

# Corruption and Economic Growth in GCC Countries

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## I. INTRODUCTION

Empirical measures of corruption in the Gulf Cooperation Council (GCC) countries of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE) have been hard to come by. The GCC countries were only included in Transparency International's (TI, 2014) Corruption Perceptions Index (CPI) starting in 2003, in the 9<sup>th</sup> year of that dataset's existence. For this reason, the GCC countries, as is the case for many developing countries, have not been included in the seminal literature (Brunetti & Weder, 1998; Mauro, 1995; Mo, 2001) on the relationship between corruption and economic growth.

Previous empirical work (Aidt, 2009; Mauro, 1995; Misati & Nyamongo, 2012; Mo, 2001; Satz, 2013) suggests a negative effect of corruption on economic growth. However, because of data limitations, some of this empirical work has been reliant on a limited set of countries, primarily developed countries. Delimiting an analysis of corruption and economic growth to the GCC countries offers an opportunity to triangulate as well as extend some of past empirical findings in the corruption-growth literature. The GCC countries are wealthy countries, but they are also situated in a region of the world, the Middle East, that TI (2014) has routinely described as one of the most corruption regions in the world. Indeed, if the GCC countries are conceived of more broadly as Arabic-speaking and Muslim-majority countries, then they have close cultural ties to countries outside the Middle East (including Arabic-speaking countries such as Libya and Sudan and Muslim-majority countries such as Pakistan and Indonesia) that also have low TI scores.

Largely because of their oil resources, the GCC countries are not only wealthy but have also had the ability to attract significant investment and engage in capital formation. If the relationship between corruption and economic growth in the GCC countries is similar to the relationship between corruption and economic growth in both (a) culturally and / or geographically related countries; and (b) all previously studied countries, developed or undeveloped, then firmer conclusions that can be reached about the relationship between corruption and economic growth. On the other hand, if the nature of the relationship between corruption and economic growth is different for the GCC countries, then there might be a convincing reason to reconsider or modify existing theories about corruption's retarding effect on economic growth. The findings would also allow conclusions to be drawn about the nature of development itself.

## II. LITERATURE

Mauro's (1995) seminal paper on corruption and growth set the terms for the contemporary scholarly debate over the relationship between these variables. Mauro's main finding was that corruption lowered investment, which in turn lowered economic growth. The existence of these links between corruption, investment, and growth was later confirmed by other scholars (Brunetti & Weder, 1998; Méon & Sekkat, 2005; Mo, 2001). Méon and Sekkat expanded the knowledge base by adding the insights that (a) quality of governance (QoG) altered the strength of the relationship between corruption and economic growth and (b) corruption had an effect on economic growth that was independent of corruption's effect on investment. Both of these findings were important contributions to the literature on corruption and economic growth. In the wake of Méon and Sekkat's results, there has been a strong case for including QoG variables alongside index measures of corruption such as those provided by TI (2014). There has also been a case for considering corruption's impact growth in both direct and indirect models.

On the one hand, several papers (Mauro, 1995; Méon & Sekkat, 2005; Mo, 2001; Satz, 2013) have detected a negative effect of corruption on economic growth. On the other hand, Roodman (2007), referencing Leamer's seminal paper (Leamer, 1983) on the methodological shortcomings of econometrics, has offered a powerful criticism of whether models that attempt to measure contributors to economic growth are actually doing so. Roodman's methodological complaint was that, in studies of the relationship between foreign aid and growth, the choice of variables, including interaction variables, might be somewhat arbitrary:

*Although probably none of the choices is made on a whim, these differences appear to be examples of what Leamer called "whimsy." From Leamer's point of view the studies together represent a small sampling of specification space. And few include much robustness testing. Without further analysis, it is hard to know whether the results reveal solid underlying regularities in the data or are fragile artifacts of particular specification choices. (Roodman, 2007, p. 56).*

The specific problems raised by Roodman, and the general concerns introduced by Leamer, apply to studies of the relationship between corruption and economic growth. To begin with, the robustness problem is exacerbated by the existence of a single commonly used corruption scale, that of TI (2014). TI's corruption scale is also subject to the specification space problem, as what counts as corruption might be arbitrarily specified. In addition, if QoG variables are included, then the specification problems involved in those variables also become part of the larger model's problem. There are widely differing specifications of QoG variables in the literature, with, however, the World Bank-sponsored World Governance Indicators (WGI)

(Kaufmann, Kraay, & Mastruzzi, 2013) having become an accepted standard. The World Governance Indicators are presented in Table 1 below:

Table 1  
The Six Components of WGI as Defined by the World Bank

Component	Description
Voice and accountability	Reflects perceptions of the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, freedom of association, and a free media.
Political stability and absence of violence	Reflects perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.
Government effectiveness	Reflects perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism.
Regulatory quality	Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
Rule of law	Reflects perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.
Control of corruption	Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.

