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Institute for the Study
of Labor

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# ABSTRACT

# Trust and Bribery: The Role of the Quid Pro Quo and the Link with Crime*

I study data on bribes actually paid by individuals to public officials, viewing the results through a theoretical lens that considers the implications of trust networks. A bond of trust may permit an implicit quid pro quo to substitute for a bribe, which reduces corruption. Appropriate networks are more easily established in small towns, by long-term residents of areas with many other long-term residents, and by individuals in regions with many residents their own age. I confirm that the prevalence of bribery is lower under these circumstances, using the International Crime Victim Surveys. I also find that older people, who have had time to develop a network, bribe less. These results highlight the uphill nature of the battle against corruption faced by policy-makers in rapidly urbanizing countries with high fertility. I show that victims of (other) crimes bribe all types of public officials more than non-victims, and argue that both their victimization and bribery stem from a distrustful environment.

JEL Classification: K4, O1, D6

Keywords: networks, crime, corruption

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In the last fifteen years a large literature on corruption has developed, as the view that corruption is a second-best solution to excessively cumbersome bureaucracy has given way to a concern that it is a brake on economic growth. The empirical side of this literature has focused on bribes paid by businesses, based on surveys of business executives asking them for their impressions of the level of corruption in their country of operation.[1] The theoretical literature includes analysis of bribes paid by individuals[2], but studies by economists have usually neglected the possibility that an implicit quid pro quo could substitute for a bribe. More generally, the economic literature has not drawn on the work of social scientists analyzing the implications of trust and personal relations for social and economic interactions.[3]

In this paper, I study data on bribes actually paid by individuals to public officials, viewing the results through a theoretical lens that considers whether trust could be established between the official and the client. Bilateral trust permits the substitution of an implicit quid pro quo for a bribe, which reduces corruption in the situations I consider. Appropriate trust networks are more likely to exist in circumstances where space, time or homogeneity facilitate many encounters between people: in small towns, among long-term residents of an area, and among people of similar ages. I look for evidence for this in the data, and I assess the overall importance of income as a determinant of bribery relative to other characteristics of individuals. I also consider the links between trust, bribery and crime at the individual and regional levels.[4]

There are several reasons why the study of bribes paid by individuals is an important extension of the literature studying businesses. Although the sums paid by businesses are likely

[1] Fisman and Gatti (2002), Mauro (1995), Swamy et al. (2001), Treisman (2000).
[2] Lui (1985), Rose-Ackerman (1978, 1999), Shleifer and Vishny (1993).
[3] An exception is the interdisciplinary project "Honesty and Trust: Theory and Experience in the Light of Post-Socialist Transformation" led by economists Susan Rose-Ackerman and Janos Kornai. Bardhan (1997) provides a survey of the corruption literature.
[4] I shall use "crime" to refer to crime other than bribery.

to be higher, the effective tax imposed on individuals by the need to pay bribes could be equivalent, and hence important on welfare grounds. Bribery by individuals is also a cause for concern for distributional reasons. An inability to pay bribes may exclude the poor from certain public services, or force them to accept lower quality or delayed service. Another concern is that widespread payment of small bribes by individuals in everyday settings may create a climate in which business corruption becomes acceptable. Business corruption, in turn, could have static or dynamic macro effects that disadvantage the poor.[5] Finally, individual bribery may be part of a wider pattern of dishonesty and distrust that reduces the quality of life through crime and more subtle channels.

The importance of measuring the actual prevalence of bribery rather than an impression of how much other people are bribing, as in the existing literature, is obvious. The difficulty when businesses are the unit of interest is that a question about actual payment of bribes is too sensitive.[6] By contrast, in countries where bribery is widespread, there is little stigma or danger attached to an individual's admitting that he or she has paid a bribe. I use data from 34 countries in Eastern Europe, the former Soviet Union, Latin America, Africa and Asia from the International Crime Victim Surveys, which ask whether in the previous year any government official had asked the respondent for a bribe or expected a bribe. An additional advantage of the data is that they allow a study of the link between victimization and bribery at the individual level for the first time.[7]

[5] Gupta et al. (1998).
[6] Some surveys ask about bribe prevalence among "similar firms".
[7] Mocan (2004) uses the same data as this paper to examine cross-country differences in corruption levels. Miller et al. (1998) tabulate data on bribes paid by individuals "in the last few years". Kibwana et al. (1996) have data on bribes paid in Kenya.

I find that older people and residents of small towns are less likely to bribe. Further, I find that while a long-term resident of an area is slightly less likely to bribe, this effect is significantly more pronounced if the area has many other long-term residents. I also find that residents of regions where a large share of the population is their own age are less likely to bribe. These results are consistent with the use of trust networks and the implicit quid pro quo in small towns and when age, low geographic mobility or homogeneity facilitate network formation over time.

These results are of grave concern for many developing countries. Many poorer countries continue to undergo rapid urbanization, implying many city residents are new arrivals, have much larger cities than richer countries, and have higher fertility and hence a greater share of young people. All these factors are detrimental to the formation of trust networks, and favorable to bribery.

I find that the rich pay the most bribes and the poor the least, while in the middle range bribery is insensitive to income. I argue that this latter result may reflect a greater facility of middle-income clients in using implicit quid pro quos, in part because the public officials are also likely to be middle-income, and thus move in the same circles. However, city size, age, sex, and ownership of a car all have a larger effect on bribery than income. The relatively small role of income provides some reassurance that the poor are not being excluded from public services.

I show that individuals who have been victims of crimes are more likely to bribe. However, this is not because their victimization brings them into contact with more officials, since the effect of reported and unreported victimization is the same, and the effect is similar for bribes to a variety of public officials. I conjecture that crime flourishes in an environment with low one-sided trust in institutions and a lack of faith in the honesty of one's peers. This

environment is conducive to the payment of bribes, but fosters too little trust to permit implicit quid pro quos or to facilitate honest dealings.

Using within-country variation in regional crime rates, and conditioning on individual victimization, I show that regional fraud and larceny are positively related to bribery. These widespread crimes may be detrimental to the atmosphere of trust in a region or may be the first result of reduced trust. Causality is likely to go both ways, suggesting that tackling even these less serious crimes could be a way to reduce corruption.

## Theoretical Considerations

*Trust networks*

A theoretical and experimental social science literature analyzes the effect of risk in economic and social transactions on the formation of trust networks.[8] In the face of widespread dishonesty and corruption, a second-best solution is to form networks of family, friends and other trusted members, and to conduct transactions within this network. Bonds of trust may be formed by gift-exchange, an observation originally made by anthropologists. One person may offer a good or service to another without insisting on immediate payment, with an implicit or explicit expectation of reciprocity. If reciprocity does occur, bilateral trust will be established, allowing for future mutually beneficial transactions. Experimental evidence has shown that implicit quid pro quos establish greater trust than explicit quid pro quos.

