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The Impact of Religion on Corruption

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Religion can influence human behavior and actions. One of the social behaviors is corruption which is important due to its effect on growth, inflation, investment and innovation and is rejected by all religions. The effect of religion on corruption has been investigated in this study. It is not the first time this issue is being investigated, but we can see certain paradoxes about it in some studies. Some of them show that religion as a cultural index has a positive effect on corruption and some others show that this effect is negative. This study uses data of 174 countries in 2010 and all of the economic and non-economic control variables were considered in its cross-sectional estimations. Although in some previous studies, religion was a factor in increasing corruption, this study shows that Islam and Christianity have no significant effect on corruption. Also, the robustness test strongly confirmed the results of the study. So, all the results showed that religion does not increase corruption.

Keywords: Religion, Corruption, Muslims, Christians

JEL Classification: Z120, D730

I. Introduction

Corruption is defined as the misuse of entrusted power for private gains according to UNDP (2010). This phenomenon is present in some countries more than others. Many researchers like Blackburn and Powell (2011), Evrensel (2010) as well as Aidt *et al.* (2008) showed that it has a negative effect on growth. Egger and Winner (2005) showed that increasing corruption has a negative effect on direct foreign investment and Anokhin and Schulze (2009) concluded that corruption has a negative effect on innovation. Corruption is an important variable resulting from social and cultural conditions. There are several researches regarding the causes of corruption. These factors can be divided into two groups: economic and non-economic.

In the existing literature, one of the non-economic factors is religion. It was introduced as an indicator of cultural factors. Religion can affect all human behaviors and decisions. Although the impact of religion on corruption has already been investigated, the results of the studies have not been similar. It should be noted that although embezzlement and bribery are forbidden in Christianity and Islam, corruption is found in Islamic and Catholic countries more than in the others. Some studies concluded that not only the same religion but also the multiplicity of religions is an important factor in corruption, but other studies like Shabbir and Anwar (2007) showed that the level of corruption is not affected by the religion. As Lambsdorff (2005) reported, La Porta *et al.* (1997) showed that Catholicism and Islam have a positive effect on corruption because of their

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hierarchical forms. They examined the mentioned hypothesis in 33 countries and reported a positive association between the percentage of population belonging to a hierarchical religion and corruption. In a larger sample consisting of 114 countries, the relationship was examined by La Porta *et al.* (1999) who found the relationship between religion and corruption is weak. As Lambsdorff (2005) explained, La Porta *et al.*'s finding is such because GDP per capita was also included as a control variable.

Treisman (2000) obtained a strong significant negative effect of percentage of Protestants on corruption in 64 countries. This result was also found by Gerring and Thacker (2005), but was not confirmed by Sandholtz and Gray (2003). Paldam (2002) considered a model for corruption in a cross-country pattern in 1999. His model included the growth of real income per capita, inflation rate and the economic freedom index. He identified several different groups of cultures and tested their impact on corruption. Paldam tried to explain corruption by a mixed economic-cultural model. He used religion as the key to cultural dimension. By comparing economic and cultural models, his results showed that both models lead to the same conclusion. The coefficient of each cultural dummy variable for Western Europe, Latin America and former communist countries is significant in all of his estimations. He concluded that the transition is influenced by culture and the countries tend to have much or little corruption relative to the transition trend.

Alesina *et al.* (2003) showed that multiple languages and religions have affected corruption and Gokcekus (2008) showed that Protestantism had a more robust impact on corruption in the past. He explained that the percentage of Protestants 100 years ago, i.e., in 1900, had a more significant effect on the level of corruption. He estimated this relationship by using data of 1900, 1970, 1990 and 2000 and found a lower t-statistic. This result indicates the Protestant effect is weaker than before.

Samanta (2011) reported that religion, especially Islam, has a positive effect in OPEC countries and leads to less corruption. Samanta estimated the effect of religion on economic growth, using panel data. It was found that economic growth reduces corruption in a unidirectional manner.

According to the current studies, there are two different impacts of religion on corruption. La Porta *et al.*'s (1999) and Treisman's (2000) theoretical analysis showed that corruption is more common in Islam and Catholicism because of their harmful effects on democracy and equality. But other studies, e.g., Samanta (2011) and North *et al.* (2013) rejected this finding. In all of these studies, religion is a cultural factor but their control variables are not the same. The control variables have an important role in the final result, i.e., the result depends on which index was used for a country. In the current study, the number of Muslims and Christians per 100 inhabitants, the sum of both groups and the government regulation of religion were used as indexes for the definition of the country's religion. This study analyzes the following questions:

1) Is religion a good factor for forecasting social behavior and if it is an acceptable variable for cultural factors, especially in social norms which can influence corruption?
2) Do Islam and Christianity, which are the most widespread religions in the world, have any significant effect on corruption?

