

Cheating, Luck and Government Effectiveness

Alvaro Forteza and Cecilia Noboa¹

Departamento de Economía, FCS-UdelaR

June 15, 2015

Abstract

We show that, up to a point, individuals who think that luck and connections are important determinants of individual outcomes are more likely to justify cheating on taxes than individuals who think that hard work usually brings success. This relationship is however non-monotonic, as there is a group of individuals who are very skeptical about the effectiveness of hard work for success and are less tolerant to tax evasion than moderately skeptical individuals. These findings suggest that law enforcement might not be popular among individuals who think that results are unfair –i.e. that luck and connections are what matters most. We find no evidence that state capacity matters for individuals' tolerance to tax evasion.

Keywords: Informality, tax morale

JEL: H20, H26, O17

¹ Alvaro.forteza@cienciassociales.edu.uy, Cecilia.noboa@cienciassociales.edu.uy.

Contents

1	Introduction	3
2	Data	5
2.1	Data sources	5
2.2	Descriptive statistics.....	7
3	Methods	9
4	Results	10
5	Concluding remarks.....	12
6	References.....	13
7	Appendix	25

1 Introduction

Individuals have different opinions regarding law compliance. Many think, or at least say when asked, that cheating on taxes, public benefits and public transport fares is never justifiable, but some individuals are more “flexible”. We show in this paper that individuals who say that success in life is more a matter of luck and connections than hard work are more likely to justify cheating. These findings suggest that policies geared to strengthening government’s enforcement capacity might lack political support among citizens who are skeptical about the returns to effort.

There is considerable evidence that the support for redistributive policies positively correlates with the belief that luck and connections is more important than hard work to succeed in life (Alesina et. al. 2001; Alesina and Angeletos, 2005b; among others). Alesina and Angeletos (2005b) present a formal model that rationalizes this stylized fact, based on the hypothesis that individuals prefer “fair” to “unfair” outcomes, where “fairness” is a measure of the distance between market outcomes and outcomes determined by effort. In their model, individuals favor redistribution to a larger extent if they believe that it is luck and connections rather than effort what drives the results.

The correlation we show in this paper between believes in luck and justification of cheating suggests a complementary channel to that in Alesina and Angeletos. The disenchanted with the market might not only support more redistribution, as Alesina and Angeletos argue, but they might also demand more tolerance to tax evasion. In other words, individuals who believe that luck determines outcomes might demand “flexibility” regarding law compliance.

We see our study as a contribution to the literature on informality. Most of the literature focusses on individuals and firms, trying to understand the reasons why they exit and/or are excluded from the formal sector (for a survey, see Perry et. al. 2007). Governments also play an important role in the explanation, since informality is considered the result of the limited ability of governments to monitor and enforce the law. This hypothesis is consistent with at least two stylized facts, namely that informality is more prevalent (i) in weak institutional environments and (ii) among small than large firms.² The idea is convincing, but it might not be the whole story. The evidence we present in this paper suggests that governments’ limited enforcement capacity might not account for all the facts regarding informality.

In a related paper (Forteza and Noboa 2014), we argue that governments might be unwilling, rather than unable, to enforce the law, if they can only commit to simple (not fully contingent) policy rules. According to this story, tolerance to informality might be a way of gaining flexibility through discretion. The evidence in the present paper provides some support to that story, as individuals are more likely to justify evasion if they think that individual effort is not conducive to success and if governments are not very effective. If these believes are correctly reflected in political support, politicians might tolerate informality.

² Assuming fixed monitoring costs, it will be inefficient to monitor small firms (Bigio et. al. 2011; Busso et. al. 2013).

In our view, if the limited enforcement capacity were the only problem, citizens would demand less rather than more tolerance to evasion in weak states. However, we see that people tend to justify cheating on taxes more in countries with less effective governments. In the story of Forteza and Noboa, this can be rationalized as a demand for flexibility. In this light, it is not surprising that weak states are not only less able but also less willing to enforce the law than strong states.

Our paper owes much to the literature on tax morale. This literature has used survey data to characterize individuals' attitudes towards tax obligations. Studying answers to questions regarding how justifiable cheating on taxes is, the literature has tried to unravel what is behind tax compliance. The idea is that the incentives provided by the risk of being caught evading and having to pay fines are not strong enough to explain the relatively high levels of compliance in most countries (see, for example, Torgler and Schaltegger, 2005).

Luttmer and Singhal (2014) provide a survey of the literature on tax morale. They review studies that analyze specific mechanisms through which tax morale may impact on tax compliance. These include: intrinsic motivation, reciprocity, peer effects and social influences, long-run cultural factors and information imperfections and deviations from utility maximization. Some studies have reported positive correlations between measures of institutional quality, trust in government, satisfaction with public services and tax morale, which is interpreted as reciprocity.

In the present paper, we complement these studies by analyzing a covariate that, to the best of our knowledge, has not yet been analyzed in the tax morale literature, namely the individuals' beliefs about the role of luck and connections in individual performance. Our hypothesis is that individuals who believe that success is more a matter of luck and connections than hard work are more likely to justify low tax compliance (weak tax morale).

Nevertheless, it should be clear by now that our motivation is different from that in the literature on tax morale. We look at individuals attitudes towards tax evasion stated in surveys as a proxy for the demand for "flexibility" or "tolerance" in the application of laws.

The theme in this paper is also related to a growing literature on political culture and development. The notion that "culture matters" is probably more extended among political scientists than economists. Inglehart, Welzel and collaborators have made a significant contribution in this regard producing the "world values surveys" (WVS). The WVS provides a comprehensive database on individuals' opinions gathered with a common methodology in almost 100 countries since 1981 (<http://www.worldvaluessurvey.org/wvs.jsp>). Mostly based on this data, they have provided systematic analysis of values and beliefs across countries and time (see, for example, Inglehart and Welzel, 2005). Most of the data we use in the present paper comes from the WVS.

In recent years, economists are paying increasing attention to culture. Alesina and collaborators, among others, have devoted considerable attention to this theme (Alesina and Angeletos, 2005a and b; Alesina and Fuchs-Schündeln, 2007; Alesina and Giuliano, 2010 and 2014). We hope our paper can make a contribution to this literature as well.

After this introduction, the paper continues as follows. In section 2, we present the data. We present the econometric methodology in section 3 and our main results in section 4. The paper ends with some concluding remarks in section 5.

2 Data

2.1 Data sources

The WVS represents the main source of data for the analysis presented in this paper. This survey started gathering individuals' opinions in 1981 and has covered almost a hundred countries since then. Surveys are organized in period waves containing between four and six years depending on the wave. In each wave questions are revised and there might be some differences between countries.

The analysis presented in this paper is based on wave 6, the most recent one. It was gathered between 2010 and 2014 depending on the country, and covered 59 countries. Questions were organized under the following chapters: perception of life, environment, work, family, politics and society, religion and morale, national identity, security, science, structure of life and socio-demographics.

In order to assess different opinions regarding tax compliance we used the following question asked in the WVS (wave 6): "Please tell me for each of the following actions whether you think it can always be justified, never be justified, or something in between." The questionnaire continues with a list of actions, including: "Cheating on taxes if you have a chance". Answers are distributed in a ten point scale, where 1 is "never justifiable" and 10 is "always justifiable". Considering this question, we built a dichotomous variable (named *cheat*) that is equal to 1 if the respondent chose 2 to 10 in the ten scale index, and is equal to 0 if she chose 1.

