The Shape of Corruption: Colombia as a Case Study

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Abstract
We examine corruption within a single country that is characterized by a stable democracy and thriving legal and illegal markets—Colombia. We focus on local, small-scale corruption, examining whether city officials solicit an extra payment when citizens seek to use public services. Using individual level data on bribe requests from citizens in 55 large and small cities in Colombia, measured over time from 2004-2011, we find that, for whole sample, and within the majority of Colombian cities, that the level of corruption is stable. The evidence that corruption is stable is disturbing. Corruption exchanges are one form of cooperative behavior. If cooperative production is stable, the result is likely to lead to economic growth. If cooperative predation is stable, it makes effective political change difficult to implement effectively, and it represents costly transfers, usually from the less well off to those who are better off. Corruption is a classic example of cooperative predation. Our results suggest that it is quite stable at different levels in most Colombian cities.

Introduction

Corruption, commonly defined as *"the use of public office for private gains*" (Swaleheen, 2011:23; Bardhan. 1997), is widely regarded as a vicious social problem: it is costly, robbing countries of economic growth in favor of costly transfers of money, often from the poor to the relatively more powerful gate-keepers or service providers. Solutions require independent, third party enforcement of "rules of law," a collective good that is likely to be impossible to impose exogenously where it is most needed (Batory, 2012: 71; Klitgaard, 1988). In other words, societies that are the most corrupt are also the most likely to find it impossible to impose or implement rules to effectively change the rules that govern the relation between those in the government and citizens (of any rank), even if they can change the formal rules (Manzetti and Blake, 1996).

We examine corruption within a single country that is characterized by a stable democracy and thriving legal and illegal markets—Colombia. We focus on local, small-scale corruption, examining whether city officials solicit an extra payment when citizens seek to use public services. Using individual level data on bribe requests from citizens in 55 large and small cities in Colombia, measured over time from 2004-2011, we find that, for whole sample, and within the majority of Colombian cities, that the level of corruption is stable. Despite efforts in Colombia to modernize its central and local governments, corruption appears to persist in some Colombian cities, especially in some cities where the conflict is persistent (e.g. Monteria, Valledupar, Puerto Asis, Cucuta). The most notable cities in Colombia (Bogota, Medellin, Cali, and Cartagena) are neither the least nor the most corrupt. We conclude that corruption clearly depends on context: the levels clearly differ with a single country; it follows that it may be more useful to study corruption within countries, rather than focus on between-country comparisons. The evidence that corruption is stable is disturbing. Corruption exchanges are one form of cooperative behavior. If cooperative production

is stable, the result is likely to be mutually beneficial exchanges that lead to economic growth. If cooperative predation is stable, it makes effective political change difficult, if not impossible, to implement effectively, and represents costly transfers, usually from the less well off to those who are better off. Corruption is a classic example of cooperative predation. Our results suggest that it is quite stable at different levels in most Colombian cities.

Theoretical background: Corruption equilibriums

Previous research in economics (and even biology) suggests that corruption is a state-dependent game, with two equilibriums. Roland and Verdier (2003) develop such an expectation in a formal model of this process, but they do not test it empirically. They frame the process as the decision by two randomly matched individuals to produce or "prey", based on the probabilities of getting caught, and the tax rate. The result is a multi-equilibrium model with a "good" equilibrium (little corruption), an opposite "bad" equilibrium, and no clear equilibrium in between them. Batory (2012) notes that the social costs of corruption are high and diffuse, and there is little or no individual utility, except for moral satisfaction (Klitgaard, 1988) to be realized from not being corrupt. The result is that corruption is likely to be particularly "sticky."

This account of dual equilibriums is similar to previous accounts of the evolution of cooperation as a form of Darwinian selection. In these accounts, the interaction of two randomly selected cooperative pairs results in a larger payoff than that from any other possible random pair-wise combination, where the probability of cooperation at time t depends on the probability at time t-1. In the model, there are two forms of cooperation. One is to cooperate in a corrupt exchange; the other is to cooperate in an uncorrupt exchange, under an externally enforceable contract, which may include future obligations. This implies that cooperation (no matter whether it is corrupt or not) is a repeated game, or, equivalently, that it is state-dependent, so the play at time t is dependent

on the previous play, at time t-1 (Boorman and Levitt, 1973; Axelrod and Hamilton, 1981). Another implication is that, with no exogenous shock to the environment, corruption is likely to be stable from one year to another.

