# Taxes and Benefits: Two Options to Cheat on the State*

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**Abstract**

In this paper we study the social norms to abstain from cheating on the state via benefit fraud and tax evasion. We interpret these norms (called benefit morale and tax morale) as moral goods, and derive testable hypotheses on whether their demand is determined by prices. Employing a large survey data set from OECD-member countries we provide robust evidence that the demand responds to price proxy variables as predicted by theory. The main general conclusions of this paper is that social norms (which are widely accepted as determinants of individual economic behaviour) are themselves influenced by economic factors.

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# 1 Introduction

Economists have studied many facets of tax evasion. Two facts about this strand of literature are notable. First, recently scholars widely recognise that morale considerations (or social norms) are key to explain compliance behaviour.[1] Second, a comparable aspect of cheating on the state, namely benefit fraud, has gained hardly any attention.

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. Given that the neo-classical model of tax evasion underpredicts real-world compliance (Alm, McClelland and Schulze, 1992), many scholars (see, for instance, Andreoni et al., 1998; Posner, 2000) conclude that citizens are not motivated purely by the rate of return on tax evasion, but also by morale aspects. As a consequence, an increasing number of papers are interested in the determinants of this social norm called *tax morale*. All these papers – explicitly or implicitly – assume that tax morale affects actual tax evasion. As discussed in a survey by Halla (2011), the empirical identification of such a causal link is, however, quite challenging, since exogenous variation in tax morale is needed. Most recently, Halla (forthcoming) suggests that the inherited part of tax morale of American-born from their ancestors country of origin provides such an exogenous variation which can be used within an instrumental variable setting. His analysis identifies a negative effect of higher tax morale on the size of the underground production. While further empirical evidence on the causal link between social norms to comply an the respective compliance behaviour is needed, there seems to be wide consensus that tax morale is at least part of the answer to the famous question 'Why do people pay taxes?' (Alm, McClelland and Schulze, 1992).

The literature on benefit fraud (with and without consideration of social norms) is in contrast quite small.[2] To the extent that there is a widespread concern about abuse and dishonesty in social welfare and health care programmes this is a quite surprising fact.[3] A possible explanation for the relative neglect of benefit fraud in the economic literature is given by the fact that tax evasion and benefit fraud are almost identical in the standard neo-classical model of compliance

[1] We use social norm and morale consideration (or motivation) synonymously. For a general discussion of social norms, see Elster (1989).

[2] While the literature on benefit fraud can be summarized in the following, a survey of the literature on tax evasion is well beyond the scope of this paper. The development of the literature through the 1980s is surveyed by Cowell (1990). More recent literature surveys are provided by Andreoni et al. (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). A survey of the literature on tax morale is given by Torgler (2002, 2003).

[3] 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.

(Halla and Schneider, 2008). The existing theoretical papers that explicitly focus on benefit fraud are Yaniv (1986) and Burgess (1992). Both papers model the abuse of unemployment insurance (e. g. recipients who work or avoid job-search activities) and discuss various penalty schemes, as well as optimal deterrence policies.[4] The empirical literature contains some empirical studies identifying fraud in different U.S. social welfare programs.[5] Finally, a small number of papers examine the social norm to abstain from cheating via benefit fraud (typical called *benefit morale*) explicitly so far. These papers mainly focus on determinants of benefit morale on a country level. Heinemann (2008); Halla et al. (2010) find that high levels of public social spending and a high unemployment rate are associated with small positive (or no) immediate impact on benefit morale, which is (partly) crowded out by adverse medium and long run effects. Heinemann (2011) shows further that sharp increases in the unemployment rate reduce benefit morale especially in countries with generous benefit schemes.

In this paper, we also define the concept of benefit and tax morale as the morale motivation to abstain from cheating on the state via benefit fraud and tax evasion, respectively. Our main contribution is to examine these moral motivations within one framework that interprets them as moral consumption goods. We derive straightforward testable hypotheses on whether their demand is determined by price and wealth effects. In order to capture the price of these non-market goods we employ individual level factors (such as labour market status and income), as well as country level factors (such as tax rates and the level of public social spending). The direct comparison of tax morale and benefit morale is especially useful, since a change in certain factors (such as, for instance, income) should affect the demand for these two goods with opposite signs. Employing a large micro data set from the *European and World Values Survey*, combined with information from the *OECD Database*, we provide robust evidence that the demand responds to our price proxy variables as predicted by theory. For instance, benefit morale improves with rising income while tax morale deteriorates with rising income. The main general conclusions of this paper is that social norms (which are among scholars widely accepted as determinants of individual economic behaviour) are themselves influenced by economic factors.

The paper is organized as follows. In Section 2 we discuss the concept of benefit and tax

[4]Relatedly, Baumann et al. (2009) model employee's evasion decisions regarding contributions to the unemployment insurance.

