



How corruption hits people when they are down[☆]

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Abstract

Using Peruvian data, I show that victims of misfortune, particularly crime victims, are much more likely than non-victims to bribe public officials. Misfortune increases victims' demand for public services, raising bribery indirectly, and also increases victims' propensity to bribe certain officials conditional on using them, possibly because victims are desperate, vulnerable, or demanding services particularly prone to corruption. The effect is strongest for bribery of the police, where the increase in bribery comes principally through increased use of the police. For the judiciary the effect is also strong, and for some misfortunes is composed equally of an increase in use and an increase in bribery conditional on use. The expense and disutility of bribing thus compound the misery brought by misfortune.

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A combination of theoretical argument and empirical evidence has made a persuasive case that the high level of corruption in many developing countries reduces efficiency. For example, [Mauro \(1995\)](#) and later papers have shown that corruption reduces growth, and [Wei \(2000\)](#) has shown that corruption reduces foreign direct investment. Development specialists also fear that

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corruption reduces equity. In this context, the burden of corruption is usually considered inequitable or regressive if the poor pay a higher fraction of their income in bribes than the rich. Evidence on this point has only recently begun to emerge. Hunt and Laszlo (2007) show that the burden of bribery is approximately constant by income in Peru, and that the distribution of the burden in Uganda cannot be accurately measured owing to measurement error in income.

In this paper I explore a different dimension of equity. I document the degree to which people pay bribes in connection with misfortune or adverse events they experience, with the consequence that the expense and possible disutility of bribery compound the original problem. I do so by using the Peruvian Household Survey (ENAHO), which contains detailed information on bribery and use of public officials, as well as a wealth of other variables.

Misfortune or adverse events can lead an individual or household to bribe simply by increasing their need for public services. For example, victims of crime will want to report the crime to the police, an act that may require a bribe to ensure police cooperation. An illness, accident or assault may lead the victim to use public hospitals, which could involve a bribe to jump a queue or see a doctor. If a household member dies, his or her death must be registered, for which a bribe might be extorted. Burglary, robbery, fraud, job loss, fire, natural disasters, the death of an earner and the bankruptcy of a shop involve the loss of possessions or income, which may impoverish the affected individuals or households and lead them to apply for unemployment insurance or welfare. The desertion of the household head can lead to legal issues concerning alimony or child custody, while the creditors of a bankrupt shopkeeper may appeal to a judge. Involvement with the courts may be associated with bribery, for example of the opponent's lawyer.

Individuals or households with such problems may also be more likely to bribe than other users of the same public officials, however. They may be more vulnerable to extortion or more willing to bribe than other users. Alternatively, the heterogeneity of services provided by an institution such as the municipal government may be relevant: those who have just experienced an adverse event may use particularly corruption-prone services within a particular institution. These services may be more corruption-prone because their users reveal their income, either as a direct consequence of their misfortune (e.g. reporting a robbery) or as a prerequisite for using the service (e.g. establishing eligibility for welfare).

It is difficult to judge which misfortunes and problems are most likely to lead to increased bribery. The magnitude of the effect would depend not only on the severity of the problem, but also on the degree of corruption of the institution to which victims would have recourse. As the police force is a very corrupt institution in many countries, problems with which the police would be associated, such as crime, could be expected to lead to frequent bribery. The purpose of the paper, however, is to demonstrate the relevance of a wide range of adverse events for bribery, rather than to emphasize differences between adverse events.

I find that Peruvian victims of misfortune, especially victims of crime, are substantially more likely to bribe than others, even after controlling for a wide range of individual and household characteristics. By contrast, misfortunes have no statistically significant effect on the amount paid in bribes, conditional on having paid a bribe. A crime victim is 6.3 percentage points more likely to bribe than a similar non-victim, compared to an overall bribery rate of 4.9%. For victims of other misfortunes, the corresponding increase in the bribery rate generally lies between 2.2 percentage points for a job loss and 3.8 percentage points for the death of a household earner, although natural disasters have no effect and unspecified other misfortunes have an 8.9 percentage point effect. For victims of all misfortunes, the increase in bribery is highest for bribes paid to the police. While it is possible that those prone to misfortune have unobservable characteristics making them more likely to bribe, the Peruvian results are almost all robust to

adding household fixed effects to the subsample that is a panel: only the effect of serious illness appears to be overstated in the absence of fixed effects, while the effect of natural disasters may be understated.

The Peruvian data show that victims bribe more not only because they use more officials, but also because they bribe more than other users of the same officials. For the pairing of crime victims and the police, the pairing with one of the highest bribery rates, the entire effect operates through greater use of the police, presumably caused by the victim's reporting the crime. But for many pairings of misfortune and public official, the higher bribery compared to other users is at least as important as greater usage. This is true for victims of crime or shop bankruptcy in connection with the judiciary, and also for many victim types in connection with the municipal government.

Individual micro-data have previously been used to show that richer households pay more frequent and larger bribes than poorer households, that people who know how to report corruption bribe less and that bribers generally receive worse service.¹ The results of the paper add to this limited knowledge of the process of bribery by individuals, and underline the extent to which corruption lowers the quality of life by compounding other miseries. The results also reinforce other studies emphasizing the importance of combatting corruption in the police force, which is itself often set the task of reducing corruption in society.

