24 Corruption and crime

Omar Azfar[1]

One of the fundamental roles of government is to protect the lives and property of citizens from criminals. We would expect corruption to lower the effectiveness of law enforcement, leading to higher crime rates. Criminals may bribe the police and avoid punishment, while corruption in the hiring process may undermine the quality of the judiciary and the police force. Anecdotal accounts suggest that corruption does indeed affect the police force and both the willingness and ability to commit crimes. However, previous studies have found only a weak relationship between corruption and crime.[2] In ongoing work at the IRIS Center of the University of Maryland, we examined the links between corruption and two kinds of crime: theft and homicides. In each case we found a significant relationship, with higher levels of corruption associated with more crime.

Theft

There are two possible sources of data on theft: Interpol, for a large number of countries; and the International Crime Victimisation Surveys (ICVS), for a smaller number. However, the Interpol data comes from police sources and is unreliable, because crimes may not be reported to the police, and crimes may not be reported by the police to international agencies. This under-reporting is large in magnitude, and the rate of under-reporting itself is highly correlated with corruption (see Soares in this report, page 289). Average crime rates calculated from the ICVS are measured with some noise but there is likely to be less bias. Hence, we used data on crime incidence from the ICVS.

The ICVS collects data from approximately 1,000 respondents in 67 countries. Data is collected on both crime rates and crime reporting rates for a variety of crimes including burglary, robbery, bribery, fraud and assault. Of these crimes theft is by far the most prevalent, and hence measured with the greatest accuracy. Across the sample of 67 countries, 16.2 per cent of respondents had been the victim of a theft of personal property (other than car-related crimes) in the past two years.

We found the rate of theft to be highly correlated with the World Bank Institute measure of corruption.[3] This relationship remained statistically strong after controlling for various factors like inequality, urbanisation, literacy, contract enforcement and legal origin.[4] Figure 24.1 depicts the relationship.

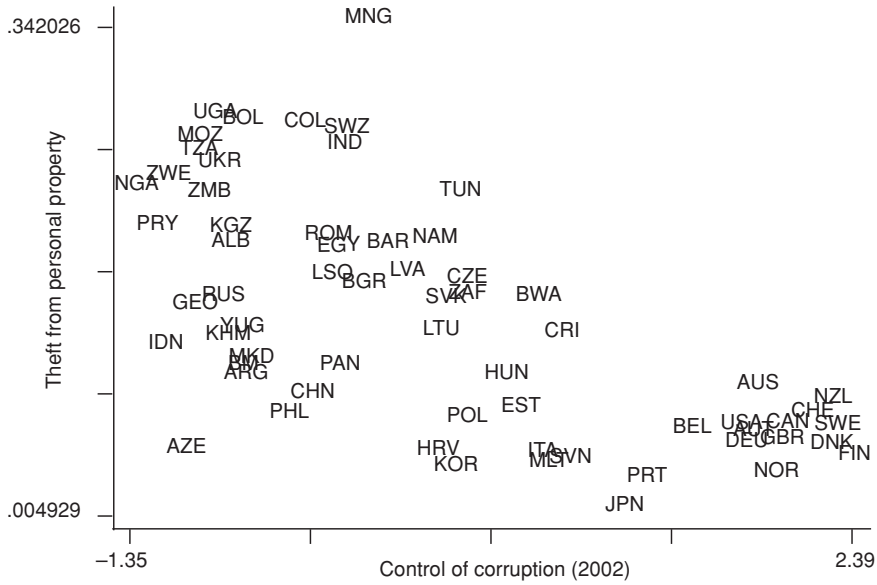

Figure 24.1: Corruption and theft

The relationship between corruption and theft was also found to be significant in an instrumental variables regression, which suggests that the link is a causal one.[5] If it is correctly interpreted as causal, then reducing corruption by one standard deviation – from the level of India to that of South Korea – would reduce theft by approximately 4.4 thefts per 100 people every two years. In global terms this would represent a reduction of hundreds of millions of thefts a year.

Homicides

There are two possible sources of data on homicides: the World Health Organisation (WHO), which publishes statistics on mortality for various causes including homicide; and Interpol, which publishes police-reported statistics on homicides. Again, there are questions about the accuracy of the Interpol data. Besides possible misreporting, there are also some definitional problems: the Interpol definition of homicides includes attempted homicides, but the data provided by police forces often excludes attempted homicides. In addition, we found the difference between the WHO and Interpol numbers to be correlated with the level of corruption – one possible explanation is that homicides are less likely to be reported to or by the police in poorly governed countries. We therefore used the WHO data.

We found a very strong correlation between homicide rates and the level of corruption.[6] This relationship remained large and significant after controlling for income, inequality, schooling and ethnic fractionalisation.[7] The relationship remained significant in an instrumental variable regression that tested for causality.

Figure 24.2 shows the relationship between homicides and corruption. Improving a country's corruption score by one standard deviation – from the level of Ukraine to Slovakia, or from the level of Brazil to Cost Rica – would reduce the homicide rate by 50 per cent. For Brazil alone, this would imply a reduction in homicides of more than 10,000 per year. Globally a reduction in homicides of this magnitude would reduce homicides by hundreds of thousands of deaths a year.

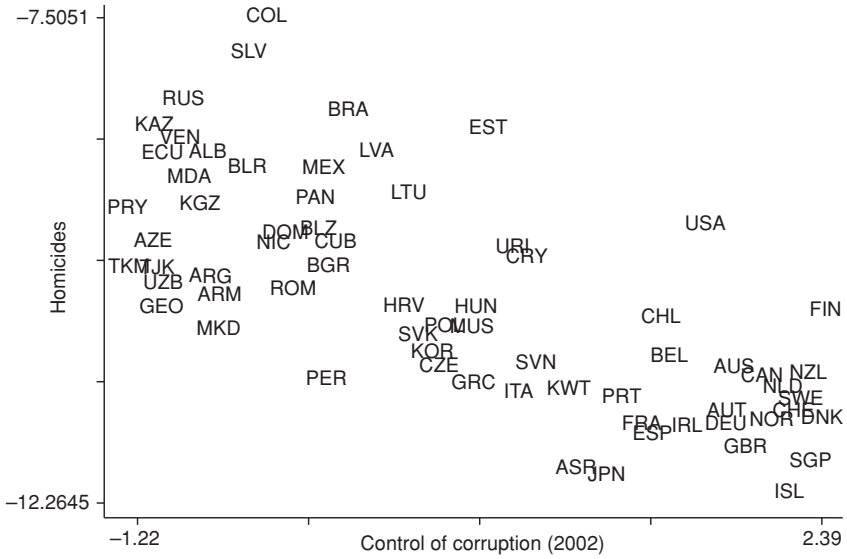

Figure 24.2: Corruption and homicides

The relationships we found are evident even with the highly imperfect data on crime. We hope that the quantity and quality of the data will improve in future and that more sophisticated analyses will become possible. In addition, there needs to be an examination of the mechanics by which corruption facilitates crime. Once these links become clearer, it may become possible to use the evidence on corruption and crime as a way to mobilise public opinion against corruption more effectively.