Recoding the original into a more compact scale is common in the literature on tax morale. Torgler and Schaltegger (2005), Torgler (2006), Frey and Torgler (2007) and Streiff (2013) use a four-point scale. Alm and Torgler (2006), Doerrenberg and Peichl (2010), Heinemann (2011), Daude (2012), Halla (2012), and Gerstenblüth et. al. (2012) use a two-point scale. Most of these two-point scales take the value 1 when cheating on taxes is "never justified" and 0 otherwise. Alm and Torgler (2006) and Daude (2012) report results with the two-point scale, but mention that they obtain similar results with the four- and the original ten-point scales. Halla (2012) creates a binary variable equal to one if the respondent answered between 6 and 10 to the WVS questionnaire, and zero otherwise. Halla's choice of the threshold is dictated by the aim of matching the WVS and the American General Social Survey questions on tax morale. Gerstenblüth et. al. built a binary variable where 1 stands for "never justify" and the following category, and 0 otherwise, in order to obtain a balanced frequency of observations.

It should be noted that, as Alm and Torgler (2006, p. 230) mention, "we recognize that single-item measures in cross-cultural comparison should be treated with some caution". Governments with quite different characteristics could imply that people are more or less likely to justify cheating on taxes beforehand (for example, if taxes are financing a dictatorship people may be more likely to justify cheating than in a democracy).

In order to assess views on how important luck is on success we used the following question in the WVS (wave 6): “Now I'd like you to tell me your views on various issues. How would you place your views on this scale? 1 means you agree completely with the statement on the left; 10 means you agree completely with the statement on the right; and if your views fall somewhere in between, you can choose any number in between”. The statement on the left is “In the long run, hard work usually brings a better life”, and the statement on the right is “Hard work doesn't generally bring success - it's more a matter of luck and connections”. We used the WVS ten-point scale for this variable, and we named it *luck*.

Following the Tax Morale literature, we include several controls regarding demographics, marital status, education, social class, and religiosity (see Frey 2007, among others). We also control for country's per capita GDP at purchasing power parity (obtained from the April 2015 edition of the International Monetary Fund's World Economic Outlook database).

Regarding demographics and marital status, we include dummies for several age groups, sex, and marital status.

The WVS (wave 6) inquires about education with the following question: “What is the highest educational level that you have attained?” Answers run in a nine scale index, where the highest value corresponds to “University-level education, with degree” and the lowest corresponds to “No formal education”. We use the original nine-point index.

Regarding social class, individuals are asked the following: “People sometimes describe themselves as belonging to the working class, the middle class, or the upper or lower class. Would you describe yourself as belonging to the upper class, upper middle class, lower middle class, working class or lower class?” Answers are distributed in a five-point scale, where the upper class takes the value 1 and the lower class takes the value 5. We recoded this variable to make higher values represent higher social class.

As for church attendance, individuals could choose to answer in an eight-point scale in which 1 stands for “more than once a week” and 8 for “never, practically never”. We recoded this variable to make lower values represent less frequent attendance to church.

All WVS data was weighted to take into account national populations characteristics and in order to make every countries' sample size equal (we plan to explore the influence of working with population weighted data in the future).

Regarding government effectiveness, we use an indicator constructed by the World Bank's Worldwide Governance Indicators (WGI) project. This project reports indicators on 215 countries from 1996 through 2013. Six dimensions of governance are measured in the WGI: voice and accountability; political stability and absence of violence; government effectiveness; regulatory quality; rule of law; and control of corruption. As Kaufmann et. al. (2009, p. 4) explain, these indicators are constructed “based exclusively on subjective or perceptions based data on governance reflecting the views of a diverse range of informed stakeholders, including tens of thousands of household and firm survey respondents, as well as thousands of experts working for the private sector, NGOs, and public sector agencies”. Our government effectiveness variable (*ge*) is the “government effectiveness estimate” in the WGI project. This

indicator aims at “capturing perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies” (Kaufmann et.al. 2009, p. 6). The indicator is defined as a continuous variable ranging from -2.5 to 2.5, and higher scores correspond to higher governance effectiveness.

Wave 6 of the WVS has 59 countries, but we could not include all of them because of data availability issues. We could cover only 51 countries when we included all the covariates we wanted to control for and 53 when we dropped some controls that do not seem to impact on our results (more on this in section 4 below).

2.2 Descriptive statistics

The response to the question about justifiability of cheating on taxes varies greatly across individuals and countries. To have a sense of the between countries heterogeneity we computed the proportion of individuals whose answers lie at or below each point of the ten-point scale country by country. Using these proportions, we estimated empirical cumulative distribution functions (CDF) for the 55 countries for which we have this information. The CDF gives a measure of the country intolerance to evasion: the higher the CDF the lower the proportion of individuals willing to justify cheating on taxes at the given tolerance point or above. Conversely, $1 - CDF$ is a measure of country tolerance to tax evasion.

As it is apparent from figure 1, the between countries heterogeneity is particularly large at the bottom of the ten-point scale. The proportion of respondents saying that cheating on taxes is never justifiable, $F(cheat = 1)$, ranges from a minimum of 23 percent in India to a maximum of 87 percent in Japan. The cross country heterogeneity is smaller at other points in the scale.

Insert figure 1 about here

There is also considerable heterogeneity between WB regions and country income groups (figures 2 and 3).³ Part of the country differences naturally average out when we look at groups of countries, but some remain. South Asia is the region that justifies cheating to a larger extent in most of the scale. Only at points 8 and 9 in the ten-point scale, the empirical CDF of South Asia lies above the CDF of other regions. Unexpectedly, Latin America and the Caribbean is the region with the lowest declared tolerance to tax evasion, close to and below that of North America (composed only by the United States in our sample).

Insert figures 2 and 3 about here

Tolerance to tax evasion is lower in high than in upper-middle and in upper- than in lower-middle income countries (figure 3). This ranking remains the same irrespective of the tolerance threshold we consider. In turn, the CDF of low-income countries lies below the other three at the lowest point in the ten-point scale (cheating on taxes is “never justifiable”) but crosses the other CDFs at higher points. Hence low-income countries are more tolerant to tax evasion than

³ Notice however that the countries included in the WVS are not necessarily fully representative of each region. See notes in tables 1 and 2.

the other three groups if we assess tolerance using the most extreme threshold (“never justifiable”) but less tolerant than middle income countries if any other threshold is used.

In most regions and country-income groups, at least half of the population says that cheating on taxes is never justifiable (the median of the variable is equal to 1, see table 1). The exceptions are South Asia and Sub-Saharan Africa and the group of low income countries, but even there at least half of the population chooses one of the two lowest points in the ten-point scale when asked about justifiability of cheating on taxes. The mean score lies between a minimum of 1.87 in Latin America and the Caribbean and a maximum of 2.90 in South Asia. In all regions and income groups the mean is well above the median, indicating that the distributions are skewed to the right.