[5]Greenberg et al. (1981); Greenberg and Halsey (1983) examine programs similar to a negative-income tax plan and find substantial income underreporting for up to 50 percent of certain subgroups of the population. Similarly Kingston et al. (1986) 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 and Food Stamps entitlement programs find more modest fraud rates of 2 to 4 percent (Wolf and Greenberg, 1986).

morale and derive testable hypotheses. Section 3 and 4 describe the dependent and independent variables, respectively. Our empirical strategy is outlined in Section 5. The estimation results are presented in Section 6, and Section 7 reports on several robustness checks. Finally, in Section 8 we conclude the paper. A Web Appendix (downloadable from the corresponding author's website) provides all details on data sources and further results.

## 2 Benefit and tax morale

We define benefit and tax morale as the morale 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 and tax morale as morale consumption 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, demand should be determined by prices and income. In the case of moral goods, which are by definition non-market goods, prices are however not directly observable. In order to test whether the demand for benefit and tax morale is affected by prices, we approximate their prices with individual level and country level characteristics along which the opportunity cost of consumption vary. In particular, we formulate hypotheses for four different proxy variables.

First, we argue that employment status is a useful proxy variable for the price of benefit and tax morale. Non-employed citizens (i. e. those out of the labour force or unemployed) face a tax morale price of zero.[7] By definition they earn no labour 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, non-employed citizens will (compared to the employed) demand a higher quantity of tax morale, and we derive the following hypothesis:

> *Hypothesis 1a:* Non-employed citizens 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 non-employed counterparts. For instance,

[6] For a discussion of morale goods in the context of the cognitive dissonance theory, see Östling (2009).

[7] We focus here on income taxes, and abstract from the tax evasion of consumption and capital taxes. In our empirical analysis we will, however, control for the taxation of income, capital and consumption

being out of the labour force (or unemployed) implies in many cases eligibility 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 non-employed citizens will demand a lower quantity of benefit morale compared to employed citizens:

> *Hypothesis 1b:* Non-employed citizens demand less benefit morale compared to employed ones.

Second, we consider income. The opportunity cost (i. e. the price) of consuming a high level of benefit and tax morale vary with income. We argue that price of benefit morale decreases with income, while the price of tax morale increases with income. A high-income household has few opportunities to commit benefit fraud. 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 have to pretend eligibility first, while the eligible low-income household may simply claim higher benefits. A rich household could also expect a higher fine if convicted. In other words, for high-income households benefit fraud is comparably less profitable, thus they face a relatively low price of benefit morale. By equivalent reasoning, one can deduce that low-income households face low cost of tax morale; where the most obvious case is given by low-income households who do not pay income taxes at all.

As usual, the demand response to a change in price can be divided into a substitution effect and an income effect. Since, our price variable of interest is income, a price change entails (besides the usual substitution and income effect) also an actual change in income. This actual change in income may also affect demand and augment the standard income effect. The substitution effect is as as always negative (i. e. demand decreases in its own price). In contrast, the sign of the income effect(s) is *a priori* ambiguous. In other words, benefit and tax morale could either be normal or inferior goods, and demand could either increase or decrease in response to an exogenous wealth shock. Clearly, it is hard to test this empirically. However, our survey data allows us to estimate the effect of a variation in a proxy variable for wealth on benefit and tax morale while controlling for income. That means, we can observe a wealth shock while keeping the substitution effect constant. Our estimation results (detailed estimation output is provided in Section A.1 of the Web Appendix) suggest that the demand for both goods increases as a response to a positive wealth shock, and therefore both goods should be normal goods. This corresponds to the idea that wealth provides greater opportunity to behave morally (Shleifer,

2004).

Assuming normality of benefit morale the prediction on the effect of income on its demand is unambiguous (substitution and income effect go in the same direction) and we hypothesize that an increase in income increases the demand for benefit morale

*Hypothesis 2a:* An increase in income increases the demand for benefit morale.

In the case of normality of tax morale, substitution and income effect counteract and the prediction is unclear. If the substitution (income) effect dominates we expect tax morale to decrease (increase) with income:

*Hypothesis 2b (null):* The substitution effect dominates the income effect, and an increase in income decreases the demand for tax morale.

*Hypothesis 2b (alternative):* The income effect dominates the substitution effect, and an increase in income increases the demand for tax morale.

If both goods were inferior goods, the prediction would be ambiguous for benefit morale and clear for tax morale. Depending on whether the substitution effect dominates the income effect or *vice versa*, the demand for benefit morale could increase or decrease. The demand for tax morale in contrast should go up as income rises.

