INSTITUTIONAL QUALITY AND ECONOMIC PERFORMANCE IN THE CARIBBEAN AND LATIN AMERICA

By

VEGA CENTENO GAMARRA, Jose Emilio

THESIS

Submitted to

KDI School of Public Policy and Management

In Partial Fulfillment of the Requirements

For the Degree of

MASTER OF DEVELOPMENT POLICY

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Committee in charge:

Professor Shun WANG, Supervisor 

Professor Baran HAN 

Professor Jong-Il YOU 

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ABSTRACT

Institutional Quality and Economic Performance in the Caribbean and Latin America

By

Jose Emilio Vega Centeno Gamarra

This study employed panel data analysis for the period between 1996 and 2010, to ascertain the overarching institutional constituent in explaining output per capita differences across the Caribbean and Latin America. It was inferred from the regression results that of all the investigated institutional components, the control of corruption index was not only the most robust in all the specified empirical models, but it was invariably positive and statistically significant. More so, a combination of corruption control plus the voice and accountability indices, elicited a robust and statistically significant correlation between it and real GDP Per Capita. Akin to Gaskins and Kock (2013), the latter results manifest the role voice and accountability plays, in not only aiding instituted corruption control measures, but also to attenuate and eradicate the adverse effects of the vice. In consequence, a telling case is made for strengthening the institutions that control corruption, in order to improve the Caribbean and Latin America`s living standards. The latter not only lends empirical credence to Mario Vargas (2015) contention that corruption is Latin America`s top problem, but it also shows that reining it in, among other things is vitally important. Also, this underscores Brunt (2007)`s overarching question regarding "which particular institutions matter for economic growth." Policy wise, efforts expended in either reducing or eradicating corruption can benefit from increased levels of voice and accountability, akin to Kock and Gaskins (2014). Finally, a proxy of collective institutional quality, constructed and invoked as a composite index, also exerted benign effects on living standards, hence accentuating the significance of strengthening institutional quality, especially when purging the markets of functional inefficiencies.

Dedicated to my wonderful wife Hilda, my beautiful daughter Isabel, and my sweet baby girl Letizia!

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I would like to express my sincere gratitude to the KDI School for all the great experiences that I lived during the time I spent there, and for the opportunity of living in such a beautiful country, that I will always admired and respect. Korea and KDI School have become a special part of my life and I will remember them with gratefulness.

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[1] IQI_3= PSN, ROL, and COC
[2] IQI_7= VA, PSN, RQ, ROL, and COC

Acronyms and Abbreviations

COC	Control of Corruption
EDUC	Education
GDP	Gross Domestic Product
GE	Government Effectiveness
IPC	Gross Domestic Product Per Capita
IQI	Institutional Quality Index
LA&C	Latin America and the Caribbean
LM	Lagrange Multiplier
PSN	Political Stability and Non-violence
ROL	Rule of Law
RQ	Regulatory Quality
TRA	Trade Openness
UNDP	United Nation
VA	Voice & Accountability
WB	World Bank
WGI	World Governance Indicators

Chapter (I): Introduction

The main purpose for this study is to ascertain how institutional quality, and particularly the control of corruption, affects output per capita across the Caribbean and Latin America. The study is literally a sequel to an age-old country prosperity question, pondered by a vast majority of economists such as Solow (1956), North (1990), and Sachs (2003), but mainly hankering after the answers to why some countries are richer than others, and why other economies remain poor. Adopting a production function approach, Solow (1956) submits that the divergences in output per capita across nations, is related to the accumulation of factors such as capital (physical and human), labor, and technology. On the other hand, North (1990) `s approach describes differences in revenue across countries as a function of institutions. He defines institutions as "the rules of the game in a society, and that they formally constitute humanely devised constraints to shape human interaction."Sachs (2003) espouses the view that the effects of geography and location determine differences in income and growth.

However, though not confuting North (1990) `s submission that strong institutions matter, in not only explaining income variations, but also in improving living standards; this study uses recent data for the period between 1996 and 2010, coupled with specifying integral dimensions constituting institutional quality, such as Control of Corruption; Voice and Accountability; Political Stability and Non-violence; Government Effectiveness; Rule of Law; and Regulatory Quality to tease out the one that most significantly explains differences in living standards across the Caribbean and Latin America.

The aforementioned notwithstanding, a composite index is constructed; incorporating the constituent features of institutional quality in the foregoing, and duly employed to affirm the relevance of institutions in the region under study. However, it is submitted in this study that there are particular institutional forms, which appropriately and effectively address the fundamental issues of securing property rights and removal of impediments to transactions, while also affording an environment that neither precludes movement, nor disrupts business operations. For example, as opposed to North and Weingast

(1989), Acemoglu et al (2005), plus Acemoglu and Robinson (2012), akin to Ogilvie and Carus (2014), strong parliaments do not invariably create institutions for growth, because powerful parliaments manned by wealth-holders, with considerable control over the executive, and strongly influencing economic policy; can still fail to manifest a natural diversity of views, by espousing homogeneous views, in which state power is deployed wherever possible to enforce their own legal privileges over factor and product markets. On the other hand, institutions guaranteeing private property rights and the ones enforcing contracts are central in affording citizens decent living standards. Even so, uniquely different problems call for particular institutions for either their reduction or eradication.

Precisely stated, besides Latin America`s excessive dependence on commodity exports, drug-related violence, lack of competitiveness, and dismal education; the region has experienced relatively high levels of corruption, with Transparency International attaching higher prevalence indices of the vice to regional member countries such as Haiti [3] and Venezuela[4], besides the myriad corruption scandals in Brazil and Mexico. Inveighed against by the Peruvian Nobel laureate, Mario Vargas (2015), corruption is reckoned as Latin America`s top problem, and blame is imputed to it for precluding the anticipated and touted emergence of Brazil and Chile[5] as strong and developed economies. It suffices to note that the specificity of corruption as an unyielding regional problem, infers that regional member countries that up their game in controlling it, are bound to register above average living standards.

[3] Corruption is a serious problem in Haiti. In 2015, Haiti ranked 161 out of the 177 countries measured on Transparency International's Corruption Perception Index, the lowest ranking in the Caribbean region. On the Corruption Perception Index, Haiti ranked 163 in 2014 and 164 in 2013.

[4] A 2014 Gallup poll found that 75% of Venezuelans believed that corruption was widespread throughout the Venezuelan government.

[5] "In December 2005 the mayor of Quillota, Luis Mella (Christian Democrat), alleged the government's Employment Generation Program (PGE) paid political allies for work that was not performed. The Public Ministry and the comptroller then initiated parallel investigations into the potential illicit use of public funds. Although earmarked for employment programs, these resources were possibly diverted to the political campaigns of Socialist Party and Party for Democracy candidates in the Fifth Region during the 2005 congressional elections. The PGE investigations revealed that individuals paid to do public works actually spent their time campaigning for political parties" (Report on Human Rights Practices 2006: Chile)

(a) Study Motivation

Understanding what explains income differences across countries, and ascertaining the channels via which institutions exert benign effects on output per capita remain alluring not just in academia, but also to me. For example, while citizens of the Bahamas and Puerto Rico enjoy relatively higher standards of living, Haiti and Venezuela still register abysmal comparable performances. So revisiting the age-old economic question of why countries are richer than others, by and large informed my decision to undertake this study.

Besides, in concurring with anecdotal and extant empirical studies, all underscoring the significance of institutions in explaining income differences across countries, the same telling question pondered, but lexically made manifest in different forms, is which institutions matter for economic growth, and it is understandably gaining traction not just amongst students and economists, but it has also piqued my interest.While studies such as Brunt (2007), Bardhan (2005), and Carlin et al (2010) pose the same question of which institutions are consequential for boosting output per capita, this study extends its import to specifically ask which institutions fundamentally explain variations in the living standards of the Caribbean and Latin America.

(b) Hypotheses

(1) Higher levels of controlling corruption conduce to higher living standards.

(2) Increased voice and accountability enhances control of corruption.

(3) Increased institutional quality improves living standards.

(c) Problem Statement

A vast majority of countries in the Caribbean and Latin America still contend with below average standards of living, invariably bested by the Eastern Asian countries, such as South Korea, Indonesia, Malaysia, Singapore, and China, although by and large akin to African economies such as Burundi and the Democratic Republic of Congo. Despite the conspicuous desperate state of affairs in the region under study, in countries such as the Bahamas and Puerto Rico, the resident citizens still enjoy decent living standards; while in countries such as Haiti and Venezuela the citizens still lag behind in terms of well-being.

Although Glaeser et al. (2004) argue that "the sustained growth achieved in some Asian countries (including China) has been the outcome of the policy decisions taken by their leaders, and not of the institutions constraining them (see also Rodrik 1994),"Dellepiane (2006) submits that bad governance in Bolivia, one of Latin America`s poorest and most unstable countries, has been both the source and the consequence of its economic underperformance. Indeed recent corruption scandals in Brazil[6] have re-awakened the debate whether this once promising Latin American country has stagnated due to deep-seated institutional issues, alluding to, inter alia, corruption and bad governance. In Brazil the then President, Mr. Lula Da Silva, along with several top politicians are being investigated for having received kickbacks from Petrobras, the nation`s biggest oil company, hence occasioning nationwide anti-corruption protests. The latter recent events infer the very reason why disparities in output per capita still exist in the Caribbean and Latin America; and only empirical findings from contemporary data remain to lend their credence.

In chapter II the extant literature is reviewed, chapter III expatiates on econometric issues, the methodology adopted, and the data used. In chapter IV and V the results are presented and main findings discussed, while Chapter VI comprises the study`s pertinent policy implications, recommendations for further research, and conclusive remarks.

