

“Measuring the Impact of Development on Corruption Perceptions: A Comparative Study of Developed and Developing Countries”*

Ariel R. Belasen
Department of Economics and Finance
Southern Illinois University Edwardsville
Edwardsville, IL 62026
abelase@siue.edu

Kyle Peyton
Department of Political Economy
School of Social and Political Sciences
University of Sydney
NSW 2006 Australia

JEL Classification: F0, F5, O5

Keywords: Corruption, International, Cross-Country, Development

Abstract

Corruption has been around for thousands of years, and economic and political theorists have argued over its causes and consequences for the past century. The advent of various corruption indices, have encouraged an increase in cross-country regressions. Unfortunately, most of these studies have relied on small sample sizes with limited time frames, and highly correlated explanatory variables. This study examines the impact of these indices on perceived levels of corruption using a 2SLS approach to reduce potential endogeneity bias in the model. Additionally, we construct a pooled cross-section of corruption perceptions in 127 developing countries across four time periods. We then use this same approach to model corruption perceptions in 32 developed countries and compare the results. Our results show that among other factors, national wealth, inflation, press freedom, oil production, geographic location, and colonization status are important determinants of corruption perceptions; however, we find significant differences in the magnitude and direction of these factors between the two sets.

* All data in this paper will be made available upon request. The authors would like to thank Ali Kutan, Dinesh Mirchandani and the seminar participants at the University of Missouri Saint Louis and at the Society for Emerging Markets' EuroConference 2010 for their comments and suggestions.

Draft Date: February 2011

Introduction

The abuse of public office is no recent phenomenon. According to an IMF Staff Paper by Vito Tanzi (1998) discussions of government corruption have been documented as far back as 2,000 years. In all likelihood, the first discourse on public sector corruption accompanied the first government institution. In his famous letter to Bishop Mandell Creighton, Lord Acton was content with citing power as the source. Causal discourse has advanced and modern researchers have made progress. Nevertheless, the root causes of corruption have yet to be isolated and universally applied.

Corruption is defined as “the abuse of legislated powers by government officials for private gain.” This definition, credited to John Girling, appeared in an early study of corruption by Arthur Goldsmith (1999) and is commonly used in empirical literature. The definition includes embezzlement, extortion, bribery and nepotism. It is similar to the definition used by Transparency International (TI), the organization that publishes the annual Corruption Perceptions (*CP*) Index, which ranks countries according to perceptions of corruption in the public sector.¹ The *CP* Index is the most commonly used measure of public sector corruption in the existing body of empirical literature. Researchers have relied on the *CP* Index in conjunction with a variety of other variables to construct empirical models of corruption.

These studies have been limited, by definition, to the public sector. This has led many to conclude that government spending is the cause of corruption and that the state and politics serve as obstacles to development and reform (Barry Weingast, 1993; Ben Ross Schneider, 1998). For example, Gary Becker (1994; 1995) has stated that the most effective way to combat corruption

¹ TI defines corruption as “the abuse of entrusted power for private gain.” Although this definition includes corrupt practices in the public and private sectors, the *CP* Index is a measurement of public sector corruption.

is to reduce the size and role of the public sector. This popular simplification overlooks a substantial body of research that describes corruption as a much more complex problem.

Michael Johnston has argued that “corruption cannot really be understood without reference to the political, economic, institutional, and social setting within which it occurs” (2005b, p24). This is especially true at the macro-level. Statistical models have been widely applied to measure corruption in emerging and developing economies (Goldsmith, 1999; Kyle Peyton and Ariel Belasen, 2011); but it exists in low to moderate levels in affluent market democracies as well. Corruption is not the same across countries and therefore requires more than a general theory. This explains, at least in part, the diversity of theory and methods presented in corruption literature. We evaluate corruption using a variety of variables that have previously been found to influence *CP* levels in both developing and developed countries.

I. Background

Scholars are fond of using the principal-agent relationship in theoretical discussions of corruption (Gary S. Becker and George T. Stigler 1974; Edward Banfield 1975; Susan Rose-Ackerman 1975, 1978; and Robert Klitgaard, 1988). Principal-agent theory can be used to model both private and public sector corruption. The literature on the subject, however, is dominated by studies that explicitly or implicitly ignore private sector corruption. As such, political bureaucracy has been presented as the primary culprit. In corrupt countries, those who occupy bureaucratic or political positions frequently abuse the principal-agent relationship to obtain politically-created rents. Anne Krueger (1974) has argued that the mere existence of rents provides a sufficient incentive for rent-seeking behavior. Rents are expected to be present in any country regardless of affluence, development, or institutional arrangement.

The dynamics of supply and demand suggest that rent-seeking can be a more rewarding some situations than others. Assuming that corruption is a symptom of successful rent-seeking, Paulo Mauro (1996; 1997) has demonstrated that some institutions are more susceptible than others due to the supply of rents and the existence of barriers to prevent extraction. The supply and availability of rent is influenced by a multitude of institutional factors. Johnston (2005) has argued that strong democratic governments are better equipped to protect economic and political rights, foster justice, and protect society from abuses of power. Countries with low levels of political competition (Johnston, 2002; Donatella Della Porta, 2004), weak governments and unsecure property rights (Rose-Ackerman, 1999; Stephen Knack and Philip Keefer, 1995) are more inclined to experience institutional problems.

High levels of inflation have also been associated with institutional problems and corruption. Miguel Braun and Rafael DiTella (2004) argue that high inflation variability can break down the principal-agent relationship and lead to higher levels of corruption. These results also show that long periods of high inflation are associated with higher levels of corruption. Fahim Al-Marhubi (2000) found a positive relationship between corruption and inflation across a cross-section of countries using a variety of specifications. Other scholars have found similar results when testing the relationship between corruption and inflation levels (Getz and Volkema, 2001; Martin Paldam, 2002). It is unclear rather inflation is a cause or consequence of corruption or simply a symptom of weak institutions.

Institutional structure plays an important role in corruption research and regression analysis has shown a negative correlation between corruption and measures of democracy, although the relationship has broken down after controlling for GDP per capita (Goldsmith, 1999; Wayne Sandholtz and William Koetzle, 2000; Torsten Persson, et al., 2003). Treisman

(2000) has shown that although current levels of democracy are insignificant, countries with long democratic traditions have lower levels of corruption. He also argued that some countries are more susceptible to corruption than others on the basis of their colonial history. In particular, he used a dummy variable to demonstrate that countries with a history of British rule enjoy lower than average levels of corruption. Because this relationship was not observed in countries with other colonial history, it appears there is something unique about British institutions and the common law tradition.

Nevertheless, strong democratic institutions do not guarantee low levels of corruption. While democratic institutions provide a mechanism for punishment through electoral politics, Johnston has argued (2005a) that countries where civil society is weak are more susceptible to corruption. An active and engaged civil society increases the probability that corrupt officials will be monitored and detected. This mechanism may deter corrupt behavior, especially when civil liberties are protected. Improved civil liberties and a free and independent press are directly and indirectly related to an active and engaged civil society. Researchers have identified a negative relationship between press freedom and corruption (Aymo Brunetti and Beatrice Weder, 2003; Shyamal Chowdhury, 2004; Sebastian Freille, et al., 2007). Empirical evidence has been used to argue that civil liberties give voters a “voice” to influence the performance of a country’s public investment programs (Jonathan Isham, Daniel Kaufmann and Lant Pritchett, 1995). When this voice is repressed voters have fewer methods for influencing the accountability of government officials and public projects.

