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RELIGIOUS LOYALTY AND ACCEPTANCE OF CORRUPTION

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Abstract

This study investigates the relationship between religiously-induced internalized values of individuals and their specific attitudes regarding the acceptance of corruption. The dataset, on which our study is based, was collected by the World Values Survey from 139,826 individuals in 78 countries surveyed during a period of 13 years. We propose that individual attitudes towards corruption and religion are associated given certain societal and institutional contexts. Our results show that although there is a negative and statistically significant effect of religiosity on the acceptance of corruption on the individual level, this effect is small. We find that there is a threshold value of religiosity below which corruption is more easily accepted by individuals. Our interpretation for this result is simple: individuals with minimal religiosity are generally less constrained by religious norms; specifically, religious norms that are opposed to corruption are less binding on these individuals, resulting in them having a greater propensity to accept corruption. Religiosity, therefore, does lower the acceptance of corruption only when it exceeds a certain threshold for a specific individual.

JEL Classification: A1, D0, D1, D7, K4, Z1

Keywords: Religion, Corruption, Institutions, Preferences

ملخص

تبحث هذه الدراسة العلاقة بين القيم الدينية الكامنة للأفراد ومواقفهم المحددة بشأن قبول الفساد. تم جمع مجموعة من البيانات التي تستند إليها دراستنا من مسح القيم العالمية من 139826 شخص في 78 بلدا شملها المسح خلال فترة 13 عاما. نقترح أن المواقف الفردية تجاه الفساد والدين ترتبط بالنظرة المجتمعية والسياقات المؤسسية. تظهر نتائجنا أنه رغم أن هناك تأثير سلبي وذات دلالة إحصائية بأن التدين يمنع من قبول الفساد على المستوى الفردي، الا أنه أثر صغير. نجد أن هناك قيمة للحد الأدنى من التدين والتي يتم أدناها قبول الفساد بشكل أكثر سهولة من قبل الأفراد. ولدينا بسيط تفسير لهذه النتيجة وهو أن الأفراد مع وجود الحد الأدنى من التدين عموما يكونون أقل تقيدا بالأعراف الدينية؛ وعلى وجه التحديد، فان المعايير الدينية التي تعارض الفساد تكون ملزمة بشكل أقل على هؤلاء الأفراد، مما أدى إلى وجود ميل أكبر لقبول الفساد.

1. Introduction

The concept of corruption has no universally accepted definition (Bhattarai, 2009). Nevertheless, international organizations have reached a de facto consensus about the grave negative effects of corruption on both global and local levels. The World Bank classifies corruption as "the single greatest obstacle to economic and social development" (Duasa, 2008, p. 2), while Transparency international identifies corruption in its mission statement as "one of the greatest challenges of the contemporary world. It undermines good government, fundamentally distorts public policy, leads to the misallocation of resources, harms the private sector and private sector development and particularly hurts the poor" (Transparency International, 2011). In a world economy that was worth USD 30 trillion in 2001-2002, The World Bank estimates that about USD 1 trillion are paid out in bribes each year, globally (World Bank, 2004). Transparency International, in its annual report on global corruption, calculated in 2004 that, worldwide, public procurement lost at least USD 400 billion per year due to bribery. (Transparency International, 2006).

This study investigates the relationship between religiously induced internalized values of individuals and their specific attitudes regarding the acceptance of corruption. Based on the principles of the New Institutional Economics (NIE), we propose that individual attitudes toward corruption and religion are associated with certain given societal and institutional contexts. We use data collected by the World Values Survey (WVS) from 139,826 individuals in 78 countries surveyed in 13 different years.

Our results show that, although there is a negative and statistically significant effect of religiosity on the acceptance of corruption by individuals, the effect is small. Interestingly, we find that those people who have a value of religiosity below a certain threshold have a greater acceptance of corruption. Our interpretation for this result is simple: individuals with minimal religiosity are generally less restricted by religious norms, including those norms that are opposed to corruption, resulting in them having a greater propensity to accept corruption. Religiosity does lower the acceptance of corruption only when it exceeds the threshold for a specific individual. We find that religiosity's effect on the acceptance of corruption does not systematically differ among individuals of different religious denominations. In addition, our results show that the more accepted corruption is at the societal level, the less of a mitigating effect religiosity has on the individual's acceptance of corruption.

This study is divided into six sections. The next section provides a multi-disciplinary literature review on religiosity and corruption while section three presents the theoretical basis for this study as well as our hypotheses. This is followed by a description of our methodology in section four, the empirical results in section five and conclusions in section six.

2. Literature Review

There are two previous studies that analyze individual attitudes toward corruption and religiosity. Guiso, Sapienza and Zingales (2003) (hereafter GSZ) investigate the effect of religion on people's economic attitudes, while controlling for country-fixed effects. GSZ use data collected by the World Values Survey (WVS) in three surveys (1981-1984, 1990-1993 and 1995-1997) which covered 66 countries. GSZ employ three distinct measures of religiosity simultaneously in each estimation:

- "Raised religiously"; the answer takes on a value of 1 when the respondent answered positively to the question "Were you brought up religiously at home?''
- "Currently religious"; the answer takes on a value of 1 when the respondent affirms having attended religious services (apart from weddings, funerals and christenings) at least once a year.

- "Actively religious"; the answer takes on a value of 1 when the respondent affirms having attended religious services (apart from weddings, funerals and christenings) at least once a week.

As for the dependent variables, GSZ categorize economic attitudes into six categories; attitudes toward cooperation, women, government, thriftiness, the market economy and its fairness, and legal rules. GSZ base their measurements of the latter category on the answer to a specific question asking if the respondents think that certain illegal acts are justifiable using a scale between 1 (never justifiable) and 10 (always justifiable). The illegal acts in question are; claiming government benefits to which the respondent is not entitled, avoiding paying the fare on public transport, tax frauds, buying stolen goods and accepting bribes. OLS regression results measuring the effect of religiosity on acceptance of bribery, mostly find negative effects, regardless of whether they include all religious denominations or estimate separately for each denomination. However, as some of these estimated effects are not statistically significant, GSZ conclude that no inference is possible concerning which religion might be better in terms of the economic outcomes.

The second study that we build upon is that of Gatti, Paternostro and Rigolini (2003) (GPR hereafter). While the study of GSZ is broader than ours with respect to the variables, GPR's study investigates a wider range of social effects of attitudes toward corruption. GPR also use data from the WVS, although with a much smaller sample size than that used by GSZ and us, because their analysis mainly focuses on the WVS' third survey.

Effects of religiosity are captured by including denomination dummies and a dummy for regular church attendance. GPR find that regular church attendance is negatively associated with acceptance of corruption. They also find that Catholic/Jewish respondents are characterized by a higher/lower acceptance of corruption.

Our study differs from those of GSZ and GPR on several levels. (1) We focus on the relationship between attitudes toward corruption and religiosity from an NIE perspective; (2) we use a larger sample, as we are able to include the latest wave of WVS survey responses; (3) we use a synthetic religiosity index instead of three dummy indicators or just a dummy for church attendance; (4) we treat attitudes toward corruption as a binary indicator, due to a very skewed distribution.