1. Data

The Encuesta Nacional de Hogares (ENAHO) is a household survey oversampling rural areas, conducted yearly by Peru's national statistical agency, the Instituto Nacional de Estadística e Información (INEI). I use the 2002 and 2003 surveys, which each contain over 18,000 households. In these years, the ENAHO included a module on governance in which one randomly chosen adult per household is asked numerous questions pertaining to the household's use of 21 different types of officials or institutions. If a particular type of official was used in the previous 12 months, respondents are asked a series of questions in connection with use and bribery of this official type in this time-frame, including whether the official asked for a bribe, gift, tip or "coima" (slang for bribe), whether the respondent felt obliged to make such a payment, made such a payment voluntarily, or refused to make such a payment, and the amount paid if she paid.

One quarter of the addresses surveyed in 2002 were also surveyed in 2003, and an indicator is provided to identify the cases where the household was the same in the two surveys. It is therefore possible to use a small panel of households. The mean characteristics of the panel households are virtually identical to the means of the full sample.

In low-corruption countries, stigma may prevent respondents from answering honestly concerning bribery. In more corrupt countries, by contrast, bribery is viewed as inevitable and the fault of the system, so stigma is low. Proética, a Peruvian anti-corruption group, found that when asked to define the Peruvian slang for bribe ("coima"), less than half their survey respondents gave answers with a negative connotation.² Fear of prosecution (at least for small bribes, which are the majority of bribes) should also be low, as most anti-corruption campaigns target officials. Furthermore, the Peruvian household survey does not attempt to force respondents to admit to having voluntarily paid a bribe, but allows them merely to acknowledge having paid a tip under duress. Reported bribery rates for some official types are very high, indicating that, at least for some

¹ See Deininger and Mpuga (2005) for Uganda, Hunt (2004) for thirty-four middle or low-income countries, Hunt and Laszlo (2007) for Peru and Thompson and Xavier (2002) for Kazakhstan hospitals.

² Proética (2004).

official types, respondents are not ashamed or afraid to acknowledge a bribery episode. I therefore do not believe that reluctance to report is a major issue. The Data appendix provides further information on the ENAHO data and further discussion of how accurately it measures bribery.

2. Descriptive statistics

The outcome of interest on which I focus is having bribed or refused to bribe, which I term a bribery episode. I include refusals in part because some may represent actual payments that respondents are reluctant to report, and in part because attempted bribery is also of interest. As shown in the upper panel of Table 1, 20% of respondents report that their household was the victim of one of nine misfortunes in the previous 12 months (column 1). These victims account for 37% of bribery episodes (column 2). This overrepresentation reflects the 8.9% bribery (episode) rate for victim households compared with the 3.9% bribery (episode) rate for non-victim households (column 3).

The lower panel of Table 1 shows the statistics for the detailed misfortunes. The most common Peruvian misfortune is natural disaster (such as drought etc.), of which 5.4% are victims (column 1). The least common misfortune is fire, affecting only 0.1%. A comparison of column 1 and column 2 shows that victims are generally two to three times overrepresented amongst bribers, with the exception of victims of natural disasters, who are not overrepresented.

Columns 4–6 provide means of characteristics of households and respondents by misfortune status. Respondents in crime victim households have similar education to non-victims, while

Table 1
Households' bribery and victimization

	(1)	(2)	(3)	(4)	(5)	(6)
	Share of households	Share of bribery episodes	Bribery episode rate	Education (years)	Living standard fell	Consumption (Nuevos Soles)
Households victim of misfortune	0.20	0.37	0.089	7.6	0.45	3556
Non-victim households	0.80	0.63	0.039	7.8	0.23	3219
All households	1	1	0.049	7.8	0.28	3226
Households victim of:						
Crime	0.034	0.098	0.141	8.1	0.39	3659
Job loss	0.042	0.085	0.100	9.8	0.55	4203
Shop bankruptcy	0.013	0.034	0.129	9.3	0.58	4165
Death of earner	0.010	0.019	0.092	7.3	0.51	3361
Serious illness, accident	0.045	0.083	0.089	7.5	0.50	3742
Desertion household head	0.007	0.012	0.080	8.4	0.55	2783
Fire in house, shop or property	0.001	0.003	0.113	7.0	0.36	2667
Natural disaster	0.054	0.055	0.050	5.4	0.35	1891
Other misfortune	0.008	0.028	0.167	7.9	0.52	3269
Observations	35,964	1757	—	—	—	—

Notes: Bribery episodes include both bribes and refusals to bribe. Examples of crimes given in the questionnaire are robbery and assault. Examples of natural disasters given in the questionnaire are drought, storm, plague [of insects], flood. Education is the years of education of the bribery respondent.

respondents in job loss and shop bankruptcy households are considerably more educated than non-victims. To have a shop bankruptcy one must be a shopkeeper, a relatively skilled job, and a job loss implies dependent employment, which is on average more skilled than self-employment. By contrast, victims of natural disaster are much less educated than non-victims. Column 5 shows that for most misfortunes, at least half of households report a fall in their standard of living over the previous year, compared to only 23% of non-victim households. The least serious misfortunes in this regard are natural disaster, fire and crime, for which only 35–39% victims reported a fall in living standard. Household consumption is also reported (column 6), although this may be endogenous to misfortune. Appendix Tables 1 and 2 present the means of all variables used in the regressions.

Table 2 provides information on the types of officials or institution bribed. The police receive the highest share of bribes, with 35% of the total. Their large share of bribes is not the result of many users, since only 5.5% of households used the police in the previous 12 months (column 2), but is owing to the large share of users who bribe: 37.2% (column 3). For the judiciary the picture is similar, as only 4.1% of households used the judiciary, but the 16.6% of users who bribed brought the judiciary's share of bribes to 12% of the total. The municipal government and state schools, by contrast, have a large share of the bribes because of high usage rates. Together, these four official types account for 76% of all bribes in Peru.