For a client and official to establish trust, they must expect to have repeated encounters.[9] This could happen if bureaucracy is so high as to require frequent transactions between the pair, or in small communities or ethnic groups where the pair would naturally interact in other

[8] See Cook et al. (2002) in sociology. Falk and Kosfeld (2003) test economic theories of network formation.

[9] See Rose-Ackerman (2001). Radaev (2004) is an application of these ideas to business corruption in Russia.

settings.[10] A longer time horizon also implies more encounters, so trust is more likely to be established among long-term residents of a town and among older people. Encounters may be more frequent and establishing trust easier between similar people. Since public officials have a variety of ages, all networks formed among adults of similar ages could potentially include both clients and public officials. Conversely, since public officials will be clustered at particular education and income levels, this will not be true of all education or income-based networks.[11]

Rose-Ackerman (1999 chapter 6) characterizes a bribe as a payment to the agent (as opposed to the principal) in the presence of an explicit quid pro quo. A public official is an agent of the government, and thus, any payment to him or her that is explicitly in return for service is a bribe. Rose-Ackerman's discussion suggests that in the context of this paper, she would also consider an exchange based on an implicit quid pro quo to be a bribe. One could imagine officials or potential clients in a small town who try to be helpful in their dealings with all people, not from altruism, but from the knowledge that making friends pays off in the future. I consider this to be an implicit quid pro quo, but one that is not corrupt: officials give the same treatment to all clients. On the other hand, if the trust network is only a subset of the relevant population, implicit quid pro quos can distort access to public services as much as explicit quid pro quos. The types of network I identify in this paper are accessible to a large share of the relevant population, at least over the life-cycle, and their facilitation of implicit quid pro quos will therefore reduce corruption.

The exchanges involving the least trust are those where the official can provide the service immediately and the client pays on the spot (although Varese (2000) notes that all bribes

[10] Bulgarians from small villages in the Miller et al. (1999) focus groups mentioned "People know each other. Bribes are not expected."
[11] Jenkins and Osberg (2002) propose and test the hypothesis that people participate in more clubs if a larger share of their age group participates.

require some trust, if betrayal is possible). An explicit quid pro quo with leading or lagged payments involves more trust, and an implicit quid pro quo involves the most trust. I believe that survey respondents are not likely to report implicit quid pro quos as bribes, and that my empirical trust proxies should therefore identify where explicit quid pro quos are replaced by implicit quid pro quos.

Networks could also lead to honesty. A higher probability of detection and a greater value of reputation within networks could lead to honesty rather than implicit quid pro quos, although there is no clear dividing line between the two. In the context of the links between crime and trust, trust should lead to honesty, rather than a network for mutually beneficial but possibly illegal exchange (the exception being the case of criminal gangs). Furthermore, the type of trust required to reduce crime is generalized, rather than bilateral, trust.

*Payment in cash versus payment with service*

It is useful to consider when an official may prefer to be paid in services, since an implicit quid pro quo will often take this form. In societies with poorly developed markets, some services such as insurance may not be available for purchase with cash. In small communities the service could be good relations during leisure time or with neighbors. Honest private services or provision of private goods where information is imperfect is also valuable: 30% of respondents in my sample report being victims of fraud in the previous year, principally in stores. It appears that much fraud cannot be detected until it is too late to obtain restitution (only 4% of frauds were reported to the police). If the fraud cannot be detected as it is perpetrated, it is unlikely that paying extra (a bribe) to the fraudster will be sufficient to avoid being defrauded. A bond of trust is required instead.

It is possible that some services, such as being a good neighbor, are not very costly to the client, so the client might prefer to pay in this currency. More commonly, however, I argue that the client is indifferent between paying with cash and a service. A dishonest car mechanic can forego profit by doing honest repairs for the official, or can pay the equivalent as a bribe to the official.

*The role of client income*

An official must have some monopoly power in order to be corrupt, or his or her rents would be competed away. It is likely that bribe-taking officials discriminate on the basis of client income. If corrupt officials discriminate perfectly, clients who can pay the marginal cost of the official's service will get it, while others will not receive service. Amongst those who bribe, larger bribes will be expected of the richer clients. Richer people will also demand more goods and services, which leads to them having more encounters with officials and paying more bribes in the course of their consumption. Bribery frequency should therefore rise with income. However, if officials move in middle-income circles, they are more likely to form trust networks with middle-income clients. It is also possible that middle-income clients have the most interesting services to be offered as part of an implicit quid pro quo. Poor people may not provide good insurance or have jobs where they can dispense favors or honest service. The value of rich people's services may be less than what they can offer in cash. The substitution of implicit quid pro quos by middle-income clients may weaken the strength of the relation between income and bribery prevalence.

**Data and Descriptive Statistics**

I use 1990s and 2000 data on countries outside the traditional OECD from the International Crime Victim Surveys (ICVS), conducted for the United Nations Interregional Crime and Justice Research Institute.[12] Interviews are conducted face-to-face with a randomly selected member of the household. Almost two thirds of the observations are from countries making the transition from communism: Appendix 1 lists the full set of countries. In many countries the ICVS surveyed only particular neighborhoods, in the capital city. Neighborhoods were chosen based on economics status, rather than randomly, although the samples are random within neighborhoods.

The survey focuses on the details of respondents' experiences of victimization, but also inquires about bribery. The question asked is: "In some countries, there is a problem of corruption among government or public officials. During 199x, has any government official, for instance a customs officer, a police officer or inspector in your country asked you, or expected you to pay a bribe for his or her services?". Respondents who answer yes are then asked what type of government official was bribed (somewhat oddly, the first option is "government official"), and then whether the incident of corruption was reported (which is almost never the case). The survey also asks respondents how long they have lived in the "area" ("area" is not defined). The amount of the bribe is not asked.

I drop only observations with missing values, and use a sample of 47,111 individuals. However, I retain observations with missing income information, indicating them with a dummy variable, since these represent 10% of the sample, and their exclusion makes the number of

[12] The earlier data are available from the ICPSR. Not all 2000 surveys have been released. I have the 2000 surveys for former communist countries, and I use those countries where the question on type of official bribed is consistent with earlier years.

bribes rather small for the purposes of the multinomial logits described below. Also, Estonia and Slovenia lack information on time lived in the area, but I retain them as they contain valuable observations from small towns (and represent 6% of the sample). The effect of missing area tenure is captured by the country dummies.

