RELIGIOSITY, CORRUPTION, AND ECONOMIC GROWTH

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ABSTRACT

The World Bank (2013b) views reducing corruption as a method to decrease poverty and promote economic growth around the world. This study considers religiosity as a factor that could reduce corruption and in turn promote economic growth. There are a large number studies that have looked at the relationship between corruption and economic growth and others that have considered the influence of religion on corruption. However, few have considered their combined influence, and those that did only considered the type of religion and not the influence of the level of religiosity on corruption and economic growth. This study attempts to fill the void in the literature by combining these factors to consider the impact of religiosity on corruption and in turn its influence on economic growth within a nation. The basic premise is that the more a nation's citizens practice their religion, the more they will incorporate their beliefs in their personal and business lives and be less corrupt, hence promoting economic growth. The results suggest that the negative impact of higher levels of religiosity dominated the possible positive impact it had on corruption and did not lead to an increase in economic growth.

Keywords: Religiosity, Economic Growth, Corruption

INTRODUCTION

Corruption has become a major obstacle to the integration of some nations in the world's economy and a more equal distribution of wealth in the world (Rose-Ackerman, 1997). High levels of corruption are viewed as a major constraint to economic growth within a nation (Landes, 1998; Stapleford, 2007; Stark, 2005). While corruption significantly influences the growth of per capita Gross Domestic Product (GDP) within a nation, it can be in a positive or negative way depending on the nation and its institutions (Swaleheen, 2011). One institution that matters for economic growth within a nation is the institution of organized religion (Noland, 2005). There is a relationship between religion and economic growth which is positive, resulting in religion promoting economic growth within a nation (Ishola, 2012). Many of the tenants of religious beliefs which influence the ethics of individuals are also ones that promote growth in economic activity and wealth (Barro & McCleary, 2003; Batson, Schoenrade, & Ventis, 1993; Bodea & Plopeanu, 2011; Wilson, 2002). These tenants include honesty, having a good work ethic, and being frugal (Weber, 1905). When people are more active in the practice of their religion, this promotes a growth of trust in others, the government, and the rule of law in a nation (Fase, 2005). The rule of law and level of corruption in a nation can both be influenced by a country's religious past (North, Orman, & Gwin, 2013). Government regulations that limit the practice of religion stimulate corruption, which has a growth reducing impact on economic activity within nation (Hylton,

Rodionova, & Deng, 2011). The relationship between religion and the level of corruption is dependent on political institutions (Sommer, Bloom, & Arikan, 2013).

Economic freedom dominates culture in its influence on economic growth, with religion being a major component of culture. However, when there is a lack of economic freedom then culture becomes a major factor (Carden & Verdon, 2010; Williamson & Mathers, 2011). Corruption can increase economic growth when there is a lack of economic freedom in a nation, but the benefit of corruption decreases as the level of economic freedom increases (Graeff & Mehlkop, 2003; Heckelman & Powell, 2010; Nwabuzor, 2005; Shen & Williamson, 2005). Corruption has been found to be helpful in promoting economic growth in a nation that has an overbearing governmental section by getting around rules and allowing business activity to increase that would not happen without corruption (Swaleheen, 2011; Swaleheen & Stansel, 2007). The two most important factors of economic freedom that decrease corruption are reducing the size of the government and the number of regulations (Heckelman & Powell, 2010; Shen & Williamson, 2005).

Previous studies between religiosity and ethics have yielded inconsistent results, with some studies finding negative relationships, others finding no relationship, and still others finding positive associations (Walker, Smither, & DeBode, 2012). Bentzen (2012) found that corruption reduced economic growth and developed a model to calculate the amount that it reduced growth as the level of corruption increased.

Barro and McCleary (2003, 2006) argued that a high frequency of participation by individuals in religious services has a negative influence on economic performance. As a whole, if a nation is more religious, it tends to have lower per capita income. As religiosity declines per capita income tends to rise in a nation (Win-Gallup International, 2012).

METHODOLOGY

The base model used as the starting point was from Alon and Chase (2005). The model used the average rate of economic growth in a nation for ten years as the dependent variable. The ten-year average was selected since it removes the variability that could be present with using just a single year. The ten-year average used was from 2003-2012.

There are four independent variables in the base model:

1. Political Stability: Political Stability is added as a control variable since the relationship between religion and lower levels of corruption are dependent on political institutions (Sommer, et al., 2013).

2. Law: The rule of law variable is included, since the rule of law and level of corruption in a nation can both be influenced by a country's religious past (North, et al., 2013).