Notes

1. Omar Azfar is a research associate at the Center for Institutional Reform and the Informal Sector at the University of Maryland, United States. Contact: omar@iris.econ.umd.edu
2. Daniel Lederman, Norman Loayza and Rodrigo Soares, *Accountability and Corruption: Political Institutions Matter*, mimeo (Washington, DC: World Bank, 2004).
3. The correlation coefficient was 0.65. See Omar Azfar and Tugrul Gurgur, *Crime, Crime Reporting and Governance*, mimeo (IRIS, University of Maryland, 2004).
4. T-stat = 3.00, easily significant at the 1 per cent level.
5. The relationship was significant at the 5 per cent level. The instruments were whether a country was democratic in 1946, whether it was ever colonised, whether there was malaria

in 1946 (as a proxy for settler mortality), and the interaction terms of 'ever-colonised' multiplied with 'malaria in 1946' (as settler mortality should have a larger impact in colonies). The first stage regression explained 80 per cent of the variation in governance and easily passed the Over-Identifying Restrictions Test.

6. The correlation coefficient was 0.73. See Omar Azfar, *The Rule of Law, Corruption and Homicides*, mimeo (IRIS, University of Maryland, 2004).
7. T-stat = 3.86, easily significant at the 1 per cent level.

25 Measuring corruption: validating subjective surveys of perceptions

Rodrigo R. Soares[1]

Objective data on corruption and institutional quality are rare, even though recent initiatives have shown that household surveys can be quite effective as a source of information on individuals' experiences with corruption. Due to data availability, virtually all the empirical work in the area has focused on subjective surveys of perceived levels of corruption and public sector efficiency, and there is no objective evidence of the adequacy of such indicators. It is therefore essential to search for alternative data sources, in order to substitute, or at least validate, subjective surveys. One option is to look for data generated by individuals' actual behaviour in situations where it should be affected by corruption, such as the rate of crime reporting.

The rate of crime reporting is the proportion of crimes committed that is reported to the police, and can be estimated by dividing the official crime rate by the crime rate obtained in victimisation surveys.[2] In principle, the rate of crime reporting should be correlated with several dimensions of institutional development that researchers are interested in, such as confidence of citizens in the system, efficiency of public services, sense of civic duty and, particularly, corruption. Corruption can reduce the gains from reporting a crime through something like a tax on the recovered good. In addition, it reduces the efficiency of the police force, since it increases the probability that the force is actually working together with the criminals.

The credibility of existing corruption indices would be reinforced if they were strongly correlated with the rate of crime reporting. To test this possibility, the rate of crime reporting was constructed using two international data sources: the International Crime Victimisation Surveys (ICVS) and the United Nations Survey of Crime Trends and Operations of Criminal Justice Systems (UNCS). The behaviour of this reporting rate was compared to the International Country Risk Guide (ICRG) corruption index. The data used were averages for the first half of the 1990s. Data for both reporting rates and the corruption index exist for roughly 40 countries, including several Western and Eastern European countries, North America, and some Asian, African and Latin American countries.

The fraction of the total number of crimes reported to the police varies widely across countries and across different types of crimes, from virtually zero (as for thefts in Egypt or India) to almost one (as for burglaries in Austria and Finland). The relationship between these rates and the ICRG corruption index is illustrated in Figure 25.1, with

the reporting rates of burglaries. Countries classified as having low corruption report, on average 37 per cent of the burglaries committed, while countries classified as having high corruption report only 3 per cent. The same pattern is present when we look at other crimes, such as thefts or violent crimes, though the differences are not so large. The simple correlation between the corruption index and the reporting rate is 0.41 for burglaries, 0.65 for thefts, and 0.62 for violent crimes (in the ICRG index, higher values correspond to lower corruption).

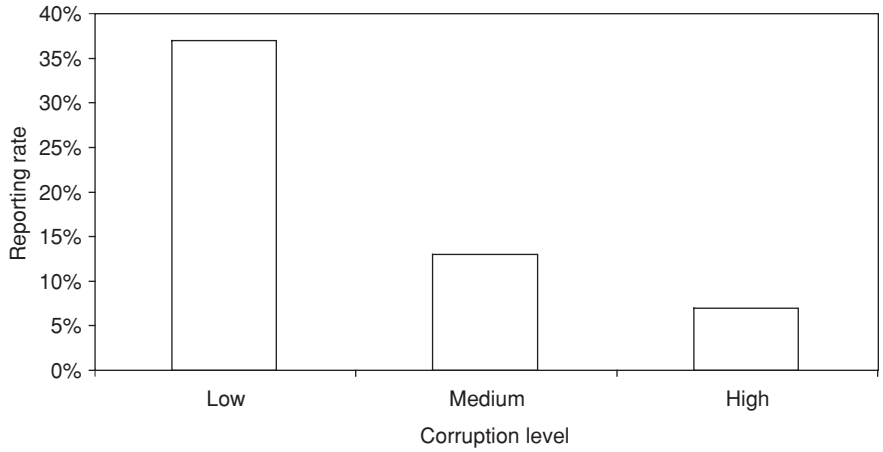

Figure 25.1: Reporting rate of burglaries according to corruption levels, country averages, 1990s

This correlation does not seem to be spurious, or generated by the indirect relation of some other variable to corruption and reporting rates. Data from several international sources show that crime reporting is strongly related to institutional stability, police presence and perceived corruption. This is true even when the analysis controls independently for the number of years under an uninterrupted democratic regime, a variable widely known to capture the degree of political stability in the system.[3]

The statistical analysis implies that if Russia reduced its perceived level of corruption to that of the United States, reporting rates of burglaries would increase from 1.8 to 5.7 per cent, reporting rates of thefts would increase from 3.1 to 6.1 per cent, and reporting rates of violent crimes would increase from 1 to 1.84 per cent. Perhaps more importantly, the evidence supports the use of subjective surveys of perceived corruption as a measure of actual corruption.