Table 1 shows the extent of bribery in the data: 12% of respondents reported having paid a bribe to a public official in the previous year. The Corruption Perceptions Index (CPI) from Transparency International, used in many previous corruption papers, can be compared with my bribe prevalence values by country. The 2003 CPI contains all my countries except Mongolia, and the correlation for the other 33 countries is –0.6 (a high value in the CPI indicates low corruption).[13]

Table 2 shows that the two most common types of bribes were those paid to a government official (24%), and those paid to the police (34%). For the subset of data for which a more detailed categorization is available, the most common "other" type of bribe was paid to nurses and doctors.

The means of the main variables used in the analysis are shown in Table 3 (additional means are shown in Appendix 2). The income quartiles refer to the country-specific distributions. The means of the city size dummies reflect the over-sampling of large cities: only 25% of respondents live in cities of less than 100,000 inhabitants.[14] 77% of respondents have lived in their area for five years or more: six percentage points of the remainder have missing values as they are in Estonia or Slovenia. 36% of respondents own one car, 8% own two cars, and 2% own three or more cars. Although the 48% of the sample that is working is over-

[13] The CPI can be obtained at www.transparency.org/cpi/index.html#cpi.
[14] In many cases the variable called "city size" appeared to refer to the size of the neighborhood, not the city. Using www.citypopulation.de and the region variable, I moved many observations from the 50-100,000 category to the over one million category.

represented amongst those having paid bribes, they nevertheless represent only 60% of those paying bribes, which represents an upper bound on the share of bribes that could have been paid in the course of business. 30% of respondents claimed to have been victims of consumer fraud in the previous calendar year (of whom 60% report being defrauded in a shop).

**Empirical Specification**

I examine the determinants of bribery with probits and multinomial logits. I begin with probits for the probability of an individual *i* in region *r* of country *c* paying a bribe in year *t*:

$$P(\text{paid bribe}_{irct}) = X_{irct}\beta_1 + \beta_2 \text{ Long-term}_{irct} + \beta_3 \overline{\text{Long-term}}_{(-i)rct} +$$

$$\beta_4 \text{ Long-term}_{irct} * \overline{\text{Long-term}}_{(-i)rct} +$$

$$\beta_5 \text{ \% Own age}_{irct} + \beta_6 \text{ Age group shares}_{(-i)rct} + \delta_t + \gamma_c + \varepsilon_{ict}.$$

All specifications include a year dummy ($\delta_t$) and country dummies ($\gamma_c$). $\text{Long-term}_{irct}$ is a dummy indicating whether the respondent has lived in the area for five years or more, while $\overline{\text{Long-term}}_{(-i)rct}$ is the average of this variable for other respondents in the region. $\beta_4$ will be negative if trust networks are formed among long-term residents, and if these networks lead to the replacement of bribes with implicit quid pro quos. $\text{\% Own age}_{irct}$ measures the share of others in the region who are in the same age group as the respondent. The vector of age group shares gives the share of others in three of the four age groups used for the % Own age variable: 16-29, 30-39, and 40-55 (55-70+ is omitted). The coefficient $\beta_5$ will be negative if trust networks are formed between members of the same age group, and if these networks permit implicit quid pro quos to substitute for bribes. Not every country contributes to identification of $\beta_3$, $\beta_4$, $\beta_5$ and $\beta_6$, since many countries have only one region: identification comes from 82 regions in sixteen countries. $X_{irct}$ includes other respondent characteristics of interest.

Since some neighborhoods are chosen based on city size and neighborhood affluence, I present only specifications that control for the respondent's income quartile and city size, as well as dummies for the size of the household (to adjust household income, to adjust for the under-representation of large households introduced by interviewing only one household member, and to take into account the number of people on whose behalf the respondent might potentially pay bribes).[15] I also always include country dummies and a year dummy (only one year dummy is separately identified). I adjust the standard errors to allow for correlation among observations in the same region, and report marginal effects.

I then investigate how the determinants of bribes vary according to the recipient of the bribe by estimating multinomial logits with six categories: the first (omitted) for no bribe paid, and the remaining five for bribes paid to the five types of official. I report odds ratios (exponentiated coefficients). For both probits and multinomial logits I report t-statistics.[16]

**Probit Results**

*Bribes and main network variables*

Table 4 contains coefficients from various specifications of a probit for the probability of having paid a bribe in the previous year. The specification of column 1 contains no variables beyond those included in all regressions (described in the previous section). The variation by city size is large: inhabitants of the smallest towns are seven percentage points less likely to bribe than those of the omitted category of cities of more than one million, and the gap declines as the city size increases. The probability of a bribe also varies greatly by income: the bottom quartile's probability is six percentage points lower than that of the (omitted) top quartile, compared to an

[15] I would like to control for the affluence of the neighborhood, but the regions I observe are generally considerably larger than the neighborhoods in question.

[16] In the multinomial logits the coefficients on the dummies of three low-bribery countries are ill-conditioned for some categories of official, so I group them with a neighboring country.

average probability of 12%. The second and third quartiles are similar, with a probability about four percentage points lower than that of the top quartile. The importance of city size and the insensitivity of bribery to income in the middle of the distribution are consistent with a reduction in bribes through trust networks and implicit quid pro quos.

In column 2 I add the three variables related to tenure in the area. As predicted, the coefficient on the interaction between individual and regional long term residence has a negative and significant coefficient (row 1). For a long-term resident, an increase of ten percentage points in the share of others in the region who are also long-term residents reduces his or her probability of bribing by 1.77 percentage points.[17] I have demeaned the regional share of long-term residents, so the dummy for a long-term resident indicates that in an average region, long-term residents bribe 2.2 percentage points less (row 2). Short-term residents are more likely to bribe if others in the region are long-term residents (row 3).

In column 3 I add controls for age. The coefficient on being a long-term resident becomes small and insignificant, showing that it column 2 it is proxying for age. The coefficient on the long-term interaction variable becomes less negative. In column 4 I add the variable indicating the share of others in the region who are the respondent's age, and three aggregate variables for the age structure of the region (the latter coefficients are not reported). Row 4 shows that a ten percentage point increase in the share of others who are the respondent's age reduces the probability the respondent will bribe by 1.19 percentage points. The coefficient on the long-term interaction becomes less negative. The effect of the aggregate share of long-term residents is cut

[17] 59% of inhabitants of cities of one million of more have lived in the area for ten years or more, compared to 69% for cities of 500,000 to one million, 77% for cities of 10,000-50,000 and 87% for cities under 10,000.

to a tenth of its column 3 magnitude: this effect is now picked up by the unreported regional age structure variables.

In the subsequent columns I control for an increasing number of other covariates. In the specification of column 5 I add controls for car ownership, and in column 6 I add controls for motor cycle and bicycle ownership, sex, education and labor force status. These covariates have little influence on the network coefficients in rows 1 and 4. The successive addition of covariates from columns 1 to 6 cuts the coefficients on income quartile more than in half. Age and car ownership, in particular, are correlated with income, and their addition reduces the effect of income. The addition of the various covariates changes the coefficients on city size less, but the addition of the regional age structure variables in column 4 does reduce them slightly.

