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Public attitudes toward corruption and tax evasion: Investigating the role of gender over time*

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Objectives: In recent years the topics of illegal activities such as corruption or tax evasion have attracted a great deal of attention. However, there is still a lack of substantial empirical evidence about the determinants of compliance. The aim of this paper is to investigate empirically whether women are more willing to be compliant than men and whether we observe (among women and in general) differences in attitudes among similar age groups in different time periods (cohort effect) or changing attitudes of the same cohorts over time (age effect) using data from eight Western European countries from the World Values Survey and the European Values Survey that span the period from 1981 to 1999. The results reveal higher willingness to comply among women and an age rather than a cohort effect.

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1. Introduction

Illegal activities are not a new phenomenon. Already 2000 years ago, the book *Arthashastra*, written by Kautilya discussed corruption (see Tanzi 2002). Corruption is a topic that has attracted important writers such as Dante and Shakespeare and bribery (besides treason) is one of the two explicitly mentioned crimes that could justify the impeachment of a U.S. president (see Noonan 1984). It is also interesting to note that in Ancient Egypt, the pharaohs searched for ways to reduce corruption of their tax collectors (called *scribes*). The scribes were paid high salaries to reduce the incentives to enrich themselves by cheating taxpayers. Furthermore, scribes working in the field were controlled by a group of special scribes from the head office. The famous Rosetta Stone, inscribed around 200 B.C. during the reign of Ptolemy, did not only help to maintain the hieroglyphic knowledge, but it is also the first “tax-oriented” documentation which reports a tax amnesty, where tax rebels were released from prison, remitting also their tax debts. The success of the tax amnesty increased the incentive to use this instrument as a regular medicine to check civil disorder (see Adams 1993). Even today, there is still a huge political interest in tax amnesty programs all around the world. Pharaohs were also confronted with the question how taxpayers should be treated. The tomb of Khiti describes a scene in which taxpayers were roughly treated by tax scribes, being for example clubbed with apparent ferocity (Adams 1993, p. 8).

However, still little is known about the causes of illegal activities such as corruption and tax evasion. Interestingly, studies in the area of compliance are highly interdisciplinary. Political scientists, sociologists, economists and social psychologists contributed to this area. In general, studies strongly increased since the early 1990s. The transformation of the socialist economies was one of the main reasons for this surge in interests since institutional weaknesses and illegal

activities surfaced as major obstacles to market reforms (Abed and Gupta 2002). Moreover, increased interest and new datasets contributed to a rapidly growing empirical literature (see Treisman 2000 and Lambsdorff 1999 for reviews on corruption, Andreoni et al. 1998 for tax compliance) to which we contribute.

This empirical study analyses the World Values Survey (WVS, waves 1 (1981-1984), and 2 (1990-1991)) and the European Values Survey data (EVS, 1999-2000) to shed some light whether gender differences matter. Moreover, we investigate women's compliance attitudes over time to see whether we observe a cohort effect (differences in attitudes among similar age groups in different time periods) or/and an age effect (changing attitudes of the same cohort over time). Section 2 of the paper gives an overview of the existing literature and has the aim to outline our theoretical approach. The interdisciplinary phenomenon of corruption and tax evasion makes it also interesting to focus on research findings in differences social science areas. Most of the studies used cross-section regressions, comparing people of different age cohorts at one point in time. Such investigations are not able to distinguish between a possible cohort and age effect. A cohort effect measures differences due to the experiences, characteristics or socialization process of a particular cohort. People of a similar age that have experienced similar historical and economic conditions may have similar attitudes towards various issues such as the justifiability of corruption. Conversely, an age effect measures differences due to chronological age or life course stage. An empirical analysis based on cross-sectional data cannot be used to make this distinction. Separating between the two effects requires longitudinal data, which unfortunately are not available. Nonetheless, as we describe later in the paper, we can accomplish much in that direction by combining WVS/EVS survey data from different years. Section 3 then presents the empirical findings. We find strong and robust gender differences and a support for an age rather

than a cohort effect for both dependent variables (justifiability of corruption and tax evasion). Finally, Section 4 finishes with some concluding remarks.

2. Are women the fairer sex and can we observe changes in attitudes over time?

Social psychological research suggests that women are more compliant and less self-reliant than men (e.g., Tittle 1980). In the past decade, experimental research findings have shown that gender may influence various behaviors, e.g., charitable giving, bargaining, and household decision making (see Andreoni and Vesterlund 2001, Eckel and Grossman 2001). In public good games, the results are not clear. Some have found men to be more cooperative (see Brown-Kruse and Hummels 1993), others have found that women are more cooperative (Nowell and Tinkler 1994). Using dictator games, Andreoni and Vesterlund (2001) observed individuals taking decisions with different budgets and interestingly found that in expensive giving-situations, women are more generous than men and when the price of giving decreases, men start to give more than women. There is evidence from the tax compliance literature showing the tendency that men are less compliant and have a lower tax morale than women (for survey studies see, e.g., Vogel 1974, Minor 1978, Aitken and Bonneville 1980, Tittle 1980, Torgler and Schneider 2006; for experiments, Spicer and Becker 1980, Spicer and Hero 1985, Baldry 1987). Evidence about gender differences can also be found in helping behavior (see, e.g., Eagly and Crowley 1986) or ethical decision making (Ford et al. 1994, Glover et al. 1997 and Reiss and Mitra 1998).

Less evidence is available in the area of corruption. Efforts to understand corruption and possible gender differences are highly relevant in the politico-economic process. It is a common belief that an increase in women's representation in public organizations may reduce corruption.

