# Essays in Institutional Economics, with special focus on Muslim-majority countries

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## Moamen Gouda

MBA born in Cairo, Egypt

*"If you want to move people, you look for a point of sensitivity, and in Egypt nothing moves people as much as religion."*

Naguib Mahfouz- 1992

*"Man, know thyself ... and thou shalt know the gods."*

Inscription from Luxor Temple- 1400 BCE

I thank my grandmother, my uncles and my dear aunt for their support and interest in my work. It is always a pleasure discussing with Uncle Salah Soliman and the enlightened young economist Abdelrahman. I thank all the lovely members of Shimaa's family, especially my mother-in-law. I am lucky to be a part of your family.

My brother never fails to impress me with his energy and dedication to his work. It is always a great moment when we recall our great childhood memories. In my eyes, he is still a kid, who is fond of playing arcade games and watching wrestling matches. I will always be there for you, Eslam.

I must express my heartfelt gratitude to my wife Shima'a Hanafy for always being beside me during the happy and hard moments to push me and motivate me. A journey is easier when you travel together. Shima'a, you are always my biggest motivation to overcome any hardships. Thanks for your understanding and for giving me freedom to pursue my dreams. Your love gives my life a meaning. I can't imagine living without you. I will eternally be with you.

I dedicate this work to the souls of my father, my grandfather, and Shimaa's father. Finally, I dedicate this work, along with my life, to my mother. Although residing 3000 kilometers away, she was never far from my heart and mind. You have been the continuous light in my life and without you, I would be nothing. I will forever appreciate your sacrifice and your belief in my abilities to achieve my dreams. I will love you past time itself.

# Outline

1. Can Shari'a be a Deterrent for Intellectual Property Piracy in Islamic Countries?

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5. Religious Loyalty and Acceptance of Corruption.

6. The Long-Term Effect of Slavery on Violent Crime: Evidence from US Counties.

# Introduction

This thesis is an attempt to gain a better understanding of how institutions, whether formal or informal, influence individual- and societal-level economic choices, especially in the Muslim-majority countries. It consists of six research papers that contribute to the economic analysis of institutions. The first paper, published in the *Journal of World Intellectual Property* in 2011, investigates the relationship between intellectual property piracy and religiosity in several Muslim-majority countries. The second paper, published in *Constitutional Political Economy* in 2013, focuses on the future of constitutionalism in Arab Spring countries by analyzing a unique Islamic constitution from a rule of law perspective. Another paper published in a collective volume tackles the relationship between business ethics and economic systems in Muslim-majority countries. The fourth paper is a novel application of economic analysis to Islamic criminal law, as it analyzes the marginal deterrence in Islamic criminal law of theft. The fifth paper, which is currently under second round review from *Journal of Economics and Statistics*, empirically investigates the relationship between the religiously induced internalized values of individuals in 78 countries and their specific attitudes toward corruption using World Value Survey data. In the sixth and final paper of my dissertation, I empirically investigate the long-term relationship between the legacy of slavery and contemporary violent crime in USA.

Paper 1 (with Nora El-Bialy): "Can Shari'a be a Deterrent for Intellectual Property Piracy in Islamic Countries?" examines the stance of Islamic legal traditions (Shari'a) towards intellectual property (IP) piracy. Although Muslims may differ on what Shari'a dictates, most of them view Shari'a as God's law and as a main ingredient of Islamic belief system. Since piracy rates in Muslim-majority countries are considerably high in light of existing formal IPR laws, it becomes essential to test if Shari'a has any relation with such phenomenon. Our hypothesis is that, although Muslim countries have formal institutions or laws that protect intellectual property rights (IPR), little attention is given to informal institutions, or human morals, regarding IPR piracy, which negatively affects the enforcement level of IPR laws in these countries. Muslims may not be convinced that IPR violations, although illegal, are unethical or forbidden by Islamic Shari'a. In order to test the level of adherence of Muslims to Shari'a to support our hypothesis, we develop a "religious loyalty" index (RLI). Comparing adherence of followers of different religions with those of Islam, Muslim countries have the highest religiosity level, positively

affecting obedience level to Shari'a. Consequently, an investigation of how Shari'a views IPR piracy is conducted. As Islam generally prohibits IPR piracy, the study concludes by offering a set of policy recommendations that can effectively help in minimizing IPR piracy in Muslim countries.

Paper 2: "Islamic Constitutionalism and Rule of Law: A Constitutional Economics Perspective" investigates the relationship between constitutionalism from an Islamic perspective and the concept of rule of law. Al Azhar, one of the oldest and most respected Sunni religious institutions in the world, developed an Islamic constitution with the purpose of making it "available to any country that wishes to model itself after the Islamic Shari'a". Facing the differences among Islamic sects, Al-Azhar's constitution preamble states that "the principles laid down in this constitution agree with those shared between the Islamic schools of law to the utmost extent possible". Since its completion in 1978, this Islamic constitution received little attention from policy makers in Muslim-majority countries as well as legal scholars worldwide. Only after the January 25 uprising did Islamic political movements in Egypt announce their desire to use this constitution as their proposed model for the upcoming Egyptian constitution.

Having this in mind, this study uses this constitution as a model of Islamic constitutionalism, whereby its stance regarding rule of law is examined using six main principles: (1) separation of powers, (2) clear and stable laws, (3) judicial independence and judicial review, (4) equal access to justice, (5) the state is bound by the law, and (6) protection of basic human rights. I find the Al-Azhar's constitution to be incompatible with essential concepts of rule of law. For example, the powers vested in the head of the Islamic state are enormous, making the executive branch of government far superior to the legislative and judicial branches. Women and non- Muslims are explicitly discriminated against throughout the constitution. Moreover, laws stemming from this constitution are not stable since many differences exist among schools of Islamic jurisprudence (fiqh). Consequently, we show that state-of-the-art Islamic constitutionalism lacks essential components needed in any constitution based on rule of law.

Paper 3 (with Helmut Leipold): "Wirtschaftsethik und Wirtschaftssysteme in islamischen Ländern" investigates if the Islamic ethics related to business and economics could offer a

solution to deter future financial crises. For this purpose, we investigate the principles of Islamic business ethics and Islamic business law. Our analysis shows that the principles of Islamic economic ethics resemble the objectives of the social market economy model. We further comparatively analyze the economic systems of members of the Organization of the Islamic Cooperation (OIC). Although Islamic countries have heterogeneous economic structures, we perceive that they are somewhat homogenous in their lack of democracy and their low levels of rule of law. Moreover, the majority of Islamic countries can be categorized as rentier states. This is not surprising in countries where religion and state are in close alliance. The paper concludes that the principles of Islamic economic ethics do not offer a specific solution to prevent future financial crises.

Paper 4: "Stealing more is better? An Economic Analysis of Islamic Law of Theft" is the very first attempt towards applying economic analysis to Islamic criminal law. Islamic criminal law offers two main punishments regarding theft; hadd, a fixed penalty that requires the amputation of the offender's right hand under certain conditions and ta'zir, a punishment that is left to the discretion of the judge and is less severe than hadd. Deterrence is one of the main objectives for Islamic criminal law. However, from the viewpoint of marginal deterrence and multiplier principles, lesser crimes with low social harm are punished severely with hadd while crimes with high social harm are punished with ta'zir. Moreover, as the probability of detection and sanction is less in crimes of high social harm, criminals would have better incentive to commit the latter type of crimes. This study implies that if Islamic criminal law is introduced in Arab Spring countries in its current form, crimes of high social cost are likely to become more frequent. A call for a modern reinterpretation and re-coding of Islamic criminal law of theft is essential for any successful attempt to apply Shari'a in Muslim-majority countries.

Paper 5 (with Sang-Min Park): "Religious Loyalty and Acceptance of Corruption" 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 164,209 individuals in 80 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.

Paper 6: "The Long-Term Effect of Slavery on Violent Crime: Evidence from US Counties" is the first to empirically investigate the long-term relationship between slavery and violence in USA. Although qualitative evidence shows that slavery has been a key factor behind the prevalence of violence, especially in South USA (Cash, 1941; Franklin, 1956; Gastil, 1971; Wyatt-Brown, 1986), no empirical evidence supports this claim so far. I propose that the proportion of slaves in a certain county in 1860 is positively correlated with the rate of violent crimes in 2000. As violence was extensively used to control slaves for hundreds of years, a culture of violence was formed and persisted through time. Extending Engermann and Sokoloff's hypotheses (1997; 2002), I empirically examine two hypotheses: (1) slavery has a long-term effect on violent crime. (2) Such long-term effect is mainly transmitted through inequality. The results show that slavery in 1860 is positively associated with violent crime in 2000. Testing the second hypothesis, I find that land inequality in 1860 has a long-term significant effect on contemporary violent crime.

# Can *Shari'a* be a Deterrent for Intellectual Property Piracy in Islamic Countries?

(with Nora El-Bialy)

# Islamic Constitutionalism and Rule of Law: A Constitutional Economics Perspective

# Wirtschaftsethik und Wirtschaftssysteme in islamischen Ländern

(with Helmut Leipold)

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Available at http://www.iwh-halle.de/d/publik/sh/SH%201%2011.htm

# Stealing more is better? An Economic Analysis of Islamic Law of Theft[*]

Under Review

# Stealing more is better? An Economic Analysis of Islamic Law of Theft

Abstract:

This study is the first attempt towards applying economic analysis to Islamic criminal law. Islamic criminal law offers two main punishments regarding theft; *hadd*, a fixed penalty that requires the amputation of the offender's right hand under certain conditions and *ta'zir*, a punishment that is left to the discretion of the judge and is less severe than *hadd*. Deterrence is one of the main objectives for Islamic criminal law. However, from the viewpoint of marginal deterrence and multiplier principles, lesser crimes with low social harm are punished severely with *hadd* while crimes with high social harm are punished with *ta'zir*. Moreover, as the probability of detection and sanction is less in crimes of high social harm, criminals would have better incentive to commit the latter type of crimes. This study implies that if Islamic criminal law is introduced in Arab Spring countries in its current form, crimes of high social cost are likely to become more frequent. A call for a modern reinterpretation and re-coding of Islamic criminal law of theft is essential for any successful attempt to apply *Shari'a* in Islamic countries.

# 1. Introduction

As democracy is bringing more political Islam into the scene in the countries of the Arab Spring, it becomes apparent that Islamists in Tunisia and Egypt in particular will play a significant role in the developing of post-revolutionary constitutions, significantly changing these countries' legal setup. Beaumont (2011) argues that political Islam is bound to dominate Arab spring countries, while Manthorpe (2011) notes that Arab spring looks more like an Islamic revolution. This is, to a certain extent, unsurprising as Islamic societies are believed to be very keen to follow the teachings of their religion. El-Bialy and Gouda (2011) develop a Religious Loyalty Index (RLI) to capture the religiosity of different societies and find that Islamic societies are the most adherent to religion. The Economist (2011a) states that "Islam is bound to play a larger role in government in the Arab world than elsewhere. Most Muslims do not believe in the separation of religion and state, as America and France do, and have not lost their enthusiasm for religion, as many "Christian Democrats" in Europe have." In another article, the Economist (2011b) argues that the full implementation of Islamic Law (*Shari'a*) is one of the dominant demands of Islamic parties in Arab Spring countries. Schacht (1964) argues that law could be considered the most important element in the struggle which is being fought in Islam between traditionalism and modernism under the impact of Western Ideas.

Such demands started to materialize in Egypt as a member of parliament from the Salafi-oriented Nour Party proposed to apply Islamic criminal law for crimes of overt robbery, murder, and forcible taking of property with a weapon. In case this call had made its way to the Egyptian legislation, punishments of these crimes would have included crucifixion and cutting the hands and legs of offenders (Al-Masry Al-Youm, 2012). Such punishments may seem harsh from the viewpoint of international human rights standards. However, in a recent survey, Pew Research Center (2010, p. 14) finds that the majority of Muslims in Egypt, Jordan, Pakistan and Nigeria are in favor of making harsh punishments, such as stoning people who commit adultery, part of the law in their country (Table 1).

| Table 1: Percentage of Muslims favoring Harsh Punishments | | | |
|---|---|---|---|
| | Stoning people who commit adultery | Whippings/cutting off of hands for theft and robbery | Death penalty for people who leave the Muslim religion |
| **Turkey** | 16 | 13 | 5 |
| **Egypt** | 82 | 77 | 84 |
| **Jordan** | 70 | 58 | 86 |
| **Lebanon** | 23 | 13 | 6 |
| **Indonesia** | 42 | 36 | 30 |
| **Pakistan** | 82 | 82 | 76 |
| **Nigeria** | 56 | 65 | 51 |

Source: Pew Research Center (2010), Question 108b-d

This study provides an economic analysis of Islamic criminal laws, a subset of *shari'a*, with regards to theft. Economic analysis of crime, first introduced by Becker (1968), assumes that a prospective offender's decision to commit a certain offense is based on rational decision-making. A deterrence theory is proposed based on the concept that, if the expected cost committing a certain crime for a potential offender offsets its expected benefit, this offender will be deterred from committing the crime. The two key components for increasing the size of the expected costs of committing a certain crime are the probability of apprehension (and conviction) and the severity of the punishment imposed on the criminal upon successful conviction. Developing such notion further, Craswell (1999, S. 2189) and Polinsky and Shavell (2000) argue that the efficient deterrence of crime is achieved when the expected sanction regarding a certain crime equals the social harm caused by this specific crime. Such concept is called the multiplier principle.

Deterrence theory resurged in recent decades among some criminologists who have chosen to adopt a new and more conservative outlook towards what should be done about crime (Eve, Segal, & Stevens, 2008). Indeed, it can be said that deterrence theory was and still is the "philosophical foundation for modern Western criminal law and criminal justice systems" (Akers, 2000, p. 17). As western legal institutions have been developed through a significantly different social, political and economic context than Islamic legal institutions, it can be of interest to examine the significance of deterrence theory in the Islamic legal context especially that related to the penal code of theft.

Islamic criminal law remains under-researched in western legal literature[1]. This study is the first to apply concepts of economic analysis on Islamic criminal law. Earlier studies tackling Islamic criminal law can be divided into two categories; those written by legal scholars aimed to analyze

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[1] The study of Peters (2005) remains the major work on Islamic criminal law in western legal literature.

certain aspects of this law from an entirely legal perspective, and those written by Muslim scholars aimed to provide a theological point of view concerning these laws. Rupp (2008) conducts a comprehensive meta-analysis of law and economics literature dealing with crime and deterrence and, out of the 700 investigated studies, not a single one is concerned with Islamic law. To our best knowledge, law and economics literature did not deal with Islamic criminal law so far. Consequently, our study aims to make the first attempt to fill this gap in literature[2]

Islamic criminal law defines a certain set of conditions for a crime to be considered a theft. In case these conditions are fulfilled, the theft falls under the category of severe crimes (*hadd*) - which is comparable to a felony under a western legal system - and a harsh punishment of amputation of the criminal's right hand is applied. If the crime does not meet the conditions set by Muslim scholars for a theft, it is considered a lesser crime (*ta'zir*), comparable to a misdemeanor, and is generally punished in a more lenient way and under the discretion of the judge. Our analysis shows that Islamic criminal law focuses on the aspect of general deterrence where, given a certain risk of detection, any prospective offender is threatened by the severe punishment of committing a crime. Therefore, crime would decrease as the cost of committing a crime outweighs its benefit for a given offender in this society.