A strong civil society serves as an important barrier to rent extraction. Mauro (1996; 1997; 1998; 2002) has shown that corruption diverts public investment from areas such as education and healthcare to physical projects like infrastructure investment, where rents can be

more easily extracted. Defense ministries, for example, may be more susceptible to corruption than government sectors involved in the provision of health and education services. A study conducted by Vito Tanzi and Hamid Davoodi (1997) supports this claim by showing that public funds are often diverted to areas where bribes are easier to collect. As a result, resources are pooled away from the health and education sectors in corrupt countries. Regression analysis has been used to show that countries with high levels of corruption spend less on education and healthcare (Mauro, 1998). Accordingly, low life expectancy, adult literacy, and other measures of human development may be symptoms of public sector corruption. This, in turn, can lead to more corrupt behavior as the situation unfolds into a vicious cycle of underfunding development.

Cross-country analyses that examine the relationship between corruption and measures of human development are rare. Selçuk Akçay (2006) explored this relationship with a multivariate regression for 63 countries that included the Human Development Index (HDI), a proxy for human development, as the dependent variable. Independent variables included an index to measure economic freedom, three measurements of corruption, an urbanization measurement, a democracy index, and a vector of geographic dummies. The results showed an inverse relationship between corruption and the HDI. The findings also showed a positive relationship between European Union membership and human development while African and Latin American dummies had a negative relationship with the HDI.

Other studies have identified a more indirect link between corruption and measures of human development. For example, Syed Akhter (2004) has shown that that increases in economic freedom and globalization can increase human development and reduce corruption perceptions. A high degree of economic development is more commonly associated with low corruption levels. This has been widely documented with multivariate regression models in both

developed and developing countries (Goldsmith, 1999; Triesman, 2000; Peter Graeff and Guido Mehlkop, 2003; Alejandro Chafuen and Eugenio Guzman, 2000; Martin Paldam, 2002; James Gwartney, 2009; and Peyton and Belasen, 2011).

Affluent societies are more likely to have high levels of human development and economic freedom. As such, a country's Gross Domestic Product (GDP) is also an important determinant of corruption. Triesman (2000), for example, shows that more than 50% of the variation in corruption perceptions can be explained by variations in per capita income. Kathleen Getz and Roger Volkema (2001) used a cross-country study to show an inverse relationship between GDP per capita and corruption. Other studies have documented a statistically significant inverse relationship between corruption and wealth using real per capita GDP growth (Mauro, 1996; Carlos Leite and Jens Weideman, 2000; Tanzi and Davoodi, 2000; and George Abed and Davoodi, 2000).

II. Data

The independent variables in this study comprise measures for national levels of education, health, wealth, natural resources, inflation, democratization, and press freedom (PF). Furthermore, dummy variables are included to identify Organization for Economic Cooperation and Development (OECD) member nations, countries located in tropical regions, and those countries with a history of British colonial rule leading into the Twentieth Century. These variables are examined separately for developing² and developed countries and in a combined sample. Descriptive statistics are presented in Table 1 of the Appendix.

² We recognize that the classification of countries or economies as "developing" is often arbitrary. In an effort to avoid this we adopt the list of "Emerging and Developing Economies" provided by the IMF which can be found here: <http://www.imf.org/external/pubs/ft/weo/2010/01/weodata/groups.htm#oem>.

The measure of corruption in this study is the level of ‘perceived corruption’ derived from Transparency International’s *CP*. *CP* is based on survey data from 13 different expert and business surveys of perceived public-sector corruption.³ The index ranges from zero to ten, with a score of zero representing a highly corrupt country. For interpretive purposes, the index has been scaled to 100 and then altered by subtracting scaled country values from 100 so that higher values correspond to higher corruption perceptions.⁴

This study compares *CP* to two indices: Press Freedom (PF) and the Democracy Index (DI). The PF index is collected by Freedom House’s annual study of media independence.⁵ The index runs from zero to 100 in terms of the degree of hostility towards the press, from a fully free press to a press endangered by open acts of violence. To better coincide with the other two indices, PF scores are subtracted from 100 such that a score of 100 reflects complete freedom of the press. DI is compiled by the Economist Intelligence Unit⁶ using five categories of democratization: electoral process and pluralism, civil liberties, functioning of government, political participation and political culture. DI ranks countries from authoritarian regimes (scores below 4.0) upwards to full democracies (scores of 8.0 or higher). To match the other indices, DI is multiplied by 10 so it also runs from zero to 100. To avoid potential reverse causality with *CP*, we are using a lagged measure of the DI in this study.

To measure national wealth, per capita GDP data has been taken from the World Economic Outlook Database created by the International Monetary Fund.⁷ The IMF’s measure

³ Although a few measures of perceived corruption exist, Transparency International’s index was selected because it is the most widely cited in the literature and covers the widest range of countries for the years selected in this study.

⁴ Myanmar, for example, receives a corruption perceptions score of 87 in 2008 and is the ‘most corrupt’ observation in the data set.

⁵ The PF index is constructed from several different sources including press organizations; official reports on the state of the media, country-based correspondents, expert opinions and local and international news services. <http://www.freedomhouse.org/>

⁶ Economist Intelligence Unit, <http://www.eiu.com/public/>

⁷ International Monetary Fund, <http://www.imf.org/external/data.htm#data>.

is computed via purchasing power parity in U.S. dollars. Since it is not necessarily clear if GDP impacts corruption or vice versa, we use a lagged measure of GDP per capita. Developing nations report a mean GDP of approximately \$7,144. Developed nations have a mean GDP per capita of more than 4 times their less developed peers at \$34,594.

Data for oil production and inflation were obtained from the CIA World Factbook.⁸ Using the net-change in the Consumer Price Index (CPI), we express the result as an inflationary percentage rate for each country. Therefore, a score of 2.0 reflects a 2% change from the previous year. Developing countries experience, on average, higher levels of inflation and greater variability across the sample. Oil production is measured in average quantity of barrels per day produced by each country. Oil production is, on average, higher in developed countries but subject to less variability in the developing sample.

Both life expectancy and adult literacy data were obtained from the United Nations Statistics Division.⁹ Countries with higher life expectancy scores are assumed to be healthier countries. Life Expectancy is measured in years, and serves as a proxy for the average health of a country, which is greatly influenced by government expenditures allocated to health related services. Life expectancy ranges from under 43 years to nearly 80 years, with a mean of 68.23 years in the complete sample. The adult literacy rate is expressed as the percentage of literate individuals aged 15 and older and is used as a proxy for the level of basic education. Although the average literacy rate in the sample is 83%, the spread ranges from 23.6% to 99.8% in the complete sample. In the sample of developed countries, literacy and life expectancy are clustered near the top but exhibit a high degree of variability in the developing sample.

⁸ CIA World Factbook, <https://www.cia.gov/library/publications/the-world-factbook/>. Although our reason for adding the oil production variable was primarily motivated by an attempt to control for the extremely high levels of GDP in oil producing states, several studies have suggested a positive relationship between corruption and oil production (See: Mauro, 1998; Ades and DiTella, 1999; and Montinola and Jackman, 2002).

⁹ United Nations Statistics Division, <http://unstats.un.org/unsd/default.htm>.