In 1999, Mexico set up new female uniformed patrols and increased the number of women police officers to reduce corruption (see TI, Press release, March, 2000). A similar policy has been introduced in Lima, Peru (see Swamy et al. 2001). Dollar et al. (2001) is one of the first papers that investigate empirically the relationship between women's government participation in legislatures and the level of perceived corruption, using a sample of between 144 and 270 observations (countries). As a measurement of corruption, they use the International Country Risk Guide (ICRG) and women's involvement in government has been proxied by the proportion of parliament seats that were held by women in the upper and lower House. In the specification they control for the level of social and economic development and find that a higher presence of women parliamentarians had a statistically significant negative impact on corruption. Swamy et al. (2001) use several data sets to investigate the relationship between gender and corruption. They present macro-evidence working with the Transparency International Corruption Perception Index. Different proxies for possible gender differences, such as the percentage of women in parliament, as government ministers and in the labor force are considered. Controlling also for social, economic and political development they find that a higher share of women's participation leads to a decrease in corruption. Robustness tests working with the Graft Index and the International Country Risk Guide (ICRG) also indicate that there are gender differences. The authors also present micro-evidence using data from a World Bank study of corruption in Georgia (survey of 350 firms). The findings also indicate a gender difference regarding the involvement in bribery. Finally, in line with our paper the authors investigate the World Values Survey. However, contrary to our paper they use only the older data sets (wave I and II (years 1981-84 and 1990-1993) and only one dependent variable (justifiability of corruption). As control variables they considered the marital status, religiosity, education and age. However,

only in 5 out of 21 in wave II and 9 out of 15 countries in wave I we observe a statistically significant difference between women and men, although the sign of the male dummy variable was negative. On the other hand, pooling all data together leads to a statistically significant coefficient. As a robustness check they also controlled for the employment status of a person. However, Sung (2003) criticizes the *macro*-results of both studies reporting that gender differences lose significance when the effects of constitutional liberalism are controlled for and refers to the important role of the judiciary and the press. Another study done by Mukherjee and Gokcekus (2004) investigates whether a higher percentage of women employed in public sector organizations reduces the level of corruption working with survey data covering 6 countries provided by the World Bank. Also contrary to the first two studies, their results imply that there is an optimal level of women in public organizations. In those organizations where less than one third of the employees are women, an increase in the proportion of women leads to a reduction of corruption. However, increasing the percentage of women beyond around 45% reduces the likelihood that corruption is reported and a value over 70% even raises corruption. Finally, Mocan (2004) investigates the determinants of corruption with the International Crime Victim Survey. The study uses the risk of exposure to bribery (having been asked for a bribe by a government official). The results indicate that men are more likely to be asked for a bribe than women.

In general, more evidence is needed to see whether gender differences matter and whether promoting women's employment could be a strategy to improve governance, reducing the level of corruption.

Strong differences between men and women can also be observed in other circumstances. For example, there is a larger accident involvement in all kinds of motor vehicle accident rates

for men than for women. But there are also differences regarding other accidents such as accidental drowning, accidents caused by fire (see Junger 1994). Similarly, alcohol and drug abuse are more common among men than women (Gottfredson and Hirschi 1990).

The criminology literature provides one of the best sources to see possible gender differences. While the previously reviewed literature does not give a theoretical explanation of possible differences, the criminology literature presents theories that try to explain gender differences although the sources or meaning of these differences are still not fully understood. The correlation between gender and crime or delinquent behavior has been adequately investigated. Some theories such as the equality or role theory would suggest that with greater equality of status between men and women there would be greater equality in their crime rates, as the opportunities to behave illegally increase for women (Gottfredson and Hirschi 1990). If this is the case, we would be able to observe a cohort effect. However, criminologists have shown that the differences in the crime rates persist after the labor-force participation of women in the United States increased, which suggests that the equality/role thesis cannot explain these observations (see Gottfredson and Hirschi 1990). Furthermore, the authors report evidence that female-male differences remain for adolescents being equally supervised by their parents. Thus, as main factors for self-control, the authors go beyond supervision, stressing the relevance of recognition of deviant behavior, the willingness to expend the effort to correct it and the socializability of a person (see p. 149). Mears et al. (2000) also report a strong cross-cultural and historical robustness that reduces the strength of a possible equality or role theory:

“at every age, within all racial or ethnic groups examined to date, and for all but a handful of offense types that are peculiarly female... sex differences in delinquency are independently

corroborated by self-report, victimization, and police data, and they appear to hold cross-culturally as well as historically” (p. 143).

Two major factors can be found in the literature that try to explain gender differences: self-control and opportunities to commit criminal or reckless acts (see, e.g., Gottfredson and Hirschi 1990, Zager 1994). Low self-control reduces the restrictions to behave illegally, failing to consider carefully long-term negative consequences of the behavior. The opportunity argument is close to the concept of traditional economics, suggesting that males and females don't have different motivations.

If only self-control was relevant, the gender differences would be constant from offense to offense (Zager 1994). However, across offenses a variation among men and women is observed. On the other hand, Gottfredson and Hirschi (1990) criticize that crime cannot be largely a result of opportunity variables pointing out that women have similar opportunities to commit assault or homicide, as they spend much of their time in unsupervised activities (e.g., interaction with children) with a larger interaction with other people than men. Mears et al. (2000), influenced by the sociological theory of Sutherland (1947) who argues that delinquency is learned behavior imitating social groups, find in an empirical study that men are more likely than women to have delinquent friends and that they appeared to be more strongly influenced by delinquent peers.

It is highly interesting to investigate whether women's justifiability of illegal activities may change over time. As previously discussed, evidence in the criminology literature suggests against a cohort effect. As mentioned, we will have the chance to differentiate between an age and cohort effect in the data. Criminologists also indicate that age is negatively correlated with rule breaking. Hirschi and Gottfredson (2000) point out that, ‘no fact about crime is more widely

accepted by criminologists. Virtually all of them, of whatever theoretical persuasion, appear to operate with a common image of the age distribution. This distribution thus represents one of the brute facts of criminology' (p. 138).