Nevertheless, Islamic law does not take into consideration the concept of marginal deterrence where an offender chooses to commit a certain crime from a set of possible crimes. For example, stealing a wallet from an individual is considered a *hadd* crime and is punished by amputation of the right hand while stealing any amount of money from state treasury or embezzling from entrusted property are considered crimes that fall under the more lenient *ta'zir* category. *Ta'zir* penalty is left to the judge's own discretion but should not reach the severity of *hadd* punishment. We also find that punishment negatively correlates with the social cost and severity of the crime in Islamic law of theft. Such legal setup would induce potential offenders to commit more serious and lucrative crimes than petty crimes at a high economic cost for society.

This inefficient legal setup persists even when we consider the probability of detection and punishment associated with different crimes. The probability of detection is higher in the case of theft, a manifest crime, than in the case of embezzlement, a non-manifest crime, for the same

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[2] Although this is the case with Islamic law, we base our analysis on the study of Garoupa and Gomez (2008) on Roman law. We find that Islamic criminal law intersects with Roman law on many fundamental aspects.

level of resources invested in apprehension and punishment. Additionally, as the sanction for manifest theft in Islam is more severe than non-manifest embezzlement, this violates the multiplier principle and the law becomes inefficient. The reason behind such an uncommon legal setup is that the Islamic criminal law was mainly developed in archaic times when private property was viewed worthy of more protection than public property. The study tries to call the attention of Muslim jurists and scholars to these fundamental problems before such legal system is applied in any contemporary society.

As the first paper to offer economic analysis to Islamic criminal law, we first present an outlook on Islamic criminal law, especially that related to theft. Arabic primary sources are used whenever possible and special attention is given to contemporary sources of Islamic criminal law. The reason for this approach is straightforward: Muslim jurists generally argue that Islamic laws can be modified to suit the relevant time and place. As the body of Islamic law was mainly comprised between the 8$^{th}$ to the 10$^{th}$ century CE, it is expected that Islamic law corresponds to this specific era, rendering such a legal system obsolete. Consequently, citing archaic literature can be seen as a redundant task. According to Hallaq (1984), Muslim jurists ceaselessly strive towards extrapolating new legal directives that harmonize Islamic law with existing social, legal, political and economic norms, internationally and locally. Therefore, it is assumed that modern literature of Islamic law, which we heavily depend on through this study, reflects the state-of-the-art in Islamic criminal law.

The actual enforcement of Islamic criminal law on theft varies across different Islamic states, ranging from the strict Iran, Saudi Arabia and Afghanistan to the more lenient Egypt, Tunisia and Morocco. With this taken into consideration, much effort was exerted collecting data on legal cases in Islamic countries, allowing for a comparison between *de jure* and *de facto* enforcement of Islamic criminal law. Unfortunately, Islamic countries, especially those applying Islamic criminal law in its strictest sense, hardly publish any data on crimes and punishments, thus making any intentions to provide a more 'rigorous' analysis of the actual implementation of Islamic criminal law, and its deterring effect, futile. Also, possible discrepancies between *Sunni* and *Shiite* sects on punishments set for theft may be found. After investigating various *Sunni* and *Shiite* sources, it can be said that these two sects share most provisions regarding the crime of

theft. Nevertheless, any differences between *Sunni* and *Shiite*, no matter how minor, will be indicated throughout this study.

The paper is divided into seven sections. A brief overview of *shari'a* is presented in section 2. Section 3 pays special attention to the kinds of punishments that Islam generally endorses, while section 4 presents the details and conditions for a crime to be considered a theft under the Islamic criminal law. Section 5 examines the general stance of Islamic criminal law from the theory of deterrence, a core principle of criminology and rational choice theories. The essence of this study is represented in section 6 where deterrence in Islamic criminal law of theft is investigated. We divide this section into two parts; the first assumes a fixed probability of detection for all crimes. The second part hypothesizes that probability of detection and punishment varies according to the crime in question. Finally, section 7 provides concluding remarks and proposals for further research.

## 2. A brief look on Islamic Law (*Shari'a*)

The literal meaning of *shari'a* in Arabic is "the path to the source of water", the connotation of which is that it is the source of life for Muslims (Zakzouk, 2002, p. 89). *Shari'a* has come to mean the "divinely mandated path", the clear and truthful path that a Muslim must follow in life to be submitting to the will of God (Esposito, 1991). As such, *shari'a* is central to any Islamic society. IslamWeb (2002) defines *shari'a* as "the whole body of beliefs, rituals, transactions, policies and norms that Allah has ordered Muslims to abide by". Supporting this definition, Zidan (1969, p. 38) argues that "*Shari'a*" and "Religion" are synonymous for Muslims. *Shari'a* is based on two essential sources: the *qur'an*, the holy book of Islam which contains God's word revealed to the prophet Muhammad over a period of 23 years, and the *sunna* - the practices and sayings of Muhammad - which became the source of Islamic ethics and norms for Muslim behavior.

As the Islamic faith attests that both *qur'an* and *sunna* were revealed by Allah, the supreme all-knowing creator, Muslims believe that provisions in both these sacred sources are impeccable and infallible, especially provisions that have a specific and fixed meaning. Moreover, Muslims also believe that such provisions are universal, suitable for every time and place. The study and

interpretation of *shari'a* through these primary sources is the essence of Islamic jurisprudence (*fiqh*) (Mutahhari, 1983). *Fiqh* adds to the body of Islamic *shari'a* laws by integrating different secondary sources in case the issue under investigation is not directly mentioned in the texts of *qur'an* and *sunna*. These secondary sources, also known as juristic principles, are: *Ijma*, or consensus among Islamic scholars, and *Qiyas* or process of analogical reasoning based on the understanding of the principles of the *qur'an* or *sunna*.

As Bälz (2008, p. 122) notes, the difference between divine ordinances, represented by *shari'a*, and their worldly interpretation, represented by *fiqh*, is a vital ingredient of Muslim legal thought and has played an important role in the shaping of Islamic law. Even if there is one divine provision regarding a certain issue, Muslim scholars tend to disagree on how to implement this provision depending on the specific situation in hand. According to Islamic legal doctrine, the jurists may choose any opinion to follow when there is no consensus. *Shari'a* does not sponsor a uniform and unequivocal formulation of the law since it bases its discourse on the constant interpretations of Muslim scholars of the *qur'an* and *sunna* as well as the consensus of the early generations of Muslim scholars. Since these scholars interpreted the sources in different ways, Muslims usually have various valid opinions for any legal issue in hand. Throughout the history of Islamic states, the jurists usually have tended to choose the legal verdict that would suit both the ruler's demands and, more importantly, the circumstances prevailing at the time (Peters, 2005).

The institution of the 'school of jurisprudence' (*madhhab*, plural *madhahib*) united Muslim scholars around certain legal doctrines and methodologies. This also brought more coherence and consistency in legal thought throughout the Islamic world since the adherents of these schools of jurisprudence were bound to follow the methodology of deduction as well as the actual opinions of the school's founding fathers. There are four jurisprudence schools in Sunni Muslim: the Hanafi [named after Abu Hanifa an-Nuʻman (c. 699–767)], Maliki [named after Malik ibn Anas (c. 711–795)], Shafii [named after Muhammad ibn Idris al-Shafii (c. 767- 820)] and Hanbali [named after Ahmad bin Hanbal (c. 780-855)]. Most of the *Shi'a* Muslims follow the Ja'fari jurisprudence [named after Ja'far al-Sadiq (702-765)].

Controversies on many essential legal issues are persisting between different *madhahib* and sometimes even within the same *madhhab*. Interestingly, Muslims view such controversies and

differences in Islamic legal opinion as permission for the Muslim public to follow any of these legal opinions. Furthermore, these differences in Islamic legal opinions stem from the uncontested ability of Muslims scholars across different ages to derive new legal opinions that suit their contemporary political, social and economic settings. This gives the Islamic legal system a dynamic part that can make Islamic laws cope with the changes across time and place. Under Islamic jurisprudence this is defined as *ijtihad*, which means "the making of a decision in Islamic law (*shari'a*) by personal effort, independently of any school of jurisprudence" (Wehr, 1976).

Gibb (1953), Zidan (1969, pp. 146-148), Anderson (1976), Al-Shawkani (1990, p. 38), Al-Ashkar (2005, p. 260) and Al-Milad (2011) emphasize the idea that since the 10th century CE, Muslim scholars from the abovementioned *madhahib* felt that all the fundamental questions of *fiqh* had been carefully studied and entirely finalized. A general consent started to materialize to the effect that from that point in time onwards no Muslim legal scholar might be considered to have the required qualifications for independent reasoning in law (*Mujtahed)*, and that all related future activity would have to be limited to the justification, application, and interpretation of the canon as it had been laid down once and for all. This 'closing of the door of *ijtihad*' gave rise to the concept of *taqlid*, a term that literally means 'imitation', that is; obeying the decision of a certain religious authority without essentially examining the scriptural basis or reasoning of that specific decision. In other words, accepting the verdict of scholars of *fiqh* without demanding an elucidation of the processes by which they arrive at it, hence observance of one of the classical schools of *madhahib*.

A considerable body of Islamic law literature refutes the aforesaid claim and argues that the door of *ijtihad* had never closed at any point in time (Hallaq, 1984, p. 33; Bediuzzaman, 1996; Kabbani, 2006; Salman, 2007; Al-Qabas, 2011). Rubin (2011, S. 1335) proposes an alternative perspective by arguing that the door of *ijtihad* may have been closed but not locked. In other words, political authorities, merchants and other interested parties in Islamic world after the 10th and 11th centuries may have been able to support efforts leading to *ijtihad*. Nevertheless, due to the incentives supported by the prevailing institutions, few had enough incentive to 'push the door open'. Such observed behavior led to the appearance that the door of *ijtihad* was closed and locked. Nevertheless, nearly all of the above mentioned studies agree that *ijtihad* should be

practiced only by highly qualified Muslim legal scholars to make sure their novel opinions are valid enough to be followed by Muslims. It is noticeable, however, that most of the contemporary *sunni fiqh* books base their legal decision only on the four *madhhab*[3] and that they hardly contain any legal opinion by any Muslim legal scholars after 10th century A.D (Ismail, 1997; Sabek, 1971).

## 3.  Types of punishments in Islamic criminal law

According to Zidan (1969, p. 474), Lippman (1989, p. 38), Hosny (2006), and Ramadan (2006b, p. 1610), there are three main categories of punishments for offenses in the Islamic penal system. The first and most flexible of these punishments is *ta'zir*. *Ta'zir* is derived from the verb *azzar*, which literally means, "to discipline with a punishment less than *hadd*" (Academy of the Arabic language, 2004; Omar, 2008). Al-Mursi (1999, p. 189) defines *ta'zir* as "a disciplinary and deterrent penalty on certain individual(s) for a forbidden and inappropriate conduct that cannot be punished by *hadd, qisas, diya or kaffara* (penance). *Ta'zir* is performed by whichever method the ruler (or judge) sees is appropriate and deterrent." Under the heading of *ta'zir*, the authorities can punish at their discretion all kinds of socially disagreeable behavior from an Islamic point of view such as cheating, gambling, or two unmarried individuals of the opposite sex spending time in a private place (*khulwa*) (Bahnasy, 1988, p. 34; Al-Mursi, 1999, p. 191). *Ta'zir* can even be imposed on those who decline to carry out religious duties such as ritual prayer or fasting (Peters, 2005, p. 66). The corrective powers of the authorities are hardly restricted and, consequently, the doctrine offers little protection to the accused.

Such punishment setup can induce uncertainty in law enforcement since a rational offender will not be able to deduce what the punishment will be for a certain unlawful act. Yet, El-Awa (1983) and Al-Khalifi (1992, p. 266) note that the judge is obliged under *shari'a* to make the punishment fit the crime since the *qur'an* states that "The guerdon of an ill-deed is an ill the like thereof. But whosoever pardoneth and amendeth, his wage is the affair of Allah. Lo! He loveth not wrong-doers." (Surah ash-Shura, 42:40) and "If ye punish, then punish with the like of that

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[3] *Al-Maktaba Al-Waqfeya*, one of the largest online sources of Islamic books, contains only five *fiqh* books that are not based on the four famous *madhahib*, see http://www.waqfeya.com/category.php?cid=67

wherewith ye were afflicted. But if ye endure patiently, verily it is better for the patient." (Surah an-Nahl, 16:126). Therefore, it is expected that the level of punishment in *ta'zir* would correspond, to a certain extent, to the amount of harm done by the unlawful act. This would decrease the level of punishment uncertainty that an offender faces.

El-Awa (1993, pp. 100-109) categorizes different kinds of *ta'zir* that were traditionally practiced by Muslim jurists against transgressors. These categories of *ta'zir* punishments include admonition, reprimand, threat, boycott, public disclosure, fines and the seizure of property, imprisonment, flogging, and death penalty. However, it should be noted that death penalty, practiced as a *ta'zir* punishment, is applied only in cases of high treason, homosexuality, propagating heretical or anti-Islamic doctrines, and on habitual offenders who repeatedly commit crimes (El-Awa, 1993, p. 109). According to Peters (2005, p. 66), out of the aforementioned types of *ta'zir,* the most common *ta'zir* punishments through the history of Islam were flogging, public rebuke, banishment and imprisonment until repentance. An important point to be taken into consideration is that the repentance of the accused prohibits and stops any *ta'zir* punishment. This is not the case of *hadd* where repentance does not stop the punishment. It is worth noting that Islamic jurisprudence does not provide a clear methodology with regards to dealing with accused persons that could unfavorably use this rule only to avoid *ta'zir.*

The second category of punishment comprises of *qisas* and *diya* punishments, which have provisions regarding offenses against persons. *Qisas*, applicable for murder or injury, is based on the notion of retaliation and self-administered justice: it involves inflicting the same punishment on the defendant as inflicted on the victim, usually by using the same methods (El-Awa, 1993, p. 71; Al-Mursi, 1999, pp. 141-145; Busaq, 2005, p. 164). *Diya*, which generally corresponds to manslaughter, involves financially compensating an injured or the family of a deceased person in case the act of injury or murder was unintentional (corresponding to involuntary manslaughter) or semi-intentional (corresponding to voluntary manslaughter) (Busaq, 2005, p. 162; Peters, 2005, p. 49; Al-Tusi, 2008). Nevertheless, *qisas* is applied in case the injured or the deceased's family refuse to pardon the offender and do not accept *diya* as well (El-Awa, 1993, p. 77; Al-Mursi, 1999; Peters, 2005, p. 44).

The third and most severe category is the *hudud* (or *hadd*, in the singular) punishment laid out in the *qur'an*. The word *hudud* literally means "limits" or "boundaries" (Kamali, 1998, p. 218). The

punishment prescribed for these offenses are seen as "claims of God" (Peters, 2005, p. 54). Because they are specified by God, they are regarded as fixed and cannot be changed. They include theft (punishable by amputation), armed robbery and banditry (punishable by death, amputation of limbs, banishment and crucifixion), extra-marital sex (punishable by death or flogging), unfounded accusation of extra-marital sex (punishable by flogging), consumption of alcohol (punishable by flogging) and apostasy or renunciation of Islam (punishable by death) (Sabek, 1971, p. 302; Al-Mursi, 1999, p. 4; Peters, 2005, p. 53). As with the whole body of *fiqh*, *madhahib* differ to a certain extent regarding the required provisions for applying prescribed punishments for each category of crime. Therefore, our analysis of theft under Islamic criminal law will mainly be based on the *fiqh* opinions with the highest degree of consensus among different *madhahib*. To conclude this section, it is essential to remember that, as the whole body of *fiqh*, most of islamic criminal provisions did not significantly develop after the 10$^{th}$ century CE due to the declining of *ijtihad* efforts and the rise of *taqlid* through Muslim community. The next section will deal extensively with provisions on theft under Islamic criminal law.

