Explaining the incidence of bribery in Europe: a multilevel analysis

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Abstract

Much of the existing evidence on the drivers of corruption has been based on 1) samples comprising both developed and developing countries, and 2) country-level indicators of the prevalence of corruption. We set out to explain the incidence of bribery in a relatively homogeneous sample of highly-developed countries, and to determine whether the known correlates of corruption function at the individual (micro) level, or at the level of the collectivity (macro). In this study, we use a measure of bribery that reflects the experiences of 'street-level' corruption among the general public. Using representative samples of individuals (N = 40,000) living in 24 European countries from the European Social Survey, we apply multilevel modelling that allows for the empirical separation of micro and macro level drivers of corruption.

At the macro level, we find that even among these developed countries, economic prosperity is associated with lower levels of bribery as are other factors associated with development including freedom of the press and a history of democracy. Generalised trust also appears to matter at the level of the collectivity though is too highly correlated with GDP in our small sample for the effects to be disentangled. On the other hand, many factors that have been shown to matter in previous studies using more heterogeneous samples have no relationship to bribery in our sample. These include: Protestantism, income inequality, economic freedom and ethnic heterogeneity.

At the micro level, we find that being male, being middle-aged, being educated and having higher income are associated with elevated risks of being asked for a bribe, likely because these factors increase the probability of contact with public officials. Further, the strength of anti-corruption attitudes and trusting others are linked to lower risks of bribery though causality is likely to be bi-directional for both of these factors. Anti-corruption attitudes operate at the level of the individual, not the collectivity, and thus are better thought of as personal values rather than 'norms'. Being from an ethnic minority background increases the risk of experiencing bribery perhaps reflecting power differentials with high status officials. We conclude that greater attention is required to the micro-level causes of corruption in developed countries.

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1. Introduction

'Grand' corruption among politicians and business elites is seldom out of the news in the developed world, and it is little wonder that the general public perceive corruption to be rife. Newspaper stories are, however, a misleading means by which to judge the incidence of corruption; the press have greater freedom in more developed nations and are likely play a key role in exposing corruption and therefore in holding politicians to account. Similarly, gauging corruption by comparing conviction rates may be problematic as successful convictions may reflect prosecutorial efforts and resources more than the actual incidence of corrupt activity (Goel and Nelson, 2011). It is perhaps not surprising, therefore, that much of the quantitative literature on the causes of corruption has come from comparative studies based on composite indices[1] of many factors including expert opinion. But here too, we may be missing something: the expert opinions of business leaders may better capture 'financial corruption' than 'street-level corruption'(Philp, 2006); others argue that the indices themselves may be overly complex and abstract, lumping together incidence of corruption with checks and controls, so that the measure becomes quite distant from the concept (Heywood and Rose 2014).

In contrast to grand corruption, 'petty' or 'street-level' corruption is often assumed to be absent in rich, highly developed nations. Yet, in this case we have a means of measurement that perhaps has greater conceptual clarity, and can be understood to represent the everyday lived experiences of corruption among the general public rather than the perception of those in the business world. In this study, we measure the incidence of reported experiences of bribery, based on survey samples designed to be representative of the population of several countries in Europe. We pay attention to what might be deemed the sociological causes of bribery: social trust, social norms, the economic context including income inequality, and ethnic heterogeneity. We examine these in a multilevel framework in order to deconstruct individual and collective properties with the aim of contributing to the understanding of the generative mechanisms of corruption in developed countries.

2. Drivers of Corruption: Theory and Evidence

The classic theoretical foundation used to explain the extent of corruption is the Principal-Agent-Client (PAC) model (Rose-Ackerman 1975). The model supposes that the probability of individual actors (in a given institution or country) engaging in corrupt activity can be determined by subtracting costs from benefits. In the frequently applied definition of corruption from the World Bank (which is by no means the only one): 'the misuse of public position for private gain', the Principal represents the public interest, the Agent is the public official, and the Client is the individual or corporation seeking a service. The public official's behaviour can be explained in terms of expected utility maximization, where disincentives (i.e. costs) in the form of the probability of detection and punishment play a key role in reducing the risk of corrupt behaviour.

The basic PAC model can be extended to take into account the social environment; Della Porta and Vannucci (1999) propose that the motivation to be corrupt is socially constructed, determined by the expectations of others and society as a whole. They distinguish the rational actor model (which

[1] Best known of the indices is the Corruption Perceptions Index (CPI) produced by Transparency International. Others are produced by the World Bank (Kaufmann et al. 2004) and by Political Risk Services (the International Country Risk Guide (ICRG).

focuses on incentives and costs) from the game theoretic model, which, though based on rational choice, emphasises the role of the behaviour of other individuals as well as individual preferences. Where corruption is widespread, the risks are lower for those who engage in corruption and the price is higher for those choosing to remain honest. Karklins (2005), for example, describes the case of a university lecturer in Bulgaria censured by his colleagues for refusing to engage in the standard but corrupt practice of taking bribes to grade papers.