This study uses binary independent variables for OECD membership, geographical presence in the Tropics, and colonization status. Countries are assigned a value of one for the years in which they were a member nation of the OECD and a zero all other times. OECD members comprise nearly 19% of the complete sample and roughly 80% of developed countries are OECD members. A value of one is assigned if more than half of the country lies between the Tropic of Cancer and Capricorn, and a value of zero is assigned otherwise.¹⁰ Less than 48% of the complete sample fits this definition and more than half of the countries in the developing sample are located in Tropical regions. Finally, a value of one is given to former British colonies if they remained colonies leading into the Twentieth Century.¹¹ This latter classification applies to approximately 25% of the complete sample.

III. Econometric Model

Because the focus of this study is to separately evaluate the formation of corruption perceptions in both developing and developed countries, two separate models are used for each of the two subsamples in addition to a third model for the overall sample. The data span four years for each country, thus the initial model below utilizes a pooled-cross-section OLS framework to examine the factors of interest: national wealth (as the lag of GDP per capita PPP), adult literacy rate, life expectancy, inflation rate (via the change in the consumer price index), press freedom (via the PF Index), oil production (in 1,000s of bbl/day), the level of democracy

¹⁰ The use of such a dummy variable appears in Triesman (2000). After controlling for other exogenous variables, he shows that distance from the equator is significantly related to levels of corruption. The use of a dummy variable for tropical climates also appears in a recent study that explores the relationship between economic freedom and corruption (see Gwartney, 2009).

¹¹ Note that only colonies were considered, and not World War I mandates. Consequently, list of former colonies included is as follows: Anguilla, Bahamas, Bahrain, Bangladesh, Barbados, Belize, Botswana, Cameroon, Cyprus, Egypt, Fiji, Gambia, Ghana, Grenada, Guyana, Hong Kong, India, Jamaica, Jordan, Kenya, Kuwait, Lesotho, Malawi, Malaysia, Maldives, Malta, Mauritius, Namibia, Nigeria, Pakistan, Papua New Guinea, Qatar, Seychelles, Sierra Leone, Singapore, South Africa, Sri Lanka, St. Lucia, Sudan, Swaziland, Tanzania, Tonga, Trinidad and Tobago, Uganda, Vanuatu, Yemen, and Zambia.

(via the lagged DI index), proximity to the Tropics, OECD membership, and British colonial history. The dependent variable CP represents the corruption perception scores for individual countries, i , for developing countries, j , for developed countries, and n , for the full sample respectively. Additionally, each equation is fitted with a series of time dummies to control for any year-to-year differences. The equations are presented below as equations (1) through (3):

$$\begin{aligned}\hat{CP}_i = & \hat{\alpha}_0 + \hat{\alpha}_1 GDP_{it-1} + \hat{\alpha}_2 Lit_{it} + \hat{\alpha}_3 Life_{it} + \hat{\alpha}_4 \pi_{it} + \hat{\alpha}_5 PF_{it} + \hat{\alpha}_6 oil_{it} + \hat{\alpha}_7 GOV_{it-1} \\ & + \hat{\alpha}_8 T_i + \hat{\alpha}_9 OECD_i + \hat{\alpha}_{10} BC_i + \hat{\alpha}_{11} 2006 + \hat{\alpha}_{12} 2007 + \hat{\alpha}_{13} 2008\end{aligned}\quad (1)$$

$$\begin{aligned}\hat{CP}_j = & \hat{\beta}_0 + \hat{\beta}_1 GDP_{jt-1} + \hat{\beta}_2 Lit_{jt} + \hat{\beta}_3 Life_{jt} + \hat{\beta}_4 \pi_{jt} + \hat{\beta}_5 PF_{jt} + \hat{\beta}_6 oil_{jt} + \hat{\beta}_7 GOV_{jt-1} \\ & + \hat{\beta}_8 T_j + \hat{\beta}_9 OECD_j + \hat{\beta}_{10} BC_j + \hat{\beta}_{11} 2006 + \hat{\beta}_{12} 2007 + \hat{\beta}_{13} 2008\end{aligned}\quad (2)$$

$$\begin{aligned}\hat{CP}_i = & \hat{\gamma}_0 + \hat{\gamma}_1 GDP_{nt-1} + \hat{\gamma}_2 Lit_{nt} + \hat{\gamma}_3 Life_{nt} + \hat{\gamma}_4 \pi_{nt} + \hat{\gamma}_5 PF_{nt} + \hat{\gamma}_6 oil_{nt} + \hat{\gamma}_7 GOV_{nt-1} \\ & + \hat{\gamma}_8 T_i + \hat{\gamma}_9 OECD_i + \hat{\gamma}_{10} BC_i + \hat{\gamma}_{11} 2006 + \hat{\gamma}_{12} 2007 + \hat{\gamma}_{13} 2008\end{aligned}\quad (3)$$

Theoretically, our expectation for each of the models is that the factors should behave similarly, albeit with changes in magnitude. Thus, national wealth, literacy, life expectancy, press freedom, democracy level, OECD membership, and British colonial history are all expected to be statistically significant with negative coefficients for each of the three equations. We use lagged GDP as our measure of national wealth to avoid reverse causality issues where corruption may impact GDP. The positive coefficient here therefore explains the impact that high levels of GDP per capita will have on future corruption perceptions. An increase in national

wealth should reduce corruption perception as measured by the index. Furthermore, since higher educational expenditures are assumed to be associated with higher adult literacy rates an inverse relationship between literacy rates and corruption perceptions is expected.¹² Likewise, countries with a higher life expectancy are expected to have lower levels of corruption as measured by the *CP* index. In addition, as individuals become more exposed to free and open information about their political institutions they are more inclined to hold them accountable for their actions, thus we expect the coefficients for *PF* and *DI* to be negative. OECD countries are committed to principles of democracy and market economy and boast relatively high levels of income, human development and economic freedom. Given the evidence suggesting these qualities are inversely related to corruption perception the coefficient on the OECD membership factor is expected to be positive. Finally, countries with British colonial heritage and legal systems were found to be less corrupt according to *CP* measurements. Consequently, the coefficient on the colonization factor is expected to be negative such that 20th century British colonies are, on average, perceived to be less corrupt.

On the other hand, countries with high levels of inflation and/or oil production are often perceived to be more corrupt, particularly when the government controls these factors directly.¹³ Furthermore, Jeffrey Sachs (2001; 2003) showed that countries located in tropical regions have lower levels of economic development and per capita income. Although a direct relationship between geographic location and corruption probably does not exist, it has been hypothesized that physical location acts as a proxy for economic development (Triesman, 2000). Since less corrupt countries have been shown to have higher levels of economic development and per capita income, on average, then underdeveloped, poor countries are expected to be more susceptible to

¹² Mauro (1998) demonstrated that corruption reduces government spending on education.

¹³ See Getz and Volkema, 2001; Al-Marhubi, 2000; Braun and DiTella, 2004; and Paldam, 2000.

corruption. In other words, low economic development, not geographic location, is likely the source of corruption in these tropical countries, with the geographic location simply serving as a proxy for this lack of development. Therefore, the coefficient on the tropics dummy is expected to be positive in corruption regressions.

The factors of interest in this study are highly correlated with one another in some circumstances. Previous studies have demonstrated a positive correlation between longevity and development (David Bloom, David Canning, and Jaypee Sevilla, 2001; Stephen Knowles and Dorian Owen, 1995; Lant Pritchett and Lawrence Summers, 1996), so some level of multicollinearity between national wealth and life expectancy is expected.¹⁴ In addition, Getz and Volkema (2001) have shown that wealthier countries should, on average, have higher levels of human development. Getz and Volkema (2001) have also argued that wealthier countries tend to have more economic freedom. Furthermore, basic neoclassical economic theory suggests that many of the factors used in the calculation of the economic freedom index (e.g. property rights, business freedom, absence of regulation etc.) will be correlated with measurements of national wealth.