Studies show that the shape of the distribution relating age and crime has remained *almost unchanged in the last 150 years* and that the relationship is *invariant across gender* and race groups. This would suggest that we should be able to find an age effect in our empirical part. Differences can be observed regarding the type of crime. For example, age is correlated with the seriousness of injury offenses but not with the seriousness of theft offenses. The peak regarding crimes against persons compared to theft is at a higher age (Gottfredson and Hirschi 1990 and Hirschi and Gottfredson 2000). Similar tendencies can be observed for other involvements. For example, the relationship between crime and motor vehicle accidents (fatal traffic accidents) has a peak point in the late teens and steadily declines thereafter. However, contrary to crime, the fatality age curve is bimodal, beginning to increase around age sixty (see Sorensen 1994). Looking at tax evasion, there is the tendency that a higher age is correlated with a lower tax evasion although a few studies imply no such influences (see Torgler and Schneider 2006).

There are two major concepts that explain the correlation between age and crime: the traditional desistance theory and the age theory (Gottfredson and Hirschi 1990). The desistance theory asserts that the decline in crime occurs because factors associated with age reduce or change the actors' criminality. Social position is a key explanation of an age effect according to that theory. Tittle (1980) argues that older people are more sensitive to the threats of sanctions and over the years have acquired greater social stakes, as material goods, status, a stronger dependency on the reactions from others, so that the potential costs of sanctions increase.

However, Gottfredson and Hirschi (1990) survey studies conducted in a controlled environment (prison) which show that the age effect is comparable to the age effect outside a prison. This persistence indicates that status changes such as marriage, parenthood or employment are not sufficiently responsible for the observed decreases in criminality associated with age (Hirschi and Gottfredson 2000). On the other hand, the age theory asserts that the decline cannot be explained by a change in the persons' status or the exposure to anti-criminal institutions, which act to restrain offenders. The theory is based on the idea that the aging of the organism itself has an impact on individuals' criminal behavior. Gottfredson and Hirschi (1990) are in favor of the aging theory stressing that differences in individuals' criminal tendencies remain relatively stable over the life course.

3. Empirical evidence

The data used in the present study come from the WVS and EVS. The surveys were first conducted in 1981-84, with subsequent surveys being carried out in 1990-91, 1995-97 and 1999-2001. These surveys have assessed the basic values and beliefs of people around the world and have been carried out in about 80 societies representing over 80 per cent of the world's population. The researchers who conduct and administer the WVS/EVS in their respective countries are required to follow the methodological requirements of the World Values Association. Surveys are generally based on national representative samples of at least 1000 individuals, ages 18 and over (although sometimes people under the age of 18 participate). The samples are selected using probability random methods and the questions contained within the

surveys generally do not deviate far from the original official questionnaire.¹ The WVS/EVS inquires about the acceptability of various dishonest or illegal activities. The questions on the justifiability of corruption and tax evasion that are of primary interest in this paper are stated as follows:

Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between: (...)

1. Someone accepting a bribe in the course of their duties.
2. Cheating on tax if you have the chance

The ten-scale index with the two extreme points “never justified” and “always justified” was recoded into a four-point scale (0, 1, 2, 3), with the value 3 standing for “never justifiable”; 4-10 were integrated in the value 0 due to a lack of variance. Thus, a higher value is interpreted as lower justifiability of corruption or tax evasion.

Both variables are not free from biases and problems. In general, the proxy can be criticized as it considers a *self-reported* and *hypothetical* choice (see Swamy et al. 2001). It is possible that an individual who has been involved in illegal activities in the past will tend to excuse such behavior declaring a low justifiability (Torgler and Schneider 2006). Furthermore, cross-cultural comparisons should be treated with caution. In countries where corruption and tax evasion is widespread and delays in transactions are long, additional payments to “speed up” the

¹ A typical World Values Survey can be viewed at www.worldvaluessurvey.org.

process may be justifiable.² Nevertheless, in recent years a number of studies have investigated the effects of values, norms, and attitudes on economic behavior or institutions (see, e.g., Knack and Keefer 1997). According to Ajzen and Fishbein (1980) and Lewis (1982) behavior can be predicted from attitudes and subjective norms. The tax compliance literature, for example, has documented a strong link between attitudes toward tax compliance and actual compliance. Weck (1983) reports a negative correlation between tax morale (attitudes toward paying taxes) and the size of the shadow economy. Compared to other variables tax morale has the most significant impact on the size of the shadow economy. In a multivariate analysis with data from the Taxpayer Opinion Survey, using tax evasion as a dependent variable, Torgler (2003a) finds that tax morale significantly reduces tax evasion and Torgler (2001) finds a strong correlation between tax morale and the size of shadow economy. Moreover, because the way we define illegal activities is less sensitive than asking whether a person has evaded taxes or is corrupt, we expect the degree of honesty to be higher. Moreover, the dataset is based on wide-ranging surveys, which reduces the probability of respondent suspicion and the framing effects (Torgler and Schneider 2006). For our purposes here, it is also useful to note that our justifiability of corruption variable is statistically significantly correlated with well-known indexes of the actual level of corruption such as the Transparency International Corruption Perception Index (correlation coefficient is 0.358) and the Quality of Government rating (Control of Corruption) developed by Kaufmann et al. (2003) (correlation coefficient 0.380).

To investigate our research questions we combine surveys from different years together. We use the following countries in our empirical analysis: Belgium, Denmark, France, Great

² De Soto (1989) and his research team conducted an experiment, setting up a small garment factory in Lima, intending to comply with the bureaucratic procedures and thus behave in accordance with the law. They were asked for a bribe to speed up the process 10 times and twice it was the only possibility to continue the experiment.