3. Empirical methodology

The basic regression is a probit for the probability that household h in region r bribes an official type o in year t :

$$P(\text{bribe episode}_{hrot}) = M_{hrt}\beta_{3o} + X_{hrt}\beta_{4o} + t_t + \gamma_r + \eta_{hrot}. \quad (1)$$

M contains dummies for nine misfortunes of which the household might have been a victim, and its coefficients β_{3o} are the coefficients of interest. The 2003 survey year is represented by t_t , and γ_r represents 24 region dummies. Since sampling is stratified by city size, I always include city size dummies among the X controls. I estimate five sets of probits for o representing any official, police, judiciary, municipal government and state schools. I adjust the standard errors to allow for correlation within districts (which are smaller than regions) and report marginal effects.

Table 2
Bribery and usage of different types of officials

	(1)	(2)	(3)	(4)
	Share of bribery episodes	Share of households using official type	Share of users with bribery episode	Number of bribery episodes
Police	0.35	0.055	0.372	735
Judiciary	0.12	0.041	0.166	244
Municipal government	0.21	0.256	0.048	440
State schools	0.08	0.539	0.008	162
Other officials	0.24	0.097	0.009	524
Total	1	—	—	2105

Note: Columns 2 and 3 give the unweighted average across the different official types. The other officials are in social security, state banks, water, telephone, electricity, arbitration, Ministry of Agriculture, Ministry of Industry and Tourism, SUNAT (customs and taxes), state hospitals, ID agency, Department of Migration, Election Office (ONPE), Election Court (JNE), development agency (FONCODES), nutritional welfare agency (PRONAA) and other.

I also estimate a related probit where the seventeen officials other than police, judiciary, municipal government and schools are pooled, and the unit of observation is a household–official pair, rather than a household. In this case, I always present specifications controlling for official type dummies v_o :

$$P(\text{bribe episode}_{hrot}) = M_{hrt}\beta_5 + X_{hrt}\beta_6 + t_t + \gamma_r + v_o + \zeta_{hrot}. \quad (2)$$

Despite the rich set of covariates for which I control, it is possible that in both Eqs. (2) and (3) the coefficients on the crimes and other misfortunes are biased by the omission of variables. For example, if risk lovers are more likely to have shops, or if risk-loving shopkeepers are more likely to go bankrupt, and risk lovers always bribe more, the effect of shop bankruptcy on bribery will be biased upward by the omission of risk aversion. To the extent that risk aversion is a fixed effect, the bias caused by its omission may be removed by using the panel subsample of the data to estimate household fixed effects δ_h . The reduction in the sample size means that this is only meaningful for estimating the probability of bribing any official:

$$P(\text{bribe episode}_{hrot}) = M_{hrt}\beta_{7o} + X_{hrt}\beta_{8o} + t_t + \gamma_r + \delta_h + \phi_{hrot}. \quad (3)$$

I estimate this as a linear probability model. If the misfortune is so great as to change, say, a risk-lover into a risk-averse person, the bias caused by the omission of the original risk-aversion cannot be differenced out with fixed effects.³ Variation along the time dimension is paramount in fixed effects estimation, unlike in the pooled cross-section approach, and I therefore also present results with region \times year dummies, to allow for local time-series variation in bribery propensity.⁴

While in principle the data permit a distinction between types of bribe and especially between bribes and refusals to bribe, in practice running multinomial logits instead of probits leads to large standard errors and insignificant marginal effects, so I do not pursue this.

It would be informative to present a decomposition of the unconditional bribery effect: if a household that is a victim of misfortune bribes more, this could be either because it simply uses more officials (which indirectly increases bribery), because it is more likely to bribe the officials it uses than other users, or some combination of the two. As a first step I rerun the regressions above changing the dependent variable to the probability of using an official, then rerun the bribery regressions above with the sample of households who used the official. Using the results of these regressions for a decomposition would be a simple matter were they linear. The probability of a bribery episode $P(B)$ is the product of the probability of using the official $P(U)$ and the probability of a bribery episode conditional on using the official $P(B|U)$:

$$P_j(B) = P_j(U)P_j(B|U), \quad (4)$$

where j represents V , for victims, or NV , for non-victims. The bribery gap between victims and non-victims is

$$P_V(B) - P_{NV}(B) = P_V(U)P_V(B|U) - P_{NV}(U)P_{NV}(B|U), \quad (5)$$

which can be rewritten as

$$P_V(U)\Delta P(B|U) + P_{NV}(B|U)\Delta P(U), \quad (6)$$

³ Even if the household is the same in the two survey years, the respondent may not be. To the extent that the change in respondent changes the information conveyed, household fixed effects may not capture all relevant fixed effects. A matching algorithm would be needed to construct respondent fixed effects.

⁴ If the relevant variation is at a more detailed geographic level, which is hard to control for given the small number of bribes in more finely-defined regions, some bias in the effect of misfortune, β_{7o} , could remain.

where $\Delta P(B|U) = P_V(B|U) - P_{NV}(B|U)$ and similarly for $\Delta P(U)$. This decomposition is also valid conditional on X . However, it is not valid for non-linear regressions such as probits. Owing to the low probabilities often involved in the regressions, probit and linear probability estimates of coefficients differ, so I prefer to use probits and forgo an exact decomposition. However, I calculate $P(U)\Delta P(B|U, X)$ and $P(B|U)\Delta P(U|X)$, and call these the conditional bribery and usage components, even though they only approximately sum to $\Delta P(B|X)$. I calculate the share due to conditional bribery by calculating its share of the sum of the two components.