To answer these questions, this study is organized as follows: Section II deals with the importance of corruption around the world. In Section III, causes of corruption will be discussed. Section IV is devoted to the data and the model. The empirical cross-sectional analysis is carried out by using the available data for countries in 2010. Section V reports and analyzes the empirical results and Section VI is devoted to conclusions.

II. The Importance of Corruption Around the World

Everyone agrees that corruption is a negative phenomenon and is prohibited by religions like Islam[1] and Christianity[2]. But surprisingly, some Islamic countries have the highest corruption level in the world. Corruption is measured by three institutions: Transparency International, the World Bank and the PRS group. Judge *et al.* (2011) explain the method of these indexes and report that they have correlation with each other. The corruption perception index (CPI) is the most popular measure. This measure is an aggregate indicator which brings together data from sources that cover the past two years. Transparency International, using data from 13 sources by 10 independent institutions, has calculated this index. Table 1 reports the CPI of 174 countries in 2010.

Table 1: Corruption Around the World (2010)

World Bank Code	Country	Transparency
AFG	Afghanistan	1.4
ALB	Albania	3.3
DZA	Algeria	2.9
AGO	Angola	1.9
ARG	Argentina	2.9
ARM	Armenia	2.6
AUS	Australia	8.7
AUT	Austria	7.9
AZE	Azerbaijan	2.4
BHR	Bahrain	4.9
BGD	Bangladesh	2.4
BRB	Barbados	7.8
BLR	Belarus	2.5
BEL	Belgium	7.1
BEN	Benin	2.8
BTN	Bhutan	5.7
BOL	Bolivia	2.8
BIH	Bosnia and Herzegovina	3.2
BWA	Botswana	5.8
BRA	Brazil	3.7
BRN	Brunei Darussalam	5.5
BGR	Bulgaria	3.6
BFA	Burkina Faso	3.1
BDI	Burundi	1.8
KHM	Cambodia	2.1
CMR	Cameroon	2.2
CAN	Canada	8.9
CPV	Cape Verde	5.1
CAF	Central African Republic	2.1
TCD	Chad	1.7
CHL	Chile	7.2
CHN	China	3.5
COL	Colombia	3.5
COM	Comoros	2.1
COD	Congo, Democratic Republic of	2
COG	Congo, Republic of	2.1
CRI	Costa Rica	5.3
CIV	Côte d'Ivoire	2.2
HRV	Croatia	4.1
CUB	Cuba	3.7
CYP	Cyprus	6.3
CZE	Czech Republic	4.6
DNK	Denmark	9.3
DJI	Djibouti	3.2

[1]For example, the *Quran*, see 2:188 and 5:62.
[2]For example, the *Bible*, see Exodus 23:8, Proverbs 12:14 and 15:27, and Hebrews 13:5-6.

Table 1: Corruption Around the World (2010): Continues

World Bank Code	Country	Transparency
DMA	Dominica	5.2
DOM	Dominican Republic	3
ECU	Ecuador	2.5
EGY	Egypt, Arab Republic of	3.1
SLV	El Salvador	3.6
GNQ	Equatorial Guinea	1.9
ERI	Eritrea	2.6
EST	Estonia	6.5
ETH	Ethiopia	2.7
FIN	Finland	9.2
FRA	France	6.8
GAB	Gabon	2.8
GMB	Gambia, The	3.2
GEO	Georgia	3.8
DEU	Germany	7.9
GHA	Ghana	4.1
GRC	Greece	3.5
GTM	Guatemala	3.2
GIN	Guinea	2
GNB	Guinea-Bissau	2.1
GUY	Guyana	2.7
HTI	Haiti	2.2
HND	Honduras	2.4
HKG	Hong Kong SAR, China	8.4
HUN	Hungary	4.7
ISL	Iceland	8.5
IND	India	3.3
IDN	Indonesia	2.8
IRN	Iran, Islamic Republic of	2.2
IRQ	Iraq	1.5
IRL	Ireland	8
ISR	Israel	6.1
ITA	Italy	3.9
JAM	Jamaica	3.3