Because of the potential for significant endogeneity bias, we will also be using a second regression method: 2SLS, which will use the *HDI*¹⁵ and *EF* indices to instrument national wealth. *HDI* contains country-specific measures provided by the United Nations Human Development Reports. The *HDI* provided in each report measures human development in five aspects: life expectancy, education, adult literacy, GDP per capita, and a gross enrollment index

¹⁴ A positive correlation between income and other various measurements of health has also been identified, see Benu Bidani and Martin Ravallion (1997), and Kwabena Gyimah-Brempong and Mark Wilson (2004).

¹⁵ The *HDI* scores countries from zero to one, with one representing the highest level of human development. Just as with the *CP* data, we have adjusted *HDI* to a 100-point scale where a score of 100 represents the highest possible level of human development.

that measures levels of educational attainment.¹⁶ *EF* is a series of ten economic measurements created by The Heritage Foundation and the Wall Street Journal.¹⁷ The economic measurements are comprised of business freedom, trade freedom, monetary freedom, government size, fiscal freedom, property rights, investment freedom, financial freedom, freedom from corruption, and labor freedom. Each of these freedoms is scaled to 100 points and then averaged. This study makes use of the aggregated average *EF* index score, which ranges from 32.8 to 78.6 with a mean of 57.6 in the sample. Finally even though the data is a pooled cross-section and not a true panel, we will also examine the robustness of the results by utilizing a fixed effects panel estimation to analyze the consistency of the estimators.

IV. Estimation Results

The estimation results are presented in Tables 2 through 4 in the appendix. Each table reports the three models (OLS pooled-cross-section, 2SLS, and fixed effects) for each of the three subsamples (developing, developed, and the complete sample).

Table 2 illustrates the results of the regressions on the developing nation sample of countries. The estimation results match up to the theoretical expectations fairly well. An examination of wealth reveals that countries whose per capita GDP is one standard deviation above the sample mean will likely have a *CP* score in the following period that is more than 6.13 points lower than the average country in the developing sample. Likewise, countries whose inflation rate is one standard deviation higher than the sample mean will face *CP* scores that are 1.28 higher on average. One standard deviation improvements in the two indices, *PF* and *DI*,

¹⁶ A complete explanation of how the index is calculated can be found here: <http://hdr.undp.org/en/statistics/indices/hdi/>.

¹⁷ Index of Economic Freedom, <http://www.heritage.org/index>.

yield *CP* scores that are 2.66 and 3.18 points lower than the average country in the sample respectively. On the other hand, heavy oil producing countries that produce more than one standard deviation more oil than their counterparts will likely have a *CP* score that is 1.19 points above average. And countries that are located in the Tropics will have scores 2.66 points higher than their temperate counterparts.

One the other hand, the coefficients for OECD membership and British Colonial history were both insignificant. While the OECD number is not that surprising due to the small sample of included OECD nations in the sample, insignificance of the British Colonial history variable runs counter to previous findings.¹⁸ Finally in another surprise, Adult Literacy Rate was only significant in the 2SLS estimation, and in that particular estimation the coefficient was opposite the theoretical value. If that finding was to be believed then countries with a literacy rate that is one standard deviation above the mean would have *CP* scores nearly one point higher than the average country in the sample. It is more likely that the OLS and FE results are more believable in this instance and that due to the limited variability in literacy rates across the sample, the results are insignificant. By contrast, the life expectancy coefficient was only significant for the pooled-cross-section OLS estimation, but its sign matched up to the theory. Countries with life expectancy levels one standard deviation above the average will have *CP* scores nearly half a point lower than the average country.

Estimation results for the sample of developed nations can be seen in Table 3. This sample is very different from the previous one. Whereas among developing nations, fewer than 5% of the sample were OECD members, in this sample over 80% are in the OECD.¹⁹ That alone indicates that the results will likely be more muted because the sample will be much more

¹⁸ See Triesman (2000) for a more complete discussion.

¹⁹ It should be noted that most OECD countries have low inflation and high levels of human development, economic freedom, literacy, life expectancy and national wealth.

homogenous. As expected, the estimation results reveal far fewer significant results. The 2SLS and FE results for the most part were completely insignificant. In the OLS estimation, however, there were a few interesting findings. For one, the coefficient for OECD membership is now significant and actually positive – indicating that OECD member nations are perceived to be more corrupt (7.84 points higher on the *CP* index on average) than their non-OECD developed peers. Additionally, literacy and life expectancy both had negative coefficients, indicating that countries with a literacy rate one standard deviation above the mean would have a *CP* score that is 3.42 below the mean, and a country with a life expectancy rate one standard deviation above the mean would have a *CP* score that is 2.07 below the mean. With that said, in order for a country to have a literacy rate that high, their literacy would have to be at 99.9% which is likely to be an impossibility for most countries.

Some of the biggest differences come from the remaining factors. The impact of inflation is felt much stronger here. A country one standard deviation above the average inflation rate will have corruption perceptions that are almost two full points higher on the scale than the average country in this sample. Relative to the developing sample, this is a much larger impact since the average *CP* score in the developed sample is roughly one-third the score of the developing sample. On the other hand, national wealth appears to play no significant role at all in determining how corrupt a developed country is perceived to be. It is likely that this is due to multicollinearity with the OECD variable. And while the *PF* index is also insignificant, the *DI* index reveals that more democratic developed countries are likely to be perceived to be less corrupt than their peers. A one standard deviation difference here coincides with a *CP* score that is 1.6 points lower. Finally, the two biggest differences come from the coefficients on the Tropics dummy variable and the oil production variable. The only two tropical countries in the

developed sample are Singapore and Hong Kong. Each of these city-states appears to buck the trend seen in the literature in which tropical nations are less developed and more corrupt. In fact their *CP* scores are likely to be more than 67 points lower than the average developed country outside of the tropics holding all else equal.²⁰ Oil production also features a reversed sign. This is likely due to countries such as the United States, the United Kingdom, and Norway which score very low on the *CP* index and yet produce a large amount of oil per day.

With these rather stark differences between the two subsamples, Table 4 uses the same estimation methods to analyze the sample in its entirety. The first thing to note is that since the developing nations greatly outnumber the developed nations, the joint sample is much closer in magnitude to the developing sample. The factors with opposing signs in the previous sample, oil production and proximity to the tropics both take the sign of the developing sample. Additionally, due to the increased dispersion in the data set, both the OECD membership dummy and the British colonial history variable are now significantly negative in the pooled-cross-section OLS equation instead of insignificant. However, in the 2SLS equation, they, along with literacy and life expectancy are all positive. This indicates that the instruments are a worse fit than the national wealth variable itself. Overall, however, the joint results are no surprise given the values of the estimators in the split-sample estimation results in Tables 2 and 3.

V. Conclusion

This study examined the factors that influence corruption perceptions in developing and developed countries. Specifically, the results obtained from the regression models used in this

²⁰ Note further that these two nations along with Cyprus and Malta also make up the only former British colonies in the developed sample, and with the colonization variable insignificant; it is highly likely that the small sample sizes are governing these two estimates.

study suggest that the factors which comprise the Economic Freedom and Human Development indices can be significant predictors of corruption perceptions in cross-country studies. Moreover, the study suggests that several of these factors affect corruption perceptions in developing countries differently from their developed counterparts.