Attempts to build a theoretical model to analyze corruption's causes and consequences are numerous (Nas, Price, & Weber, 1986; Caiden, 1988; Shleifer & Vishny, 1993; Mishra, 2006; Khan, 2006; Guerrero & Rodriguez-Oreggia, 2008; Matei & Matei, 2009). These studies are not only based on economic perspectives but also on other specialist fields, including finance, public administration, sociology and political science. However, economists were generally interested in specifically modeling the relation between corruption and economic development (Macrae, 1982; Ehrlich & Lui, 1999; Barreto R. A., 2000; Mauro, 2002; Barreto & Alm, 2003; Basu, 2006). As for the empirical research, a growing number of studies investigate the causes and effects of corruption across countries (Mauro, 1995; Ades A. D., 1997; Van Rijckeghem & Weder, 1997; Wei, 1997; Mauro, 1998; Lambsdorff, 1999; Rose-Ackerman, 1999; Jain, 2001; Herzfeld & Weiss, 2003). These studies have searched for empirical correlations between corruption and a variety of economic and non-economic determinants. However, there is still no commonly accepted theory on which to base an empirical model of the causes of corruption (Alt & Lassen, 2003).

Corruption was only recently incorporated in the studies of sociologists through their examination of social deviance (Naumova, 2009). Marquette (2010) asserts that the influence of religion on attitudes towards corruption is not clear, as many other factors come into the formation of these attitudes such as gender, age, education level and the nature of religion and the religious community involved. This claim is supported by the study of Hirschi and Stark

(1969) who investigate the relation between church attendance and delinquent attitudes and behavior. They find that attendance at church influences neither actual delinquent acts nor attitudes towards delinquency, even amongst respondents who believe in a literal hell and the devil.

The results of the latter study contradict those of Tittle and Welch (1983) wherein the demographics and the religious affiliations of residents of several US states are surveyed. The authors find that there is little or no difference between religious and non-religious respondents regarding behavior that is condemned by society as a whole, such as major theft, assault and tax evasion. However, significant differences are found when it comes to behavior that is not widely condemned by society, such as pot smoking and not standing for the national anthem. This implies that the deterrent impact of religion on attitudes concerning corrupt behavior positively correlates with the intensity of social condemnation of such behavior.

Beets (2007) gives two main arguments as to why religiosity might encourage people to resist corruption: (1) the ill-treatment of others, theft and dishonesty are not compatible with adherence to a religion; (2) religion provides moral guidance to its adherents. These two arguments are supported by Treisman (2000), Brunetti and Weder (2003), Herzfeld and Weiss (2003), Braun and Di Tella (2004), Kunicova and Rose Ackerman (2005), and Lederman, Loayza, & Soares (2005). North, Orman and Gwin (2013) argue that a religious society is expected to demonstrate a higher degree of morality than a non-religious one. Therefore, it is assumed that in countries where religion plays an essential role in the lives of most people, civic employees, as well as others, are likely to obtain their ethical framework at least partly from their religion: this, in turn, will directly influence their tendency to commit corrupt acts. Religion is said to provide its followers with a code of ethics, some of which are of significant importance in the battle against corruption. However, as Marquette (2010) argues, there is a logical error in this argument because it presupposes that all religions emphasize the same moral codes. In actuality, a considerable body of literature proposes that followers of different religions – or even sects of a religion – hold divergent opinions on what constitutes morality (Guiso, Sapienza, & Zingales, 2003; Al-Marhubi, 2004; Durkheim, 1912/1915; Weber, 2010; Jagodzinski, 2009). Luxmoore (1999) attempts to rebut this claim by assuming that because certain values such as fairness and honesty are basic teachings of most - if not all - religions, these same religions can therefore be used as an antidote for corruption. In Table 4, we document how some of the main sources of the major world religions stress the immorality of theft and bribery.

Contradicting the assumption by Luxmoore (1999), Marquette (2010) “many of the most corrupt countries in the world (according to Transparency International’s Corruption Perception Index) also rank high in terms of religiosity (using indicators such as those used by the Pew Global Attitudes Project)”. This apparent contradiction has two main explanations. First, in countries where a high level of both religiosity and corruption exists, other endogenous factors may be affecting them both: for example, the presence of a corrupt theocratic leadership in a certain country. Investigating such endogenous factors is beyond the scope of most literature focused on the religion-corruption nexus. However, some control variables relating to the political and social environment in sampled countries are taken into consideration. Second, the level of religiosity might not be the only important explanation when investigating its relation to the perceived corruption levels and the type of religion. For that reason, various studies use the type of religion as an explanatory variable and show that it has a significant effect on the level of corruption in the sampled countries (La Porta, De-Silanes, Shleifer, & Vishny, 1999; Treisman, 2000; Paldam, 2001; Beets, 2007; Mutascu, 2010). However, other studies find an insignificant relation between the public level of adherence to a certain religion in a country and the country’s perceived level of corruption (North, Orman, & Gwin, 2013; Flavin & Ledet, 2008).

Several economic literature studies investigate the relation between religion and corruption (La Porta, De-Silanes, Shleifer, & Vishny, 1999; Treisman, 2000; Paldam, 2001; Chang & Golden, 2007). Treisman (2000) shows that religion reduces corruption since it helps civil society to be more organized and ensures that citizens are more likely to monitor elite groups. Paldam (2001) argues that religion may limit the effects of corruption and notes, for example, that the percentage of Protestants in a country is reciprocally related to corruption level. According to Flavin and Ledet (2008), scholars debate the appropriate measurement of religiosity, and explain that this is partly due to "…disagreements… about how best to quantify religion and an individual's underlying "level" of religious belief and devotion when referring to the different ways in which religiosity can be assessed". Religion was assessed through examining the "dominant religion" or "the religion of majority" in a certain country. However, most of these studies are flawed because they assume that, if an individual ascribes to a certain religion, their behavior is bound by the rules of that religion. The level of adherence to a religion is not investigated in these studies and that might significantly impact the overall conclusion.

We can deduce from the foregoing, that, although theoretical arguments supporting the negative relation between religion and corruption may seem valid and logical, the results of the considerable body of empirical literature addressing this issue remain controversial and inconclusive. Marquette (2010) states "that the evidence for a causal relationship between religion (or types of religion) and either higher or lower levels of corruption is in no way convincing". The author argues that the data - on religion - used in the majority of these studies are aggregated at the country level. Therefore, such studies are ill-equipped to examine aspects such as: (1) the influence of religion on how attitudes are formed, (2) how individual attitudes towards corruption are formed and (3) what are the possible strategies that the religion(s) permits or encourages its adherents to follow in order to change corrupt behavior. In order to avoid these shortcomings, this study will be based on a dataset collected by the World Values Survey.

Regarding aspect (1), we hypothesize that religion forms an essential component of the individual's morality in social groups with high rates of religiosity. As for aspect (2), we hypothesize that religions, in general, endorse honesty and suppress corruption. Therefore, as the degree of religiosity increases on the individual level, their general attitudes towards corruption conform more and more with the religion's fundamental morality teachings. It is difficult to fully assess the specific approach of every religion towards corruption. Therefore, we test the effect of religiosity on corruption by either first, considering the type of religion or second, disregarding the religious type under investigation. This allows us to assess whether religiosity generically affects corruption or, adherence to a certain religion is the main influence on the level of corruption in any given country. Concerning aspect (3), it is essential to point out that actions endorsed by a certain religion against corruption are not practiced in a vacuum. In other words, social institutions (at both group and country level), can play a major role in influencing individual attitudes towards corruption by offering various positive attitudes and appropriate actions against corruption (e.g. whistle-blowing) and limiting or suppressing other unwanted attitudes and actions (e.g., citizens' vigilante behavior against corrupt officials).