World Bank Code	Country	Transparency
JPN	Japan	7.8
JOR	Jordan	4.7
KAZ	Kazakhstan	2.9
KEN	Kenya	2.1
KIR	Kiribati	3.2
KOR	Korea, Republic of	5.4
KSV	Kosovo	2.8
KWT	Kuwait	4.5
KGZ	Kyrgyz Republic	2
LVA	Latvia	4.3
LBN	Lebanon	2.5
LSO	Lesotho	3.5
LBR	Liberia	3.3
LBY	Libya	2.2
LTU	Lithuania	5
LUX	Luxembourg	8.5
MAC	Macao SAR, China	5
MKD	Macedonia, FYR	4.1
MDG	Madagascar	2.6
MWI	Malawi	3.4
MYS	Malaysia	4.4
MDV	Maldives	2.3
MLI	Mali	2.7
MLT	Malta	5.6
MRT	Mauritania	2.3
MUS	Mauritius	5.4
MEX	Mexico	3.1
MDA	Moldova	2.9
MNG	Mongolia	2.7
MNE	Montenegro	3.7
MAR	Morocco	3.4
MOZ	Mozambique	2.7
MMR	Myanmar	1.4
NAM	Namibia	4.4
NPL	Nepal	2.2
NLD	Netherlands	8.8

Table 1: Corruption Around the World (2010): Continues

World Bank Code	Country	Transparency
NZL	New Zealand	9.3
NIC	Nicaragua	2.5
NER	Niger	2.6
NGA	Nigeria	2.4
NOR	Norway	8.6
OMN	Oman	5.3
PAK	Pakistan	2.3
PAN	Panama	3.6
PNG	Papua New Guinea	2.1
PRY	Paraguay	2.2
PHL	Philippines	2.4
POL	Poland	5.3
PRT	Portugal	6
PRI	Puerto Rico	5.8
QAT	Qatar	7.7
ROU	Romania	3.7
RUS	Russian Federation	2.1
RWA	Rwanda	4
STP	Sao Tome and Principe	3
SAU	Saudi Arabia	4.7
SEN	Senegal	2.9
SRB	Serbia	3.5
SYC	Seychelles	4.8
SLE	Sierra Leone	2.4
SGP	Singapore	9.3
SVK	Slovak Republic	4.3
SVN	Slovenia	6.4
SLB	Solomon Islands	2.8
SOM	Somalia	1.1
ZAF	South Africa	4.5
ESP	Spain	6.1

World Bank Code	Country	Transparency
LKA	Sri Lanka	3.2
SDN	Sudan	1.6
SWZ	Swaziland	3.2
SWE	Sweden	9.2
CHE	Switzerland	8.7
SYR	Syrian Arab Republic	2.5
TJK	Tajikistan	2.1
TZA	Tanzania	2.7
THA	Thailand	3.5
TLS	Timor-Leste	2.5
TGO	Togo	2.4
TON	Tonga	3
TTO	Trinidad and Tobago	3.6
TUN	Tunisia	4.3
TUR	Turkey	4.4
TKM	Turkmenistan	1.6
UGA	Uganda	2.5
UKR	Ukraine	2.4
ARE	United Arab Emirates	6.3
GBR	United Kingdom	7.6
USA	United States	7.1
URY	Uruguay	6.9
UZB	Uzbekistan	1.6
VUT	Vanuatu	3.6
VEN	Venezuela, RB	2
VNM	Vietnam	2.7
YEM	Yemen, Republic of	2.2
ZMB	Zambia	3
ZWE	Zimbabwe	2.4
	Average	4.01092

The CPI ranges from 0 to 10 and the lower value conveys high corruption.[3] In 2010, the mean of this index of the countries under discussion was 4.01. Somalia with 1.1 and Denmark with 9.3 have the highest and lowest level of corruption, respectively. Almost 63.79 percent of countries have a corruption level higher than the average value of the world.

III. Determinants of Corruption

Corruption is a social phenomenon that is hard to define mathematically. Fortunately, some of the causes of corruption have been checked by previous researchers. Theoretically, some of these factors do not have a strong effect on corruption. Dreher *et al.* (2007) concluded that these factors can be shown in four groups: political, historical, social-cultural and economic.