WGI, like corruption, appears to be subject to specification problems. One way to bypass at least some aspects of the specification problem (Leamer, 1983; Roodman, 2007) is to employ a comparative rather than a positivist approach vis-à-vis the relationship between corruption and economic growth. In this kind of approach, what matters is not so much the conceptual and operational determination of variables, but rather closer attention to how relationships between variables change when the sample itself is expanded. Such an approach is described and defended below.

III. METHODOLOGY

The first step in the analysis was to replicate the results of past findings with respect to the GCC countries. Based on previous approaches (Mauro, 1995; Méon & Sekkat, 2005), such a regression approach would have the independent variable of corruption and the dependent variable of economic growth. A one-year lag could account for the unfolding effect of corruption; hence, corruption in year  $y$  could be regressed on economic growth in year  $y + 1$ . Table 2 contains an overview of the first model of the study:

Table 2

Model One

Years	Countries	Independent Variable	Dependent variables
2003-2014	Bahrain Kuwait Oman Qatar Saudi Arabia United Arab Emirates	Corruption in year $y$	GDP growth % in year $y + 1$

The subsequent three models of the study expand the sample but retain the regression structure of the first model. In model two, the sample is expanded to include six randomly chosen Arabic-speaking countries; in model three, the sample is expanded to include six randomly chosen Muslim-majority countries; and, in model four, the sample is expanded to include six randomly chosen developing countries that are neither Arabic-speaking nor Muslim-majority countries. In each model, changes in  $p$ ,  $R^2$ , and  $\beta$  coefficient value will be remarked, leading to the development of conclusions about the relationship between corruption and economic growth among GCC countries is exceptional. The countries chosen for the models are presented in Table 3 below.

Table 3

Countries in Study Model

Model	Countries
1	Bahrain Kuwait Oman Qatar Saudi Arabia United Arab Emirates
2	Countries in Model 1 plus:  Iraq Yemen Sudan Syria Libya Egypt
3	Countries in Model 2 plus:  Pakistan Indonesia Turkey

	Bangladesh
	Iran
	Afghanistan
4	Countries in Model 3 plus:
	Kenya
	Philippines
	Mongolia
	Vietnam
	Nigeria
	Cambodia

In each of the four models of the study, ordinary least squares (OLS) regression was the data analysis technique, and the variables were defined as follows:  
 Corruption: Country score on TI's (2014) CPI  
 Economic growth: GDP growth % as obtained from World Bank (2014) data

IV. RESULTS

The inferential findings of the study will be presented after a presentation and discussion of histograms for each of the variables in the study.

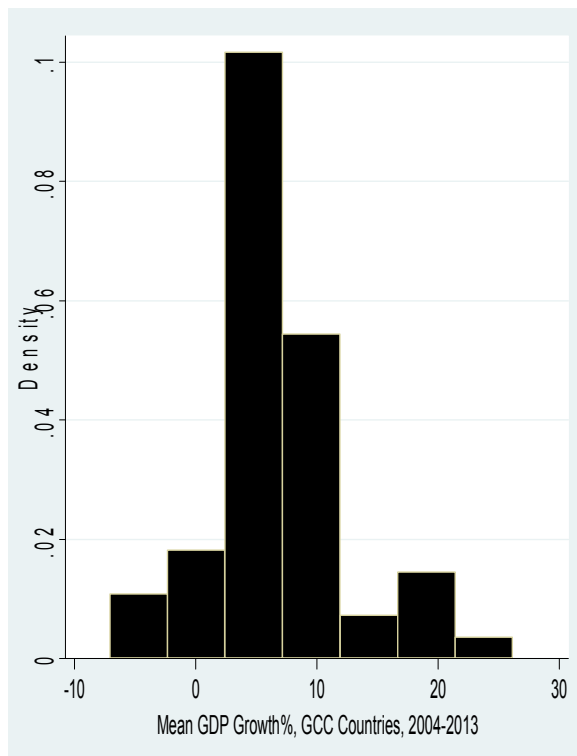


Figure 1. Histogram of Mean GDP Growth, Model 1.