Britain, Ireland, Italy, Netherlands and Spain³. The surveys have been conducted in the years 1981, 1990 and 1999 only in these countries. Thus, we have nine years between each survey, which allows us to build consistent cohort groups over time. We proceed as follows. We create five dummy variables using the 1981 survey for age groups: 18-26, 27-35, 36-44, 45-53, 54-62. Similarly, we create five dummy variables for the same cohort groups nine years later using the 1990 survey (age 27-35, 36-44, 45-53, 54-62, 63-71) and five more using the 1999 survey (age 36-44, 45-53, 54-62, 63-71, 72-80). The 14 dummy variables (excluding one reference group) are included in a model along with several control variables to explain the reported justifiability of illegal activities. To investigate whether there is a cohort effect, we can compare the same age group in different surveys, e.g., respondents aged 36-44 in 1981, 1990, and 1999. Thus, the question here is not whether the same cohort of women changed their attitudes over time (an age effect) but whether women of similar age had different attitudes towards compliance in different time periods. Now, to observe an age effect, we compare the coefficients of the dummy variables for the same age group over time, e.g., female respondents with age 18-26 in the 1981 survey, with those aged 27-35 in the 1990 survey, and those aged 36-44 in the 1999 survey. Granted, these are not the same women being asked the same questions over time as in a longitudinal survey. However, tracking the attitudes of the same cohort over time using nationally representative surveys is the next best alternative.

We will use an ordered probit estimation to analyze the ranking information of the scaled dependent variable. A weighting variable has been applied to correct the samples and thus to get a reflection of the national distribution⁴. The models also include country dummy variables.

³ We excluded Germany, as the 1981 survey considers only West Germany.

⁴ The WVS/EVS provides the weighting variable.

Since the equation in an ordered probit model is nonlinear, only the signs of the coefficients can be directly interpreted and not their sizes. Calculating the marginal effects is therefore a method to find the quantitative effect of an independent variable. The marginal effect indicates the change in the share of individuals (or the probability of) belonging to a specific justifiability of corruption/tax evasion levels, when the independent variable increases by one unit. If the independent variable is a dummy variable, the marginal effect is evaluated in regard to the reference group. In all estimations the marginal effects are presented only for the highest social norm of bribing level (score of 3). ‘I don’t know’ answers and missing values were omitted from all estimations. Moreover, the relatively high number of responses that illegal activities are never justifiable suggests the tendency of a natural cut-off point at value with the lowest justifiability (score 3). Thus, we will also report the findings of a probit model in which our dependent variables take the value 1 for a response that illegal activities are “never justified” and zero otherwise. The results remain robust.

Independent Variables

To isolate the impact of our main independent variables, the estimations reported in the next section control first of all for the education level, the marital status and the employment status of individuals. *Table A1* in the Appendix provides a description of these variables. The variable *EDUCATION* (continuous variable) is related to citizens’ knowledge about rule evasion. Better educated individuals might know more about the government’s activities and thus would be in a better position to assess the degree of corruption and tax evasion. This may have a positive or a negative impact on the justifiability of corruption and tax evasion, depending on how governments act. On the other hand, they may be more strongly involved in illegal

activities, understanding better the opportunities of them. For example, fiscal knowledge may also positively influence the practice of avoidance (see Geeroms and Wilmots 1985). Thus, the effect of education is not clear and the available evidence in the area of tax compliance is mixed (for an overview see Torgler 2003b). The literature on corruption provides only a limited amount of evidence. Swamy et al. (2001), for example, do not include an education variable in the reported equations. Mocan (2004) finds that a higher level of education leads to a higher probability of being targeted for bribes.

Marital status is a further control variable (dummy variable, value 1 if the respondent is married and 0 otherwise). Married people may be more compliant than others, especially compared to single people because they are more constrained by their social network (Tittle 1980). It is also argued that marriage alters public behavior (Swamy et al. 2001). Tittle (1980) finds significant differences between the various marital statuses. However, controlling for age, the results show that the association between deviance and marital status is a reflection of age difference, as older persons are more likely to be married or widowed and age was a strong predictor of deviance. Gottfredson and Hirschi (1990) also point out that in the literature on crime marital status does not seem to have an impact on the likelihood of crime.

As a proxy for income we use the economic situation of an individual (dummy variable for *UPPER CLASS* with the remaining individuals in the reference group). Using the exact income would produce biases, because this variable is not comparable across different countries. Individuals with a higher income are more likely to be asked for a bribe, as are those with a better education. Individuals with a lower income might have lower social “stakes” or restrictions but are less in a position to take risks because of a high marginal utility loss (wealth reduction) if they are caught and penalized behaving illegally. The literature on tax evasion has

shown that depending on risk preferences and the progression of the income tax schedules, income may increase or reduce tax evasion (Torgler and Schneider 2006).

An important variable to include is the occupation status, as it allows us to take into consideration that women may disapprove corruption because they are less likely to be employed and thus less in the position to benefit from corruption (see Swamy et al. 2001). The literature on tax compliance suggests that self-employed persons have higher compliance costs, which leads to a stronger incentive to evade taxes. Taxes are more visible for the self-employed, who have a higher opportunity to evade or avoid them. (Torgler and Schneider 2006). Thus, their willingness to comply may be lower. Being unemployed may have an impact on the norms regarding bribery. Being away from a job with its regular hours, restrictions, and compensations may increase the incentive to act illegally. In addition to a dummy variable for unemployment, we use a dummy variable for self-employed individuals as they might be in the best position to invest in bribing and benefit from corruption.

Empirical Results

Table 1 presents the first results for both dependent variables. Four specifications are reported. In EQ1 and 3 we use the whole data set available to investigate gender differences. In EQ2 and EQ4 we control for a possible cohort and age effect investigating five different generations, using the 36 to 44 year old respondents in the 1999 survey as a reference group, i.e. all other dummy variable coefficients show the difference in attitudes between the reference group and the attitudes of another age group in the 1999 or another survey. In a first step, the four estimations are not controlling for the economic classes, due to the fact that the economic