Following the tradition of the New Institutional Economics (North D. C., 1990), we argue that individual attitudes about corruption are affected not only by the legal system, i.e., formal institutions, but also by the prevailing morals and values in a society, i.e., informal institutions. Consequently, individuals who are constantly exposed to a certain religion will – to a significant extent – adopt its prescribed system of beliefs and values (i.e., informal rules) which frame their own constraints when tempted by corruption.

4. Theoretical Background

Stark and Bainbridge (1985, S. 5) and Iannaccone (1998, S. 1466) define religion as any shared set of beliefs, activities, and institutions based upon faith in supernatural forces. All religious sects investigated through this study emphasize the immorality of theft and bribery in their theological teachings. Table 4 provides a modest survey of religious texts that deal with stealing and bribery: these texts represent the foundations of these religions. A more comprehensive survey is beyond the scope of this study.

The effect of religiosity on attitudes towards corruption remains an issue for debate in the empirical literature of sociology and economics. There is a schism between theology and social sciences on the stance of different religions regarding stealing and bribery. Several theories are proposed to explain the source of this confusion[1]. We now summarize the main points of these theories.

Middleton and Putney (1962) conclude that some uncertainty is created by confusion of the scope of empirical research related to religion and morality. They emphasize that there is commonly a failure to distinguish between two different kinds of ethical standards: the ascetic (i.e., sexual inclinations, gambling) and the social (i.e., cheating, theft). Violations of social standards are harmful to every member of society, both religious and nonreligious people. However, since violations of ascetic standards are usually not directly harmful to society as a whole, the nonreligious are expected to be more prescribed by these standards than the religious. Accordingly, differences in behavior between the religious and the nonreligious are apparent in specific areas only, and are a product of divergence in standards rather than to a differential upholding of standards.

Tittle and Welch (1983) argue that individual religiosity has a significant impact on suppressing deviant behavior in highly secularized and run-down communities. In contrast, it is less of a deterrent in highly integrated and organized communities where religious morality is redundant given the other sources of moral authority and social control. Van Vleet, Cockayne and Fowles (1999, S. 12) state that most of the research investigating the relation between religion and delinquency hinges on a theory of "religious ecology". This theory proposes that religion is negatively associated with deviant behavior only when it is a part of widely accepted social values and norms that prohibit such behavior (Chadwick & Top, 1993). Stark, Kant, and Doyle (1982, S. 4) observe that "...conflicting findings stem from variations in the religious ecology of the communities studied. In communities where religious commitment is the norm, the more religious an individual, the less likely he or she will be delinquent. However, in highly secularized communities, even the most devout teenagers are no less delinquent than the most irreligious."

Kohlberg (1981) presents a different perspective, claiming that religiosity and moral reasoning are essentially separate areas of human concern. Although moral decision-making is mainly influenced by the level of cognitive development (based on, e.g., education) and exposure to the socio-moral climate, religious reasoning is based upon teachings by religious authorities that emphasize morality. In other words, moral reasoning provides moral prescriptions and religious reasoning affirms these moral judgments as meaningful. This conclusion is also apparent in Kohlberg's (1984) theory on stages of moral development, where the author argues that moral reasoning has six identifiable developmental stages. Each of these stages is more suitable for responding to moral dilemmas than its predecessor. Kohlberg (1984) states that the process of moral development is chiefly concerned with justice, and that it continues throughout the individual's lifetime, a notion that spawned dialogue on the philosophical implications of such research. As for religion and morality, Power and Kohlberg (1981) suggest

[1] Marquette (2010) provides an excellent overview of these theories.

that a seventh stage should be integrated into the theory under the title "transcendental morality" or "morality of cosmic orientation" which links religion with moral reasoning. However, Kohlberg's difficulties in obtaining empirical evidence for even the sixth stage, lead him to underline the speculative nature of this proposed seventh stage (Power & Kohlberg, 1981).

The present study focuses on investigating the specific link between the religiously induced internalized values and beliefs of individuals on the one hand and their specific attitudes regarding corruption on the other, which gives us our main hypothesis:

Hypothesis 1: Higher individual-level religiosity is associated with lower acceptance of corruption.

We focus our analysis specifically on the micro-level rather than the macro-level. An individual's degree of exposure to religion is thought to be reflected by their internalized values and beliefs and is measured through variables that demonstrate their level of religious adherence. The attitudes and beliefs concerning corruption are reflected through the survey respondents' acceptance of corrupt actions. Because our framework explicitly accounts for the micro-macro interaction in values and beliefs, i.e., the social context, we also propose the following hypothesis:

Hypothesis 2: Stronger acceptance of corruption at the societal level is associated with higher individual-level acceptance of corruption.

5. Methodology and Model Specification

Because our hypotheses relate to individual level attitudes, it is appropriate that we test them with data from individuals. Naturally, experimental data about such attitudes is difficult to generate or find[2], therefore, we use survey data taken from the World Values Survey (WVS), which measures values and attitudes in representative samples from more than 80 countries around the world. Index *i* denotes individuals surveyed, *j* denotes country of residence and *t* denotes year of survey. Our estimation sample is composed of 139,826 individuals in 78 countries surveyed in 13 different years.

Following a considerable body of literature[3], the degree of acceptance of corruption is measured by responses to the WVS question "Please tell me for each of the following statements whether you think it can always be justified, never be justified, or it's somewhere in between, that someone accepts a bribe in the course of their duties." The responses range from 1 (never justifiable) to 10 (always justifiable).

Because the responses to this question are very skewed towards 1 (almost 75%), we recode this information into a binary format. Our dependent variable $Corruption_i$ takes on a value of 0 if respondents answered that bribes are never justified, and a value of 1 otherwise. Intuitively, this procedure is in line with the observation that religious norms usually do not permit any intermediate level of corruption.

The main variable of interest, religiosity, is measured through responses to four WVS questions: (1) "Indicate how important it is in your life. Would you say it is: Religion?" (2) "Apart from weddings, funerals and christenings, about how often do you attend religious services these days", (3) "Independently of whether you go to church or not, would you say you are a religious person?", and (4) "How important is God in your life?" We construct a weighted index $Religiosity_i$ from these questions, weighted according to the results from a

[2] Armantier and Boly (2011) provide evidence from a controlled field experiment that religiosity, measured through a post-experimental question of how often the subject goes to church, is associated with a lower probability of subjects accepting bribes.

[3] See, for example, Swamy et al., (2001), Gatti, Paternostro and Rigolini (2003), You and Khagram (2005) and Esarey and Chirillo (2012)

factor analysis. In order to control for denominational differences, we also include dummies for the 7 main denominations with which the respondent might be affiliated.

In order to capture the micro-macro interaction of the theoretical framework (hypothesis 2), we include as independent variables the aggregated country-level mean for corruptibility (*Acceptance*$_{jt}$).