The GCC countries experienced moderate GDP growth ( $M = 6.662$ ,  $SD = 5.480$ ) from 2004 to 2013. When Arabic-speaking countries were added to the dataset, the mean was similar, but the standard deviation increased radically ( $M = 6.067$ ,  $SD = 13.394$ ), and there were some extreme outliers. The leptokurtosis of the distribution was observed to increase, with the kurtosis going from 5.57 in model 1 to 34.28 in model 2.

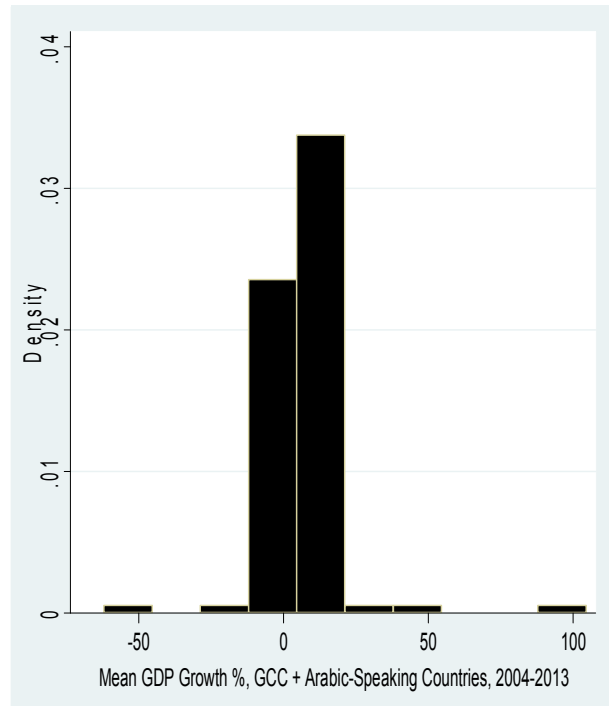


Figure 2. Histogram of Mean GDP Growth, Model 2.

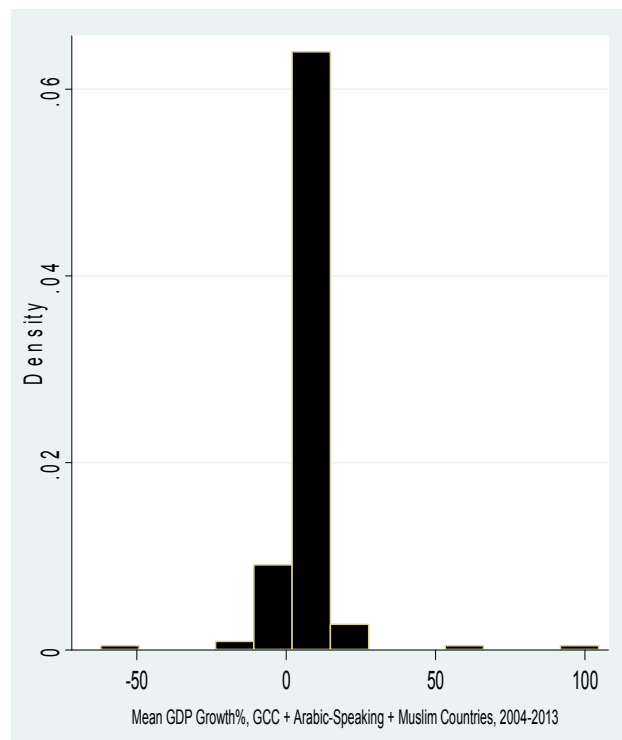


Figure 3. Histogram of Mean GDP Growth, Model 3.

In model 3, in which six Muslim countries were added to the six GCC countries and six Arabic-speaking, non-GCC countries in model 2, GDP growth ( $M = 5.886$ ,  $SD = 11.03$ ) was similar to model 1, and standard deviation declined over model 2. Kurtosis increased to 48.488. Finally, in model 4, six developing countries were added to the dataset, and GDP growth ( $M = 6.214$ ,  $SD = 9.800$ ) appeared similar to GDP growth for the GCC countries.

