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On culture and corruption

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Robert Klitgaard



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Abstract

Around the world, people talk about “corrupt cultures”, implying a predisposition for a group of people to behave in corrupt ways. Measures of corruption are in fact strongly correlated with “cultural variables” such as strong family ties, the traditional end of the World Values Survey’s tradition-rational dimension, the survival end of the WVS’s survival-expressive dimension, individualism, and power distance. The decision to be corrupt involves both cultural norms and a calculation of risks and rewards. A kind of n-person prisoners’ dilemma can result, where a bribing equilibrium results even if hypothetically all officials wish they were impartial and efficient and all people paying bribes wish they didn’t have to. The practical challenge is not to change cultural values and beliefs, but instead to disrupt corrupt equilibriums and alter the risk-reward calculations of bribe-takers and bribe-makers. Fortunately, theory and examples provide guidance and inspiration – even when we can only shrug our shoulders when asked how to engineer cultural change in a broader sense.

Introduction

“What do you do if you have to be the big fish?”

I didn’t know how to answer that one.

The question came after a two-day workshop on fighting corruption with 60 South Sudanese leaders from government, the liberation army, and civil society, in 2004. We had discussed the principle of the big fish: early on, successful anti-corruption campaigns fry some big fish or offenders, including from your own party.

When the workshop closed, I invited everyone for a drink. As we mingled in the dusk, we were tired and stimulated, drained and inspired, confused and celebratory. We ate dinner. I wandered from table to table. The participants were talking about government and corruption and the tasks ahead.

It is at this point that the head of prisons looks at me and asks, “What do you do if you have to be the big fish?”

Puzzled, I ask what he means.

He inquires softly, “How did you pay for the drinks you invited us to tonight?”

I paid for it from my own pocket.

“What if you didn’t have a deep-enough pocket?”

Then I get it. His role creates expectations. He must occasionally or even often provide hospitality or more—help or support or subsistence. Where should he come up with the resources? Unsaid is “without being corrupt.”

Others at the table wrestle with his question before I have to. I’m grateful for that, because I don’t have a good answer. When asked again, all I can manage to say is that our starting points are always imperfect, just as we are as individuals. I relate the story of an African president who told me that he understood that corruption constrained his country but that his party’s finances were based on corruption. “If I fight this sort of corruption, I will fall, or perhaps even be killed,” he said. “How should I begin?” And I relate what I said in response. Have a strategy. Do things in a sequence: don’t try everything at once. Begin with something easy to correct. Build political support and isolate enemies. This may mean leaving some of the deepest corruption alone, for now. A sad notion for idealists.

I ask the people at the table if that advice disappoints them. Does it seem impure?

Now it is their turn to be stumped. They answer only indirectly, or perhaps don’t answer at all. I suppose it’s too abstract a question, and it’s getting late. We say goodnight and wander off to our tents (from Klitgaard 2013, chap. 18).

The question posed by the head of prisons goes beyond “greed corrupts power.” Neither he nor anyone else at the South Sudan workshop was saying, “Look, in our culture it’s okay to put yourself and your family above your obligations to serve in the public interest.” His question suggested a conflict between competing obligations. Public servants have a role-related obligation to be impartial and not corrupt. And more strongly in some cultures than

in others, they may also experience a kinship-related obligation to favor family and friends, even when it entails corruption.

The point is not that the first norm is weak and the second norm is strong: even in quite corrupt settings, citizens and public officials affirm values of impartial public service and scorn bribery.¹ The point is that either choice—to be corrupt or not to be—may leave a moral residue. “Since no matter what the agent does he will appropriately experience remorse or guilt,” writes the philosopher Terrance McConnell (2014), “then no matter what he does he will have done something wrong. Thus, the agent faces a genuine moral dilemma.”

Some might call see in this a kind of culture of underdevelopment: fine words about noble causes and civic virtues, and actions that belie the words. But this is not simple hypocrisy: it may be better seen as a culturally conditioned clash of values.

Officials can face conflicting values; so can citizens in corrupt settings. The same people may condemn corruption in the morning, pay a bribe to get a needed service in the afternoon, and then in the evening complain that nothing can be done because corruption has become part of their culture. In India,

a highly placed official who fails to help a close relative or a fellow villager obtain a government position is often roundly criticized by people for not fulfilling his obligations to his kinsmen and village brothers. On the other hand, the same people

¹ In 2001, Sten Widmalm and his colleagues surveyed people in 24 villages in Kerala and Madhya Pradesh, two Indian states that had succeeded in implementing the decentralized *panchayat* reforms in the 1990s. Madhya Pradesh is poor and poorly governed; Kerala is much more prosperous and does better on indicators of government performance. Citizens in the two states differed in their answers; but even in Madhya Pradesh, the overwhelming majority rejected the idea that bribery is acceptable and civil servants should be allowed to misuse their offices on behalf of friends and family. One question asked

According to one opinion, a civil servant or worker in the public sector should have the following traits:

- He/she should treat everyone equally, regardless of income, status, class, caste, gender, or religion.
- He/she should not ever under any circumstances accept bribes.
- He/she should always act according to stipulated rules and laws.

How important do you think this view is? 0 not important, 4 very important.

“In the overall survey, an overwhelming 77 percent answered ‘very important,’ and 86 percent indicated three or four on the scale...In Madhya Pradesh, 75 percent indicated three or four on the scale, while 97 percent did so in Kerala” (Widmalm 2005: 765).

“In general,” Widmalm concluded, “corruption is not accepted by most people in the survey; most respondents favor a rule-governed bureaucracy within a democratic setting, regardless of whether the society is plagued by corruption or not” (Widmalm 2005: 774).

Around the world, the problem is not that people in certain cultures *approve* of corruption. It is rather that they perceive conflicts between values: for example, between favoring one’s family and doing one’s civic duty.

often roundly condemn any official of another caste or village who has done precisely that as being 'corrupt' and as guilty of 'nepotism' (Gupta 1995: 397n46).

In Nigeria,

People frequently condemn corruption and its consequences as immoral and socially ruinous, yet they also participate in seemingly contradictory behaviors that enable, encourage, and even glorify corruption... In many instances, ordinary Nigerians see themselves as complicit in corruption, and indeed it is this awareness of collective responsibility for corruption that fuels hopes for change, even as it paradoxically perpetuates cynicism and a sense of intractability (Smith 2007: 5, 6).

These separate cases represent two archetypes of culture and corruption.

1. The head of prisons experiences a conflict between cultural norms, which may lead him to take actions he and others perceive as corrupt.
2. Citizens may feel themselves trapped in equilibriums of corruption, which lead them to paying bribes even though they decry bribery.

In both cases, the individuals' value systems may be criticized, and entire cultures may be seen as corrupted. A premature conclusion may emerge: the only way we can improve is for our culture and values to change. This essay presents a different approach to culture and corruption: tackling even culturally loaded and partly culturally determined problems may require avoiding culture change.

Are Some Cultures More Corrupt than Others?

A journalist from Brazil recently requested an interview about her country's corruption crisis. "Many Brazilians believe that corruption is part of our culture," she said, "and that without a big cultural change, we will not be able to fight corruption. Do you agree?"²

Brazilians are not alone. In Uganda, Emmanuel Mwaka Lutukomoi, the Resident Deputy Commissioner of Lira, declares: "We live in a rotten country, rotten districts, rotten offices, with rotten people. Corruption has invaded all public institutions... We have lost the moral sense of shame" (Okot 2016: 2). And in the United States:

The liberal position is that Washington has been corrupted by crony capitalism, that the system is grinding the faces of ordinary working Americans ... and that the answer is more Washington. The conservative position is that Washington has been corrupted by crony capitalism, that the system is grinding the faces of ordinary working Americans ... and that the answer is to squeeze Social Security and cut taxes for the rich (Crook 2016).

Pope Francis laments that corruption has become "a personal and social statement tied to customs" and "a greater ill than sin."

The scandalous concentration of global wealth is made possible by the connivance of public leaders with the powers that be... Corruption is a greater ill than sin. More

² The subtitle of her published article included this even stronger question: "A trapaça está enraizada no nosso DNA?" ("Is cheating rooted in our DNA?") (Bublitz 2016).

than forgiveness, this ill must be treated. Corruption has become natural, to the point of becoming a personal and social statement tied to customs, common practice in commercial and financial transactions, in public contracting, in every negotiation that involves agents of the State (Pope Francis 2014).

When people complain about corrupted cultures, they have in mind the shared values, beliefs, and norms of a group of people (Alesina and Giuliano 2015).

Cultures are not merely customs to which people have a sentimental attachment or badges of “identity.” ... Cultures are particular ways of accomplishing the things that make life possible—the perpetuation of the species, the transmission of knowledge, the absorption of the shocks of change and death, among other things. Cultures differ in the relative significance they attach to time, noise, safety, cleanliness, violence, thrift, intellect, sex, and art. These differences in turn imply differences in social choice, economic efficiency, and political stability (Sowell 1996: 379).

Despondency about corrupted cultures is often based on a perceived exaltation of greed and a diminishing of traditional cultural ideals. And therefore—sometimes explicit in the argument but always lurking underneath—without a change in culture (a reevaluation of values, a new mentality, a conversion experience...), the standard approaches to and remedies for corruption will flounder.

In all cultures, there is a tension between the civic benefits of authority and the risks of its misuse.