## 4. Theft under Islamic criminal law

Under Islamic *shari'a*, theft is considered a *hadd* crime, where a specific and fixed punishment is administered. This punishment is established by *qur'an*:

"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. But whoso repenteth after his wrongdoing and amendeth, lo! Allah will relent toward him. Lo! Allah is Forgiving, Merciful." (Surah al-Mā'ida 5:38-39)

According to Ali (1955, p. 605) and Al-Mursi (1999, p. 6), cutting the hands was already an established punishment for theft in pre-Islamic Arabia. Islam approved such punishment and the prophet Muhammad himself administered it through his reign (Sabek, 1971, p. 413). With *hudud* punishments described as 'brutal and medieval' (One Law for All, 2010, p. 6) and 'cruel' (Brems, 2001, p. 217), Muslim jurists and *fiqh* scholars try to revoke such criticism and provide a four-fold rationale behind such punishment for theft crimes; first, cutting the hand of a thief makes it very hard for this handicapped offender to commit another theft in the future. Second,

the amputation serves as a signal for the society that this individual was a convicted criminal and, therefore, interacting with such person must be kept to a minimum (Sedki, 1987, pp. 236-237; Al-Mursi, 1999, pp. 7-8). Third, by cutting the hand of a thief, this person is believed to have made amends for the sin of theft and will not be punished for it in the afterlife (Al-Mursi, 1999, p. 6). On the contrary, Peters (2005, pp. 53-54) undermines this reason and states that the purification from sin is only of secondary importance and does not extend to all cases in which fixed penalties are imposed, since these punishments also apply to non-Muslims, who cannot be purified from their sins. Lastly and most importantly, there is a consensus among Muslim legal scholars that the main reason of applying such punishment is deterrence (Sabek, 1971, p. 411; Sedki, 1987, p. 236; Al-Mursi, 1999, p. 6; Peters, 2005, p. 53; Busaq, 2005; Al-Sheha, 2007, p. 121). As law and economics literature is vastly interested in the concept of deterrence and its effect on crime, we attempt to analyze the deterrent effect of Islamic punishment on crimes. However, before doing this, a closer look on the conditions needed to apply punishment of theft crimes in Islam is required.

Even though the *qur'an* establishes the punishment for theft, the holy book of Muslims does not provide any provisions regarding how this punishment should be applied. Nevertheless, the main schools of *fiqh* develop an extensive set of requirements where a theft can be considered a *hadd* crime and is therefore punished by amputation of the right hand (or, according to the Shiites, of the four fingers of the right hand). These set of rules is derived from three main sources, which are the actions and sayings attributed to the prophet Muhammad, the understandings of prophet companions - the first generation of Muslims in the 7th century CE, and the interpretation of Muslim scholars for rationale of the prophet and his companions (Sabek, 1971, pp. 410-426; Al-Mursi, 1999, pp. 5-23). These provisions for *hadd* application have two categorizes; those related to the thief; and those related to the stolen item. As for the former, the most important provisions are that the thief must be sane, adult, have no share in the stolen money, and have no need to steal for himself or for another person. For the latter category, the stolen item must have been taken, among other requirements, in secret from a secure place and have a certain minimum value (*nissab*) (for a complete list of these provisions, see appendix).

Related literature argues that the most important of these requirements for *hadd* application are the surreptitious nature of theft, as well as the minimum value of stolen item. As for the former,

Ramadan (2006b, p. 1617) states that the 'taking secretly' element is important with respect to the definition of the offense and the appropriate punishment. As the definition of theft in Islamic *Fiqh* emphasises the secretive nature of stealing, legal decisions by muslim scholars are affected by this notion.

As for the latter, the concept of *nissab* in theft is established by the act of Prophet Muhammad, who amputated the hand of a thief for stealing a shield that was worth three Dirhams (Bukhari, 1996, Vol VIII, Book 81-No. 788/789/790) and his saying that, "The hand should be cut off for stealing something that is worth a quarter of a Dinar or more." (Bukhari, 1996, Vol VIII, Book 81- No. 780). At the time of Muhammad, three dirhams were equal to quarter of a Dinar (Sabek, 1971, p. 420). Al-Masha'al (2007) studies different opinions regarding the minimum value of the stolen item and reaches the conclusion that the suitable current value is 1.06 g of gold, which approximately equals $45.1 in current US dollars[4]. In case the theft did not meet the conditions needed to apply the fixed *hadd* punishment for amputation of the actor's hand, then the actor may be sentenced to a *ta'zir* punishment. As aforementioned, *ta'zir* gives wide-ranging powers for the judge or ruler as they punish (1) those who have committed theft but could not be convicted on technical grounds (e.g. in cases of uncertainty of evidence (*shubha*), or when the owner of the stolen item pardons the accused) and also (2) those who have committed theft but do not fall under their abovementioned strict conditions (Bahnasy, 1988, p. 19; Peters, 2005, p. 66).

As can be concluded from this section, punishment of theft under Islamic penal law differs significantly from corresponding western legal frameworks and even from contemporary legal systems in most Arabic and Islamic countries. Under the framework of public international law, such punishments, whether for *hadd* or *ta'zir*, are considered cruel and inhuman. Article 5 of the Universal Declaration of Human Rights states that "no one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment." Article 7 of the International Covenant on Civil and Political Rights (ICCPR) provides that "no one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment. In particular, no one shall be subjected without his free consent to medical or scientific experimentation." It should be noted that this

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[4] Gold-US Dollars conversion was calculated on October 31, 2013 using the goldprice.org website, http://goldprice.org/Calculators/Gold-Price-Calculators.html

study does not project any ethical predisposition or judgments on Islamic criminal law. We also do not intend to compare normatively between the "modern-humane" western legal institutions and the "archaic-brutal" Islamic laws. In the next section, we will investigate deterrence theory in Islamic criminal law.

## 5. Deterrence in theory of Islamic criminal law

Most of the literature dealing with punishment in Islamic criminal law argues that the underlying principles of all fields of Islamic law are deterrence and retribution. However, deterrence is stressed more evidently in most studies (Sabek, 1971; Bahnasy, 1988; El-Awa, 1993; Peters, 2005). Peters (2005) argues that even though Islamic laws related to homicide are based on retribution, the concept of deterrence plays a major role in this case as *qur'an* states:

"And there is life for you in retaliation, O men of understanding that ye may ward off [evil]." (Surah Al-Baqara 2:179)

This is usually understood as signifying that retaliation will deter people from killing. Nevertheless, we could not find any Islamic law research dealing with the deterrence incentives that this law implies for specific crimes such as theft. Deterrence theory assumes the rationality of the criminal. The rational criminal considers the consequence of his behavior before committing a crime by calculating the expected benefit from committing the crime and the expected cost in case of arrest and punishment and the punishment itself (Becker, 1968). Therefore, such a criminal will commit the act if his expected utility from doing so, considering his gain and the chance of being caught and sanctioned, exceeds his utility if he does not commit the act (Polinsky & Shavell, 2000). In other words, a potential offender commits a crime if his private benefits from such crime exceed probability of detection and sanction severity linked to this specific crime.

The law and economics literature dealing with deterrence usually separates between three notions of deterrence: general, specific and marginal deterrence. General deterrence focuses on reducing the probability of deviance in the general population by threatening all members of society with sanctions (LaFave & Scott, 1972; Scaros, 2011, p. 286). Blumstein (1978) defines

general deterrence as the inhibiting effect of sanctions on the criminal activity of the public other than the sanctioned offender. In other words, when the public perceives that offenders in a society receive punishment because of their deviant act, others are assumed to rationally avoid crime (Williams & McShane, 1994, p. 19). Specific deterrence shifts the focus from threatening all members of society with sanctions to the actual application of punishment onto specific offenders. The aim here is to prevent these offenders from future criminal acts by outweighing the gain from the crime with a suitably costly sanction (Scaros, 2011, p. 286). In other words, if the expected utility of violating law rises with the collective harm generated in a given society, it might be optimal for society to install a set of sanctions that increases with the social harm associated with that specific violation. With severe sanctions, any criminal would be threatened by the negative consequence of crime. Therefore, the expected utility for committing any offense would be lower than the expected cost of crime in case there is a sufficient level of detection in that society. Craswell (1999, S. 2189) and Polinsky and Shavell (2000) argue that the efficient deterrence of crime is achieved when the expected sanction regarding a certain crime equals the social cost caused by this specific crime. Such concept is called the multiplier principle.

We find that most of the studies dealing with Islamic law do not clearly differentiate between general and specific deterrence. However, it can be seen that the two concepts are relevant in the setup of Islamic punishments of crime. A considerable body of Islamic criminal law literature argues that *had* punishment of theft under Islamic law, albeit severe, is an effective deterrent since it helps preventing future acts of crime in a given society (see for example (Sabek, 1971; El-Awa, 1993; Al-Awabdeh, 2005; Ramadan H. M., 2006a). Ramadan (2006b) clearly states that "Islamic law employs a general deterrence approach in its fullest sense by prescribing tough punishment for offenses".

The third notion of deterrence in law and economics literature, namely marginal deterrence, is not considered in studies that dealt with Islamic law so far. The term marginal deterrence in its modern sense was introduced by Stigler (1970). However, classical writings on crime and punishment have already dealt with marginal deterrence, most noticeably in Beccaria (1770/1983) and Montesquieu (1748/1977). Bentham (1789/1973) states that the rationale behind punishment is "to induce a man to choose always the less mischievous of two offenses;

therefore where two offenses come in competition, the punishment for the greater offense must be sufficient to induce a man to prefer the less."

Shavell (1992) argues that while deterrence theory mostly focuses on situations in which individuals consider whether to commit a single harmful act or not, marginal deterrence deals with individuals choosing to perform one of several harmful acts. In other words, it is the tendency of an individual to be deterred from committing a more harmful act due to the difference, or margin, between the expected sanction for such act and a less harmful one. Garoupa (2003) states that "as long as expected sanctions rise with harm, criminals will choose the commit less harmful criminal acts. The result that the expected sanction for a more harmful criminal act should exceed that of a less harmful act is known as the marginal deterrence principle." Friedman and Sjostrom (1993) argue that the logic behind the concept of marginal deterrence is demonstrated in the English proverb "As good be hanged for a sheep as a lamb", where a thief has the option to carry off one animal from the flock. However, if the penalty is the same whichever animal he chooses to steal, he might as well take the most valuable. In the next section, we will use the deterrence theory to analyze the Islamic law of theft.


## 6. Deterrence in Islamic law of theft

According to Polinsky and Shavell (2000) and Dana (2001), efficient deterrence (or optimal law enforcement) is realized when the expected cost for a certain crime is equivalent to the social harm caused by this crime or offense. Consequently, the two types of Islamic sanctions for theft should correspond to the expected social harm from committing this offense in order to have efficient marginal deterrence. However, it is noticeable that the social harm associated with committing a *ta'zir* crime is larger than that associated with the severely punished *hadd* crime. The reason behind such a skewed punishment setup is that the requirements needed to apply *hadd* are directed to prevent first and foremost petty theft rather than crimes of embezzlement, fraud or bribery, which can cause greater social harm as the stolen amount in these latter crimes may be much larger than that of the former.

Sabek (1971, p. 412), Al-Mursi (1999, p. 6), and Ramadan (2006b, p. 1617) justify the punishment setup for theft by arguing that the harm generated by theft is of a much higher scale

than that generated by embezzlement since the social harm of embezzlement is limited to the creation of a sphere of mistrust between the victim(s) and the offender, in addition to the value of the property stolen. Conversely, social harm resulting from theft extends far beyond the value of the stolen property and the trust relationship between the parties as it negatively affects the entire sphere of social peace and order. Furthermore, if stealing property by means of secretly taking is allowd to be common by imposing a lesser sanction, this would promote an environment of guardedness and suspicion which would negatively influence everyday activities and cause economic losses (Ramadan H. M., 2006b). On this basis, muslim jurists rationalize that larceny, which encompasses secretly taking property that belongs to someone else, deserves a more severe punishment than embezzlement.

A rational offender would only commit theft if the gain from the crime exceeds the probability of detection times the cost of the sanction. As literature on Islamic criminal law presents no special provisions concerning apprehension of theft, we first assume in our analysis that the expected probability of detection in *hadd* crimes is the same as that of *ta'zir, i.e.* constant probability of detection. Using the latter assumption, subsection 6.1 will analyze, from a marginal deterrence perspective, some proposed sanctions under Islamic criminal law. This will be demonstrated by some revealing cases. In this part, we will follow Islamic literature and assume that probability of detection is the same for all crimes. Nevertheless, It can be reasonably assumed that probability of detection vary according to the crime in question. Consequently, the cost of committing a crime for a certain offender could be dramatically changed, even with an extreme sanction as hand amputation, when the probability of detection is low. We shall deal with the assumption of variable probability of detection in subsection 6.2. Even with such assumption, we will show how Islamic criminal law of theft is inefficient, ceteris paribus.

## 6.1. Deterrence with a fixed probability of detection

From a marginal deterrence perspective, our analysis shows that the structure of Islamic law of theft is inefficient since, ceteris paribus, a rational offender choosing between committing a crime of petty theft such as pick pocketing, which is punished with right hand amputation, and a crime of fraud, bribery or embezzlement, which is punished with *ta'zir,* would choose the latter since it is the crime with lesser punishment and can be of considerable high return. In other

words, an offender would be better stealing *more* (e.g. embezzling money) and, in case of apprehension, being punished according to the more lenient rules of *ta'zir*. To further demonstrate this essential point, we present the following cases that better reveal the inefficiencies of Islamic criminal law of theft in its current form:


A- Embezzlement

As abovementioned, embezzlement is punished with *ta'zir* under Islamic criminal law. This provision is mainly based on Prophet Mohammad's saying "the embezzler, the looter and the traitor should not be punished by *hadd*" (Al-Darmi, 2000, No. 2236). Al-Hamawi (2003, p. 331) notes that the definition of embezzlement in Islam differs from that of contemporary law since *fiqh* defines embezzlement as an overt and unlawful acquisition of something in the presence of the owner (Al-Sarkhasi, 1978; Ibn Qudama, 1984). This definition does not prescribe whether the stolen item is from public or private property. Moreover, the concept of the owner's presence remains blurry through Islamic criminal law as no specific definition is given regarding the meaning of "owner's presence". However, the crime of treason mentioned above corresponds with embezzlement in contemporary legal theory, since treason is defined as unlawfully taking from an entrusted property (Al-Bahoti, 1997).