3. Economic Freedom: "Economic freedom is the fundamental right of every human to control his or her own labor and property. In an economically free society, individuals are free to work, produce, consume, and invest in any way they please. In economically

free societies, governments allow labor, capital and goods to move freely, and refrain from coercion or constraint of liberty beyond the extent necessary to protect and maintain liberty itself." (Heritage Foundation, 2014, p. 1).

Many previous studies have shown that the index of economic freedom has an impact on economic growth within a nation. Since the index of economic freedom used for this study includes a corruption component, to isolate the effect of corruption, the corruption component of the economic freedom index was removed (Fraser Institute, 2014). In addition, the rule of law component was removed and a separate variable was considered for this so that this effect could be isolated.

4. Religious Freedom: religious freedom is the right of individuals to practice their religion without fear of persecution by the government or others (World Values Survey, 2013).

There were four additional variables added to the base model:

1. Religiosity: "The religiosity index represents the percentage of the population who self-describe themselves as a religious person, irrespective of whether you attend a place of worship or not, would you say you are a religious person, not a religious person or a convinced atheist" (WIN-Gallup International, 2012, p. 9).

2. Corruption: "The abuse of public office for private gain…. Public office is abused for private gain when an official accepts, solicits, or extorts a bribe. It is also abused when private agents actively offer bribes to circumvent public policies and processes for competitive advantage and profit" (World Bank, 2013b, para. 2).

3. Corruption Squared: Corruption can have a non-linear negative impact on economic growth in a nation and as a result, a quadratic term for corruption was included in the model (Swaleheen, 2011).

4. Interaction Term: An interaction term was created to consider the effects that religiosity and corruption can have on each other to impact economic growth. No other study was found that included this as an explanatory variable for economic growth.

From the different data sets, 53 countries had data for all aspects considered. The dependent variable, ten-year average economic growth rate percentage, was from the World DataBank. Political stability, rule of law, and corruption were on a scale from -2.5 to 2.5, and were also obtained from the World DataBank. However, due to the corruption variable being squared in the model, '2.5' was added to each value to create a scale from 0-5 to adjust for the problems which would have been created using a quadratic. A higher number indicated more political stability and a stronger rule of law, while for corruption a higher value meant less corruption. Religious freedom data was from the World Values Survey on a scale from 1 to 10 (higher being more). Economic freedom data was obtained from the Heritage Foundation on a scale from 1 to 100 (higher being more economic freedom), with rule of law and corruption removed from the index. Religiosity data was obtained from a WIN-Gallup Poll survey that showed the percentage of the population in

a nation considered to be religious, irrespective of the type of religion. The coefficient and the P-value are shown for each variable included in the different versions of the model. Significance is considered at the 5% level and marginal significance at the 10% level.

Results

Regressions were run starting with the base model from Alon and Chase (2005), and then using all of the variables with the results shown in table 1. Model A shows the results of the base model with all of the variables being significant except economic freedom. Surprisingly, the coefficients for freedom of religion and rule of law were both negative, which is the opposite of what was expected. As a result of economic freedom being not significant, it was dropped from base model in Model B and all of the remaining variables were significant. However, the overall significance of the model dropped as measured by adjusted R squared. Model C included all of the variables under consideration and rule of law became insignificant and economic freedom was once again insignificant, political stability became marginally significant, but religious freedom remained significant. Religious freedom and rule of law continued to have negative coefficients. Of the additional variables added, only religiosity was significant in the expanded model with a negative coefficient. Model D included all of the variables except economic freedom and the only significant variable was religious freedom with political stability and religiosity becoming marginally significant. Overall the significance of both models A and C dropped, as measured by adjusted R squared, when economic freedom was excluded, so economic freedom was included in the rest of the models.

Table 1. Base Model and all Variables

Model	A		B		C		D	
	Coeff	Pvalue	Coeff	Pvalue	Coeff	Pvalue	Coeff	Pvalue
Economic Freedom	0.0569	0.1895			0.0735	0.1028		
Political Stability	1.2879	0.0277	1.1955	0.0403	1.1112	0.0559	0.9838	0.0921
Rule of Law	-2.0940	0.0003	-1.7655	0.0006	-1.6101	0.2307	-1.2883	0.3401
Religious Freedom	-0.3960	0.0071	-0.4085	0.0058	-0.3341	0.0250	-0.3580	0.0182
Religiosity					-0.0344	0.0312	-0.0293	0.0642
Corruption					8.3411	0.2755	10.0362	0.1951
Corruption Squared					-3.3868	0.2391	-3.8107	0.1927
Inter Action					0.3828	0.2444	0.4181	0.2119
Adjusted R2		0.3827		0.3730		0.4110		0.3877