Notes

1. Rodrigo R. Soares is an assistant professor of economics at the University of Maryland (contact: soares@econ.umd.edu).
2. Victimisation surveys are less subject to underreporting than official crime statistics. This phenomenon is truer of 'economic crimes' such as thefts and burglaries than of crimes

associated with social stigma, such as domestic violence and sexual crimes, for which even victimisation surveys give an underestimate.

3. This analysis also controlled for the other dimension of the ICRG corruption index – the 'political risk' involved in corruption – that might be thought to bias the results. For full results, see Rodrigo R. Soares, 'Crime Reporting as a Measure of Institutional Development', *Economic Development and Cultural Change* 52 (2004).

26 How far can we trust expert opinions on corruption? An experiment based on surveys in francophone Africa

Mireille Razafindrakoto and François Roubaud[1]

Traditionally we have relied on expert opinions for our understanding of the incidence of corruption – and more widely of bad governance. An alternative approach, based on public opinion polling – tracking both the perceptions and the experiences of the public – is emerging, albeit not so frequently employed because of the substantial financial and human resources needed for a representative sample to be surveyed and statistics to be updated on a regular basis.

Although initially heavily criticised, expert panels have acquired a degree of legitimacy, for several reasons. First, there is sufficient correlation between indicators based on different, independent expert panels. Second, a growing number of studies have established the link between these indicators and economic growth, investment, international trade and poverty. Nevertheless, there is no proven link between these expert perception indicators and the actual level of corruption, which is the subject of this chapter. Our survey compares expert opinion on the subject with the perceptions and actual experiences of corruption by the general population.

Some questions on corruption were included in the General Household Survey on Governance and Democracy conducted between 2001 and 2003 in eight African capitals.[2] In a parallel 'mirror survey', the same questions on corruption were asked to a panel of experts in the North and South (including researchers, development experts, decision-makers, senior civil servants and politicians).[3] The experts were asked two types of questions: (1) their personal opinion on a given issue; and (2) what they believed the public would reply.

Comparing the two surveys clearly shows that experts overestimate the extent to which the general population experiences corruption (see Table 26.1). On average, 13 per cent of the population experienced acts of corruption in the past year, whereas experts expected a figure of 54 per cent. Moreover, only 5 per cent of the public believed bribery to be an acceptable practice, while experts expected a figure of 32 per cent. Overall, experts hold a far more negative view of reality than the general public.

This overestimation of real levels of corruption would not be so bad if it were consistent, but it is not, as there are significant differences between the two surveys concerning the relative positions of the eight countries. The relatively good reputation of Burkina Faso in the eyes of experts – as seen in the low incidence of small-scale corruption in expert opinions and the lowest percentage of experts believing it to be

Table 26.1: Comparing the General Household Survey with the 'mirror survey'

Percentage	Benin	Burkina Faso	Ivory Coast	Madagascar	Mali	Niger	Senegal	Togo	Average
Incidence of corruption									
General population[a]	8.7	15.2	16.5	16.3	10.1	8.2	10.8	9.6	**13.1**
Expert panel (what they believe public would reply)	54.1	35.2	60.7	57.1	52.0	56.1	51.1	62.5	**54.0**
Beliefs that making a bribe is acceptable behaviour									
General population[a]	3.6	8.2	5.2	10.5	5.0	3.1	2.2	3.8	**5.2**
Expert panel (what they believe public would reply)	31.3	28.7	29.2	32.9	33.3	33.8	35.5	21.8	**31.5**
Corruption is a major problem									
General population[a]	94.2	87.4	91.0	96.9	88.4	91.6	87.9	82.8	**90.3**
Expert panel (what they believe public would reply)	84.8	67.4	72.3	76.4	67.2	62.3	69.4	84.0	**72.9**
Expert panel (personal opinion)	96.3	65.0	94.1	88.9	78.1	72.7	80.5	92.3	**85.3**

a. In Madagascar, results were drawn from the 2003 survey. In all other countries, small variations between the incidence of corruption and the published results in the *Global Corruption Report 2004* are due to differences in the harmonisation of weighting procedure.

Sources: General Household Survey (35,594 persons interviewed; 4,500 for each country on average); expert panel survey (246 persons surveyed; 30 experts for each country on average).

a major problem – is not sustained in the household survey. Conversely Togo, which according to the household survey suffers from far lower levels of everyday corruption than the regional average, is rated worst by the experts.

There is in fact no correlation between the rates of corruption measured by the household surveys and by the *mirror survey*: the correlation coefficient, although not significant, is actually negative (–0.19). On the other hand, the expert opinion results drawn from the *mirror survey* are similar to corruption indicators found in international databases. The correlation between the expert panel results and the 'control of corruption' indicator built by Kaufmann, Kraay and Zoido-Lobaton (KKZ) in 2002 is –0.52, which is a positive association, since the measure decreases the higher the corruption.[4]

In order to dig a little deeper, we tried to find out the factors that explain the expert opinions on corruption. The models indicated that expert opinions are not linked to the level of corruption observed in the country but to the country's reputation for good economic governance and strength of democracy in the eyes of the outside world (see Table 26.2). The five governance indicators from the KKZ database were tested as explanatory variables of the expert estimation of the incidence of corruption (columns 3 and 4). We found significant associations with the *voice and accountability* indicator (respectively –1.1 and –2.5), the *regulatory quality* indicator (respectively –8 and –17), the