Leaders can play a critical role in fostering group well-being and are ideally positioned to help groups manage their problems and achieve their goals. Leaders, however, are typically endowed with power, and power can corrupt. Instead of wielding their power for the greater good, leaders might be tempted to use their power in self-serving ways (Maner & Mead 2010: 482).

The authors call this “the essential tension between leadership and power.”

When people in authority illicitly use their power to benefit themselves and their family and friends, around the world it is called “corruption.” Corruption in this opportunistic sense depends on values; it also depends on calculations of risk and reward. Monopoly power enables greater rewards and probably fewer risks. Discretion enables the official to take advantage of monopoly power. Accountability, in the sense of both information about actions and results and incentives linked to them, increases the risks and reduces the rewards. Individuals, their professional settings, and their countries differ along these dimensions, in part because of policies and in part because of underdevelopment (for example, of information systems).

Since this “essential tension” is pervasive, a variety of policies and institutions have been created to mitigate corruption. Policies include the competitive elections, merit systems, separation of powers, competitive procurement, independent auditors, and many more. Institutions implement these policies, with more or less success: election boards, civil service systems, judicial-legislative oversight systems, procurement boards, internal and external auditors (including supreme audit authorities), prosecutors, police, and many more. E-government and automation enter, too, as methods of reducing discretion and enhancing accountability.

Variations in corruption across countries can be partly understood in terms of the quality of such policies and institutions—and the gap between the laws and policies on the books and their implementation in practice. The efficiency of public and private institutions is in turn correlated with a variety of variables, including levels of education and measured intelligence. When abilities to process information are weak, corruption arises in government, business, and civil society.

But beyond the “essential tension,” the story of the head of the prisons raises a deeper tension of competing values, which are culturally conditioned. Jean-Paul Sartre illustrates the ethical point in describing a student whose brother had been killed in the German offensive of 1940. The student wanted to fight forces that he regarded as evil. But his mother was living with him, and she had no one else to care for her. The student is torn between conflicting ethical obligations, two kinds of morality: one of limited scope but certain efficacy, personal devotion to his mother; the other of much wider scope but uncertain efficacy, attempting to contribute to the defeat of an unjust aggressor.

Consequently, he found himself confronted by two very different modes of action; the one concrete, immediate, but directed towards only one individual; and the other an action addressed to an end infinitely greater, a national collectivity, but for that very reason ambiguous – and it might be frustrated on the way. At the same time, he was hesitating between two kinds of morality; on the one side the morality of sympathy, of personal devotion and, on the other side, a morality of wider scope but of more debatable validity. He had to choose between those two... Which is the more useful aim, the general one of fighting in and for the whole community, or the precise aim of helping one particular person to live? Who can give an answer to that a priori? No one. Nor is it given in any ethical scripture (Sartre 1957 [1945]: 30-31).

In some cultures, where a kinship-related obligations to use their office to favor family and friends, the “essential tension” to use official power illicitly can move from a selfish temptation to cultural mandate.

Across countries and cultures, the norm to favor one’s family varies greatly. Göran Hydén (1980, 2014) described Africa’s “economies of affection” where kinship and tribal obligations inhibit good governance. Jean-François Bayart (2006 [1986]) memorably labeled politics in Africa *la politique du ventre*. An African finance minister once lectured me that family and clan come first:

“In Africa you have to understand that people do not have a common interest,” he said. “Without a common interest, there are fights. Social conflict. I don’t know if you understand me. In Africa, first comes the family, then the clan, then the province, then the region, and finally the country. But the country is the last thing” (from Klitgaard 2013, ch. 13).

But Africa is not alone. If it is true that an African proverb says, “Whoever does not rob the state robs his kith and kin,” a saying in the former Czechoslovakia was “He who does not steal from the state, steals from his family.” From Latin America come accounts of clans and also *compadrazgo* or fictive kinship that provides mutually supporting and constraining networks (for example, Rivas 2010). In India, Narendra Modi argued that he would not be corrupt because he is single, as opposed to other Indians with strong, corrupting family

ties.³ From Egypt and Afghanistan come analyses of the power of family and clan to distort the good governance many in these countries say they seek (Hessler 2016, Packer 2016). Edward Banfield (1958) created a theory of underdevelopment based on an Italian case study of a culture of “amoral familism.”

Using the World Values Survey, Albero Alesina and Paola Giuliano (2010) created a measure of the strength of family ties. This measure combined three WVS questions that asked people about their beliefs regarding the importance of the family in an individual’s life, the duties and responsibilities of parents and children, and the love and respect for one’s own parents. “Scandinavian countries and many Eastern European countries tend to have the weakest levels of family ties. In a middle range are France, Canada, the United States and the United Kingdom. More familistic societies are Italy and many Latin American countries including Colombia, Peru and Brazil. In the extreme part of the distributions are some Latin America countries like Guatemala and Venezuela, African countries like Egypt and Zimbabwe and Asian countries like Indonesia, Vietnam, and the Philippines” (see Fig. 1).

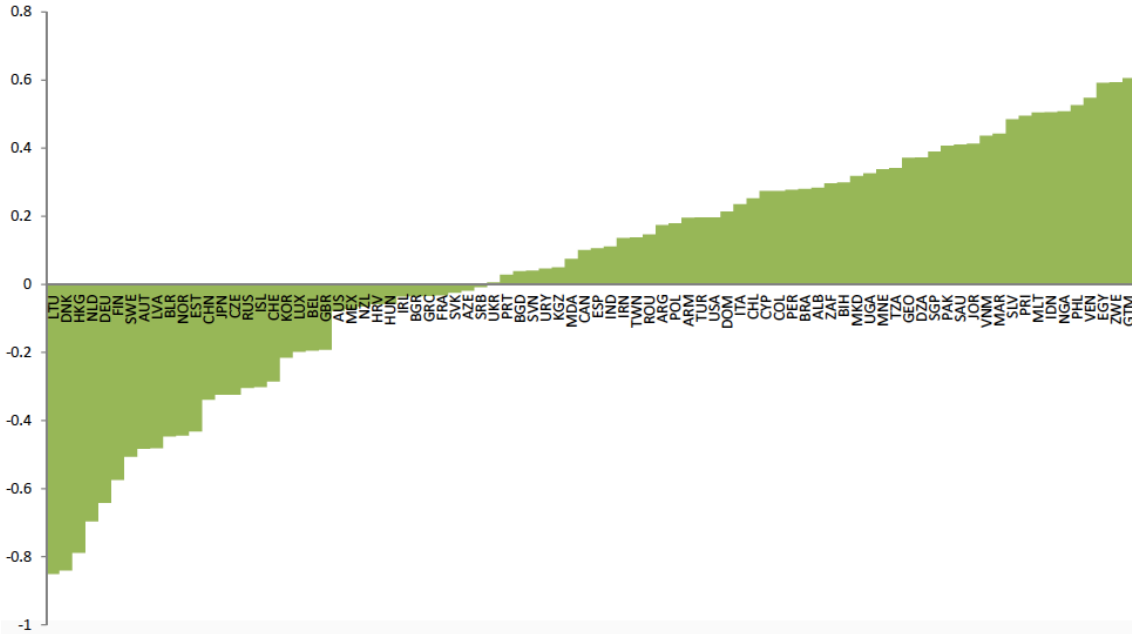


Figure 1 A Measure of the Strength of Family Ties

Source: Alesina and Giuliano (2014)

The authors found that countries with stronger family ties tended to have more corruption and weaker institutions. The correlation between strength of family ties and the World Bank’s control of corruption measure was -0.54 and with political stability -0.61. “These

³ “Narendra Modi has reinforced the long-held belief in India that a public official without familial baggage is best suited to effectively battle corruption. In the 13 years that he has been Gujarat chief minister, there have been no allegations of corruption against Modi or complaints that he used his office for personal gain or that any family member took undue advantage to profit by using his name. Being single helps a politician remain committed to the principles of good governance, integrity, openness and honesty.” Nandy (2014).

results remain valid if one exploits the correlation between inherited family values and current institutions and level of development, indicating a strong persistence in family values” (Alesina and Giuliano 2014: 177 and Table 10). Earlier statistical work by Seymour Martin Lipset and Gabriel Salman Lenz (2000: 120) also revealed strong correlations between their own “familism scale” and corruption.

And a historical tour de force argued that when institutions are weak or begin to break down, people return to family connections:

[H]uman beings are born with a suite of emotions that fortify the development of social relationships based on cooperation with friends and family. To behave differently—to choose, for example, a highly qualified employee over a friend or relative, or to work in an impersonal bureaucracy—is socially constructed behavior that runs counter to our natural inclinations. It is only with the development of political institutions like the modern state that humans begin to organize themselves and learn to cooperate in a manner that transcends friends and family. When such institutions break down, we revert to patronage and nepotism as a default form of sociability. (Fukuyama 2014: 88-9)

Other Cultural Dimensions Are Correlated with Corruption

According to many social scientists, cultures with stronger family ties are likely to experience public-sector corruption than those with weaker family ties. Do other cultural dimensions also covary with corruption?