4. Results

I begin by examining in some detail the effect of criminal victimization in [Table 3](#), before turning to the effect of other misfortunes and adverse events. I present only results containing a rich set of respondent and household covariates, listed in the Appendix tables. Among the controls are dummies representing whether the household respondent reported that the household's living standard had risen or fallen over the previous 12 months, as well as the equivalent questions for the community/town. Without these controls, the misfortune dummies could conceivably pick up the behavior of all households with a drop in their living standard and who might therefore qualify for welfare, for example. The results of a full set of specifications, reported in [Hunt \(2006\)](#), show that the effects of interest are not sensitive to the exclusion of household consumption, change in living standard dummies, or other potentially endogenous variables.

4.1. Criminal victimization

The analysis of criminal victimization, bribery and use of officials is presented in [Table 3](#), where each marginal effect (columns 2, 5 and 7) is the marginal effect of criminal victimization from a different probit. As in all subsequent tables, the marginal effects are multiplied by 100 and therefore represent percentage point effects.

Columns 1 and 2 of [Table 3](#) refer to the unconditional probability of a bribery episode. Panel A shows the effect of criminal victimization on the probability of bribing (or refusing to bribe) any type of official is 6.3 percentage points, compared to an overall bribery episode probability of 4.9%.⁵ Fixed effects results are similar, and I report on these in more detail in the next section.

Panels B–F estimate the probability of a bribery episode for the four major official types and the seventeen pooled minor officials. One can see looking down the columns that the largest effects of criminal victimization are for the police, as would be expected, followed by the judiciary, municipal government, and schools. The effects for minor officials are almost an order of magnitude smaller. The effect of criminal victimization on the police is 2.8 percentage points (panel B), a large effect compared to the 2.0% of households who bribe the police. The effect for the judiciary is 1.4 percentage points (panel C), also large compared to the 0.7% of households who bribe the judiciary.

I now turn to investigating how much of the unconditional bribery episode effects uncovered in column 2 are the result of differences in usage of officials, and how much are the result of differences in bribery conditional on use of the official in question. The analysis of the probability of a bribery episode conditional on using an official is shown in columns 3–5. Panel A shows that for the police, there is no significant conditional bribery effect, and in fact, the point estimate is

⁵ In an earlier version of the paper I found similar results using cross-country data. See [Hunt \(2006\)](#).

Table 3

Effect of household criminal victimization on probability of a bribery episode and probability of using an official

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Probability of bribing		Probability of bribing conditional on use			Probability of use	
	Mean of dependent variable ($\times 100$)		Observations	Mean of dependent variable ($\times 100$)		Mean of dependent variable ($\times 100$)	
A. Any official	4.9	6.32 (9.4)	—	—	—	—	—
R-squared		0.11			—	—	—
B. Police	2.0	2.81 (8.5)	1977	37.2	-1.91 (-0.5)	5.5	11.30 (16.2)
R-squared		0.16			0.11		0.13
C. Judiciary	0.7	1.41 (7.2)	1470	16.6	15.27 (3.7)	4.1	4.50 (7.8)
R-squared		0.14			0.12		0.09
D. Municipal government	1.2	0.71 (3.3)	9201	4.8	2.08 (2.3)	25.6	5.02 (3.9)
R-squared		0.10			0.09		0.09
E. Schools	0.5	0.20 (2.1)	19,367	0.8	0.37 (1.8)	53.9	4.03 (2.5)
R-squared		0.12			0.12		0.32
F. Other officials (17 types pooled)	0.09	0.037 (3.9)	59,468	0.9	0.46 (3.2)	9.7	0.75 (5.3)
R-squared		0.12			0.14		0.31

Notes: Columns 2, 5 and 7 contain marginal effects from probits, multiplied by 100 (in addition to the *R*-squared for the regression). The sample sizes for columns 1–2 and 6–7 are 35,964 except for panel F, where the sample size is 611,262. Each marginal effect is the marginal effect on the dummy for household criminal victimization from a different regression. *T*-statistics clustered by district are in parentheses. In panels A–E an observation is a household; in panel F it is a household–official pair. One region had no bribes to school officials and is combined with a neighboring region for the schools regressions containing region dummies. Unreported regression controls are dummies for non-crime misfortunes, year, and official type (panel F only); age of respondent, its square, and respondent years of education; dummies for respondent sex, marital status, sex \times marital status, job type and occupation in public administration; dummies for city size, region (24), household size, acquisition of home through land invasion, change in living standard of household, change in living standard of town, presence of children aged 0–3, 4–7, 8–11, or 12–15, ownership of vehicles and receipt of food aid; and controls for travel time to the district administrative center and household consumption.

negative. For the judiciary (panel B), on the contrary, there is a very large conditional bribery effect: victims of crime are 15.3 percentage points more likely to bribe the judiciary than other users of the judiciary, compared to a bribery rate among users of 16.6%. There is a smaller significant effect of 2.1 percentage points for the municipal government (panel C), compared to a bribery rate of 4.8%.

In columns 6 and 7 I return to the sample of all households, and examine the association between criminal victimization and the probability of using an official, in order to gauge how much of the increase in unconditional bribery comes indirectly through increased use of officials. There is a significant and positive effect for all official types. The effect for the police is very large (panel A): victims of crime are 11.3 percentage points more likely to use the police than non-victims, compared to the 5.5% of households who use the police. The effects for the other three major official types are 4–5 percentage points, which is large compared to the judiciary usage rate (4.1%).