In this particular model, the state-dependence is not linear. Instead, the model resembles the polynomial in Boorman and Levitt (1973), but it does not range from 0 (no cooperation) to 1 (all cooperate). Unlike Boorman and Levitt, this dual equilibrium model hypothesizes a hyperbolic tangent relation between corruption at time t-1 and corruption at time t. (See Fig. 1 and Weisstein, 1999.) The hyperbolic tangent ranges not from 0 to 1 but from -1 (total corrupt cooperation) to +1 (total non-corrupt cooperation), with cooperative equilibriums at the extremes, and unstable levels of corruption that lie between the tipping points (Roland and Verdier, 2003. (See also Hammond, 2000, for a different model with a similar expectation.) Bicchieri (1990) also develops a theoretical model of norms of cooperation in which the probability that tit-for-tat rather than "always defect" emerges as a rational strategy depends on the frequency with which others in the group are likely to play tit-for-tat. If the groups or societies in this model have repeated interactions, so that they are not totally independent or unaware of each other (that is, they are social), then this model also predicts two equilibriums, one cooperative and the other not. Callahan (2005) also argues that the world is not characterized by less and more social capital. Rather, he recognizes two equilibriums of "anti-social" and "social" capital; ironically, high levels of cooperation characterize both equilibriums.

Another set of models predicts multiple equilibriums (Bisin, Moro, and Topa, 2011; Bicchieri, 1990). In this case, the probability of action (e.g. smoking, crime, corruption, or even voting) depends on what others in the local group are doing (Krosnick and Judd, 1982; Norton, Lindrooth, and Ennett, 1998). Social interactions (i.e., the correlation between an individual's actions and the actions of her peers) may arise either from peer effects or self-selection. In these

cases, the equilibrium choice of each individual is dependent on the prevalence of the behavior in the individual's social group or network. Some equilibriums may be more "sticky" or stable than others.

The formal models agree that there should be dual equilibriums at the extremes, or multiple equilibriums, but they provide little systematic empirical evidence regarding this conjecture for understanding corruption. We partially fill this gap, using evidence from a country of many extremes, Colombia, which has both a thriving market in illegal cocaine trade, and a thriving legal market in petroleum and coffee exports. This is a country characterized by a long standing democracy (i.e. consistent elections during the last century), also afflicted by a long lasting guerrilla conflict which in the last decades worsened by the presence of paramilitary groups and other armed actors linked to criminal and illegal activities such as kidnapping and drug trafficking. In fact, the country was strongly identified during the 90s and early 00s as one of the failing states in the world, with vast areas of the country lacking any control from the government (Acemoglu and Robinson, 2012).

In a country of such extremes it would be likely to find some divergent situations in terms of corruption and illegal rent-seeking at the local level. Our focus is on local, small-scale corruption: we look at whether city officials request an extra payment when citizens seek to use city services. In this context, it is very likely that local norms and social interaction matters: requesting a bribe payment is hazardous when the solicited (bribed) is likely to turn the solicitor (briber) in to the authorities, but if requesting a bribe is likely to go unpunished and may even elicit the bribe, it would be quite rational to demand a bribe payment.

To test whether corruption is characterized by multiple equilibriums and time dependence in different social (i.e., local) communities, dual equilibriums, or none at all, we use data on corruption over time from 21 department capital cities and 34 villages and towns surveyed by the

LAPOP project. Those 34 towns include some of the areas in the country most affected by the presence of illegal armed forces. We use a simple linear model: if corruption is characterized by multiple and different "sticky" equilibriums in different social communities, then we expect that a regression of corruption on time within each local area will yield no trend for each area (because corruption is stable, or "sticky") and significant (and different) intercepts for each local area. If there are dual equilibriums (high and low), the intercepts will cluster around two values. If corruption is only time-dependent (and unstable) in each city, we expect that the trend variable will be significant (in any direction). It is also possible that corruption is both time dependent and place specific.