There is a wide range of policy measures that may affect the prices of benefit and tax morale. In this paper we focus on two fiscal policy measures, the tax burden and public social spending. 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 benefit and tax 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.[8] The majority of empirical (e. g. Clotfelter, 1983; Crane and Nourzad, 1986) an experimental analyses (e. g. Friedland et al., 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. A rising tax rate increases the cost of (full) compliance and is, therefore, equivalent to an increase in the price of tax morale. If tax morale is a normal good, the income

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

*Hypothesis 3a:* An increase in the tax rate decreases the demand for tax morale.

In contrast, 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, given that benefit morale is a normal good, the income effect (due to the increasing tax rate) should lower benefit morale:

*Hypothesis 3b:* An increase in the tax rate decreases the demand for benefit morale.

If benefit and tax morale were inferior goods, the effect of an increasing tax rate on the demand for tax morale would be ambiguous, and the effect in the demand for benefit morale positive. An alternative argument (outside the scope of standard consumer theory), could be based on the idea that tax payers could interpret social benefits as a payment to which they are entitled because of earlier tax (and social security) contributions. Within such a framework an increase in the tax rate is equivalent to an increase in citizens contribution and could therefore reduce (as predicted by *Hypothesis 3b*) benefit morale.

*Public social spending* – Equivalent to the reasoning regarding the effect of a rising tax rate on tax morale, an increase in the subsidy rate (or more generally an increase in generosity of the welfare state) increases the price of benefit morale. Honest behavior gets more costly as the generosity of the system increases.[9] However, assuming normality of benefit morale, we have a counteracting income effect; an increase in the subsidy rate generates a positive income effect. That means, we have for our empirical test (where we capture the generosity of the welfare state with the size of public social spending) two alternative hypotheses:

*Hypothesis 4a (null):* The substitution effect dominates the income affect, and an increase in public social spending increases the demand for benefit morale.

*Hypothesis 4a (alternative):* The income effect dominates the substitution affect, and an increase in public social spending decreases the demand for benefit morale.

A changing subsidy rate does not alter the price of tax morale. However, given that tax morale is a normal good, the income effect (due to the increasing subsidy rate) should increase tax morale:

[9] Lindbeck (e. g. 1995*a*,*b*); Lindbeck et al. (e. g. 2003) discuss disincentive effects of generous welfare payments in the context of a dynamic interaction between market behavior and political behavior over time.

*Hypothesis 4b:* An increase in public social spending increases the demand for tax morale.

A similar reasoning outside the scope of the of standard consumer theory (as used above) could endorse this hypothesis. It is often argued that citizens evaluate the tax burden based on what the states provides in return. 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 affect the willingness to pay taxes. Therefore, the demand for tax morale 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 et al., 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.[10] In general, it is difficult to distinguish which sub-population of citizens will benefit from a certain public good or service. If citizens predominantly perceive a generous welfare state as a desirable public good, an increase in public social spending should improve tax morale.

However, quite plausibly, support for generous welfare state arrangements should vary along the income distribution. Citizens at the top of the income distribution will typically benefit less from a generous welfare state. As a consequence, one may expect that the positive impact of higher public spending on tax morale decreases as one moves up the income distribution. To test this, we formulate a final hypothesis:

*Hypothesis 5:* The positive effect of higher public social spending on the demand for tax morale decreases with income.

## 3 Dependent variables

The individual level data for our estimation analysis is from the first four waves of the *European and World Values Survey* (E/WVS). 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

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

same question was asked for 'cheating on tax if [they] have the chance' [...]. We use these two questions to construct our measure of benefit and tax morale. Information about more than 75,000 respondents from 29 OECD member countries from 1982 to 2001 is available.[11]

[Insert Table 1 around here.]

As can bee seen in Table 1, overall, citizens show a slightly higher level of benefit morale (8.84) than of tax morale (8.48). 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 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 and tax morale (based on individual data) is 0.44 and indicates that the issues are closely connected.[12] Nevertheless, we obtain some systematic differences on a country level. Whereas the average 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 column three in Table 1 ). 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 and tax morale over time. In most of the countries benefit and tax morale are fairly stable over time.[13] The largest fluctuations are observed in the case of Slovakia and Mexico.[14] In our empirical analysis below we will account for the differences across time and across countries.

## 4 Independent variables

In order to test our hypotheses we need information on individuals' employment status, household income, the tax burden and on public social spending. The E/WVS includes a large set of socio-economic characteristics measured on an individual level which contains information on labour

[11] An overview of the number of observations over years and countries is given by Table A.2 in the Web Appendix.

[12] See also the scatter-plot in Figure A.4 in the Web Appendix.

[13] Figure A.5 and A.6 in the Web Appendix depict the evolution of average levels of benefit and tax morale for countries with four and three available observations over time separately.

[14] The large fluctuations in Slovakia can be observed 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. Mexico accounts for the largest fluctuation between the second wave (1990) and the fourth wave (2000).

market status (employed, self-employed, unemployed or out of the labour force) and on household income (measured on a ten-point scale). This allows us to test *Hypotheses 1* and *2*.