Even posing the question can offend. Being on the receiving end of accusations of corruption can trigger understandable resistance. After all, the concepts and measures are usually sourced in the cultural West; when applied to other cultural constellations, the worry is that the concepts and measures are culturally biased. Can a country’s “corruption” be accurately measured? After all, there are many kinds of corruption. A typology might include such dimensions as who initiates (extortion as a subset of bribery), external or internal (the latter includes various kinds of fraud, embezzlement, nepotism), the resources used (such as money, favors, influence), and levels (low, medium, high; a bureaucracy can be relatively corruption free even when there is “state capture”), and the nature of the economy (rule based, deal based; something related to Weber’s traditional vs. rationalized). The extent of corruption clearly matters, from sporadic or cowboy corruption, to systemic corruption. And as with many statistics about the state of a society, one can talk about the national, state, and local levels; disaggregate by institution (health vs. foreign ministry vs. justice department) and by function (auditing, service delivery, and so forth).

Many of the same points apply to culture. The measures are imprecise and, like all national averages or frequencies, hide subnational variations. Moreover, cultures change, in part as the result of economic and political development; individualism in China is much higher than it was a generation ago. Finally, the causal connections between measures of culture and measures of corruption are difficult to ascertain for a host of reasons including theory uncertainty, model uncertainty, and econometric uncertainty.

Annex 1 discusses some of the issues surrounding the validity of national-level measures of corruptions, such as Transparency International’s Corruption Perceptions Index (CPI).⁴ For now, let us report and then go beyond some of the country-level correlations between measures of culture and measures of corruption.

Recall that the cultural aspects at issue here pertain to values and beliefs (and not culture in other senses, such as art, music, and literature). A fascinating source of comparative data is the World Values Survey (WVS). In periodic surveys beginning in the 1980s, the WVS has surveyed individuals in many countries around the world. The surveys ask about demographics, economic status, and values and beliefs.

In a data reduction exercise, Ronald Inglehart and Christian Welzel empirically derived two “cultural dimensions” for each country.⁵ One dimension moves from “tradition to reason.”

Traditional values emphasize the importance of religion, parent-child ties, deference to authority and traditional family values. People who embrace these values also reject divorce, abortion, euthanasia and suicide. These societies have high levels of national pride and a nationalistic outlook. *Secular-rational values* have the opposite preferences to the traditional values. These societies place less emphasis on religion, traditional family values and authority. Divorce, abortion, euthanasia and suicide are seen as relatively acceptable.

The second composite runs from “survival mode to individual expressiveness.”

Survival values place emphasis on economic and physical security. This variable is linked with a relatively ethnocentric outlook and low levels of trust and tolerance. *Self-expression values* give high priority to environmental protection, growing tolerance of foreigners, gays and lesbians and gender equality, and rising demands for participation in decision-making in economic and political life.

These two dimensions alone turn out to explain 62 percent of the variance in the 2014 Corruption Perceptions Index (see Fig. 2, which shows the simple sum of the two standardized dimensions.)⁶

⁴ See <https://www.transparency.org/research/cpi/overview>

⁵ See <http://www.worldvaluessurvey.org/WVSContents.jsp>

⁶ $CPI\ 2014 = 52.57 + 8.51\ trad_rat + 11.82\ self_surv$, $R^2\ adj\ for\ d.f. = 0.62$. Figure 1 uses unit weights.
(1.34) (1.35)

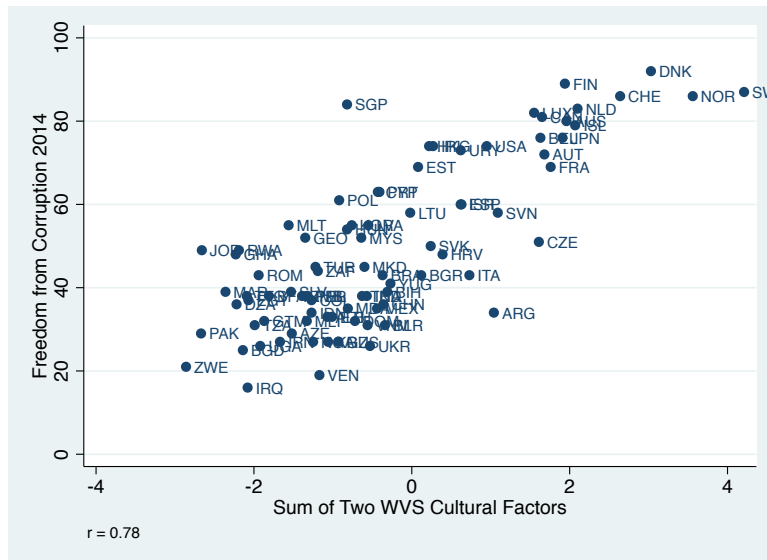


Figure 2. “Freedom from Corruption” and Two Cultural Factors

Another widely used “cultural dimension” is individualism-collectivism. It is related to the strength of family ties but goes further. Based on a factor analysis of their own surveys, Geert Hofstede and colleagues (2010) created a country-level measure of this dimension.

Individualism is “...defined as a preference for a loosely-knit social framework in which individuals are expected to take care of only themselves and their immediate families. Its opposite, collectivism, represents a preference for a tightly-knit framework in society in which individuals can expect their relatives or members of a particular in-group to look after them in exchange for unquestioning loyalty. A society’s position on this dimension is reflected in whether people’s self-image is defined in terms of ‘I’ or ‘we.’” <https://geert-hofstede.com/national-culture.html>

The higher a country scores on this measure, the better is its score on the Corruption Perceptions index ($r=0.64$); see Fig. 3. Many other scholars have examined measures of individualism and collectivism. “The in-group favoritism inherent to collectivist societies is likely to engender corruption, nepotism and clientelism in the public sphere. In individualist societies, the relative weakness of in-group pressures and an emphasis on personal achievement and worth will contribute towards a more meritocratic and efficient public sector” (Kyriacou 2016: 1; see also Gorodnichenko & Gerard 2016).

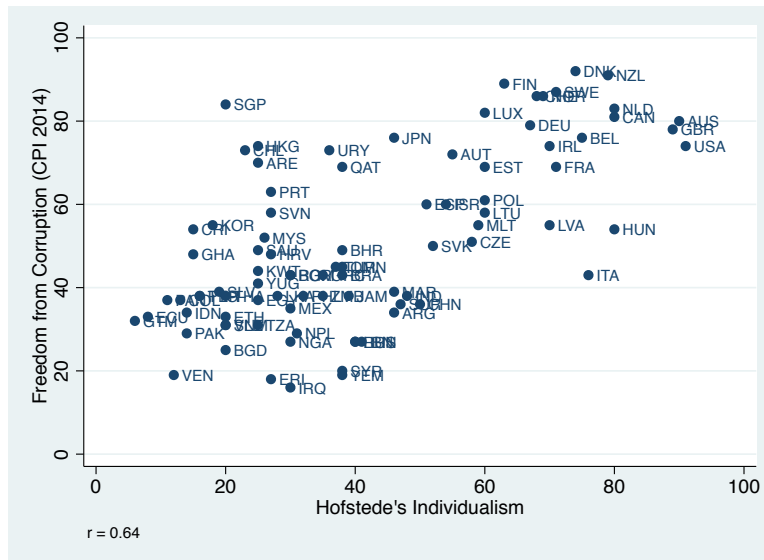


Figure 3. More Individualism, Less Corruption

Geert Hofstede *et al.* also created a measure of “power distance,” a country’s cultural tendency toward hierarchy.

This dimension expresses the degree to which the less powerful members of a society accept and expect that power is distributed unequally. The fundamental issue here is how a society handles inequalities among people. People in societies exhibiting a large degree of Power Distance accept a hierarchical order in which everybody has a place and which needs no further justification. In societies with low Power Distance, people strive to equalize the distribution of power and demand justification for inequalities of power. <https://geert-hofstede.com/national-culture.html>

This measure of a country’s tendency toward hierarchy correlates -0.63 with “freedom from corruption” (see Fig. 4).

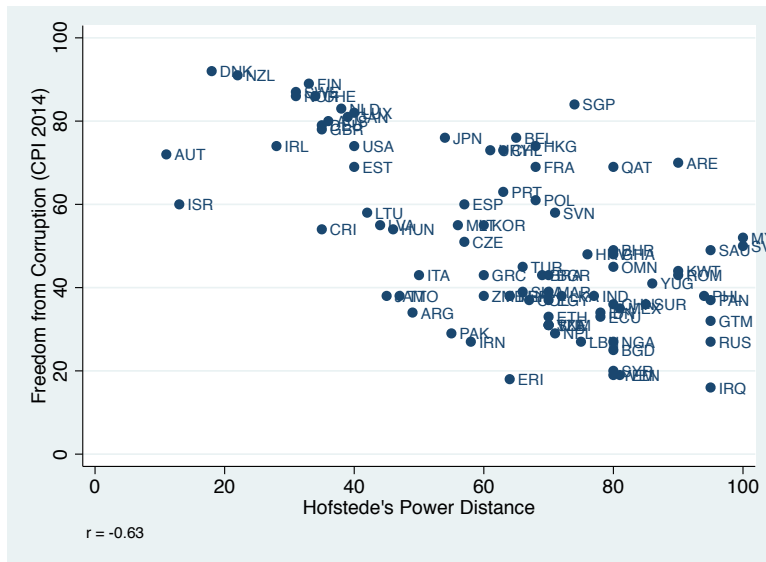


Figure 4. More Power Distance, More Corruption

Other theories link corruption to cultural diversity (Cerqueti, Coppier & Piga 2012). One idea is that more ethnolinguistic diversity exacerbates the moral dilemma between taking care of one's family and clan and serving impartially and without corruption. Figure 5 shows ethnolinguistic diversity at the country level plotted against the Corruption Perceptions Index in 2014 ($r=-0.44$): the countries of sub-Saharan Africa are in red.