Description of data and variables

To measure corruption, we use individual level survey responses from 2004-2011 provided by the Americas Barometer of the Latin American Public Opinion Project (LAPOP) of Vanderbilt University[1], which offers data about actual (rather than perceived) corruption. The survey asked respondents how many times they have been requested to pay a bribe in the last 12 months in their interactions with a public official, the municipal government, the courts, the police, hospitals and schools, or in the context of their own work.

The specific questions are:

1) Did any public official ask you for a bribe in the last 12 months?
2) In order to process something in the municipality, a permit for instance, during the last year, has someone asked you to pay a bribe?
3) Have you had to pay a bribe at the courts during the past year?
4) Did any police officer ask you for a bribe in the last 12 months?
5) During the last 12 months, have you had to pay a bribe in order to be assisted in a hospital?

[1] We particularly thank professor Juan Carlos Rodriguez-Raga of Universidad de los Andes who provided ample access to the Colombian LAPOP data.

6) During the last 12 months, have you had to pay a bribe in a school?
7) At work, have you been requested to pay a bribe during the last 12 months?

We create a summative index of the total of the number of times a respondent has been requested to pay a bribe from each of the categories of bribes for each municipality for each year, which is subsequently our dependent variable.

Additionally, we use a number of independent variables to estimate our models. First, we use year of LAPOP survey as a time trend variable to capture temporal dependence, such that the level of bribes in a local area at time t is dependent on the level at time t-1. Second, not all in our study have the opportunity to be requested to pay a bribe. Opportunity matters considering that if the individual did not use any public services he might not be asked to pay a bribe for the service. Recognizing that those who had not chosen to use a particular service (i.e., a hospital, a court, the police) will not be asked for a bribe, we add a dummy variable to indicate exposure to an opportunity to be asked to pay a bribe. The variable has a value of 1 for those individuals who used the service in the last twelve months and 0 otherwise. We add another dummy variable with value 1 for all those individuals who actually answered the questions regarding bribes or exposure, and 0 for those who were asked but did not respond. In this way, we make use of statistical controls to mitigate problems of bias due to self-selection (choice to use a service; to respond to question). Finally, to test for equilibrium (constant) level of corruption in each city, we include a dummy variable for each city (Medellin is the reference city). If there are multiple equilibriums, we expect significant dummies for each individual city, and for most of the dummies to be different from each other.

Descriptive Statistics

The LAPOP data shows similar frequencies each year (Table 1) the survey has been applied.[2]

Table 1- Observations by year

Year	Frequency	Percentage
2004	1,483	12.40
2005	1,487	12.44
2006	1,491	12.47
2007	1,491	12.47
2008	1,503	12.57
2009	1,493	12.49
2010	1,506	12.60
2011	1,503	12.57

We use seven bribe variables that ask for different chances of corruption. Each of these variables asks whether the individual has been requested to pay a bribe while using a public service. According to the results in Table 2, the percentage of bribed individuals appears to be relatively low in the Colombian context. The most common request is from the police or from a city official to process a request (Table 2a). Most respondents have not been requested to pay a bribe; about 10% have been requested to pay one or two bribes (Table 2b). However, this situation might conceal local differences since some municipalities can be more prone to corruption than others. Thus, our purpose in this paper is to examine bribes at the city level over time across a sample of localities.

Table 2a - Bribes frequencies: by type of bribe

[2] Colombia is the only Latin American country that has been consistently surveyed by the LAPOP project every single year since 2004.

Variable	Observations	Frequency Yes	Percentage
Police bribe	11,922	681	5.71
Public official bribe	11,933	347	2.91
Municipality bribe	2,650	135	5.09
Own work bribe	7,004	293	4.18
Courts bribe	1,595	56	3.39
Hospital bribe	5,971	217	3.63
Schools bribe	5,161	126	2.44

Table 2b- Number of Bribes frequencies: total (0 includes all missing values, which means no bribe requested, or no use of city services, or no response to either survey question).