We estimate

$$\Pr\left(Corruption_i = 1 \mid X\right) = G\left(\beta_0 Religiosity_i + Z_i^1\beta_1 + Z_{jt}^2\beta_2 + u_i\right) \tag{1}$$

with maximum likelihood, where *G* is the standard normal cumulative distribution function, Z_i^1 is the vector containing our individual level controls and Z_{jt}^2 is the vector containing our country-level controls.

Several individual-level control variables are included in Z_i^1. We control for sex (*Male*$_i$), age (*Age*$_i$), education (*Education*$_i$), marital status (*Married*$_i$), employment status (*Unemployed*$_i$) and trust towards others (*Trust*$_i$) of the respondent. To control for income-related differences, we include an ordinal variable (*Income*$_i$) which is a subjective, self-reported assessment of the respondent's income level. We also control for the respondent's financial satisfaction (*Financial_satisfaction*$_i$), because low financial satisfaction might be associated with higher acceptance of corruption.

Unobserved heterogeneity refers to variables which cannot be accounted for, such as, the respondents' acceptance of corruption and religiosity may be affected by the year that the survey was carried out in or the country or region that they live in. There are, accordingly, two distinct approaches to arrange the vector Z^2_{jt}. The first approach is to include a full set of country and year dummies that accounts for any level differences there might be between countries in different years. The second approach is to include a wide set of time-varying country-level variables which might be relevant in influencing acceptance of corruption on a macro-level. A country's colonial history might influence its formal and informal institutions, which is why we control for it with a set of appropriate dummies (*Colonial_historyX*$_j$)[4]. More institutional variables include an indicator for quality of democracy (*Democracy*$_j$) and age of democracy (*Age_democracy*$_{jt}$). We also control for per capita income (*GDP*$_{jt}$)[5]. The two approaches for arranging the vector Z_{jt}^2 are mutually exclusive as combining country, region and year dummies with multiple country level variables would result in near perfect multicollinearity. Details on all variables can be found in Table 1 and 2.

6. Estimation Results

In Probit estimations, the marginal effect of any explanatory variable is (1) inherently non-linear and (2) conditional on values of all other covariates. The main effect of interest, i.e., the marginal effect of religiosity on the probability that corruption will be accepted is

$$\frac{\partial \Pr\left(Corruption_i = 1\right)}{\partial Religiosity_i} = g\left(\beta_0 Religiosity_i + Z_i^1\beta_1 + Z_{jt}^2\beta_2\right)\cdot\beta_0 \tag{2}$$

where $g\left(z\right) \equiv \frac{dG}{dz}(z)$. It is immediately apparent that this marginal effect needs to be evaluated at specific values of $\left(Religiosity_i, Z_i^1, Z_{jt}^2\right)$ in order to be interpreted in a meaningful way. We

[4] La Porta et. al. (1999), Treisman (2000), and Herzfeld and Weiss (2003) show that former British colonies have lower levels of corruption.

[5] See, for example, van Rijckeghem-Weder, 1997; Ades-Di Tella, 1999; Treisman, 2000; Rauch-Evan, 2000; Paldam, 2002; Sandholtz and Gray, 2003; Tavares, 2003; Dreher et al. 2004; Chang-Golden; 2004; Kunicova-Ackerman, 2005.

can also see that interpretations of interaction effects are possible without explicitly including interaction terms as explanatory variables.

In Table 3, we present the average marginal effects (AMEs) from our estimations. In order to compute these, equation (2) is calculated for each observation using the estimated coefficients and then averaged over all observations. This gives us a first impression of the effects we are interested in. Columns (1) to (4) represent estimations with different sets of fixed effects, while column (4) represents an estimation with country-level controls, but only year fixed effects. We interpret the results as being quite robust across specifications.

The AME of religiosity ($Religiosity_{ij}$) is estimated to be negative and significantly different from zero. This is in line with hypothesis 1, implying that, at the individual level; religiosity can act as a deterrent against accepting corruption. The effect is rather small in size: a 1% increase in individual religiosity is on average associated with a 0.05% decrease in individual level acceptance of corruption (column 5).

When we examine the country level acceptance of corruption ($Acceptance_j$), we find a significantly positive association with individual level acceptance. This is in line with hypothesis 2 and shows that, on average, the more corruption that is accepted in society, the more likely an individual is to accept corruption. Ranging from 1.093 to 1.301, the effect is quite large in size: a 1% higher aggregate acceptance of corruption is associated with a higher individual acceptance of corruption of around 1.4%.

At first glance, our micro-level result is at odds with established macro-level results: in purely cross-country settings, high levels of religiosity are usually associated with high levels of corruption and vice versa (Paldam & Gundlach, 2013). Even though the pure macro-level relationship is not of primary interest in our study, this apparent contradiction needs to be addressed.

One possible explanation may be that the variable of interest in our study – acceptance of corruption – is conceptually different from the usual macro level indicator – perceived corruption. If we speculate that these two proxies are negatively related – high perceived corruption is associated with low acceptance of corruption– a negative correlation between individual level religiosity and individual level acceptance of corruption is reasonable[6] and not at all contradictory to existing macro level results.

Even if we do not subscribe to the conjecture that acceptance of corruption and perceived corruption are negatively related, we could interpret the divergence between our micro level results and established macro level results as a particular case of the ecological fallacy. One could conjecture that, although the relationship between religiosity and acceptance of corruption is negative at the individual level, the aggregate relationship appears to be positive due to clustering at the country level (Seligson, 2002, pp. 275-276; Przeworski & Teune, 1970, p. 73).

A full treatment of the micro-macro dynamics would require a multilevel model, which is beyond the scope of this work. Nonetheless, the positive correlation that we observe in our study might be evidence that established aggregate level correlations might suffer from the ecological fallacy.

Moving on to the remaining survey level controls, $Income_{ij}$, $Unemployed_{ij}$, $Financial\_Satisfaction_{ij,:}$ we do not find a significant association between these and the acceptance of corruption. Individuals that are male, younger, unmarried and less well educated, ceteris paribus, are found to have significantly higher acceptance of corruption. There is also

[6] Our study does not include an aggregate level proxy for perceived corruption such as the Corruption Perceptions Indicator, as this would restrict our sample size significantly.

some evidence that acceptance of corruption differs between individuals of different denominations: while Hindus are characterized by lower acceptance of corruption, Jewish, Orthodox and Catholics are characterized by higher acceptance of corruption. Buddhist, Muslim and Protestant individuals do not differ significantly from individuals of "other religions" denomination.

Though it is not the focus of our study, we briefly describe the results for the country-level controls in column 4. The proportion of males in a country, the mean age and the proportion of married individuals are not associated with significant differences in acceptance of corruption. Surprisingly, the effect of the level of democracy is only weakly significant, while the effect of age of democracy is significantly positive, implying that individuals in countries with more mature democracies are more accepting of corruption. On a purely aggregate level, Rock (2009) found evidence for an inverted-U relationship between corruption and the age of democracy, which might be of help explaining this result. We also find that higher levels of GDP are associated with significantly lower acceptance of corruption.