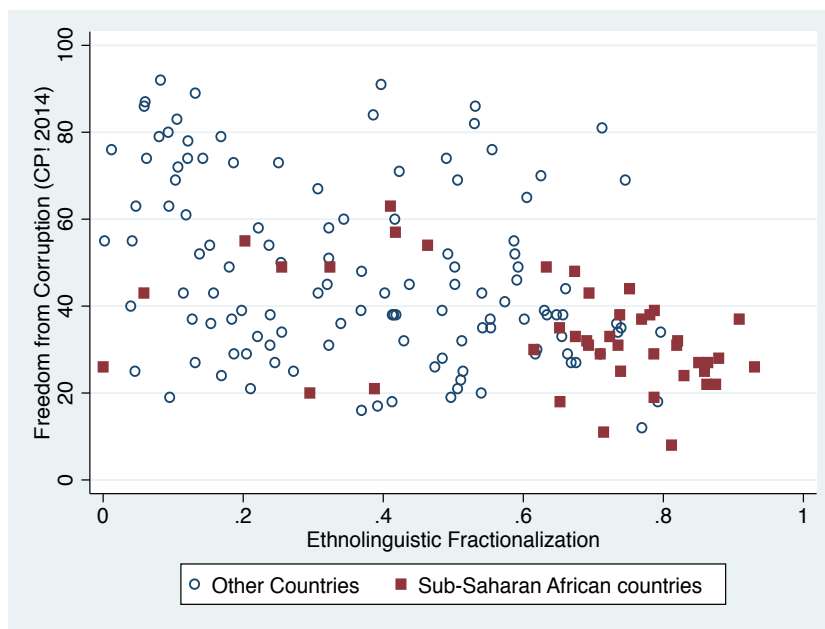


Fig. 5 More Cultural Diversity, More Corruption

Yes, yes: correlations. But these relationships have interesting causal explanations. One fascinating recent theory examines a group's historical exposure to parasites and pathogens. Some regions of the world historically suffered from greater diversity and

intensity of pathogens, as a consequence of their high ultraviolet exposure and humidity. The prevalence and rapid evolution of contagious diseases leads to genetic, behavioral, and cultural adaptation. Among the cultural adaptations are harsh in-group discipline and bellicose out-group behavior, ethnocentrism, and xenophobia (Thornhill and Fincher 2014). Hofstede's measure of Individualism is negatively correlated with a nine-item measure of historical prevalence of infectious diseases ($r=-0.68$) (Murray and Scheller 2010: 102).

In regions characterized by a higher prevalence of infectious diseases, cultures are more highly collectivistic. The intriguing implication is that cultural differences in individualism and collectivism—differences that are fundamental to so much research in cultural psychology—may exist in part because of regional differences in the prevalence of disease-causing pathogens (Murray & Schaller 2016: 110).

These particular “deep roots of development” (Spolaore and Wacziarg 2013) also may explain why some countries tend to have more emphasis on hierarchy, more sexist behavior, more violence within families and across ethnic groups, more clans, and less generalized trust. And across countries and groups, many of these cultural and behavioral characteristics are related to higher levels of corruption.

Johannes Fedderke, Valerio Napolioni, and I have been exploring some of these issues in recent papers. Annex 2 outlines the theory and provides some new statistical results related to culture and corruption.

Can Corruption Be Reduced Even in Corrupt Cultures?

Let us turn to a different sense in which cultures can become corrupted: not personal immorality becoming widespread, not even a conflict between cultural norms of caring for one's family and doing one's job. Imagine a culture of corruption as when “Good people, trapped in a corrupt structure, become corrupted as they do their best within the given economic, legal, institutional structure” (Light 2013: 3).

Societies can draw different lines between a licit transaction and a corrupt *quid pro quo*. For whatever line a society decides to draw in a particular domain, those receiving and giving bribes weigh the possible benefits and costs of crossing the line. Corruption is a crime of calculation. As the Auditor General of Uganda puts it, “Someone will ask, ‘Will it pay?’ If it will, one will steal. If it won't pay, one won't steal. It should be too expensive to steal. This is why corruption is happening on a grand scale” (Human Rights Watch 2013: 1).

Recall the dilemma faced by South Sudan's head of prisons. His question was “What if you are the big fish?”

One approach might be try to change South Sudan's culture, so that (for example) the strength of family ties is attenuated, power distance is reduced, collectivism is loosened, and an overarching identity can overcome cultural diversity in South Sudan.

Another idea is to change the decisionmaking context faced by the head of prisons, including his ability to convey favoritism and his calculations of the risks and rewards of doing so.

Consider an old checklist for policy design regarding corruption (Exhibit 1). (Checklists may sound like something as those books “for dummies,” but Atul Gawande reminds us in *The*

Checklist Manifesto that they are used in sophisticated, high-tech settings: “Checklists...are not comprehensive how-to guides, whether for building a skyscraper or getting a plane out of trouble. They are quick and simple tools aimed to buttress the skills of expert professionals.” Gawande 2010: 128.)⁷

The checklist in Exhibit 1 mentions values, but it sets aside the challenge of changing the national norm of helping one’s family and friends. Instead, it addresses the decision frame in which the official is found.

Exhibit 1 Measures to Control Corruption: A Framework for Policy Analysis

- A. Select agents for “honesty” and “capability”
 - 1. Screen out the dishonest (past records, tests, predictors of honesty)
 - 2. Exploit outside “guarantees” of honesty (networks for finding dependable agents and ensuring they stay that way)
- B. Change the rewards and penalties facing agents (and clients)
 - 1. Shift rewards
 - a. Raise salaries to reduce the need for corrupt income
 - b. Reward specific actions and agents that control corruption
 - c. Use contingent contracts to reward agents as a function of their eventual success or failure (analogies: forfeitable nonvested pensions, performance bonds)
 - d. Use nonmonetary rewards (transfers, training, travel, publicity, praise)
 - 2. Penalize corrupt behavior
 - a. Raise the general levels of formal penalties
 - b. Increase the principal’s authority to punish
 - c. Calibrate penalties in terms of deterrence (as a function of the size of the bribe and the size of the illicit profit)
 - d. Use nonformal penalties (transfers, publicity, loss of professional standing, blackballing)
- C. Gather and analyze information in order to raise the chances that corruption will be detected
 - 1. Improve auditing systems and management information systems
 - a. Provide evidence that corruption has occurred (red flags, statistical analyses, random samples, inspections)
 - b. Assess the organization’s vulnerability to corruption
 - 2. Strengthen “information agents”
 - a. Beef up specialized staff (auditors, investigators, surveillance, internal security)
 - b. Create a climate where agents will report improper activities (e.g., whistle-blowers)
 - c. Create new units (ombudsmen, special audit committees, anticorruption agencies)
 - 3. Use information provide by third parties (media, banks)

⁷ “If our goal is to be of practical use to policymakers, we academicians would do better to derive rough-and-ready frameworks and checklists instead of calculating theoretically ‘optimal’ policies under highly restrictive and unrealistic conditions. We might think of our job as stimulating creativity, making sure promising options are not overlooked, and highlighting trade-offs—a much humbler stance than many social scientists and policy advisers are used but, I think, the correct one” (Klitgaard 1988: 95-6).

4. Use information provided by clients and the public
 5. Change the burden of proof, so that the potentially corrupt have to demonstrate their innocence
- D. Restructure the principal-agent-client relationship to remove the corruption-inducing combination of monopoly power plus discretion plus little accountability
1. Induce competition in the provision of service (private sector, among government agents)
 2. Reduce agents' discretion
 - a. Define objectives, rules, and procedures more tightly
 - b. Have agents work in teams and subject them to hierarchical review
 - c. Divide large decisions into separable tasks
 3. Rotate agents functionally and geographically
 4. Change the organization's mission, product, or technology to render them less susceptible to corruption
 5. Organize client groups, to render them less susceptible to some forms of corruption and to create an anticorruption lobbying force
- E. Change attitudes about corruption
1. Use training, educational programs, and personal example
 2. Promulgate a code of ethics (civil service, particular organizations)
 3. Change the organizational culture

From Klitgaard (1988): 94-5

Applying this checklist should take culture (and other contextual features) into account (see also Klitgaard 1998). True, at a high-enough level of abstraction,

corruption is a phenomenon universally understood in a similar manner across cultures... Differences in what is understood as corruption lie in the variation of what counts as (and is the extension of) public goods in cultures, and not variation in whether it is morally wrong to turn a public good into a private good (Rothstein & Torsello 2014: 279, 265).

With regard to corruption, cultural relativism is located in contexts, not concepts—and this is why a checklist (or a simplifying model) can be useful across contexts. But as with all policies, design and implementation even when based on sound principles should take culture into account. Different kinds of corruption (from tax collection to police, from procurement to permits, from privatization to nationalization) in different locations (local, regional, national—and what agency) have different culturally tuned meanings, different connections with culturally laden institutions, and more or less culturally intense politics. A framework may be useful across cultural settings (and functions and agencies). In practice, the challenge for policy design and implementation is to take the particular cultural setting into account in each heading of the checklist.

