. of observations	75,471	75,471	66,540	66,540	66,540	66,540	66,540	66,540
No. of countries	29	29	27	27	27	27	27	27

[a] Method of estimation is a random intercept model. Standard errors in parentheses. *, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level, respectively. [b] The variables social exp. and income are mean centered. These variables and their interaction are jointly statistically significant (P-value< 0.001).

Figure 7: Impact of increasing public social spending along the income distribution.

Table 5: Two-stage least square estimation of tax morale.[a]

DEPENDENT VARIABLE	TM	
Income	-0.547*	(0.290)
Age	0.017***	(0.007)
Female	0.383***	(0.120)
Married	0.811**	(0.348)
No. of children	0.012	(0.064)
School leaving age	0.049	(0.036)
Town size	-0.001	(0.121)
Constant	9.574***	(1.193)
No. of observations	3,768	
No. of countries	18	

[a] The dependent variable is tax morale. Method of estimation is two-stage least squares. Income is identified by the exclusive restriction of the number of co-workers. Standard errors in parentheses. *, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level, respectively.

Table 6: Determinants of benefit morale and tax morale (fixed-effects estimation).[a]

Dependent variable	Specification I TM		Specification I BM		Specification II[a] TM		Specification II[a] BM		Specification III[b] TM		Specification III[b] BM		Specification IV[b] TM		Specification IV[b] BM	
Hypotheses 1a & 1b																
Out of labor force	0.052**	(0.023)	-0.053***	(0.020)	0.051**	(0.024)	-0.061***	(0.021)	0.048**	(0.024)	-0.063***	(0.021)	0.046*	(0.024)	-0.062***	(0.021)
Hypotheses 2a & 2b																
Income	-0.019***	(0.004)	0.034***	(0.003)	-0.018***	(0.004)	0.037***	(0.003)	-0.016***	(0.004)	0.038***	(0.003)	-0.019***	(0.004)	0.040***	(0.003)
Hypotheses 3a & 3b																
Tax rate on labor					-0.072***	(0.008)	-0.019***	(0.007)	-0.071***	(0.008)	-0.018***	(0.007)	-0.039***	(0.011)	-0.038***	(0.009)
Tax rate on capital					-0.003	(0.002)	0.004**	(0.002)	-0.003	(0.002)	0.004**	(0.002)	0.005	(0.003)	0.005	(0.003)
Tax rate on cons.					-0.041***	(0.012)	-0.038***	(0.010)	-0.041***	(0.012)	-0.039***	(0.010)	0.022	(0.017)	-0.039***	(0.014)
Hypotheses 4a & 4b																
Social exp.					0.018	(0.011)	-0.011	(0.009)	0.017	(0.011)	-0.012	(0.009)	0.023	(0.015)	0.025**	(0.013)
Social exp.*income									-0.004***	(0.001)	-0.002***	(0.001)	-0.003***	(0.001)	-0.002***	(0.001)
Composition of social expenditures																
Survivor													0.142***	(0.028)	0.082***	(0.025)
Incapacity													0.029**	(0.013)	0.016	(0.012)
Health													0.053***	(0.011)	0.034***	(0.010)
Family													0.188***	(0.016)	0.036**	(0.014)
ALMP													0.069***	(0.022)	0.051***	(0.019)
Unemployment													0.016*	(0.009)	-0.036***	(0.008)
Housing													0.219***	(0.048)	0.087**	(0.042)
Other													0.067***	(0.019)	0.076***	(0.016)
Individual level controls																
Age	0.018***	(0.001)	0.018***	(0.001)	0.019***	(0.001)	0.019***	(0.001)	0.019***	(0.001)	0.019***	(0.001)	0.019***	(0.001)	0.019***	(0.001)
Female	0.376***	(0.017)	0.178***	(0.015)	0.387***	(0.018)	0.180***	(0.016)	0.387***	(0.018)	0.180***	(0.016)	0.384***	(0.018)	0.179***	(0.016)
Married	0.241***	(0.019)	0.222***	(0.016)	0.245***	(0.020)	0.227***	(0.017)	0.248***	(0.020)	0.229***	(0.017)	0.252***	(0.020)	0.229***	(0.017)
No. of children	-0.004	(0.006)	-0.012**	(0.005)	0.001	(0.007)	-0.007	(0.006)	0.003	(0.007)	-0.006	(0.006)	0.002	(0.007)	-0.006	(0.006)
School leaving age	0.003	(0.002)	0.010***	(0.002)	0.002	(0.002)	0.008***	(0.002)	0.002	(0.002)	0.008***	(0.002)	0.003*	(0.002)	0.007***	(0.002)
Unemployed	-0.202***	(0.039)	-0.300***	(0.034)	-0.229***	(0.041)	-0.309***	(0.036)	-0.229***	(0.041)	-0.310***	(0.036)	-0.218***	(0.041)	-0.308***	(0.036)
Self-employed	-0.310***	(0.034)	-0.050*	(0.030)	-0.307***	(0.037)	-0.047	(0.033)	-0.309***	(0.037)	-0.048	(0.033)	-0.311***	(0.037)	-0.047	(0.033)
Town size	-0.096***	(0.011)	-0.081***	(0.010)	-0.091***	(0.012)	-0.071***	(0.011)	-0.093***	(0.012)	-0.072***	(0.011)	-0.094***	(0.012)	-0.074***	(0.011)
Country controls	yes		yes		yes		yes		yes		yes		yes		yes	
Survey wave controls	yes		yes		yes		yes		yes		yes		yes		yes	
Population controls	yes		yes		yes		yes		yes		yes		yes		yes	
Macroeconomic controls	yes		yes		yes		yes		yes		yes		yes		yes	
Constant	7.576***	(0.054)	7.861***	(0.048)	12.450***	(0.450)	10.170***	(0.390)	12.600***	(0.440)	10.070***	(0.380)	4.314***	(0.850)	8.853***	(0.740)
No. of observations	75,471		75,471		66,540		66,540		66,540		66,540		66,540		66,540	
No. of countries	29		29		27		27		27		27		27		27	

[a] Method of estimation is a fixed-effects model. Standard errors in parentheses. *, **, and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level, respectively. [b] The variables social exp. and income are mean centered. These variables and their interaction are jointly statistically significant (P-value< 0.001).