Ibn Qayyim Al-Jawziyya (1968, p. 88) justifies the logic behind this *hadith* by arguing that one cannot take precautions against the thief who breaks into houses and breaches one's hiding-places and breaks locks; the owner of the goods cannot do any more than that (i.e., hiding them in appropriate places). Therefore, if it was not prescribed for the hand of the thief to be cut off, then people would steal from one another and a great deal of harm would be done, and the problem of theft would be grave. This is unlike the cases of looting and embezzlement, as the looter is the one who overtly steals in the sight of people, making it easy for them to stop this criminal act. As for the embezzler, he takes things when the owner is not paying attention. Therefore, there has to be some form of negligence, which enables the embezzler to steal, i.e. such a crime can be easily avoided. According to Ramadan (2006b, p. 1616), the main distinguishable element between theft and larcenous acts, including embezzlement, fraudulent larceny, and debtor/pledge refusal to return the pledge/debt, is secretly taking of property.

Given such punishment setup for embezzlement, it would be better for a rational offender to steal valuable property when the owner is not paying attention and without using force. As one of the requirements of a crime to be considered a theft is that the owner of the stolen item must not know about the crime, this offender would face an accusation of embezzlement rather than a theft and be punished under *ta'zir* regulations and not *hadd*. Moreover, the punishment setup does not consider value of the stolen item by any chance. In other words, embezzling an indefinitely large amount of public or private property will be punished with *ta'zir*, while an offender's right hand can be amputated for pick pocketing any amount more than or equal to $45.1.


### B- Stealing public property

Muslim jurists argue that the main purpose of Islamic criminal law is to protect people and their belongings (Sedki, 1987, p. 73). According to Peters (2005, p. 54), the objective of *hadd* penalties is to protect public interest. Hosny (2006, p. 18) notes that Allah did not set any legal rule except for the reason of public interest. Protecting public interest would certainly entail securing public property against theft by setting an appropriate sanction for the social harm corresponding to such offense. However, An-Na'im (1990, p. 5) notes that "Public law has traditionally been the least developed aspect of *shari'a*". A consensus appears among all *madhahib* (except Maliki) that *ta'zir* is the appropriate punishment for stealing public property, no matter what the value of the stolen property is. The rationale behind this legal rule is that *hadd* is not applied in case the thief had any share in the stolen property. Since public property is partially owned by every individual in the society, there is no doubt that the thief partially owns the stolen property (Sabek, 1971, p. 415; Al-Mursi, 1999, p. 11; Al-Hamawi, 2003, p. 345; Ramadan H. M., 2006b, p. 1630). It is apparent that private property is more protected under Islamic *shari'a* than public property since stealing any private property with a value that exceeds *nissab* is punished with *hadd*. On the other hand, stealing any amount of public property, no matter how large or small the amount, through committing crimes such as tax evasion, bribery or unlawful appropriation of development aid, can only be punished with *ta'zir*. Therefore, ceteris paribus, a rational offender would rather steal public than private property and face a lesser sanction in case of apprehension.

C- <u>Stealing perishable foods</u>

Stealing perishable foods is punished under *ta'zir*, regardless of the amount of food or its value (Al-Mursi, 1999, pp. 15-16; Peters, 2005, p. 56; Ramadan H. M., 2006b, p. 1618). Therefore, under such set of punishments, a rational offender would rather steal any amount of food products than committing petty theft, ceteris paribus. Ramadan (2006b, p. 1618) presents an interesting example that sheds light on how specific the punishment for stealing consumable food is in Islam. This example supposes that an offender stole a certain item and swallowed it. In this case, Islamic criminal law distinguishes between the case where the stolen property is consumable (e.g. food or drink) and the other case where the property is non-consumable (e.g. jewelry or money). In the former, the offense committed is criminal damage rather than theft. However, in the latter case, Muslim scholars present two propositions:

- First, swallowing property that is not safely retrieved afterwards is considered consumption; therefore, the crime committed is criminal damage.
- Second, swallowing property that is safely retrieved afterwards is considered "taking secretly." Therefore, the actor is liable for theft if the other requirements of the crime are fulfilled and a *hadd* punishment is applied.

Therefore, it can be stated that retrieving the property safely after swallowing is the benchmark for offense classification. If the property is retrieved safely, the actor has committed theft, punished with *hadd*. If not, then the offense committed is criminal damage, punished by *ta'zir*.

D- <u>The crime of kidnapping</u>

Kidnapping and abduction are synonyms in Islamic criminal law. Interestingly, the punishment of kidnapping in Islam depends on the status of the victim, whether a slave or a free person[5] (Sabek, 1971, p. 417; Ibn Jabrin, 2001; Ouda, 2009). The major Islamic *madhahib* (except Maliki) propose that, in case of the former, *hadd* is applied on the kidnapper since a slave is considered of monetary value and the slave's owner would be losing a valuable item. However,

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[5] Although prohibition of slavery is currently an international norm to which most, if not all, states in the world are committed, slavery continues to be lawful under Islamic law. For more on this, see An-Na'im (1990).

in the latter case, a kidnapper would be punished by *ta'zir* since a free person is not treated as money. In other words, kidnapping a slave is punished more severely than kidnapping a free person (Al-Mursi, 1999, p. 11; Al-Marzok, 2005; Al-Washli, 2008, p. 479).

This sanction setup presents an interesting conundrum demonstrated in the following three situations. First, in case an offender threatens a victim with a weapon, then this offender, in case of apprehension, will face the highly severe punishment of *haraba* (one of several sanctions that include death, crucifixion, cutting hands and legs, or banishment) (Sabek, 1971, p. 400). Second, in case the offender pickpockets a victim, then this offender faces *hadd*, and his hand is amputated. Third, and most interestingly, in case an offender kidnaps a child while using no weapon, then this offender receives the least of these punishments and *ta'zir* is applied. Such an inefficient setup of punishments can lead potential offenders to focus more on crimes of kidnapping than committing petty theft. It can be assumed that the probability of detection and punishment for this crime is independent of the kidnapped person's status, whether being free or slave. It could also be argued that ransom remains the main motive behind kidnapping crimes[6]. Consequently, it could be assumed that a free person's ransom would be greater than of a slave. With this in mind, we find that Islamic law incentivizes potential kidnappers to abduct free persons rather than slaves, as the former crime offers more gain and lesser sanction than the latter.

## 6.2. Deterrence with a variable probability of detection

A potential offender would commit a crime when its expected benefit exceeds its expected cost. The cost of crime for a potential offender is a product of the probability of detection and the severity of sanction (Stigler G. J., 1974). In the previous subsection, we assumed a constant probability of detection for all crimes. Therefore, our analysis mainly focused on the marginal deterrence of Islamic criminal law corresponding to changes in sanction severity. Through this subsection, we will integrate probability of detection in our analysis, assuming its variance according to the type of crime in question. Probability of detection plays a major role in Becker's (1968) rational criminal model. Stigler (1974, S. 60) states that the sanction and probability of

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[6] Apps (2011) states that, the insurance sector worldwide began writing 'Kidnap & Ransom' policies in the late 1970s. Such insurance policies currently generate yearly premiums of nearly $500 million.

detection must be increasing functions of the enormity of the offense. From this perspective, it can be argued that integrating probability of detection in our analysis could alter the findings of subsection 6.1. In other words, it may be the case that the probability of detection of *hadd* crimes is low and that of *ta'zir* crimes is high. Thus, even if the latter crimes are more lucrative, it is possible to preserve marginal deterrence while punishing them less severely.

We argue that, even when taking probability of detection into consideration, Islamic criminal law incentivizes potential offenders to commit more harmful criminal acts. According to Forte (1985, S. 53), Islamic law of theft is based on the idea of manifest criminality. The concept of manifest criminality is "that the commission of the crime be objectively discernible at the time that it occurred." (Fletcher, 2000, S. 116). In other words, manifest criminality describes certain crimes where the prohibited act could be recognized as a crime by a neutral third party observer without special knowledge of the offender's intention (Steel, 2008). In the context of Islamic criminal law, theft is considered a manifest crime while embezzlement, for example, is considered a non-manifest crime. According to Garoupa and Gomez (2008), the probability of detection is higher in the case of manifest theft than in the case of non-manifest theft for the same level of resources invested in apprehension and punishment. Additionally, as the sanction for manifest theft in Islam is more severe than non-manifest embezzlement, this violates the multiplier principle and becomes inefficient[7].

This remark is supported by the models developed through economic literature of avoidance activities (Malik, 1990; Nussim & Tabbach, 2007) and self-reporting (Kaplow & Shavell, 1994; Innes, 2001). From their perspective, manifest crime is less costly for the society. This is because it is easier to detect and prosecute such crimes without wasting valuable resources. On the other hand, an offender committing non-manifest crime exerts valuable resources to hide the unlawful activity. Consequently, non-manifest crime has a higher social cost than manifest crime. According to Garoupa and Gomez (2008), there are two reasons why penalties should be designed to induce higher incentives for manifest rather than for non-manifest crimes, due to the high social cost of the latter. First, manifest crimes have lower investigation and prosecution

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[7] The setup of Islamic criminal law resembles to a great extent that of Roman law. Consequently, this line of economic analysis is similar to that offered by Garoupa and Gomez (2008).

costs for victims. Second, manifest crimes generate fewer criminal avoidance activities that are a waste of resources, which have a positive effect on the cost of detection and punishment.

Since manifest crimes have less social cost than non-manifest crimes, the sanction associated with the former should be lower than that of the latter. In other words, the setup of Islamic criminal law should incentivize potential offenders to commit a manifest crime such as theft, as it is less costly and easier to detect. Nevertheless, Islamic criminal law offers *hadd* sanction for manifest crime and *ta'zir* for non-manifest crime. Such setup violates the multiplier principle as well as the marginal deterrence concept.

Consider a simple case where a potential offender rationalizes whether to commit theft or embezzlement. The expected utility from theft for this offender is

$$\frac{b_t}{d_t.s_t} \tag{1}$$

Where $b_t$ is the offender's benefit from theft, $d_t$ is the probability of detecting theft. $s_t$ is the sanction of theft. Similarly, the expected utility from embezzlement is

$$\frac{b_e}{d_e.s_e} \tag{2}$$

Where $b_e$ is the offender's benefit from embezzlement, $d_e$ is the probability of detecting embezzlement. $s_e$ is the sanction of embezzlement in Islamic criminal law. We know that the sanction for theft (*hadd*) is more severe than that of embezzlement (*ta'zir*), consequently:

$$s_t > s_e \tag{3}$$

As for the probability of detection, theft, as a manifest crime, has a higher probability of detection than embezzlement, a non-manifest crime:

$$d_t > d_e \tag{4}$$

Therefore, the expected cost of theft is always higher than the expected cost of embezzlement:

$$d_t.s_t > d_e.s_e \tag{5}$$

Assuming $b_t = b_e$, from a marginal deterrence perspective, a potential offender would prefer to commit embezzlement than theft,

$$\frac{b_t}{d_t.s_t} < \frac{b_e}{d_e.s_e}$$

As for the multiplier principle, equation (5) demonstrates that the expected sanction of theft is higher than that of embezzlement. Since manifest theft has less social harm than that of non-manifest embezzlement, multiplier principle is not fulfilled through the setup of Islamic criminal law.

## 7. Conclusion

The novelty of this study stems from analyzing Islamic criminal laws through theories developed by the field of 'law and economics'. Being revered by approximately one fifth of the world's population, these laws obtain their significance from Muslim's resolute belief in their divine nature. Additionally, with the historical upsurge of Islamic movements in Arab spring countries and calls for full application of *shari'a* through their respective societies, it becomes apparent that attempts to apply Islamic criminal law may soon materialize. Interestingly, no studies have been conducted by Islamic movements or interested parties to forecast the expected impact of applying these criminal laws, which may radically alter the legal and penological setup of the respective countries. Furthermore, research aiming to analyze law from an economic viewpoint has not tackle Islamic laws so far. Thus, this study is a first step towards bringing the attention of economists and legal researchers towards Islamic law at this crucial time of political and legal developments in Arab spring countries.

using the concept of marginal deterrence, as well as the multiplier principle, on Islamic penal laws of theft, the study has demonstrated that a rational offender would chose to steal an item that does not correspond with the conditions specified for the severe punishment of *hadd* and would chose, given the same return, a crime that would face the less severe punishment, which in our case is *ta'zir*. Legal rationale would set law so that the severity of the punishment is positively correlated with the seriousness of the crime in hand. The current setup of Islamic criminal law of theft contains major inefficiencies as crimes with severe social harm have

relatively lenient punishments while less serious crimes and petty theft have an extreme punishment of hand amputation. Consequently, criminals would prefer to commit crimes with high levels of social harm, and economic cost of crime for society would significantly rise. The reason behind such an inefficient legal setup is that crucial economic and legal concepts were not fully developed or taken into consideration by founders of *madhahib* in the 8th and 9th century CE. Even at our present time, contemporary Muslim jurists still base their legal verdicts on those *madhahib*, indefinitely prolonging the archaic viewpoints of *madhahib* founders. We call for a modern Islamic reinterpretation and recoding of Islamic penal laws as it offers little help in deterring crime, especially serious crime, in its current status-quo.

However, it is still not clear whether reason and logic motivate Muslim jurists to restructure Islamic laws of theft to correspond with sound legal and penological policies or if their belief in the infallibility of the current form of Islamic law deter them from extrapolating new legal verdicts. According to An-Na'im (1990, p. 112), searching for rational justification may help the believer to understand the wisdom and rationale of the *Shari'a*, but failure to find sufficient objective justification does not relieve him or her of the duty to comply. Consequently, penological and sociological considerations cannot affect the principle of *hudud*. In other words, the existence of *hudud* as part of the criminal law of an Islamic state is not dependant on the existence or strength of penological or sociological justifications. Nevertheless, we hope that, with the eminent potential of applying *shari'a* in Arab spring countries, Muslim jurists find enough motivation to review legal verdicts of Islamic criminal law in order to achieve efficient marginal deterrence. Our study demonstrates that, in its current form, an efficient deterrence is not provided through Islamic criminal law of theft due to its skewed and inefficient setup of punishments for criminal acts.

Further research on Islamic criminal law is needed at this point in time. Most importantly, since Islamic law was implemented with varying degrees across different societies through fifteen centuries of Islamic history, empirical studies are indispensable to investigate the effects of applying *shari'a* in Arabic Spring countries on their crime rates and deterrence. Moreover, since law and economics literature has developed advanced models in their quest to determine the optimal levels of law enforcement and deterrence in various settings, in-depth theoretical investigation of the stance of Islamic criminal law regarding different crimes is needed as well.

# Appendix

Requirements of applying *hadd* punishment for theft crimes in *shari'a* and *fiqh*[*]

<u>Regarding the Actor:</u>

1. The offender must be sane and adult (more than 15 years old according to most *madhaheb*).

2. The offender must not have resorted to stealing under compulsion. If that person had been obliged to do so because of hunger or poverty, the penal code is not applied.

3. If the actor claims that, when taking the item in question, the intention of stealing did not exist and the judge considers this, then the hand amputation penalty is not applied.

4. If before a theft can be proved, the offender goes to the judge and repents and promises not to steal in future, this person is saved from the punishment. However, once the theft has been proved, repentance is of no consequence and punishment will be implemented.

5. The offender must take away the stolen item from its proper place. If one takes out the thing from its owner's designated safe place and another actor steals it away, neither of the two can be punished for theft. Because, the one who has taken out the thing from its safe place has not stolen it and the one who has stolen it has not done so from its place of safety.

6. If the owner takes back his goods or allows the offender to keep them before the matter is reported to the judge and does not press for a penalty.