The results of columns 5 and 7 may be used to decompose the effect of misfortune on bribery into the indirect effect of higher usage of officials and the direct effect of higher bribery relative to

other users. The direct effect of bribery represents –3% of the total effect for the police, 47% for the judiciary, 69% for the municipal government, and 87% for schools.

4.2. Victims of all misfortunes

In Table 4 I present the marginal effects of all nine misfortunes on the unconditional probability of a bribery episode. The marginal effects come from the regressions of column 2 in Table 3. The synthesis of the many numbers is that most misfortunes increase bribery, and bribes to many types of officials are affected by many types of misfortune. The official type most affected is the police, and crime is the misfortune with the largest effect (apart from “other misfortunes”).

For the probability of a bribery episode in connection with any official, column 1 shows that the largest effects are the previously reported effect of criminal victimization, a 6.3 percentage point effect, and the effect of “other” misfortunes, a statistically indistinguishable 8.9 percentage point effect. The marginal effect of a fire is large at 4.9 percentage points, but the small number of

Table 4
Effect of misfortunes on probability of a bribery episode

	(1) Any official	(2) Police	(3) Judiciary	(4) Municipal government	(5) Schools	(6) Other officials
Crime	6.32 (9.4)	2.81 (8.5)	1.41 (7.2)	0.71 (3.3)	0.20 (2.1)	0.037 (3.9)
Job loss	2.24 (5.6)	0.89 (4.0)	0.24 (2.3)	0.48 (2.3)	0.08 (0.9)	0.016 (2.2)
Shop bankruptcy	3.14 (4.1)	0.94 (2.9)	0.74 (3.7)	0.34 (1.2)	0.32 (1.9)	0.014 (1.2)
Death of earner	3.84 (3.9)	1.41 (2.6)	0.04 (0.1)	0.79 (1.9)	0.34 (1.7)	0.050 (2.6)
Illness, accident	2.85 (6.1)	1.03 (3.9)	0.11 (1.1)	0.66 (3.2)	0.13 (1.5)	0.039 (4.7)
Desertion of household head	2.34 (2.2)	0.50 (1.0)	0.30 (1.2)	0.45 (1.1)	0.39 (1.8)	−0.004 (−0.3)
Fire in house, shop, property	4.89 (1.6)	4.23 (2.3)	2.20 (1.9)	−	−	0.041 (1.0)
Natural disaster	0.38 (0.8)	0.22 (0.8)	0.06 (0.5)	−0.01 (−0.0)	0.07 (0.8)	0.020 (2.6)
Other misfortune	8.85 (7.6)	3.28 (5.4)	1.34 (4.8)	2.17 (4.3)	0.70 (2.7)	0.058 (3.3)
R-squared	0.11	0.16	0.14	0.10	0.12	0.16
Observations		35,964				611,262

Notes: Marginal effects from probits, multiplied by 100. *T*-statistics clustered by district are in parentheses. In columns 1–5 an observation is a household; in column 6 it is a household–official pair. There are too few bribes to municipal government and schools by victims of fire to include a dummy for this misfortune in the bribery regressions for municipal government and schools. Unreported regression controls are dummies for year, and official type (column 6 only); age of respondent, its square, and respondent years of education; dummies for respondent sex, marital status, sex × marital status, job type and occupation in public administration; dummies for city size, region (24), household size, acquisition of home through land invasion, change in living standard of household, change in living standard of town, presence of children aged 0–3, 4–7, 8–11, or 12–15, ownership of vehicles and receipt of food aid; and controls for travel time to the district administrative center and household consumption.

fires leads to large standard errors and insignificance. Natural disasters have no significant effect, while the effects of other misfortunes lie in a range from 2.2 percentage points for a job loss to 3.8 percentage points for the death of an earner (within this range the effects are statistically indistinguishable).

Seven of nine misfortunes significantly increase the probability of bribing the police in column 2, with only the desertion of a household head and natural disasters insignificant. For the judiciary in column 3, the effects are somewhat smaller and four of nine are significant. For the municipal government in column 4, the effects are smaller still, and although again four of nine are significant, the pattern is different from that for the judiciary. For example, there is no effect of shop bankruptcy, unlike for the judiciary, whereas there is a significant effect of illness/accident, possibly reflecting the use of municipal medical clinics. Effects for schools in column 5 are less significant, while the pooling of officials in column 6 leads to greater significance despite much smaller effects.

I check the robustness of the Table 4 marginal effects to reclassifying refusals to bribe as a non-bribe rather than a bribe: refusals are 22% of bribery episodes. For the bribery of any official, the

Table 5
Effect of misfortunes on probability of a bribery episode with any official type, fixed effects