Table 26.2: Explaining the expert opinions stated in the expert panel

Dependent variables: Incidence of corruption (according to expert panel)[a] **Independent variables**:	With incidence of corruption in household survey	With 'control of corruption' indicator from KKZ	With 5 governance indicators from KKZ	With both KKZ indicators and household survey incidence
Incidence of corruption (according to public opinion survey)	0.2			–6.1*
Indicators from the KKZ database				
Control of corruption		–0.5**	2.6**	9.7**
Voice & accountability			–1.1**	–2.5**
Regulatory quality			–8.0**	17.0**
Government effectiveness			3.9**	9.9**
Rule of law			–2.6*	–10.1**
Individual expert's characteristics				
Expert from African country	0.0	0.0	–0.1	–0.1
Claims good knowledge of the country	0.2	0.3	0.1	0.2
Claims good knowledge of the subject	–0.4**	–0.4**	–0.4**	–0.4**
Constant/intercept	0.6	0.1	–0.9*	–13.8*
R^2	0.03	0.05	0.09	0.11
R^2 adjusted	0.01	0.03	0.06	0.07
Number of observations	233	233	233	233

** Coefficient is statistically significant at 5 per cent. * Statistically significant at 10 per cent.

a. The indicators showing incidence of corruption have been normalised (to a tolerance of –2.5 to 2.5 as for other indicators) in order to work with comparable coefficients.

Sources: Expert panel, General Household Survey, and Kaufmann, Kraay and Zoido-Lobaton database, 2002.

rule of the law indicator (–2.6 and –10.1), with the expected negative signs. The experts' profile (their gender, nationality or institution) did not influence their perceptions of corruption. Reassuringly, however, good knowledge of the subject did reduce the extent to which experts overestimated corruption.

The results do not invalidate the relevance of expert opinions since they do capture common perceptions of corruption. Nevertheless, the study suggests that expert opinions should be combined with a new set of indicators based on objective measures and not only on perceptions if we are to understand the full complexity of corruption.

Notes

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2. See Mireille Razafindrakoto and François Roubaud in *Global Corruption Report 2004*.
3. The experts were chosen from among a panel of both international and national specialists in corruption/governance issues and/or among experts on at least one of the eight countries under review. For this purpose we mobilised DIAL's international network as well as its institutional partners from the North (GovNet of the OECD, the METAGORA project, the French Ministry of Foreign Affairs, Transparency International, and so on) and the South (social scientists, policy-makers in ministries of finance, high-ranking civil servants, and so on).
4. The 'Spearman coefficient' produces similar results: 0.02 between the expert panel data and the general population poll; –0.50 between the expert panel and data from KKZ.

27 Gender and corruption: in search of better evidence

Hung-En Sung[1]

Corruption levels are often found to be lower in countries where there are more women in government. But does female political participation *reduce* political corruption because women are more scrupulous than men? Should raising female representation in government be recommended as corruption control measures? These causal assumptions and policy prescriptions are being challenged by new hypotheses and data. A recent study argues, and demonstrates, that the link between gender and corruption is spurious and mainly determined by the presence of a liberal democracy that promotes both gender equality and good governance.[2]

In 2001 two research studies using different data and samples reported the same observations: female respondents expressed stronger rejection of government corruption than men in attitudinal surveys, and female political participation and political corruption were consistently negatively correlated in cross-national comparisons.[3] Since female citizens were less tolerant of corruption and their representation in government was associated with less corruption, researchers urged governments to increase the number of female officials in government. Yet several methodological weaknesses underlie this early research, and among them one limitation stands out as the most critical: the 'fairer sex' argument had not been tested against a competing theory.

More data on gender and corruption have since become available. Contrary to the gender–corruption link previously reported among ordinary citizens, surveys of state officials have revealed no significant differences in perceptions of and attitudes toward corruption between male and female government officials.[4] What occurred among ordinary civilians did not necessarily hold for state agents, and what existed across individuals did not automatically take place across organisations. Different explanations are needed at different levels of analysis. What then about national levels of corruption?

Alexis de Tocqueville observed in the nineteenth century that expanded opportunities for women went along with a social structure that was generally more participatory, and hence more receptive to democracy. Could it be possible that both female participation in government and lower levels of corruption are dependent on a liberal democratic polity? In a liberal democracy, ideological emphases on equality and egalitarianism facilitate women's entry into governmental positions, while institutional checks and balances minimise opportunities for systemic corruption. To test the linkages, indicators of the 'fair sex' hypothesis (for example, women in parliament, women in ministerial positions, and women in sub-ministerial positions) were pitted against measures of

liberal democracy (for example, rule of law, press freedom and elections) in a study based on the 99 countries that were included in Transparency International's 1999 Corruption Perceptions Index.[5]

Overall, the gender–corruption link was refuted as a largely spurious relationship, and the liberal democracy hypothesis received strong support. Levels of women both in government and in liberal democracy were found to be significantly related to lower corruption when they were isolated from each other. But when forced into the same model, the effects of gender on corruption became statistically insignificant, whereas liberal democracy remained a very powerful predictor (see Table 27.1).

Table 27.1: Regression analysis relating women in cabinet (ministerial positions) with corruption

Variables	Step 1			Step 2		
	B	SE	*Beta*	*B*	SE	*Beta*
Control variables						
GNP	–.000	.000	–.737***	–.000	.000	–.514***
Poverty	.025	.012	.157*	.022	.011	.138*
Illiteracy	–.010	.011	–.072	–.009	.010	–.059
Female participation						
Women in cabinet	–.042	.020	–.147*	–.030	.019	–.105
Liberal democracy						
Rule of law	–	–	–	–.174	.071	–.184**
Freedom of press	–	–	–	–.025	.010	–.235**
Electoral democracy	–	–	–	.467	.404	.87
R^2		.770***			.818***	
Incremental R^2		–			.47***	

* p < .05; ** p < .01; *** p < .001 (one-tail test)

Freedom of the press showed the most powerful influence on corruption, followed by the rule of law indicator. Vibrant investigative journalism that scrutinises officials' behaviours enhances government transparency, while the subordination of the use of state power by officials to predefined laws and the punishment of public misconduct foster government accountability. Democratic elections exerted a positive effect on corruption but failed to attain the significance level, which suggests that competitive elections by themselves are not an automatic cure to political corruption and could be vulnerable to dishonest manipulations.

To increase female participation in public life is a noble and just end in itself, but would not be an effective means to engineer a clean government.