[6]"Brazilian prosecutors say that executives from the state-run oil firm PetróleoBrasileiro SA and some of the nation's largest construction firms colluded for more than a decade to inflate the price of contracts, kicking back a portion of the ill-gotten gains to lawmakers and other political officials. Executives from the company's biggest construction companies and roughly 50 politicians have been accused, including the heads of Brazil's senate and lower house. Eduardo Cunha, Brazil's powerful speaker of the lower house of Congress, and Sen. Delcídio do Amaral, a member of the Workers' Party and the Senate whip, have denied wrongdoing. While the corruption scandal roils the country's political class, Brazil's economy continues to suffer. Unemployment is rising, the country's currency has crumbled, and this week the government reported its worst economic performance in 25 years, as the GDP contracted 3.8%. Ms. Rousseff's finance minister, Joaquim Levy, stepped down late last year after intense scrutiny, and was replaced by a minister many analysts think is less market-friendly. The corruption probe has paralyzed much of the oil and construction sectors, pillars of the local economy, which led in part to Brazil losing its sovereign-credit rating last year (See Connors Will, "5 things to know about Brazil`s corruption scandal," The Wall Street Journal, 4/03/2016).

Chapter (II): Literature Review

Gwartney et al (2004) broach three types of interpretations for the differences in income levels and economic performance across countries. The most entrenched interpretation is based on the work of Solow (1956), which follows a production function approach, The second one, based on the works of North (1990) and Landes (1998), justify variations in income and growth across countries as a function of institutions, The third type, espoused by Sachs (2003), underscores as determinants of economic performance, the effects of geography and location. According to Solow (1956), output is augmented not only by expanding the amount of capital and labor, but also the production function could be influence by technological improvements, so that more output can be obtained with the same quantity of inputs. The latter thesis presumes that better growth rates can be obtained by increasing inputs into the production function, and by ascertaining ways to employ the inputs more productively.

Central to the institutional approach to growth, is the conception that both the availability and productivity of resources will be impacted by the institutional and policy environment North (1993).According to North (1993), "institutions as the formal and informal rules governing human interactions, or, the set of rules that articulate and organize economic, social and political interactions between individuals and social groups;" exert benign effects on economic growth. For North (1990), institutions affect the performance of economies, and that the current economic differences among countries are due to the ways these institutions have evolved, and their current quality. However, there isn't yet a consensus about the main features or characteristics of the institutions that are most appropriate for prosperity. Worthy to note is that a vast majority of economists, such as Gwartney et al (2004) concur "that secure property rights are crucial, and that the impediments to exchange must be minimal," but economists such as Brunt (2007), Bardhan (2005), and Carlin et al (2010) literally ask which institutions are consequential for boosting output per capita, and in attempting to answer this telling question this study empirically investigates how the overarching institutional forms have performed in

the Caribbean and Latin America. Precisely stated, debate still exists pertaining to which institutional forms guarantee and sustain economic success.

A third approach to ascertaining factors that conduce to prosperity across countries focuses on geographical factors. Promoted by Jeffrey Sachs (2003), geography and location are broached as the most important determinants of cross-country differences in income levels and economic performance. Sachs believes that the import of three major geographic-locational factors, which comprise a tropical climate, access to an ocean point, and the air distance of a country from the world`s major trading centers, such as London, Rotterdam, New York, among others. According to Sachs, a tropical climate precludes economic growth because of the heightened menace carriage by diseases such as malaria, and that a hot and humid climate impinges on the energy level of people and labor productivity. For Sachs (2003), the lack of access to an ocean port infers higher transaction costs, and inadequate trade with a sizeable portion of the global population. A distant location from the major world markets also preclude not just trade, but will affect negatively the gains from division of labor, specialization, and economies of scale. The aforementioned geographic and locational factors make a country less alluring as a base for production, hence compromising its capacity to attract foreign capital.

Akin to Gwartney et al (2004), this study infers that "if appropriate institutions are in place, the market system provides an incentive for market participants to invest in human and physical capital, and to improve their methods of production through innovation. The production function still focuses on policies that will increase the quantity and improve the productivity of capital and labor. More so, Sach`s approach literally invokes policies geared towards controlling tropical diseases, coupled with applicable technology to improve the productivity of resources in tropical regions." Besides, Acemoglu et al (2001) find in their study that geography is insignificant in explaining cross-country income differences once formal institutions are controlled for. It is also affirmed by Rodrik et al (2004), plus Easterly and Levine (2003) that the only effect geography has on income per capita is an indirect effect,

plausibly via institutions. It is against this background the geography factors are discounted in this study.

Invoking the modern and comprehensive World Bank`s WGI indicators to proxy institutions, including a self-constructed composite index from them to collectively measure institutional quality, this study traces their individual and collective effects on living standards in the Caribbean and Latin America. While not all economists such as Glaeser et al (2004); Fogel (2004), Schmid (2006); plus Mcarthur and Sachs (2001) agree that institutions are major ingredients for growth; premised on the view that it is corruption that is prejudicing the Caribbean and Latin America the most, this study makes a telling case for the institutions controlling corruption as veritable platforms for improving the region`s living standards.

Previous empirical research on corruption, such as Mauro (1995, 1997, and 1998); Tanzi (1998); Kaufmann and Wei (1999); Pellegrini and Gerlagh (2004); plus Gupta et al (2001 and 2002) found that corruption impinges on economic growth. Other studies such as Mauro (1995); Tanzi (1997); Gupta (2000); Gyimah-Brempong (2001), among others, suggest the following four plausible channels via which corruption prejudices economic growth: orruption distorts incentives and market forces, leading to misallocation of resources; corruption diverts talent and resources, including human resources, towards "lucrative" rent-seeking activities, such as defense, rather than productive activities; corruption acts as an inefficient tax on business, ultimately raising production costs and reducing the profitability of investments; and corruption may also decrease the productivity of investments by reducing the quality of resources. For example, by undermining the quality and quantity of health and education services, corruption decreases a country's human capital. Besides, rent-seeking behavior is also likely to create inefficiencies, fuelling waste of resources and undermining the efficiency of public expenditure.

Worth mentioning, the extant literature on corruption against economic growth presents arguments for and against corruption, with also studies such as Leff (1964) and Hunnington (1968) submitting that corruption is the necessary "grease" for lubricating the stiff

wheels of rigid government administration, by facilitating the circumvention of bureaucratic arrangements. Precisely stated, the latter studies suggest that corruption may boost economic growth. However, this study contributes to the existing literature by accentuating the mechanism via which the institutions for controlling corruption can be aided, i.e. through increased levels of voice and accountability, which can potentially make corruption visible, and hence manageable.

Chapter (III): Econometric Model Specification And Data

The regression specification employed in this study is premised on a combination of growth theories espoused by Solow (1956), Romer (1986), plus Lucas (1988) and North (1990). In consequence, akin to Siddiqui and Ahmed (2009), to explain income differences across the Caribbean and Latin America, GDP Per Capita as a linear function of institutional quality indicators, and their related author-computed composite indices, while controlling for, inter alia, capital, education, and trade openness is empirically investigated. Below is the basic form of the estimated relation:

$$IPCI_{it} = \beta_0 + \beta_1 GCF_{it} + \beta_2 GDS_{it} + \beta_3 TRA_{it} + \beta_4 EDUC_{it} + \beta_5 PSN_{it} + \beta_6 GE_{it} + \beta_7 RQ_{it} + \beta_8 ROL_{it} + \beta_9 VA_{it} + \beta_{10} COC_{it} + \mu \quad \ldots\ldots (1)$$

$$IPCI_{it} = \beta_0 + \beta_1 GCF_{it} + \beta_2 GDS_{it} + \beta_3 TRA_{it} + \beta_4 EDUC_{it} + \beta_n Z_{it} + \mu \quad \ldots\ldots (2)$$

Where:

IPC= GDP Per Capita
PSN= Political Stability and Non-violence
GE= Government Effectiveness
RQ= Regulatory Quality
ROL= Rule of Law
VA= Voice & Accountability
COC= Control of Corruption
μ = Error Term
IQI_3= PSN, ROL, and COC
IQI_7= VA, PSN, RQ, ROL, and COC } Institutional Quality Indices

The aforementioned composite institutional quality indices are author-computed. Z= is a vector of control variables to be specified in the discussion of results, comprising GCF, GDS, TRA, and EDUC as specified in the next Table 1. Different specifications are used to both assess the robustness of the econometric models; and to examine the impact of adding the latter control variables. The employed methodology incorporates variability both across countries (i) and over time (t), in a pooled cross-sectional analysis. In the widest forms, the regressions in the foregoing are estimated using 510 observations on 34 countries.

Table 1: Data and their related sources

Variable	Abbreviation	Description	Source
GDP Per Capita (fixed 2000 US$)	IPC	Main dependent variable	World Bank-World Development Indicator
Gross Capital Formation(% of GDP)	GCF	Control variable	World Bank-World Development Indicator
Gross Domestic Savings (% of GDP)	GDS	Control variable	World Bank-World Development Indicator
Trade Openness (Trade as % of GDP)	TRA	Control variable	World Bank-World Development Indicator
Voice & Accountability	VA	Independent variable	World Bank-World Development Indicator
Political Stability & Non violence	PSN	Independent variable	World Bank-World Development Indicator
Government Effectiveness	GE	Independent variable	World Bank-World Development Indicator
Regulatory Quality	RQ	Independent variable	World Bank-World Development Indicator
Rule of Law	ROL	Independent variable	World Bank-World Development Indicator
Control of Corruption	COC	Independent variable	World Bank-World Development Indicator
Education	EDUC	Independent variable	World Bank-World Development Indicator
Institutional Quality Index	IQI	Independent variable	Author constructed

(a) Data

GDP Per Capita is the main dependent variable, and proxy for standard of living, as used in studies such as Kraay and Kaufmann (2002). Also inferred by Douglas (2003) as Per Capita Real GDP, the standard of living is basically defined as the ratio of real GDP and the population of a given country[7].