Total number of bribes requested[3]	Observations	Percentage
0	10,597	88.63
1	997	8.34
2	263	2.20
3	75	0.63
4	20	0.17
5	4	0.03
6	0	0
7	1	0.01

Bribes vary among Colombian cities and regions. The overall mean level of the bribe index is .16. The mean level of the bribe index in the city we use as the reference city, Medellin, the second city of the country, is .18, with a range from 0 to 4. Given the sample size in Medellin, this implies a rate of bribes requested from 3 in 10,000 citizens, according to the proportional sample size (not the total population). In general, the capital cities appear to show very low rates

[3] This shows how many individuals answered yes to each of the seven questions listed above .

per 10,000 inhabitants; however there are still variations among them. The capital of the country, Bogota, reports a mean of .21 (with a range of 0 to 7); given the large sample size from this very large city, the rate is just 1 in 10,000. Similarly, Cali, the most important city of Colombia's south west, reports a mean of .20 and a range of 0 to 4; the rate is 3 in 10,000.

However, other capital cities in the Caribbean coast show higher levels of bribe averages. Barranquila, the biggest city on the Caribbean coast, has a mean of .28 with a range of 0 to 5, and a rate of bribes requested from 8 in 10,000 citizens. Cartagena, another large city on the Northern coast, reports a mean of .19 and a range from 0 to 3; the rate is 8 in 10,000. Even more, those regions that have been traditionally associated with strong presence of illegal forces show high levels of bribe prevalence. It is clearly the case for Monteria, which has the highest mean of .36, with a range of just 0 to 3, and a very high rate of 37.5 in 10,000. Similarly, Valledupar has a mean of 0.23 and Santa Marta 0.18, which appear high for cities that do not exceed 300,000 inhabitants.

Interestingly, the smaller cities show interesting differences across regions. There is clearly a high level of bribing in areas affected by the conflict, where the state is also less present. For instance, Rosas, in the Cauca department (0.25), and the Cauca department capital, and Popayan, (0.15) have relatively high means. Similarly, Puerto Asis in the Putumayo region (0.19), Cucuta, the capital of the border region of Norte de Santander (0.29), and Villavicencio, the point of entrance to a traditionally afflicted area (0.32), also report relatively high bribe frequencies.

At the other end of the scale, we found that very small towns appear to exhibit very low prevalence of bribes according to the LAPOP survey. For instance we find the cities of Quinchia (in Risaralda) and San Martin (in Cesar), with means of .04, ranging from 0 to 2 bribes requested, and rates of 1 in 10,000. Other remarkable cases in this group of small towns and villages are those in the Departments of Boyaca (Sutamarchan and Tunja, with means of .07 and .11 respectively) and Tolima (Coyaima and Icononzo, with means of .09). (Table not shown.)

Table 3 shows that 21% of the respondents in our sample reported using at least one public service in the last year, and Table 4 shows that about one quarter of the respondents in our sample actually answered the question (one way or the other) about use of public services and bribe request.

Table 3- Frequencies: Use of Public services

Use of Public Services	Observations	Percentage
No	9,385	78.49
Yes	2,572	21.51
Total	11,957	100.00

Table 4- Frequencies: Response to question about use of services or bribes

Responses to question about use of services	Observations	Percentage
No	8,949	74.84
Yes	3,008	25.16
Total	11,957	100.00

We create a time series, cross-section design using individual responses for each type of bribe for each of the 55 municipalities (21 department capitals and 34 towns) included in the LAPOP sample for each year. Thus we have repeated measures for independent samples of respondents in each city for each year. We also create a municipality bribe index by summing the seven bribe requests for each city or town for each year.

We estimate two sets of regression models that test for (linear) time dependence and stability. The first model examines the entire sample of individual respondents in each city over

time. If multiple equilibriums and temporal stability characterize the data, then the trend variable will not be significant and the separate city dummies will be significant and different from each other. If there are dual equilibriums, then the separate city dummies will cluster at high and low values (and the trend will not be significant). The second model examines whether there is a trend (or stability) within each city. In all cases, we expect that exposure to corruption by choosing to use city services elicits more requests for a bribe.