	(1)	(2)	(3)	(4)	(5)
	Full sample	Reduced sample			
	Probit	Probit	Linear probability	Linear probability	fixed effects
Crime	6.32 (9.4)	2.15 (2.4)	3.33 (2.1)	3.02 (1.7)	2.60 (1.5)
Job loss	2.24 (5.6)	2.74 (3.4)	4.23 (2.8)	3.09 (2.0)	2.58 (1.7)
Shop bankruptcy	3.14 (4.1)	2.38 (1.6)	4.03 (1.3)	6.16 (2.1)	5.64 (2.0)
Death of earner	3.84 (3.9)	11.36 (4.6)	11.88 (3.1)	6.93 (2.1)	6.81 (2.1)
Illness, accident	2.85 (6.1)	1.80 (2.1)	2.44 (1.9)	-0.79 (-0.5)	-1.22 (-0.8)
Desertion of household head	2.34 (2.2)	4.41 (1.7)	2.86 (1.1)	4.03 (1.0)	3.14 (0.8)
Fire in house, shop, property	4.89 (1.6)	14.64 (1.9)	15.35 (1.2)	25.24 (2.6)	25.30 (2.6)
Natural disaster	0.38 (0.8)	0.58 (0.7)	0.55 (0.4)	2.47 (1.6)	1.24 (0.8)
Other misfortune	8.85 (7.6)	5.67 (3.3)	8.04 (2.3)	11.86 (3.6)	11.00 (3.4)
Region × year dummies	No	No	No	No	Yes
R-squared	0.11	0.14	0.06	0.03	0.05
Observations	35,964			8850	

Notes: Marginal effects from probits (columns 1 and 2) or linear regressions (columns 3–5), multiplied by 100. *T*-statistics clustered by district are in parentheses. An observation is a household and household fixed effects are included. Column 1 repeats the results of Table 4 column 1. Unreported regression controls are a dummy for year; age of respondent, its square, and respondent years of education; dummies for respondent sex, marital status, sex × marital status, job type and occupation in public administration; dummies for household size, acquisition of home through land invasion, change in living standard of household, change in living standard of town, presence of children aged 0–3, 4–7, 8–11, or 12–15, ownership of vehicles and receipt of food aid; and controls for travel time to the district administrative center and household consumption.

new marginal effects are on average 94% of the column 1 effects (these results are not reported). The results for the police, municipal government and judiciary are also robust to this change.

It is possible that victimization is correlated with unobserved variables that cause individuals or households to bribe more, an issue that may be addressed with fixed effects estimation for the quarter of the sample that is a panel. The sensitivity of the results to reducing the sample may be assessed by comparing columns 1 and 2 in Table 5, while the effect of using linear probability instead of a probit may be assessed by comparing columns 2 and 3. These changes raise the standard errors greatly. I introduce household fixed effects in column 4, but the large standard errors preclude a statistically meaningful comparison with column 3. Possible qualitative differences are that natural disasters, whose effect is insignificant in column 1, may in fact have a significant effect, and that illness or accident, which has a significant effect in column 1, may instead have an insignificant effect. In column 5, I introduce region \times year dummies. The coefficients that were significant in column 4 decrease slightly or stay the same. The natural disaster coefficient is cut in half, but is still much larger than in column 3, though insignificant.

As with criminal victimization, I am interested in how much of the increase in bribery caused by misfortune is caused by greater use of officials, and how much is caused by increased bribery compared to other users. However, the latter effect (corresponding to the regression of column 5 in Table 3) is insignificant for most misfortunes and for schools. I therefore present results in Table 6 for selected misfortunes and officials with larger such effects.

All marginal effects in odd columns examining the probability of using an official are positive and statistically significant except one. The largest effect is for the pairing of criminal victimization and the police: a crime victim is 11.3 percentage points more likely to use the police, compared to

Table 6

Effect of misfortunes on the probability of using official and the probability of a bribery episode conditional on using official

	(1)	(2)	(3)	(4)	(5)	(6)
	Police		Judiciary		Municipal government	
	Usage	Bribery episode if usage	Usage	Bribery episode if usage	Usage	Bribery episode if usage
Crime	11.30 (16.2)	-1.91 (-0.5)	4.50 (7.8)	15.27 (3.7)	5.02 (3.9)	2.08 (2.3)
Job loss	2.47 (5.2)	5.40 (1.3)	2.28 (5.9)	0.75 (0.3)	4.62 (4.2)	1.26 (1.5)
Shop bankruptcy	2.36 (3.1)	5.56 (0.9)	2.12 (2.9)	12.27 (2.4)	7.03 (3.5)	0.45 (0.4)
Illness, accident	2.81 (5.1)	5.85 (1.2)	1.53 (3.7)	0.60 (0.2)	2.17 (1.7)	2.36 (2.5)
Other misfortune	6.20 (5.3)	14.79 (1.8)	7.82 (6.7)	6.44 (1.1)	9.00 (3.4)	6.64 (3.5)
R-squared	0.13	0.11	0.09	0.12	0.09	0.09
Observations	35,964	1977	35,964	1470	35,964	9201

Notes: Marginal effects from probits, multiplied by 100. T-statistics clustered by district are in parentheses. An observation is a household. Unreported regression controls are dummies for misfortunes not listed in the table and year; age of respondent, its square, and respondent years of education; dummies for respondent sex, marital status, sex \times marital status, job type and occupation in public administration; dummies for city size, region (24), household size, acquisition of home through land invasion, change in living standard of household, change in living standard of town, presence of children aged 0–3, 4–7, 8–11, or 12–15, ownership of vehicles and receipt of food aid; and controls for travel time to the district administrative center and household consumption.