Democracy, electoral rules and the degree of decentralization are some of the political factors that are shown by Treisman (2000), Fisman and Gatti (2002), Paldam (2002), Chowdhury (2004) and Shrabani *et al.* (2009). The effect of democracy on corruption was investigated in many studies. Some of the researchers like Treisman (2000) mentioned that democracy increases growth and consequently reduces corruption. Treisman's research was not an empirical study and some empirical studies rejected the positive effect of democracy on growth. So one can ask if democracy leads to growth. According to some studies, the impact of democracy on growth depends on the amount of corruption in the country. However, in reality we can overlook democracy as a determinant of growth because of its unproven impact on corruption and also its high collinearity with some of the other determinants of growth. According to the existing literature, the determinants of corruption vary according to different studies.

For instance, Vorhies and Glahe (1988), Wittman (1989), Scully and Slottje (1991), Spindler (1991) and Olson (1993) showed that the increase in democracy leads to more growth because it results in a higher public participation. Also, a market economy has a structure which could lead to democracy. Przeworski and Limongi (1993) found that democracy cannot be a cause for growth. They mentioned that the lack of political stability leads to disruptive solidarity in the development of policies and the trend of democracy to redistribution of income, which is among policies, does not lead to growth especially in poor and low income nations. According to Lambsdorff (2005), the relationship between corruption and democracy is not linear. In some processes of growth, more democracy leads to more corruption and after a threshold it leads to a decrease in corruption.

In the present study, the effect of democracy on corruption, using the democracy index obtained from the Freedom House (2013), is examined. We found that democracy decreases transparency which contradicts the general view that it leads to more information. Also using dummy variable for dictatorship states it was found that it increases transparency. According to Przeworski and Limongi (1993) and Shrabani *et al.* (2009), the impact of democracy on growth cannot be analyzed without considering a social structure. The role of the judicial system has been studied by Baker (1988) and North (1990). Some other studies, e.g., La Porta (1997) and Treisman (2000), pointed to historical factors like the colonial heritage of the country and the civil law system associated with former colonies of continental European countries.

Social-cultural factors should also be included in the analysis. For example, La Porta *et al.* (1999) Treisman (2000) and Alesina *et al.* (2003) consider religion, ethnicity and multiple languages as proxies for social and cultural factors. Paldam (2002) used dummy variables for four cultural regions in the world. The impact of religion as a cultural factor has been investigated by

[3]This index shows transparency which is the inverse of corruption.

La Porta *et al.* (1999) and Treisman (2000) who show that Muslims and Catholics, because of their hierarchical system, are more corrupt but Protestants, due to their religion's positive effect on democracy and growth, are less corrupt. Alesina *et al.* (2003) showed that the multiplicity of religions, languages and ethnicities increases corruption because of their negative effect on government quality.

Some antithetical studies reject the above reasons and results. Gokcekus (2008) explained that the effect of Protestantism on corruption is weaker nowadays. The percentage of Protestants 100 years ago was more significant than today. The t-statistic of the coefficient of this index was double in 1900, compared to 2000. Gokcekus showed that the corruption function is not linear and different control variables can change the significance level. Also, using regional control variables led to a strange reduction in the religion effect on corruption. His result about regional control variables confirmed Paldam's (2003) results. Cameron *et al.* (2009) showed that the tendency to punish corruption is more than the tendency to eliminate it. Also they showed that there is no relationship between the level of corruption and nationality. It means that bribery is not related to nationality. They concluded that even accepting bribery from and offering bribery to Indonesian students was lower than for Singaporean students although Indonesia has one of the highest corruption indexes in the world contrary to Singapore. Finally, Barr and Serra (2010) showed that although corruption is a cultural phenomenon, we cannot prejudge the countries based on cultural differences only.