As per Solow (1956), to proxy physical capital as a telling factor for explaining variations in standards of living across countries, the Gross Capital Formation is used. Formerly known as the gross domestic investment, GCF as per the World Bank consists of

[7]See the appendix I to see the economic performance of Latin America and Caribbean.

outlays on additions to the fixed assets of the economy, plus net changes in the level of inventories. Fixed assets comprise land improvements (such as fences, ditches, drains, and so on); plant, machinery, equipment purchases; the construction of roads and railways, coupled with schools, offices, hospitals, private residential dwellings, plus commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, including works in progress.

Douglas (2003) submits that "in a country with population growth and diminishing marginal productivity, what is necessary for improvements to living standards are additions to the capital stock, the level of technology, or both. These additions increase the productivity of workers, and allow for more output for each and every labor input. Hence the creation and accumulation of capital is intended to increase the level of a nation`s productivity;" inferring a positive correlation between capital and the standard of living.

Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption). Christened by Economists as the "seed-corn" of the economy, Lawrence (2001) submits that savings are akin "to a farmer who does not eat all his corn at harvest time but instead, puts some aside to plant next year. Savings are the primary source of capital, which is the lifeblood of an economy. Capital refers to accumulated funds (savings) that an entrepreneur invests for future production. When a person starts a small business, for instance, he has no revenue yet from sales because he has not yet produced a product. Yet, he needs funds to buy the machinery, plant and equipment and hire the workers that he will need to get things going. He funds these early start-up necessities either by using his own savings or by borrowing the savings of others from a bank. Savings can be in the form of the build-up of equity in a person's home, or the stocks and bonds he has purchased and thereby allowed others to use for productive purposes in business. Hence a positive correlation between savings and living standards is expected.

In this study, trade openness is simply defined as the total trade volume (exports plus imports) relative to GDP. Invoking the concept of comparative advantage, Dixit and

Norman (1980) explain that the conventional trade theory determines the patterns of international trade and the allocation of profit across countries in a static setting. He also states that nations that engage in international trade, will necessarily specialize in goods whose production processes foster relatively reduce opportunity costs prior to trade than the other country. In consequence, a country`s exports are constituted by goods in which it has a comparative advantage.

Furthermore, Andersen and Babula (2008) explain that comparative advantage is derived from either exogenous technological differences (the classical Ricardian model) or different factor endowments (the Heckscher-Ohlin model); hence associating international trade with a redistribution of resources within the national borders, determined by exogenous differences across countries. It is the latter reallocation of resources which generates efficiency gains that increase the level of aggregate national income.

Adopting static models of monopolistic completion and economies of scale, Krugman (1979 and 1980) suggests two other sources of gains from international trade. For starters, opening up for trade between two countries that make differentiated products means that there are more varieties available for consumption, which is a source of gain for consumers. Also, Andersen and Babula (2008) submit that "openness to international flows of capital may raise the speed at which physical capita and human capital are accumulated locally (at least temporarily). Second, openness may speed up productivity growth through faster technological progress. Various theoretical links between trade, productivity, and growth exist in the innovation-based growth studies of Grossman and Helpman (1991) plus Rivera-Batiz and Romer (1991). International trade can, suffice it to say, improve a nation`s living standards by giving access to foreign intermediate inputs and technologies; expanding the market size for new product varieties; and facilitating the international diffusion of knowledge. He a positive correlation between trade openness and living standards is expected.

According to the World Bank, the Voice and accountability indicator captures 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. Additionally, Foresti et al (2009) submit that "voice is about poor people expressing their views and interests in an effort to influence government priorities and governance processes. Accountability exists when those who set and implement a society's rules – politicians and public officials – are answerable to the people who live under those rules. Voice and accountability are separate but related concepts. In some contexts, voice can lead to greater accountability. In most contexts, a lack of voice will lead to a lack of accountability. Voice and accountability matter for development for two sets of reasons. First, powerlessness, voicelessness and a lack of accountability are constitutive of poverty. As such, enhancing voice and accountability leads in itself to a reduction in poverty. Second, voice and accountability can lead to other outcomes such as greater ownership and pro-poor policies which can lead to a reduction in poverty." Therefore a positive correlation between VA and living standards is expected.

The political stability and non-violence index measures perceptions of the likelihood of political instability and politically motivated violence, including terrorism. Acts of terrorism, civil war, plus protests and riots cause not only damage to assets, but also injure and liquidate people, including disruption of normal movement and paralysis of business operations. Especially when protracted or intermittent, political instability and violence impinge on output per capita, hence PSN affords the business community and general workforce a conducive environment to sustain and perpetuate the production of goods and services. Therefore a positive correlation between PSN and IPC is expected.

According to the World Bank, the government effectiveness index captures perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government`s commitment to such policies. Yang (2010) even further submits that "government performance can influence a country`s human development."He contends that "effective governments are more likely to make firm and efficient policies that are

beneficial to human development." Additionally, Salhi and Bolle (2007) infer that both autocratic and democratic governments are wont to spend because they are ultimately assessed by the economic welfare they create for their citizens, either through improved GDP Per Capita, redistributive monetary transfers, or the provision of public goods. Alluding to government effectiveness, Katumba (2016) makes a telling deduction that "the political survival of incumbent governments is a function of the quantity and quality of delivered public goods and services." By and large, governments that are consistently effective in delivering excellent services to their citizens can impose a benign effect on their living standards. Therefore, a positive correlation between GE and IPC is expected.

In order to reflect at least in part the supervisory role of government as a regulator in the economic environment, this study adopts the World Bank`s Regulatory Quality Index, which reflects "the ability of the government to provide sound policies and regulations that enable and promote private sector development." Akin to Cabula and Clark (2014), a positive correlation between RQ and IPC is expected.

The World Bank`s Rule of Law Index "captures perceptions of the extent to which agents have coincidence 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." Central to secure property rights is the overarching idea that growth is a function of investment, and that investors scarcely invest if there is a risk of any kind of expropriation. Besley and Ghatak (2009) submit that secure property rights influence economic performance and resource distribution. They explain the four channels via which the latter happens thus:

(1) The security channel: whereby a flow of income is counted upon to be led by investment, and requires protection against expropriation through secure, well defined property rights. Such protection provides the incentive to invest; and by implication, insecure property rights could mean that the economic agent may de deficient to appreciate the fruits of their investment efforts.

(2) The efficiency channel: That enhances the mobility of assets through transactions on which such assets are relocated to those who can take advantage of them most productively.

(3) Reduced protection costs: secure property rights results on individuals applying less resources to protecting their property (an unproductive use of resources) and these resources can be redistributed to productive uses.

(4) Transactions facilitation: property rights allow their use in supporting other transactions, by employing them as collateral to raise resources on the financial market. The latter may increase productivity along the lines delineated by De Soto (2000). Hence a positive correlation is expected between ROL and IPC.

The Control of Corruption index captures, as per the World Bank, "the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as state exploitation by elites and private interests. It also measures the strength and effectiveness of a country's policy and institutional framework to prevent and combat corruption."Actually, Peruvian-born Nobel Prize winner, Mario Vargas Llosa, famously stated in a public interview with the Miami Herald`s journalist, Oppenheimer (2015) that "Latin America`s top problem is corruption." Indeed one can impute blame to corruption as Lula Da Silva`s government saw Brazil`s economic emergence nipped in the bud. Oppenheimer (2015) argues that "Brazil was neither hit by a devastating economic blow from abroad, nor suffered a natural disaster. Its economy collapsed in 2015 amid growing political scandal over the national Petrobras oil company`s kickbacks to ruling party politicians. The anti-corruption protests that ensued just manifested an already deep-seated problem, the kind that engendered the plummeting of Brazil`s economy. The same goes for Mexico, Chile, Venezuela, and Argentina; where corruption has grossly prejudiced local living standards. Corruption and financial sector inefficiencies conduce to market inefficiencies, which circumscribe factor productivity growth, and then impinge on living standards. Reining in corruption through anti-corruption programs and policies is thus bound to exert a benign effect on living standards.

Access to education by and large not only affords a person with the requisite skills hankered after by the labor sector, but it also suffuses one with entrepreneurship salutary abilities that enhance and supplement their inherent repertoire. By improving human capital, quality education attainment betters one`s living standards, hence a positive correlation is expected between EDUC and IPC, akin to Solow (1956) `s submission.Now, while the effect of the institutional factor on output per capita in the extant literature has a myriad of proxies, this study invokes thePSN, VA, GE, ROL, RQ, and COC indices. Most importantly, the study focuses on constituents of institutions that not only ensure secure property rights and remove impediments to transactions, but also afford the labor industry an environment that scarcely interrupts its income-generating operations and movements.

Against this backdrop, a composite index, incorporating the aforementioned institutional quality indicators is author-constructed, to assess its collective effect on living standards in the Caribbean and Latin America. A positive correlation between IQI and IPC is expected, in support and affirmation of how strong individual institutions plausibly boost living standards, as explained in this study thus far.Worth mentioning though, is that while the existing theoretical frameworks in the literature almost corporately support the view that institutions, as manifested and proxyied by their constituents, exert benign effects on output per capita; a myriad of studies where fused or individual institutional indices are invoked, however either tenuously support this view, or confute it as highlighted in the review of the extant literature.