Table 2 shows the results when the variables were added one by one to the base model. Model E included only the addition of religiosity to the base model and the overall significance of the model increased compared to all the previous models. Only economic freedom was not significant, but it was marginally significant. Model F added corruption to Model E and as a result rule of law dropped from significant to marginally significant and corruption was insignificant. The overall level of significance of the entire model also dropped. Model G added the quadratic version of corruption to the model, but it was not significant and the significance of none of the other variables changed. In addition, the overall level of significance of the overall model dropped once again. The rule of law and religious freedom continued to have a negative coefficient.

Table 2. Adding Variables to the Model One by One

Model	E		F		G	
	Coeff	PValue	Coeff	PValue	Coeff	PValue
Economic Freedom	0.0780	0.0713	0.0788	0.0710	0.0769	0.0888
Political Stability	1.2491	0.0268	1.2353	0.0300	1.2260	0.0337
Rule of Law	-2.5890	0.0000	-2.0996	0.0837	-2.1618	0.0893
Religious Freedom	-0.3646	0.0102	-0.3471	0.0187	-0.3485	0.0197
Religiosity	-0.0332	0.0334	-0.0335	0.0334	-0.0338	0.0347
Corruption			-0.4953	0.6411	-0.0661	0.9792
Corruption Squared					-0.0594	0.8515
Inter Action						
Adjusted R2		0.4280		0.4183		0.4059

Table 3 shows variations of the model with religiosity included in all of the models, but with different variables dropped from the full model. Model H dropped the corruption variable and only considered the quadratic version of corruption and this improved the overall level of significance of the model. However, the quadratic variable was insignificant and the other variables remained the same in terms of their individual significance. Model I dropped both of the corruption variables and added the interaction variable. The interaction variable was not significant, while the other variables remained near the same in terms of their individual significance. There was a slight drop in the overall significance of the model. Model J added the corruption variable back into Model I, but it was not significant and the interaction term continued to be insignificant. In addition, the rule of law variable dropped to being marginally significant. Model K dropped the corruption variable and replaced it with the corruption squared variable. However, it was insignificant and the interaction term and rule of law continued to be insignificant. However, the overall level of significance for the model improved slightly as measured by adjusted R squared.

Table 3. Variations of Variables in the Models with the Inclusion of Religiosity

Model	H		I		J		K	
	Coeff	PValue	Coeff	PValue	Coeff	PValue	Coeff	PValue
Economic Freedom	0.0767	0.0789	0.0763	0.0815	0.0782	0.0832	0.0801	0.0743
Political Stability	1.2252	0.0316	1.2300	0.0311	1.2331	0.0326	1.2244	0.0334
Rule of Law	-2.1814	0.0319	-2.3305	0.0083	-2.1213	0.0990	-1.8252	0.1715
Religious Freedom	-0.3491	0.0168	-0.3542	0.0147	-0.3476	0.0201	-0.3385	0.0234
Religiosity	-0.0339	0.0322	-0.0338	0.0328	-0.0336	0.0357	-0.0335	0.0358
Corruption					-0.4111	0.8224		
Corruption Squared	-0.0669	0.6153					-0.3447	0.6158
Inter Action			-0.0087	0.6809	-0.0021	0.9547	0.0448	0.6799
Adjusted R2		0.4188		0.4177		0.4054		0.4081

Table 4 shows Models L through O which dropped the religiosity variable with different combinations of the other variables in the models. The only variables that were significant in any

of the models were political stability and religious freedom, which were significant in all of the models. The overall significance of the models did not improve and were below any of the models that included religiosity.

Table 4. Variations of the Model with the Exclusion of Religiosity

Model	L		M		N		O	
	Coeff	PValue	Coeff	PValue	Coeff	PValue	Coeff	PValue
Economic Freedom	0.0573	0.1902	0.0576	0.2077	0.0541	0.2370	0.0588	0.1970
Political Stability	1.2775	0.0307	1.2784	0.0330	1.1719	0.0529	1.2826	0.0322
Rule of Law	-1.7073	0.1685	-1.7008	0.1890	-1.1768	0.3938	-1.6559	0.2056
Religious Freedom	-0.3826	0.0123	-0.3824	0.0135	-0.3696	0.0171	-0.3811	0.0139
Religiosity								
Corruption	-0.3874	0.7253	-0.4346	0.8686	7.4225	0.3505	-0.5962	0.7538
Corruption Squared			0.0065	0.9842	-3.1046	0.2994		
Inter Action					0.3581	0.2955	0.0051	0.8921
Adjusted R2		0.3712		0.3575		0.3592		0.3578