Table 7

Share of misfortune's effect working through bribery conditional on use of official rather than through usage

	(1) Police (%)	(2) Judiciary (%)	(3) Municipal government (%)	(4) Schools (%)
Crime	−3	47	69	87
Job loss	24	8	59	—
Shop bankruptcy	26	59	25	—
Illness, accident	24	9	85	—
Other misfortune	26	17	80	—

Notes: The contribution of bribery conditional on usage is computed as the marginal effect of the misfortune on bribery conditional on use ([Table 3 or 6](#)) multiplied by the share of users using the official type. The contribution of usage is computed as the marginal effect of the misfortune on usage of the official ([Table 3 or 6](#)) multiplied by the share of users of that official type who have a bribery episode. Shares for schools are reported only for victims of crime, as the bribery conditional on use effects are estimated too imprecisely for the other misfortunes.

an overall usage rate of 5.5%. Next largest are all the “other” misfortune effects, which range from 6.2 percentage points for the police to 9.0 percentage points for municipal government.⁶

The even columns examine the probability of bribing conditional on use. Two misfortunes have a very large effect on the probability of bribing the judiciary conditional on using the judiciary (column 4): criminal victimization raises the probability by 15.3 percentage points, as already reported, and a shop bankruptcy raises it by 12.3 percentage points, compared to the bribery rate of 16.6% among judiciary users. “Other” victimization raises conditional bribery of the police by 14.8 percentage points (though this is significant only at the 10% level, column 2), and several misfortunes raise conditional bribery of the municipal government by statistically significant amounts that are large compared with the conditional bribery rate of 4.8%: “other”, illness/accident and crime (column 6).

In [Table 7](#) I report the share of the overall bribery effect due to higher bribery of victims compared to other users (conditional bribery), for the misfortunes and officials of [Table 6](#). The first row repeats numbers for criminal victimization cited in the text above. For the police paired with the other four misfortunes, this component represents only a quarter of the effect. For the judiciary the results are more varied. For job loss, illness/accident and “other”, most of the effect comes through usage, while for shop bankruptcy and crime about half the effect is conditional bribery and half usage. For the municipal government, the shop bankruptcy effect comes mostly through usage, while for the other misfortunes the effect comes mostly through conditional bribery.

I have extended the analysis to seek effects of misfortune on the amount of a bribe paid, conditional on a bribe being paid. However, all marginal effects are insignificant, owing to the limited sample size and associated large standard errors (this results are not reported).

5. Conclusions

In this paper, I show that Peruvian victims of misfortune and adverse events, particularly crime victims, are much more likely to bribe than non-victims. This holds even after conditioning on a variety of individual and household characteristics, as well as household fixed effects. Victims of misfortune are more likely than non-victims to use public officials, particularly the police, which

⁶ Almost all misfortunes increase the usage of the police, judiciary and municipal government. The pairings for which the relationship is insignificant are fire–judiciary and sickness/accident–municipal government. Most misfortunes do not statistically significantly increase the usage of schools, while almost all increase the usage of the pooled other officials.

indirectly leads to more bribery. However, in many situations victims also bribe more than other users who are not victims. In such cases, victims may be more vulnerable or more desperate for service than other users, or they may have need of a more corrupt service (for example, establishing eligibility for benefits) than non-victims using the same institution. Whichever route leads the victim to the corrupt interaction with the official, the expense or disutility associated with the interaction compounds the original misfortune. People encounter corruption at the most difficult times of their lives, which is a form of inequity.

Misfortune especially spurs bribery of the police and judiciary. Of note among the detailed results is the frequent bribery of police by crime victims, caused by victims' very high use of police, presumably to report the crime. The frequent bribery of the judiciary by crime victims and bankrupt shopkeepers is distinctive for the important role played by higher bribery compared to other users, as is the bribery of the municipal government by victims of several misfortunes. The results reinforce other studies emphasizing the importance of combatting corruption in the police force, which is itself often set the task of reducing corruption in society.

Appendix A. Data appendix

A.1. Encuesta Nacional de Hogares (ENAHO)

The 2002 survey was taken in October, November and December of 2002. The “2003” survey was taken from May 2003 to April 2004. One quarter of the 2003 households were also interviewed in 2002. I simply combine monetary values from surveys taken at different times with no adjustment for inflation or seasonality, which tests indicated was appropriate for household consumption. A noteworthy discrepancy between 2002 and 2003 is a leap in the share of households reporting in the bribery module that they had used a state hospital, apparently due to more complete reporting. Whenever I control for official type dummies, I therefore also permit an interaction of the state hospital dummy with a dummy for the survey year 2003. Household consumption, computed by the statistical agency, is based on the survey's 31 pages of questions on household expenditure and consumption. The bribery module was also included in the 2004 and 2005 surveys, but the bribery data have not been released with the rest of the data.

The twenty-one types of officials listed in the survey are: municipal government, social security (providing social insurance other than pensions), state banks, judiciary, drinking water, telephone, electricity, state schools, arbitration, Ministry of Agriculture, Ministry of Industry and Tourism, tax/customs authority (SUNAT), state hospitals, national civil identification registry, Department of Migration, police, electoral office (ONPE), electoral court (JNE), development agency (FONCODES), food agency (PRONAA), and “other”.

The data are available at www.inei.gob.pe/srienaho/English/Consulta_por_Encuesta.asp.

A.2. Bribery measurement issues

The ENAHO bribery rate may be compared with the rate measured by other surveys of Peru. A 2004 Transparency International survey of 416 respondents in greater Lima found 14% of respondents had bribed in the previous 12 months, compared to 6.0% among the 3758 Lima respondents in my 2002–2003 data.⁷ However, the Transparency question did not restrict itself to bribes paid to public officials, but potentially included private sector bribes. Proética reports much

⁷ Transparency (2004).

higher bribery rates for the years 2002, 2003 and 2004 of 32%, 29% and 27%, respectively.⁸ Proética's bribery rates, conditional on the use of particular officials, look very similar to those in my data, but their usage rates look implausibly high for a window of 1 year. This suggests that the Proética time-frame, not reported in the documentation available to me, was in fact much longer than a year, even though yearly bribery rates are reported.