We use a zero inflated Poisson regression to estimate the model parameters. We do this for several reasons. First, our data are count data that are absolute frequencies that cannot take on a value that is less than zero. Second, it is unlikely that the stochastic term will be normally distributed, since the probability of observing zero or a low number of bribes (as with any illegal behavior) is (exponentially) much higher then the chance of observing a large number of bribes. Third, we use a Poisson model because the mean of the dependent variable (.15) not significantly different from the variance (.24). Fourth, we need to condition the model because there are two types of respondents who can respond that they had zero requests to pay a bribe for city services: those who used city services but really had no bribe requests, and those who either used no services or failed to respond to the survey questions. The zero inflated Poisson regression jointly estimates each component of the model. The first (the zero inflation) estimate is from a logit regression, where the dependent variable is a 0 (for any reason) or a 1, which means the respondent reported bribes (of any number), and the independent variables are whether the respondent used city services (yes or no) and whether the respondent answered the questions on city services or bribes (yes or no). The second equation (the Poisson) regresses the 0-inflated bribe index on time and city dummies. Because of social interaction within local areas, we expect that the variance of the residuals will be smaller within than between cities; hence we report clustered standard errors. We also report estimates for each city.

Results

Table 5 reports the results. The inflation adjustments are significant; however, that is no surprise when the N is large. Nonetheless, the effect size of the inflation adjustment variables is substantively small. Use of public services actually appears to reduce the request for bribes, while responding to the question appears to have the opposite effect of the same small magnitude. This may suggest that those who are bribed are less likely to respond to these questions in the first place.[4] This is even more likely to characterize areas where illegal groups have been present: the individuals in these areas may be especially less willing to reveal or report illegal activities, even in an anonymous survey.

With respect to the main regression, the trend is not significant, implying that corruption is not state or temporally path dependent. However, most of the dummies are significant, implying stability in each local area. Of the 55 city dummies, 33 have significantly lower intercepts than the reference city of Medellin (meaning IRRs of .90 or less), while 9 have significantly higher intercepts than Medellin (meaning IRRs of 1.1 or more). Thus, most of the cities have fewer bribes requested than in Medellin. These cities include many of the smaller municipios in Colombia (Abejorral, Bello, Caldas, San Juan Nepomuceno, Sutamarchan, Manzanares, Padilla, Cerro de San Antonio, Quinchia, Santuario, Riofrio, and Mitu, for example). This is not surprising given the lower chance that an individual in a small town with fewer (and poorer) public services is solicited to pay a bribe..

[4] We also estimated the model using a Poisson regression of bribes requested on time, the two opportunity variables (use of city services; responded to the question), and city dummies. The model fit is slightly worse (since the log likelihood fit is 5522 in the Poisson and slightly better at 5310 in the zero-inflated Poisson regression). However, in the simple Poisson, the two opportunity variables, used as statistical controls remain significant and have the expected signs: those who report using city services report a higher incidence rate ratio of bribes requested, and those who do not answer the question also are more likely to report fewer bribes requested. The results for the theoretically relevant trend variable and the city dummies do not change in any substantively meaningful way from the results reported below.

It might also be due to the existence of social capital networks in small villages and rural areas that rule out the presence of money bribes in exchange for non-cash "payments".

The cities where more bribes are requested than Medellin include the Caribbean cities of Barranquilla and Monteria, but also some smaller capital cities like Villavicencio and, arguably, Cucuta, Armenia, and Pereira. It is notable that the largest, most prominent cities in Colombia are not different than Medellin (i.e., Bogota, Cali, and perhaps Cartagena). This reflects the strong coexistence, especially in the context of the largest Colombian cities, of modern practices of government (e.g., merit based procedures, strict procedures in contracting out) with entrenched illegal structures and informal rules schemes that favor political patronage, clientelism and cronyism, which finally lead to greater corruption levels. This is clear evidence of multiple equilibriums, if not dual equilibriums. In all cases, the estimated value of the intercept dummy is not "large", ranging from an incidence rate ratio of 1.5:1 more bribes requested (and sometimes larger) than in Medellin to about .5:1 fewer bribe requests (or even less). However, while no estimate is especially "large" at the individual level, where the incidence of bribes is low (ranging from 0 to 7, with a mean less than 1), an IRR of .5:1 (or 1.5:1) implies 50% fewer (or more) bribe requests for each 100 respondents.

There are four elements that might explain this difference between the capital cities and smaller towns. First, the large capitals have a greater range and variety of public services to offer, which can make bribing a more frequent outcome. Medellin and the 9 other capital cities, as expected considering their size and greater range of public services, exhibit more opportunities for corrupt exchanges between citizens and city workers for city services than smaller towns in Colombia. This pattern is stable during the years of our study, despite efforts by the Colombian government to modernize its central and local governments (Sanabria, 2010). Second, it could also be possible that non-monetary exchanges (e.g., bartering instead of bribes) take place in towns

with small populations. Third, it makes sense that bribes are less frequent in those areas where the Colombian state has a weak presence (i.e. there are no public officials to bribe). Fourth, in those areas afflicted by the guerrilla or the paramilitary conflict, citizens may be less willing to report any kind of illegal activities (including bribes).