The results in Table 2 indicate that higher levels of national wealth, life expectancy, press freedom, and democratization reduce perceptions of corruption in developing countries, while the opposite is true for higher levels of inflation and oil production. Additionally, tropical countries are perceived to be more corrupt than their more-temperate peers. Table 3 reveals that for developed countries, while national wealth does not play a role in corruption perceptions, higher levels of literacy rates, life expectancy, and democratization reduce corruption perceptions. Similar to developing countries, higher levels of inflation increase corruption perceptions. Potentially due to the small sample size, surprisingly, proximity to the Tropics reduces corruption perceptions for developed countries, while OECD member nations are viewed as more corrupt than their non-member peers. Finally, the results in Table 4 show that when the breadth of the sample size is widened, the coefficients more closely match up to the theoretical expectations laid out in prior studies.

These findings have public policy implications. First, for all countries, increasing democratic reforms and investing in human development are the best bet to potentially reduce levels of perceived corruption. In addition, low inflation may also contribute to reductions in corruption perception levels. Although this may appear to be easier said than done, it does imply that developing nations committed to improving along these guidelines could have diminishing levels of corruption over time. Second, while levels of national wealth do not appear to be as important for developed nations as developing nations in reducing corruption, wealth

enhancement via investment in domestic natural resources appears to be more beneficial for developed countries than developing countries in reducing corruption perceptions. Unfortunately, this presents somewhat of a catch-22 in that developing countries are typically much more reliant on revenues from natural resources for economic gains than their developed counterparts. Thus it is particularly important for resource-endowed nations to be more open regarding the distribution of wealth from oil and gas. Finally, running counter to theory that high levels of government expenditures will increase corruption perceptions (Becker, 1994; 1995), these results suggest that a reduction in the size and role of government may not always be the best course of action when tackling corruption problems, rather government expenditure in areas of human development such as literacy and healthcare can reduce corruption perceptions.

High levels of perceived corruption are the symptoms of low quality institutions. It is possible that higher levels of human development also act as a proxy for institutional quality. This does not necessarily imply that increasing the relative size and regulatory power of the public sector will lead to decreases in corruption perception levels. Many of the countries from the sample with high EF scores are relatively low HD scores have low levels of perceived corruption. New Zealand, for example, has a very high EF score and a relatively low HD score yet it is tied with or listed as the least corrupt country for all years examined in this study.

Future research efforts could be directed at including measurements of public expenditures on health and education instead of life expectancy and adult literacy to get a more accurate picture of good versus bad government spending. Unfortunately, complete data sets with measures of social spending are not currently available for a cross-country study committed to a large sample size. Since considerable investment in education and health is typically associated with a large public sector, including measures of social spending could offer

additional insight into the relationship between human development and corruption. Finally, additional measurements of institutional quality would be useful for future studies involving corruption perceptions.

References

- Abed, George and Hamid Davoodi. 2000. "Corruption, Structural Reforms and Economic Performance in the Transition Economies," IMF Working Paper No. 132. Washington: International Monetary Fund.
- Ades, Alberto and Rafael Di Tella. 1996. "The Causes and Consequences of Corruption: A Review of Recent Empirical Contributions," *IDS Bulletin*, 27(2): 6-12.
- _____ 1999. "Rents, Competition and Corruption," *The American Economic Review*, 89 (4): 982-993.
- Ahrend, Rudiger. 2002. "Press Freedom, Human Capital and Corruption," *DELTA Working Paper No. 2002-11*.
- Akçay, Selçuk. 2006. "Corruption and Human Development," *Cato Journal*, 26(1): 29-48.
- Akhter, Syed H. 2004. "Is Globalization What It's Cracked Up to Be? Economic Freedom, Corruption, and Human Development," *Journal of World Business*, 39(1): 283-95.
- Al-Marhubi, Fahim. 2000. "Corruption and Inflation," *Economic Letters*, 66: 199-202.
- Banfield, Edward. 1975. "Corruption as a Feature of Government Organization," *Journal of Law and Economics*, 18 (3): 587-605.
- Bardhan, Pranab K. 1997. "Corruption and Development: A Review of Issues," *Journal of Economic Literature*, 35 (3): 1320-1346.
- Becker, Gary S. and George J. Stigler. 1974. "Law Enforcement, Malfeasance, and the Compensation of Enforcers," *Journal of Legal Studies*. 3(1): 1-18.
- Becker, Gary S. 1994, "To Root Out Corruption, Boot Out Big Government," *Business Week*, January 31, p. 18.
- _____ 1995, "If You Want to Cut Corruption, Cut Government," *Business Week*, December 11, p. 26.

- Bidani, Benu and Martin Ravallion. 1997. "Decomposing Social Indicators Using Distributional Data," *Journal of Econometrics*, 77(1): 125-139.
- Blackburn, Keith and Rashmi Sarmah. 2007. "Corruption, Development and Demography" *Economics of Governance*, 9(4): 341-362.
- Bloom, David E., David Canning, and Jaypee Sevilla. 2001. "The Effect of Health on Economic Growth: Theory and Evidence," National Bureau of Economic Research Working Paper No. 8587.
- Braun, Miguel and Rafael Di Tella. 2004. "Inflation, Inflation Variability, and Corruption," *Economic and Politics* 16(1): 77-100.
- Brunetti, Aymo and Beatrice Weder. 2003. "A free press is bad news for corruption," *Journal of Public Economics* 87(2003): 1801-1824.
- Chafuen, Alejandro and Eugenio Guzman. 2000. "Economic Freedom and Corruption," In *2000 Index of Economic Freedom*, edited by Gerald O'Driscoll Jr., Kim Holmes, and Melanie Kirkpatrick. Washington, D.C.: Heritage Foundation.
- Chakraborty, Lekha S. 2003. "Public Expenditure and Human Development: An Empirical Investigation," Paper prepared for the Wider International Conference on Inequality, Poverty and Human Well-Being, Helsinki, May 30-31.
- Chowdhury, Shyamal K. 2005. "The effect of democracy and press freedom on corruption: an empirical test," *Economics Letters*, 85(1): 93-101.
- Della Porta, Donatella. 2004. "Parties and Corruption," *Crime, Law, and Social Change* 66: 35-60.
- Freedom House. 2006. *Freedom of the Press Index*, 2006. www.freedomhouse.org
 _____ 2007. *Freedom of the Press Index*, 2007. www.freedomhouse.org

- _____ 2008. *Freedom of the Press Index*, 2008. www.freedomhouse.org
- _____ 2009. *Freedom of the Press Index*, 2009. www.freedomhouse.org
- Freille, Sebastian, M. Emranul Haque and Richard Kneller. 2007. "A contribution to the empirics of press freedom and corruption," *European Journal of Political Economy*, 23(4): 838-862.
- Getz, Kathleen A. and Roger J. Volkema. 2001. "Culture, Perceived Corruption, and Economics: A Model of Predictors and Outcomes," *Business and Society*, 40(1): 7-30.
- Girling, John. 1997. *Corruption, Capitalism and Democracy*. London: Routledge Studies in Social and Political Thought.
- Goldsmith, Arthur A. 1999. "Slapping the Grasping Hand: Correlates of Political Corruption in Emerging Markets," *American Journal of Economics and Sociology*, 58(4): 865-863.
- Graeff, Peter and Guido Mehlkop. 2003. "The Impact of Economic Freedom on Corruption: Different Patterns for Rich and Poor Countries," *European Journal of Political Economy*, 19(3): 605-20.
- Gwartney, James. 2009. "Institutions, Economic Freedom, and Cross-Country Differences in Performance," *Southern Economic Journal*, 75(4): 937-56.
- Gyimah-Brempong, Kwabena and R. Mark Wilson, "Health, Human Capital, and Economic Growth in Sub-Saharan African and OECD Countries," *Quarterly Review of Economics and Finance*, 44(2): 296-320.
- Heritage Foundation. 2006. *Index of Economic Freedom*, 2006. www.heritage.org.
- _____ 2007. *Index of Economic Freedom*, 2007. www.heritage.org.
- _____ 2008. *Index of Economic Freedom*, 2008. www.heritage.org.
- _____ 2009. *Index of Economic Freedom*, 2009. www.heritage.org.