Let us keep in mind that these AMEs represent mere snapshots. In order to gain more complete insights into the effects of religiosity, we also have to investigate interaction effects, which is achieved by computing the conditional marginal effect of religiosity in equation (2) for varying levels in the interacting explanatory variable (leaving all other covariates at their respective means) and plotting the marginal effect.

The first interaction to consider is the interaction of religiosity with itself, in order to check for any non-linearities in the effect of religiosity. In Figure 1, we plot the marginal effect of religiosity (i.e., the estimated elasticity) for different percentiles of religiosity, holding constant all other covariates at their respective means. The effect of religiosity is clearly non-linear: for low values of religiosity (below the 30^{th}-percentile), the effect is positive; for higher values of religiosity (above the 30^{th}-percentile), there is a negative effect on the acceptance of corruption. This implies that there is a threshold value of religiosity below which corruption is more acceptable. We interpret this in the following manner: religious norms for individuals with very low religiosity, in general, are less binding, thus, religious anticorruption norms are also less binding, resulting in a higher probability that corruption will be accepted. An individual's religiosity actually lowers acceptance of corruption only when his/her religiosity exceeds a certain minimum level of religiosity, the threshold level. We can also see that when the marginal effect of religiosity on acceptance of corruption becomes stronger, the higher the level of religiosity. We conclude that hypothesis 1 is partially confirmed.

We then compare the effect of religiosity on individuals of different religious denominations. In Figure 2, we plot the marginal effect of religiosity by religious denomination. Here, we replicate Figure 1 for different values of religious denomination. It becomes apparent that the effect of religiosity on acceptance of corruption does not systematically differ between individuals of different religious denominations. Differences between denominations are strongest for very extreme values of religiosity. We do not find any significant interaction in the effect of religiosity (graphs not shown), for country-level denomination averages, implying that country level differences in religious denomination do not affect how religiosity and acceptance of corruption interact at the individual level. Thus, no further analysis into specific differences between religious denominations is required.

Next, we ask whether the effect of religiosity depends on societal level acceptance of corruption. In Figure 3, we plot the marginal effect of religiosity for different deciles of aggregated acceptance of corruption. We do observe some interaction, but no reversal: the overall trend of the marginal effects curve is the same for all deciles of acceptance of corruption (although the curve is almost flat for the 99^{th} -percentile). We can see that the effect of individual religiosity is more pronounced for lower aggregated acceptance of corruption than

for medium to high levels of acceptance. This implies that the more accepted corruption is at the societal level, the less of a mitigating effect religiosity has on the individual acceptance of corruption. This is in line with hypothesis 2, as well as with the findings of Chadwick and Top (1993)and Stark, Kant, and Doyle (1982).

For all remaining explanatory variables, we do not find any interaction with the effect of religiosity.

7. Conclusions and Outlook

Although the relevance of institutions for the analysis of human behavior is by now almost indisputable, there seems to be little consensus on how informal institutions affect behavior and other institutions: "*What is it about informal constraints that gives them such a pervasive influence upon the long-run character of economies?*" (North D. , 1991, S. 111).

In this study, we have tried to shed some light on the relationship between two different informal constraints: religiosity and the acceptance of corruption. We find that, although there is a statistically significant association, the effect of religiosity on the acceptance of corruption is very small in magnitude. One explanation for this is that religiosity affects the acceptance of corruption through different and opposing transmission channels. By promoting intra-group trust instead of inter-group trust (Berggren & Bjornskov, 2011), increased religiosity could indirectly lead to higher acceptance of corruption. At the same time, increased religiosity should also lead individuals to be more strongly bound by anti-corruption religious norms. Even though our exploratory analytical framework cannot differentiate between these two transmission channels, our finding that religiosity only lowers acceptance of corruption above a threshold level of religiosity is consistent with the existence of opposing transmission channels. Below the threshold level, the trust effect prevails, above the threshold level the anti-corruption norm effect prevails. Future research into this matter should provide theoretical models that can illuminate this conceptual dilemma.

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Figure 1: Marginal Effect of Religiosity