We also estimated regressions (both OLS and Poisson) for each of the 55 cities in our study. (Results available but not shown.) With few exceptions, there is no trend; in other words, within each city, the number of bribes has not changed during the 7-year duration of our study. There are some interesting exceptions. There is a clear downward trend in Bogota, the capital city: the coefficient is -.02 ($p<.03$), indicating 2 bribes fewer per 100 persons each year. Despite recent corruption scandals that have afflicted most of the high scale infrastructure projects in Bogota that have involved private contractors, the downward trend might indicate that although the city has advanced in the control of small corruption in public services (i.e. bribes), illegal rent seekers have been very effective to affect public contracting. In fact, corruption scandals have affected most of the contracting out of high scale infrastructure in the country in the last years. It is possible that bribes in contracting are far more lucrative than bribes from citizens for municipal services or (less) policing; thus corruption in contracting may crowd out small corruption in public services. There is also a downward trend in Pelaya (-.07, $p<.00$) and in Cucuta (-.09, $p< .01$), and in Puerto Asis (-.06, $p< .05$). On the other hand, in Cartagena the trend is significant ($p<.02$) in the opposite direction; the coefficient is .05, indicating 5 more bribes offered per 100 people each year; the same is true in Muzo and Combitara. There is no significant trend in any other city.

< INSERT TABLE 5 HERE>

Discussion and Conclusion

It is good news if cooperative production is stable; it is very bad news if cooperative predation is stable, because it makes effective political change difficult, if not impossible, to implement effectively. Corruption is a classic example of cooperative predation. Our results suggest that it is quite stable at different levels in most Colombian cities.

Even though corruption appears to be dependent on context, it is important to understand its sources. In some theories (e.g., rotten apples), corruption is associated with individual-level characteristics and values (Batory, 2012). In other theories (e.g., rotten barrels), context is more important than individuals: the implication is that institutional norms and rules are more important than individual characteristics and values in determining whether public employees cooperate in corrupt activities (Langbein and Jorstad, 2004). Future research will examine these theories empirically by estimating two models of who is willing to offer a bribe payment. The first model hypotheses that the decision to cooperate in paying a bribe resembles an individual level demand function, where willingness to pay is a function of price, tastes and preferences (values), income, and the price of substitutes (and complements). Specifically, the individual level model will use as the dependent variable whether the respondent paid a bribe for a particular service (e.g., hospital). The survey does not ask how much the bribe cost, but we assume that the price is constant for all respondents within the same city. We expect that bribes are probably a normal good, which means that the willingness to pay increases with income; it is also possible that bribing is an inferior good, which means that the willingness to pay decreases with income. In either case, we include income in the individual model. We measure tastes and preferences with indicators of education, occupation (white collar, blue collar, labor, and unemployed) and indicators of pro-social

values, and, in the case of hospital, age. We measure the costs of substitutes by including indicators of the number of alternative providers of the service in the respondent's area of residence (e.g., # of hospitals). We expect that more competition will reduce the willingness to pay a bribe. The second model incorporates individual level variables from the first model, but adds contextual characteristics, including departmental average income, education, and occupation; departmental average levels of bribing, departmental dependence on legal compared to illegal economic activities; and departmental fixed effects.

If corruption is state dependent and characterized by dual (or multiple) equilibriums, it is likely that the contextual model (the barrel + the apples) will dominate the individual model (apples only). If the contextual variables that we use are important, the policy implications are that a focus on substitutes (e.g. number of hospitals, and relative dependence on legal compared to illegal markets) may be useful in controlling corruption, especially in unstable areas that are not (yet) in a corruption equilibrium.