Notes

1. Hung-En Sung is a research associate at the National Center on Addiction and Substance Abuse at Columbia University, United States. Contact: hsung@casacolumbia.org

2. See H.-E. Sung, 'Fairer Sex or Fairer System? Gender and Corruption Revisited', *Social Forces* 82 (2003).
3. D. Dollar, S. Fisman and R. Gatti, 'Are Women Really the "Fairer" Sex? Corruption and Women in Government', *Journal of Economic Behavior & Organization* 46 (2001); A. Swamy, S. Knack, Y. Lee and O. Azfar, 'Gender and Corruption', *Journal of Development Economics* 64 (2001), summarised in the *Global Corruption Report 2003*.
4. For syntheses of this more recent research, see both R. Mukherjee and O. Gokcekus, and V. Vijayalakshmi, in the *Global Corruption Report 2004*.
5. Data on female participation in government were gathered from the United Nations and the Inter-Parliamentary Union. The rule of law measure was compiled by researchers at the Fraser Institute, who based their estimation on the judicial independence index published by the World Economic Forum. The press freedom rating was performed by Freedom House's analysts who examined and rated each country's laws and regulations governing media content, incidents and patterns of political control and intimidation of the press, and the presence of economic pressures that influence media content. The electoral democracy variable, also a Freedom House construct, simply identified countries that elected heads of state through universal and fair suffrage.

28 Corruption, pollution and economic development

Heinz Welsch[1]

Case studies have suggested that corruption is an important source of environmental degradation, especially in developing countries, but systematic quantitative assessments of the environmental effects of corruption are only just starting to be undertaken.

There are two distinct ways in which corruption may affect environmental quality, and the two effects differ. On the one hand, corruption may reduce the stringency of environmental regulation or the effectiveness with which environmental regulation is enforced, thus leading to higher pollution. On the other hand, corruption has been found to reduce prosperity. As prosperity (per capita income) is in turn an important determinant of cross-country differences in pollution levels, corruption may indirectly lead to a lower level of pollution. Putting the two effects together, the combined effect of corruption on the environment is uncertain.

Recent research has examined these links between corruption, pollution and economic development.[2] First, it investigated how corruption affects pollution at given levels of income, through corruption's effect on the formation and enforcement of environmental laws (direct effect). Second, it examined the influence of corruption on pollution via corruption's impact on income (indirect effect). It then added the two effects together.

The analysis used cross-sectional data for 106 countries, referring to the mid-1990s. The data set included indicators of ambient air pollution (sulphur dioxide, nitrogen oxides, total suspended particles) and water pollution (dissolved oxygen demand, phosphorus, suspended solids), jointly with data on per capita income and corruption. The latter were subjective indices on corruption, taken from the World Bank Institute.

The methodological approach to disentangling the indirect from the direct effect was to estimate an equation system comprising equations for the six types of pollution mentioned above, and an income equation. The pollution equations included per capita income and corruption as explanatory variables, whereas the explanatory variables for income (per capita) were physical and human capital, and corruption. The direct effect of corruption on pollution was given by the derivative of the six pollution equations with respect to corruption. The indirect effect was given by the derivative of the pollution equations with respect to income, times the derivative of an income equation with respect to corruption. Since, consistent with earlier literature, income affects pollution in a non-linear fashion, both the indirect effect and the total effect may be different at different income levels.[3] The effects of corruption on pollution are presented in Table 28.1.

Table 28.1: Effects on pollution of a one-SD increase in corruption[a]

		Direct effect	Indirect effect	Total effect
Sulphur dioxide	Maximum	0.343	0.071	0.414
	Minimum	0.343	–0.137	0.206
Nitrogen oxide	Maximum	0.358	–0.024	0.334
	Minimum	0.358	–0.063	0.295
Total suspended particles	Maximum	0.209	0.357	0.566
	Minimum	0.209	0.012	0.221
Dissolved oxygen demand	Maximum	0.364	0.185	0.549
	Minimum	0.364	0.005	0.369
Phosphorus	Maximum	0.308	0.316	0.624
	Minimum	0.308	–0.094	0.214
Suspended solids	Maximum	0.404	0.257	0.661
	Minimum	0.404	–0.041	0.363

a. Effects measured in standard deviations.

Putting the direct and indirect effects together, corruption was found overall to increase levels of pollution. This is in spite of the finding on the indirect effects of corruption, that there exist income ranges at which corruption actually reduces some types of pollution by means of lowering the level of income.

In low-income countries, however, both the direct and the indirect effects work in the same direction: both effects result in corruption increasing the level of pollution. A possible explanation is that by reducing the level of income in low-income countries, corruption reduces the resources that are necessary for pollution abatement. In fact, for some specific types of pollution (total suspended particles, dissolved oxygen demand, and suspended solids), the indirect effect strongly reinforces the direct effect. For these types of pollution, the combined harmful effect of corruption on pollution is stronger in poor countries than in both middle-income and rich countries.

As an example of the quantities involved, consider the cases of Burundi and Peru. Burundi is ranked as highly corrupt (1.2 standard deviations (SD) above average) whereas the corruption level of Peru is more moderate (0.2 SD above average). If the corruption level of Burundi were reduced to the level prevailing in Peru, this would be associated with an increase in Burundi's per capita income from less than one-fifth to somewhat more than one-half the level of Peru. Looking at the total effect on pollution, such a reduction in corruption would be associated with a substantial decline in total suspended particles (from 1.65 to 1.1 SD above average), dissolved oxygen demand (from 1.4 to 0.85 SD) and suspended solids (from 1.65 to 1.0 SD).

From a policy point of view, the most important message appears to be that, for most pollutants, the effect of corruption on pollution is particularly strong in low-income countries. Reducing corruption is therefore especially important for the less-developed world. By reducing corruption, low-income countries could considerably improve both their economic and their environmental conditions.

Notes

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2. Heinz Welsch, 'Corruption, Growth, and the Environment: A Cross-Country Analysis', *Environment and Development Economics* 9 (2004).
3. The equation system was estimated using the method of 'seemingly unrelated regressions' (assuming that corruption is independent of income and pollution).