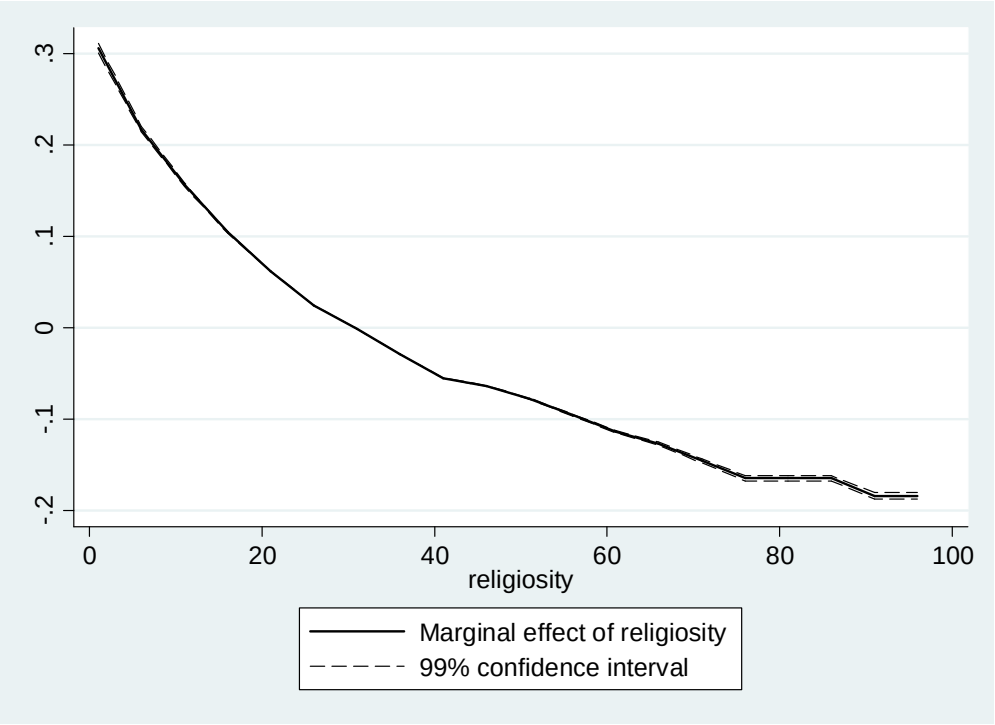

Figure 2: Marginal Effect of Religiosity by Religious Denomination

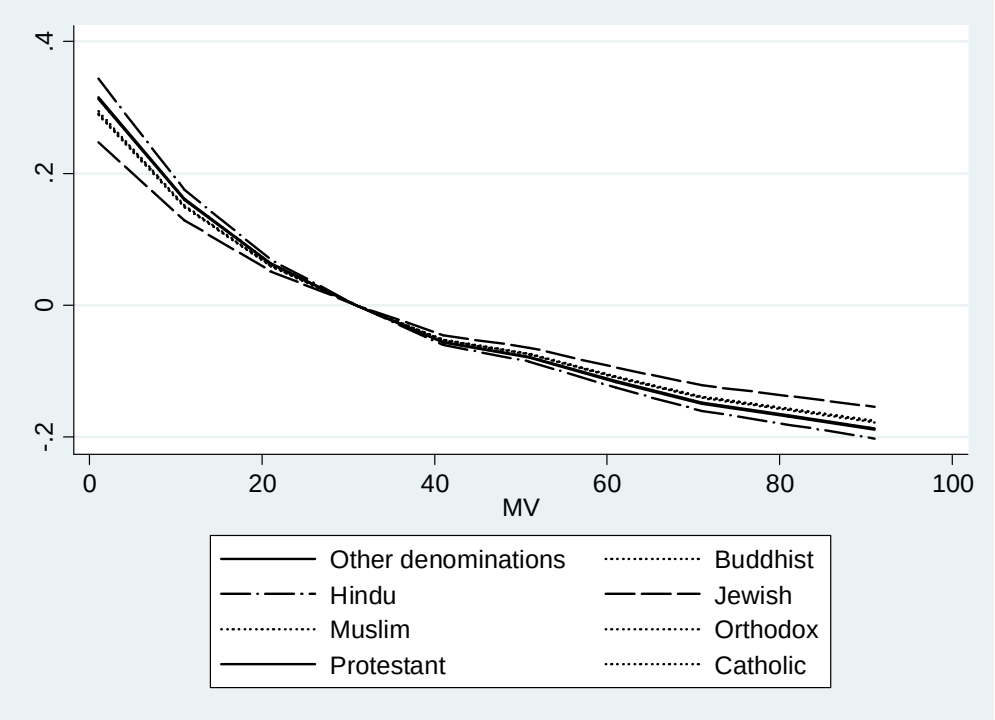

Figure 3: Marginal Effect of Religiosity by Acceptance of Corruption (country)

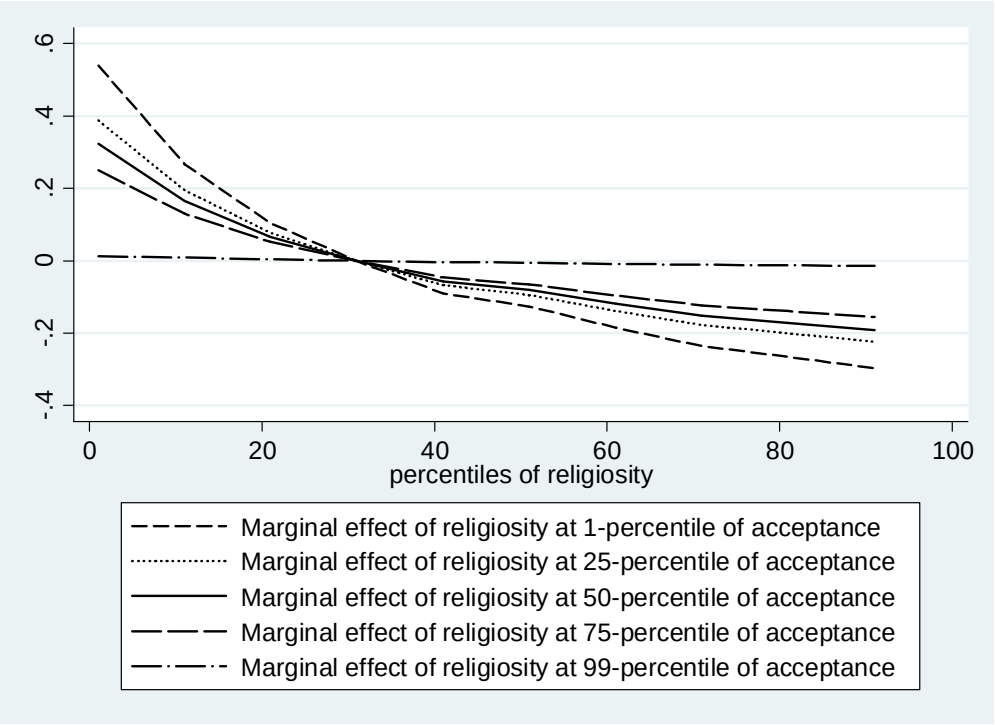

Table 1: Description of Individual Level Variables (all taken from World Values Survey)

Variable	Description and source	N	Mean	P50	SD	Min	Max
$Corruption_i$	Is someone accepting a bribe acceptable? (f117)	141326	.2872154	0	.4524645	0	1
$Religiosity_i$	Weighted average of variables a006 (*Religion important in life*), f028 (*How often do you attend religious services?*), f034 (*Religious person*), f063 (*How important is God in your life?*).	141326	.1833668	.4657919	.9155713	-2.504312	1.124521
$Income_i$	Self-reported household income, on a scale of societal deciles (x047; 10 = highest income group).	141326	4.541613	4	2.411419	1	10
$Male_i$	Indicator variable for sex of respondent (x001; 1 = Male).	141326	.4909217	0	.4999193	0	1
Age_i	Age of respondent (x003).	141326	40.20323	38	15.83598	15	98
$Married_i$	Marital status of respondent (x007; 1 = Married).	141326	.5780879	1	.4938662	0	1
$Uemployed_i$	Employment status of respondent (x028; 1 = unemployed).	141326	.0975051	0	.2966453	0	1
$Financial\_satisfaction_i$	Satisfaction with financial situation of household of respondent (c006; 10 = satisfied).	141326	5.537014	6	2.658144	1	10
$Education_i$	Highest educational level attained (x025; 8 = University with degree)	141326	4.464201	4	2.308836	1	8
$Denom\_Buddhist_i$	Indicator variable for religious denomination (f025; 1 = Buddhist)	141326	0.022395	0	0.147965	0	1
$Denom\_Hindi_i$	Indicator variable for religious denomination (f025; 1 = Hindi)	141326	0.045575	0	0.208863	0	1
$Denom\_Jewish_i$	Indicator variable for religious denomination (f025; 1 = Jewish)	141326	0.003799	0	0.061624	0	1
$Denom\_Muslim_i$	Indicator variable for religious denomination (f025; 1 = Muslim)	141326	0.209855	0	0.407206	0	1
$Denom\_Orthodox_i$	Indicator variable for religious denomination (f025; 1 = Orthodox)	141326	0.106349	0	0.308286	0	1
$Denom\_Protestant_i$	Indicator variable for religious denomination (f025; 1 = Protestant)	141326	0.189599	0	0.391978	0	1
$Denom\_Catholic_i$	Indicator variable for religious denomination (f025; 1 = Catholic)	141326	0.163204	0	0.369553	0	1
$Denom\_Other_i$	Indicator variable for religious denomination (f025; 1 = Other)	141326	0.259230	0	0.438213	0	1