Our results in this paper add to existing research on the control of corruption in several ways. First, it offers an empirical test of a commonly expected theoretical model of corruption. We find that corruption (in Colombia) is characterized by local equilibriums; the equilibrium appears to be context dependent, since different cities have different and stable levels of corruption. If corruption is characterized by dual (or multiple) equilibriums, the policy implications are rather dismal. Second, and perhaps most important, we examine corruption within a country rather than corruption across countries. Corruption is undoubtedly contextual; this implies that it varies within countries. Even relatively "clean" countries have sub-areas where corruption continues to thrive, as it has for centuries. Thus, it is more useful to study corruption within countries than across countries. We focused on Colombia to illustrate our conjectures.

We do not make any strong causal claims about the determinants of corruption. Rather, we focus attention on its stable, context-contingent appearance. An implication from this study is that it is both hard to ruin non-corrupt polities and to root out corruption when it is firmly planted. Accordingly, we find evidence of equilibriums in corruption. It is likely that each corruption equilibrium may have different institutional roots: the institutional conditions that account for corruption in one place may not work the same way in another context (Bednar and Page, 2005). At the cross-national level, there are many types of corruption (Johnston, 2005). Cross national institutional diversity (Ostrom, 2005) makes different forms of corruption inevitable, and implies that multiple causes of corruption are very likely and are probably specific to each country. Similarly, there is institutional and economic diversity within countries: legal economic opportunities vary within nations, possibly in accord with the adversity of the climate and geopolitical history. Corruption survives in corrupt institutions, which corrupt politicians have little incentive to change. Fortunately, by the same logic, it is equally hard to alter uncorrupt institutions.

Our analysis, however, is at the individual level. We do not know why some citizens chose to pay bribes when given the opportunity, while others do not. We suspect that prevailing social norms matter, even in different institutional settings (Langbein and Jorstad, 2004). Our continuing research investigates who chooses to pay and play, and who does not.

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Figure 1: The hyperbolic tangent.

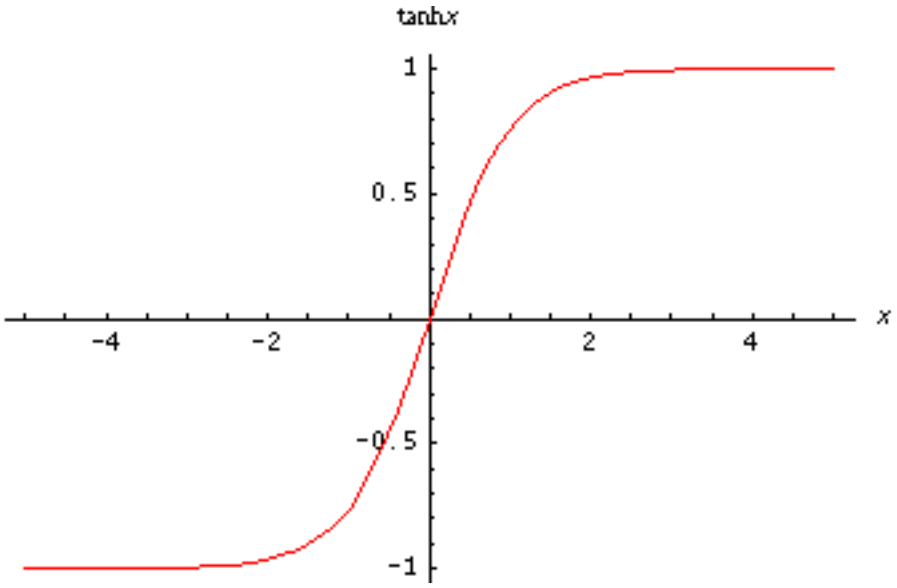

Table 5: Regression of bribes offered on opportunity for bribe, city and time trend (Zero-inflated Poisson estimates, standard errors adjusted for clustering within city).