The E/WVS, however, does not provide information on individuals' tax burden or a measure for the utility derived from public social spending. We therefore have to rely on average tax rates and public social spending measured on a country level in order to test *Hypotheses 3*, *4*, and *5*. To measure the tax burden we calculate effective average tax rates, which are based on a methodology inspired by Lucas (1990), developed by Mendoza et al. (1994) and refined by Volkerink and de Haan (2001). This is a well-known approach to measure the tax burden on labour, capital and consumption on an internationally comparable level (OECD, 2000). This method is based on aggregate data drawn from Revenue Statistics and National Accounts (see Table A.3 in the Web Appendix). In order to test *Hypotheses 4* and *5* we opt for public social spending derived from the OECD *Social Expenditure Database*.

As control variables on an individual level we use the available information in the E/WVS on 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). On a country level we control for the population size, fertility rates and a number of macroeconomic indicators (GDP per capita, inflation and the unemployment rate). Further details on all variables and data sources are provided in Section A.1 of the Web Appendix.

# 5 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 morale 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.[15]

[15]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

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 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 $\zeta_{1j}$ varies only between countries $j$, and the transitory error component $\varepsilon_{ij}$ 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 $\zeta_{1j}$ 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 $w_j$:

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

Our two dependent variables are measured on a ten-point scale. Strictly speaking these are ordinal measures. Therefore, we have also estimated multilevel proportional-odds models (Rabe-Hesketh and Skrondal, 2005) that account for the ordinal nature of our two dependent variables. Since the qualitative results are equivalent (detailed estimation output is available upon request) and the scale is rather large we will for the ease of presentation focus on conventional multilevel

(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.

models throughout the paper.[16]

It is important to note that, in principal, all our explanatory variables of primary interest are subject to potential endogeneity concerns. In order to account for unobserved heterogeneity that remains conditional on our set of control variables, we proceed in two steps. First, we replicate our entire analysis based on a fixed-effects model that allows for unobserved heterogeneity at a country level. Second, we present (for important sub-samples) an instrumental variable (IV) estimation strategy for two of our four explanatory variables of primary interest. In particular, we exploit exogenous variation in labour income due to firm size, and exogenous variation in public social spending due to political fractionalisation. Ideally, we would also like to present an IV estimation for the effect of labour market status and tax rates, however, in these cases no credible instrument variables are available. However, since all four variables represent the same economic mechanism, we hope the reader is convinced by the robustness check based on two variables. Given that all alternative estimation methods (i. e. the fixed-effects model and the IV estimations) give qualitative results equivalent to those estimated by the multilevel models, we present first the results of the latter model, where we focus on the economic interpretation, and report on the alternative models thereafter.

# 6 Estimation results

The main estimation results are summarized in Table 2. The intraclass correlation $\rho$ varies in our eight specifications between 0.062 and 0.156; the mean is equal to 0.097. That means, that on average 9.7 percent of variation in morale can be explained by country level factors. This substantial intraclass correlation indicates clustering of morale in countries and, therefore, a significant country influence on individual morale.[17]

Specification I provides clear evidence in favor of *Hypotheses 1a* and *1b*. Compared to employed citizens, those not employed have a statistically significant lower level of benefit morale (minus 0.05 points). For tax morale the reverse is true, where non-employed citizens exhibit a significantly higher willingness to comply (plus 0.13 points). In both cases demand decreases with the price, and we interpret this as first evidence that morale motivation to comply is an en-

[16] As pointed out by Ai and Norton (2003); Norton et al. (2004) the interpretation of interaction effects in nonlinear models is quite cumbersome and not fully demonstrative.

[17] The number of available observations varies across specifications, since country-level control variables – which are introduced starting with the test of *Hypothesis 3*; the first test that is based on variables measured on the country-level) are missing for some country-years. However, it can be noted that the results of the first two specifications are not sensitive to the inclusion of the country-level control variables and the exclusion of the observations from the respective country-years.

dogenous dimension. When we add in further specifications income as an additional explanatory variable, statistical significance of labour market status vanishes in the benefit morale equation. Here, one has to keep in mind that labour market status and income are correlated dimensions. A further disaggregation of the two labour market status – where we distinguish between citizens who are either out of labour force, unemployed, employed (i. e. wage earners) or self-employed – is revealing.[18] It turns out that citizens out of labour force, and those unemployed have a lower benefit morale compared to all type of employed citizens. The positive effect of non-employment on tax morale is, however, only driven by those out of labour force. The disaggregation of the two types of employed citizens reveals that self-employed citizens exhibit a substantially lower level of tax morale compared to wage earners (about minus 0.31 points). This can be explained by extensive opportunities to evade taxes (i. e. high cost of tax morale) among the self-employed; their income is less visible, their tax return (including many deductibles) is more complex, and offers in sum more opportunities to conceal income. 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. There is no statistically significant difference between those two groups' benefit morale. Notably, the patterns found for the disaggregated labour market status are robust across all specifications.