This is true in two senses: in controlling corruption (by affecting specific agents in their contexts), and in subverting corrupt equilibriums in their particular contexts (Klitgaard 2000).

In some situations, a corrupt equilibrium emerges. It can be understood as an n-person Prisoners' Dilemma where many people may wish they didn't have to participate but where individual maximizing logic drives them to do so. Once corrupt behavior is embedded, each

individual may have little choice but to go along. For your child to pass the examination, you may have to pay a bribe—whether or not she actually passed. Once a Catholic bishop in Côte d'Ivoire “excused” business people who were paying bribes to receive government contracts, because this had become the lamentable norm. In Indonesia, an international agency used to give employees a list of reimbursable bribes and their amounts: otherwise, you’d never get your telephone installed or receive your driver’s license.

This logic suggests both consequences and solutions. The predicted consequences of corrupt equilibriums include lower levels of investment, worse public services, greater inequality, and greater public cynicism.

The possible solutions include a variety of ways to “subvert” a corrupt equilibrium, including “frying big fish,” taking two or three highly visible steps that people can perceive as progress, and reforming institutions to raise the risks and lower the rewards from corrupt behaviors (Pieth ed. 2012; Klitgaard 2000, 2015). The principles of change resemble other situations of collective action (Olson 1971; Poteete, Janssen & Ostrom 2010). The literature on strategic change is also relevant (for example, Heath & Heath 2010).

Fortunately, these are not just theories; we can learn from examples of progress in overcoming corrupt equilibriums. Singapore is an excellent example. In the 1960s, it moved from an equilibrium of corruption and crime to one of remarkably good governance, without notably changing national cultural characteristics such as family ties, individualism, or power distance. Singapore’s strategy can be understood in terms of the preceding paragraphs, as can the radical improvement of corruption control in Hong Kong, China, in the 1970s (Klitgaard, 1988, ch. 4).

Similar points can be made about cases such as Colombia in the late 1990s, Georgia in 2004, the Philippines under Benigno Aquino III, Qatar, and Rwanda (Klitgaard 2015). Some would include Indonesia, which moved in the first decade of the 21st century from about the 6th percentile to the 40th percentile on the Corruption Perceptions Index. A number of cities have also made impressive progress against corruption, such as Bogotá and Medellín, Colombia; Campo Elias, Venezuela; Naga City, the Philippines; La Paz, Bolivia; and Mandaue, the Philippines (Devlin and Chaskel, 2010a, 2010b; González de Asís, 2000; Puatu, 2012; Klitgaard *et al.*, 2000; Klitgaard and Smith 2017). Craiova, Romania and Martin, Slovak Republic, won the United Nations Public Service Awards in 2011 for their reforms against corruption. Princeton’s Innovations for Successful Societies contains valuable case studies of fighting corruption; see also the success stories assembled by the Legatum Institute (2015) and from the Center for Integrity in Business and Government (2015).

These cases reveal the intersection between economic analysis of corrupt equilibriums (organizational structures, information, incentives, and Prisoners’ Dilemmas) and political acumen (not trying to do everything at once, building momentum, frying big fish, fostering collaboration with business and civil society). Even though each case is unique, these examples can both inspire us and reveal useful principles of reform.

Can corruption be reduced even in corrupt cultures? Yes, and the key may be avoiding culture and instead addressing the calculations of officials and the expectations attendant to an equilibrium of corruption. When corruption is systemic, we need to subvert it first and then create sustainable structures and incentives so that the individual calculations about

offering and receiving bribes do not lead to a resurgence of corruption (using ideas from Exhibit 1).

Conclusions

Corruption is scorned everywhere in the world. Cultural relativism is located in contexts, not concepts—at least at a high enough level of abstraction. And yet, cultural differences clearly matter for corruption. For example, cultures with stronger family values experience more corruption. Should we therefore conclude—as many people around the world do—that we need cultural change to fight corruption?

Not usually. Often in policy design and implementation, we should avoid talk of culture in order to tackle culturally loaded problems. And in the case of corruption, I believe the opportunity for progress is to reframe a cultural or value issue as one of structures, information, and incentives.

Statements about culture or value systems are sensitive; when an outsider says our culture and values are causing behavior that is corrupt, our first reaction may be defensive. “You are corrupt, too; at least, you certainly were in the past. Your concepts are culturally imperialistic and your measures are culturally biased.” A stereotypical recent example is Lin & Monga (2017), who run through these arguments to drive the conclusion (in my words), “*We* from the outside should not be insisting that *they* tackle corruption.”

But let us suppose, realistically, that around the world people want to tackle corruption. As with the Brazilian journalist, people are appalled by corruption and want to do something about it. If they can reframe corruption in structural rather than cultural terms, they may be less defensive. Moreover, when combined with real examples of reforms that worked, abstractions like Exhibits 1 and collective action models may come to life. Success stories may be inspire us and help us overcome any cultural fatalism, even if we know that because contexts vary, we cannot simply copy what worked somewhere else. And at this point our defensiveness may drop concerning those measures of performance (and corruption), especially when these can be disaggregated by agency and function and region and project. And especially when such indicators can help us find “bright spots” in our own country and culture: examples of agencies, functions, projects, programs that are working relatively well here, now, despite all that talk that our culture is corrupted.

This combination of frameworks, success stories, and data characterizes a methodology for taking culture into account—and more generally, for us to learn from others what might work here. I call it “convening.” Locals have tacit knowledge about their cultural and other contexts. But they often lack access to the best models and theories, the best data and techniques of data collection, and the appropriate comparisons for them to calibrate their challenges. They may lack examples of what has worked elsewhere, not so much to copy as to inspire. The challenge becomes how to combine forces: how to bring what they know best (local objectives, constraints, alternatives, intervening variables, etc.) with what outsiders may offer (facts, examples, frameworks).

Convening tries to bring these forces together. Those convened stakeholders have different if overlapping objectives, different if sometimes overlapping capabilities, and different if overlapping information about the state of the world and about if-then relationships (such as treatment effects). The stakeholders are strategically connected, in the sense that what

one party does often affects the outcomes of what other parties do. They are not fully aware of each others' objectives, capabilities, or information sets; they do not fully understand their strategic interrelations.

Convenings *build on policy analysis and evaluation*. In particular, we are concerned with convenings that provide stakeholders with:

- Data, especially data that helps people “get on the same page” about the nature of the problems, if’s and then’s, funding, and costs. Data-rich discussions also help build trust, particularly about controversial issues where someone may be suspicious of being sold an ideological or political argument.
- Examples of success in similar problem areas, which spotlight goals, alternatives, if-then relationships, and partnerships. These examples are based on an evaluation of what they achieved and theory-based speculation about how.
- Frameworks for understanding goals, alternatives, if-then relationships, and/or strategic interdependence. A framework may be a grand theory, a program theory, or a heuristic. The framework may draw upon social science, policy analysis, and evaluation.

Convenings bring together:

- Key decisionmakers and stakeholders, sometime from outside government,
- In a “safe” setting (no recordings, Chatham House rules, etc.),
- For at least six hours, sometimes one or more days,
- Away from the office.
- Participants consider together:
 - Data that help contextualize their particular challenges.
 - A case study of a success in a different place.
 - A practical framework (model, theory).

Through a convening, sometimes participants will discover ideas that they can adapt to their cultural settings. Sometimes they may discern potential interactions between their cultural context and various choices of design and implementation. These are things they can do better than any outsider.

“What If You Are the Big Fish?”

This essay began with the story of the head of prisons in South Sudan. What to do if we are in a culture where we feel compelled to use our office to help our family and clan? Even when we recognize the value of norms of impartiality, we may feel stuck in a corrupt equilibrium, reinforced but not created by our culture’s strong family ties. Each one of us can face a painful choice; we may feel obligated to acquiesce.

Jean-Paul Sartre (1957 [1945]) argued that we cannot fruitfully address this situation in terms of individual ethics: how a person should weigh the tradeoff between family and duty. The same goes for citizens facing a corrupt equilibrium, where they must pay a bribe even though they feel the “moral residue.”

But we (and they) may be able to address these cultural aspects of corruption by changing our (and perhaps their) frame of reference. The corrupt official's choices can be constrained by reducing monopoly, tightening discretion, and enhancing accountability, leading to less corruption. Corrupt equilibriums can be reframed in terms of Prisoners' Dilemmas and collective action problems, leading to political and economic steps that subvert the equilibrium and create new constellations of interests and institutions. Success is not easy, of course; but many examples around the world show that progress is possible.

What practical lessons might we draw?

First, don't focus on cultures in terms of trying to change national values and attitudes. Rather, reframe cultures of corruption as crimes of calculation in particular structural contexts. Analyze how corrupt *systems* work and how they can be undermined. Study the incentives facing individual actors, those principals and agents and clients who give and receive bribes. Analyze how these incentives can be nudged or shifted, perhaps through actions by business groups and civil society, to disrupt corrupt equilibriums. Consider carefully political strategies, such as frying big fish, attaining quick wins, focusing on a few priorities instead of a proverbial holistic approach, and sidelining key opponents—and as you design them, take culture into account. Consider practical ways to involve the private sector and civil society in the design, implementation, and evaluation of reforms (for example, the Philippines' Performance Governance System as described in Estanislao 2016 and Klitgaard and Smith 2017).