Insert table 1 about here

All in all, this analysis shows that most of the heterogeneity regarding tolerance to tax evasion takes place at the lowest threshold. Therefore a binary variable that separates those who are totally intolerant to evasion from all the others looks as an appropriate simple indicator of tolerance to evasion. The last column in table 1 reports the frequencies of this variable across regions and country-income groups. This measure of tolerance to evasion ranges from a minimum of 30 percent in the Americas to a maximum of 55 percent in South Asia. The indicator is monotone in country income, ranging from a minimum of 34 percent in high-income countries to a maximum of 58 percent in low-income countries.

The covariate in the WVS we are most interested in is individuals’ opinions about the importance of luck and connections for individual success. Table 2 summarizes the distribution of the original ten-point scale and the proportion of individuals choosing points 2 and above. The mean score in the ten-point scale ranges from a minimum of 3.3 in the Middle East & North Africa to a maximum of 4.6 in Europe & Central Asia.⁴ The median score ranges from a minimum of 2 in the Middle East and North Africa to a maximum of 4 in Asia, Europe, Latin America and South Asia. The distributions are skewed to the right. The proportion of individuals who chose point 2 and above –i.e. those who did not choose that “in the long run, hard work usually brings a better life” – ranges from a minimum of 58 percent in the Middle East & North Africa to a maximum of 80 percent in Europe & Central Asia.

Insert table 2 about here

The propensity to attribute success to luck and connections is roughly increasing in country’s income (see lower panel in table 2). The mean score ranges from 3.68 in lower-middle to 4.43 in high income countries. The proportion of respondents choosing 2 and above in the ten-point scale ranges from 64 percent in lower-middle to 82 percent in high-income countries. The

⁴ These figures should be taken with care and only as a first approximation, because some regions are probably not well represented in this sample. In particular, west Europe is represented by only three out of seventeen countries included in the WB region “Europe & Central Asia”. Since all countries are given the same weight in this analysis, west European countries weight only 3/17 in that region. At the moment of writing this paper, we have not been able to safely merge the WVS with the European Values Survey.

sample contains only two low-income countries, Rwanda and Zimbabwe, with a group mean score that lies between those of the upper and lower middle income countries.

As a preparation for the more formal econometric analysis in the following sections, it is useful to explore the covariation of tolerance to tax evasion and the propensity to attribute success to luck and connections. In figure 4, we present the proportion of individuals choosing 2 and above in the ten-point scale for justification of tax evasion computed by category of response to the question regarding importance of luck and connections for success. The dots are the observed frequencies and the continuous line is the predicted probability from a probit model of tolerance in luck and luck squared. The graph suggests that the tolerance to tax evasion is a non-monotone function of the importance attributed to luck and connections. Tolerance to tax evasion initially rises with importance of luck, increasing from about 0.27 to about 0.50 as importance of luck changes from 1 to 6. Then, for higher points in the importance of luck scale, tolerance to evasion diminishes with importance attributed to luck, dropping to about 0.33.

Insert figure 4 about here

We replicated this analysis for different subgroups of observations and got basically the same pattern. The inverted U curve is present in many individual countries, and in both sexes. Hence we include the importance of luck squared in our regressions.

We are also interested in studying the effect of state capacity on tolerance to law non-compliance. Figure 5 shows countries mean justification of cheating on taxes by country's government effectiveness. The figure suggests a negative albeit not very strong correlation.

3 Methods

We analyze the effect of (i) importance of luck and connections (*luck*) and (ii) government effectiveness (*ge*) on tolerance to tax evasion (*cheat*). We include several controls regarding demographics, marital status, education, social class, and religiosity.

We specified a two-level logistic model in which individuals (subindex *i*) are the level 1 and countries (subindex *j*) are the level 2. The level 1 model is specified as follows:

$$\text{logit}\{Pr(\text{cheat}_{ij} = 1 | \text{luck}_{ij}, \text{ge}_j, z_{ij})\} = \eta_{1j} + \eta_{2j}\text{luck}_{ij} + \eta_{3j}\text{luck}_{ij}^2 + \eta_4'z_{ij}$$

Where z_{ij} is a vector of controls.

The level 2 model includes government effectiveness impacting on the intercept and the slope of *luck*, plus a random intercept. The corresponding equations are:

$$\begin{aligned}\eta_{1j} &= \gamma_{11} + \gamma_{12}\text{ge}_j + \zeta_{1j} \\ \eta_{2j} &= \gamma_{21} + \gamma_{22}\text{ge}_j \\ \eta_{3j} &= \gamma_{31} + \gamma_{32}\text{ge}_j\end{aligned}$$

Where ζ_{1j} stands for the random intercept.⁵

We substitute the level 2 into the level 1 equation to get a reduced form model:

$$\begin{aligned} \text{logit}\{Pr(\text{cheat}_{ij} = 1 | \text{luck}_{ij}, \text{ge}_j, z_{ij})\} \\ = \beta_0 + \beta_1 \text{luck}_{ij} + \beta_2 \text{luck}_{ij}^2 + \beta_3 \text{ge}_j + \beta_4 \text{ge}_j \times \text{luck}_{ij} + \beta_5 \text{ge}_j \\ \times \text{luck}_{ij}^2 + \beta_6' z_{ij} + \zeta_{1j} \end{aligned} \quad (1)$$

where $\beta_0 = \gamma_{11}; \beta_1 = \gamma_{21}; \beta_2 = \gamma_{31}; \beta_3 = \gamma_{12}; \beta_4 = \gamma_{22}; \beta_5 = \gamma_{32}; \beta_6 = \eta_4$.

ge_j is allowed to impact on both, the intercept and the slope. Individuals may think that cheating on taxes is less justifiable if the government is effective than if it is not. In turn, the (expected positive) impact of luck_{ij} on cheat_{ij} might be ameliorated if the government is effective, because social programs could compensate the unlucky. In other words, if the government is sufficiently effective, those who think that hard work does not bring success could still refrain from justifying cheating and rather support larger social programs (the Alesina-Angeletos channel).

We used `gllamm` in STATA to take due care of the particular structure of errors and used an adaptive quadrature with eight integration points for each individual effect.⁶

The residual between-countries heterogeneity can be computed in the random intercept model as:

$$\rho = \frac{\text{Var}(\zeta_{1j})}{\text{Var}(\zeta_{1j}) + \pi^2/3}$$

ρ measures the proportion of the residuals variance that is due to the variance of the random intercept.

4 Results

The main results are summarized in table 3. In the first column, we present results for a model with all the controls. We dropped the control for religiosity (*church*) in the second column, after observing that this control made us lose two countries and more than two thousand observations. In the third column we also dropped the control for education to gain more than four thousand observations. We ended up with a sample of 53 countries and 72,262 responses. We run our main regressions, columns (3) to (5), on this sample.

In column (3) we present the results of a model that includes government effectiveness and GDP. We include only GDP in column (4) and only government effectiveness in column (5). We are interested in the effect of state capacity on tolerance to evasion, and use these two variables as proxies and controls at the same time.

⁵ We also made attempts at estimating the model with random slopes for luck_{ij} and luck_{ij}^2 , but the model did not converge.

⁶ See Rabe-Hesketh and Skrondal (2012) for a detailed explanation of `gllamm` in STATA.