[ Insert Table 2 around here. ]

In Specification II we test our hypotheses on the effect of income (*Hypotheses 2a* and *2b*). Under the presumption that both morale goods are normal goods, the prediction on the effect of income on benefit morale is unambiguous. Income and substitution effects 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 in benefit morale of about 0.04 points. This result supports *Hypothesis 2a.* In the case of tax morale the income and the substitution effect have opposite signs. Our estimation results suggest that the substitution effect dominates. This is evidence in favor of *Hypothesis 2b (null).* A one point increase in income reduces tax morale by about 0.02 points. The comparably smaller effect in the case of tax morale (compared to benefit morale) is consistent with the result on the normality of both goods. Again, this is clear evidence that morale 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

[18] Detailed estimation output is provided in Table A.4 in the Web Appendix.

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 Specification III we consider the effects of the tax burden (*Hypotheses 3* and *3b*). 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 income effect goes in the same direction, tax morale should decrease with an increasing tax burden. As expected, we find that a higher tax rate on labour reduces tax morale significantly. A one percentage point increase in the tax rate on labour (sample means is equal to 32 percent) decreases tax morale by about 0.07 points. We find also some negative effect of the tax rate on capital and consumption. With respect to the effect of tax rates on benefit morale, we have an equivalent prediction, but based on the income effect only. Our empirical results show that citizens respond in a similar manner as with tax morale. Higher taxes on labour and consumption decrease benefit morale. The smaller quantitative effect of taxation of labour for benefit morale (compared to that of tax morale) may reflect that the former results is only driven by an income effect. Just in case of taxes on capital we find against our expectation a positive effect on benefit morale. Nevertheless, in sum, we interpret these results as evidence in favor of *Hypotheses 3* and *3b*. If the tax burden is perceived to be, high citizens adjust their morale 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 (among other factors) counterproductive, if citizens respond with sufficiently low compliance. Tax revenues may increase by less than the amount hoped for and increased (unjustified) benefit claims might further aggravate the budget crisis.

In Specification IV we introduce the level of total public social spending as an additional explanatory variable in order to capture the effect of the generosity of the welfare state (*Hypotheses 4a* and *b*). It turns out that the level of public social spending has no statistically significant effect on benefit morale.[19] That means, we do not find support for *Hypothesis 4a*. Theoretically it is possible that the income and the substitution effect cancel each other out. For tax morale we find a positive effect of public social spending on its demand. An increase in public social spending by one percentage point (sample mean is equal to 19.44 percent) is associated with an

[19]Halla et al. (2010) find a small positive effect of public social spending on benefit morale. The authors (as well as Heinemann, 2008) stress, however, adverse medium and long run effects.

increase in tax morale by 0.03 points. This result supports *Hypothesis 4b*. This effect may be solely driven by an income effect and/or highlight that citizens recognize the important role of exchange (i. e. they forgo private purchasing power in return for publicly provided goods, such as a social welfare state). The latter effect would reject the classical supposition that taxpayers perceive their relationship with the state only as one of coercion.

In Specification V we add an interaction term between public social spending and income (both variables are mean centered) in order to test *Hypothesis 5*. Given that citizens at the top of the income distribution will, in expectation, benefit less from a generous welfare state, we expect the positive impact of higher public spending on tax morale to decrease with rising income. Put differently, we expect a negative sign for the interaction term. Indeed, we find that a statistically significant negative interaction term. Our estimations suggest that an increase in public social spending (at its mean) by one percent of GDP, increases tax morale of citizens at the bottom of the income distribution by 0.04 points, and has basically no impact (plus 0.006 points) on the tax morale of citizens at the top of the income distribution. In the case of benefit morale, we observe a similar pattern, however, the effects are very small along the whole income distribution; the average effect of public social spending on benefit morale is statistically insignificant.

In a final step we extend Specification V by control variables for the composition of total public social spending in our two estimations; detailed estimation output is available upon request. The qualitative results hardly change due to this additional control variables, with the exception of the effect of total public social spending on benefit morale, which increases somewhat in significance.[20]

The results on all individual level control variables are robust across different specifications. Both benefit and tax morale are higher among older citizens, females, married and those residing in smaller towns. Higher educational attainment is positively related to benefit morale, but has not significant impact on tax morale. These results are in accordance with earlier studies on tax morale (see, for instance, Torgler and Schaltegger, 2006) and benefit morale.