Human Development Report. 2006. UNDP: <http://www.undp.org>.

_____ 2007. UNDP: <http://www.undp.org>.

_____ 2008. UNDP: <http://www.undp.org>.

_____ 2009. UNDP: <http://www.undp.org>.

Huntington, Samuel P. 1968. *Political Order in Changing Societies*. New Haven: Yale University Press.

Johnston, Michael. 1996. "The Search for Definitions: The Vitality of Politics and the Issue of Corruption," *International Social Science Journal*, 48(3): 321-35.

_____ 2002. "Party Systems, Competition, and Political Checks against Corruption," in Arnold J. Heidenheimer and Michael Johnston, eds., *Political Corruption: Concepts and Contexts*, 3rd edn, New Brunswick, NJ: Transaction Publishers pp. 777-794.

_____ 2005a. *Civil Society and Corruption: Mobilizing for Reform*, Lanham, MD: University Press of America.

_____ 2005b. *Syndromes of Corruption: Wealth, Power, and Democracy*, Cambridge, UK: Cambridge University Press.

Kaufmann, Daniel, Aart Kraay and Pablo Zoido-Lobaton. 1999. "Governance Matters," World Bank Policy Research Working Paper 2196, Washington, DC: World Bank. Online at http://www.worldbank.org/wbi/governance/working_papers.htm (viewed 21 July 2010).

Klitgaard, Robert. 1988. *Controlling Corruption*. Berkeley: University of California Press.

Knack, Stephen and Philip Keefer. 1995. "Institutions and Economic Performance: Cross-Country Tests Using Alternative Institutional Measures," *Economics and Politics* 7: 207-227.

- Knowles, Stephen and P. Dorian Owen. 1995. "Health Capital and Cross-Country Variation in Income per Capita in the Mankiw-Romer-Weil Model," *Economics Letters*, 48(1): 99-106.
- Krueger, Anne O. 1974. "The Political Economy of the Rent-Seeking Society," *American Economic Review*, 64(3): 291-303.
- Lambsdorff, Johann Graff. 2002. Background Paper to the 2002 Corruption Perception Index: Framework Document 2002.
- Transparency International, Berlin. Available at <http://www.transparency.org>.
- LaPalombara, Joseph. 1994. "Structural and Institutional Aspects of Corruption," *Social Research*, 62(2): 325-350.
- Leff, Nathaniel. 1964. "Economic Development through Bureaucratic Corruption," *American Behavioral Scientist*, 8(3): 8-14.
- Leite, Carlos and Jens Weideman. 1999. "Does Mother Nature Corrupt? Natural Resources, Corruption and Economic Growth," IMF Working Paper No. 85. Washington: International Monetary Fund.
- Mauro, Paulo. 1995. "Corruption and Growth," *Quarterly Journal of Economics*, 110(3): 681-712.
- _____ 1996. "The Effects of Corruption on Investment, Growth and Government Expenditure." IMF Working Paper No. 98, Washington: International Monetary Fund.
- _____ 1997. "The Effects of Corruption on Growth, Investment and Government Expenditure: A Cross-Country Analysis," in Kimberly Ann Elliott, ed., 1997. *Corruption and the Global Economy*. Washington D.C.: Institute for International Economics.
- _____ 1998. "Corruption and the Composition of Government Expenditure," *Journal of*

- Public Economics*, 69(2): 263-279.
-
2002. "The Effects of Corruption on Growth and Public Expenditure," in Arnold J. Heidenheimer and Michael Johnston, eds., *Political Corruption: Concepts and Contexts*, 3rd edn, New Brunswick, NJ: Transaction Publishers, pp. 339-352.
- Mocan, Naci, 2004. "What determines corruption? International evidence from micro data." *National Bureau of Economic Research Working Paper No. 10460*.
- Montinola, Gabriella and Robert W. Jackman. 2002. "Sources of Corruption: A Cross-Country Study," *British Journal of Political Science*, 32(1): 147-170.
- Nye, Joseph S. 1967. "Corruption and Political Development: A Cost-Benefit Analysis," *American Political Science Review* 61(2): 3-24.
- Paldam, Martin. 2002. "The Cross-Country Pattern of Corruption: Economics, Culture and the Seesaw Dynamics," *European Journal of Political Economy*, 18(2): 215-20.
- Persson Torsten, Guido Tabellini and Francesco Trebbi. 2003. "Electoral Rules and Corruption," *Journal of the European Economic Association*, 1 (4): 958-89.
- Peyton, Kyle and Ariel R. Belasen. 2011. "Corruption Perceptions in Emerging and Developing Economies: Evidence from a Pooled Cross-Section," working paper.
- Pritchett, Lant and Lawrence H. Summers. 1996. "Wealthier is Healthier," *Journal of Human Resources*, 31(4): 841-868.
- Qizilbash, Mozaffar. 2001. "Corruption and Human Development: A Conceptual Discussion," *Oxford Developmental Studies*, 29(3): 265-78.
- Rose-Ackerman, Susan. 1975. "The Economics of Corruption," *Journal of Public Economics*, 4(2): 187-203.

- _____ 1978. *Corruption: A Study of Political Economy*. New York: Academic Press.
- _____ 1999. *Corruption and Government: Causes, Consequences, and Reform*. New York: Cambridge University Press.
- Sandholtz, Wayne, and William Koetzle. 2000. "Accounting for Corruption: Economic Structure, Democracy, and Trade Source," *International Studies Quarterly* 44: 31-50.
- Sachs, Jeffrey D. 2001. "Tropical Underdevelopment," National Bureau of Economic Research Working Paper No. w8119.
- _____ 2003. "Institutions Don't Rule: Direct Effects of Geography on Per Capita Income," National Bureau of Economic Research Working Paper No. 9490.
- Schneider, Ben Ross. 1998. "Elusive Synergy: Business-Government Relations and Development," *Comparative Politics* 31: 101-122.
- Shleifer, Andrei and Robert W. Vishny. 1993. "Corruption," *The Quarterly Journal of Economics*, 108(3): 599-617
- Tanzi, Vito. 1998. "Corruption Around the World: Causes, Consequences, Scope, and Cures," IMF Working Paper No. 63. Washington: International Monetary Fund.
- Tanzi, Vito and Hamid Davoodi. 1997. "Corruption, Public Investment and Growth," IMF Working Paper no. 97. Washington: International Monetary Fund.
- _____ 2000. "Corruption, Growth and Public Finances." IMF Working Paper No. 116. Washington: International Monetary Fund.
- Transparency International. 2006. *The Corruption Perception Index 2005*.
www.transparency.de/index.html.
- _____ 2007. *The Corruption Perception Index 2006*.

www.transparency.de/index.html.