7. If the offender steals a certain good in the presence of its owner, the *hadd* punishment is not applied as theft is defined under Islamic penal law as "taking something without the knowledge of its owner". In such case, the actor is beaten up and warned about repeating this act again. However if a weapon was used in the theft, the punishment is equal to that of being at war against the Muslim society and is punished by *haraba*, a severe set of

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[*] Sources: Kamal-Al-Din A. Al-Mursi, <u>Al-hudud al-shariya fe al-deen al-islami (The legal hudud in Islam).</u> (Dar Al-Ma'refa Al-Jame'iya, 1999). Elsayed Sabek. <u>Fiqh alsunna (The jurisprudence of sunna).</u> (Dar Al-Fikr for printing, publishing and distribution., 1971). Rudolph Peters. <u>Crime and punishment in Islamic law: theory and practice from the sixteenth to the Twenty-first century.</u> (Cambridge University Press, 2005). Mohamed B. Ismail. <u>Al-fiqh al-wadeh (The clear fiqh).</u> (Dar Al-Manar, 1997). Mohamed S. El-Awa, <u>Punishment in Islamic law: a comparative study.</u> (American Trust Publications, 1993).

punishments which include crucifixion, cross amputation of the thief's right hand and left foot, banishment and death.

8. In order to prove the theft, two just Muslim witnesses should have seen the actor stealing. It may also be the case where there is only one witness but the owner of the stolen item also testifies that the specific actor has been seen stealing.


Regarding the stolen item:

9. The item stolen must have been taken from a secure place. If something is not kept in a safe place and left unsecured, its theft does not incur punishment.

10. The stolen item must be moveable. Stealing a building or a land property is not punished by *hudud*.

11. The stolen item has to have a certain minimum value (*nissab*).

12. The stolen item must be taken away in a surreptitious way. If someone steals goods from a market booth in broad daylight, the fixed penalty for theft cannot be imposed because the goods were not secretly stolen.

13. The stolen item must not be partially owned by the actor. Since Islam stresses on the notion that the children owe their lives and their belongings to their parents, if a father steals from his son, he is not punished. On the contrary if a son or a daughter steals from the father or mother their hands are amputated.

14. Stealing public utility or state treasury does not entail the fixed punishment of *hadd*, as it is considered to be partially owned by the actor. The value of the stolen public utility or the amount stolen out of the state treasury is not taken into consideration.

15. The stolen item must not be entrusted to the actor. Therefore, there is no *hadd* punishment for embezzlement, i.e. the misappropriation of goods entrusted to the embezzler.

16. If the use of the stolen things is considered forbidden, there is no *hadd* punishment against the robber. Forbidden items include wine, pork, pornographic material, copyrighted art that exposes private parts of men and women, musical instruments and cigarettes among others.

17. Perishable foodstuffs cannot entail the fixed punishment.

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# Religious Loyalty and Acceptance of Corruption

(with Sang-Min Park[*])

2nd Revise and resubmit, *Journal of Economics and Statistics*

# Religious Loyalty and Acceptance of Corruption

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 164,209 individuals in 80 countries surveyed during a period of 18 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.

Keywords: Religion, Corruption, Institutions, Preferences

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

## 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 164,209 individuals in 80 countries surveyed in 18 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 attitude**s** 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.

## 3. 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.

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

**Figure 1: The effect of religion on beliefs, values and actions related to corruption**
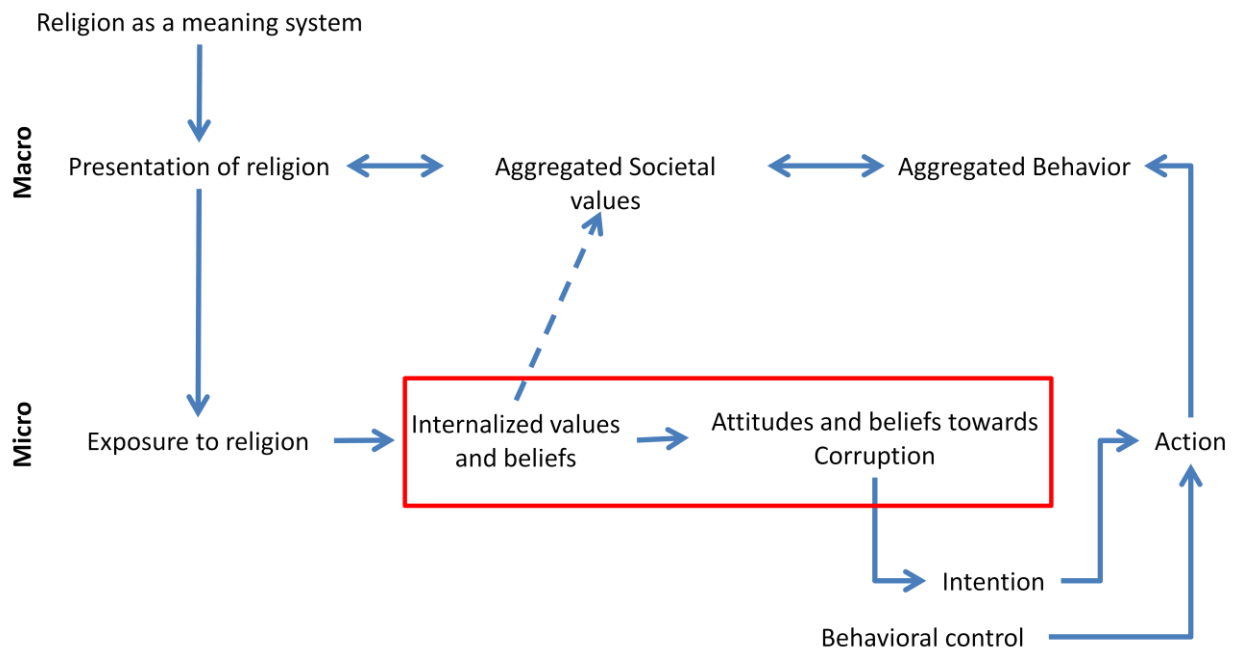


Source: Jagodzinski (2009), modified by the authors.

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 (represented by the red rectangle in Figure 1), 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.*

## 4. Methodology and model specification

Because our hypotheses relate to individual level behavior, it is appropriate that we test them with data from individuals. Naturally, experimental data about such behavior 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 164,209 individuals in 80 countries surveyed in 18 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).

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[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)

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 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 $Z^2_{jt}$ 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.

## 5. 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

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

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[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.

where $g(z) \equiv \dfrac{dG}{dz}(z)$. 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 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 corrupt behavior. 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 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

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[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.

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 30th-percentile), the effect is positive; for higher values of religiosity (above the 30th-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 99th -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.

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

## 6. 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.

**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 | .915573 | -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 | .578089 | 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 | 4.46421 | 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 | 0.0455755 | 0 | 0.2085633 | 0 | 1 |
| $Denom\_Jewish_i$ | Indicator variable for religious denomination (f025; 1 = Jewish) | 141326 | 0.0037997 | 0 | 0.0615249 | 0 | 1 |
| $Denom\_Muslim_i$ | Indicator variable for religious denomination (f025; 1 = Muslim) | 141326 | 0.2098552 | 0 | 0.4072066 | 0 | 1 |
| $Denom\_Orthodox_i$ | Indicator variable for religious denomination (f025; 1 = Orthodox) | 141326 | 0.1063499 | 0 | 0.308286 | 0 | 1 |
| $Denom\_Protestant_i$ | Indicator variable for religious denomination (f025; 1 = Protestant) | 141326 | 0.18959 | 0 | 0.391978 | 0 | 1 |
| $Denom\_Catholic_i$ | Indicator variable for religious denomination (f025; 1 = Catholic) | 141326 | 0.1632042 | 0 | 0.3695532 | 0 | 1 |
| $Denom\_Other_i$ | Indicator variable for religious denomination (f025; 1 = Other) | 141326 | 0.2592304 | 0 | 0.4382138 | 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) |

| | none | country | country, year | year |
|---|---|---|---|---|
| *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) |
| | | | | |
| 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**<br>It is forbidden to rob or to **steal** even a minor amount from either a Jew or a gentile.<br><br>**Sefer HaChinuch, 259**<br>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.<br><br>**Shulchan Aruch Choshen Mishpat 359:1**<br>It is forbidden to rob or to cheat even a minor amount from either a Jew or a gentile.<br><br>**Shulchan Aruch (Code of Jewish Law) Choshen Mishpat 348:2** | **Old Testament**<br>**Exodus 20:14-16**<br>"You shall not steal."<br><br>**Exodus 23:7-9**<br>"Do not accept a **bribe**, for a **bribe** blinds those who see and twists the words of the innocent.<br><br>**Leviticus 19:10-12**<br>"'Do not **steal**. "'Do not lie. "'Do not deceive one another.<br><br>**Deuteronomy 5:18-20**<br>"You shall not steal.<br><br>**1 Samuel 8:2-4**<br>But his sons did not follow his ways. They turned aside after dishonest gain and accepted **bribe**s and perverted justice.<br><br>**Job 36:17-19**<br>Be careful that no one entices you by riches; do not let a large **bribe** turn you aside.<br><br>**Psalm 15:4-5**<br>who lends money to the poor without interest; who does not accept a **bribe** against the innocent. | **New Testament**<br>**Matthew 15:18-20**<br>For out of the heart come evil thoughts—murder, adultery, sexual immorality,**theft**, false testimony, slander.<br><br>**Matthew 19:17-19**<br>"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,<br><br>**Mark 7:20-22**<br>For it is from within, out of a person's heart, that evil thoughts come—sexual immorality, **theft**, murder,<br><br>**Luke 18:19-21**<br>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.' "<br><br>**John 10:9-11**<br>The thief comes only to **steal** and kill and destroy; I have come that they may have life, and have it to the | **Qur'an**<br>**Al-Baqara, Chapter #2, Verse #188** (Pickthal)<br>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.<br><br>**Al-Maeda, Chapter #5, Verse #38**<br>"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."<br><br>**An-Nisa, Chapter #4, Verse #161**<br>"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.<br><br>**Hud, Chapter #11 Verse #85**<br>O my people! Give full | **Second Precepts Of Buddhism**<br>"I undertake the training rule to abstain from taking what is not given"<br><br>**Buddha's teaching in Aṅguttaranikāya**<br>"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."<br><br>**Mahasi Sayadaw in Sallekha Sutta**<br>"Other people may steal or loot what is not given by the owner.We will avoid doing so"<br><br>**Dhammika Sutta, v. 20**<br>A disciple then knowing [the law] should refrain from stealing anything at any place; should not | **The 10 Vedic Restraints- YAMA 3: Asteya, Nonstealing**<br>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.<br><br>**The 10 Vedic Restraints- YAMA 8: Arjava, Honesty**<br>Maintain honesty, renouncing deception and |

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| | | | | | |
|---|---|---|---|---|---|
| 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. | Whoever does these things will never be shaken.<br><br>**Ecclesiastes 7:6-8**<br>Extortion turns a wise person into a fool, and a **bribe** corrupts the heart.<br><br>**Isaiah 33:14-16**<br>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—<br><br>**Amos 5:11-13**<br>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. | full.<br><br>**Romans 2:20-22**<br>you, then, who teach others, do you not teach yourself? You who preach against **stealing**, do you steal?<br><br>**Ephesians 4:27-29**<br>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.<br><br>**Revelation 9:20-21**<br>Nor did they repent of their murders, their magic arts, their sexual immorality or their **thefts**. | measure and full weight in justice, and wrong not people in respect of their goods. And do not evil in the earth, causing corruption.<br><br>**Hadith**<br>**Sunan Abu-Dawud, Book #24, Hadith #3573**<br>Narrated Abdullah ibn Amr ibn al-As:<br>"The Apostle of Allah (peace be upon him) cursed the one who offers **bribe** as well as one who accepts **bribe**."<br><br>**Sunan Abu-Dawud, Book #23, Hadith #3534**<br>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. | cause another to steal anything, should not consent to the acts of those who steal anything, should avoid every kind of theft. | 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#toc5

**Figure 1: Marginal effect of religiosity**
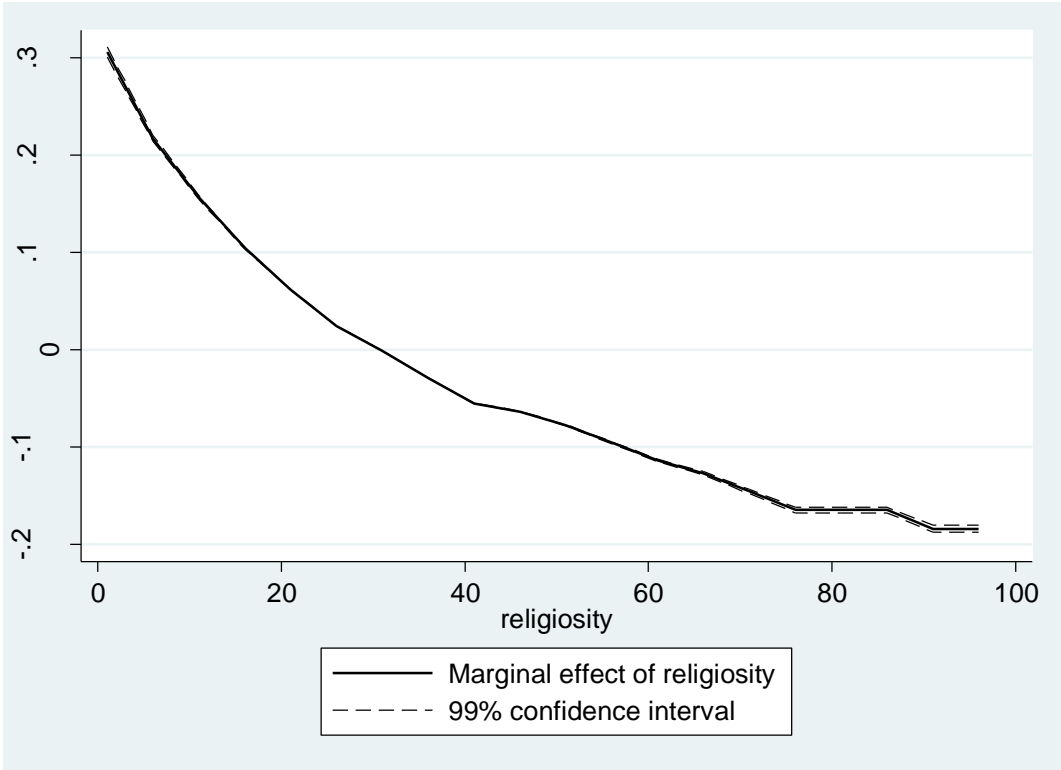


**Figure 2: Marginal effect of religiosity by religious denomination**
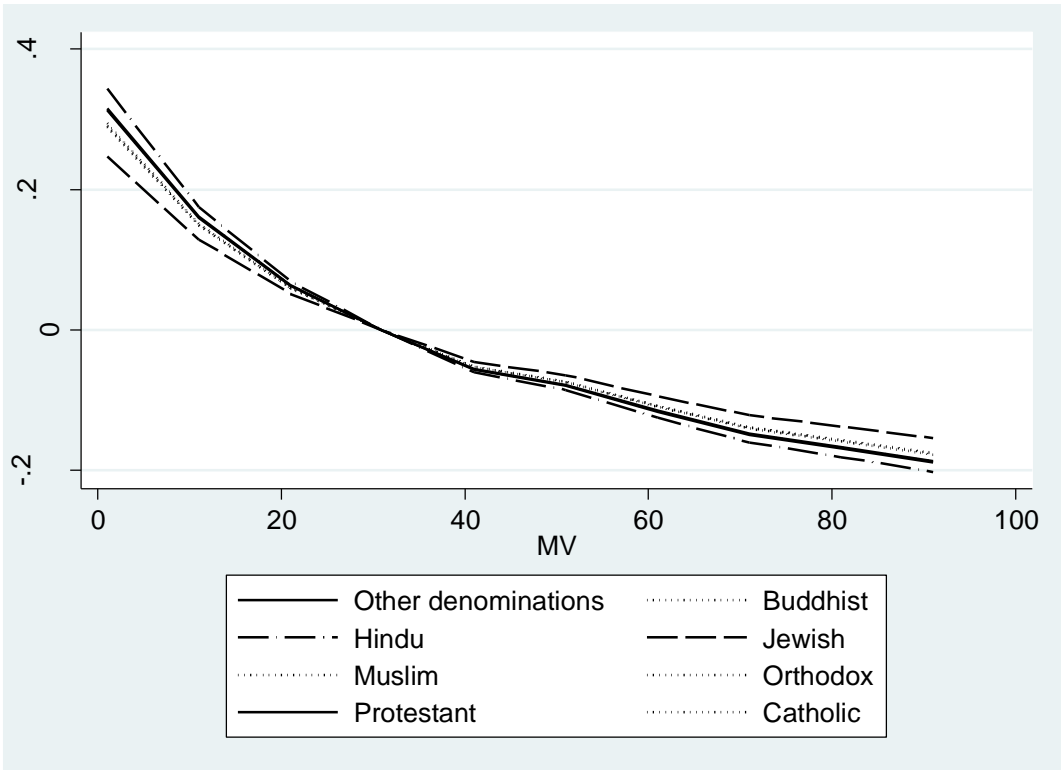
**Figure 3: Marginal effect of religiosity by acceptance of corruption (country)**