Norms, Trust and Civic Virtue

This interactionist position is one that emphasises social norms: the beliefs, customs, standards, and rules shared by a social group and part of the "…taken-for-granted background to everyday life" (Hogg 2010, p. 1174). There is a linked literature on the role of culture (which might be defined as a sense of shared norms) as a causal mechanism underlying corruption (e.g. Paldam 2002). Culture, however, perhaps makes for an unsatisfactory causal explanation as the argument can become circular: high levels of corruption create norms of corruption, yet norms of corruption reduce the perceived moral costs and thereby encourage further corruption. Many scholars have therefore attended to cultural attributes that can be more meaningfully theorised, such as freedom of the press which is theorised to increase the likelihood of detection and thus inhibit corruption (Treisman, 2000; Shen and Williamson, 2005). Further factors include long-standing democracy and a history of British rule, both of which appear to reduce corruption (Nieuwbeerta et al., 2003; Treisman 2000; Donchev and Ujhelji, 2014) and a history of socialism, which appears to increase it (Paldam, 2002; You and Khagram, 2005).

A crucial aspect of the theory of culture and norms is the level at which the effect is exerted. We expect that *individuals* with strong moral objections to corrupt behaviour will be less likely to engage in corrupt deals, the subjective moral costs in this case being higher. On the other hand, we might also expect effects at the level of the *collectivity*. In an environment with strong anti-corruption norms, these norms will be enforced by bystanders and thus corrupt behaviour, even among those uninhibited by personal moral values, will be less likely (Karklins, 2005). Civic virtue, the willingness to intervene, object, and report corrupt behaviour, is therefore likely to function at the level of the collectivity. Uslaner and Rothstein (2012) similarly argue that generalized trust helps overcome the free-rider problem, whereby individuals in a trusting collectivity are less likely to engage in corruption because the punishment in terms of social sanctions is higher. Generalized trust needs to be property of the collectivity as a whole if there is to be a stable non-corrupt equilibrium.

Religion

Religion is a further factor that has been demonstrated to influence levels of corruption, though the mechanism and level of effect often remains rather unclear or under-theorised. On Protestantism, Treisman (2000) argues that the religion developed in reaction to state-sponsored corruption and that institutions of the church play a role in monitoring state officials. Others have argued that the 'hierarchical religions' may dissuade the reporting of corruption as it is more difficult to challenge the authority of office-holders (La Porta et al., 1999; Treisman 2000). Others frame the role of religion differently, tending to focus on the values and morality that it might bring to the individual (Lambsdorff, 2010).

Education

Similarly, the average level of education in a country is theorised by Lambsdorff (2010) to reduce corruption by influencing individual values and morality, which is to say that the 'moral costs' of corrupt behaviour are increased. Svensson (2005), on the other hand, suggests a macro-level cause, that human capital is required for formal institutions to operate efficiently and government abuses are more likely to go unchallenged when the electorate is not literate, which is to say that the probability of detection and punishment is lower. It is not clear, however, how this might be applied to a developed society where the vast majority of the population is literate. Cross-national studies have shown country-level education to be linked to better scores on expert indices (Svensson, 2005; Uslaner and Rothstein, 2012) but education also appears to be linked to higher probability of experiencing corruption in some studies (Chatterjee and Ray, 2012; Nieuwbeerta et al., 2003; Tavits, 2010; Mocan, 2008; cf. Lee and Guven, 2013).

Ethnic heterogeneity

Ethnic heterogeneity or 'fragmentation' has also been theorised to increase corruption. Glaeser and Saks (2006) argue that ethnic in-group loyalty overrides desires for clean politics by reducing punishment in the form of the popular will to oppose corrupt politicians: "If an area is torn apart by ethnic divisions and leaders tend to allocate resources towards backers of their own ethnicity, then members of one ethnic group might continue to support a leader of their own ethnic group, even if he is known to be corrupt" (p. 1056). Cross-national analyses have shown that ethnic diversity is associated with more pessimistic scores on corruption indices (Shen and Williamson, 2005; Treisman 2000); However, others show that the effect disappears once GDP per capita is controlled (e.g. Brunetti and Weder, 2003; Donchev and Ujhelyi, 2014; Van Rijckeghem and Weder, 2001).