Insert table 3 about here

In all the regressions the coefficient of *luck* is positive and the coefficient of *luck*² is negative, both significant at 1 percent. These coefficients change little across regressions. The coefficients of the interactions of *luck* with either government effectiveness or GDP are not significantly different from zero. Therefore, we computed the predicted effect of *luck* on the odds of tolerance to evasion (the odds ratios) as follows:

$$OR(a, b) = \frac{\text{odds}(\text{cheat} | \text{luck} = a)}{\text{odds}(\text{cheat} | \text{luck} = b)} = (\exp(\beta_1))^{a-b} (\exp(\beta_2))^{a^2-b^2}$$

In table 4, we present the odds ratios for several values of *luck*.

Insert table 4 about here

The odds of tolerance to evasion is estimated to be 1.45 times as high for individuals who chose 2 as for those who chose 1 in the question about the importance of luck and connections for success. The odds ratio is 1.93, if the answers to the question about luck are 3 and 1, and it reaches a maximum of 2.80 if the answers are 6 and 1. Therefore, the probability that someone justifies cheating on taxes over the probability that he never justifies cheating on taxes multiplies by almost 3 if he picked 6 rather than 1 in the ten-point scale of the question about the importance of luck and connections for success. The probability of justifying cheating on taxes falls for values of *luck* above 6, but still the estimated odds of justifying cheating on taxes is 1.47 as large for someone who chose 10 as for someone who chose 1 in the luck scale.

State capacity measured either with the WGI government effectiveness index or per capita GDP at PPP does not have an effect on the probability of justifying cheating on taxes, according to the regressions in table 3. These variables have no statistically significant effect on either the intercept or the slopes of the level 1 model.

The results for the controls are mostly in line with what it has been reported in the literature (see in particular, Frey 2007). A few comments may nevertheless be useful, because the sample, the set of controls and the econometric models vary between studies.

Social class presents a positive coefficient, significant at 1 percent, and robust across different specifications. Moving from one auto-identified social class to the next causes a five percent increase in the odds of justifying cheating. The odds ratio climbs to 1.23 (= 1.054⁴) if we compare the lowest with the highest social class in the five-point scale used in the WVS.

The residual between-countries heterogeneity is in the order of 10 percent. Hence only about 10 percent of total residual heterogeneity is due to the variance of the random intercepts.

5 Concluding remarks

We find that individuals who think that luck and connections rather than effort determine success are more likely to justify cheating on taxes than individuals who claim it is their own effort what matters most. The odds of justifying cheating is estimated to be almost three times as high for individuals who chose 6 as for individuals who chose 1 in the ten-point scale used to measure the importance individuals ascribe to luck and connections for success.

However, the belief that luck is important for success seems to have a non-monotone effect on tolerance to tax evasion. For levels of belief in luck below 6 in the ten-point scale, tolerance to tax evasion increases with the belief that luck is important for success. But beyond that point, individuals who ascribe more importance to luck are less tolerant to tax evasion.

At this point, we have no explanation for this non-monotone relationship. Our initial hypothesis was that the belief that luck determines outcomes would induce individuals to justify cheating on taxes. So we expected a monotone increasing relationship between these two variables. The data however shows otherwise. While the increasing relationship is present in the data and valid for about 70 percent of the respondents (those who chose 5 and below in the luck question), there is a minority, but still important group of individuals, who think that luck is very important and are nevertheless relatively less willing to tolerate tax evasion.

We would expect that individuals who tend to justify cheating on taxes also tend to prefer that the government is tolerant with evasion. Therefore, our findings suggest that, up to a point, the belief that success is determined by luck and connections spurs citizens' demands for government tolerance with tax evasion.

We find no support for the hypothesis that government effectiveness matters in this regard. Neither the World Bank indicator of government effectiveness or GDP per capita at PPP contribute to explain individuals' justification of cheating on taxes. Hence, we could not find evidence in this data that citizens in countries with more effective governments are less willing to tolerate tax evasion than citizens in countries in which governments are less effective.

We have analyzed individuals' justification of cheating on taxes, but our story is not mainly about tax morale. We used this variable as a proxy for citizens' demand for government tolerance or "flexibility". In our story, individuals demand tolerance when they think outcomes are determined by luck and connections, i.e. unfair. We see our results as complementary to Alesina and Angeletos (2005b), who have argued that individuals demand larger social programs when they think outcomes are not fair.

6 References

- Alesina, Alberto; Glaeser, Edward L. and Sacerdote, Bruce. , 2001. "Why Doesn't the United States Have a European-Style Welfare State?" *Brookings Papers on Economic Activity*, (2), pp. 187-254.
- Alesina, Alberto and George-Marios Angeletos. 2005a. "Corruption, Inequality and Fairness." *Journal of Monetary Economics*, 52, 1227-44.
- _____. 2005b. "Fairness and Redistribution." *American Economic Review*, 95(4), 960-80.
- Alesina, A. and N. Fuchs-Schündeln (2007). "Goodbye Lenin (or Not?): The Effect of Communism on People." *American Economic Review* 97(4): 1507-1528.
- Alesina, A. and Giuliano (2010). Preferences for Redistribution. *Handbook of Social Economics*. J. Benhabib, M. Jackson and A. Bisin, North Holland.
- Alesina, A. and P. Giuliano (2014). *Culture and Institutions*, Bocconi, Harvard, UCLA
- Alm, J. and B. Torgler (2006). "Culture differences and tax morale in the United States and in Europe" *Journal of Economic Psychology* 27: 224–246.
- Bigio, Saki and Eduardo Zilberman. 2011. "Optimal self-employment income tax enforcement." *Journal of Public Economics* 95 (9-10):1021–1035.
- Busso, M., A. Neumeyer and M. Spector (2012). *Skills, Informality and the Size Distribution of Firms*, IADB and UTDT.
- Daude, C., H. Gutiérrez and A. Melguizo (2012). *What Drives Tax Morale?* Working Paper No. 315. OECD Development Center.
- Doerrenberg, P. and A. Peich (2010). *Progressive Taxation and Tax Morale*. Discussion Paper No. 5378, The Institute for the Study of Labor (IZA).
- Forteza, A. and C. Noboa (2014). "Discretion Rather than Simple Rules. The Case of Social Protection". Documento de Trabajo 8/2014, Departamento de Economía, FCS-UDELAR.
- Frey, B. S. and B. Torgler (2007). "Tax morale and conditional cooperation." *Journal of Comparative Economics* 35: 136-159.
- Gerstenblüth, M., M. Rossi, N. Melgar and J. Pagano (2012). "How do inequality affect tax morale in Latin America and Caribbean?" *Revista de Economía del Rosario* 15(2): 123 - 135
- Halla, M. (2012). "Tax Morale and Compliance Behavior: First Evidence on a Causal Link." *The B.E. Journal of Economic Analysis & Policy* 12(1): Article 13.
- Inglehart, R. and C. Welzel (2005). *Modernization, Cultural Change, and Democracy. The Human Development Sequence*. Cambridge University Press.

Kaufmann, D., A. Kraay and M. Mastruzzi (2009). "Governance Matters VII. Aggregate and Individual Governance Indicators 1996-2008". Policy Research Working Paper 4978, The World Bank.