class variable has a relatively high number of missing values. Looking at all regression, we find a strong gender effect. Being a woman rather than a man increases the probability of stating that corruption or tax evasion is never justifiable between 5.8 and 7.1 percentage points. Thus, we observe a strong quantitative effect. EQ1 and 3 also indicate a statistically significant age effect. EQ2 and 4 provide further insights differentiating between a cohort and age effect. Looking at GENERATION 1, we observe that there is a strong age effect. Greater age is correlated with a lower justifiability of corruption and tax evasion. The proportion of persons aged 18-26 in 1981 who report the lowest justifiability of corruption (highest social norm) and tax evasion (tax morale) is more than 15 and, respectively, 10.4 percentage points lower than for the same cohort 18 years later. Similarly, the same cohort group reports a higher justifiability of illegal activities in 1990 compared to 1999, with marginal effects around 5 percentage points. Thus, we not only observe statistically significant coefficients and relatively high marginal effects, but also an increase of the marginal effects over time. To check whether there is also a cohort effect we compare the reference group (age 36-44 in year 1999) with the same age categories in 1981 (GENERATION 2) and in 1990 (GENERATION 3). The coefficient estimates for corruption are in most of the cases negative (-0.042 and -0.077 for corruption, -0.074 and 0.013 for tax evasion) and the coefficients are never statistically significant. Thus, focusing on men and women, we observe an age effect but no cohort effect. The age effect is additionally supported when focusing on age groups higher than 36-44 in other generations (especially for the justifiability of tax evasion).

Looking at the control variables in *Table 1* we find a statistically significant effect of EDUCATION on the JUSTIFIABILITY OF CORRUPTION, but not on the JUSTIFIABILITY OF TAX EVASION. In both cases, married people have also a higher social norm regarding

illegal activities (lower justifiability) than individuals with another marital status. Being married increases the share of persons indicating that accepting a bribe is never justifiable by more than 3 percentage points and increases the probability of stating that tax evasion is never justifiable by more than 4 percentage points. Thus, we observe similar quantitative effects. On the other hand, we do not find a statistically significant effect of the employment status on individuals' justifiability of corruption, but a certain effect regarding the justifiability of evading taxes. Specifically, being self-employed increases the justifiability of evading taxes quite substantially (marginal effects around 5 percentage points).

[TABLE 1 ABOUT HERE]

Next, *Table 2* reports several robustness checks for the gender effect summarizing the results of 30 regressions (see EQ5 to 34). The first result column focuses on the justifiability of corruption, the second on the justifiability of tax evasion (tax morale). This allows us to get a broader picture of gender differences. For simplicity, in most of the cases only the coefficient for the variable WOMAN is reported. First, we use a probit instead of an ordered probit model (EQ5 to 8). A relatively high number of responses stating that corruption and tax evasion is never justifiable allows the use of a probit model in which our dependent variables take the value 1 for a response that illegal activities are never justifiable and zero otherwise. As can be seen, the coefficient WOMAN remains highly statistically significant with similar marginal effects (between 5.5 and 6.4 percentage points).

Next, *Table 2* reports estimations using each of the years in our sample (1981, 1990 and 1999) separately (EQ9 to 14). The role theory would suggest that a greater equality of status

between men and women over time would lead to decreasing gender differences. However, such an argument is not supported by our results. Gender differences remain statistically significant in all three time periods and we cannot observe a decay in the marginal effects over time. The tax morale variable even indicates an increase of the marginal effects (5.5 to 8.5 percentage points). Thus, focusing on different time periods supports the previous findings of a gender effect.

We also investigate every single country in our data set (EQ15 to 26). Gender differences might be less obvious in Northern European countries where women have established greater equality (e.g., stronger labor force participation etc.). However, as before, in these estimations the gender effect is quite significant and we cannot observe strong regional differences. Looking at corruption all coefficients are statistically significant with marginal effects between 4.5 (Italy) and 9.4 (Belgium). Similar results are observable for tax evasion. The marginal effects vary between 0.8 (Italy) and 13 percentage points (Denmark). Only in one case the coefficient was not statistically significant. Surprisingly, it was Italy a country from the south.

Finally, we extend the previous EQ2 and 4 by including additional control variables (EQ27 to 34). First, we include a proxy for the economic situation (UPPER CLASS). This variable was not included in our models originally as it reduces the number of observations (from 24911 to 21820 (corruption) and 24967 to 21681 (tax evasion)). Gender differences are not affected by adding individuals' economic situation. The coefficient is still highly statistically significant with robust marginal effects (no change for corruption, slight reduction from 6.8 to 6.4 percentage point for tax evasion). The effect of economic class is similar to that of education, i.e. the highest economic class has the lowest justifiability of corruption with a marginal effect of 2.3 percentage points. On the other hand, the coefficient is not statistically significant focusing on the justifiability of tax evasion (also in line with the variable education).

The next three estimations in *Table 2* still control for the economic situation but we also add variables for trust in the state and national pride. Torgler and Schneider (2006) show that these are key variables to understand the level of tax morale. The first four estimations focus on trust. The relationship between taxpayers and government can be seen as a relational or psychological contract, which involves strong emotional ties and loyalties. Taxes are a price paid for government actions and maintenance of a fair legal system. If taxpayers trust the state institutions, they are more willing to be honest. We are going to use two proxies that measure individuals' trust: trust in the legal system and trust in the parliament⁵. The last one focuses on national pride. The sense of group identification produced by national pride encourages cooperative behavior and thereby influences citizen behavior in groups, organizations, and societies (Tyler 2000). We can also expect that these factors affect the justifiability of corruption in a similar manner. A stronger legitimacy of the political system reduces the justifiability of corruption. In line with Torgler and Schneider (2006) we have included these groups of variables sequentially in the estimations to reduce possible criticism of conceptual similarities between them and our two dependent variables. All six estimations report statistically significant coefficients for the legitimacy of the state system, with higher marginal effects for the dependent variable tax morale. The coefficient WOMAN remains statistically significant showing marginal effects between 6 and 9.1 percentage points for tax morale and more than 5 percentage points for the justifiability of corruption.

[TABLE 2 ABOUT HERE]

⁵ Corresponding question: Could you tell me how much confidence you have in the *legal system/parliament*: is it a great deal of confidence, quite a lot of confidence, not very much confidence, or none at all? (4 = a great deal to 1 = none at all).