Legend:
- Marginal effect of religiosity at 1-percentile of acceptance
- Marginal effect of religiosity at 25-percentile of acceptance
- Marginal effect of religiosity at 50-percentile of acceptance
- Marginal effect of religiosity at 75-percentile of acceptance
- Marginal effect of religiosity at 99-percentile of acceptance

x-axis: percentiles of religiosity
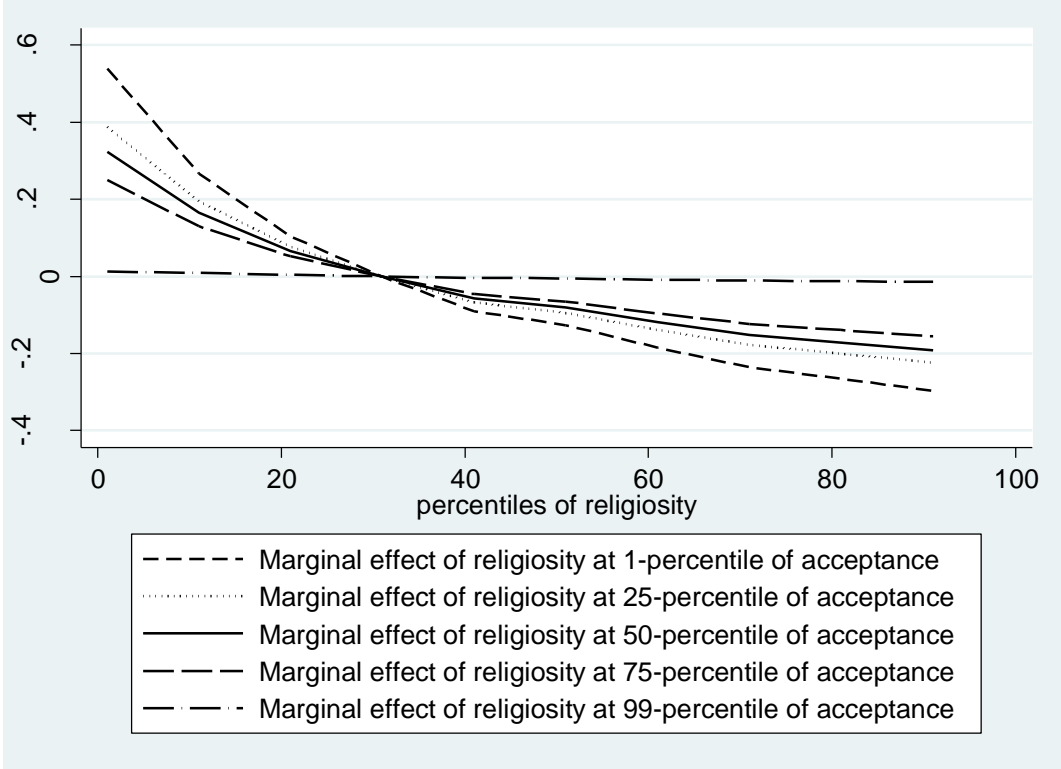
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# The Long-Term Effect of Slavery on Violent Crime: Evidence from US Counties[*]

# The Long-Term Effect of Slavery on Violent Crime: Evidence from US Counties

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Abstract:

This study is the first to empirically investigate the long-term relationship between slavery and violence in USA. Although qualitative evidence shows that slavery has been a key factor behind the prevalence of violence, especially in South USA (Cash, 1941; Franklin, 1956; Gastil, 1971; Wyatt-Brown, 1986), no empirical evidence supports this claim so far. I propose that the proportion of slaves in a certain county in 1860 is positively correlated with the rate of violent crimes in 2000. As violence was extensively used to control slaves for hundreds of years, a culture of violence was formed and persisted through time. Extending Engermann and Sokoloff's hypotheses (1997; 2002), I empirically examine two hypotheses: (1) slavery has a long-term effect on violent crime. (2) Such long-term effect is mainly transmitted through inequality. The results show that slavery in 1860 is positively associated with violent crime in 2000. Testing the second hypothesis, I find that land inequality in 1860 has a long-term significant effect on contemporary violent crime.

## 1. Introduction

Since the 18th century, it is noticeable that violence is more prevalent in Southern USA than other parts of the United States (Ayers, 1991; Nisbett, 1993). Clarke (1998, p. 275) states that "Violence was as much a part of the Southern landscape and culture as azalea festivals and bourbon whiskey". A considerable body of literature investigates the reason behind the prevalence of violence in South USA, a phenomenon coined as "Southern Violence" (Hackney, 1969; Gastil, 1971; Wasserman, 1977). Southern violence continued up till today. In 2011, the South was the region with the highest violent crime rate (Federal Bureau of Investigation, 2011). According to the 2011 U.S. Peace Index that measures level of peacefulness, or "absence of violence" on state level, the South was the least peaceful region in the United States, having nine of the ten nationally most violent states (Institute for Economics and Peace, 2011). Many studies hypothesize that the institution of slavery was an important factor behind this culture of Southern violence (Nash, Jeffrey, Frederick, Davis, & Winkler, 2003, p. 362; Cardyn, 2002; West, 2012).

This study fills an important gap in the economic and sociological literature by empirically investigating the long-term relationship between slavery and violent crime in the US. Engerman and Sokoloff (1997; 2002) argue that the existence of slavery in South USA led to significant inequality between different segments of the population. This inequality persisted over time and led to different levels of economic development in the long run (Engerman & Sokoloff, 1997; Engerman & Sokoloff, 2002). Moreover, Engerman and Sokoloff argue that historical inequality negatively affected important institutions such as patents (Khan & Sokoloff, 1998), suffrage (Engerman & Sokoloff, 2005), provisions of primary education (Mariscal & Sokoloff, 2000) and taxation (Sokoloff & Zolt, 2007). Extending Engerman and Sokoloff's thesis (1997; 2002), I empirically examine two hypotheses: (1) slavery has a long-term effect on crime. (2) Such a long-term effect is mainly transmitted through economic inequality.

The results show that slavery in 1860 positively affects violent crime in 2000. Testing for the second hypothesis, I find a significant positive long-term relationship between land inequality in 1860 and contemporary violent crime. The results are robust to controlling for three possible channels of inequality transmission between violent crime and the main explanatory variable. These channels of transmission are income per capita, poverty level and income inequality. Moreover, the results are robust when controlling for other contemporary variables affecting violent crime.

This study is divided into six sections. The next section provides a theoretical background on the relation between the legacy of slavery and violence. Section 3 presents the estimation strategy and data. Section 4

presents results on the empirical relationship between slavery and contemporary violent crime. Section 6 concludes.


## 2. Theoretical Background and Hypotheses

In a series of papers, Engerman and Sokoloff (1997; 2002; 2005) and Sokoloff and Engerman (2000) argue that the existence of certain factor endowments in 18th and 19th centuries was detrimental to long-term economic development in New World countries. These factor endowments are mainly soil, climate, and the size of labor supply, consisting primarily of slaves (Engerman & Sokoloff, 2002, p. 17). The differences in availability of these three factors led to the use of different production processes in different colonies, leading to different degrees of initial wealth concentration, human capital, and political power. This initial inequality significantly influenced the type of institutions set up in a given country. These institutions persisted over time and led to different levels of economic development in the longer run (Engerman & Sokoloff, 1997; Engerman & Sokoloff, 2002).

Relying mainly on qualitative evidence, Engerman and Sokoloff used this line of reasoning to argue that historical inequality negatively affected important institutions such as patents (Khan & Sokoloff, 1998), suffrage (Engerman & Sokoloff, 2005), provisions of primary education (Mariscal & Sokoloff, 2000) and taxation (Sokoloff & Zolt, 2007). Considerable empirical research follows suit and investigates the long-term effect of certain institutions, in particular slavery, on various economic outcomes. Recent findings indicate that slavery has a persistent and long-lasting effect on income inequality (Bertocchi & Dimico, 2011), economic development (Acemoglu, Johnson, & Robinson, 2002; Nunn, 2008; Maloney & Caicedo, 2012), racial educational inequality (Bertocchi & Dimico, 2012), and political attitudes (Acharya, Blackwell, & Sen, 2013). Investigating the long-run development of different municipalities in Columbia, Acemoglu, García-Jimeno, and Robinson (2012) find that the historical presence of slavery is associated with an increase in poverty rate and a reduction in school enrollment, vaccination coverage, and public good provision.

There has been a recent interest in investigating the long-term effect of historical institutions on violent behavior. Jha (2008) argues that inter-ethnic medieval trade has left a lasting legacy on the patterns of religious violence between Hindus and Muslims in India. Voigtländer and Voth (2012) demonstrate that the same places in Germany that saw violent attacks on Jews during the plague also showed more anti-Semitic attitudes over half a millennium later. As for the United States, a considerable body of sociological literature investigates the reason behind the prevalence of violence in the South, a phenomenon coined as "Southern Violence" (Hackney, 1969; Gastil, 1971; Wasserman, 1977). Since the 18th century, it was noticeable that the violence was far more prevalent in the South than other parts of the

United States (Ayers, 1991; Nisbett, 1993). Messner, Baller and Zevengergen (2005, p. 633) state that "distinctive historical experiences in the South gave rise to cultural orientations conducive to violence." According to Ousey (2000, p. 264), there is remarkable continuity in the position of the South as the most homicidal region of the United States, having the highest homicide rate every year between 1960 and 1997. Interestingly, this finding is identical to that of Redfield (1880), which observed that violent crime rates were highest in the Southern United States in mid 19th century.

Many studies try to explain this phenomenon. Most contemporary researchers view the empirical studies of Hackney (1969) and Gastil (1971) as starting points for explaining the source of the South's high violence rates (Ousey, 2000, p. 268). Hackney and Gastil argue that Southern violence can be attributed primarily to a unique cultural pattern which developed in the South and which persists, despite considerable economic and structural change in this region, to produce a consistently high rate of interpersonal violence. Gastil (1971) declare that the degree of 'Southernness' in the culture is a more powerful predictor of violence than socioeconomic factors, such as educations, age, or economic status. Although Loftin and Hill (1974) refute Gastil's latter claim, a considerable body of research, mainly sociological, hypothesize that Southern violence stems from specific cultural factors (Bruce, 1979; McCall, Kenneth, & Cohen, 1992; Clarke, 1998; Dixon & Lixotte, 1987; Ellison, 1991; Hayes & Lee, 2005).

In an attempt to explain the Southern culture of violence, Nisbett and Cohen (1996) identify four major explanations for Southern violence, including higher temperatures, greater poverty, and the tradition of slavery. Nevertheless, they argue that the importance of honor in the South is perhaps greater than any of the other explanations (Nisbett & Cohen, 1996, p. 3). The authors argue that the South "had and to a substantial degree, and still has, a type of culture of honor" (p. xiv). This culture of honor places extreme importance on the ability to react towards social insults and economic challenges. According to Nisbett and Cohen, in a "culture of honor," a reputation for toughness and strength is worth great economic value (p. xv).

Honor-based cultures develop in response to economic instability and minimal state protection against theft of property (Nisbett & Cohen, 1996, p. 4). Herding societies often demonstrate these characteristics since a loss of a herd represented a loss of entire wealth (Nisbett & Cohen, p. 5). The Scotch-Irish, descendants of Celtic herdsman, developed rural herding communities along the Appalachians and in the South. Consequently, Nisbett and Cohen (1996) believe that the Southern culture of honor derives from

the herding economy brought to the South by the earliest settlers and practiced by them for many decades thereafter.

Confirming the relation between herding and Southern violence, Grosjean (2011) empirically finds that historical Scot or Scots-Irish presence is associated with higher contemporary homicide, particularly by white offenders. The author also finds that the culture of honor was transmitted to subsequent generations; but only in the South and, more generally, where historical institutional quality was low. Other studies reach a similar conclusion (Wyatt-Brown, 2001; Baller, Zevenbergen, & Messner, 2009; Ousey & Lee, 2010). Nevertheless, other studies find little support for the proposition that herding affects Southern culture of violence (Chu, Rivera, & Loftin, 2000; Altheimer, 2013).

Among the reasons Nisbett and Cohen (1996) gave for Southern culture of violence is the tradition of slavery. Violence was extensively used by slaveholders to control slaves for hundreds of years. Being a slaveholder himself, Thomas Jefferson, founding father and the 3$^{rd}$ president of the United States, points out that the unrestrained authority wielded by slaveholders tended to breed reckless behavior and shortness of temper, characteristics passed from one generation of masters to the next (cited in (Ayers, 1991). Social historians have documented the brutality and violence of African enslavement in the South (Tolnay & Beck, 1995; Rice, 1975; Mullin, 1995; Fogel & Engerman, 1989; Campbell, 1989; Blassingame, 1972). Many studies propose that the institution of slavery has been a key factor behind the Southern culture of violence (Cash, 1941; Franklin, 1956; Gastil, 1971; Wyatt-Brown, 1986).

This study is the first to empirically investigate the relation between slavery and violence in USA. I hypothesize that the proportion of slaves in a certain county in 1860 is positively correlated with the rate of violent crimes in 2000. As violence was extensively used to control slaves for hundreds of years, a culture of violence was formed and persisted until our current time. Moreover, according to Engermann and Sokoloff's hypothesis, the initial presence of certain factor endowments explains the development of agricultural production methods based on slave labor, which in turn resulted in extreme economic inequality. They state that "the greater efficiency of the very large plantations, and the overwhelming fraction of the populations that came to be black and slave, made the distributions of wealth and human capital extremely unequal." (Sokoloff & Engerman, 2000, p. 221). Such inequality persisted over time and led to different economic outcomes in the long run (Engerman and Sokoloff (1997; 2002). Many studies find a significant positive relation between inequality and violent crime (Fajnzylber, Lederman, & Loayza, 2002; Wilkinson, Kawachi, & Kennedy, 1998; Kelly, 2000; Blau & Blau, 1982). Consequently,

my second hypothesis is that the initial inequality in land ownership is positively related to level of violence in a given county.