Chapter (IV): Empirical Results

Summary statistics for all the variables are given in Table 2 below, which also includes the correlation matrix

Table 2: Descriptive Statistics

Panel A: Summary Statistics

	IPC	GCF	GDS	TRA	VA	PSN	GE	RQ	ROL	COC	IQI
Obs	510	510.00	510	510	510	510	510	510	510	510	510
Mean	5016	22.92	15.28	5554345	0.29	0.00	-0.02	0.07	-0.15	0.01	0.38
Std. Dev.	4379	6.80	10.64	10300000	0.68	0.75	0.67	0.69	0.79	0.79	0.80
Min	371	8.50	-24.60	19863	-1.87	-2.39	-1.68	-1.69	-1.91	-1.82	-0.17
Max	21809	49.18	59.80	68800000	1.47	1.41	1.60	1.64	1.45	1.76	7.31

Panel B: Correlation Matrix With Logarithmic Variables

	IPC	GCF	GDS	TRA	VA	PSN	GE	RQ	ROL	COC	IQI
IPC	1.00										
GCF	0.13	1.00									
GDS	0.27	0.07	1.00								
TRA	-0.19	-0.51	0.36	1.00							
VA	-0.11	-0.39	-0.12	0.19	1.00						
PSN	0.29	-0.07	-0.10	-0.34	0.22	1.00					
GE	0.49	-0.10	0.26	0.16	0.30	0.15	1.00				
RQ	0.16	-0.08	0.27	0.29	0.15	-0.10	0.64	1.00			
ROL	0.38	-0.08	0.36	0.10	0.15	0.32	0.66	0.61	1.00		
COC	0.50	-0.16	0.26	0.14	0.21	0.43	0.77	0.45	0.58	1.00	
IQI	0.32	-0.22	0.20	0.21	0.40	0.21	0.67	0.66	0.64	0.50	1.00

Table 3 indicates that countries with relatively higher IQ indicators, by and large registered income per capita above the sampled group`s average income per capita of US$ 5016, plausibly lending credence to the positive role strong institutions play in standards of living.

Table 3: Sampled countries and their mean variables (1996-2010)

COUNTRY	MIPC	MVA	MPSN	MGE	MRQ	MROL	MCOC
BAHAMAS	20672.913	1.04	0.96	1.13	0.87	1.05	1.24
PUERTORICO	16302.71	0.96	0.36	0.74	1.02	0.76	0.67
ANTIGUABARBUDA	11464.298	0.49	0.84	0.51	0.64	0.96	1.08
BARBADOS	9231.475	1.22	1.08	1.39	0.88	1.19	1.38
ST. KITTS AND NEVIS	8978.502	1.05	1.08	0.35	0.46	0.72	0.65
ARGENTINA	8279.193	0.29	-0.13	-0.07	-0.52	-0.57	-0.30
TRINIDADANDTOBAGO	8059.37	0.55	-0.03	0.29	0.56	0.01	-0.08
URUGUAY	7182.147	0.99	0.77	0.49	0.44	0.49	0.91
MEXICO	5788.856	0.14	-0.55	0.21	0.36	-0.53	-0.31
CHILE	5369.959	0.99	0.54	1.21	1.48	1.26	1.33
DOMINICA	5169.599	1.03	0.84	0.48	0.57	0.67	0.59
VENEZUELA	5076.384	-0.64	-1.12	-0.99	-1.10	-1.25	-1.03
GRENADA	5025.234	0.76	0.60	0.27	0.37	0.22	0.48
GROUP AVERAGE	5015.9291	0.29	0.00	-0.02	0.07	-0.15	0.01
ST. LUCIA	4757.053	1.12	0.83	0.42	0.47	0.74	0.78
PANAMA	4427.567	0.49	0.01	0.13	0.42	-0.16	-0.35
COSTA RICA	4389.964	1.00	0.67	0.29	0.53	0.51	0.49
ST. VINCENT AND THE GRENADINES	4117.893	1.04	0.90	0.43	0.44	0.79	0.69
BRAZIL	3951.348	0.35	-0.12	-0.07	0.17	-0.28	-0.06
JAMAICA	3644.844	0.17	-0.17	0.13	0.25	-0.44	-0.43
BELIZE	3403.5	0.72	0.23	-0.23	-0.25	-0.20	-0.07
CUBA	3282.626	-1.66	0.30	-0.43	-1.50	-0.83	0.38
DOMINICANREPUBLIC	3054.315	0.06	-0.10	-0.54	-0.22	-0.64	-0.52
COLOMBIA	2769.166	-0.30	-1.76	-0.12	0.16	-0.59	-0.16
PERU	2367.54	-0.06	-0.94	-0.29	0.36	-0.65	-0.33
ELSALVADOR	2336.125	0.02	0.01	-0.28	0.19	-0.68	-0.44
SURINAME	2230.894	0.28	0.20	-0.19	-0.58	-0.15	0.00
GUATEMALA	1753.829	-0.33	-0.82	-0.60	-0.17	-1.08	-0.56
ECUADOR	1481.407	-0.26	-0.70	-0.74	-0.83	-0.93	-0.85
PARAGUAY	1411.975	-0.30	-0.78	-0.93	-0.55	-0.99	-1.06
HONDURAS	1245.769	-0.33	-0.43	-0.63	-0.32	-0.88	-0.87
BOLIVIA	1067.124	-0.03	-0.56	-0.43	-0.47	-0.76	-0.55
GUYANA	1028.621	0.18	-0.50	-0.19	-0.46	-0.55	-0.52
NICARAGUA	817.291	-0.26	-0.32	-0.81	-0.32	-0.74	-0.66
HAITI	402.099	-0.90	-1.19	-1.47	-0.99	-1.54	-1.30

A cursory look at Table 4 below infers that in the sampled group, countries with relatively superior government effectiveness registered above-average income per capita, in affirmation of Kaufmann and Kraay (2002)`s study.

Table 4: Relationship between Income per Capita and Government Effectiveness

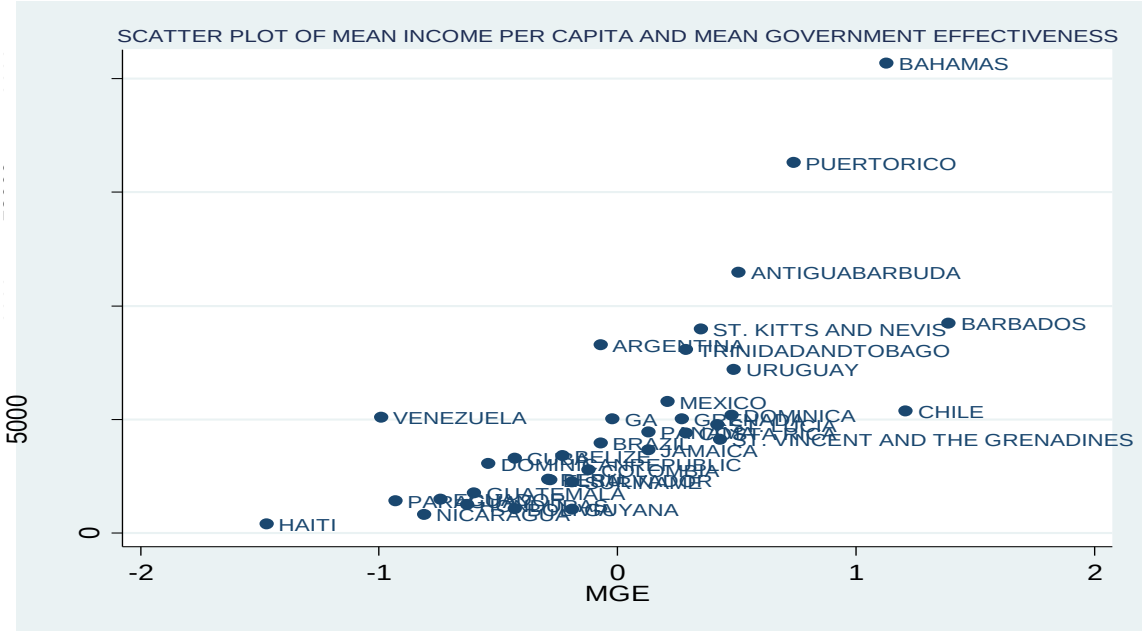
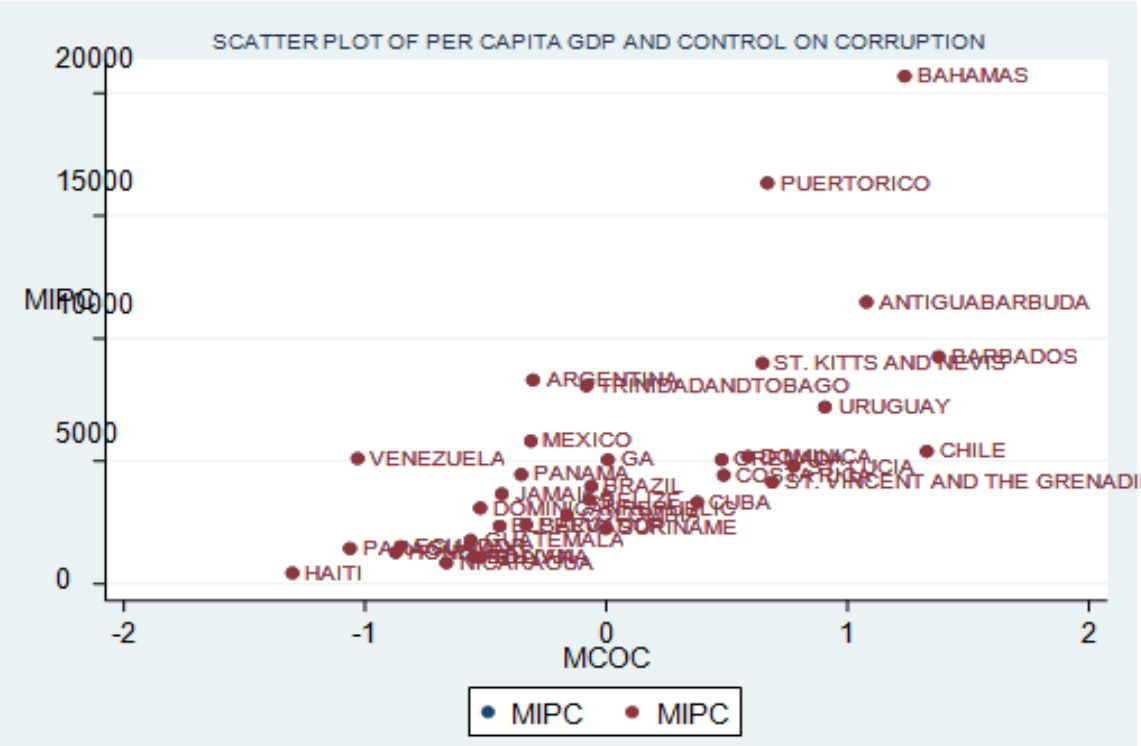