In column 7 I add covariates capturing victimization, which reduces the coefficients on city size. In the specifications of columns 1-6, the city size coefficients were picking up both trust effects, and the victimization effects, since larger cities have more crime.[18] The latter link itself is likely to be related to less personalized and trusting interactions between people in larger cities.[19] The coefficients on the long-term resident interaction and the share of similarly aged residents also become slightly less negative, with values of –0.085 and –0.093 respectively.

The results in Table 4 are supportive of the hypothesis that bribery is reduced by the formation of networks that could potentially include public officials. In Table 5 I test the robustness of some of these results. The column of Table 5 labelled "6" reproduces key coefficients from column 6 of Table 4. In column 6.1 I report results when the definition of being a long-term resident is changed from being someone who has lived in the area five years or more to someone who has lived in the area ten years or more. The coefficient on the long-term

[18] Glaeser and Sacerdote (1999).
[19] Wirth (1938) is merely one example of an early paper on this topic.

interaction is only one third as large in this case, and only significant at the 10% level. This suggests that residents with five to ten years tenure have already been able to establish networks.

In column 6.2, instead of controlling for the share of other residents who are of similar age, I control for the share of other residents in the region in the same educational quartile as the respondent (with quartiles measured by country). I do not expect to find evidence of network effects here, since public officials are not widely distributed across educational categories. The positive, insignificant coefficient of 0.013 is consistent with this. In column 6.3, I instead control for the share of others in the region who are in the same income quartile as the respondent. Like in the case of education, I do not expect to find an effect here, and although the coefficient is negative, it is small (–0.013) and not close to significant.

In column 6.4 I check that the results of column 6 are robust to the addition of regional dummies, which is the case. In column 6.5 I check that the results of column 6 are robust to dropping residents with less than a year's tenure, since in this case a bribe reported might have taken place in the pre-move neighborhood. This change to the sample does render the coefficient on the long-term interaction less negative: –0.076, compared to –0.091 in column 6. This implies that a ten percentage point increase in the share of other long-term residents reduces a long-term resident's bribery probability by 0.76 percentage points. A ten percentage point increase in the share of other residents of a similar age reduces bribery by 0.96 percentage points.

*Bribes and other individual characteristics*

Further coefficients from the regressions of Table 4 are reported in Table 6. Column 5 (corresponding to column 5 in Table 4) shows that bribery increases by about 5 percentage points with each additional car owned. The addition of subsequent covariates reduces the effect

of owning a car to about 3 percentage points in columns 6 and 7, however. Column 7 shows that women are less likely to bribe than men, by 4.7 percentage points. Each year of education, which may proxy for within-quartile income, increases the probability of bribery by 0.22 percentage points, a small effect. Ownership of a motorcycle or moped also increases bribery, by 2.2 percentage points, while labor force status has little effect: only the negative coefficient on being retired or disabled is significant, and its coefficient is small at 1.3 percentage points. The weakness of the labor force variables suggests that most bribes in the data set do not stem from business transactions.

The age dummies of column 6 are plotted in Figure 1 with bars twice the size of the standard error. (The age coefficients change little across the specifications.) The figure indicates that people in their twenties and thirties are most likely to bribe (the omitted age category is 25-29), with a linear decline in probability from age 30-34. Teenagers are four percentage points less likely to bribe than the omitted group, presumably because their parents bribe on their behalf. People in their seventies or older are seven percentage points less likely to bribe.

The results of column 6 and Figure 1 show that several characteristics are more important than income in determining bribery. The importance of age could be related to trust: younger people may not yet have developed the personal networks necessary to avoid paying bribes. This effect should be captured by the area tenure variables, however. There are several other factors that might contribute to the age result. There could be certain services one needs early in life that must be obtained with bribes, such as connection to electricity or telephone, a first driver's licence, a place at university, good grades at university, medical services for sick children, or paying oneself out of trouble with the police. Young people's inexperience may make them more vulnerable to demands made by officials. It seems unlikely that the age coefficients represent

cohort effects, since unreported regressions show the age pattern is similar in groups of countries in very different parts of the world.

The effect of being female is also larger than the effect of income. Swamy et al. (2001) show that women disapprove of bribery more than men, and that female-run Georgian firms pay fewer bribes. They hypothesize that women may be more honest than men.[20] There are other possibilities, however. In some contexts it may be more effective for a woman to get a man to pay a bribe on her behalf, if his bargaining power is stronger.[21] Even at a given household income a woman may encounter fewer business situations where a bribe is required.[22] To the extent that some of the bribes occur in a criminal context, they are less likely to be paid by women. Finally, however, some part of the effect could be because women may have more opportunity than men to pay in sexual favors, something perhaps not reported as a bribe.

Owning a car has a larger effect on bribery than the difference between the top and bottom income quartile. There could be several reasons for this: a car requires a licence and usually inspections, it may give an impression of wealth that attracts bribe-takers, driving it leads one to commit certain infractions such as speeding and leaves one vulnerable to false allegations of such infractions. Ownership of a vehicle could also be endogenous: if one wishes to smuggle goods professionally, one needs to buy a car and bribe customs officials.

[20] Other coefficients in my regressions could also represent differences in attitudes to bribes across groups.
[21] Marital status is not available in all countries, but in unreported regressions on a smaller sample, the coefficients on both having a spouse and its interaction with sex were insignificant.
[22] Swamy et al. (2001) make the similar point that business women may not have the contacts necessary to pay bribes. However, an unreported regression shows that the interaction of female and working is insignificant.

*Bribes and victimization*

Table 7 column 7 reports the coefficients on the victimization variables introduced to the column 6 specification. Whether the individual had been a victim of assault, burglary, larceny, robbery or consumer fraud in the previous year is strongly associated with the payment of bribes. In particular, having been a victim of fraud raises the bribe probability by 7.1 percentage points. Robbery and assault raise the probability by about five percentage points, while burglary and larceny raise it by about 2.5 percentage points

One explanation for the victimization effects is that crime is exogenous, and victims have to bribe the officials they must deal with when reporting the crime. This can be tested by dividing the crimes according to whether the victim reported them to the police or not. In the column 8 specification I provide two dummies for each crime category: whether the respondent had been a victim and had reported it or whether the respondent had been a victim and had not reported it. The results show that reporting the crime or not has little effect on its association with bribery, which rules out the proposed channel of causation. A different possibility is that victims perceive the rule of law or morality as being weak, which encourages them to bribe. Alternatively, victims may be more likely than non-victims to live in an environment with low one-sided trust in institutions and a lack of faith in the honesty of one's peers. This type of environment is conducive to both crime and bribery, but not to the trust networks necessary for implicit quid pro quos, nor to honest service by public officials. Such an environment could correspond to a particular neighborhood, for example, or to groups involved in black markets.