Table 2: Description of Country Level Variables

Variable	Description and source	N	Mean	P50	SD	Min	Max
$Religiosity_j$	Country average of $Religiosity_i$	141326	0.1857126	0.3470483	0.5475786	-1.138073	0.976903
$Acceptance_j$	Country average of $Acceptance_i$	141326	0.2901851	0.2684564	0.1689217	0	1
$Male_j$	Country average of $Male_i$	141326	0	0.4957411	0	0.343	0.5974026
Age_j	Country average of Age_i	141326	40.03516	39.69038	5.105734	28.69082	52.45044
$Married_j$	Country average of $Married_i$	141326	1	0.5667456	0	0.1434263	0.8352357
$Unemployed_j$	Country average of $Unemployed_i$	141326	0.1006594	0.0841794	0.0687431	0	0.3673333
$Denom\_Buddhist_j$	Country average of $Denom\_Buddhist_i$	141326	0.0220085	0.0007813	0.1083848	0	0.9680574
$Denom\_Hindi_j$	Country average of $Denom\_Hindi_i$	141326	0	0	0	0	0.8824
$Denom\_Jewish_j$	Country average of $Denom\_Jewish_i$	141326	0	0.0008326	0	0	0.0637138
$Denom\_Muslim_j$	Country average of $Denom\_Muslim_i$	141326	0.2054172	0.0106285	0.3451973	0	0.9888559
$Denom\_Orthodox_j$	Country average of $Denom\_Orthodox_i$	141326	0.1042883	0.0032026	0.2344388	0	0.9225621
$Denom\_Protestant_j$	Country average of $Denom\_Protestant_i$	141326	0.1602449	0.0470628	0.226506	0	0.8850347
$Denom\_Catholic_j$	Country average of $Denom\_Catholic_i$	141326	0.2544323	0.1018252	0.2978343	0	0.944
$Colonial\_2_j$	Indicator variable for Spanish colonial origin (Teorell & Hadenius, 2007)	141326	0.016232	0	0.126367	0	1
$Colonial\_3_j$	Indicator variable for Italian colonial origin (Teorell & Hadenius, 2007)	141326	0.1433636	0	0.3504445	0	1
$Colonial\_4_j$	Indicator variable for U.S. colonial origin (Teorell & Hadenius, 2007)	141326	0.0083566	0	0.0910318	0	1
$Colonial\_5_j$	Indicator variable for British colonial origin (Teorell & Hadenius, 2007)	141326	0.237918	0	0.4258102	0	1
$Colonial\_6_j$	Indicator variable for French colonial origin (Teorell & Hadenius, 2007)	141326	0	0	0	0	1
$Colonial\_7_j$	Indicator variable for Portuguese colonial origin (Teorell & Hadenius, 2007)	141326	0.0296548	0	0.1696338	0	1
$Colonial\_8_j$	Indicator variable for Belgian colonial origin (Teorell & Hadenius, 2007)	141326	0.0098496	0	0.0987554	0	1
GDP_j	Real GDP per capita (United Nations Statistics Division 2009).	141326	6823.824	2500.875	10127.43	163.3393	40112
$Democracy_j$	Democracy score. Variable that combines the Freedom House democracy score with the imputed polity score (QOG 2013).	141326	7.169732	8.25	2.702349	0	10
$Age\_Democracy_j$	Age of democracy. Counts the number of interrupted years of democracy up to year of observation. Own calculation using the revised combined polity score (Marshall & Jaggers, 2002)	141326	27.74922	21	21.05904	0	62

Table 3: Average Marginal Effects of Probit Estimations (Dependent Variable: Acceptance of Corruption)

Variables	(1)	(2)	(3)	(4)
$Religiosity_{ij}$	-0.0472***	-0.0477***	-0.0478***	-0.0493***
	(0.00825)	(0.00826)	(0.00831)	(0.00952)
$Acceptance_j$	1.093***	1.177***	1.301***	1.190***
	(0.0962)	(0.161)	(0.166)	(0.103)
$Income_{ij}$	1.093***	0.0229	0.0268	-0.000938
	(0.0962)	(0.0379)	(0.0387)	(0.0386)
$Male_{ij}$	0.0568***	0.0593***	0.0604***	0.0552***
	(0.0164)	(0.0168)	(0.0171)	(0.0185)
Age_{ij}	-0.381***	-0.413***	-0.419***	-0.406***
	(0.0414)	(0.0431)	(0.0444)	(0.0461)
$Married_{ij}$	-0.0864***	-0.0856***	-0.0893***	-0.0856***
	(0.0148)	(0.0138)	(0.0134)	(0.0144)
$Uemployed_{ij}$	-0.00661	0.0161	0.0167	0.0162
	(0.0276)	(0.0212)	(0.0213)	(0.0218)
$Financial\_satisfaction_{ij}$	0.0286	0.0105	0.0212	0.0450*
	(0.0227)	(0.0263)	(0.0247)	(0.0237)
$Education_{ij}$	-0.163***	-0.209***	-0.209***	-0.197***
	(0.0277)	(0.0237)	(0.0233)	(0.0270)
$Denom\_Buddhist_{ij}$	0.143**	0.141**	0.143**	0.133*
	(0.0622)	(0.0597)	(0.0595)	(0.0713)
$Denom\_Hindi_{ij}$	-0.308***	-0.314***	-0.302***	-0.305***
	(0.0941)	(0.0931)	(0.0933)	(0.0925)
$Denom\_Jewish_{ij}$	0.304***	0.312***	0.316***	0.294***
	(0.0606)	(0.0581)	(0.0585)	(0.0585)
$Denom\_Muslim_{ij}$	-0.0843	-0.0796	-0.0781	-0.106
	(0.0759)	(0.0770)	(0.0768)	(0.0805)
$Denom\_Orthodox_{ij}$	0.0951**	0.100**	0.104**	0.108**
	(0.0427)	(0.0421)	(0.0417)	(0.0459)
$Denom\_Protestant_{ij}$	-0.0110	-0.00201	0.000238	-0.0254
	(0.0588)	(0.0594)	(0.0598)	(0.0568)
$Denom\_Catholic_{ij}$	0.118***	0.123***	0.126***	0.104***
	(0.0331)	(0.0319)	(0.0323)	(0.0331)
$Male_j$				-0.155
				(0.328)
Age_j				-0.316
				(0.254)
$Married_j$				0.153
				(0.207)
$Unemployed_j$				-0.0907**
				(0.0363)
GDP_j				-0.0471***
				(0.0179)
$Democracy_j$				-0.154*
				(0.0870)
$Age\_Democracy_j$				0.276***
				(0.0494)
$Denom\_Buddhist_j$				-0.0109***
				(0.00262)
$Denom\_Hindi_j$				0.000831
				(0.00978)
$Denom\_Jewish_j$				0.00921
				(0.00716)
$Denom\_Muslim_j$				0.0697
				(0.0545)
$Denom\_Orthodox_j$				0.0136
				(0.0177)
$Denom\_Protestant_j$				0.00622
				(0.0283)
$Denom\_Catholic_j$				0.0240
				(0.0404)

Table 3: Continued

Variables	(1)	(2)	(3)	(4)
Fixed effects	none	country	country, year	year
Countries	80	80	80	73
Years	18	18	18	16
Observations	164,209	164,209	164,209	141,326
Pseudo R-squared	0.2084	0.2195	0.2213	0.2115

Estimation with Probit (with number of respondents per country as weights). Reported numbers are estimated elasticities (with respect to a 1% change for continuous variables and a 1 unit change for dummy variables). Country cluster robust standard errors in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 4: Selected Texts on Theft and Bribery from Main Sources of Major World Religions