Table 5 below shows that economies which strengthen institutions for reining in corruption are bound to relatively register improved standards of living. As per New Americas Now (2015), "Venezuela and Haiti are the most corrupt countries in the Caribbean and Latin America. Both nations have ranked at a low 19 on the TI Index for the past three years – between 2012 and 2014. In Venezuela corruption is rampant in the main oil industry. Large-scale corruption is alleged to have taken place at the state oil company, Petróleos de Venezuela (PDVSA), and other state entities. Political power is concentrated in the executive, with many opportunities for corruption. Capital controls, for example, allow officials to purchase U.S. dollars at a fixed peg and then sell them on the black market for as much as a 1,100 percent profit which has led to widespread smuggling and other illegal activities.

In Haiti corruption is rampant, the judicial system is ineffective and inefficient and smuggling remains a huge problem that is exacerbated by poor trade freedom. Haiti is also a major narco-trafficking transshipment point and the dysfunctional judicial system is

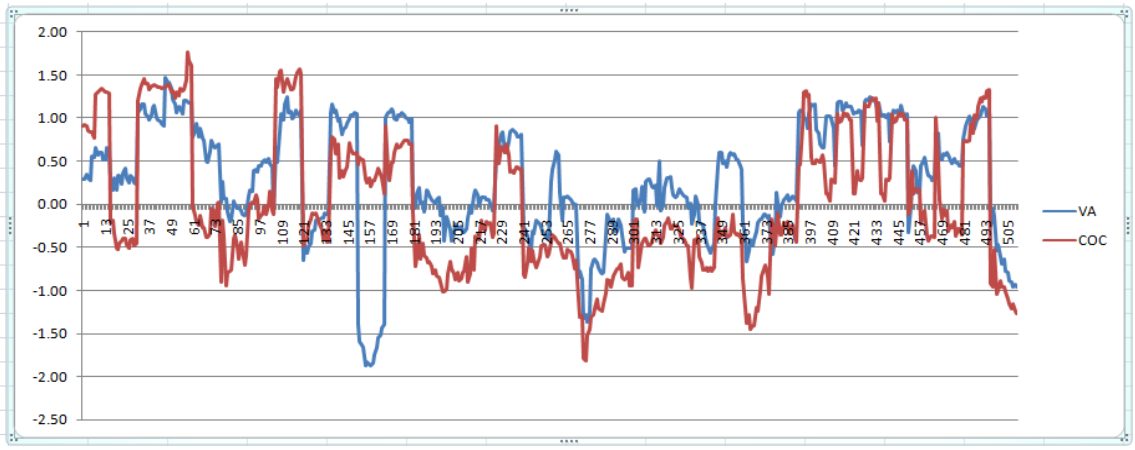
underfunded making it open to corruption." All the aforementioned affirm this study`s revelations that countries such as Venezuela and Haiti, with conspicuously tenuous controls on corruption register relatively lower standards of living.

Table 5: Relationship between per capita GDP and control on corruption



A look at Table 6 shows how the Voice and Accountability Index was co-moving with the Control of Corruption Index. By and large, where VA spikes were manifested, similar COC spikes were registered and huge troughs in VA are followed with conspicuously corresponding depressions in COC. To a plausible extent, VA complements COC, suggesting that expended efforts to combat and prevent corruption can benefit from increased levels of voice and accountability.

Table 6: Co-Movement between Control of Corruption Plus Voice and Accountability



4.1 Testing for Random Effects: Breusch-Pagan Lagrange Multiplier (LM)

The LM test helps to decide between a random effects regression and a simple OLS regression. In the LM test, the null hypothesis is that the variance across entities is zero (i.e. there are no significant differences across units and thus there is no panel effect. As per Table 7 below, there is evidence of significant differences across countries, ostensibly qualifying the Random Effects regression, and in consequence obviating with the need of running a simple OLS regression.

Table 7: Choosing between the OLS and Random Effects Regression

```
Breusch and Pagan Lagrangian multiplier test for random effects

        lipc[country1,t] = Xb + u[country1] + e[country1,t]

        Estimated results:
                         |       Var      sd = sqrt(Var)
                ---------+------------------------------
                    lipc |   .2428425       .4927905
                       e |   .0049912       .0706482
                       u |   .3735473       .6111851

        Test:   Var(u) = 0
                                 chi2(1) =   343.20
                              Prob > chi2 =   0.0000
```

4.2 Choosing between the Fixed and Random Effects: Hausman Test

According to Green, a Hausman test is run to decide between fixed or random effects regression, in which the null hypothesis is that the preferred model effects vs. the alternative fixed effects (Green, 2008). It seeks to ascertain whether the unique errors (μ_i) are correlated with the regressors, of which the null hypothesis is that they are not. Table 8 shows

that since the P-value is statistically significant, the fixed effects would be more appropriate in this study.

Table 8: Choosing Between Fixed and Random Effects (The Hausman Test).

```
. hausman fixed random

                 ---- Coefficients ----
                 (b)          (B)            (b-B)     sqrt(diag(V_b-V_B))
                 fixed        random         Difference          S.E.
-------------------------------------------------------------------------------
        lgcf     .0104958     .0325691       -.0220732                .
        lgds    -.0330166    -.032604        -.0004125                .
        ltra     .2095886     .1571248        .0524639          .0068173
         lva     .1063099     .1196816       -.0133717                .
        lpsn    -.0571273    -.0583859        .0012586                .
         lrq    -.0184381    -.0269568        .0085187                .
        lrol    -.0016956    -.0046224        .0029267                .
        lcoc     .0326955     .0451045       -.012409                 .
-------------------------------------------------------------------------------
                           b = consistent under Ho and Ha; obtained from xtreg
            B = inconsistent under Ha, efficient under Ho; obtained from xtreg

    Test:  Ho:  difference in coefficients not systematic

                  chi2(8) = (b-B)'[(V_b-V_B)^(-1)](b-B)
                          =          52.17
                Prob>chi2 =         0.0000
                (V_b-V_B is not positive definite)
```

4.3 A Cross-Sectional Dependence Test (Contemporaneous Correlation).

According to Baltagi (2005),"cross-sectional dependence is a problem in macro panels with long time series (over 20-30 years)." This is not only much complicated in micro panels (few years and large number of cases), but this study`s employed data spans a period of 14 years, from 1996 to 2010, inferring that the residuals across entities are not correlated.Table 9 in the next page reports the fixed effects regression findings, which by and large infer strong and positive statistical significance for Control of Corruption against GDP Per Capita (See alsoTable 5).

Chapter (V): Regression Results

(a) Voice and accountability

Akin to Kock and Gaskins (2013), in Table 9 myriad fixed effects regressions VA was not only statistically significant, at 1% level, but there was also a positive correlation between it and IPC. To ascertain the plausible channel via which VA works to improve living standards, a combined factorCVA of it and COC was regressed against IPC, eliciting a statistically significant and positive coefficient, which remained robust in all the empirical models specified (See Table 10 appended to this study).

(b) Political Stability and Non-Violence

Akin to De Gregorio (1992), it was found in this study, as shown in Table 9 that though rather statistically significant, PSN was negatively correlated to IPC.

Table 9: Fixed Effects Regression Results

	1	2	3	4	5	6	7
GDP Per Capita							
Gross Capital Formation	0.01093 (0.28)	0.005 (0.13)	0.0042 (0.10)	0.0121 (0.31)	0.026 (0.65)	-0.016 (-0.58)	-0.017 (-0.63)
Gross Domestic Saving	-0.0301 (-2.07)**	-0.0333 (-2.46)	-0.0497 (-3.29)***	-0.038 (-2.5)**	-0.0468 (-3.23)***	-0.008 (-0.76)	-0.0071 (-0.71)
Trade Openness	0.2345 (8.93)***	0.2203 (8.37)***	0.2333 (8.11)***	0.226 (8.12)***	0.2181 (7.85)***	0.19 (12.39)***	0.1859 (12.21)***
Voice & Accountability	0.1075 (2.65)***	0.1113 (3.2)***		0.145 (3.28)***	0.1441 (3.60)***		
Political Stability & Non-violence	-0.0263 (-1.34)	-0.0558 (-2.8)***	-0.0818 (-2.86)***	-0.0553 (-2.19)**	-0.0938 (-3.41)***		
Government Effectiveness			-0.0253 (-1.19)	0.0086 (0.57)	-0.0305 (-1.5)		
Regulatory Quality							
Rule of law	-0.0082 (-0.30)			-0.0181 (-0.5)			
Control of corruption		0.0213 (1.8)	0.0598 (2.20)**		0.0540 (2.07)**		
Education						0.098 (4.12)***	0.0957 (4.04)***
Institutional Quality Index (IQI3)							0.0303 (2.12)***
Institutional Quality Index (IQI7)						0.0177 (2.17)**	

Detailed related STATA 11 estimation result sheets appended to this report. T-statistics in parentheses, where ***P≤ 0.01; **P≤0.05; *P≤0.10 denote levels of statistical significance.