Economic factors

You and Khagram (2005) propose that the rich in an unequal society have more money to buy influence. They argue that greater inequality means a greater number of poor people who will demand redistribution and the rich consequently have greater motivation to circumvent paying taxes and thus to be corrupt. Further, in high inequality societies, poor people may be more likely to be deprived of public services and may rely on petty corruption to ensure services. The middle class have the resources and the cause to monitor and expose corruption by the rich and powerful and so they hypothesise that the bigger the middle class, the less corruption there will be. Despite You and Khagram's empirical confirmation of their hypothesis, it is likely that it is status inequality between particular sets of actors that matter, and for example, a public official may be in a more powerful position to extort bribes if the client has lower social standing. Indeed, Jancsics (2013) showed that the comfortably-off didn't pay bribes to traffic officers because they could afford the standard fine easily. Uslaner and Rothstein's (2014) argument is that inequality breeds corruption through generating a sense of unfairness among ordinary citizens. Other studies have failed to replicate the finding that country-level inequality (such as the Gini coefficient for income) predicts corruption (e.g. Paldam, 2002; Treisman 2007).

Studies have almost unanimously shown that GDP per capita is associated with lower incidence of corruption cases and experiences, and corresponding positive perceptions among both experts and members of the public (cf. Brunetti and Weder, 2003). The mechanisms by which GDP may reduce levels of corruption include the quality of institutions. Higher GDP also means higher wages for civil servants as well as for the general public thereby reducing incentives to engage in illegal activity for

material gains (Van Rijckeghem and Weder 2001). Other economic factors such as government expenditure (Shen and Williamson, 2005) and trade openness (Brunetti and Weder, 2003; Svensson, 2005) are also associated with more optimistic expert opinion. In country-level analyses of corruption, small sample sizes tend to limit the degree to which the effects of correlated explanatory variables can be disentangled. Democracy is shown to matter, as is education, and freedom of the press yet these attributes tend to go hand in hand with higher GDP. Countries that have been labelled as having cultures of corruption are often those with lower GDP, leaving some uncertainty about the role of norms and acceptability of corruption versus the role of development. In one of the few studies that attempts to unpick the effects of culture from GDP, Paldam (2002) shows that there is a great deal of variation within cultural groups and uses this to argue that economic factors have greater explanatory power than cultural determinism.

Causality

As well as the challenge of disentangling the effects of correlated factors, researchers of corruption also need to take account of the direction of causality. Regarding GDP, Mauro (1995) showed that corruption inhibits economic growth, and thus economic prosperity is a consequence as well as a cause of corruption. Social trust is similarly likely to operate in both directions: trust within the collectivity may increase the perceived moral costs of corrupt behaviours, yet those having negative experiences in their exchanges with public officials are also likely to have their trust undermined. (Rothstein and Stolle 2001). Attitudes towards corruption can also be a result of high levels of corruption (e.g. moral outrage) as well as a factor that may inhibit corrupt behaviours.

3. Research aims

Much of the evidence cited above comes from studies that include both developed and developing countries. At the country-level, Protestantism, democracy, free press, economic freedom and education all appear to reduce corruption, yet these factors correlate with GDP. There is a danger that the statistical associations simply re-state what we already know about the differences between developed and developing countries. Nieuwbeerta at al. (2003) and Mocan (2008), however, showed heterogeneity in the effects of explanatory variables according to the development level of countries. It is not always clear why country-level factors would matter in one set of countries but not another, yet this is clearly of importance for understanding the mechanisms underlying the association between variables. We examine drivers of corruption in a sample of countries that are relatively homogeneous in terms of their development level, all being ranked as having the “highest” level of development in the Human Development Index.

A second motivation for this study is to determine which level of analysis matters for understanding the incidence of bribery, again with the aim of adding to our understanding of the causal mechanisms that belie the known statistical associations. There have been surprisingly few multilevel studies of corruption given the advantage that such an analytic approach brings: it enables the within- and between-country factors to be modelled simultaneously thus allowing the empirical separation of individual-level and macro-level causes.