[20] We follow here the OECD terminology of social purpose and distinguish between spending shares on nine core policy areas: old age, survivors, incapacity-related benefits, health, family, active labour market policies (ALMP), unemployment, housing and other social policy areas. This estimations also reveals that citizens on average dislike spending in 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. 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. Detailed estimation output is available upon request.

## 7 Sensitivity analysis

We test the sensitivity of our results to a number of alternative specifications and methods. Firstly, we estimate a fixed-effects model by introducing country fixed-effects. Thereby, we control for unobserved time-invariant heterogeneity at the country level. Table 3 provides estimation output for Specification V.[21] It turns out that our results are very robust to this modification. We do not observe any important differences compared to results discussed above at the individual nor at the country level.

[ Insert Table 3 around here. ]

Secondly, we suggest an IV estimation strategy for two of our four explanatory variables of primary interest. First we instrument for income. 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. We utilize here a robust empirical finding from the labour economics literature (Oi and Idson, 1999) stating that earnings are higher in larger firms, and instrument income with firm size (captured by the number of the respondent's co-workers). The identifying assumption is that the number of co-workers is not related to other unobserved determinants of 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 (3, 768 observations from 18 countries). However, given the fact that a credible instrument it is hard to find, we accept this trade-off. The power of the our instrument is confirmed by a sufficiently high Cragg-Donald Wald F statistic of 11.66 in the first stage of our two-stage least square (2SLS) estimation procedure. In the second stage (summarised in Table 4) we find again a statistically significant negative effect of income on tax morale of minus 0.547 points; which is comparable larger than the initial estimate.

[ Insert Tables 4 and 5 around here. ]

Second, we instrument for total public social spending. Here we follow Halla et al. (2011) and use political fractionalisation (i. e. the number of relevant parties involved in the legislative process) captured by the so-called *Rae-Index* as an instrument.[22] We have to assume that

[21] Estimation output for more specifications is available in the Web Appendix (see Table A.5).

[22] Halla et al. (2011) show that (controlling for unobserved time-invariant heterogeneity across countries) higher political fractionalisation in OECD member countries leads to significantly lower public (social) spending and use this finding to identify the causal effect of public (social) spending on different demographic outcomes. The Rae-Index is defined as $1 - \sum_{i=1}^{n} s_i^2$, where $s_i$ is the share of seats for party $i$ and $n$ the number of parties (Rae, 1968). That means, a higher value of the Rae-Index indicates a more fractionalised system.

the number of relevant political parties involved in parliament affects individual benefit and tax morale only through the channel of total public social spending. The 2SLS estimation summarised in Table 5 (based on 58,332 observations from 22 countries with a strong first stage) shows a statistically significant positive effect of total public social spending on benefit and tax morale (plus 0.197 and 0.231 points, respectively). This confirms our results presented above.

## 8 Summary & conclusions

Our results suggest the motivation to abstain from cheating on the state via benefit fraud and tax evasion evolve endogenously in the sense that these social norms are determined by prices (i. e. by 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, citizens self-servingly adjust their morale values. From a policy perspective it is beneficial to know that by affecting the price of a certain offense (for instance, via the tax rate or the generosity of certain welfare arrangements), there might be an additional effect on the underlying moral motivation to abstain; which in turn will affect compliance behavior. That means, 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 policy makers have to consider also an impact of the policy on respective social norm.

Finally, our results can also 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 motivations to comply (i. e. benefit and tax morale) are indeed altered by extrinsic factors, such as tax rates.