DV: Bribe Index	Zero Inflated Poisson Estimates	z-scores	P>|z|
Year	0.978	-135	0.178
	(0.016)		
Abejorral (Antioquia)	0.576	-65.55	0.000
	(0.005)		
Belo (Antioquia)	0.668	-36.48	0.000
	(0.007)		
Caldas (Antioquia)	0.731	-53.59	0.000
	(0.004)		
Marinilla (Antioquia)	1.002	0.12	0.901
	(0.017)		
Barranquilla (Atlantico)	1.547	33.19	0.000
	(0.020)		
Soledad (Atlantico)	1.259	30.09	0.000
	(0.010)		
Bogota D.C.	1.102	18.43	0.000
	(0.006)		
Cartagena (Bolivar)	1.085	7.41	0.000
	(0.012)		
San Juan N. (Bolivar)	0.470	-108.72	0.000
	(0.003)		
Tunja (Boyaca)	0.592	-61.15	0.000
	(0.005)		
Muzo (Boyaca)	0.807	-18.74	0.000
	(0.009)		
Sutamarchan (Boyaca)	0.385	-110.88	0.000
	(0.003)		
Manizales (Caldas)	1.278	31.91	0.000
	(0.010)		
Manzanares (Caldas)	0.337	-158.4	0.000
	(0.002)		
Florencia (Caqueta)	1.128	23.72	0.000
	(0.006)		
Popayan (Cauca)	0.792	-76.54	0.000
	(0.002)		
Padilla (Cauca)	0.420	-132	0.000
	(0.003)		
Rosas (Cauca)	1.014	0.44	0.657
	(0.031)		
Valledupar (Cesar)	0.917	-7.93	0.000
	(0.010)		
Pelaya (Cesar)	0.451	-67.44	0.000
	(0.005)		
San Martin (Cesar)	0.219	-228.87	0.000
	(0.001)		
Monteria (Cordoba)	1.765	26.74	0.000
	(0.037)		
(Ayapel (Cordoba)	0.552	-81.54	0.000
	(0.004)		
Facatativa (Cundinamarca)	1.190	39.61	0.000
	(0.005)		
Soacha (Cundinamarca)	0.643	-46.07	0.000
	(0.006)		
Neiva (Huila)	0.478	-162.97	0.000
	(0.002)		
Mitu (Vaupes)	0.371	-80.55	0.000
	(0.005)		
inflate			
dummyopp	-1.146	-4.71	0.000
	(0.243)		
dummyquestionopp	1.012	4.11	0.000
	(0.246)		
Observations	11,957		

DV: Bribe Index	Zero inflated Poisson Estimates	z-scores	P>|z|
Santa Marta (Magdalena)	0.937	-14.28	0.000
	(0.004)		
Cerro San Antonio (Magdalena)	0.344	-138.33	0.000
	(0.003)		
Villavicencio (Meta)	1.469	21.89	0.000
	(0.026)		
Guamal (Meta)	0.978	-2.84	0.005
	(0.008)		
Pasto (Narino)	1.114	14.09	0.000
	(0.009)		
Cumbitara (Narino)	0.764	-25.38	0.000
	(0.008)		
Sandona (Narino)	0.763	-100.79	0.000
	(0.002)		
Cucuta (Norte de Santander)	1.373	21.54	0.000
	(0.020)		
Armenia (Quindio)	1.377	21.66	0.000
	(0.020)		
Pereira (Risaralda)	1.204	12.1	0.000
	(0.018)		
Quinchia (Risaralda)	0.237	-152.57	0.000
	(0.002)		
Santuario (Risaralda)	0.407	-90.68	0.000
	(0.004)		
Bucaramanga (Santander)	0.840	-26.09	0.000
	(0.005)		
Confines (Santander)	0.552	-71.27	0.000
	(0.005)		
Rionegro (Santander)	0.494	-93.07	0.000
	(0.004)		
Chalan (Sucre)	0.452	-21	0.000
	(0.017)		
Majagual (Sucre)	0.773	-40.38	0.000
	(0.005)		
Morroa (Sucre)	0.853	-8.36	0.000
	(0.016)		
Ibague (Tolima)	1.023	1.94	0.052
	(0.012)		
Coyaima (Tolima)	0.461	-117.01	0.000
	(0.003)		
Icononzo (Tolima)	0.498	-102.35	0.000
	(0.003)		
Cali (Valle del Cauca)	1.072	14.34	0.000
	(0.005)		
Buga (Valle del Cauca)	0.638	-179.89	0.000
	(0.002)		
Florida (Valle del Cauca)	0.698	-71.51	0.000
	(0.004)		
Riofrio (Valle del Cauca)	0.417	-140.75	0.000
	(0.003)		
Monterrey (Casanare)	0.679	-119.7	0.000
	(0.002)		
Puerto Asis (Putumayo)	0.995	-1.58	0.115
	(0.003)		