Luttmer, E. and M. Singhal (2014). Tax Morale. National Bureau of Economic Research Working Paper.

Perry, G., et al. (2007). Informality, Exit and Exclusion. Washington DC, The World Bank.

Rabe-Hesketh, S. and A. Skrondal (2012). Multilevel and Longitudinal Modeling Using Stata. Third Edition. Stata Press.

Streiff, S. (2013). "The effect of German Reunification on Tax Morale & the Influence of Preferences for Income Equality and Government Responsibility." *The Public Purpose* XI: 115-141.

Torgler, B. and C. A. Schaltegger (2005). Tax Morale and Fiscal Policy. CREMA Working Paper Series, CREMA.

Torgler, B. (2006). "The importance of faith: Tax morale and religiosity." *Journal of Economic Behaviour & Organization* 61: 81-109.

Tables and figures

Table 1: Tolerance to tax evasion, descriptive statistics

	Number of countries	10-point scale (1)				2-point scale (2)
		Mean score	Median score	10 th perc.	90 th perc.	Mean score (probability of 1)
Regions (3)						
East Asia & Pacific	11	2.13	1	1	5	0.37
Europe & Central Asia	17	2.15	1	1	5	0.37
Latin America & Caribbean	9	1.87	1	1	4	0.30
Middle East & North Africa	10	2.31	1	1	6	0.39
North America	1	1.91	1	1	5	0.30
South Asia	2	2.90	2	1	7	0.55
Sub-Saharan Africa	5	2.46	2	1	6	0.52
Income groups (4)						
High income	20	1.98	1	1	5	0.34
Upper middle income	20	2.23	1	1	5	0.37
Lower middle income	13	2.40	1	1	6	0.43
Low income	2	2.27	2	1	5	0.58
<p>(1) Justifiable cheating on taxes, 10-point scale: 1 "Never justifiable" - 10 "Always justifiable".</p> <p>(2) Justifiable cheating on taxes, 2-point scale: 0 "Never justifiable" - 1 Otherwise.</p> <p>(3) Countries by region (World Bank classification): <u>East Asia & Pacific</u>: Australia, China, Hong Kong, Japan, Malaysia, New Zealand, Philippines, Singapore, South Korea, Taiwan and Thailand. <u>Europe & Central Asia</u>: Armenia, Azerbaijan, Belarus, Cyprus, Estonia, Kazakhstan, Kyrgyzstan, Netherlands, Poland, Romania, Russia, Slovenia, Spain, Sweden, Turkey, Ukraine and Uzbekistan. <u>Latin America & Caribbean</u>: Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Trinidad and Tobago, and Uruguay. <u>Middle East & North Africa</u>: Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Palestine, Tunisia and Yemen. <u>North America</u>: United States. <u>South Asia</u>: India and Pakistan. <u>Sub-Saharan Africa</u>: Ghana, Nigeria, Rwanda, South Africa and Zimbabwe.</p> <p>(4) Countries by income group (World Bank classification): <u>High income</u>: Australia, Chile, Cyprus, Estonia, Hong Kong, Japan, Kuwait, Netherlands, New Zealand, Poland, Russia, Singapore, Slovenia, South Korea, Spain, Sweden, Taiwan, Trinidad and Tobago, United States and Uruguay. <u>Upper middle income</u>: Argentina, Azerbaijan, Belarus, Brazil, China, Colombia, Ecuador, Iraq, Jordan, Kazakhstan, Lebanon, Libya, Malaysia, Mexico, Peru, Romania, South Africa, Thailand, Tunisia and Turkey. <u>Lower middle income</u>: Armenia, Egypt, Ghana, India, Kyrgyzstan, Morocco, Nigeria, Pakistan, Palestine, Philippines, Ukraine, Uzbekistan and Yemen. <u>Low income</u>: Rwanda and Zimbabwe.</p> <p>Data is not weighted by the population of each country (all countries have the same weight).</p> <p>Source: Own computations based on WVS.</p>						

Table 2: Importance of luck and connections in success, descriptive statistics

	Number of countries	10-point scale (1)				2-point scale (2)
		Mean score	Median score	10 th perc.	90 th perc.	Mean score (probability of 1)
Regions (3)						
East Asia & Pacific	11	4.04	4	1	8	0.79
Europe & Central Asia	17	4.60	4	1	9	0.80
Latin America & Caribbean	9	4.10	4	1	9	0.71
Middle East & North Africa	10	3.33	2	1	8	0.58
North America	1	3.83	3	1	8	0.79
South Asia	2	4.59	4	1	9	0.76
Sub-Saharan Africa	5	3.93	3	1	8	0.75
Income groups (4)						
High income	20	4.43	4	1	8	0.82
Upper middle income	20	4.09	4	1	9	0.71
Lower middle income	13	3.68	3	1	8	0.64
Low income	2	3.79	3	1	8	0.75
<p>(1) Importance of luck for success, 10-point scale: 1 "In the long run, hard work usually brings a better life" - 10 "Hard work doesn't generally bring success - it's more a matter of luck and connections".</p> <p>(2) Importance of luck for success, 2-point scale: 0 "In the long run, hard work usually brings a better life" - 1 Otherwise.</p> <p>(3) Countries by region (World Bank classification): <u>East Asia & Pacific</u>: Australia, China, Hong Kong, Japan, Malaysia, New Zealand, Philippines, Singapore, South Korea, Taiwan and Thailand. <u>Europe & Central Asia</u>: Armenia, Azerbaijan, Belarus, Cyprus, Estonia, Kazakhstan, Kyrgyzstan, Netherlands, Poland, Romania, Russia, Slovenia, Spain, Sweden, Turkey, Ukraine and Uzbekistan. <u>Latin America & Caribbean</u>: Argentina, Brazil, Chile, Colombia, Ecuador, Mexico, Peru, Trinidad and Tobago, and Uruguay. <u>Middle East & North Africa</u>: Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Palestine, Tunisia and Yemen. <u>North America</u>: United States. <u>South Asia</u>: India and Pakistan. <u>Sub-Saharan Africa</u>: Ghana, Nigeria, Rwanda, South Africa and Zimbabwe.</p> <p>(4) Countries by income group (World Bank classification): <u>High income</u>: Australia, Chile, Cyprus, Estonia, Hong Kong, Japan, Kuwait, Netherlands, New Zealand, Poland, Russia, Singapore, Slovenia, South Korea, Spain, Sweden, Taiwan, Trinidad and Tobago, United States and Uruguay. <u>Upper middle income</u>: Argentina, Azerbaijan, Belarus, Brazil, China, Colombia, Ecuador, Iraq, Jordan, Kazakhstan, Lebanon, Libya, Malaysia, Mexico, Peru, Romania, South Africa, Thailand, Tunisia and Turkey. <u>Lower middle income</u>: Armenia, Egypt, Ghana, India, Kyrgyzstan, Morocco, Nigeria, Pakistan, Palestine, Philippines, Ukraine, Uzbekistan and Yemen. <u>Low income</u>: Rwanda and Zimbabwe.</p> <p>Source: Own computations based on WVS.</p>						

Table 3: Two-level logit models for tolerance to tax evasion (0 = “never justifiable”, 1 = otherwise). Random intercept. Odds ratios.