(c) Control of Corruption

Table 9 shows that COC was positively correlated to IPC and statistically significant at 2% level. This finding plausibly infers that increased levels of corruption control conduce to increased levels of output per capita.

(d) Education and Trade Openness

In Table 9, both EDUC and TRA were not only positively correlated to IPC, but were also statistically significant at 1% level. The latter results are as expected, given education`s beneficial effects on human development through requisite skill acquisition, and the technology transfer afforded by international trade, including the enhanced variety of goods and services.

(e) Institutional Quality Composite Indices (IQI3[8] and IQI7[9])

Table 9 shows that IQI3, as defined earlier in this study, is positively correlated to IPC, and statistically significant at 1% level. Also, IQI7, latterly defined in this study, is positively correlated to IPC and statistically significant at 2% level. These findings suggest that countries benefit from particular institutional forms, and for this region, control of corruption, in conjunction with the mediating voice and accountability are the most overarching.In Table 10, with random effects regressions, the factors that are positively correlated to IPC include TRA, EDUC, VA, COC, and IQI3; all with statistical significance at 1% level. IQI7 was positively correlated to IPC and statistically significant at 2% level.Table 11 (appended to this report) shows that CVA, the factor combining both control of corruption, plus voice and accountability, was positively correlated to IPC, and statistically significant.

[8] IQI_3= PSN, ROL, and COC
[9] IQI_7= VA, PSN, RQ, ROL, and COC

Table 10: Random Effects Regression Results

	1	2	3	4	5	6	7
Gross Capital Formation	0.0237 (0.59)	0.0419 (0.97)	0.031 (0.69)	0.025 (0.61)	0.054 (1.25)	-0.0062 (-0.21)	-0.0064 (-0.22)
Gross Domestic Saving	-0.0308 (-2.02)**	-0.033 (-2.14)**	-0.0503 (-3.06)***	-0.0385 (-2.44)**	-0.047 (-2.95)***	-0.0069 (-0.64)	-0.0067 (-0.61)
Trade Openness	0.2051 (7.99)***	0.148 (5.74)***	0.1694 (6.11)***	0.196 (7.19)***	0.156 (5.86)***	0.157 (9.96)***	0.1485 (9.46)***
Voice & Accountability	0.118 (2.81)***	0.138 (3.53)***		0.1525 (3.29)***	0.163 (3.75)***		
Political Stability & Non-violence	-0.0222 (-1.09)	-0.05 (-2.2)**	-0.0889 (-2.87)***	-0.0502 (-1.91)	-0.102 (-3.4)***		
Government Effectiveness			-0.0305 (-1.32)	0.0117 (0.74)	-0.0359 (-1.62)		
Regulatory Quality							
Rule of law	0.0022 (0.08)			-0.0036 (-0.1)			
Control of corruption		0.037 (2.81)***	0.087 (0.003)**		0.078 (2.79)***		
Education						0.125 (4.94)***	0.1266 (4.97)***
Institutional Quality Index (IQI3)							0.0452 (2.90)***
Institutional Quality Index (IQI7)						0.0196 (2.22)**	

Detailed related STATA 11 estimation result sheets appended to this report. Z-statistics in parentheses, where ***P≤ 0.01; **P≤0.05; *P≤0.10 denote levels of statistical significance.

Chapter (VI): Policy Implications And Conclusion

In this Caribbean and Latin American study, besides a constructed composite index to proxy institutional quality, particular forms of institution from Kaufmann et al (2009) `s comprehensive Worldwide Governance Indicators, coupled with control variables were regressed against Real GDP Per Capita, for a period between 1996 and 2010 in fixed and random effects models. It was discovered from the regression analysis that among the particular institution indicators investigated, control of corruption, plus voice and accountability were positively correlated to output per capita, and were statistically significant and robust in all econometric models specified. The overarching lesson from the study infers that increased levels of voice and accountability enhance control of corruption, which in turn exerts benign effects on the region`s living standards.

It was manifest from the data that countries with relatively higher control of corruption, registered above average living standards, implying that veritable platforms to support voice and accountability should be invoked to attenuate the behavioral tendencies of perpetuating government corruption. Akin to Kock and Gaskins (2014), "Policy-makers in developing countries aiming at increasing voice and accountability at the national level, and thus the degree to which their citizens participate in the country's governance, should strongly consider initiatives that broaden Internet access in their countries."

The study findings make a telling case that strengthening accountability is an overarching institutional capacity development strategy. Any plausible accountability mechanism should serve to increase transparency; broaden access to information and awareness; establish legitimate and pro-poor "rules of the game;" plus strengthen voice and ability to articulate; while improving access of poor to recourse and arbitration. Besides, disclosure of budget allocations to local service providers should be made mandatory, which in turn "permits local people at a minimum to question the use of the funds, and overtime influence the effectiveness in using such resources" (see the UNDP Capacity Development Resource, November 2006). Perhaps in concurrence with Andersen et al (2010), the internet can raise

information levels and in consequence detection risks. So “by enabling e-government, it obviates bureaucrats` role in the provision of public services and increases transparency.” The latter accentuates the role of internet penetration in not only increasing voice and accountability, but also in making the citizens cognizant of government budgetary activities. In part, it is the citizens` awareness of proceedings, which perhaps invariably infuses the realization into the accounting officers’ minds, not to indulge in (grand and petty) malpractices.

Precisely stated, Andersen et al (2010) explain that “the internet facilitates the dissemination of information about corrupt behavior, making it more risky for bureaucrats and politicians to take bribes.” Besides, studies such as Jha and Sarangi (2010) plus Andersen et al (2010) have empirically affirmed that internet diffusion reduces corruption; and perhaps akin to Kock and Gaskins (2013), it plausibly attenuates corruption via enhancing voice and accountability. By and large, in the Caribbean and Latin America, “policies improving voice and accountability and reducing corruption can help to reduce the incentive to take economic activities underground” (see Torgler et al 2010).

APPENDICES

Tables

Table 11: Control of Corruption and Voice and Accountability on Real GDP Per Capita

```
. xtreg lipc lgcf lgds ltra leduc lva lpsn lge lrq lrol lcoc lcva, fe
note: lcoc omitted because of collinearity

Fixed-effects (within) regression               Number of obs      =       140
Group variable: country1                        Number of groups   =        12

R-sq:  within  = 0.5444                         Obs per group: min =         2
       between = 0.0415                                        avg =      11.7
       overall = 0.0450                                        max =        15

                                                F(10,118)          =     14.10
corr(u_i, Xb)  = -0.6352                        Prob > F           =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |   .0342073   .0391521     0.87   0.384    -.0433245    .1117392
        lgds |  -.0424276   .0146937    -2.89   0.005    -.0715251   -.0133301
        ltra |   .1591826   .0347574     4.58   0.000     .0903536    .2280117
      leduc |   .0987864   .0403369     2.45   0.016     .0189083    .1786646
         lva |   .0633785   .0539993     1.17   0.243    -.0435547    .1703117
        lpsn |  -.0892247    .028551    -3.13   0.002    -.1457635   -.0326859
         lge |  -.0006858   .0220553    -0.03   0.975    -.0443613    .0429896
         lrq |  -.0148954   .0202343    -0.74   0.463    -.0549649     .025174
        lrol |  -.0103442   .0367685    -0.28   0.779    -.0831559    .0624674
        lcoc |  (omitted)
        lcva |   .0544314   .0259632     2.10   0.038     .0030172    .1058456
       _cons |   6.744307   .3949307    17.08   0.000     5.962236    7.526377
-------------+----------------------------------------------------------------
     sigma_u |  .60316754
     sigma_e |  .07064819
         rho |  .98646655   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(11, 118) =   307.36             Prob > F = 0.0000
```

Table 12: Institutional Quality (IQI7) on Real GDP Per Capita (Random Effects)

```
. xtreg lipc lgcf lgds ltra leduc inqi7, re

Random-effects GLS regression                   Number of obs      =       462
Group variable: country1                        Number of groups   =        33

R-sq:  within  = 0.3904                         Obs per group: min =         8
       between = 0.1507                                        avg =      14.0
       overall = 0.1348                                        max =        15

Random effects u_i ~ Gaussian                   Wald chi2(5)       =    204.92
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |  -.0061604   .0293541    -0.21   0.834    -.0636933    .0513725
        lgds |  -.0068712   .0108115    -0.64   0.525    -.0280613     .014319
        ltra |    .156696   .0157387     9.96   0.000     .1258486    .1875433
      leduc |   .1249238   .0252943     4.94   0.000     .0753478    .1744997
       inqi7 |   .0195577   .0087957     2.22   0.026     .0023184    .0367971
       _cons |   5.777727   .2459441    23.49   0.000     5.295685    6.259768
-------------+----------------------------------------------------------------
     sigma_u |  .54914867
     sigma_e |  .09525351
         rho |  .97079158   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 13: Institutional Quality (IQI7) on Real GDP Per Capita (Fixed Effects)

```
. xtreg lipc lgcf lgds ltra leduc inqi7, fe

Fixed-effects (within) regression               Number of obs      =       462
Group variable: country1                        Number of groups   =        33

R-sq:  within  = 0.3948                         Obs per group: min =         8
       between = 0.1570                                        avg =      14.0
       overall = 0.1425                                        max =        15

                                                F(5,424)           =     55.33
corr(u_i, Xb)  = -0.6778                        Prob > F           =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |  -.0156388   .0271957    -0.58   0.566    -.0690939    .0378163
        lgds |  -.0075733   .0100032    -0.76   0.449    -.0272354    .0120888
        ltra |   .1898006    .015314    12.39   0.000     .1596998    .2199014
      leduc |   .0977599   .0237164     4.12   0.000     .0511436    .1443762
       inqi7 |   .0177119    .008144     2.17   0.030     .0017042    .0337195
       _cons |   5.412873   .2148521    25.19   0.000     4.990565     5.83518
-------------+----------------------------------------------------------------
     sigma_u |  1.0494985
     sigma_e |  .09525351
         rho |  .99182975   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(32, 424) =   583.88                 Prob > F = 0.0000
```

Table 14: Institutional Quality (IQI3) on Real GDP Per Capita (Fixed Effects)