## 3. Estimation strategy and data

Following existing empirical literature, I conduct the analysis at the county level (Gould, Weinberg, & Mustard, 2002; Lott & Mustard, 1997; Hull & Frederick, 1995; Hull, 2000). Using Ordinary Least Square (OLS) regression, I first report baseline estimates of regressing violent crime in 1970, 1980, 1990 and 2000, respectively, on population proportion in slavery in 1860. For this purpose, I use a reduced model:

$$\ln y_i = \alpha + \beta Slave_i + \gamma Popdens_i + \mu Slavestate_i + \varphi Regional_i + \varepsilon_i \qquad \text{(I)}$$

Counties are indicated by subscript $i$, $y$ is violent crime per 100,000 population in the respective year, $Slave$ is the proportion of slaves to total population in 1860, $Popdens$ is the population density in 1860, $Slavestate$ is a dummy variable for slave states in 1860, $Regional$ is a dummy variable for regional divisions in USA, $\beta$ is our parameter of interest. I intermittently add dummies for slave state as well as regional divisions to even-numbered columns.

I then test for channels of transmission between slavery and violent crime using the following model:

$$\ln y_i = \alpha + \beta Slave_i + \gamma Popdens_i + \delta Landineq_i + \theta Gini_i + \varpi Income_i + \psi Poverty_i + \mu Slavestate_i + \varphi Regional_i + \varepsilon_i \qquad \text{(II)}$$

$Landineq$ is the Gini coefficient of land inequality in 1860, $Gini$ is Gini income coefficient in 2000, $Income$ is the log of income per capita in 2000, $Poverty$ is the proportion of population in poverty in 2000.

Adding further contemporary controls, I finally estimate the following model[1]:

$$\ln y_i = \alpha + \beta Slave_i + \gamma Popdens_i + \delta Landineq_i + \theta Gini_i + \psi Poverty_i + \lambda X'_i + \mu Slavestate_i + \varphi Regional_i + \varepsilon_i \qquad \text{(III)}$$

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[1] I do not include $Income$ when counting for further contemporary controls due to multicollinearity.

$X'$ is a set that includes contemporary controls for county characteristics that may affect crime rate. These contemporary controls are population per square mile, unemployment rate, proportion of population aged 18-34 (Youth), proportion of population with at least a high school degree (Educational Attainment), proportion of Hispanics and African American population. Including

County-level crime data comes from The Uniform Crime Reports (UCR) published by the U.S. Federal Bureau of Investigation. The Uniform Crime Reporting Program is a data collection effort designed to provide an overall view of crime in the United States. The data have been gathered by the Federal Bureau of Investigation (FBI) since 1930 and are compiled from law enforcement agencies on a monthly basis. By 2000, there were 19,655 law enforcement agencies contributing reports either directly or through their state reporting programs to UCR. The county level UCR files were aggregated to the county level and archived at the National Archive of Criminal Justice Data (NACJD), part of the Inter-University Consortium on Political and Social Research of the University of Michigan. We use the data collection containing county level counts of arrests and offenses for violent crime. Violent crime includes homicide (and non-negligent manslaughter), forcible rape, rape, robbery and aggravated assault.

Considerable economic literature use UCR county-level data on crime[2]. According to Maltz (2006), this data is popular for two reasons; first, since 1977 county-level crime data has been publically available on NACJD website; and second, there is greater variation in demographic characteristics among counties than among either cities or states, thus permitting analysts to investigate additional relationships between crime and these characteristics. Nevertheless, in a series of papers, Michael Maltz (1999; 2003; 2006), and Maltz and Targonski (2002; 2004) find many problems with the accuracy and reliability of UCR crime data, especially that on county level. Maltz (1999, p. iv) states, "The quality of the data provided to the FBI, however, is uneven. Reporting to the FBI remains for many jurisdictions a voluntary activity; although many States now mandate that agencies report crime and arrest data to them (which they then forward to the FBI), even in those States local agencies do not always comply. Moreover, despite the efforts of the FBI to maintain their quality, there are many gaps in the data that make their use questionable".

In line with this conclusion, Maltz and Targonski (2004, p. 1) conducted a project to clean, annotate and make available UCR crime data. They end up producing data files of monthly crime counts from 1960 to 2004 for the over 17,000 police departments in the US, for the seven Index crimes (murder, rape, robbery,

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[2] See, for example, Kovandzic and Vieraitis (2006), Grosjean (2011), Gould, Weinberg and Mustard (2002), Lott and Mustard (1997), Hull and Fredrick (1995), Hull (2000), Grinols, Mustard and Staha (2011), Lott (1998; 2000).

aggravated assault, burglary, larceny, and auto theft) (Ohio State University, 2013). Although Maltz's dataset offers more reliable crime statistics, it is limited by the large number of observations amputated. Moreover, as I aggregate monthly data on yearly basis, I use a strict standard of dropping a county's[3] observations if a month (or more) observation is missing. Consequently, as the number of available observations for Maltz's data is significantly limited, I use Maltz's data for robustness check. Both UCR and Maltz's data are merged with the 1990 and 2000 U.S. Census data to obtain crime rates per 100,000 people.

Considering Engerman and Sokoloff's hypothesis, I account for historical inequality by using the Gini coefficient of land inequality in 1860, which is constructed by Nunn (2008) and is available online[4]. Following Engerman and Sokoloff (1997; 2002) and Acemoglu et al. (2002), I account for population density in 1860 as a proxy for initial prosperity. All 1860 data primarily comes from the 1860 Decennial Censuses of the United States[5].

All data for the year 2000 are from the 2000 U.S. decennial census, except income data which comes from the Bureau of Economic Analysis's *Regional Economic Accounts* (U.S. Department of Commerce, 2013). I use United States Census Bureau's nine regional divisions to account for geographic differences among U.S. states (United States Census Bureau, 2013). Table 1 provides descriptive statistics for variables used.

## 4. Results: UCR data

The coefficient estimates and robust standard errors of model (I) are presented in Table 2. The results show that all of the estimated coefficients for fraction of population in slavery are positive and significant at the 1% level for the different years. Moreover, the magnitudes of the estimated coefficients are large. To illustrate, a one percentage point increase in fraction of slaves in 1860 translates to a 115% increase in violent crimes in 2000. Even when including regional and slave state dummies to check whether the relationship is being driven by differences across states, I find that violent crimes in 2000 increases by 80.5% when fraction of slaves in 1860 increases by one percentage point. This is in line with the first hypothesis regarding the relation between slavery and violent crime. Note that while we find that this

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[3] Maltz's data was initially identified by FBI's Original Agency Identifier (ORI). I use Law Enforcement Agency Identifiers Crosswalk for the year 2005 (National Archive of Criminal Justice Data, 2006) to link ORI with Federal Information Processing Standards (FIPS) county code.

[4] Data are available at Nunn's Harvard university webpage (http://scholar.harvard.edu/nunn/pages/data-0). For more information regarding the construction of this measure, see Nunn (2008, S. 36-37)

[5] Data can be accessed online at University of Virginia's Historical Census Browser
(http://mapserver.lib.virginia.edu/collections/)

relation persists across the decades, we cannot really strictly compare the estimated coefficients due to the differences of the numbers of observations between the years.

Model (II) is estimated through the specifications in table 3, where I test the second hypothesis related to inequality as the channel of transmission between slavery and violent crime. In columns (1) and (2), I include the Gini coefficient of land inequality in 1860 as a further independent variable. In columns (3) and (4), I test several channels of transmission from slavery to crime, namely income per capita, poverty level and income inequality. Dummies for regional divisions and slave states are added to columns (2) and (4). Through all columns, the slavery variable remains positively significant at the 1% level. We also look at beta coefficients to assess the relative importance of explanatory variables. The beta coefficients for slavery remain the highest among the four columns, scoring 0.23 and 0.18 in columns (1) and (2), respectively. When controlling for channels of transmission in columns (3) and (4), the beta coefficients reach 0.22 and 0.17 respectively. It can be seen that the three channels of transmission investigated at columns (3) and (4) minimally alter the effect of slavery on violent crime. Contemporary income per capita and Gini coefficient are both positive and highly significant, with the latter having a strong economic impact on violent crimes. Regarding land inequality, the results show that unequal distribution of land in 1860 has a positive and significant effect on violent crime in 2000. This goes in line with the second hypothesis regarding the long-term effect of initial inequality on violent crimes.

Table 4 reports the estimation results of model (III), where I control for other contemporary controls for the year 2000, namely population per square mile, unemployment rate, educational attainment, youth proportion, and proportion of Hispanics. I also control for proportion of African-Americans in columns (3) and (4). Dummies for regional divisions and slave states are added to even-numbered columns. As with previous models, the effect of slavery remains positive and highly significant at the 1% level, in line with our first hypothesis. Through the four regressions presented in this table, the effect of one percentage point increase in 1860 slave fraction correlates with a surge in violent crime in 2000 of a range between 72%-117.8%. Although controlling for other variables for the year 2000, the effect of the 1860 land inequality remains significant and loses only a bit in magnitude. The results suggest that a one percentage point increase in Gini coefficient of land inequality in 1860 is associated with a 73-85% increase in violent crime in 2000. This indicates that large scale plantations in 1860 made the distributions of wealth and human capital unequal. Consequently, such inequality exerts a considerable effect on level of violence in its respective county.

Note that the former population density variable and the Gini coefficient are no longer significant when adding the further contemporary controls. The effect of the proportion of African-Americans is insignificant, suggesting that inequality created by the former institution of slavery is not transformed to contemporary violence through today's proportion of African-Americans in a given county. Out of the contemporary controls, only the education attainment, proportion of Hispanics, and youth are significant, with the latter having the largest magnitude. As in the case of table 3, slavery fraction remains the variable with the highest beta coefficient across the four regressions, reaching 0.23, 0.18, 0.26 and 0.20 respectively. This is again in line with the first hypothesis.

## 5. Robustness check: Maltz data

For robustness check, I rerun the regression models of tables 2 to 4 using data provided by Maltz (Ohio State University, 2013) for the reasons illustrated in section 3. As with table 2, table 5 shows that all of the estimated coefficients for fraction of population in slavery are positive and significant at the 1% level. The magnitude of slavery estimates is considerably large. Note that population density estimates are not significant in any regression model in this table using Maltz's data. Regression results in table 6 are similar to table 3 for our variable of interest; the effect of slavery is positive and highly significant at the 1% level. Moreover, the effect of land inequality in 1860 is also positive and significant at 5% and 1% levels. As channels of inequality transmission are tested in columns (3) and (4), Gini coefficient retains its considerable importance. However, while contemporary income per capita is not significant in table 3, poverty in 2000 is positive and highly significant in table 6 using Maltz data.

Regression results in table 7 are noticeably different from that in table 4. Slave fraction is highly significant in columns (1) and (2), controlling for other contemporary variables. However, slave fraction loses this significance when the percentage of black population is controlled for in columns (3) and (4). Unlike the results obtained from UCR data at table 4, the effect of slavery on violence seems to be transmitted across time through the percentage of black population. Other variations from the results in table 4 exist. Gini coefficient, youth population and proportion of population in poverty have a high economic and statistic significance.

## 6. Conclusion

What are the reasons behind the prevalence of violence in Southern USA? This question is central for many sociological and economic theories aiming to explain this phenomenon. While numerous studies speculate that the legacy of slavery may have a significant effect on violence, no study has empirically investigated this claim. This study is the first to provide such empirical investigation. I base my

theoretical background on the institutional approach emphasized by Engerman and Sokoloff (1997). This approach profess that the roots of the different economic outcomes of the north and South of the USA are in their different levels of economic inequality in the 19th century. The main conclusion of this paper is that slavery has a significant and positive long-term effect on the incidence of violent crime. The effect is robust across the two datasets used.

As suggested by Engerman and Sokoloff, historic inequality plays a major role in impacting economic outcome in the long run. In our case, historic inequality is associated with contemporary violence. The results show that land inequality in 1860 is a strong determinant of violent crime in 2000. This relation is robust using Maltz dataset. Nevertheless, land inequality loses its significance when further contemporary controls are introduced in the model. As slavery was specifically targeted to black population, I test whether the violence black population faced during their enslavement until 1863 affected their tendency towards violence in their specific counties. I find that black population did not affect violence when historic slavery is controlled for. Nevertheless, this result is not found to be robust using Maltz data.

To conclude, it is interesting to note that although Nisbett and Cohen (1996) view the legacy of slavery as one of the four reasons behind the prevalence of violence in the South, it remains the only factor that has not been empirically tested so far. This study fills this gap in the literature and provides evidence that the prevalence of violence in South USA can be explained by institutions generated due to historic slavery. As other studies argue that the culture of honor is an important factor behind Southern violence, further research is needed to empirically investigate the combined effect of culture of honor and slavery on Southern US violence.