**Multinomial Logit Results**

*Individual level variables*

Splitting bribery into several categories means that coefficients are less precisely estimated in the multinomial logits than in the probits, so that differences across categories in individual coefficients are not always significant. But the hypothesis that the coefficients (other than the country and year dummies) are the same for any pair of categories can be rejected in all regressions below.

Table 8 displays coefficients from the multinomial equivalent of column 7 in Table 4 (and Table 6). The networking effect arising from long-term residency of an area is significant only for bribes to government officials (column 1), while the coefficient is of a similar magnitude but not quite significant for the police (column 2). The coefficient is also quite negative (small odds-ratio) for inspectors (column 3), but it is imprecisely estimated. The first row shows that a ten percentage point increase in the share of other long-term residents reduces the relative probability of bribery by a long-term resident by 14% for government officials, and 12% for police. The networking effect arising from having many age peers is significant for all five officials categories. The largest effect is for bribes to customs, where a ten percentage point rise in the share of age peers reduces the relative bribery probability by 16%.

The coefficients on city size in columns 1-5 indicate that the biggest differences between the largest and smaller cities are for bribery of police (the relative probability of bribing in the smallest towns is only 28% of that of the omitted category). It seems likely that the difference in city size effect across official types reflects differences in opportunities to bribe. In unreported specifications with fewer covariates, city size effects were somewhat stronger, particularly for government officials.

Columns 1 and 5 show that bribes to government official and "other" officials appear to be non-monotonic in income (although insignificantly so), which may indicate the use of implicit quid pro quos by the middle-income. The biggest gap between the top and bottom quartiles is for bribery of customs officials (column 2) and inspectors (column 4): the bottom quartile has only half the relative probability of bribing that the top quartile does.

In Table 9 I report the coefficients on car ownership and other coefficients including victimization. With three exceptions, the coefficients on all victimization dummies have significantly positive effects on bribes in all official categories, and the similarity of the coefficients across columns, indicating rises in relative probability of 50-100%, is more striking than the differences. The similarity of the coefficients suggests that the victimization variables indeed reflect individuals' living in situations of low trust, where crime rates and bribery of all types are high.

The significance of single car ownership for all categories of official except "other" suggests that the variety of explanations for its effect proposed in the previous section are all operative, but that the increased interactions with the police is the most important channel. Education significantly increases bribery of government officials, customs and especially "other". The most noteworthy of the labor force status coefficients are for bribery of "other" officials: students and home-makers are particularly likely to make these bribes (52% and 28% more likely, respectively). Also, the gender differential is small for the "other" category. The results are consistent with bribes to "other" officials being in the health and education sectors.

The coefficients (odds-ratios) on the age dummies are plotted in Figure 2 for the five officials categories. The standard errors are not indicated, but are such that the differences across categories tend to be insignificant. The odds ratio closest to one that is significant is 0.8. The age

pattern is qualitatively similar across categories. The relatively high bribery of "other" officials by teens is consistent with bribery in education.

*Regional-level variables*

In Table 10 I examine the impact of adding certain regional-level variables, whose values I compute from within the data set, to the specification of Tables 8 and 9. Each row in Table 10 reports results from a different regression (some of the regional variables are highly correlated). I begin by examining the impact of the share of people in the region who had been victims of crimes common enough to measure reliably at the regional level: burglary, larceny and fraud. With crime measured at the regional level, the coefficient can reflect the fact that crime can be associated with bribes paid by non-victims, possibly criminals (the channel between victims and bribes is captured by the victimization dummies).

Regional crime is not related to bribes to inspectors or "other" officials (columns 4 and 5). Puzzlingly, the first row of the first column shows that there is a significantly negative relation between burglary and bribes to government officials. The point estimates show a positive relation between fraud and larceny and bribes to government officials, customs, and police. The coefficients are significant at the 5% or 10% level for fraud, while only the government official coefficient is significant for larceny, possibly because measurement error is higher. The coefficient of 15.6 for fraud in column 1 indicates that an increase in regional fraud prevalence of 10 percentage points increases the relative probability of bribing government officials by 32%.[23]

[23] These results are sensitive to the recoding of city size: with the original city size variable more regional crimes had significant coefficients, probably proxying for large cities.

The fourth row of Table 10 shows that in regions with more cars, bribes to inspectors are actually significantly lower: a ten percentage point increase in the share of people owning a car reduces the relative probability of bribes to inspectors by 37% (column 4). However, regional car ownership is positively associated with bribes to customs (column 2). Car ownership may permit, or be the result of the possibility of smuggling. The actions of smugglers may corrupt customs, leading to more bribery by others too.

Finally, since we know that rich countries have less bribery than poor countries, I hypothesized that rich regions within countries would have less bribery than poor regions. The sixth row indicates that this is true only for bribes to police, and that bribes to inspectors are higher in rich regions. Demand for services by inspectors may be very income elastic.

**Conclusions**

In this paper I study the determinants of bribery of public officials through a theoretical lens considering the implications of trust networks. Trust networks would facilitate the replacement of a bribe with an implicit quid pro quo, reducing corruption in the situations I consider. People in smaller communities and long-term residents of stable communities are more likely to establish such networks, as are older people and people in regions with many residents of their own age. I find empirical evidence confirming that these types of people pay fewer bribes. These results highlight the uphill nature of the battle against corruption faced by policy-makers in rapidly urbanizing countries with high fertility.

The rich pay the most bribes and the poor the least, while in the middle range bribe-paying is somewhat insensitive to income. This may indicate the use of implicit quid pro quos by middle-income clients, who may have the most appealing services to offer as part of an implicit quid pro quo, and who may move in similar circles to the public official. Income plays a

surprisingly small role once other characteristics are controlled for. The relative unimportance of income provides some reassurance that the poor are not being excluded from public services.

I also present evidence that victims of crime are more likely to bribe all types of official, which explains part of the city-size effect. I show this is not because crime causes victims to have more contact with public officials. Crime may cause a breakdown in trust, or vice-versa, which leads to an environment conducive to bribes rather than honesty or implicit quid pro quos. Measured at the regional level, and thus reflecting the effects of bribes paid by non-victims, possibly criminals, the crimes of fraud and larceny are positively related to bribes to government officials, the police and customs. Tackling even less serious crimes such as these could be a way of reducing corruption.

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Table 1: Frequency of Year-to-Year Inter-State Migration

| | All | 18-29 | 30-49 | Men | Women | Not laid off | Laid off |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Sample size | 114,946 | 33,238 | 56,862 | 57,239 | 57,707 | 107,139 | 2,526 |
| % migrated | 0.67% | 1.25% | 0.58% | 0.66% | 0.68% | 0.60% | 1.43% |

Notes: Unweighted means for individuals aged 18-65, unless otherwise specified. “Laid off” means that in the second year of the pair the individual reported having been laid off since the first interview. The sample includes some individuals whose layoff status is unknown.