Covariates (a)	(1)	(2)	(3)	(4)	(5)
<i>luck</i>	1.698***	1.623***	1.635***	1.686***	1.677***
	-0.148	-0.116	-0.119	-0.103	-0.0616
<i>luck</i> ²	0.957***	0.961***	0.960***	0.957***	0.957***
	-0.007	-0.006	-0.006	-0.005	-0.003
<i>government effectiveness (ge)</i>	0.927	0.958	0.914		0.892
	-0.153	-0.101	-0.118		-0.100
<i>gdp</i>	1.000	1.000	1.000	1.000	
	0.000	0.000	0.000	0.000	
<i>ge × luck</i>	1.002	0.959	0.953		0.970
	-0.064	-0.051	-0.053		-0.033
<i>ge × luck</i> ²	1.001	1.004	1.005		1.003
	-0.006	-0.005	-0.005		-0.003
<i>gdp × luck</i>	1.000	1.000	1.000	1.000	
	0.000	0.000	0.000	0.000	
<i>ge × luck</i> ²	1.000	1.000	1.000	1.000	
	0.000	0.000	0.000	0.000	
<i>sclass</i>	1.062***	1.061***	1.054***	1.054***	1.055***
	-0.020	-0.019	-0.018	-0.017	-0.018
<i>woman</i>	0.846***	0.847***	0.859***	0.858***	0.859***
	-0.031	-0.031	-0.033	-0.033	-0.033
<i>education</i>	0.986**	0.985**			
	-0.007	-0.007			
<i>church</i>	0.976**				
	-0.010				

Continues on next page

Covariates (a)	(1)	(2)	(3)	(4)	(5)
<i>constant</i>	0.292***	0.278***	0.235***	0.241***	0.226***
	-0.072	-0.051	-0.048	-0.045	-0.028
Number of units					
Level 1 (individuals)	66,013	68,127	72,262	72,262	72,262
Level 2 (countries)	51	53	53	53	53
seEform in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					
Variances and covariances of random effects					
<i>country</i>	0.338	0.348	0.357	0.376	0.359
<i>rho</i>	0.093	0.096	0.098	0.102	0.098

(a) Covariates relative to age groups, marital status and employment status were omitted from the table. We present a complete table in the Appendix.

Source: Own computations based on WVS and the World Bank.

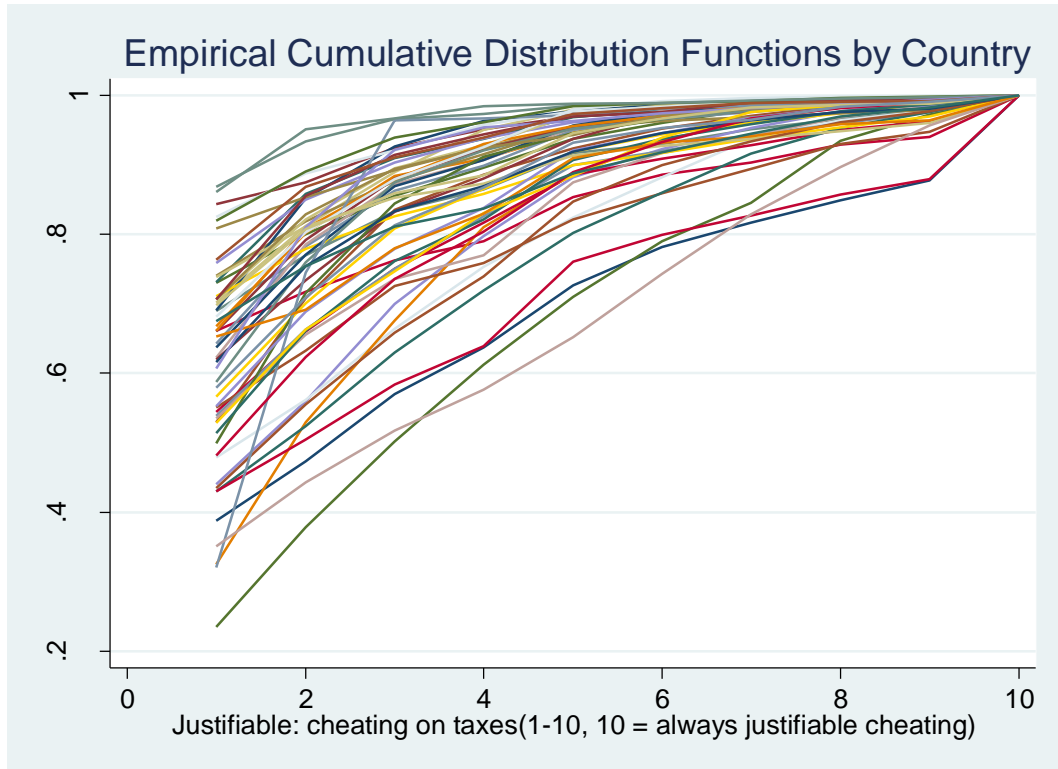
Table 4: Odds ratios of tolerance to tax evasion conditional on importance of luck and connections.

<i>luck = a</i>	<i>luck = b</i>		
	1	2	3
1	1.00		
2	1.45	1.00	
3	1.93	1.33	1.00
4	2.37	1.64	1.23
5	2.68	1.85	1.39
6	2.80	1.94	1.45
7	2.69	1.86	1.40
8	2.39	1.65	1.24
9	1.95	1.35	1.01
10	1.47	1.01	0.76

$OR(a, b) = odds(cheat|luck = a)/odds(cheat|luck = b)$

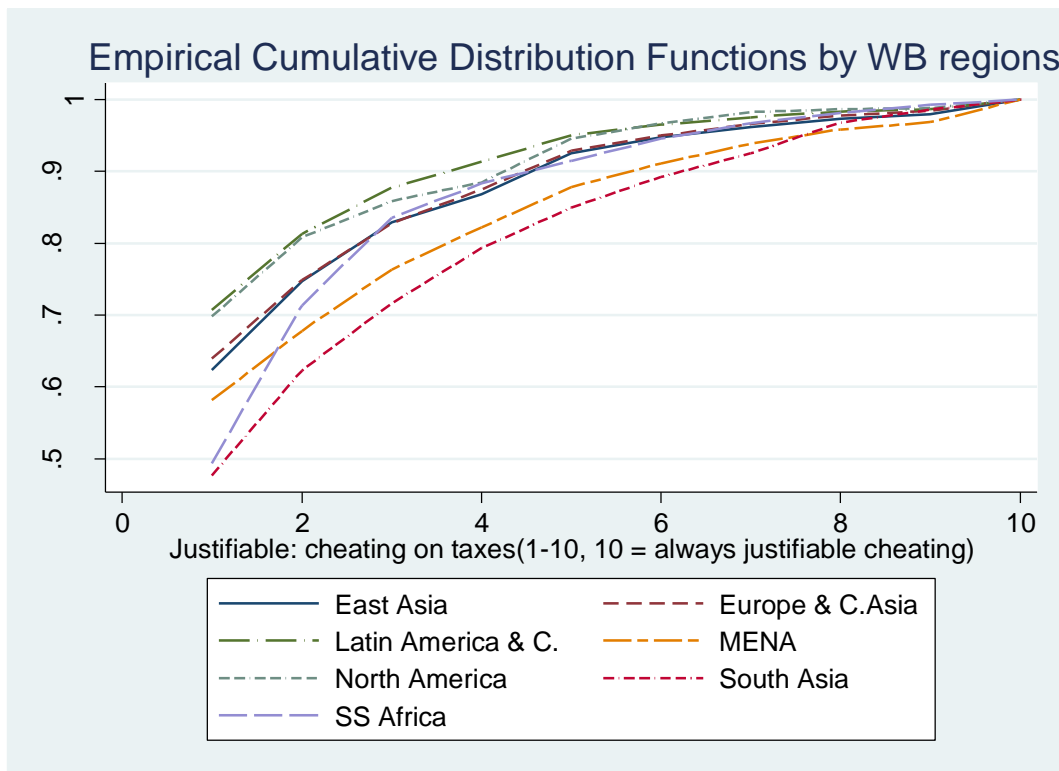
Source: own computations based on table 3, column (3).