The share of households or individuals bribing and the number of bribes will be understated if clients commonly use agents to act as intermediaries between themselves and officials, and bribes paid by the agent are reported in the survey by the agent (or no-one), rather than the client. A 2003 survey by Proética gathered information on bribes and agents ("tramitadores") in Peru.⁹ 52% of respondents who had bribed to obtain a driver's licence reported having paid the bribe to an agent, while the share was 15% or less for the other nine activities reported in the summary statistics.¹⁰ The number of bribery episodes per household is also understated because each respondent can only report one bribery episode per year per official. Another issue is that corrupt officials may demand a fee that clients do not recognize as a bribe. Taking the various factors into consideration, it seems inevitable that the ENAHO somewhat underestimates bribery of public officials, but I do not believe the underestimation to be severe.

Appendix Table 1
Means of household variables

	All households	Users of police	Users of judiciary	Users of municipal government	Households with bribery episode
Quarterly consumption —	3226	4880	4588	3902	4433
Nuevos Soles	(2941)	(4383)	(3787)	(3340)	(3612)
Travel time to district's main town — minutes	66 (158)	36 (91)	40 (138)	55 (134)	47 (126)
Town > 500,000	0.15	0.26	0.18	0.13	0.20
Town 100,000–500,000	0.22	0.26	0.29	0.23	0.27
Town 50,000–100,000	0.06	0.09	0.08	0.08	0.10
Town 20,000–50,000	0.08	0.10	0.11	0.10	0.10
Town 2000–20,000	0.08	0.08	0.08	0.09	0.09
Town 500–2000	0.05	0.04	0.05	0.06	0.08
Town about 200	0.27	0.12	0.15	0.23	0.17
Town about 100	0.10	0.05	0.06	0.08	0.06
Own bike	0.27	0.35	0.34	0.32	0.36
Own car, van	0.07	0.16	0.13	0.10	0.14
Own tricycle, truck, taxi	0.06	0.09	0.07	0.08	0.11
Own motorbike	0.03	0.05	0.05	0.04	0.06
Residence by invasion	0.05	0.05	0.04	0.04	0.06
Child aged 0–3 present	0.29	0.28	0.25	0.38	0.30
Child aged 4–7 present	0.33	0.33	0.31	0.38	0.34
Child aged 8–11 present	0.35	0.33	0.34	0.38	0.36
Child aged 12–15 present	0.33	0.32	0.35	0.35	0.33
Household size	4.4 (2.2)	4.4 (2.1)	4.4 (2.2)	4.8 (2.2)	4.5 (2.1)
Living standard rose	0.08	0.14	0.11	0.10	0.14
Living standard same	0.65	0.52	0.54	0.62	0.51
Living standard fell	0.28	0.34	0.35	0.27	0.34

(continued on next page)

⁸ Proética (2004).

⁹ Proética (2003).

¹⁰ Bertrand et al. (2006) analyze the use of agents for obtaining drivers' licences in India.

Table 1 (continued)

	All households	Users of police	Users of judiciary	Users of municipal government	Households with bribery episode
Town living standard rose	0.06	0.09	0.08	0.07	0.09
Town living standard same	0.71	0.61	0.60	0.67	0.59
Town living standard fell	0.24	0.31	0.32	0.25	0.33
Food aid in: school	0.18	0.16	0.15	0.21	0.18
Communal room	0.07	0.05	0.06	0.08	0.06
Community dining hall	0.05	0.05	0.04	0.05	0.05
Home	0.01	0.01	0.01	0.01	0.01
Municipal government	0.04	0.03	0.04	0.06	0.04
Other house	0.17	0.14	0.12	0.18	0.15
Health treatment	0.01	0.01	0.01	0.02	0.01
Church, other	0.01	0.01	0.01	0.01	0.01
Observations	35,964	1977	1470	9201	1757

Notes: Standard deviations are in parentheses. One Nuevo Sol is worth about 0.3 US cents.

Source: ENAHO.

Appendix Table 2
Means of respondent variables

	All households	Users of police	Users of judiciary	Users of municipal government	Households with bribery episode
Male	0.48	0.54	0.49	0.49	0.55
Age	41	38	41	39	38
	(16)	(14)	(15)	(15)	(13)
Years education	7.8	10.3	9.9	8.9	9.8
	(4.8)	(4.4)	(4.7)	(4.8)	(4.6)
Married or cohabiting	0.64	0.64	0.56	0.68	0.65
Married/cohabiting × male	0.32	0.36	0.32	0.35	0.37
Not employed	0.21	0.20	0.22	0.20	0.19
Non-agricultural employer	0.02	0.05	0.03	0.03	0.04
Agricultural employer	0.03	0.02	0.04	0.03	0.03
Non-agricultural self-employed	0.19	0.24	0.22	0.19	0.25
Agricultural self-employed	0.16	0.07	0.09	0.14	0.08
White collar	0.12	0.21	0.20	0.15	0.18
Blue collar	0.12	0.12	0.09	0.10	0.11
Unpaid family worker	0.13	0.08	0.08	0.13	0.09
Domestic or other worker	0.02	0.02	0.02	0.01	0.02
In public administration	0.06	0.10	0.11	0.09	0.09
Observations	35,964	1977	1470	9201	1757

Note: Standard deviations in parentheses.

Source: ENAHO.

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