Figure 1: Causes of Corruption

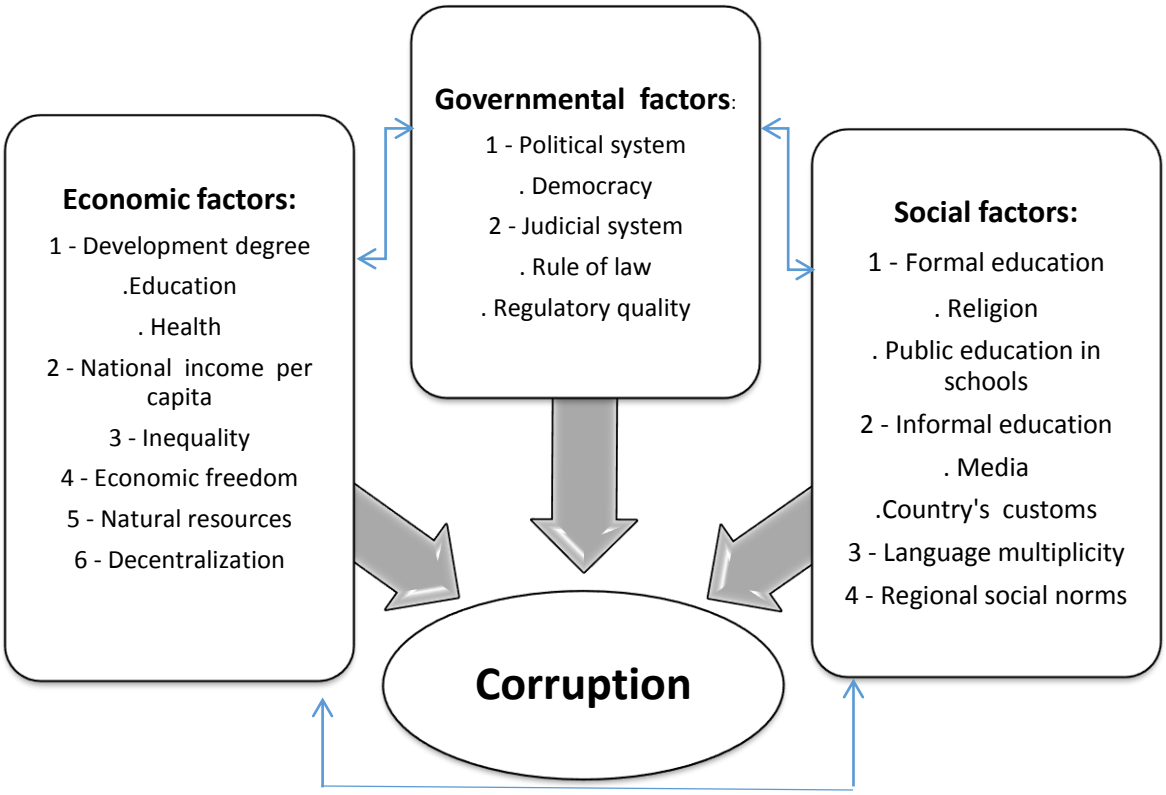

Figure 1 shows the causes of corruption in a country. According to this figure, the society structure is one of the factors affecting corruption. Furthermore, such structure consists of political,

economic and cultural organizations which are related to each other. According to previous studies, the most important causes of corruption are known. In the next section, data and model are presented based on these investigations.

IV. Data and the Model

Data are drawn from a wide range of sources. There are three major measures of corruption: the corruption perception index (CPI) that is the inverse of transparency, the control of corruption index (CCI) and the corruption index (CI). The CPI is the most popular one and is drawn from 13 data sources. It ranges from 0 to 10 where low values indicate high transparency and low corruption. According to Judge *et al.* (2011), the correlation coefficient of CPI with CCI is 0.97 and with CI, 0.75. The CPI is used as an index for corruption in the present study. The corruption perception index was obtained from Transparency International (2013).

It is expected that more society facilities lead to less corruption. GDP per capita was used as a proxy for society facilities in some of the previous studies. The question is that, can GDP per capita explain the differences between available facilities for every citizen in the countries? GDP per capita is the value of all final goods and services produced in a country in a given year divided by the average population for the same year. This variable explains a total value of products without any attention to inequality in using facilities. Sims *et al.* (2012) show that human development index has a significant effect on corruption. It seems the variable inequality-adjusted human development index as an explanatory variable not only shows the level of country development but also reflects inequality. So, it can explain corruption better. If people have more available facilities with less discrimination, their tendency to do corrupt acts will be less. Inequality-human development index (IHDI) is obtained from the Human Development Report (UNDP, 2010). In the main estimation, I use this index because of its logical relation with corruption. But due to the general use of GDP per capita as an index for available facilities in different studies, I also used GDP per capita in constant 2005 US$ and PPP (GDP per capita based on purchasing power parity). However, all proxies gave the same result. Both of GDP per capita indexes are extracted from the World Bank.

Regulatory quality (RQ) is a good governmental index which is a set of judicial construction. Rules are essential for social welfare and growth. RQ reflects the judicial system of a country. It ranges from 0 to 100, which means the higher the number, the better the judicial system in a country. Finland had the highest at 99 and Eritrea and Myanmar, the lowest at 1 in 2010. RQ data is extracted from the Worldwide Governance Indicators (2013).