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**Table 1: Descriptive statistics and sources of the variables**

| Variable | Obs | Mean | Std. Dev. | Min | Max | Source |
|---|---|---|---|---|---|---|
| Violent crime (per 100,000 population) UCR (2000) | 2633 | 6.524 | 0.990 | 1.894 | 11.600 | |
| Violent crime (per 100,000 population) UCR (1990) | 2777 | 6.117 | 1.084 | 0.697 | 11.540 | In Logs County-level data |
| Violent crime (per 100,000 population) UCR (1980) | 2839 | 5.540 | 1.096 | 1.338 | 11.378 | Uniform Crime Reports- U.S. Department of Justice-Federal Bureau of investigation. Population statistics from U.S. Decennial Census. |
| Violent crime (per 100,000 population) UCR (1970) | 2179 | 4.252 | 1.096 | 0.091 | 7.154 | |
| Violent crime (per 100,000 population) Maltz (2000) | 834 | 5.264 | 0.886 | 2.145 | 8.759 | |
| Violent crime (per 100,000 population) Maltz (1990) | 1032 | 5.227 | 0.955 | 2.136 | 8.148 | In Logs County-level data Michael Maltz's Revisions on UCR data. Data can be downloaded from: http://cjrc.osu.edu/researchprojects/hvd/usa/ucrfbi/ |
| Violent crime (per 100,000 population) Maltz (1980) | 1327 | 5.008 | 1.005 | 1.743 | 7.814 | Population statistics from U.S. Decennial Census. |
| Violent crime (per 100,000 population) Maltz (1970) | 860 | 4.496 | 1.019 | 1.171 | 7.597 | |
| Fraction slaves per county (1860) | 2014 | 0.156 | 0.216 | 0 | 0.925 | Nunn (2008), U.S. Decennial Census. |
| Gini coefficient of land inequality (1860) | 1933 | 0.432 | 0.074 | 0.044 | 0.643 | Nunn (2008), Land area for U.S. states and counties are from U.S. Bureau of the Census (2006). |
| Population density (1860) | 2033 | 0.551 | 8.016 | 0 | 353.769 | Nunn (2008), U.S. Decennial Census. |
| Gini (2000) | 3109 | 0.434 | 0.038 | 0.314 | 0.605 | GeoDa Center for Geospatial Analysis and Computation |
| Log (Income per capita) (2000) | 3110 | 10.021 | 0.225 | 8.917 | 11.360 | Nunn (2008), U.S. Decennial Census. |
| Poverty (2000) (proportion of population poverty status is determined) | 3106 | 0.964 | 0.046 | 0.313 | 1.047 | U.S. Decennial Census |
| Population per square mile (2000) | 3138 | 243.73 | 1,666.86 | 0 | 66,834.60 | U.S. Decennial Census |
| Blacks (proportion of population) (2000) | 3106 | 0.864 | 0.144 | 0 | 0.868 | U.S. Decennial Census |
| Hispanics (proportion of population) (2000) | 3106 | 0.062 | 0.121 | 0.001 | 0.972 | U.S. Decennial Census |
| Unemployment rate (2000) | 3138 | 5.812 | 2.860 | 0 | 41.700 | U.S. Decennial Census |

| | | | | | | |
|---|---|---|---|---|---|---|
| Youth (2000) (proportion of population aged 18-34) | 3106 | 0.209 | 0.046 | 0.047 | 0.513 | U.S. Decennial Census |
| Educational Attainment (proportion of population with at least a high school degree) (2000) | 3105 | 0.507 | 0.070 | 0.160 | 0.737 | U.S. Decennial Census |
| Slave state dummy (1860) | 3361 | 0.334 | 0.472 | 0 | 1 | U.S. Decennial Census |
| Regional division dummy | 3138 | 5.526 | 2.872 | 1 | 9 | United States Census Bureau, Division 1: (New England) Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut. Division 2 (Mid-Atlantic) New York, Pennsylvania, New Jersey Division 3 (East North Central) Wisconsin, Michigan, Illinois, Indiana, Ohio Division 4 (West North Central) Missouri, North Dakota, South Dakota, Nebraska, Kansas, Minnesota, Iowa Division 5 (South Atlantic) Delaware, Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida Division 6 (East South Central) Kentucky, Tennessee, Mississippi, Alabama Division 7 (West South Central) Oklahoma, Texas, Arkansas, Louisiana Division 8 (Mountain) Idaho, Montana, Wyoming, Nevada, Utah, Colorado, Arizona, New Mexico Division 9 (Pacific) Alaska, Washington, Oregon, California, Hawaii |

**Table 2: Slavery and violent crime across time (UCR)**

| VARIABLES | Log (violent crime per 100,000 population) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) 2000 | (2) 2000 | (3) 1990 | (4) 1990 | (5) 1980 | (6) 1980 | (7) 1970 | (8) 1970 |
| **Fraction slaves (1860)** | **1.155\*\*\*** | **0.805\*\*\*** | **0.716\*\*\*** | **1.341\*\*\*** | **0.998\*\*\*** | **1.328\*\*\*** | **1.588\*\*\*** | **1.217\*\*\*** |
| | **(0.101)** | **(0.137)** | **(0.114)** | **(0.158)** | **(0.111)** | **(0.155)** | **(0.143)** | **(0.193)** |
| Population density (1860) | 0.0919\*\*\* | 0.150\*\*\* | 0.252\*\*\* | 0.281\*\*\* | 0.322\*\*\* | 0.335\*\*\* | 0.223\*\*\* | 0.220\*\*\* |
| | (0.0271) | (0.0375) | (0.0580) | (0.0733) | (0.0798) | (0.0894) | (0.0505) | (0.0492) |
| Constant | 6.308\*\*\* | 6.090\*\*\* | 5.927\*\*\* | 5.792\*\*\* | 5.302\*\*\* | 5.241\*\*\* | 3.901\*\*\* | 3.929\*\*\* |
| | (0.0313) | (0.0547) | (0.0351) | (0.0603) | (0.0386) | (0.0628) | (0.0379) | (0.0560) |
| Slave state dummy (1860) | No | Yes | No | Yes | No | Yes | No | Yes |
| Regional division dummy | No | Yes | No | Yes | No | Yes | No | Yes |
| Observations | 1,674 | 1,674 | 1,856 | 1,856 | 1,879 | 1,879 | 1,472 | 1,472 |
| R-squared | 0.069 | 0.083 | 0.032 | 0.077 | 0.057 | 0.069 | 0.088 | 0.097 |
| F-Test | F(2,1671)=68.43\*\*\* | F(4,1669)=45.13\*\*\* | F(2,1853)=27.59\*\*\* | F(4,1851)=34.38\*\*\* | F(2,1876)=46.07\*\*\* | F(4,1874)=29.61\*\*\* | F(2,1469)=68.48\*\*\* | F(4,1467)=38.66\*\*\* |

Notes: The table reports OLS estimates. Robust standard errors in parentheses, \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Table 3: Testing channels of transmission between slavery and violent crime (UCR)**

| VARIABLES | Log (violent crime per 100,000 population), 2000 | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| **Fraction slaves (1860)** | **1.023*** | **0.818*** | **0.991*** | **0.777*** |
| | **(0.105)** | **(0.138)** | **(0.113)** | **(0.140)** |
| Gini coefficient of land inequality (1860) | 1.307*** | 1.222*** | 1.098*** | 1.011*** |
| | (0.309) | (0.311) | (0.310) | (0.311) |
| Population density (1860) | 0.0670** | 0.116*** | -0.0136 | 0.0348 |
| | (0.0271) | (0.0318) | (0.0403) | (0.0316) |
| Gini (2000) | | | 3.072*** | 2.685*** |
| | | | (0.731) | (0.732) |
| Log (Income per capita) (2000) | | | 0.670*** | 0.703*** |
| | | | (0.128) | (0.128) |
| Poverty prop. (2000) | | | 0.361 | 0.490 |
| | | | (0.403) | (0.404) |
| Constant | 5.780*** | 5.620*** | -2.510* | -2.971** |
| | (0.132) | (0.135) | (1.424) | (1.404) |
| Slave state dummy (1860) | No | Yes | No | Yes |
| Regional division dummy | No | Yes | No | Yes |
| | | | | |
| Observations | 1,597 | 1,597 | 1,597 | 1,597 |
| R-squared | 0.079 | 0.090 | 0.101 | 0.112 |
| F-Test | F(3,1593)=49.99*** | F(5,1591)=39.31*** | F(6,1590)=29.48*** | F(8,1588)= 29.42*** |

Notes: The table reports OLS estimates. Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

**Table 4: Slavery and violent crime-more contemporary controls (UCR)**

| VARIABLES | Log (violent crime per 100,000 population), 2000 | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| **Fraction slaves (1860)** | **1.178*** | **0.917*** | **1.106*** | **0.720*** |
| | **(0.121)** | **(0.142)** | **(0.182)** | **(0.209)** |
| Gini coefficient of land inequality (1860) | 0.831*** | 0.738** | 0.847*** | 0.768** |
| | (0.308) | (0.309) | (0.308) | (0.307) |
| Population density (1860) | -0.00827 | 0.0626 | -0.00739 | 0.0680 |
| | (0.0782) | (0.0819) | (0.0783) | (0.0817) |
| Gini (2000) | 1.183 | 0.380 | 1.105 | 0.130 |
| | (0.821) | (0.842) | (0.839) | (0.869) |
| Population per square mile (2000 | 4.15e-05 | 1.42e-05 | 3.48e-05 | -3.60e-06 |
| | (9.27e-05) | (9.20e-05) | (9.37e-05) | (9.37e-05) |
| Unemployment rate  (2000) | 0.0204 | 0.0360** | 0.0185 | 0.0325** |
| | (0.0147) | (0.0152) | (0.0156) | (0.0158) |
| Educational Attainment prop. (2000) | 1.816*** | 2.179*** | 1.830*** | 2.252*** |
| | (0.506) | (0.551) | (0.506) | (0.555) |
| Hispanics prop. (2000) | 1.566*** | 1.306*** | 1.598*** | 1.377*** |
| | (0.307) | (0.314) | (0.316) | (0.326) |
| Black prop. (2000) | | | 0.142 | 0.355 |
| | | | (0.309) | (0.315) |
| Poverty prop. (2000) | 0.481 | 0.550 | 0.477 | 0.536 |
| | (0.464) | (0.488) | (0.466) | (0.495) |
| Youth prop. (2000) | 2.992*** | 3.283*** | 2.975*** | 3.251*** |
| | (0.528) | (0.536) | (0.528) | (0.536) |
| Constant | 3.254*** | 3.052*** | 3.288*** | 3.132*** |
| | (0.552) | (0.565) | (0.561) | (0.580) |
| Slave state dummy (1860) | No | Yes | No | Yes |
| Regional division dummy | No | Yes | No | Yes |
| | | | | |
| Observations | 1,597 | 1,597 | 1,597 | 1,597 |
| R-squared | 0.124 | 0.134 | 0.125 | 0.135 |
| F-Test | $F(10,1586)=25.12^{***}$ | $F(12,1584)=24.30^{***}$ | $F(11,1585)=22.98^{***}$ | $F(13,1583)=22.50^{***}$ |

Notes: The table reports OLS estimates. Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

**Table 5: Slavery and violent crime across time (Maltz)**

| VARIABLES | Log (violent crime per 100,000 population) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) 2000 | (2) 2000 (+ dummy variables) | (3) 1990 | (4) 1990 (+ dummy variables) | (5) 1980 | (6) 1980 (+ dummy variables) | (7) 1970 | (8) 1970 (+ dummy variables) |
| **Fraction slaves (1860)** | **0.863*** | **0.794*** | **1.209*** | **1.332*** | **1.231*** | **1.636*** | **1.946*** | **2.273*** |
| | **(0.179)** | **(0.215)** | **(0.177)** | **(0.220)** | **(0.148)** | **(0.191)** | **(0.199)** | **(0.251)** |
| Population density (1860) | 0.145 | -0.239 | 0.347* | 0.151 | 0.324 | 0.122 | 0.299 | 0.105 |
| | (0.272) | (0.298) | (0.194) | (0.238) | (0.212) | (0.230) | (0.194) | (0.181) |
| Constant | 5.074*** | 5.401*** | 4.888*** | 5.110*** | 4.632*** | 4.900*** | 4.111*** | 4.416*** |
| | (0.0633) | (0.125) | (0.0601) | (0.122) | (0.0618) | (0.110) | (0.0690) | (0.107) |
| Slave state dummy (1860) | No | Yes | No | Yes | No | Yes | No | Yes |
| Regional division dummy | No | Yes | No | Yes | No | Yes | No | Yes |
| | | | | | | | | |
| Observations | 463 | 463 | 615 | 615 | 792 | 792 | 499 | 499 |
| R-squared | 0.057 | 0.096 | 0.093 | 0.099 | 0.089 | 0.101 | 0.154 | 0.169 |
| F-Test | $F_{(2,460)}=14.94$*** | $F_{(4,458)}=12.35$*** | $F_{(2,612)}=29.12$*** | $F_{(4,610)}=15.84$*** | $F_{(2,789)}=42.06$*** | $F_{(4,787)}=24.92$*** | $F_{(2,496)}=55.28$*** | $F_{(4,494)}=29.77$*** |

Notes: The table reports OLS estimates. Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

**Table 6: Testing channels of transmission between slavery and violent crime (Maltz)**

| VARIABLES | Log (violent crime per 100,000 population) | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| **Fraction slaves (1860)** | **0.657*** | **0.814*** | **0.554*** | **0.796*** |
| | **(0.177)** | **(0.213)** | **(0.177)** | **(0.209)** |
| Gini coefficient of land inequality (1860) | 1.731*** | 1.614*** | 1.158** | 1.295** |
| | (0.524) | (0.553) | (0.528) | (0.545) |
| Population density (1860) | 0.00554 | -0.339 | 0.201 | -0.0530 |
| | (0.274) | (0.299) | (0.261) | (0.288) |
| Gini (2000) | | | 6.575*** | 6.514*** |
| | | | (1.162) | (1.164) |
| Log (Income per capita) (2000) | | | 0.217 | 0.171 |
| | | | (0.213) | (0.222) |
| Poverty prop. (2000) | | | 1.640*** | 1.526*** |
| | | | (0.553) | (0.537) |
| Constant | 4.414*** | 4.835*** | -1.945 | -1.068 |
| | (0.228) | (0.256) | (2.378) | (2.432) |
| Slave state dummy (1860) | No | Yes | No | Yes |
| Regional division dummy | No | Yes | No | Yes |
| | | | | |
| Observations | 433 | 433 | 433 | 433 |
| R-squared | 0.073 | 0.096 | 0.162 | 0.176 |
| F-Test | $F_{(3,429)}=11.28$*** | $F_{(5,427)}=9.20$*** | $F_{(6,426)}=14.38$*** | $F_{(8,424)}=11.58$*** |

Notes: the table reports OLS estimates. Robust standard errors in parentheses, *** $p<0.01$, ** $p<0.05$, * $p<0.1$

**Table 7: Slavery and violent crime-more contemporary controls (Maltz)**

| VARIABLES | Log (violent crime per 100,000 population) | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| **Fraction slaves (1860)** | 0.654*** | 0.904*** | 0.245 | 0.523 |
| | (0.174) | (0.204) | (0.296) | (0.342) |
| Gini coefficient of land inequality (1860) | 0.625 | 0.863 | 0.742 | 0.911 |
| | (0.542) | (0.552) | (0.557) | (0.558) |
| Population density (1860) | -0.255 | -0.409 | -0.252 | -0.422 |
| | (0.272) | (0.292) | (0.271) | (0.293) |
| Gini (2000) | 4.981*** | 5.534*** | 4.398*** | 4.896*** |
| | (1.164) | (1.196) | (1.243) | (1.315) |
| Population per square mile (2000) | 0.00133*** | 0.00134*** | 0.00127*** | 0.00127*** |
| | (0.000338) | (0.000374) | (0.000337) | (0.000372) |
| Unemployment rate  (2000) | 0.0315* | 0.0160 | 0.0208 | 0.00805 |
| | (0.0187) | (0.0201) | (0.0199) | (0.0209) |
| Educational Attainment prop. (2000) | -0.861 | -1.504* | -0.856 | -1.284 |
| | (0.729) | (0.874) | (0.730) | (0.883) |
| Hispanics prop. (2000) | -0.220 | -0.102 | -0.0596 | 0.0812 |
| | (0.500) | (0.515) | (0.515) | (0.543) |
| Black prop. (2000) | | | 0.814* | 0.707 |
| | | | (0.462) | (0.509) |
| Poverty prop. (2000) | 2.286*** | 2.413*** | 2.354*** | 2.386*** |
| | (0.609) | (0.615) | (0.614) | (0.622) |
| Youth prop. (2000) | 2.501** | 2.378** | 2.334** | 2.243** |
| | (1.103) | (1.085) | (1.102) | (1.091) |
| Constant | 0.214 | 0.462 | 0.436 | 0.698 |
| | (0.780) | (0.786) | (0.817) | (0.837) |
| Slave state dummy (1860) | No | Yes | No | Yes |
| Regional division dummy | No | Yes | No | Yes |
| Observations | 433 | 433 | 433 | 433 |
| R-squared | 0.234 | 0.246 | 0.241 | 0.250 |
| F-Test | F(10,422)=13.34*** | F(12,420)=11.09*** | F(11,421)=12.24*** | F(13,419)=10.31*** |

Notes: The table reports OLS estimates. Robust standard errors in parentheses, *** p<0.01, ** p<0.05, * p<0.1