Table 2: Types of Year-to-Year Inter-State Migration

| | All | 18-29 | 30-49 | Men | Women | Not laid off | Laid off |
|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| New neighbor state, not with same employer | 240 (31%) | 142 (34%) | 78 (26%) | 106 (28%) | 134 (34%) | 192 (30%) | 11 (31%) |
| New non-neighbor state, not with same employer | 219 (29%) | 111 (27%) | 91 (30%) | 95 (25%) | 124 (31%) | 175 (27%) | 13 (36%) |
| Return state, not with same employer | 134 (17%) | 88 (21%) | 39 (13%) | 57 (15%) | 77 (20%) | 104 (16%) | 12 (33%) |
| New state, same employer | 140 (18%) | 64 (15%) | 68 (23%) | 94 (25%) | 46 (12%) | 140 (22%) | 0 |
| Return state, same employer | 35 (5%) | 11 (3%) | 23 (8%) | 25 (7%) | 10 (3%) | 35 (5%) | 0 |
| Number of moves | 768 (100%) | 416 (100%) | 317 (100%) | 377 (100%) | 391 (100%) | 646 (100%) | 37 (100%) |

Notes: Unweighted means for individuals aged 18-65, unless otherwise specified. “Laid off” means that in the second year of the pair the individual reported having been laid off since the first interview. The sample includes some individuals whose layoff status is unknown.

Table 3: Means by Migration Status and Type of Migration

| | Stayers | Migrants | | | | | |
|---|---|---|---|---|---|---|---|
| | | All | Neighbor state | Distant state | Return state | Same employer | |
| | | | | | | New state | Return state |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Sex (female=1) | 0.50 | 0.51 | 0.56 | 0.57 | 0.57 | 0.33 | 0.29 |
| Age | 39.4<br>(13) | 31.6<br>(10) | 30.9<br>(11) | 31.5<br>(10) | 30.1<br>(10) | 33.9<br>(10) | 35.1<br>(8) |
| University | 0.09 | 0.28 | 0.26 | 0.26 | 0.22 | 0.34 | 0.49 |
| Not working | 0.35 | 0.38 | 0.51 | 0.47 | 0.50 | 0 | 0 |
| Unemployed | 0.06 | 0.10 | 0.15 | 0.11 | 0.13 | 0 | 0.02 |
| Hourly wage<br>(if working) | 20.4<br>(23) | 22.2<br>(34) | 16.3<br>(8) | 25.0<br>(53) | 18.4<br>(8) | 25.4<br>(38) | 27.6<br>(15) |
| Laid off<br>(if non-missing) | 0.02 | 0.05 | 0.05 | 0.07 | 0.10 | 0 | 0 |
| Previous move | 0.03 | 0.32 | 0.15 | 0.11 | 1 | 0.15 | 1 |
| Observations | 114,178 | 768 | 240 | 219 | 134 | 162 | 35 |

Notes. Whether the individual was working or registered as unemployed, and the wage of the employed refer to the initial year of the pair. Education is measured in the second year of the pair, while "laid off" refers to those reporting a layoff between the two interviews. The standard deviations of wages and age are in parentheses. Wages are measured in 1991 DM.

Table 4: Sensitivity of Determinants of Migration to Same-Employer Migration and Return Migration

| | Standard migration definition | | | | | Same-employer migrants are stayers | | Returners are stayers |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| General schooling | -0.0005<br>(-1.1) | -- | -- | -0.0008<br>(-0.9) | -0.0007<br>(-1.1) | -- | -0.0004<br>(-0.7) | -0.0007<br>(-0.9) |
| University | 0.0121<br>(12.4) | -- | -- | 0.0114<br>(12.3) | 0.0073<br>(10.9) | -- | 0.0042<br>(8.3) | 0.0080<br>(11.3) |
| Vocational,civil service training | 0.0015<br>(2.7) | -- | -- | 0.0014<br>(2.7) | 0.0012<br>(2.7) | -- | 0.0007<br>(2.2) | 0.0012<br>(2.8) |
| Education increase | 0.0028<br>(3.0) | -- | -- | 0.0029<br>(3.1) | 0.0033<br>(3.7) | -- | 0.0023<br>(3.4) | 0.0034<br>(3.9) |
| Not working | -- | 0.0028<br>(6.1) | 0.0027<br>(5.4) | 0.0031<br>(6.1) | 0.0028<br>(6.3) | 0.0038<br>(9.1) | 0.0040<br>(9.8) | 0.0021<br>(4.9) |
| Work part-time | -- | -- | -- | 0.0005<br>(0.8) | 0.0010<br>(1.5) | -- | 0.0016<br>(2.8) | 0.0008<br>(1.3) |
| Unemployed | -- | -- | 0.0016<br>(2.1) | 0.0017<br>(2.4) | 0.0015<br>(2.4) | -- | 0.0011<br>(2.4) | 0.0014<br>(2.2) |
| Laid off | -- | -- | 0.0051<br>(4.0) | 0.0054<br>(4.5) | 0.0038<br>(3.8) | -- | 0.0050<br>(5.7) | 0.0023<br>(2.3) |
| Wage*working *1000 | -- | 0.0166<br>(4.1) | -- | 0.0111<br>(2.3) | 0.0099<br>(2.3) | 0.0069<br>(1.2) | 0.0028<br>(0.4) | 0.0098<br>(2.4) |
| Previous move | -- | -- | -- | -- | 0.0243<br>(21.5) | -- | 0.0174<br>(19.6) | 0.0072<br>(9.1) |
| Pseudo $R^2$ | 0.10 | 0.08 | 0.09 | 0.12 | 0.16 | 0.09 | 0.18 | 0.12 |

Notes: Marginal effects from probits on a sample of 114,946 observations. The t-statistics in parentheses are adjusted to account for repeated observations on the same person, and are computed for the untransformed coefficients. Regressions also include sex, spouse, sex*spouse, child, sex*child, foreign and age dummies, year dummies and state dummies. Columns 3,7 and 8 also contain a dummy for missing layoff information. The omitted education is apprenticeship. In columns 6 and 7 same-employer migrants are coded as stayers rather than migrants. In column 8 all return migrants, including same-employer return migrants, are coded as stayers rather than migrants.