After observing a strong and robust gender effect, we take a closer look at different women generations with the objective to investigate further the cohort and age effects specifically for female respondents. *Table 3* presents these results. In the first and third regression of the table we use the 36 to 44 year old women in the 1999 survey as a reference group for both dependent variables. The only difference in the second and fourth regression is that we use a different reference group: those 45-53 in 1999. The results of all these estimations are the same. However, reporting estimations using a different reference group makes the interpretation of coefficients more straightforward and allows us to check the robustness of the results. To better visualize the results, age and cohort effects are in bold, additionally the age effect in italics. In line with *Table 1*, we are not able to find a cohort effect, but observe an age effect. Comparing women's age group 36-44 in the year 1999 with the same age group in 1990 (GENERATION 2) and 1981 (GENERATION 3) leads to the conclusion that there is no cohort effect (coefficients are not significantly different). Similarly, comparing the age group 45-53 in 1999 of the GENERATION 2 (reference group) with the same age group in 1981 (GENERATION 4) and 1990 (GENERATION 3) leads to similar results. On the other hand, looking at the results under the heading GENERATION 1 shows that being at the age of 36-44 in 1999 rather than 18-26 in 1981 increases the probability of arguing that accepting a bribe or cheating on taxes is never justifiable by 15.7 and 9 percentage points. GENERATION 2 also indicates that the probability of stating that corruption or tax evasion is never justifiability is lower at the age 36-44 year 1990 and age 27-35 year 1981 compared to the reference group (age 45-53 year 1999). However, statistical significant differences between our reference groups (age 36-44 YEAR 1999 and age 45-53 YEAR 1999) and other age groups in 1999 are only observable after one or two generations.

4. Concluding remarks

This empirical study uses the World Values Survey and the European Values Survey data covering eight Western European countries spanning the period from 1981 to 1999 to shed some light on the extent to which citizens perceive corruption and tax evasion as a justifiable phenomenon. The major goals of the paper are to investigate whether gender matters and whether the gender effect is related to the age groups in different time periods (cohort effect) or changing attitudes of the same cohorts over time (age effect). Furthermore, the multivariate analysis allows us to isolate the impact of these effects from other “life-course” explanations such as marriage, employment, education or economic situation. Despite an increasing interest in the determinants of corruption and tax evasion and contrary to the criminology literature, this aspect has been widely neglected in the economics literature. Thus, it is highly relevant to investigate empirically this question as previous studies working mostly with cross-sectional data have failed to separate the age and cohort effects.

In general, we find evidence for strong gender differences. Women are significantly less likely to agree that corruption and cheating on taxes can be justified. This result remains robust after conducting several robustness tests (presenting 34 different estimations). The results have some interesting political implications. Increasing the number of women in the government or the public administration may help to reduce the level of corruption, which would benefit society. However, such a recommendation or policy implication should be treated with caution. Although we tested the robustness in detail, it is still possible that other factors are causing the differences. For example, the relationship between gender and illegal activities may decrease after controlling for additional characteristics such as risk attitudes. Moreover, the limited

number of studies in the area of corruption provides a somewhat mixed picture and more evidence in line with the criminology literature is required to provide a solid policy recommendation.

Focusing on women's willingness to comply, we were not able to find differences in women's attitudes among similar age groups in different time periods. Thus, the results don't support a cohort effect. However, we could observe a strong and robust age effect. Thus, our results are not in line with the equality and role theory that would suggest a decrease of gender differences with greater equality of status between men and women over time. Our results were also supported when focusing independently on different time periods in *Table 2*. We also observed an age rather than a cohort effect when investigating the entire data set (men and women) in *Table 1*.

How is this result explained, taking into account that we live in a rapidly changing world? One reason could be that in a highly developed and stable region such as Western Europe cohort effects among women are less likely to appear. Focusing on developing and transition countries, where women were faced with greater changes during our investigated period of 18 years, may lead to different results. The strong economic, social and cultural changes in these regions in the last decades have lead to new opportunities and a new role for women in society (Abramo and Valenzuela 2005). For example, in Latin America 33 million women joined the labor force between 1990 and 2004 (Abramo and Valenzuela 2005, p. 373). Unfortunately, the WVS/EVS does not allow us to investigate developing and transition countries in such a consistent manner as done in this study, covering a period of 18 years. Thus, our present study is a first attempt to examine how cohort and age effects affect attitudes towards corruption and tax evasion. Future research can shed more light onto this complex relationship.