```
. xtreg lipc lgcf lgds ltra leduc inqi3, fe

Fixed-effects (within) regression               Number of obs      =       462
Group variable: country1                        Number of groups   =        33

R-sq:  within  = 0.3945                         Obs per group: min =         8
       between = 0.1448                                        avg =      14.0
       overall = 0.1310                                        max =        15

                                                F(5,424)           =     55.25
corr(u_i, Xb)  = -0.6608                        Prob > F           =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |  -.0171738    .027179    -0.63   0.528    -.0705961    .0362486
        lgds |  -.0071121    .009991    -0.71   0.477    -.0267501     .012526
        ltra |   .1858896   .0152265    12.21   0.000     .1559608    .2158184
      leduc |   .0956604   .0236546     4.04   0.000     .0491654    .1421553
       inqi3 |   .0303725   .0143235     2.12   0.035     .0022185    .0585265
       _cons |   5.475423   .2129392    25.71   0.000     5.056875     5.89397
-------------+----------------------------------------------------------------
     sigma_u |  1.0353305
     sigma_e |  .09527947
         rho |  .99160196   (fraction of variance due to u_i)
------------------------------------------------------------------------------
F test that all u_i=0:     F(32, 424) =   491.90                 Prob > F = 0.0000
```

Table 15: Institutional Quality (IQI3) on Real GDP Per Capita (Random Effects)

```
. xtreg lipc lgcf lgds ltra leduc inqi3, re

Random-effects GLS regression                   Number of obs      =       462
Group variable: country1                        Number of groups   =        33

R-sq:  within  = 0.3867                         Obs per group: min =         8
       between = 0.1190                                        avg =      14.0
       overall = 0.1069                                        max =        15

Random effects u_i ~ Gaussian                   Wald chi2(5)       =    199.28
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |  -.0063929   .0296659    -0.22   0.829    -.0645369    .0517512
        lgds |  -.0066846   .0109216    -0.61   0.541    -.0280906    .0147215
        ltra |   .1485442   .0157025     9.46   0.000     .1177678    .1793205
       leduc |   .1265685   .0254511     4.97   0.000     .0766853    .1764518
       inqi3 |   .0451574   .0155616     2.90   0.004     .0146572    .0756576
       _cons |   5.891626   .2427135    24.27   0.000     5.415916    6.367336
-------------+----------------------------------------------------------------
     sigma_u |   .5090239
     sigma_e |  .09527947
         rho |  .96614938   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 16: Control of corruption & Living Standards (Random Effects)

```
. xtreg lipc lgcf lgds ltra lrq lrol lcoc, re

Random-effects GLS regression                   Number of obs      =       156
Group variable: country1                        Number of groups   =        12

R-sq:  within  = 0.4267                         Obs per group: min =         3
       between = 0.0169                                        avg =      13.0
       overall = 0.0194                                        max =        15

Random effects u_i ~ Gaussian                   Wald chi2(6)       =     68.45
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |    .021878   .0431639     0.51   0.612    -.0627217    .1064778
        lgds |  -.0287183   .0167878    -1.71   0.087    -.0616218    .0041853
        ltra |   .1724234   .0278143     6.20   0.000     .1179084    .2269385
         lrq |   -.005075   .0180432    -0.28   0.779    -.0404389     .030289
        lrol |  -.0197842   .0379321    -0.52   0.602    -.0941297    .0545613
        lcoc |   .0379439   .0155714     2.44   0.015     .0074246    .0684632
       _cons |   6.716426   .3645496    18.42   0.000     6.001922     7.43093
-------------+----------------------------------------------------------------
     sigma_u |  .29846424
     sigma_e |  .07745047
         rho |  .93690988   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 17: Voice & Accountability and Living Standards (Random Effects)

```
. xtreg lipc lgcf lgds ltra lva lpsn lrol, re

Random-effects GLS regression                   Number of obs      =       159
Group variable: country1                        Number of groups   =        14

R-sq:  within  = 0.4486                         Obs per group: min =         1
       between = 0.0081                                        avg =      11.4
       overall = 0.0268                                        max =        15

Random effects u_i ~ Gaussian                   Wald chi2(6)       =     94.00
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |    .023646   .0399452     0.59   0.554    -.0546453    .1019372
        lgds |   -.030828   .0152265    -2.02   0.043    -.0606714   -.0009845
        ltra |   .2050699   .0256673     7.99   0.000     .154763    .2553769
         lva |   .1179182   .0419389     2.81   0.005     .0357194    .2001171
        lpsn |  -.0221687   .0202613    -1.09   0.274    -.0618802    .0175428
        lrol |   .0022015   .0278455     0.08   0.937    -.0523746    .0567776
       _cons |   6.234432   .3539508    17.61   0.000     5.540701    6.928163
-------------+----------------------------------------------------------------
     sigma_u |  .46197616
     sigma_e |   .0764478
         rho |  .97334625   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 18: Voice & Accountability and Living Standards (Fixed Effects)

```
. xtreg lipc lgcf lgds ltra lva lpsn lrol, fe

Fixed-effects (within) regression               Number of obs      =       159
Group variable: country1                        Number of groups   =        14

R-sq:  within  = 0.4515                         Obs per group: min =         1
       between = 0.0092                                        avg =      11.4
       overall = 0.0280                                        max =        15

                                                F(6,139)           =     19.07
corr(u_i, Xb)  = -0.7199                        Prob > F           =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |   .0109294   .0385031     0.28   0.777    -.0651981    .0870568
        lgds |   -.030135   .0145869    -2.07   0.041    -.0589759   -.0012941
        ltra |   .2345699   .0262781     8.93   0.000     .1826134    .2865263
         lva |   .1074937   .0406168     2.65   0.009     .0271871    .1878004
        lpsn |  -.0262488   .0195487    -1.34   0.182       -.0649    .0124024
        lrol |   -.008225   .0272833    -0.30   0.764    -.0621689    .0457188
       _cons |   6.012562   .3274656    18.36   0.000     5.365104     6.66002
-------------+----------------------------------------------------------------
     sigma_u |  .68911178
     sigma_e |   .0764478
         rho |  .98784266   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 19: Control of corruption & Living Standards (Random Effects)

```
. xtreg lipc lgcf lgds ltra lva lpsn lcoc, re

Random-effects GLS regression                   Number of obs      =       163
Group variable: country1                        Number of groups   =        15

R-sq:  within  = 0.4493                         Obs per group: min =         2
       between = 0.0166                                        avg =      10.9
       overall = 0.0180                                        max =        15

Random effects u_i ~ Gaussian                   Wald chi2(6)       =     81.94
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000
```

lipc	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lgcf	.0418966	.0430359	0.97	0.330	-.0424522	.1262454
lgds	-.0329238	.0153916	-2.14	0.032	-.0630908	-.0027567
ltra	.1478741	.0257574	5.74	0.000	.0973905	.1983576
lva	.1379546	.0390515	3.53	0.000	.0614151	.2144942
lpsn	-.0497951	.0226793	-2.20	0.028	-.0942458	-.0053444
lcoc	.0369113	.013155	2.81	0.005	.0111279	.0626946
_cons	6.786959	.3590061	18.90	0.000	6.08332	7.490598
sigma_u	.3340496					
sigma_e	.07527482					
rho	.9516756	(fraction of variance due to u_i)				

Table 20: Control of Corruption and Living Standards (Fixed Effects)

```
. . xtreg lipc lgcf lgds ltra lva lpsn lcoc, fe

Fixed-effects (within) regression               Number of obs      =       163
Group variable: country1                        Number of groups   =        15

R-sq:  within  = 0.4775                         Obs per group: min =         2
       between = 0.0477                                        avg =      10.9
       overall = 0.0296                                        max =        15

                                                F(6,142)           =     21.63
corr(u_i, Xb)  = -0.7013                        Prob > F           =    0.0000
```

lipc	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgcf	.0049858	.0381832	0.13	0.896	-.0704951	.0804667
lgds	-.0332801	.0135058	-2.46	0.015	-.0599785	-.0065816
ltra	.2203403	.0263328	8.37	0.000	.1682853	.2723954
lva	.1113151	.0347673	3.20	0.002	.0425867	.1800434
lpsn	-.0558234	.0199501	-2.80	0.006	-.095261	-.0163857
lcoc	.0213011	.0118373	1.80	0.074	-.002099	.0447013
_cons	6.182527	.3320504	18.62	0.000	5.526126	6.838928
sigma_u	.77497034					
sigma_e	.07527482					
rho	.99065346	(fraction of variance due to u_i)				

Table 21: Government Effectiveness and Living Standards (Random Effects)

```
. xtreg lipc lgcf lgds ltra lpsn lge lrq, re

Random-effects GLS regression                   Number of obs      =       156
Group variable: country1                        Number of groups   =        17

R-sq:  within  = 0.4482                         Obs per group: min =         1
       between = 0.0559                                        avg =       9.2
       overall = 0.0485                                        max =        15

Random effects u_i ~ Gaussian                   Wald chi2(6)       =     72.17
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000
```

lipc	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
lgcf	-.1356276	.0438566	-3.09	0.002	-.2215848	-.0496703
lgds	-.0278699	.0189256	-1.47	0.141	-.0649634	.0092235
ltra	.1927412	.0314742	6.12	0.000	.1310528	.2544295
lpsn	-.0257996	.0247143	-1.04	0.297	-.0742387	.0226395
lge	.0387634	.0180346	2.15	0.032	.0034162	.0741107
lrq	-.0409594	.023466	-1.75	0.081	-.086952	.0050332
_cons	6.703275	.4435671	15.11	0.000	5.833899	7.57265
sigma_u	.45783312					
sigma_e	.08812514					
rho	.96427389	(fraction of variance due to u_i)				

Table 22: Control of Corruption and Living Standards (Fixed Effects)