29 Firm responses to corruption in foreign markets

Klaus Uhlenbruck, Peter Rodriguez, Jonathan Doh and Lorraine Eden[1]

Government corruption has a widespread but insufficiently studied influence on international business and managerial decision-making. We employed a model that incorporates two fundamental features of corruption – its pervasiveness and arbitrariness – to evaluate how corruption affects international market entry decisions by telecommunications firms.

The experience of corruption can vary widely across countries that rank similarly on one-dimensional indices of corruption. In our two-dimensional measure of corruption, one dimension, 'pervasiveness', reflects the average firm's likelihood of confronting corrupt transactions in a given country. The second dimension, 'arbitrariness', captures the inherent degree of ambiguity surrounding corrupt transactions. Where arbitrariness is high, firms are unsure whether bribes are necessary, whom to pay, what to pay, or whether the payments will have an effect. Taken together, measures of pervasiveness and arbitrariness allow for a richer and more useful depiction of the variance in the nature of government corruption.[2] Research has shown that both the level and the arbitrariness of corruption independently reduce foreign direct investment (FDI).[3]

We derived measures of pervasiveness and arbitrariness from the 1998 World Business Environment Survey (WBES), which was based on the perceptions of company managers. The WBES provided information on both the extent and nature of expectations surrounding corrupt transactions and was drawn from a broad sample of 8,000 firms across 80 emerging countries. The questions used to extract 'pervasiveness' enquired about the frequency of bribery and breadth of government officials and agencies requesting or requiring bribe payments. The questions used to extract 'arbitrariness' enquired about the extent to which the terms of corrupt transactions were predictable and the objects of bribery were usually delivered as agreed once a bribe was paid. Figure 29.1 presents a representative distribution across the two dimensions showing the substantial variation in the nature of corruption.[4]

We combined these data with a database of 400 telecommunications projects started largely between 1996 and 1998 in 96 emerging countries, drawn from the World Bank's Private Participation in Infrastructure (PPI) database. There are several advantages to a focus on infrastructure investments, including the increased likelihood of identifying effects and the fact that the services created cannot subsequently be exported to other countries, thus providing a clear linkage to host country conditions. Because these projects involve more interaction with government agencies, however, there is a higher potential for encountering corruption than for firms in some other industries.

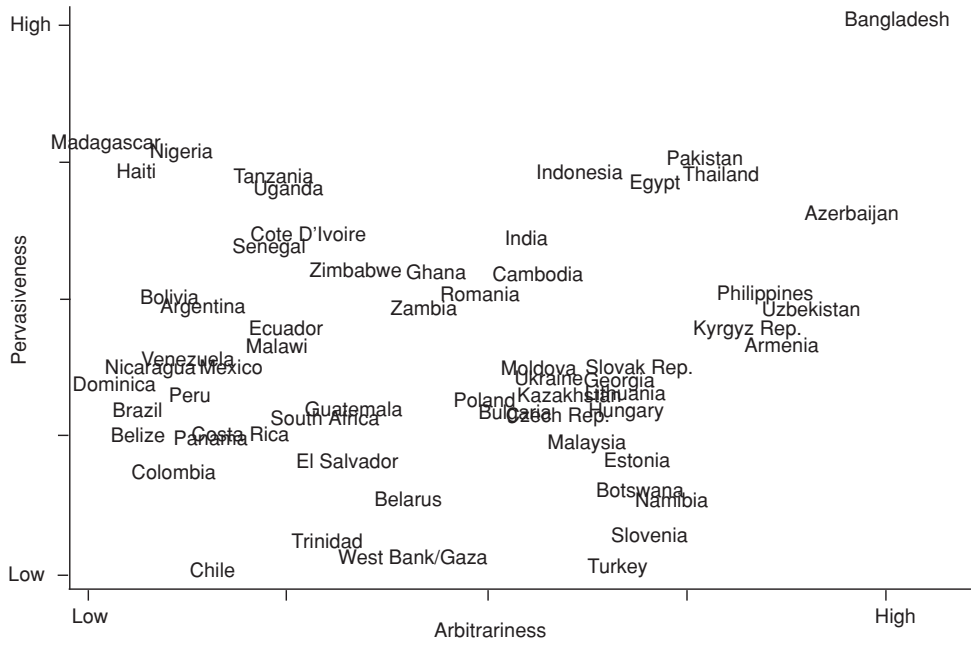

Figure 29.1: Two dimensions of corruption

Our two dependent variables indicate the characteristics of the entry modes of foreign firms. The first indicates whether firms engage in short-term turnkey projects that involve exporting technological know-how, or whether they commit to long-term FDI in the host country by maintaining ownership in the newly created facilities. The second indicates whether a multinational enterprise that pursues FDI engages in a wholly-owned subsidiary or a joint venture with a local partner. The data were analysed with logistic regression.

We found that some firms simply avoid investment in countries plagued by corruption. Other firms adapt their organisation forms and entry strategies in order to buffer their operations from the deleterious effects of corruption. After controlling for restrictions on FDI and country-specific legal and developmental characteristics, we observed that:

- as pervasiveness of corruption increases, entry modes are more likely to take the form of short-term turnkey projects rather than long-term FDI. Firms are more inclined to transfer ownership to local firms or the government, and less willing to remain in countries where pervasiveness is high. Additionally, where both pervasiveness and arbitrariness are high, virtually all projects are sold or transferred after completion
- as arbitrariness of corruption increases, entry modes are more likely to take the form of joint ventures and include local partners. We conclude that investors

ally with local partners to navigate environments characterised by ambiguous or highly unpredictable systems of corruption. In addition, the interaction between arbitrariness and pervasiveness increases the likelihood of joint venture entry.

Firms' adaptations to the nature of corruption ultimately generate additional costs to companies, host governments and society. By creating conditions where firms feel forced to divest and exit once projects are completed, or take on local partners solely to protect against corruption, host governments limit the potential benefits of FDI even when they do not completely deter it. However, policy-makers should consider the versatility of multinational firms when formulating investment policies. Rather than forgoing economic opportunities because of highly corrupt environments, firms look for alternative modes to participate in such markets, for instance via short-term engagements such as turnkey projects. While international firms find ways to adapt to difficult conditions, local firms with strong ties to the domestic economy are more constrained and probably suffer the most from government corruption.