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Table 1: Gender Effect

DEPENDENT VARIABLE WEIGHTED ORDERED PROBIT	JUSTIFIABILITY OF CORRUPTION						JUSTIFIABILITY OF TAX EVASION					
	Coeff.	z-Stat.	Marg. Effects	Coeff.	z-Stat.	Marg. Effects	Coeff.	z-Stat.	Marg. Effects	Coeff.	z-Stat.	Marg. Effects
INDEPENDENT VARIABLES	<i>EQ1</i>			<i>EQ2</i>			<i>EQ3</i>			<i>EQ4</i>		
a) Demographic Factors												
WOMAN	0.177***	9.17	0.058	0.182***	7.96	0.058	0.179***	10.44	0.071	0.171***	8.49	0.068
AGE	0.014***	21.16	0.004				0.014***	25.40	0.005			
GENERATION 1												
AGE 18-26 YEAR 1981				-0.417***	-9.51	-0.15				-0.262***	-6.64	-0.104
AGE 27-35 YEAR 1990				-0.111**	-2.18	-0.04				-0.139***	-3.02	-0.055
AGE 36-44 YEAR 1999				Reference	group					Reference	group	
GENERATION 2												
AGE 27-35 YEAR 1981				-0.299***	-5.87	-0.103				-0.148***	-3.15	-0.059
AGE 36-44 YEAR 1990				-0.042	-0.79	-0.01				-0.074	-1.56	-0.030
AGE 45-53 YEAR 1999				0.058	1.14	0.018				0.090***	2.13	0.035
GENERATION 3												
AGE 36-44 YEAR 1981				-0.077	-1.34	-0.03				0.013	0.25	0.005
AGE 45-53 YEAR 1990				0.11*	1.88	0.034				0.027	0.54	0.011
AGE 54-62 YEAR 1999				0.107**	2.01	0.033				0.153***	3.42	0.060
GENERATION 4												
AGE 45-53 YEAR 1981				0.007	0.11	0.002				0.191***	3.55	0.075
AGE 54-62 YEAR 1990				0.254***	4.12	0.075				0.119***	2.28	0.047
AGE 63-71 YEAR 1999				0.276***	4.85	0.081				0.292***	6.04	0.113
GENERATION 5												
AGE 54-62 YEAR 1981				0.046	0.73	0.015				0.286***	5.08	0.111
AGE 63-71 YEAR 1990				0.281***	4.12	0.082				0.254***	4.40	0.099
AGE 71-80 YEAR 1999				0.295***	4.19	0.085				0.386***	6.56	0.147
EDUCATION	0.015***	5.36	0.005	0.009***	2.72	0.003	0.002	0.79	0.001	-0.002	-0.72	-0.001
b) Marital Status												
MARRIED	0.133***	6.53	0.044	0.100***	3.8	0.032	0.115***	6.41	0.046	0.110***	4.69	0.044
c) Employment Status												
SELFEMPLOYED	-0.034	-0.92	-0.011	-0.056	-1.34	-0.018	-0.131***	-4.02	-0.052	-0.128***	-3.52	-0.051
UNEMPLOYED	-0.065	-1.64	-0.022	-0.092*	-1.84	-0.03	-0.062*	-1.71	-0.025	-0.043	-0.95	-0.017
Country Dummies	yes			yes			yes					
Number of observations	33525			24911			33624			24967		
Prob > chi2	0.00			0.000			0.000			0.000		
Pseudo R2	0.040			0.0385			0.036			0.029		

Notes: Robust standard errors. AGE 36-44 YEAR 1999 is the reference group in EQ2 and EQ4. Other reference groups: MALE, OTHER MARRIED STATUS, HER EMPLOYMENT STATUS. Significance levels: * 0.05 < p < 0.10, ** 0.01 < p < 0.05, *** p < 0.01. Marginal effect = highest score (JUSTIFIABILITY OF CORRUPTION AND JUSTIFIABILITY OF TAX EVASION=3). JUSTIFIABILITY OF CORRUPTION/TAX EVASION (TAX MORALE): the higher the value the lower the justifiability.

Table 2: Robustness Check

<i>DEPENDENT VARIABLE</i>	<i>JUSTIFIABILITY OF CORRUPTION</i>			<i>JUSTIFIABILITY OF TAX EVASION</i>		
	<i>Coeff.</i>	<i>z-Stat.</i>	<i>Marg. Effects</i>	<i>Coeff.</i>	<i>z-Stat.</i>	<i>Marg. Effects</i>
<i>ROBUSTNESS CHECK</i> EQ5 – EQ34						
<i>INDEPENDENT V. (ALL OTHER CONTROLLED)</i>						
MODEL: PROBIT INSTEAD OF ORDERED PROBIT (EQ5 – 8)						
<i>Structure in line with EQ1/EQ3</i>						
WOMAN	0.173***	8.62	0.056	0.160***	8.74	0.064
<i>Structure in line with EQ2/4</i>						
WOMAN	0.172***	7.26	0.055	0.147***	6.82	0.058
YEAR (EQ9-14)						
<i>1981</i>						
WOMAN	0.213***	6.11	0.072	0.141***	4.40	0.055
<i>1990</i>						
WOMAN	0.123***	3.46	0.040	0.195***	6.23	0.078
<i>1999</i>						
WOMAN	0.196***	6.79	0.060	0.213***	8.41	0.085
COUNTRIES (EQ15-26)						
<i>FRANCE</i>						
WOMAN	0.190***	4.09	0.071	0.214***	4.81	0.085
<i>GREAT BRITAIN</i>						
WOMAN	0.184***	3.51	0.055	0.218***	4.61	0.086
<i>ITALY</i>						
WOMAN	0.140***	3.28	0.045	0.022	0.59	0.008
<i>THE NETHER LANDS</i>						
WOMAN	0.250***	4.51	0.088	0.206***	4.00	0.081
<i>DENMARK</i>						
WOMAN	0.413***	4.84	0.058	0.348***	6.17	0.130
<i>BELGIUM</i>						
WOMAN	0.249***	5.31	0.094	0.144***	2.91	0.053
ADDITIONAL CONTROL V. BASED ON EQ. 2/4 INCLUDING ECONOMIC SITUATION (EQ27 – 34)						
<i>UPPER CLASS</i>						
WOMAN	0.069**	2.54	0.023	0.034	1.38	0.013
<i>TRUST SYSTEM</i>						
WOMAN	0.177***	7.34	0.058	0.162***	7.50	0.064
<i>TRUST PARLIAMENT</i>						
WOMAN	0.038**	2.58	0.013	0.117***	8.83	0.046
<i>NATIONAL PRIDE</i>						
WOMAN	0.169***	6.95	0.056	0.151***	6.92	0.091
<i>WOMAN</i>						
WOMAN	0.027*	1.79	0.009	0.096***	7.07	0.038
<i>WOMAN</i>						
WOMAN	0.175***	7.18	0.058	0.150***	6.83	0.06
<i>WOMAN</i>						
WOMAN	0.079***	5.02	0.026	0.153***	10.67	0.061
<i>WOMAN</i>						
WOMAN	0.165***	6.63	0.054	0.154***	6.91	0.061

Notes: 30 estimations, control variables not reported. Significance levels: * 0.05 < p < 0.10, ** 0.01 < p < 0.05, *** p < 0.01. Marginal effect ordered probit estimations = highest score (JUSTIFIABILITY OF CORRUPTION AND JUSTIFIABILITY OF TAX EVASION=3). JUSTIFIABILITY OF CORRUPTION/TAX EVASION (TAX MORALE): the higher the value the lower the justifiability.