2008. *The Corruption Perception Index 2007*.

www.transparency.de/index.html.

2009. *The Corruption Perception Index 2008*.

www.transparency.de/index.html.

Treisman, Daniel. 2000. "The Causes of Corruption: A Cross-National Study," *Journal of Public Economics*, 76(3): 399-457.

Van Roy, Edward. 1970. "On the Theory of Corruption," *Economic Development and Cultural Change*, 19(1): 86-110.

Wei, Shang-Jin. 1997. "Why is Corruption So Much More Taxing Than Tax? Arbitrariness Kills." *NBER Working Paper No. W6255*.

Wei, Shang-Jin. 1999. "Corruption in Economic Development: Beneficial Grease, Minor Annoyance, or Major Obstacle?" *World Bank Policy Research Working Paper No. 2048*.

Weingast, Barry. 1993. "Constitutions as Governance Structures: The Political Foundations of Secure Markets," *Journal of Institutional and Theoretical Economics* 149: 286-311.

Appendix

Table 1: Descriptive Statistics

| | n | Mean | Standard Deviation |
|----------------------------------|----------|-------------|---------------------------|
| Developing Nations | | | |
| Adult Literacy Rate | 508 | 79.904% | 19.549 |
| Life Expectancy at birth | 508 | 65.304 | 9.656 |
| Lagged GDP Per Capita (PPP USD) | 504 | \$7,143.998 | 9,013.488 |
| Inflation Rate (as Δ CPI) | 505 | 7.890% | 5.841 |
| Corruption Perception Index | 496 | 68.171 | 12.205 |
| Economic Freedom Index | 470 | 57.211 | 7.992 |
| Human Development Index | 506 | 57.061 | 16.013 |
| Press Freedom Index | 503 | 45.453 | 20.459 |
| Lagged Democracy Index | 485 | 49.366 | 18.694 |
| Oil Production (1,000bbl/day) | 507 | 483.710 | 1,404.239 |
| Tropics | 508 | 0.583 | 0.494 |
| OECD Member | 508 | 0.047 | 0.212 |
| Former British Colony | 508 | 0.283 | 0.451 |
| Developed Nations | | | |
| Adult Literacy | 128 | 98.231% | 1.682 |
| Life Expectancy at birth | 128 | 79.909 | 1.574 |
| Lagged GDP Per Capita (PPP USD) | 128 | \$34,594.24 | 10,938.28 |
| Inflation Rate (as Δ CPI) | 128 | 2.438% | 1.946 |
| Corruption Perception Index | 128 | 25.672 | 15.693 |
| Economic Freedom Index | 128 | 72.945 | 7.491 |
| Human Development Index | 128 | 86.249 | 3.336 |
| Press Freedom Index | 128 | 80.125 | 10.826 |
| Lagged Democracy Index | 128 | 83.927 | 9.365 |
| Oil Production (1,000bbl/day) | 128 | 551.872 | 1,583.648 |
| Tropics | 128 | 0.063 | 0.243 |
| OECD Member | 128 | 0.813 | 0.392 |
| Former British Colony | 128 | 0.125 | 0.332 |
| Complete Sample | | | |
| Adult Literacy | 636 | 83.593% | 18.967 |
| Life Expectancy at birth | 636 | 68.243 | 10.454 |
| Lagged GDP Per Capita (PPP USD) | 632 | \$12,703.54 | 14,516.84 |
| Inflation Rate (as Δ CPI) | 633 | 6.788% | 5.725 |
| Corruption Perception Index | 624 | 59.454 | 21.530 |
| Economic Freedom Index | 598 | 60.579 | 10.190 |
| Human Development Index | 634 | 62.954 | 18.555 |
| Press Freedom Index | 631 | 52.487 | 23.491 |
| Lagged Democracy Index | 613 | 56.583 | 22.186 |
| Oil Production (1,000bbl/day) | 635 | 497.449 | 1,441.148 |
| Tropics | 636 | 0.478 | 0.500 |
| OECD Member | 636 | 0.189 | 0.392 |
| Former British Colony | 636 | 0.252 | 0.434 |

Table 2: Regression Results of Corruption Perception in Developing Countries

| Coefficient: | OLS | 2SLS | FE |
|---|--------------|--------------|--------------|
| Lagged GDP per capita (PPP\$1,000s) | | | |
| <i>Coefficient:</i> | -0.6857*** | | -0.6816*** |
| <i>Standard Error:</i> | (0.0503) | | (0.0992) |
| Instrumented GDP (via HDI and EF) | | | |
| <i>Coefficient:</i> | | -0.9810*** | |
| <i>Standard Error:</i> | | (0.1062) | |
| Adult Literacy (% aged 15 and older) | | | |
| <i>Coefficient:</i> | 0.0090 | 0.0492* | -0.0144 |
| <i>Standard Error:</i> | (0.0264) | (0.0294) | (0.0500) |
| Life Expectancy at Birth | | | |
| <i>Coefficient:</i> | -0.0492*** | 0.0311 | -0.0259 |
| <i>Standard Error:</i> | (0.0560) | (0.0695) | (0.1094) |
| Inflation (ΔCPI) | | | |
| <i>Coefficient:</i> | 0.2321*** | 0.2113*** | 0.3615** |
| <i>Standard Error:</i> | (0.0689) | (0.0731) | (0.1760) |
| Press Freedom (PF) | | | |
| <i>Coefficient:</i> | -0.1520*** | -0.1127*** | -0.1302* |
| <i>Standard Error:</i> | (0.0345) | (0.0423) | (0.0706) |
| Oil Production (1,000s of bbl/day) | | | |
| <i>Coefficient:</i> | 0.0007** | 0.0010*** | 0.0007 |
| <i>Standard Error:</i> | (0.0003) | (0.0003) | (0.0005) |
| Lagged Democracy Index (DI) | | | |
| <i>Coefficient:</i> | -0.1363*** | -0.1992*** | -0.1428* |
| <i>Standard Error:</i> | (0.0394) | (0.0488) | (0.0790) |
| Tropics | | | |
| <i>Coefficient:</i> | 2.8672*** | 2.4651*** | 2.4079 |
| <i>Standard Error:</i> | (0.8564) | (0.9194) | (1.6455) |
| OECD Membership | | | |
| <i>Coefficient:</i> | 0.8541 | 2.3508 | 0.6510 |
| <i>Standard Error:</i> | (1.9979) | (2.1111) | (3.8929) |
| British Colony | | | |
| <i>Coefficient:</i> | -1.2437 | 0.0015 | -1.6827 |
| <i>Standard Error:</i> | (0.9212) | (1.1714) | (1.7973) |
| 2006 Dummy | | | |
| <i>Coefficient:</i> | -0.6810 | -1.1770 | 0.2631 |
| <i>Standard Error:</i> | (0.9971) | (1.0586) | (11.0435) |
| 2007 Dummy | | | |
| <i>Coefficient:</i> | -0.3656 | -0.8597 | -9.7252 |
| <i>Standard Error:</i> | (0.9871) | (1.0491) | (16.9075) |
| 2008 Dummy | | | |
| <i>Coefficient:</i> | -1.8346* | 2.1027* | -15.6400 |
| <i>Standard Error:</i> | (1.0659) | (1.309) | (21.6946) |
| R² | .6165 | .5945 | .4384 |
| F | 55.78 | 46.29 | 15.06 |
| n | 465 | 444 | 465 |

Note: All regressions were also run with constants as well. Dummy variables in the FE model were interacted with a time variable.