Notes

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2. For a detailed discussion of this view of the nature of corruption, see P. Rodriguez, K. Uhlenbruck and L. Eden, 'Government Corruption and Entry Strategies of Multinationals', *Academy of Management Review* (forthcoming, 2005). Also see A. Shleifer and R. Vishny, 'Corruption', *Quarterly Journal of Economics* 108 (1993).
3. See J. E. Campos, D. Lien and S. Pradhan, 'The Impact of Corruption on Investment: Predictability Matters', *World Development* 27 (1999); S.-J. Wei, Why is Corruption So Much More Taxing than Tax? Arbitrariness Kills, NBER Working Paper No. 6255 (1997).
4. The two dimensions are nearly orthogonal. Factor loadings were highly significant and reliabilities (Cronbach's alphas) were all above 0.70.

30 The effect of corruption on trade and FDI

Mohsin Habib and Leon Zurawicki[1]

The impact of corruption on international business has been investigated mainly in the context of foreign direct investment (FDI). Very few empirical studies have examined the adverse impact of corruption on international trade.[2] Also, while corruption (negatively) affects international business, the reverse does not necessarily have to be true.[3] Granted that there are many issues still left for exploration, in this study we focused on differences in the influence of corruption on alternative modes of international business.

Dealing with corruption, whether in the context of foreign trade or investment, raises uncertainties and costs for businesses. Corruption distorts the market and can make competition unfair. Ethically sound companies are not necessarily the most successful ones.

Previous studies have typically focused on corruption in the destination countries for investment and trade. This study considered the impact of corruption in the country of origin as well, using TI's Corruption Perceptions Index (CPI). While the CPI mainly characterises public officials, we infer that it also illustrates the proneness of the private sector to bribe – the supply side of corruption. Accordingly, since a company associated with a corrupt country can behave unethically, its business partners in other countries will have to spend more effort on monitoring and control, thereby diverting valuable resources from other productive areas of business. Assuming all other elements equal, we hypothesised that suppliers of goods, capital and technology from countries deemed less corrupt would tend to be favoured.

The sample of 89 countries for the study was chosen from the International Financial Statistics data published by the International Monetary Fund. Data on country-specific FDI inflows and outflows were collected from the UNCTAD Foreign Direct Investment Online. Data on imports and exports were taken from the International Financial Statistics.

Decisions regarding FDI and trade are usually based on a comprehensive analysis of the business environment. According to the international business literature, there are several determinants of FDI and trade. These factors were incorporated in the analytical model to extract the specific effects of corruption. The independent variables were lagged by one year to measure their effects on the dependent variables. In order to allow meaningful comparisons, identical models assuring the overall best fit were developed to assess the impact of corruption on inward and outward trade and FDI.

Table 30.1: Corruption negatively affects trade and foreign investment

	Log FDI inflow (to a country)	Log export (to a country)	Log import (from a country)	Log FDI outflow (from a country)
CPI coefficients[a]	0.17	0.11	0.11	0.39

a. The CPI coefficients were based on four OLS regressions of log FDI inflow, log export, log import, and log FDI outflow on corruption (CPI), log population, log GDP/capita, distance from USA, distance from France, distance from China, economic ties (part of a regional integration), political risk, and presence of TI chapter. All four models were statistically significant and the adjusted R-squares were 0.65, 0.91, 0.87, and 0.41, respectively. A positive CPI coefficient suggests a negative effect of corruption on the dependent variable, as a higher number on the CPI indicates a 'cleaner' country.

Our results showed negative effects of corruption for the inflow and outflow of FDI as well as imports and exports of a country (see Table 30.1). Further analysis revealed that:[4]

1. In more corrupt markets trade appears to be a safer option. In our opinion this is because FDI as an entry mode is viewed as requiring a greater level of commitment and effort than trade. This increased level of involvement translates into a higher level of risk (and cost) for the companies concerned. Also, corruption can make FDI more vulnerable due to the low redeployability of assets and resources. The proposed relationship between entry modes and a firm's corruption-induced risk and overall flexibility is shown in Figure 30.1.

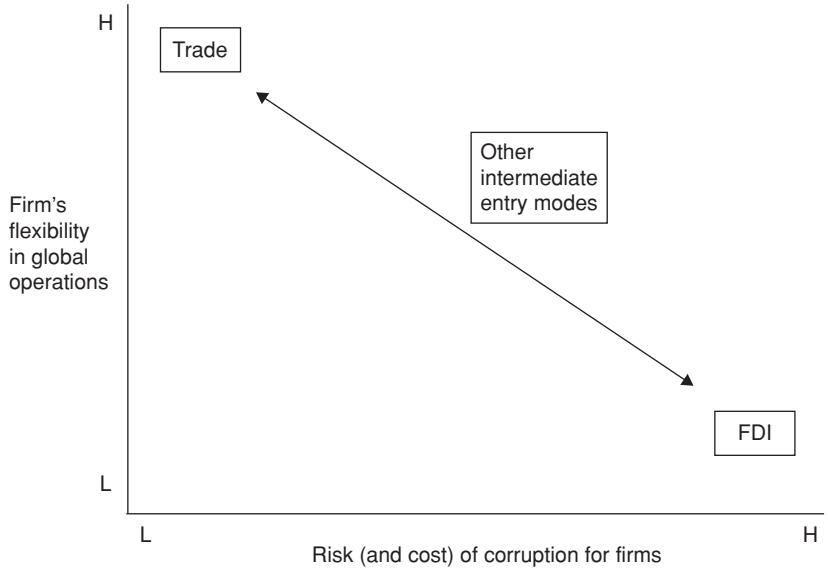

Figure 30.1: Entry modes, flexibility and risk of corruption

2. With respect to FDI, corruption in the country of origin matters more than corruption in the target country, as corroborated by comparing the coefficients for the inflow and outflow of FDI. It seems that choosing a credible business partner is more important when looking at the origin country of FDI than when looking at the destination country. This suggests that future research might benefit from shifting attention from the quantity of the respective flows to the reputation of individual (and overall) firms and the quality of projects.

In policy terms, the findings suggest that decision-makers should pay attention to corruption in the 'country of origin', which precedes the reputation of individual (usually lesser-known) small and medium-sized companies. From a managerial standpoint, other things being equal, a company from a less corrupt country will have an advantage, whether in trade or FDI.