The total natural resources rent (NR) is the sum of resource rents from oil, natural gas, coal, minerals and forests as a percentage of GDP which is another independent variable in the model. It is extracted from the World Bank (2013). Petermann *et al.* (2007) and Kolstad and Soreide (2009) reported the positive effect of natural endowment on corruption. They confirmed that fuel mineral affects corruption positively and non-fuel can also increase it in poor countries. Bhattacharyya and Hodler (2010) have shown this effect is weak in democratic institutions. It seems that including the natural resources in the corruption function especially in a cross-sectional model is necessary. This index, obtained from the World Bank (2013), can explain the entire governmental activities.

Graeff and Mehlkop (2003), Apergis *et al.* (2012), and Pieroni and d'Agostino (2013) reported that the economic freedom (EF) has a negative effect on corruption. The economic freedom is the mean of ten sub-indexes that measure freedom in various parts of the economy and

is calculated yearly by the Heritage Foundation (2010). It should be noted that one of these sub-indexes is the control of corruption. So it is an endogenous variable in the corruption function. To solve this problem, we remove the control of corruption and calculate the average of another nine sub-indexes as a proxy. In the current study, the adjusted economic freedom index is calculated in this way and was used in the estimation. It means that economic freedom is the average of property rights, fiscal freedom, government spending, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, and financial freedom[4] in this study.

The effect of social and cultural factors on corruption is confirmed in all previous studies and religion is a proxy for social norms and human behavior as it influences this behavior. Researchers have found different effects of religion on corruption. In some studies, not only the religion, but also the multiplicity of religions, is a factor in increasing corruption. The effect of religion, whether positive or negative, on corruption was reported in studies by La Porta (1999), Treisman (2000), Alesina *et al.* (2003), Chowdhury (2004), Gokcekus (2008) and Samanta (2011), but other studies like Shabbir and Anwar (2007) showed that the level of corruption is not affected by religion.

The percentage of Muslims and Christians was used as the religion indexes in 174 countries in the current paper. These two religions have more than 55 percent believers around the world and generally every country has an impressive number of followers. The data was obtained from the Association of Religion Data Archives (ARDA, 2013).

REL is an index which explains the extent to which the government regulates the selection, practice, and profession of religion through official laws, policies, or administrative actions. It ranges from 0 to 10 in which a higher value indicates a greater governmental regulation of religion. It was obtained from ARDA. Table 2 shows the definitions of the variables and their sources.

Table 2: Variables, Definitions and Sources

Variable	Index	Definition	Source
Corruption	TI	Transparency International corruption index	Transparency International
Available facilities	IHDI	Inequality-adjusted human development index	World Bank
	$GDP_{pc}ppp$	GDP per capita based on purchasing power parity	World Bank
	$GDP_{pc}C$	GDP per capita in constant 2005 US$	World Bank
Regulatory quality	RQ	Regulatory quality capturing	Worldwide Governance Indicators
Natural resources rents	NR	The sum of oil, natural gas, coal, minerals and forests rents as a percentage of GDP	World Bank
Economic freedom	EF	Economic freedom index	Heritage Foundation

[4]EF=Σ (property rights, fiscal freedom, government spending, business freedom, labor freedom, monetary freedom, trade freedom, investment freedom, financial freedom)/9.

Table 2: Variables, Definitions and Sources: Continues

Variable	Index	Definition	Source
Religion	Mu	The percentage of Muslims	Association of Religion Data Archives
Religion	Ch	The percentage of Christians	Association of Religion Data Archives
	MuCh	The sum of percentage of Muslims and Christians	Association of Religion Data Archives and author's calculations
	REL	The government regulates the selection, practice, and profession of religion through official laws, policies, or administrative actions	Association of Religion Data Archives

To assess the importance of religion and the impact of Islam and Christianity on corruption I used the following equations:

$$Corruption_i = \beta_0 + \beta_1 AF_i + \beta_2 RQ_i + \beta_3 NR_i + \beta_4 EF_i + \beta_5 Mu_i + \beta_6 Ch_i + \varepsilon_i, \quad (1)$$

where β_i is a constant coefficient for all i=0,1,…,6 and $\beta_1>0$, $\beta_2>0$, $\beta_3<0$, $\beta_4>0$, $\beta_5=?$, $\beta_6=?$. ε is the error term which is assumed to be white noise.