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# Tables and figures

**Table 1: Mean of benefit morale, tax morale, and their difference[a]**

| | Benefit Morale | | Tax Morale | | Difference | |
|---|---|---|---|---|---|---|
| Australia | 9.31 | (1.55) | 8.52 | (2.33) | 0.79 | (2.29) |
| Austria | 9.14 | (1.61) | 8.97 | (1.82) | 0.17 | (1.86) |
| Belgium | 8.59 | (2.15) | 7.18 | (2.98) | 1.41 | (3.18) |
| Canada | 9.08 | (1.86) | 8.80 | (2.17) | 0.28 | (2.21) |
| Czech Republic | 9.26 | (1.44) | 9.09 | (1.67) | 0.18 | (1.74) |
| Denmark | 9.57 | (1.21) | 8.76 | (2.06) | 0.82 | (2.17) |
| Finland | 8.64 | (1.94) | 8.42 | (2.32) | 0.21 | (2.34) |
| France | 7.67 | (2.58) | 7.99 | (2.66) | -0.32 | (3.06) |
| Germany | 8.95 | (1.90) | 8.36 | (2.35) | 0.59 | (2.12) |
| Greece | 7.03 | (2.73) | 7.81 | (2.49) | -0.78 | (3.21) |
| Hungary | 8.76 | (2.46) | 8.39 | (2.68) | 0.37 | (2.07) |
| Iceland | 9.39 | (1.31) | 8.75 | (2.01) | 0.65 | (2.06) |
| Ireland | 9.15 | (1.67) | 8.37 | (2.33) | 0.79 | (2.25) |
| Italy | 9.17 | (1.72) | 8.69 | (2.15) | 0.47 | (2.18) |
| Japan | 9.02 | (1.82) | 9.53 | (1.33) | -0.51 | (1.84) |
| Luxembourg | 8.16 | (2.39) | 7.84 | (2.71) | 0.31 | (3.18) |
| Mexico | 7.17 | (3.04) | 7.95 | (2.66) | -0.78 | (3.32) |
| Netherlands | 9.53 | (1.21) | 8.11 | (2.33) | 1.43 | (2.37) |
| New Zealand | 9.21 | (1.69) | 8.68 | (2.21) | 0.53 | (2.10) |
| Norway | 9.52 | (1.13) | 8.00 | (2.49) | 1.52 | (2.55) |
| Poland | 8.76 | (1.96) | 8.63 | (2.19) | 0.13 | (2.49) |
| Portugal | 8.22 | (2.67) | 7.24 | (3.13) | 0.98 | (3.42) |
| Slovakia | 8.27 | (2.24) | 8.59 | (2.12) | -0.32 | (2.14) |
| Spain | 8.64 | (2.33) | 8.62 | (2.16) | 0.02 | (2.56) |
| Sweden | 9.11 | (1.65) | 8.69 | (2.01) | 0.42 | (2.14) |
| Switzerland | 8.92 | (2.08) | 8.56 | (2.28) | 0.36 | (2.67) |
| Turkey | 9.77 | (0.96) | 9.83 | (0.88) | -0.06 | (1.17) |
| United Kingdom | 9.18 | (1.64) | 8.48 | (2.23) | 0.70 | (2.09) |
| United States | 9.20 | (1.71) | 9.06 | (1.86) | 0.14 | (1.92) |
| | 8.84 | (1.88) | 8.48 | (2.23) | 0.36 | (2.37) |

[a] A graphical depiction of these country averages is provided in the Web Appendix: Figures A.1, A.2 and A.3 show the average level of benefit morale, tax morale and the difference between these two variables by countries.

**Table 2: Determinants of benefit and tax morale**[a]

| | Specification I | | Specification II | | Specification III | | Specification IV[b] | | Specification V[b] | |
|---|---|---|---|---|---|---|---|---|---|---|
| Dep. variable | BM | TM | BM | TM | BM | TM | BM | TM | BM | TM |
| *Hypotheses 1a & 1b* | | | | | | | | | | |
| Non-employed | −0.052*** | 0.126*** | −0.018 | 0.110*** | −0.021 | 0.109*** | −0.025 | 0.110*** | −0.027 | 0.107*** |
| | (0.019) | (0.021) | (0.019) | (0.022) | (0.020) | (0.023) | (0.020) | (0.023) | (0.020) | (0.023) |
| *Hypotheses 2a & 2b* | | | | | | | | | | |
| Income | | | 0.038*** | −0.017*** | 0.042*** | −0.016*** | 0.042*** | −0.016*** | 0.042*** | −0.015*** |
| | | | (0.003) | (0.004) | (0.003) | (0.004) | (0.003) | (0.004) | (0.003) | (0.004) |
| *Hypotheses 3a & 3b* | | | | | | | | | | |
| Tax rate on labour | | | | | −0.022*** | −0.065*** | −0.021*** | −0.069*** | −0.020*** | −0.067*** |
| | | | | | (0.006) | (0.007) | (0.006) | (0.007) | (0.006) | (0.007) |
| Tax rate on capital | | | | | 0.004** | −0.005** | 0.006*** | −0.001 | 0.006*** | −0.001 |
| | | | | | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |
| Tax rate on cons. | | | | | −0.031*** | −0.026** | −0.035*** | −0.035*** | −0.035*** | −0.035*** |
| | | | | | (0.009) | (0.011) | (0.010) | (0.011) | (0.010) | (0.011) |
| *Hypotheses 4a & 4b* | | | | | | | | | | |
| Social exp. | | | | | | | −0.002 | 0.025** | −0.003 | 0.024** |
| | | | | | | | (0.009) | (0.010) | (0.009) | (0.010) |
| *Hypothesis 5* | | | | | | | | | | |
| Social exp.*income | | | | | | | | | −0.002*** | −0.004*** |
| | | | | | | | | | (0.001) | (0.001) |
| *Control variables* | | | | | | | | | | |
| Individual level[c] | yes | | yes | | yes | | yes | | yes | |
| Time fixed-effects[d] | yes | | yes | | yes | | yes | | yes | |
| Country level[e] | no | | no | | yes | | yes | | yes | |
| No. of observations | 75,471 | | 75,471 | | 69,008 | | 66,540 | | 66,540 | |
| No. of countries | 29 | | 29 | | 29 | | 27 | | 27 | |
| $\rho$ | 0.010 | 0.065 | 0.096 | 0.062 | 0.131 | 0.156 | 0.130 | 0.094 | 0.130 | 0.092 |