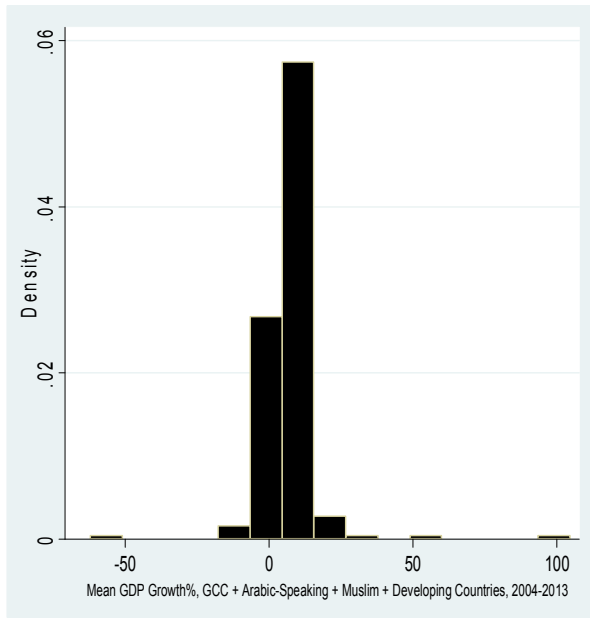


Figure 4. Histogram of Mean GDP Growth, Model 4.

In considering the histograms for corruption scores, presented in Figure 5 below, one obvious point of interest was that the standard deviations, considered as a percentage of the mean, were proportionally lower than in the case of GDP growth. In other words, while GDP growth was subject to a fair amount of volatility, corruption scores were fixed within a rather narrow band. Many countries experienced wide swings in GDP, but corruption did not swing widely.

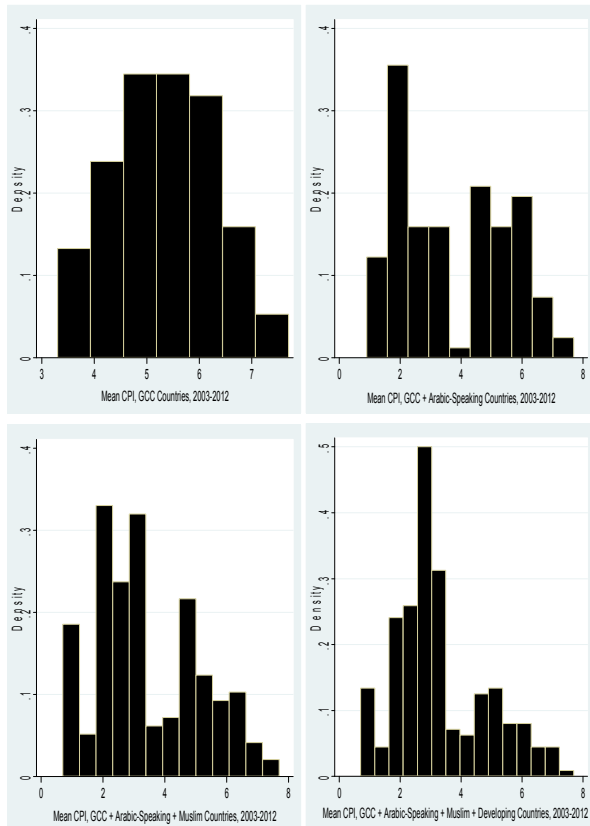


Figure 5. Histograms of Corruption Scores, Models 1-4

The first regression utilized in the study was of CPI scores on GDP growth percentages for the GCC countries.

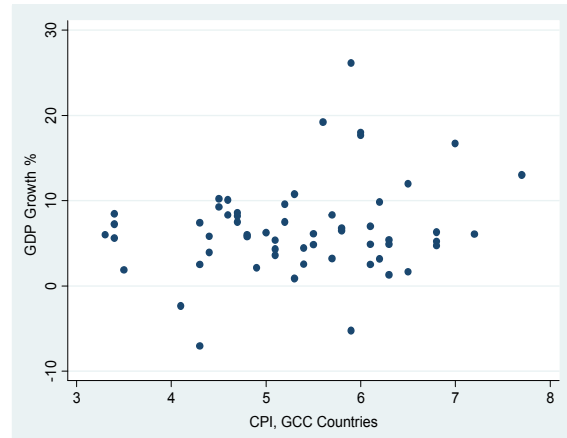


Figure 6. Scatterplot, Model 1.