Notes

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2. J. Lambsdorff, 'An Empirical Investigation of Bribery in International Trade', *European Journal of Development Research* 11 (1998).
3. S. Knack and O. Azfar, 'Trade Intensity, Country Size and Corruption', *Economics of Governance* 4 (2003).
4. General Linear Model multivariate analysis was used to test, for example, whether the slope of FDI inflow (to a country) against corruption (CPI) is significantly different than the slope of exports (to a country) against corruption (CPI).

31 Firms, bureaucrats and organised crime: an empirical examination of illicit interactions

Larry Chavis[1]

The focus of this research was on how the social networks of a firm's owner can affect the bribe payments required of that firm. The aim was to identify networks that empower managers in their negotiations over bribe payments. The research used a 1997 survey of more than 900 firms in Poland, Romania and Slovakia. The survey was carried out in medium-sized cities in each country and was designed to be representative of small to medium-sized firms. The emphasis of the survey was also on entrepreneurship, so more than 90 per cent of the firms in the survey were less than 10 years old. The survey produced data relating to a number of areas such as start-up conditions, supplier and customer characteristics, contract disputes and bribe payments.[2]

The data on bribe payments was obtained by asking firm owners and managers two-part questions relating to bribes to government officials and bribes to organised crime. With regards to government payments, they were asked whether or not the typical firm in their sector would be likely to make 'indirect or direct payments to government officials to obtain permissions, licences and regulations'. A similar question was asked with regard to 'protection payments'. If the managers answered that there were such payments, they were also asked the amount the typical firm in their sector made in such payments. This research assumes that the managers answered these questions with their own experiences in mind.[3] Thus the answers to these questions were taken to indicate the amounts paid in bribes to government officials and organised crime by the firm being surveyed.

A summary of the bribe variables is given in Table 31.1. The mean bribe payment was found to be similar for payments to government officials and to organised crime, although many more firms admitted making payments to government officials. In both cases a substantial proportion of the managers did not report the amount of the bribe payments. For both types of bribes the amount of the payments could be substantial, with more than half the firms that report payments paying more than 2 per cent of their revenues in bribes.

Table 31.2 summarises some of the characteristics of firms that do and do not pay bribes. For example, 28.3 per cent of those firms that do not pay bribes are run by former state-owned enterprise (SOE) managers, while this is true of only 16.6 per cent of those firms that do pay bribes. Similarly the table shows that fewer trade association members pay bribes. On the other hand, firms that are start-ups and thus have fewer

connections to the state seem to pay bribes more often. These relationships hold for both payments to government officials and protection payments.

Table 31.1: Summary of bribe variables

	Unofficial government payments	Protection payments
Percentage paying bribes	28	13
Percentage reporting bribe amount	16	9
Mean payment	US $1,379	US $1,428
Note: Standard deviation	*US $2,182*	*US $1,857*
Total payments as percentage of revenues:		
Median	2.0	2.4
Mean	6.4	7.2
Note: Standard deviation	*11*	*11*

Table 31.2: Characteristics of firms that pay/do not pay bribes

	Trade association member	Spin-off	Start-ups	Previously SOE manager
Unofficial government payments (%)				
Firms that pay	30.3[a]	16.1	77.6 [a]	16.6[a]
Firms that do not pay	37.1[a]	20.1	72.4 [a]	28.3[a]
Protection payments (%)				
Firms that pay	26.1[a]	14.3	77.3	16.8[a]
Firms that do not pay	36.5[a]	19.6	3.2	26.1[a]

a. Means are different at 95 per cent level of statistical significance.

To explore the relationship between social networks and bribe payments further, the research regressed the amount of bribe payments on social network variables and other characteristics of the firm.[4] The results of the regressions suggest that social networks are strongly correlated with both the amount of bribe paid and the probability of paying a bribe. What is surprising is that this research suggests the impact of social networks can be much larger than the impact of other, more 'routine' characteristics of the firm like employee size or profits. For a small firm with US $13,000 in yearly profits, it is estimated that having an owner who was a former manager in a state-owned enterprise lowers their yearly government bribe payments by approximately US $3,300. Doubling the same firm's profits to US $26,000 would increase the bribe payment by less than US $20. Thus it may be the case that bribe-takers are more in tune with a firm's social connections than with their profits.[5] We also found that the pattern that emerges for the payment of bribes to government officials is much clearer than for payments to

organised crime, and that government officials and organised crime do not seem to coordinate in setting the amounts of bribes to be extracted.

Two of the findings offer hope for policy-makers. One is that trade association membership is associated with a lower likelihood of paying bribes. The other is that firms that have recent positive experiences with the courts make lower bribe payments. Both of these results could be interpreted as the power of 'old boy' networks, whose members enjoy the favour of both the courts and bribe-takers. A more optimistic interpretation is that both trade associations and the courts can empower owners in their interactions with bribe-takers. Thus strengthening courts and trade associations could help lower levels of corruption in these countries. This is a very preliminary conjecture, but one that is worthy of further research to help better understand the mechanisms at work in bribery situations.

Notes

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2. The survey instrument and resulting data can be found at www2-irps.ucsd.edu/faculty/cwoodruff/data.htm. The data are summarised in the online appendices of S. Johnson, J. McMillan and C. Woodruff, 'Property Rights and Finance', *American Economic Review* 92 (2002).
3. This key assumption is explored further in the working paper version of this research. The assumption is necessary because asking firms directly about their own bribe payments would result in very low response rates. If the assumption does not hold and managers do answer with the 'typical firm' in mind then the results of this research indicate that former managers of state-owned enterprises view bribery as less prevalent than other managers.
4. Since many managers did not report the amount of the bribe payment, there is a serious missing data problem facing regressions using bribe amount as the dependent variable. This issue is dealt with at length in the working paper. The results are found to be robust to this missing data, though the magnitude of the impact of the social network may be slightly overstated in some specifications. However, in all cases, the social network variables remain far more important than variables such as profits or employee size.
5. Profits have played an important role in the theory of bribery because they represent the money that is potentially available for bribe-takers. Thus one normally expects profits to be a key determinant of the amount of a bribe.