*Significant at the 10% level
 **Significant at the 5% level
 ***Significant at the 1% level

Table 3: Regression Results of Corruption Perceptions in Developed Countries

| Coefficient: | OLS | 2SLS | FE |
|---|--------------|--------------|--------------|
| Lagged GDP per capita (PPP\$1,000s) | | | |
| <i>Coefficient:</i> | 0.0733 | | 1.1437** |
| <i>Standard Error:</i> | (0.0907) | | (0.4758) |
| Instrumented GDP (via HDI and EF) | | | |
| <i>Coefficient:</i> | | -1.4786 | |
| <i>Standard Error:</i> | | (1.0850) | |
| Adult Literacy (% aged 15 and older) | | | |
| <i>Coefficient:</i> | -2.0335*** | 0.1917 | -1.3382 |
| <i>Standard Error:</i> | (0.6669) | (1.9867) | (1.0515) |
| Life Expectancy at Birth | | | |
| <i>Coefficient:</i> | -1.3147** | -0.2417 | 2.8193 |
| <i>Standard Error:</i> | (0.5381) | (1.2578) | (1.9935) |
| Inflation (ΔCPI) | | | |
| <i>Coefficient:</i> | 1.0111** | 0.1498 | -0.0629 |
| <i>Standard Error:</i> | (0.0689) | (1.0709) | (0.3562) |
| Press Freedom (PF) | | | |
| <i>Coefficient:</i> | -0.1406 | -0.1998 | -0.8247* |
| <i>Standard Error:</i> | (0.1237) | (0.2372) | (0.3944) |
| Oil Production (1,000s of bbl/day) | | | |
| <i>Coefficient:</i> | -0.0010* | 0.0016 | -0.0041** |
| <i>Standard Error:</i> | (0.0005) | (0.0020) | (0.0020) |
| Lagged Democracy Index (DI) | | | |
| <i>Coefficient:</i> | -0.1721*** | -6.4967 | 0.3448 |
| <i>Standard Error:</i> | (0.0172) | (8.0773) | (0.3790) |
| Tropics | | | |
| <i>Coefficient:</i> | -67.2169*** | -18.5277 | 0.7692 |
| <i>Standard Error:</i> | (6.2071) | (35.6004) | (1.6462) |
| OECD Membership | | | |
| <i>Coefficient:</i> | 7.8397** | 7.7482 | 1.5711 |
| <i>Standard Error:</i> | (3.3999) | (6.4228) | (1.1858) |
| British Colony | | | |
| <i>Coefficient:</i> | 3.9967 | 5.0797 | 0.2391 |
| <i>Standard Error:</i> | (4.8469) | (9.1865) | (1.5002) |
| 2006 Dummy | | | |
| <i>Coefficient:</i> | -2.2398 | -8.1702 | 8.8633** |
| <i>Standard Error:</i> | (2.2332) | (6.1492) | (4.1697) |
| 2007 Dummy | | | |
| <i>Coefficient:</i> | -0.8305 | -4.9081 | 5.2343* |
| <i>Standard Error:</i> | (2.1721) | (4.9761) | (2.7703) |
| 2008 Dummy | | | |
| <i>Coefficient:</i> | -0.8192 | -0.4956 | 1.7656 |
| <i>Standard Error:</i> | (2.5233) | (4.7719) | (1.9088) |
| R² | .7410 | .0757 | .2763 |
| F | 25.09 | 7.16 | 2.44 |
| n | 128 | 128 | 128 |

Note: All regressions were also run with constants as well. Dummy variables in the FE model were interacted with a time variable.

*Significant at the 10% level

**Significant at the 5% level

***Significant at the 1% level

Table 4: Regression Results of Corruption Perceptions Across the Entire Sample

| Coefficient: | OLS | 2SLS | FE |
|---|---------------|---------------|--------------|
| Lagged GDP per capita (PPP\$1,000s) | | | |
| <i>Coefficient:</i> | -0.7996*** | | -0.8052*** |
| <i>Standard Error:</i> | (0.0446) | | (0.0877) |
| Instrumented GDP (via HDI and EF) | | | |
| <i>Coefficient:</i> | | -1.3930*** | |
| <i>Standard Error:</i> | | (0.1060) | |
| Adult Literacy (% aged 15 and older) | | | |
| <i>Coefficient:</i> | 0.0389 | 0.0943** | 0.0157 |
| <i>Standard Error:</i> | (0.0320) | (0.0380) | (0.0607) |
| Life Expectancy at Birth | | | |
| <i>Coefficient:</i> | -0.1304** | 0.1723* | -0.0912 |
| <i>Standard Error:</i> | (0.0664) | (0.0934) | (0.1293) |
| Inflation (ΔCPI) | | | |
| <i>Coefficient:</i> | 0.2690*** | 0.1334 | 0.4438** |
| <i>Standard Error:</i> | (0.0834) | (0.0998) | (0.2123) |
| Press Freedom (PF) | | | |
| <i>Coefficient:</i> | -0.1183*** | -0.0193 | -0.0871 |
| <i>Standard Error:</i> | (0.0398) | (0.0510) | (0.0810) |
| Oil Production (1,000s of bbl/day) | | | |
| <i>Coefficient:</i> | 0.0007** | 0.0015*** | 0.0007 |
| <i>Standard Error:</i> | (0.0003) | (0.0003) | (0.0005) |
| Lagged Democracy Index (DI) | | | |
| <i>Coefficient:</i> | -0.2098*** | -0.3155*** | -0.2242** |
| <i>Standard Error:</i> | (0.0415) | (0.0565) | (0.0902) |
| Tropics | | | |
| <i>Coefficient:</i> | 1.7012* | 0.9539 | 1.2780 |
| <i>Standard Error:</i> | (1.0177) | (1.1984) | (1.9590) |
| OECD Membership | | | |
| <i>Coefficient:</i> | -4.3610*** | 5.2267** | -4.5320 |
| <i>Standard Error:</i> | (1.5463) | (2.2882) | (2.9877) |
| British Colony | | | |
| <i>Coefficient:</i> | -2.0204* | 2.5357* | -2.3954 |
| <i>Standard Error:</i> | (1.0677) | (1.5052) | (2.0840) |
| 2006 Dummy | | | |
| <i>Coefficient:</i> | -1.9931* | -3.1670** | 1.7570 |
| <i>Standard Error:</i> | (1.1031) | (1.3008) | (13.7337) |
| 2007 Dummy | | | |
| <i>Coefficient:</i> | -1.1408 | -1.9569 | -7.1840 |
| <i>Standard Error:</i> | (1.0929) | (1.2868) | (21.0209) |
| 2008 Dummy | | | |
| <i>Coefficient:</i> | -1.7951 | -1.5432 | -19.0871 |
| <i>Standard Error:</i> | (1.1755) | (1.3820) | (26.9276) |
| R² | .8175 | .7598 | .7090 |
| F | 199.49 | 142.83 | 53.72 |
| n | 593 | 572 | 593 |

Note: All regressions were also run with constants as well. Dummy variables in the FE model were interacted with a time variable.

- *Significant at the 10% level
- **Significant at the 5% level
- ***Significant at the 1% level