The scatterplot in Figure 6 suggested the absence of a linear relationship between corruption and GDP growth in model 1, which was limited to the GCC countries. The regression was not significant ( $p = 0.118$ ) and had a very small effect size ( $R^2 = 0.043$ ). The relationship was as follows:

$$GDP = (Corruption)(1.114) + 0.708$$

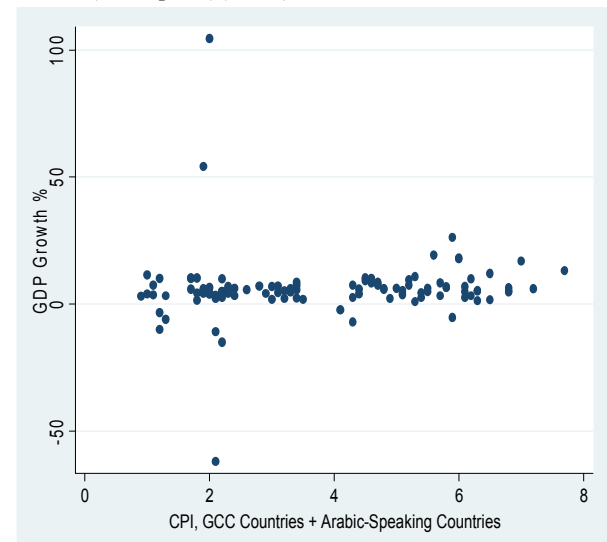


Figure 7. Scatterplot, Model 2.

The scatterplot in Figure 7 also suggested the absence of a linear relationship between corruption and GDP growth in model 2, which was limited to the GCC countries plus six Arabic-speaking countries that were not in the GCC. The regression was not significant ( $p = 0.5179$ ) and had a very small effect size ( $R^2 = 0.0038$ ). The relationship was as follows:

$$GDP = (Corruption) (0.448) + 4.374$$

Next, the scatterplot in Figure 8 suggested the absence of a linear relationship between corruption and GDP growth in model 3, which was limited to the GCC countries, plus six Arabic-speaking countries that were not in the GCC and six Muslim countries that were neither in the GCC nor had majority Arabic-speaking populations. The regression was not significant ( $p = 0.6595$ ) and had a very small effect size ( $R^2 = 0.0011$ ). The relationship was as follows:

$$GDP = (Corruption)(0.22) + 5.125$$

DISCUSSION

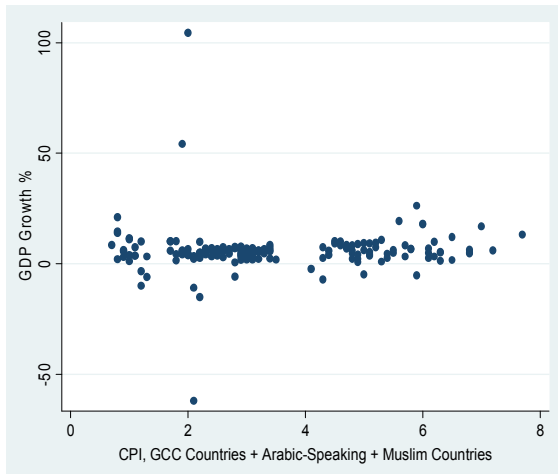


Figure 8. Scatterplot, Model 3.

Finally, the scatterplot in Figure 9 suggested the absence of a linear relationship between corruption and GDP growth in model 4, which included the six GCC countries, six Arabic-speaking countries, six Muslim countries, and six developing countries. The regression was not significant ( $p = 0.7022$ ) and had a very small effect size ( $R^2 = 0.0006$ ). The relationship was as follows:

$$GDP = (Corruption)(0.164) + 5.667$$

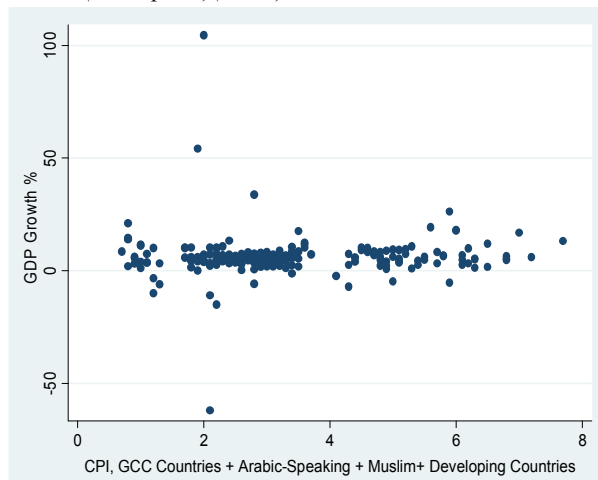


Figure 9. Scatterplot, Model 4.

The results of the four models are summarized in Table 4 below.

Table 4

Summary of Model Results

	Model 1	Model 2	Model 3	Model 4
Corruption	1.113	0.448	0.220	0.165
$\beta$	(0.701)	(0.691)	(0.500)	(0.430)
(Standard Error)				
$p$	0.1181	0.5179	0.6595	0.7022
$R^2$	0.0430	0.0038	0.0011	0.0006
Constant	0.709	4.374	5.125	5.667

The results of the study suggested that corruption and GDP growth are not significantly associated, or, in the case of the GCC countries, might be positive associated, thus contradicting some earlier findings about the relationship between corruption and economic growth (Mauro, 1995; Méon & Sekkat, 2005; Mo, 2001). These results are, however, subject to the numerous limitations of the study. To begin with, because the GCC countries were the focus of the research, corruption data could only be drawn since 2003; that was the first year in which TI (2014) presented corruption data for the GCC countries. It is possible that the relation between corruption and economic growth become apparent over a longer timespan than the one utilized in this study. Second, there could be time effects in the relationship between corruption and GDP growth that were not considered in this study. For example, corruption might have lagged GDP by two or more years, whereas the lag in the study was for only one year.

As discussed at the outset of the study, the focus of the findings was intended to be comparative rather than absolute. For example, observing changes in the statistics associated with each of the four models was envisioned as a means of understanding both differences and similarities between the GCC countries and other countries, whether Arabic-speaking, Muslim, or situated in the developing world. In this respect, there are two points that deserve close attention. First, the  $\alpha$  of Model 1 was lower than the  $\alpha$  of every other model; it was quite close to 0.10, which would have been an acceptable level of error. Second, the  $\beta$  coefficient value was higher for Model 1 than for the other models. These figures suggest not only that corruption might have greased the wheels of economic growth in the GCC countries, but that this effect was stronger than in other developing countries. Of course, understood from a certain perspective, the fact that the  $\alpha$  of all four models was above 0.10 renders this kind of comparison moot. However, the 0.10 or 0.05 cutoffs are also statistical conventions (Balnaves & Caputi, 2001); they do not represent some irrefutable limit of significance corresponding with a feature of the natural world. The wide gap in observed  $\alpha$  between Model 1 and the remainder of the models can thus be construed as supporting:

- Corruption as a factor that greases the wheels of GCC countries' economies
- GCC economies being somewhat exceptional, in terms of the magnitude of their  $\beta$  coefficient for corruption, in relation to three comparable groups of countries

More research is needed to confirm these findings and, to the extent possible, place them in the proper context. If the findings of the study hold, then the significance of the study lies in its demonstration that the link between corruption and economic growth is either not significant for a cross-section of developed countries over the period covered in this period and that, in the case of the GCC countries, corruption might actually grease the wheels of the economy.

In terms of the positive economic role of corruption in the GCC countries in particular, the case of South Korea might provide an interesting theoretical framework. South Korea has long been known for corruption in intra-business and business-government dealings (Heo & Roehrig, 2010; Kang, 2002). However, this corruption has also served the purpose

of allowing South Korea to take advantage of economies of scale and otherwise execute its export-oriented strategy with more efficiency. Indeed, modern South Korea began to pick up economic steam during its era of military dictatorship. The example of South Korea, which in some respects echoes the earlier history of Japan (Lonien, 2003), suggests the possibility of corruption being marshaled towards ends and strategies that promote rather than retard the growth of the economy. In the GCC countries, corruption might be found to achieve a similar function, by means that ought to be explored in greater detail by future scholars.

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