Figure 1: Tolerance to tax evasion: empirical cumulative distribution functions by country.



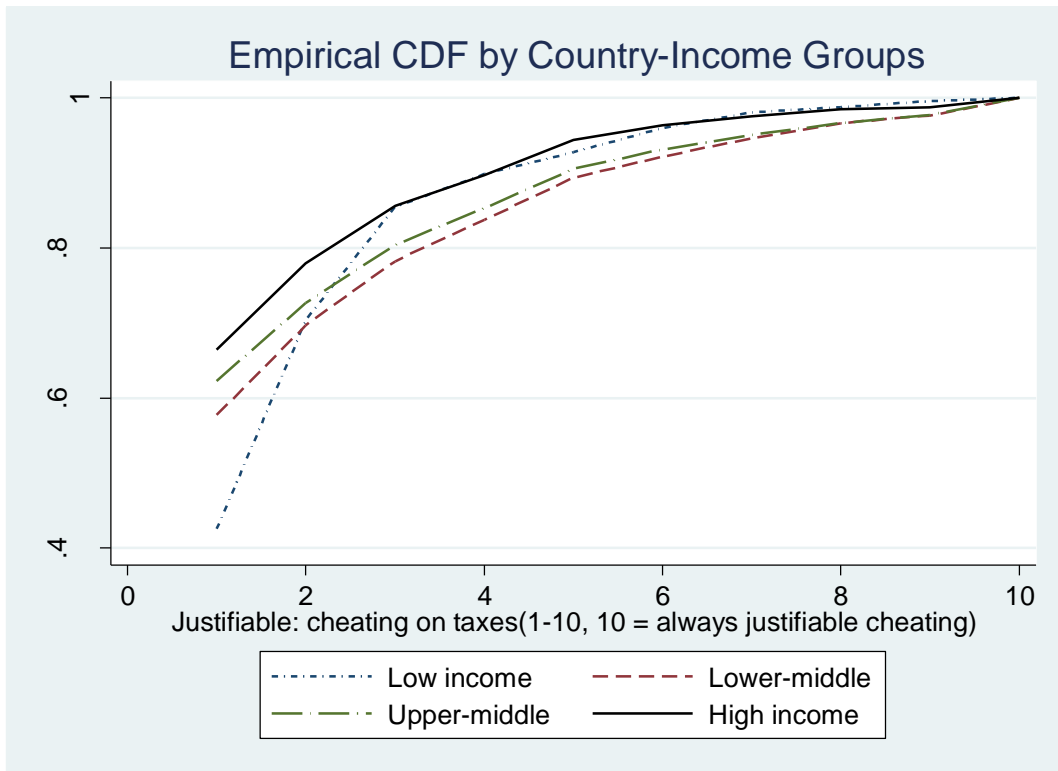
Source: Own computations based on WVS.

Figure 2: Tolerance to tax evasion: empirical cumulative distribution functions by WB regions



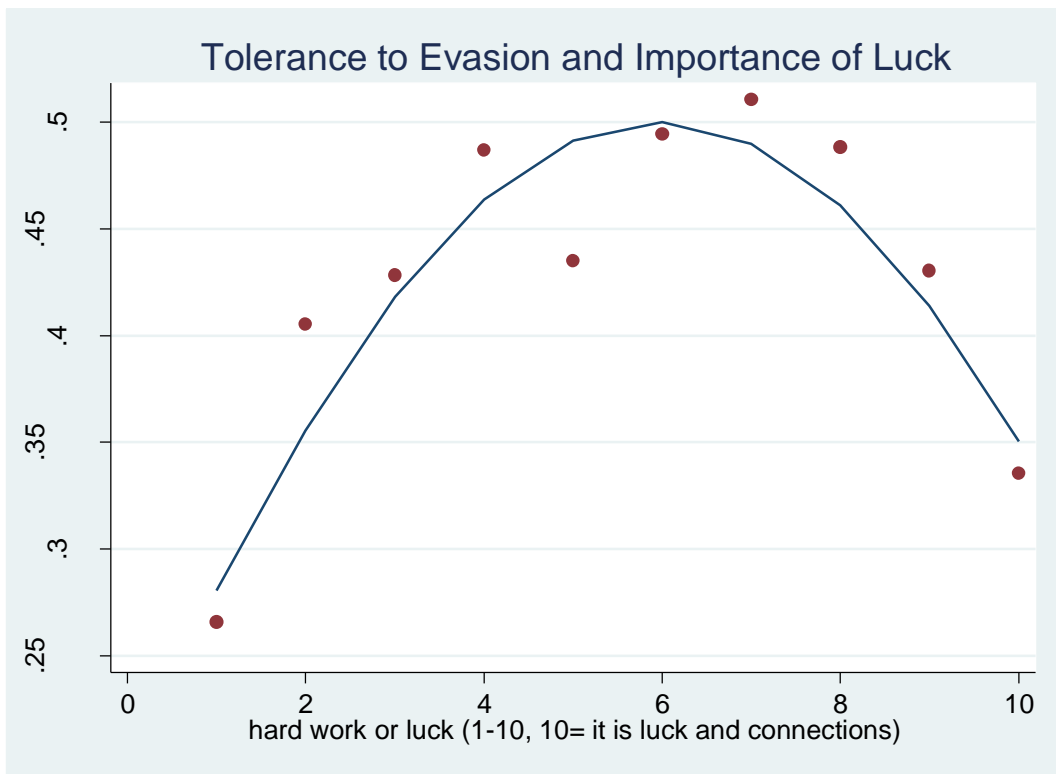
Source: Own computations based on WVS.