$$Corruption_i = \gamma_0 + \gamma_1 AF_i + \gamma_2 RQ_i + \gamma_3 NR_i + \gamma_4 EF_i + \gamma_5 REL_i + \epsilon_i, \quad (2)$$

where γ_i is a constant coefficient for all i=0,1,…,6 and $\gamma_1>0$, $\gamma_2>0$, $\gamma_3<0$, $\gamma_4>0$, $\gamma_5=?$. ϵ is the error term which is assumed to be white noise.

$$Corruption_i = \varphi_0 + \varphi_1 AF_i + \varphi_2 RQ_i + \varphi_3 NR_i + \varphi_4 EF_i + \varphi_5 MuCh_i + \omega_i, \quad (3)$$

where φ_0 is a constant coefficient for all i=0,1,…,6 and $\varphi_1>0$, $\varphi_2>0$, $\varphi_3<0$, $\varphi_4>0$, $\varphi_5=?$. ω is the error term which is assumed to be white noise. In the above equations i denotes the country.

For the sake of robustness check, I replaced Mu and Ch, the percentage of Muslims and Christians with REL which indicates the governmental religious index. Furthermore, I replaced REL with MuCh variable, which is the percentage of Muslims and Christians in the country$_i$ [see Equation (3)]. Table 3 reports the estimation result of Equation (1), where the variable AF proxied by IHDI, GDP per capita PPP and GDP per capita C. Table 4 reports the estimation result of equations (2) and (3).

V. Empirical Results

Figure 2 presents the relationship between the percentage of Muslims and Christians with transparency (the inverse of corruption). As we can see, there is a negative relationship between the percentage of Muslims and transparency (Figure 2a), indicating that the higher the percentage of Muslims is, the higher corruption will be. There is, however, a positive relationship between the percentage of Christians and transparency (Figure 2b), indicating that the higher the percentage

of Christians is, the lower corruption will be. Our empirical verification will confirm if these relationships are statistically significant.

Figure 2: Corruption and Religion

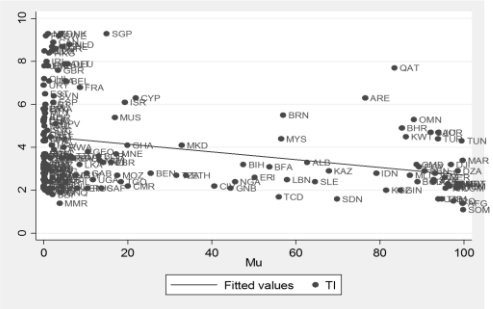

Figure 2a: Percentage of Muslims and transparency in the studied countries

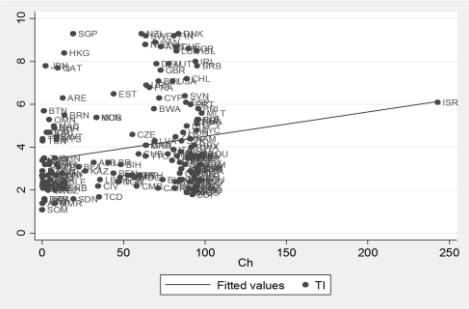

Figure 2b: Percentage of Christians and transparency in the studied countries

The estimation results of Equation (1) are shown in Table 3. It reports the result of three estimations. In column 1, the variable IHDI (inequality-adjusted human development index) is a control variable. Because IHDI is not available for all countries, the effective number of observations for column 1 is only 133. In columns 2 and 3, GDP per capita PPP and GDP per capita at constant price replace IHDI. These variables are not available for some years for some countries and, therefore, the effective number of observations is 156. According to the estimation result, these indexes have a positive and statistically significant coefficient which confirms the theoretical implication of Equation (1). Regulatory quality (RQ) in contrast with corruption has a positive and statistically significant effect on transparency, indicating that increasing the quality of law reduces corruption. According to the estimated coefficient of NR, which is negative and statistically significant in columns 2 and 3, natural endowment has a positive effect on corruption. The estimated coefficient of economic freedom (EF) does not have any effect on transparency. The t-statistic of economic freedom is less than 2, but more than 1, so it is kept in the equation. The coefficients of percentage of Muslims (Mu) and Christians (Ch) are negative and statistically insignificant in all the estimations, which indicates an unreliable relationship between religion and corruption.