Table 5: Multinomial Estimation of Determinants of Migration

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | Neighbor state | Distant state | Return state | Same employer | Neighbor state | Distant state | Return state | Same employer |
| University | -- | -- | -- | -- | 4.13 | 3.90 | 4.26 | 4.67 |
| | | | | | (7.3) | (6.8) | (5.4) | (7.1) |
| Not working | 1.85 | 2.50 | 2.60 | 1 | 2.22 | 3.68 | 3.17 | 1 |
| | (2.5) | (5.9) | (5.0) | | (3.1) | (6.7) | (4.8) | |
| Work part-time | -- | -- | -- | -- | 2.17 | 1.28 | 0.79 | 1.12 |
| | | | | | (2.9) | (0.8) | (-0.5) | (0.4) |
| Unemployed | -- | -- | -- | -- | 1.76 | 1.02 | 1.21 | 1 |
| | | | | | (2.5) | (0.1) | (0.6) | |
| Laid off | -- | -- | -- | -- | 2.19 | 3.09 | 5.02 | 1 |
| | | | | | (2.2) | (3.7) | (4.7) | |
| Wage*working | 0.977 | 1.004 | 1.000 | 1.005 | 0.970 | 1.004 | 0.998 | 1.005 |
| | (-1.8) | (3.8) | (0.6) | (8.0) | (-2.7) | (2.9) | (-0.5) | (7.6) |
| Pseudo- $R^2$ | 0.10 | | | | 0.14 | | | |

Notes: Odds ratios (exponentiated coefficients) for multinomial logits on a sample of 114,946 observations. The reference category is non-migration. The t-statistics in parentheses are adjusted to account for repeated observations on the same person, and are computed for the untransformed coefficients. Regressions also include sex, spouse, sex*spouse, child, sex*child, foreign and age dummies, year dummies and state dummies. The omitted education is apprenticeship. Columns 5-8 also contain a dummy for missing layoff information and the remaining education dummies.

Table 6: Multinomial Estimation of Determinants of Migration by Sex

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | Men | | | | Women | | | |
| | Neighbor state | Distant state | Return state | Same employer | Neighbor state | Distant state | Return state | Same employer |
| University | 3.54 | 3.38 | 3.11 | 5.89 | 4.15 | 4.57 | 5.32 | 2.42 |
| | (4.3) | (4.3) | (2.7) | (6.8) | (5.3) | (5.5) | (4.7) | (2.1) |
| Not working | 2.21 | 4.91 | 2.21 | 1 | 2.27 | 1.92 | 4.20 | 1 |
| | (2.1) | (5.3) | (1.9) | | (2.2) | (1.9) | (4.4) | |
| Work part-time | 4.09 | 3.18 | 1.11 | 0.33 | 1.77 | 0.85 | 0.97 | 1.71 |
| | (3.3) | (2.2) | (0.1) | (-1.1) | (1.6) | (-0.4) | (-0.1) | (1.5) |
| Unemployed | 1.51 | 1.28 | 0.95 | 1 | 1.96 | 0.79 | 1.41 | 1 |
| | (1.1) | (0.7) | (-0.1) | | (2.3) | (-0.6) | (0.9) | |
| Laid off | 3.48 | 2.07 | 11.5 | 1 | 1.16 | 3.84 | 0.65 | 1 |
| | (2.7) | (1.4) | (6.3) | | (0.2) | (3.5) | (-0.4) | |
| Wage*working | 0.971 | 1.005 | 0.996 | 1.004 | 0.971 | 0.978 | 0.996 | 1.006 |
| | (-2.0) | (3.9) | (-0.5) | (5.7) | (-1.7) | (-1.3) | (-0.5) | (5.9) |
| Pseudo- $R^2$ | 0.14 | | | | 0.14 | | | |
| Observations | 57,239 | | | | 57,707 | | | |

Notes: Odds ratios (exponentiated coefficients) for multinomial logits on a sample of 114,946 observations. The reference category is non-migration. The t-statistics in parentheses are adjusted to account for repeated observations on the same person, and are computed for the untransformed coefficients. Regressions also include spouse, child, foreign and age dummies, year dummies and state dummies (Hamburg and Bremen are grouped with Niedersachsen), a dummy for missing layoff information and two additional education dummies. The omitted education is apprenticeship.

Table 7: Multinomial Estimation of Determinants of Migration by Age

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| | Age 18-29 | | | | Age 30-49 | | | |
| | Neighbor state | Distant state | Return state | Same employer | Neighbor state | Distant state | Return state | Same employer |
| University | 3.71 | 4.93 | 3.09 | 4.59 | 5.05 | 3.79 | 4.43 | 4.64 |
| | (4.4) | (5.1) | (2.7) | (4.1) | (5.2) | (5.0) | (3.5) | (5.5) |
| Not working | 1.76 | 2.21 | 3.66 | 1 | 2.31 | 5.59 | 2.84 | 1 |
| | (1.7) | (2.2) | (4.7) | | (1.6) | (5.1) | (1.9) | |
| Work part-time | 3.28 | 1.77 | 1.10 | 0.90 | 1.73 | 1.31 | 0.73 | 1.25 |
| | (3.4) | (1.2) | (0.1) | (-0.2) | (1.2) | (0.6) | (-0.4) | (0.6) |
| Unemployed | 1.46 | 1.25 | 0.66 | 1 | 2.37 | 0.76 | 1.69 | 1 |
| | (1.2) | (0.7) | (-0.9) | | (2.1) | (-0.6) | (1.1) | |
| Laid off | 1.48 | 1.86 | 5.04 | 1 | 3.53 | 5.78 | 2.53 | 1 |
| | (0.8) | (1.2) | (4.0) | | (2.4) | (4.5) | (1.2) | |
| Wage*working | 0.951 | 0.980 | 1.003 | 1.005 | 0.972 | 1.007 | 0.976 | 1.006 |
| | (-2.6) | (-0.9) | (2.3) | (4.4) | (-2.2) | (4.2) | (-1.3) | (4.5) |
| Pseudo- $R^2$ | 0.11 | | | | 0.14 | | | |
| Observations | 33,238 | | | | 51,224 | | | |