Judaism	Judeo-Christian	Christianity	Islam	Buddhism	Hinduism
Maimonides, Mishneh Torah, Hilchot Gezeilah 1:2 It is forbidden to rob or to **steal** even a minor amount from either a Jew or a gentile. **Sefer HaChinuch, 259** And it is biblically forbidden to **steal** even a minor amount; even a gentile - it is forbidden to steal from him or to cheat him. And if you stole from him or cheated him you must return the stolen money or object. **Shulchan Aruch Choshen Mishpat 359:1** It is forbidden to rob or to cheat even a minor amount from either a Jew or a gentile. **Shulchan Aruch (Code of Jewish Law) Choshen Mishpat 348:2** Anyone who steals even a minor amount violates the prohibition of [Leviticus 19:11] "You shall not **steal**" and is required to repay [the amount stolen] whether one steals from a Jew or a gentile.	**Old Testament** **Exodus 20:14-16** "You shall not steal." **Exodus 23:7-9** "Do not accept a **bribe**, for a **bribe** blinds those who see and twists the words of the innocent. **Leviticus 19:10-12** "'Do not **steal**. "'Do not lie. "'Do not deceive one another. **Deuteronomy 5:18-20** "You shall not steal. **1 Samuel 8:2-4** But his sons did not follow his ways. They turned aside after dishonest gain and accepted **bribe**s and perverted justice. **Job 36:17-19** Be careful that no one entices you by riches; do not let a large **bribe** turn you aside. **Psalm 15:4-5** who lends money to the poor without interest; who does not accept a **bribe** against the innocent. Whoever does these things will never be shaken. **Ecclesiastes 7:6-8** Extortion turns a wise person into a fool, and a **bribe** corrupts the heart. **Isaiah 33:14-16** Those who walk righteously and speak what is right, who reject gain from extortion and keep their hands from accepting **bribes**, who stop their ears against plots of murder and shut their eyes against contemplating evil— **Amos 5:11-13** For I know how many are your offenses and how great your sins. There are those who oppress the innocent and take **bribe**s and deprive the poor of justice in the courts.	**New Testament** **Matthew 15:18-20** For out of the heart come evil thoughts—murder, adultery, sexual immorality,**theft**, false testimony, slander. **Matthew 19:17-19** "Which ones?" he inquired. Jesus replied, "'You shall not murder, you shall not commit adultery, you shall not **steal**, you shall not give false testimony, **Mark 7:20-22** For it is from within, out of a person's heart, that evil thoughts come—sexual immorality, **theft**, murder, **Luke 18:19-21** You know the commandments: 'You shall not commit adultery, you shall not murder, you shall not **steal**, you shall not give false testimony, honor your father and mother.' " **John 10:9-11** The thief comes only to **steal** and kill and destroy; I have come that they may have life, and have it to the full. **Romans 2:20-22** you, then, who teach others, do you not teach yourself? You who preach against **stealing**, do you steal? **Ephesians 4:27-29** Anyone who has been **stealing** must **steal** no longer, but must work, doing something useful with their own hands, that they may have something to share with those in need. **Revelation 9:20-21** Nor did they repent of their murders, their magic arts, their sexual immorality or their **thefts**.	**Qur'an** **Al-Baqara, Chapter #2, Verse #188** (Pickthal) And eat not up your property among yourselves in vanity, nor seek by it to gain the hearing of the judges that ye may knowingly devour a portion of the property of others wrongfully. **Al-Maeda, Chapter #5, Verse #38** "As for the thief, both male and female, cut off their hands. It is the reward of their own deeds, an exemplary punishment from Allah. Allah is Mighty, Wise." **An-Nisa, Chapter #4, Verse #161** "And of their taking usury when they were forbidden it, and of their devouring people's wealth by false pretences, We have prepared for those of them who disbelieve a painful doom. **Hud, Chapter #11 Verse #85** O my people! Give full measure and full weight in justice, and wrong not people in respect of their goods. And do not evil in the earth, causing corruption. **Hadith** **Sunan Abu-Dawud, Book #24, Hadith #3573** Narrated Abdullah ibn Amr ibn al-As: "The Apostle of Allah (peace be upon him) cursed the one who offers **bribe** as well as one who accepts **bribe**." **Sunan Abu-Dawud, Book #23, Hadith #3534** Narrated AbuUmamah: The Prophet said: If anyone intercedes for his brother and he presents a gift to him for it and he accepts it, he approaches a great door of the doors of usury.	**Second Precepts Of Buddhism** "I undertake the training rule to abstain from taking what is not given" **Buddha's teaching in Aṅguttaranikāya** "Monks, through repeated stealing and robbing, one is liable to be reborn in hell or in the animal realm or in the realm of hungry ghosts. At the very least, stealing leads to damage and loss of property." **Mahasi Sayadaw in Sallekha Sutta** "Other people may steal or loot what is not given by the owner.We will avoid doing so" **Dhammika Sutta, v. 20** A disciple then knowing [the law] should refrain from stealing anything at any place; should not cause another to steal anything, should not consent to the acts of those who steal anything, should avoid every kind of theft.	**The 10 Vedic Restraints-YAMA 3: Asteya, Nonstealing** Uphold the virtue of non stealing, neither thieving, coveting nor failing to repay debt. Control your desires and live within your means. Do not use borrowed resources for unintended purposes or keep them past due. Do not gamble or defraud others. Do not renege on promises. Do not use others' name, words, resources or rights without permission and acknowledgment . **The 10 Vedic Restraints-YAMA 8: Arjava, Honesty** Maintain honesty, renouncing deception and wrongdoing. Act honorably even in hard times. Obey the laws of your nation and locale. Pay your taxes. Be straightforward in business. Do an honest day's work. Do not bribe or accept bribes. Do not cheat, deceive or circumvent to achieve an end. Be frank with yourself. Face and accept your faults without blaming them on others.

Source: (Judism) Student, Gil (2000). Theft from Gentiles. Retrieved November 11, 2011 from: http://www.angelfire.com/mt/talmud/theft.html (Judeo-Christian and Christianity) Bible- New International Version, (2011) search words „theft" „steal" „bribe", retrieved November 11, 2011 from: http://www.biblegateway.com/, (Islam-Qur'an) Pickthall, Mohammed M. (1995). The meaning of the glorious Qur'an. New Delhi: Madhur Sandesh Sangam, retrieved November 11, 2011 from: http://www.khayma.com/librarians/call2islaam/quran/pickthall/index.html. (Islam-Hadith) Abu-Dawud (n.a.), Sunan Abu-Dawud, Kitab Al-Aqdiyah, Book #24, Hadith #3573 and Book #23, Hadith #3534, Retrieved November 11, 2011 from http://www.yanabi.com/Hadith.aspx?HadithID=143455 and http://www.yanabi.com/Hadith.aspx?HadithID=143848 (Buddhism) Wat Palelai Singapore (n.a.). Sila and the five percepts. Retrieved November 11, 2011 from: https://sites.google.com/site/watpalelai/buddhism/practices/the-five-precepts.Venerable Mahāsī Sayādaw (2006). A Discourse on the Sallekha Sutta. Bhikkhu Pesala, Association for Insight Meditation. http://www.dhammapath.com/resources/Mahasi_2/A%20Discourse%20on%20the%20Sallekha%20Sutta.pdf (Hindusm) Vedic Knowledge online (n.a.), Yamas and Niyamas, retrieved November 11, 2011 from: http://veda.wikidot.com/yama-niyama#toc