Table 3: Women's Willingness to Comply over Time

DEPENDENT VARIABLE	JUSTIFIABILITY OF CORRUPTION						JUSTIFIABILITY OF TAX EVASION					
	Coeff.	z-Stat.	Marg. Effects	Coeff.	z-Stat.	Marg. Effects	Coeff.	z-Stat.	Marg. Effects	Coeff.	z-Stat.	Marg. Effects
WEIGHTED ORDERED PROBIT	EQ35			EQ36			EQ37			EQ38		
INDEPENDENT VARIABLES												
<i>a) Demographic Factors</i>												
GENERATION 1												
AGE 18-26 YEAR 1981	-0.453***	-6.40	-0.157	-0.501***	-6.66	-0.175	-0.228***	-3.55	-0.090	-0.330***	-4.92	-0.131
AGE 27-35 YEAR 1990	-0.129	-1.61	-0.042	-0.177**	-2.12	-0.058	-0.127*	-1.78	-0.050	-0.230***	-3.13	-0.091
AGE 36-44 YEAR 1999	reference	group		-0.048	-0.59	-0.015	reference	group		-0.103	-1.45	-0.041
GENERATION 2												
AGE 27-35 YEAR 1981	-0.269***	-3.32	-0.090	-0.317***	-3.76	-0.107	-0.108	-1.48	-0.043	-0.210***	-2.82	-0.084
AGE 36-44 YEAR 1990	-0.020	-0.24	-0.006	-0.069	-0.80	-0.022	0.027	0.37	0.011	-0.075	-0.99	-0.030
AGE 45-53 YEAR 1999	0.048	0.59	0.015	reference	group		0.103	1.45	0.040	reference	group	
GENERATION 3												
AGE 36-44 YEAR 1981	0.030	0.34	0.009	-0.018	-0.20	-0.006	0.067	0.84	0.026	-0.036	-0.45	-0.014
AGE 45-53 YEAR 1990	0.074	0.84	0.023	0.025	0.28	0.008	0.085	1.09	0.033	-0.017	-0.22	-0.007
AGE 54-62 YEAR 1999	0.102	1.10	0.031	0.054	0.57	0.017	0.100	1.30	0.039	-0.002	-0.03	-0.001
GENERATION 4												
AGE 45-53 YEAR 1981	-0.043	-0.47	-0.014	-0.092	-0.97	-0.030	0.130	1.60	0.050	0.027	0.33	0.011
AGE 54-62 YEAR 1990	0.303***	3.08	0.086	0.254**	2.55	0.073	0.169**	2.07	0.065	0.066	0.81	0.026
AGE 63-71 YEAR 1999	0.371***	3.96	0.102	0.322***	3.40	0.090	0.215***	2.62	0.083	0.113	1.36	0.044
GENERATION 5												
AGE 54-62 YEAR 1981	0.063	0.66	0.019	0.015	0.15	0.005	0.180**	2.13	0.070	0.078	0.91	0.030
AGE 63-71 YEAR 1990	0.171	1.62	0.051	0.123	1.15	0.037	0.171*	1.89	0.066	0.069	0.76	0.027
AGE 71-80 YEAR 1999	0.318***	2.74	0.089	0.270**	2.31	0.077	0.305***	3.05	0.116	0.203**	2.01	0.078
EDUCATION	0.011*	1.89	0.004	0.011*	1.89	0.004	-0.015***	-2.90	-0.006	-0.015***	-2.90	-0.006
<i>b) Marital Status</i>												
MARRIED	0.042	1.08	0.013	0.042	1.08	0.013	0.043	1.25	0.017	0.043	1.25	0.017
<i>c) Employment Status</i>												
SELFEMPLOYED	-0.163**	-2.01	-0.054	-0.163**	-2.01	-0.054	-0.200***	-2.82	-0.079	-0.200***	-2.82	-0.079
UNEMPLOYED	-0.179**	-2.22	-0.059	-0.179**	-2.22	-0.059	-0.066	-0.87	-0.026	-0.066	-0.87	-0.026
<i>d) Economic Variables</i>												
UPPER CLASS	0.081**	2.08	0.025	0.081**	2.08	0.025	0.015	0.45	0.006	0.015	0.45	0.006
Country Dummies	yes			yes			yes			yes		
Number of observations	11451			11451			11480			11480		
Prob > chi2	0.000			0.000			0.000			0.000		
Pseudo R2	0.032			0.032			0.020			0.020		

Notes: Robust standard errors. AGE 36-44 YEAR 1999 is the reference group in EQ. 36 and EQ. 38, AGE AGE 45-53 YEAR 1999 in in EQ. 37 and EQ. 39. Other reference groups: MALE, OTHER MARRIED STATUS, HER EMPLOYMENT STATUS, LOWER CLASSES. Significance levels: * 0.05 < p < 0.10, ** 0.01 < p < 0.05, *** p < 0.01. Marginal effect = highest score (JUSTIFIABILITY OF CORRUPTION AND JUSTIFIABILITY OF TAX EVASION=3). JUSTIFIABILITY OF CORRUPTION/TAX EVASION (TAX MORALE): the higher the value the lower the justifiability.

APPENDIX

Table A1. Description of variables

Variable	Derivation
AGE	DUMMIES AGE 30-49, AGE 50-64, 65+ (reference group, AGE < 30)
GENDER	FEMALE (MALE in the reference group)
EDUCATION	Continuous variable At what age did you or will you complete your full time education, either at school or at an institution of higher education? Please exclude apprenticeships
MARITAL STATUS	DUMMY: MARRIED=1, all other classes (divorced, separated, widowed, single) in the reference group.
Economic CLASS	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: DUMMY: UPPER CLASS and UPPER MIDDLE CLASS, the rest (lower middle class, working class and lower class) is the reference group.
OCCUPATION STATUS	TWO DUMMIES: SELFEMPLOYED, UNEMPLOYED, the rest (part time employed, at home, student, retired, other) is in the reference group.

Source: Inglehart et al. (2000).