Figure 3: Tolerance to tax evasion: empirical cumulative distribution functions by WB country-income group



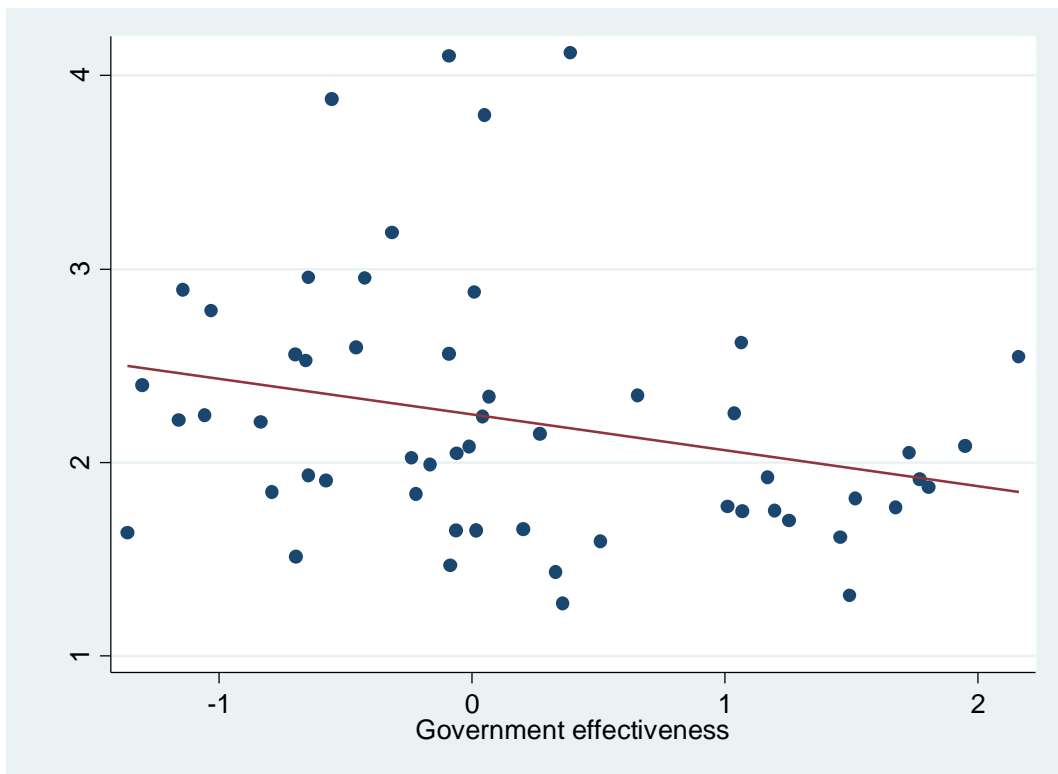
Source: Own computations based on WVS.

Figure 4:



Source: Own computations based on WVS.

Figure 5: Tolerance to Evasion and Government Effectiveness



Source: Own computations based on WVS and WGI.

7 Appendix

Table A1: Two-level logit models for tolerance to tax evasion (0 = “never justifiable”, 1 = otherwise). Random intercept. Odds ratios.

Covariates	(1)	(2)	(3)	(4)	(5)
<i>luck</i>	1.698***	1.623***	1.635***	1.686***	1.677***
	-0.148	-0.116	-0.119	-0.103	-0.062
<i>luck*luck</i>	0.957***	0.961***	0.960***	0.957***	0.957***
	-0.007	-0.006	-0.006	-0.005	-0.003
<i>ge</i>	0.927	0.958	0.914		0.892
	-0.153	-0.101	-0.118		-0.100
<i>gdp</i>	1.000	1.000	1.000	1.000	
	0.000	0.000	0.000	0.000	
<i>ge*luck</i>	1.002	0.959	0.953		0.970
	-0.064	-0.051	-0.053		-0.033
<i>ge*(luck*luck)</i>	1.001	1.004	1.005		1.003
	-0.006	-0.005	-0.005		-0.003
<i>gdp*luck</i>	1.000	1.000	1.000	1.000	
	0.000	0.000	0.000	0.000	
<i>gdp*(luck*luck)</i>	1.000	1.000	1.000	1.000	
	0.000	0.000	0.000	0.000	
<i>sclass</i>	1.062***	1.061***	1.054***	1.054***	1.055***
	-0.020	-0.019	-0.018	-0.017	-0.018
<i>woman</i>	0.846***	0.847***	0.859***	0.858***	0.859***
	-0.031	-0.031	-0.033	-0.033	-0.033

Continues on next page

Covariates	(1)	(2)	(3)	(4)	(5)
<i>age30_39</i>	0.884***	0.885***	0.884***	0.884***	0.884***
	-0.029	-0.028	-0.029	-0.029	-0.029
<i>age40_49</i>	0.830***	0.822***	0.817***	0.817***	0.817***
	-0.034	-0.032	-0.032	-0.032	-0.032
<i>age50_59</i>	0.718***	0.715***	0.728***	0.728***	0.728***
	-0.032	-0.031	-0.031	-0.031	-0.031
<i>age60_69</i>	0.634***	0.632***	0.654***	0.653***	0.654***
	-0.036	-0.035	-0.036	-0.036	-0.036
<i>age70_</i>	0.537***	0.534***	0.564***	0.563***	0.564***
	-0.043	-0.044	-0.044	-0.044	-0.044
<i>divorced</i>	1.109**	1.136***	1.124**	1.126**	1.125**
	-0.055	-0.056	-0.055	-0.055	-0.055
<i>separated</i>	1.198**	1.197***	1.222***	1.223***	1.222***
	-0.088	-0.080	-0.083	-0.083	-0.083
<i>widowed</i>	1.109*	1.116*	1.121**	1.121**	1.121**
	-0.069	-0.069	-0.062	-0.062	-0.063
<i>never_married</i>	1.071*	1.095**	1.093**	1.092**	1.093**
	-0.039	-0.041	-0.039	-0.039	-0.040
<i>part_time</i>	1.008	1.016	1.015	1.016	1.015
	-0.042	-0.041	-0.043	-0.043	-0.043
<i>selfemployed</i>	1.008	1.003	0.983	0.984	0.983
	-0.040	-0.041	-0.039	-0.039	-0.039
<i>retired</i>	0.955	0.943	0.923	0.924	0.923
	-0.046	-0.044	-0.046	-0.046	-0.046

Continues on next page

Covariates	(1)	(2)	(3)	(4)	(5)
<i>housewife</i>	1.006	1.007	1.052	1.054	1.052
	-0.053	-0.053	-0.064	-0.064	-0.064
<i>student</i>	1.002	0.977	0.971	0.970	0.971
	-0.049	-0.050	-0.048	-0.048	-0.049
<i>unemployed</i>	1.010	1.003	1.024	1.024	1.023
	-0.045	-0.045	-0.043	-0.043	-0.043
<i>other employment status</i>	1.157	1.122	1.080	1.080	1.080
	-0.137	-0.129	-0.114	-0.114	-0.114
<i>education</i>	0.986**	0.985**			
	-0.007	-0.007			
<i>church</i>	0.976**				
	-0.010				
<i>constant</i>	0.292***	0.278***	0.235***	0.241***	0.226***
	-0.072	-0.051	-0.048	-0.045	-0.028
Number of units					
Level 1 (individuals)	66,013	68,127	72,262	72,262	72,262
Level 2 (countries)	51	53	53	53	53
seEform in parentheses					
*** p<0.01, ** p<0.05, * p<0.1					
Variances and covariances of random effects					
<i>country</i>	0.338	0.348	0.357	0.376	0.359
<i>rho</i>	0.093	0.096	0.098	0.102	0.098

Source: Own computations based on WVS and the World Bank.