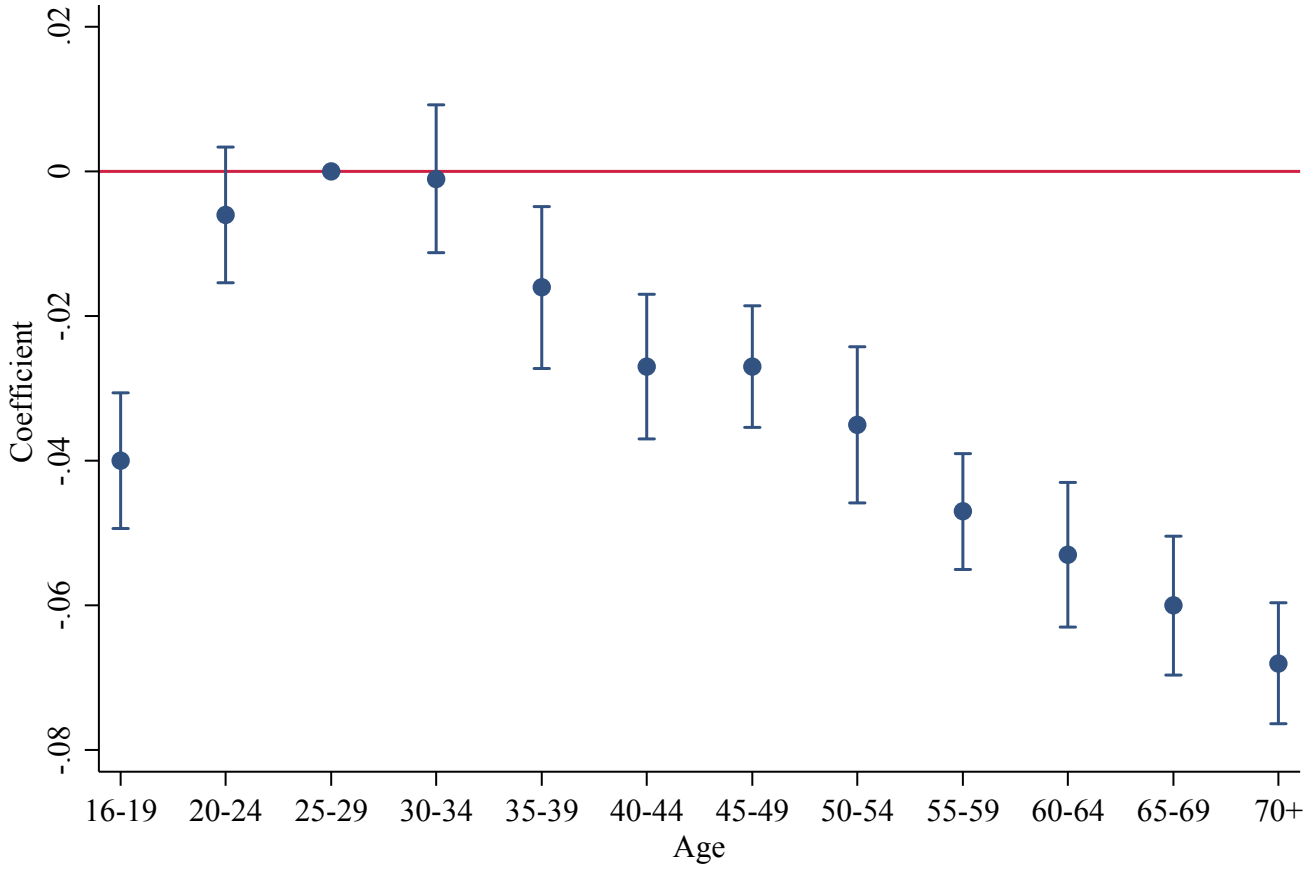
Notes: Odds ratios (exponentiated coefficients) for multinomial logits on a sample of 114,946 observations. The reference category is non-migration. The t-statistics in parentheses are adjusted to account for repeated observations on the same person, and are computed for the untransformed coefficients. Regressions also include sex, spouse, sex*spouse, child, sex*child, foreign and age dummies, year dummies and state dummies (Hamburg and Bremen are grouped with Niedersachsen), a dummy for missing layoff information, and two additional education dummies. The omitted education is apprenticeship.

Appendix Table: Additional Means

| | Stayers | Migrants | | | | | |
|---|---|---|---|---|---|---|---|
| | | All | Neighbor state | Distant state | Return state | Same employer | |
| | | | | | | New state | Return state |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Spouse | 0.66 | 0.36 | 0.34 | 0.35 | 0.34 | 0.41 | 0.43 |
| Sex (female) * spouse | 0.34 | 0.19 | 0.21 | 0.21 | 0.23 | 0.11 | 0.09 |
| Child age 0-11 in household | 0.31 | 0.25 | 0.25 | 0.28 | 0.23 | 0.21 | 0.29 |
| Sex (female) * child age 0-11 | 0.16 | 0.14 | 0.17 | 0.18 | 0.16 | 0.04 | 0.03 |
| Foreign | 0.26 | 0.14 | 0.16 | 0.14 | 0.13 | 0.13 | 0.09 |
| Age 18-21 | 0.09 | 0.11 | 0.11 | 0.13 | 0.13 | 0.06 | 0.03 |
| Age 22-25 | 0.10 | 0.20 | 0.24 | 0.18 | 0.24 | 0.15 | 0.03 |
| Age 26-29 | 0.10 | 0.24 | 0.24 | 0.20 | 0.28 | 0.24 | 0.26 |
| Age 30-39 | 0.15 | 0.20 | 0.19 | 0.25 | 0.14 | 0.19 | 0.23 |
| Age 40-49 | 0.21 | 0.15 | 0.12 | 0.14 | 0.10 | 0.23 | 0.34 |
| Age 50-59 | 0.19 | 0.06 | 0.05 | 0.05 | 0.05 | 0.09 | 0.09 |
| Age 60-65 | 0.15 | 0.05 | 0.05 | 0.05 | 0.04 | 0.03 | 0.03 |
| General schooling | 0.33 | 0.22 | 0.23 | 0.23 | 0.27 | 0.15 | 0.06 |
| University | 0.09 | 0.28 | 0.26 | 0.26 | 0.22 | 0.34 | 0.49 |
| Apprenticeship | 0.39 | 0.32 | 0.33 | 0.30 | 0.35 | 0.32 | 0.26 |
| Vocational , civil service training | 0.19 | 0.18 | 0.17 | 0.21 | 0.16 | 0.19 | 0.20 |
| Education increase | 0.02 | 0.08 | 0.13 | 0.05 | 0.04 | 0.08 | 0 |
| Work part-time | 0.08 | 0.07 | 0.09 | 0.06 | 0.04 | 0.06 | 0.09 |
| Laid off | 0.02 | 0.05 | 0.05 | 0.06 | 0.09 | 0 | 0 |
| Missing layoff information | 0.05 | 0.11 | 0.15 | 0.14 | 0.13 | 0 | 0 |
| Wage*working | 13.2 (21) | 13.7 (29) | 7.9 (10) | 13.1 (41) | 9.2 (11) | 25.4 (38) | 27.6 (16) |

Notes: Unweighted means of 114,178 stayers and 768 migrants. Variables refer to the initial year of the pair, except education, which refers to the second year. “Laid off” refers to those reporting a layoff between the two interviews. The standard deviation of wages interacted with working is reported in parentheses. Means of other variables are shown in Table 2. Wages are in 1991 DM.

Figure 1: Age Effects Relative to Age 25-29



## Figure 2: Age Coefficients by Official Type