[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. BM stands for benefit morale, and TM for tax morale. [b] The variables social exp. and income are mean centered. These variables and their interaction are jointly statistically significant (P-value$<$ 0.001). [c] Individual level control variables comprise information on respondent's 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). [d] Time fixed-effects are binary variables for each wave of the E/WVS. [e] Country level control variables comprise macroeconomic indicators (GDP per capita, inflation and the unemployment rate) and population control variables (population size and fertility rate).

**Table 3: Determinants of benefit and tax morale (country fixed-effects estimation)**[a]

| | Specification V | | | |
|---|---|---|---|---|
| Dependent variable | BM | | TM | |
| *Hypotheses 1a & 1b* | | | | |
| Non-employed | −0.027 | (0.020) | 0.108*** | (0.023) |
| *Hypotheses 2a & 2b* | | | | |
| Income | 0.042*** | (0.003) | −0.015*** | (0.004) |
| *Hypotheses 3a & 3b* | | | | |
| Tax rate on labour | −0.018*** | (0.007) | −0.071*** | (0.008) |
| Tax rate on capital | 0.004** | (0.002) | −0.002 | (0.002) |
| Tax rate on cons. | −0.039*** | (0.010) | −0.039*** | (0.012) |
| *Hypotheses 4a, 4b & 5* | | | | |
| Social exp. | −0.010 | (0.009) | 0.018* | (0.011) |
| Social exp.*income | −0.002*** | (0.001) | −0.004*** | (0.001) |
| *Control variables* | | | | |
| Individual level[b] | yes | | | |
| Time fixed-effects[c] | yes | | | |
| Country level[d] | yes | | | |
| Country fixed-effects | yes | | | |
| No. of observations | 66,540 | | 66,540 | |
| No. of countries | 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. BM stands for benefit morale, and TM for tax morale. The variables social exp. and income are mean centered. These variables and their interaction are jointly statistically significant (P-value$< 0.001$). [b] Individual level control variables comprise information on respondent's 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). [c] Time fixed-effects are binary variables for each wave of the E/WVS. [d] Country level control variables comprise macroeconomic indicators (GDP per capita, inflation and the unemployment rate) and population control variables (population size and fertility rate).

**Table 4: Instrumenting for income**[a]

| Dependent variable | TM | |
|---|---|---|
| *Hypothesis 1a* | | |
| Income | −0.547* | (0.290) |
| 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 (i. e. by firms size). The estimation controls for respondent's 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). Standard errors in parentheses. *, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level, respectively.

**Table 5: Instrumenting for public social spending**[a]

| Dependent variable | BM | | TM | |
|---|---|---|---|---|
| *Hypotheses 1a & 1b* | | | | |
| Non-employed | −0.028 | (0.021) | 0.107*** | (0.025) |
| *Hypotheses 2a & 2b* | | | | |
| Income | 0.039*** | (0.003) | −0.026*** | (0.004) |
| *Hypotheses 3a & 3b* | | | | |
| Tax rate on labour | −0.059*** | (0.009) | −0.097*** | (0.010) |
| Tax rate on capital | 0.005** | (0.002) | 0.002 | (0.002) |
| Tax rate on cons. | −0.050*** | (0.011) | −0.028** | (0.012) |
| *Hypotheses 4 &, 4b* | | | | |
| Social exp. | 0.197*** | (0.036) | 0.231*** | (0.042) |
| *Control variables* | | | | |
| Individual level [b] | yes | | | |
| Time fixed-effects[c] | yes | | | |
| Country level [d] | yes | | | |
| Country fixed-effects | yes | | | |
| No. of observations | 58,332 | | | |
| No. of countries | 22 | | | |

[a] Method of estimation is two-stage least squares. Public social spending (Social exp.) is identified by the exclusive restriction of the so-called *Rae-Index*. The Rae-Index is defined as $1 - \sum_{i=1}^{n} s_i^2$, where $s_i$ is the share of seats for party $i$ and $n$ the number of parties (Rae, 1968). That means, a higher value of the Rae-Index indicates a more fractionalized political system. Standard errors in parentheses. *, ** and *** indicate statistical significance at the 10-percent level, 5-percent level, and 1-percent level, respectively. BM stands for benefit morale, and TM for tax morale. [b] Individual level control variables comprise information on respondent's 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). [c] Time fixed-effects are binary variables for each wave of the E/WVS. [d] Country level control variables comprise macroeconomic indicators (GDP per capita, inflation and the unemployment rate) and population control variables (population size and fertility rate).