```
. xtreg lipc lgcf lgds ltra lpsn lge lcoc, fe

Fixed-effects (within) regression               Number of obs      =       143
Group variable: country1                        Number of groups   =        13

R-sq:  within  = 0.4741                         Obs per group: min =         2
       between = 0.1155                                        avg =      11.0
       overall = 0.0567                                        max =        15

                                                F(6,124)           =     18.63
corr(u_i, Xb)  = -0.7554                        Prob > F           =    0.0000
```

lipc	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lgcf	.0042335	.0413409	0.10	0.919	-.0775917	.0860587
lgds	-.049702	.0151087	-3.29	0.001	-.0796064	-.0197975
ltra	.2333457	.0287638	8.11	0.000	.1764142	.2902772
lpsn	-.0818248	.0285886	-2.86	0.005	-.1384096	-.02524
lge	-.0252666	.0212697	-1.19	0.237	-.0673653	.0168322
lcoc	.0598113	.0272359	2.20	0.030	.0059037	.1137188
_cons	6.059322	.3615367	16.76	0.000	5.34374	6.774905
sigma_u	.80242095					
sigma_e	.07615711					
rho	.99107266	(fraction of variance due to u_i)				

Table 23: Voice and Accountability and living standards (Random Effects)

```
. xtreg lipc lgcf lgds ltra lva lpsn lge lrol, re

Random-effects GLS regression                   Number of obs      =       142
Group variable: country1                        Number of groups   =        14

R-sq:  within  = 0.4993                         Obs per group: min =         1
       between = 0.0063                                        avg =      10.1
       overall = 0.0459                                        max =        15

Random effects u_i ~ Gaussian                   Wald chi2(7)       =     98.54
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |   .0251195   .0413811     0.61   0.544    -.055986     .106225
        lgds |  -.0385245   .0158203    -2.44   0.015    -.0695317   -.0075173
        ltra |   .1958783   .0272577     7.19   0.000     .1424542    .2493025
         lva |   .1524491   .0462732     3.29   0.001     .0617553     .243143
        lpsn |  -.0502779    .026345    -1.91   0.056    -.1019131    .0013573
         lge |   .0117105   .0159274     0.74   0.462    -.0195067    .0429277
        lrol |  -.0036358   .0358727    -0.10   0.919    -.0739451    .0666735
       _cons |   6.362609   .3650996    17.43   0.000     5.647027    7.078191
-------------+----------------------------------------------------------------
     sigma_u |  .44351058
     sigma_e |  .07282839
         rho |  .97374343   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 24: Voice & Accountability and living standards (Fixed Effects)

```
. xtreg lipc lgcf lgds ltra lva lpsn lge lrol, fe

Fixed-effects (within) regression               Number of obs      =       142
Group variable: country1                        Number of groups   =        14

R-sq:  within  = 0.5035                         Obs per group: min =         1
       between = 0.0097                                        avg =      10.1
       overall = 0.0494                                        max =        15

                                                F(7,121)           =     17.53
corr(u_i, Xb)  = -0.7390                        Prob > F           =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |   .0121145     .03942     0.31   0.759    -.0659278    .0901568
        lgds |  -.0376362   .0150335    -2.50   0.014    -.0673991   -.0078734
        ltra |   .2259408   .0278192     8.12   0.000     .1708653    .2810163
         lva |   .1449173   .0441584     3.28   0.001     .0574941    .2323405
        lpsn |  -.0553354    .025218    -2.19   0.030     -.105261   -.0054098
         lge |   .0086422   .0151265     0.57   0.569    -.0213046    .0385891
        lrol |  -.0180584   .0361384    -0.50   0.618    -.0896039     .053487
       _cons |   6.128672   .3451658    17.76   0.000     5.445325    6.812019
-------------+----------------------------------------------------------------
     sigma_u |  .68898789
     sigma_e |  .07282839
         rho |  .98895024   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 25: Control of corruption and living standards (Random Effects)

```
. xtreg lipc lgcf lgds ltra lva lpsn lge lcoc, re

Random-effects GLS regression                   Number of obs      =       143
Group variable: country1                        Number of groups   =        13

R-sq:  within  = 0.5065                         Obs per group: min =         2
       between = 0.0949                                        avg =      11.0
       overall = 0.0578                                        max =        15

Random effects u_i ~ Gaussian                   Wald chi2(7)       =     96.17
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |   .0540464   .0432175     1.25   0.211    -.0306584    .1387512
        lgds |    -.04674   .0158378    -2.95   0.003    -.0777815   -.0156985
        ltra |   .1559809   .0266318     5.86   0.000     .1037836    .2081782
         lva |   .1624683    .043304     3.75   0.000      .077594    .2473426
        lpsn |  -.1016412   .0299048    -3.40   0.001    -.1602536   -.0430289
         lge |  -.0358896   .0222186    -1.62   0.106    -.0794372     .007658
        lcoc |   .0779991   .0279082     2.79   0.005     .0232999    .1326982
       _cons |   6.761324   .3674195    18.40   0.000     6.041195    7.481453
-------------+----------------------------------------------------------------
     sigma_u |  .38266942
     sigma_e |  .07272761
         rho |  .96513891   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 26: Control of corruption and living standards (Fixed Effects)

```
. xtreg lipc lgcf lgds ltra lva lpsn lge lcoc, fe

Fixed-effects (within) regression               Number of obs      =       143
Group variable: country1                        Number of groups   =        13

R-sq:  within  = 0.5242                         Obs per group: min =         2
       between = 0.1150                                        avg =      11.0
       overall = 0.0624                                        max =        15

                                                F(7,123)           =     19.36
corr(u_i, Xb)  = -0.7450                        Prob > F           =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |   .0260919   .0399431     0.65   0.515     -.052973    .1051567
        lgds |  -.0467469   .0144517    -3.23   0.002    -.0753532   -.0181407
        ltra |     .21813   .0277915     7.85   0.000     .1631184    .2731415
         lva |   .1440857    .040008     3.60   0.000     .0648923     .223279
        lpsn |  -.0937545   .0275014    -3.41   0.001    -.1481918   -.0393172
         lge |  -.0305307   .0203644    -1.50   0.136    -.0708408    .0097795
        lcoc |   .0540062   .0260593     2.07   0.040     .0024233    .1055891
       _cons |   6.174526   .3467347    17.81   0.000     5.488186    6.860867
-------------+----------------------------------------------------------------
     sigma_u |   .7608489
     sigma_e |   .07272761
         rho |   .99094577   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 27: Control of corruption and living standards (Random Effects)

```
. xtreg lipc lgcf lgds ltra lpsn lge lrq lcoc, re

Random-effects GLS regression                   Number of obs      =       143
Group variable: country1                        Number of groups   =        13

R-sq:  within  = 0.4590                         Obs per group: min =         2
       between = 0.1008                                        avg =      11.0
       overall = 0.0495                                        max =        15

Random effects u_i ~ Gaussian                   Wald chi2(7)       =     82.21
corr(u_i, X)       = 0 (assumed)                Prob > chi2        =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |   .0262295   .0439671     0.60   0.551    -.0599444    .1124034
        lgds |  -.0492828   .0162249    -3.04   0.002    -.0810831   -.0174825
        ltra |   .1667161   .0294909     5.65   0.000     .1089149    .2245173
        lpsn |  -.0939859   .0309958    -3.03   0.002    -.1547365   -.0332352
         lge |  -.0212754   .0241985    -0.88   0.379    -.0687036    .0261529
         lrq |  -.0224147    .021483    -1.04   0.297    -.0645206    .0196912
        lcoc |   .0861984    .028716     3.00   0.003     .029916    .1424808
       _cons |   6.701275   .4050172    16.55   0.000     5.907456    7.495094
-------------+----------------------------------------------------------------
     sigma_u |   .45009193
     sigma_e |   .07644888
         rho |   .97195936   (fraction of variance due to u_i)
------------------------------------------------------------------------------
```

Table 28: Control of corruption and living standards (Fixed effects)

```
. xtreg lipc lgcf lgds ltra lpsn lge lrq lcoc, fe

Fixed-effects (within) regression               Number of obs      =       143
Group variable: country1                        Number of groups   =        13

R-sq:  within  = 0.4743                         Obs per group: min =         2
       between = 0.1152                                        avg =      11.0
       overall = 0.0565                                        max =        15

                                                F(7,123)           =     15.85
corr(u_i, Xb)  = -0.7519                        Prob > F           =    0.0000

------------------------------------------------------------------------------
        lipc |      Coef.   Std. Err.      t    P>|t|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
        lgcf |   .0041552   .0415006     0.10   0.920    -.0779927    .0863031
        lgds |  -.0495107   .0151884    -3.26   0.001    -.0795753   -.0194462
        ltra |    .230513   .0312858     7.37   0.000     .1685847    .2924414
        lpsn |  -.0831846   .0292749    -2.84   0.005    -.1411324   -.0252368
         lge |  -.0234794   .0226634    -1.04   0.302    -.0683402    .0213814
         lrq |  -.0048198   .0204955    -0.24   0.814    -.0453893    .0357498
        lcoc |   .0606633   .0275793     2.20   0.030     .0060718    .1152549
       _cons |   6.092602    .389537    15.64   0.000     5.321537    6.863666
-------------+----------------------------------------------------------------
     sigma_u |  .79676297
     sigma_e |  .07644888
         rho |  .99087771   (fraction of variance due to u_i)
------------------------------------------------------------------------------
--more--
```

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