Table 3: Cross-Country Estimates: Dependent Variable = Transparency (Inverse of Corruption)*

Variables	1	2	3
IHDI	**2.60[a]** **(3.19)**	—	—
$GDP_{per\ capita}$ PPP	—	**$7.28*10^{-5}$[a]** **(5.58)**	—
$GDP_{per\ capita}$ C	—	—	**0.0001[a]** **(7.48)**

Table 3: Cross-Country Estimates: Dependent Variable = Transparency (Inverse of Corruption)*: Continues

Variables	1	2	3
RQ	0.044[a] (4.65)	0.026[a] (3.66)	0.026[a] (4.23)
NR	-0.004 (-0.66)	-0.015[a] (-2.70)	-0.008[a] (-2.12)
EF	-0.002 (-0.11)	0.028 (1.03)	0.01 (0.78)
Mu	-0.006 (-1.51)	-0.005 (-1.47)	-0.004 (-1.16)
Ch	-0.003 (-0.89)	-0.002 (-0.60)	-0.002 (-0.53)
C	0.871 (0.898)	1.22 (1.59)	1.62[a] (2.52)
Adjusted R^2	0.70	0.79	0.83
Durbin-Watson stat	1.99	1.96	2.08
No. of observations	133	156	156
Glejser** F-statistic	7.24	6.59	5.15

* The estimation method is OLS. Figures in brackets are t-statistics.

** Since the error is heteroskedastic, according to the Glejser test, the Newey-West robust error technique to correct standard errors was used.

a = Statistically significant

Table 4 reports the estimation results of equations (2) and (3). But because of heteroskedasticiy in the primary estimations, the estimation method is Newey and West's (1987) Robusterror Ordinary Least Squared. This table shows the results of robustness check of the previous estimations. The estimated coefficient of MuCh is statistically insignificant, which indicates, similar to the result in Table 3, that religion does not have any impact on corruption. The estimated coefficient of REL is weakly statistically significant. This result indicated that the measure of influence in government may affect corruption. The estimated coefficient of other variables in Table 4 also confirms what was reported in Table 3.

Table 4: Robustness Check: Cross-Country Estimates: Dependent Variable = Transparency (Inverse of Corruption)*

Variables	Equation (2)	Equation (3)
$GDP_{\text{per capita}}$ PPP	$7.25*10^{-5a}$ (5.26)	$7.3*10^{-5a}$ (5.54)
RQ	0.02[a] (2.29)	0.028[a] (3.88)
NR	-0.014[a] (-2.31)	-0.017[a] (-3.03)

Table 4: Robustness Check: Cross-Country Estimates: Dependent Variable = Transparency (Inverse of Corruption)*: Continues

Variables	Equation (2)	Equation (3)
EF	0.028 (1.33)	0.013 (0.86)
REL	-0.05 (-1.85)	—
MuCh	—	-0.003 (-0.87)
C	0.53 (0.58)	1.32 (1.71)
Adjusted R^2	0.79	0.79
Durbin-Watson stat	1.78	1.94
No. of observations	147	156
Glejser** F-statistic	5.23	6.01

* The estimation method is OLS. Figures in brackets are t-statistics.
** Since the error is heteroskedastic, according to the Glejser test, the Newey-West robust error technique to correct standard errors was used.
a = Statistically significant

Consequently, religion does not influence corruption. In other words, religion is not a strong barrier for giving or taking bribes. Gokcekus (2009) has shown that the relationship between religion and corruption from 1900 to 2000 is weak. The results also confirm the finding of North *et al.* (2013) who concluded there is an insignificant effect of religion on corruption. The finding of this study is in contrast with the finding of La Porta *et al.* (1999) and Treisman (2000) as they paid no attention to the countries' structures by ignoring some important control variables. Kingston (2008) explains that patterns of interaction in a society can affect the level of corruption but these patterns result from the enforcement of rules against bribery. The interaction between formal and informal rules sometimes leads to unexpected outcome. However, it is logical to conclude that religion has no significant effect on corruption.

VI. Conclusion

The relationship between religion as a cultural factor and corruption has been studied before, but with contradictory results. This poses an interesting question: if bribery and embezzling are prohibited in Islam and Christianity, then what is the impact of religion on corruption? In the current study, the percentage of Muslims and Christians is used as indexes for religion influence in 174 countries in 2010.

All of the estimations in this paper with various control variables show that religion has no significant effect on corruption. This study also investigated the impact of government imposed religion on corruption as a robustness check. It was also found such influence has no impact on corruption. In other words, religion is an internal barrier for avoiding bad actions but religion orders are not enough for avoiding corruption. Furthermore, this study finds that corruption and

its control are not the results of any religion when the religion does not make social norms. Perhaps we have to focus on other cultural factors like media for improving our anti-corruption programs.

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