Second, the task requires dipping below the national level and beyond single constructs of corruption. Corrupt equilibriums have commonalities, but their practical solution depends on locating them (in every sense) by type of corruption, agency, activity, locality, and so forth. It may be theoretically interesting, but in order to combat systemic corruption, it is of almost no practical use to focus on national indicators of corruption or broad and imprecise "cultural variables."

Third, instead of focusing on all our perceived obstacles (cultural and otherwise), seek out "bright spots" in our own country (Heath & Heath 2010). Even in countries plagued by corruption, some projects and cities, ministries and banks, are relatively well run. Once these success stories are identified (and verified by citizens), they should be studied carefully. Universities can help; the press can help. Study both what was done and how. Then share these stories with officials and citizens, with the business community and the press. The point of sharing success stories is not so much to copy as to inspire. Examples of success can help defeat cynicism and overcome ignorance—and thereby illuminate discipline and rejuvenate the passion for reform.

Fourth, insofar as national cultures go, take them into account without trying somehow to change them. It is not that cultures do not change, of course; rather, that we seem to lack reliable tools to engineer cultural change (Klitgaard 1994). Ask instead how anti-corruption initiatives can take advantage of our cultural contexts. Emphasize our religion (all religions condemn bribery) and our relevant traditional values. Use our indigenous institutions to help design, implement, and monitor reforms. And restate the reforms we desire in language that appeals in our culture, not necessarily in the language of economics or Western philosophy or agencies of international development.

If we begin our work with local people's outrage over corruption, their stories of dysfunction, and their desire to do better—instead of with social scientific accusations and counterarguments—we may be more helpful as analysts and evaluators. If we recognize the contradictions in our own societies—the generalization of their feelings about corruption to our own n-person Prisoners' Dilemmas of disappointing conformity to things we really don't admire, to our own examples of stigma (and self-stigma), and to the moral dilemmas we face—we may resonate with what at first may seem alien, even disgusting corruption in faraway places. This may help us think more creatively and practically, and act more humbly and humanely.

Annex 1 On Measures of Corruption

Isn't "corruption" is itself a culturally loaded term and couldn't the measures of corruption simply culturally biased perceptions? As corruption emerged on the agenda of international finance institutions and bilateral donors in the late 1990s, aid to many recipient countries was threatened by accusations of corruption. Some intellectuals also resisted what they saw as the imposition of inappropriate cultural norms. "What your culture (Western culture, say) calls 'corruption' is not what we call corruption. Your labels and measures are culturally imperialistic, especially when they are linked with development assistance, the financing of private investment, or sanctions."

Corruption is difficult to observe and measure because in all countries most acts called "corrupt" are illegal. In his magisterial book *Bribes* (1984), John T. Noonan, Jr., noted that we cannot always trust what people say about corruption nor seemingly objective measures such as the number of news stories about corruption or the number of corruption cases prosecuted (Noonan 1984: xiii). Indeed, surveys around the world find gaps between what people say they have experienced and their perception of corruption in the country as a whole. In Peru, when the local NGO Ciudadanos al Día surveyed citizens in 2013, 70 percent of respondents said government employees are not honest and 79 percent thought "corruption has gained ground in the country." Yet only 3 percent said they were asked to pay bribes (Boza 2013).

Some researchers have argued that the gap between experience and perceptions implies that perceptions are unreal and that statistical results based on them are invalid. The gap between the two measures is worth exploring and trying to explain. But at the country level, the two measures are highly correlated when appropriately transformed.⁸

Across countries, the correlation between the log of the percent that admit to paying a bribe and the Corruption Perceptions Index turns out to be -0.81. Similar findings hold for other research on measures of experience and perception: the correlations are above 0.8 when the variables are transformed to reduce skewness. When one takes logs of the multi-year measures in Treisman (2015), the correlation between experience and perception is 0.84 (see Figures A1 and A2).

Similar results hold for the data in Donchev and Ujhelyi (2013). In a sample of 43 countries in 2000, an average of 10.4 percent of respondents to the International Crime Victims Survey answered yes to this question: "During [the past year] has any government official, for instance a customs officer, police officer or inspector in your own country, asked you or expected you to pay a bribe for his services?" The authors found a correlation of 0.77

⁸ The bribe-paying (experience) measure is highly skewed, meaning that correlation coefficients and linear regressions can be misleading (Kowalski 1972). Bishara and Hittner (2012: 399) conclude, "With most sample sizes ($n \geq 20$), Type I and Type II error rates were minimized by transforming the data to a normal shape prior to assessing the Pearson correlation."

between the percent yes and the World Bank's measure of corruption perceptions (Table 1, p. 33). Figures in the paper show the nonlinearity of this relationship (p. 41).

Finally, all three experience variables used by Gutmann, Padovano and Voigt (2015) are highly skewed. After taking logs, all three correlations with the Corruption Perceptions Index exceed 0.8.

Figure A1. Experience and Perceptions

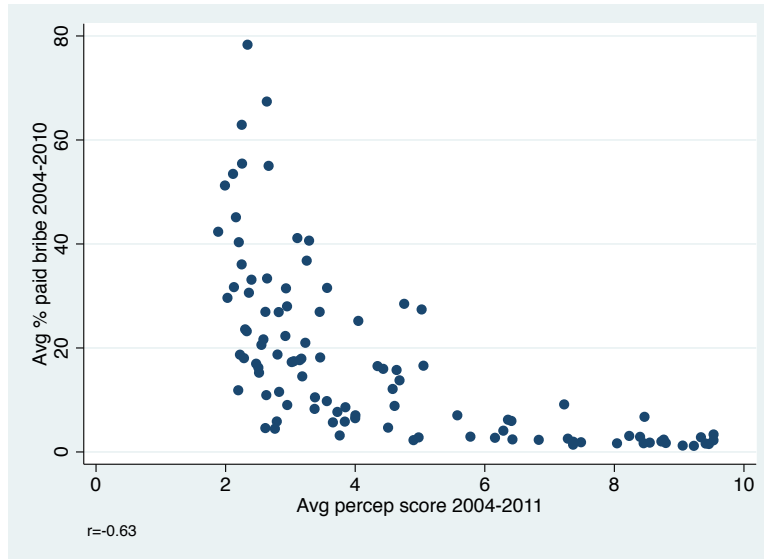
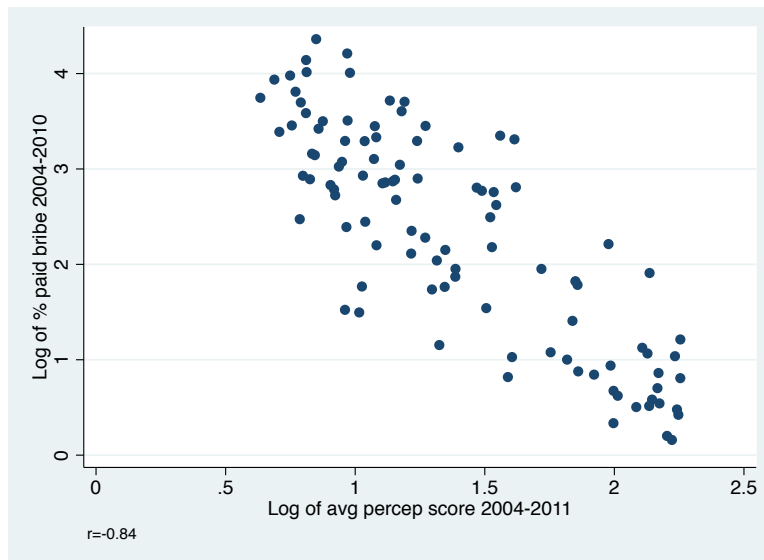


Figure A2 Logs of Experience and Perceptions



Note: Thanks to Daniel Treisman for sharing his data on multiyear averages.

The Corruption Perceptions Index is a composite measure based on twelve different data sources from eleven different institutions that capture perceptions of corruption within the previous two years. The CPI is scaled to measure “freedom from corruption,” so higher scores are better. Statisticians have detailed the qualities of a good composite measure (OECD/EC JRC 2008; Saisana, Saltelli, and Tarantola 2005), and some of these same scholars have examined the Corruption Perceptions Index.

The JRC analysis suggests that the new methodology for the Corruption Perceptions Index (CPI), besides being appealing for reasons of transparency and replicability, it is also conceptually and statistically coherent and with a balanced structure (i.e., the CPI is not dominated by any of the individual sources). Despite the high associations between the sources, the information offered by the CPI is shown to be non redundant (Saisana and Saltelli 2012a: 21).

Researchers have developed many other measures and proxies related to corruption. Besides asking individuals about their experiences or perceptions, investigators have used numbers of prosecutions, news stories, and tweets. Judgments within and across countries have been solicited from business people, professors, and other “experts.” Other research looks at the flip side of corruption, for example perceptions of impartiality, government efficiency, the rule of law, and the independence of civil servants or judges. One study created a seemingly objective measure based on how long it takes for a mistakenly addressed letter to be returned to sender. Still other researchers have created scales based on the existence and/or implementation of various laws, rules, rights, and institutions in a country. Finally, a number of composite indices exist, which try to combine the various measures. A for-profit organization has created a composite measure of governance, one element of which is the risk of corruption. One of the World Bank’s six composite indicators of good governance is called Absence of Corruption.