Table 5 includes Models P, Q, and R that dropped the religiosity and corruption variables from the regressions to consider the impact of the corruption squared term and interaction term. Political stability and religious freedom were significant in all of the models. In Model R, which included only the interaction term, rule of law was significant in addition to the two other variables previously mentioned. However, the overall level of significance of all of the models was below those that included the religiosity variable as measured by adjusted R squared. A stepwise regression was used as a final check for robustness. The only variable that was included in the model was corruption, but the overall significance of the model was the lowest of all the models evaluated.

Table 5. Quadratic, Inter-Action Term, and Stepwise

Model	P		Q		R		S	
	Coeff	PValue	Coeff	PValue	Coeff	PValue	Coeff	PValue
Economic Freedom	0.0558	0.2038	0.0604	0.1819	0.0558	0.2056		
Political Stability	1.2731	0.0316	1.2715	0.0332	1.2785	0.0310		
Rule of Law	-1.8277	0.0773	-1.3793	0.3116	-1.9567	0.0276		
Religious Freedom	-0.3866	0.0106	-0.3726	0.0160	-0.3910	0.0093		
Religiosity								
Corruption							-1.3134	0.0000
Corruption Squared	-0.0427	0.7568	-0.3963	0.5787				
Inter Action			0.0570	0.6134	-0.0045	0.8381		
Adjusted R2		0.3708		0.3607		0.3701		0.2910

DISCUSSION

Religiosity was a significant variable in all of the models tested in which it was included, suggesting it is an important factor when considering levels of economic growth. The coefficient was negative indicating that as religiosity increased the level of economic growth declined in a nation which supports the results from previous studies. Increased religiosity means more time devoted to religious activities and less time to economic activities which is the cause of lower economic growth. The inclusion of only religiosity to the base model produced the best overall model in terms of the highest adjusted R squared. All but one of the variables were significant with the remaining one marginally significant.

The coefficients for rule of law and religious freedom were negative, which did not seem in line with other studies which considered these factors as being positive for economic growth. The negative coefficient for rule of law could be due to the time period considered with the flood of new business regulations that were imposed due to the global economic crisis during this time period. These new regulations might have caused an over-regulation of the economy, which would have a negative impact on economic growth. Also, many of the nations with the strongest rule of law were also those nations most impacted by the global economic crisis. As for the negative coefficient for religious freedom these could be explained by two factors. First, the rise in oil prices over the time period of this study which would increase the GDP of the oil producing nations. Many of these oil producing nations have some of the lowest levels of religious freedom. Second, the high rates of economic growth in some communist nations, such as China, which restrict religious freedom for fear of losing control of its grip on power.

Corruption did not appear to be a significant variable in any of the models except the stepwise regression model. It may be due to the fact that the other variables accounted for the influence that corruption has on economic growth. The interaction term between corruption and religiosity was also not significant in any of the models, even at the marginally significant level. This suggests that corruption and religiosity does not have an influence on each other in terms of promoting economic growth within a nation. The positive influence of religious beliefs on corruption could also have been dominated by the negative impact of religiosity.

The stepwise regression was run on all of the variables and surprisingly the resulting model included only corruption, but the model had the lowest adjust R squared of all of the models considered. This could suggest that corruption is a possible proxy for the other variables that were dropped from the model and has the potential to provide a better explanation of economic growth. This could be based on the idea that as people are able to carry out the economic activity without the presence of corruption a more positive outcome happens.

CONCLUSION

Religiosity seemed to be a good predictor of economic growth within a nation, with that effect being negative. However, religiosity did not seem to influence corruption to a level that it had a positive impact on economic growth that outweighed the negative influence that religiosity had on economic growth.

Several of the variables in the regressions had negative coefficients, which seemed to go against general belief that they should have a positive influence on economic growth. However, the time period of the study could be the cause of this result. Using this model for a different time period could produce results that are more in line with these generally held beliefs and may alter the overall findings of the model.

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QUARTERLY REVIEW OF BUSINESS DISCIPLINES

November 2014

Volume 1
Number 3

A JOURNAL OF INTERNATIONAL ACADEMY OF BUSINESS DISCIPLINES
ISSN 2334-0169 (print)
ISSN 2329-5163 (online)