Across cultures and countries, these many measures of corruption and good governance turn out to be highly correlated. For example, the bivariate correlations among the Corruption Perceptions Index, the World Bank’s Rule of Law Index, and its Absence of Corruption measure all exceed 0.90. The CPI is correlated 0.91 with a composite of three quality-of-government indicators of the PRS Group’s *International Country Risk Guide* (ICRG).⁹ The CPI is also highly correlated with answers to two questions in the World Economic Forum’s Global Competitiveness Index (GCI): Irregular payments and bribes ($r=0.90$) and Diversion of public funds ($r=0.86$).

A number of researchers have recently developed new measures of corruption and the quality of governance. Remarkably, even though many of the authors developed the measures out of dissatisfaction with “corruption perceptions,” their new measures also turn out to correlate highly with the CPI.

Impartiality

Bo Rothstein and Jan Teorell (2012) criticized existing measures of corruption and governance as theoretically ungrounded. In response, they developed a new measure of “impartiality” in government. After a multi-year data collection effort, their measure turns

⁹ <http://www.prsgroup.com/about-us/our-two-methodologies/icrg>

out to correlate over 0.86 with measures such as the CPI and the various World Bank Worldwide Governance Indicators.

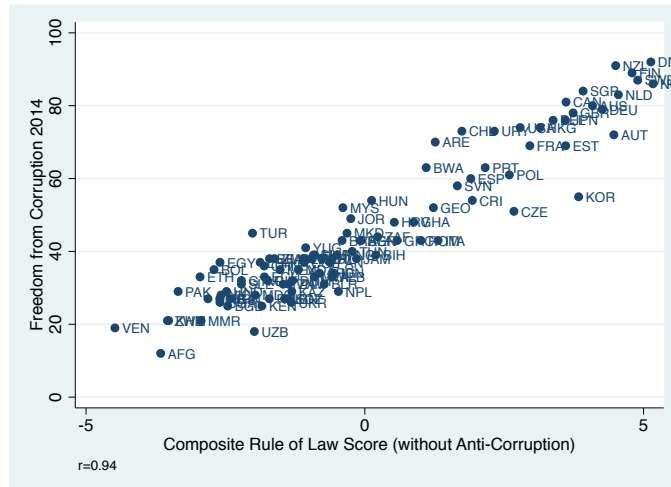
Rule of Law

The World Justice Project (WJP) decomposed “the rule of law” into eight dimensions: absence of corruption, constraints on government powers, open government, fundamental rights, order and security, regulatory enforcement, civil justice, and criminal justice (World Justice Project 2015). These eight were in turn disaggregated into 47 “sub-factors.” The WJP carried out two surveys in countries around the world, one of the public and another of local legal experts. The most recent iteration surveyed over 100,000 respondents and 2400 in 102 countries.

The WJP’s absence of corruption measure turns out to be correlated 0.95 with the Corruption Perceptions Index. What is more, the WJP’s dimensions of the rule of law are highly intercorrelated, despite their conceptual differences and wide variety of measures. An outside “statistical audit” of an earlier year’s results that the WJP’s dimensions “share a single latent factor that captures 81 percent of the total variance. This latter result could be used as a statistical justification for aggregating further the nine [the previous version included informal justice—RK] dimensions into a single index by using a weighted arithmetic average.” But the WJP does not wish to provide an aggregated measure: “This is not currently done, as the WJP team aims to shed more light to the dimensions of the rule of law as opposed to an overall index” (Saisana and Saltelli, 2012b: 2).

Using the latest WJP data, I created two composite rule of law indices using principal components. One of the indices uses all eight of the WJP’s dimensions; the other uses seven dimensions, leaving out anti-corruption. These two composite WJP indices are correlated 0.999. The WJP composite without the anti-corruption dimension turns out to be correlated 0.94 with the Corruption Perceptions Index (see Figure A3).

Figure A3 The Corruption Perceptions Index and the Rule of Law Composite Are Closely Related



Public Administration Corruption Index

Laarni Escresa and Lucio Picci (2015) painstakingly created another new measure of corruption across countries. Their Public Administration Corruption Index (PACI) is based

on the geographic distribution of public officials involved in cross-border corruption. The index examines 816 cross-border corruption cases pursued between 1998 and 2012 by courts in Germany and the United States with 122 foreign countries. The log of the authors' preferred version of the PACI turns out to be correlated over -0.85 with both the CPI and the World Bank's Control of Corruption Index.

Index of Public Integrity

In May 2016, a new Index of Public Integrity (IPI) was released for 105 countries. It combines expert judgments and objective indicators across six categories: judicial independence, "administrative burden," trade openness, budget transparency, "e-citizenship," and freedom of the press. The resulting IPI turns out to be correlated 0.89 with the 2014 CPI (Mungiu-Pippidi and Dadašov 2016: 17).

Business Bribery Risk

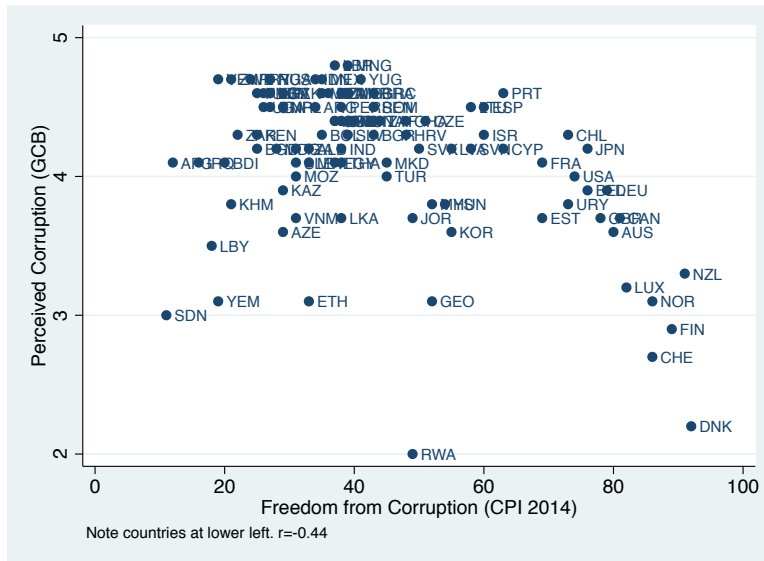
In collaboration with the RAND Corporation, the U.S.-based company TRACE International developed measures of "business bribery risk" in 199 countries.¹⁰ The overall country risk score is a combined and weighted score of four domains—Business Interactions with the Government, Anti-bribery Laws and Enforcement, Government and Civil Service Transparency and Capacity for Civil Society Oversight, including the role of the media—as well as nine subdomains. I calculate the overall risk score is correlated -0.84 with the CPI.

Exceptions

Not all measures are so closely connected. For example, the Global Corruption Barometer's Corruption Perceptions measure seems badly behaved in the statistical sense. Figure A4 shows this variable and the Corruption Perceptions Index. Note the strange pattern and the many apparent outliers. The correlations between this GCB measure and the other measures of corruption are significantly lower.

¹⁰ <http://www.traceinternational.org/trace-matrix>

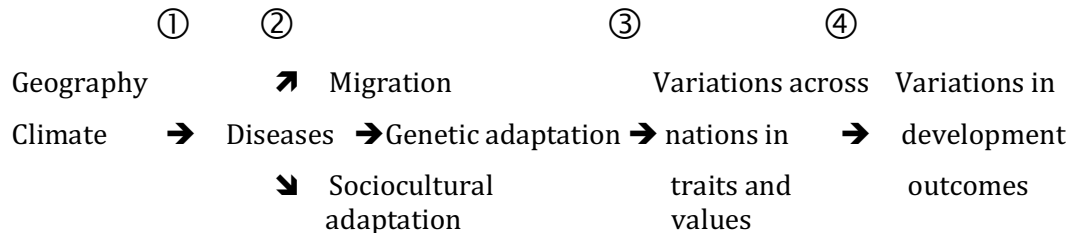
Figure A4 A Relationship that Demands Further Exploration



At the national level, many (but not all) indicators of good government are tightly enough related that, as a first approximation, we might say they are measuring the same underlying concept.

Annex 2 On Deep Roots of Culture and Corruption: A Framework for Analysis

Recent evolutionary theories of development investigate some of these links:



① Geography and climatic conditions create differences in disease environments (for a reviews, see Thornhill & Fincher 2014 and Fedderke, Klitgaard & Napolioni forthcoming a).

As one example, the intensity of exposure to ultraviolet radiation (UVR) lowers folate, increases oxidative stress, and increases immune suppression (switch from pro- to anti-inflammatory immune responses). The “faster evolution” hypothesis (Wright *et al.* 2003) argues that higher UVR near the equator increases evolutionary rates and species production through shorter generation times and faster mutation rates. One consequence: more and more rapidly evolving pathogens (Keesing *et al.* 2010).

② Different disease environments lead to three responses: migration; genetic adaptation (Fumagalli *et al.* 2011); and what Thornhill and Fincher (2015), following Schaller (2006), call “behavioral immune systems” in the form of cultural values and behaviors (Fedderke, Klitgaard & Napolioni forthcoming a)

For example, several genetic polymorphisms respond to the effects of lower folate, higher oxidative stress, increased immunosuppression, and more pathogens. Some of these adaptations have side effects in terms of various physical ailments, personality characteristics, and mental illnesses that differentially affect people carrying different genotypes (Willour *et al.* 2012; Bottini *et al.* 2002d; Napolioni *et al.* 2014). A range of cultural phenomena, such as individualism-collectivism, power distance, avoidance of strangers, emphasis on purity in food and sexual behavior, are correlated with historical disease environments.

③ Migration, genetic adaptation, and cultural adaptation lead to variations across countries in traits and values (Putterman and Weil 2010; Chanda, Cook & Putterman 2014; Spolaore & Wacziarg 2015).

“According to the parasite-stress theory, analytical cognition is optimal when parasite stress is reduced and therefore there is less need to construct and maintain strong and permanent in-group affiliations that function to offset the negative reproductive consequences from parasites” (Fincher & Thornhill 2012: 109). Parasite burdens are strongly associated with lower measures of intelligence (Eppig *et al.* 2010). Individualism as a cultural value decreases (and collectivism increases) in proportion to the group’s typical pathogen burden (Chiao & Blizinsky 2010; Way & Lieberman 2010; Cashdan & Steele 2013; Terrizzi *et al.* 2013). Pathogen burden

increases in-group favoritism and out-group negativity (Chiao & Blizinsky 2010) and promotes adherence to rigid prescriptive and proscriptive behavioral sanctions (Cashdan & Steele 2013). In turn, compliance with behavioral sanctions in disease-endemic regions is reinforced by socializing children to obedience rather than autonomy (Fincher *et al.* 2008). This constellation of tendencies reduces the potential for innovation and trust.

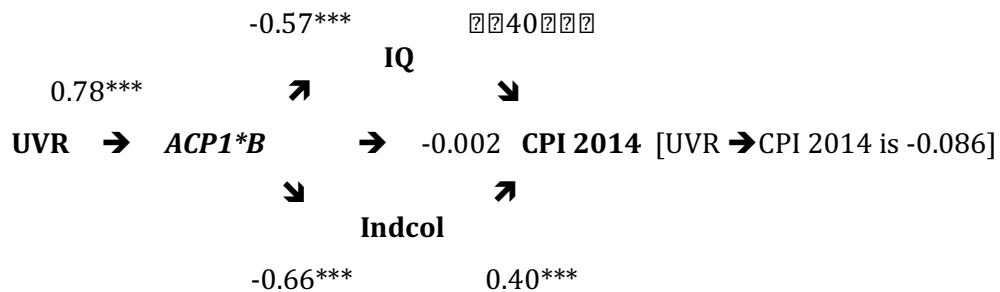
④ These differences in traits and values affect contemporary economic and political development (among many studies, Gorodnichenko & Roland 2011; Hofstede 2011; Maseland 2013; Alesina and Giuliano 2015).

Specifying and estimating these relationships runs into a host of conceptual, measurement, and statistical challenges. Unfortunately, our measures are incomplete and partial. We do not have data on the pathogen burden at historical dates relevant for evolutionary change; today's data on infectious disease burden have already benefited from the epidemiological transition that began around 1950 (Cook 2016). The effects of heat on mortality have changed greatly over the last century thanks to innovations such as air conditioning (Barreca *et al.* 2016). Since we cannot gauge the changing pathogen burden through history, our empirical work begins with the connection between UVR exposure and frequencies of a limited number of genes across national populations, after adjusting for ethnicity. We hypothesize that (1) our measure of UVR exposure has no direct, contemporary causal connection with development outcomes such as corruption and (2) geographic patterns of UVR exposure have not changed over time. Based on studies of individuals, we hypothesize that UVR affects various genes and behavioral adaptations, whose adaptations in turn affect such characteristics as IQ and Individualism, and these reductions then play out in terms of worse development outcomes such as worse levels of corruption.

The simple path analysis in Fig. 1—new for this paper—illustrates the approach. It examines the adaptations to UVR of a single genetic response: Acid phosphatase controlled by locus 1 (*ACP1*), an enzyme found in the cytoplasm of many tissues. *ACP1* seems to adapt to UVR exposure in order to reduce oxidative stress (Apelt *et al.* 2009). *ACP1* mediates the shift from pro-inflammatory to anti-inflammatory bias, and carriers of *ACP1*B* are less susceptible to heat stress and tropical diseases. These adaptations of *ACP1* have side effects in terms of various physical ailments, personality characteristics, and mental illnesses that differentially affect people carrying different *ACP1* genotypes (Willour *et al.* 2012; Bottini *et al.* 2002d; Napolioni *et al.* 2014).

We hypothesize that *ACP1* alleles frequencies also capture the effects of other genes that adapt to UVR and disease and in turn affect culture and behavior. Thus, the coefficient on *ACP1*B* in the model capture the effects of other genes; obviously, the model is incomplete. In addition, it does not account for possibilities reverse causation, nor does it examine the many other variables that affect the outcome. In ongoing work, we are building more complete models of the first paths in Figure 1 (Fedderke, Klitgaard & Napolioni forthcoming, a and b; Klitgaard, Fedderke, and Napolioni 2016).

Figure A6
 A Simple Path Analysis Shows How Individualism's Effects on Corruption May Stem from Ultraviolet Exposure and Genetic Adaptation (*ACP1*B*)



Note: This simple path model (based on Table A1 below) suggests that neither ultraviolet exposure (UVR) nor a single genetic adaptation to it (*ACP1*B*) have *direct* effects on Corruption today (their respective path coefficients are -0.086 and -0.002, neither statistically significant). Their effects come from their hypothesized evolutionary impacts on IQ and Individualism (indcol), which in turn affect levels of corruption perceptions (CPI 2014). The path coefficients are standardized regression coefficients, which convey what a one-standard-deviation increase in the variable means to the next variable in the path. They can be compared with the simple correlation coefficients: for Individualism, the path coefficient with CPI 2014 is 0.40 and the correlation coefficient is 0.64.

*** = significant at $p < 0.01$.

UVR = World Health Organization-derived ultraviolet (B) exposure, which reflects biological exposure per square meter (BD/m^2), with the continuous measure scaled by dividing each averaged ultraviolet radiation dose by half of the interquartile range (Anderson *et al.* 2016).

*ACP1*B* = national frequency of the *ACP1*B* allele, from Klitgaard, Fedderke & Napolioni 2016.

IQ = country mean level of measured intelligence, from Eppig *et al.* 2010,

Indcol = country mean of Hofstede's measure of individualism, from Hofstede *et al.* 2010.

CPI 2014 = Corruption Perceptions Index 2014, where higher scores reflect lower corruption (more "freedom from corruption").

| acp1_b | Coef. | Std. Err. | t | P> t | Beta |
|--|------------------|-----------------|--------------|--------------|------------------|
| uvdamage | .0009111 | .0000904 | 10.08 | 0.000 | .7809099 |
| _cons | .5515797 | .0170155 | 32.42 | 0.000 | . |
| n = 67 R2 = 0.6098 sqrt(1 - R2) = 0.6246 | | | | | |
| iq | Coef. | Std. Err. | t | P> t | Beta |
| acp1_b | -57.2214 | 10.29968 | -5.56 | 0.000 | -.5674195 |
| _cons | 131.4696 | 7.340893 | 17.91 | 0.000 | . |
| n = 67 R2 = 0.3220 sqrt(1 - R2) = 0.8234 | | | | | |
| indcol | Coef. | Std. Err. | t | P> t | Beta |
| acp1_b | -162.9087 | 23.27015 | -7.00 | 0.000 | -.6556504 |
| _cons | 157.4471 | 16.58535 | 9.49 | 0.000 | . |
| n = 67 R2 = 0.4299 sqrt(1 - R2) = 0.7551 | | | | | |
| Corrupt2014 | Coef. | Std. Err. | t | P> t | Beta |
| uvdamage | -.0216747 | .0389017 | -0.56 | 0.579 | -.0859771 |
| acp1_b | -.4234518 | 28.21452 | -0.02 | 0.988 | -.0019597 |
| iq | .8566972 | .2372823 | 3.61 | 0.001 | .399827 |
| indcol | .3450651 | .1039406 | 3.32 | 0.002 | .3967925 |
| _cons | -36.40647 | 31.00471 | -1.17 | 0.245 | . |
| n = 67 R2 = 0.6063 sqrt(1 - R2) = 0.6275 | | | | | |

Table A1 Results of the Path Analysis

| | Cor~2014 | indcol | iq | acp1_b | uvdamage |
|-------------|-----------------------|----------------------|-----------------------|----------------------|----------------------|
| Corrupt2014 | 1.0000 166 | | | | |
| indcol | 0.6406 88 | 1.0000 88 | | | |
| iq | 0.5553 165 | 0.5506 88 | 1.0000 182 | | |
| acp1_b | -0.4858 115 | -0.6557 67 | -0.6705 119 | 1.0000 120 | |
| uvdamage | -0.5205 166 | -0.7114 88 | -0.7278 182 | 0.7936 119 | 1.0000 184 |

Table A2 Matrix of Zero-order Correlations

Note: All the correlations are significant at $p < 0.01$. The numbers beneath the correlations are the numbers of countries included in each calculation.

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