4. Data and measures

We use the Round 2 of the European Social Survey which covered 25 European countries, with fieldwork completed mostly in 2004 (Jowell et al., 2005). We drop Ukraine from the analysis as it is an outlier in several ways, having levels of bribery that far exceed the other countries in the sample as well as a level of development (in terms of GDP, average income and ranking in the Human Development Index) that is substantially different to the rest of the sample. We use the following survey question to ascertain individual-level experience of bribery: *How often, if ever, has a public official asked you for a favour or a bribe in return for a service in the last five years?* The answer options are (with frequencies): Never (95%), Once (3%), Twice (1%), 3-4 times (0.5%), 5 times or more (0.5%). We recode this to a binary variable 0 (no experience) or 1 (any experience). As the question wording specifies that the corrupt exchange was initiated by the official rather than the citizen, it is possible to think of this variable as capturing *Extortion*[2] though we use the term bribery thoughout. We follow others (e.g. Tavits, 2010; Lambsdorff, 2010; You and Khagram, 2005) in measuring attitudinal 'norms' of corruption with the survey item asking respondents how wrong they feel it is for a public official to take a bribe: *How wrong, if at all, do you consider public official asking someone for a favour or bribe in return for their services?* The possible answers are: Not wrong at all (1%), a bit wrong (2%), wrong (27%), and seriously wrong (70%).

We take measures of GDP, income inequality, freedom of the press and political histories from the CIA database, Freedom House, and other sources outlined in Table 1. Several of our explanatory variables are aggregated directly from the European Social Survey and include generalised trust measured on a 10-point scale, educational attainment measured using the 5-point ISCED classification, ethnic minority and immigrant status, and self-reported belonging to the Protestant religion. Due to high levels of missingness on household income (for example, income was not asked at all to Estonian respondents), we include a dummy variable "income missing". We also centre income on the country-median so that the measure becomes relative to others in the same country. There are also high levels of missing data on the religion variable and we exclude this variable in all models except those directly testing the effect of Protestantism. In Table 2 we show the rank correlations between the country-level indicators. There are strong correlations between GDP and average trust, inequality, political freedom and freedom of the press. Protestantism and economic freedom have moderate correlations with GDP, as do a history of Socialism and democracy.

Along with the explanatory variables outlined above, we also control for age, sex, employment status, and marital status which have been shown to influence the incidence of bribery in previous studies. It is likely that these variables proxy for the probability of contact with public services, which in turn creates the opportunity for corrupt exchanges. Rose and Peiffer (2015) term this a *two-step model* of corruption, namely that having accounted for the probability of contact, these factors have no influence on the probability of engaging in corrupt activity. We have no measure of contact available to be able to confirm that this is the case in this analysis.

[2] "Where a public official dispenses to a citizen something valued, that he controls by virtue of his bureaucratic position, this distinction refers to which of the pair initiates the corrupt exchange: It is bribery if initiated by the citizen and extortion if initiated by the official." (Granovetter, 2007, p. 153).

Country-level variables	Mean	Min (country)	Max (country)	Source
GDP $	28,836	10,301 (Turkey)	65,206 (Luxembourg)	World Bank
Trust	4.9	2.9 (Turkey)	6.8 (Denmark)	European Social Survey
Ethnic minority %	4.5%	0.5% (Finland)	21% (Estonia)	European Social Survey
Born overseas %	8.3%	1.1% (Poland)	32.5% (Luxembourg)	European Social Survey
Income inequality - Gini	26.9	23.4 (Sweden)	44.8 (Turkey)	Eurostat, Work Bank
Political freedom	1.2	1 (several countries)	3.5 (Turkey)	Freedom House (Low score = more freedom)
Freedom of the press	17.6	9 (Finland, Iceland, Sweden)	48 (Turkey)	Freedom House (Low score = more freedom)
Government expenditure	47.6	34.1 (Switzerland)	59.4 (Slovenia)	Heritage.org
Democratic since 1950	65.4%	0	1	CIA World fact book
CPI index	7.0	3.2 (Turkey)	9.7 (Finland)	Transparency International
Protestant %	19.7%	0 (Turkey)	93% (Denmark)	European Social Survey
Average 'How wrong..?'	3.6	3.4 (France)	3.8 (Denmark)	European Social Survey
Average being asked for a bribe (extortion)	4.9%	1.0% (Finland)	14.7% (Slovakia)	European Social Survey

Table 1: Country-level explanatory and outcome variable; mean, minimum and maximum

		1	2	3	4	5	6	7	8	9	10	11	12	13
1	**Log GDP pc**	1												
2	**Protestant %**	0.51	1											
3	**Trust %**	0.76	0.84	1										
4	**Gini**	-0.35	-0.67	-0.46	1									
5	**Ethnic minority %**	0.02	0.09	-0.01	0.19	1								
6	**Born overseas %**	0.43	0.17	0.25	-0.06	0.41	1							
7	**Freedom House**	-0.75	-0.41	-0.62	0.41	0.30	-0.33	1						
8	**Freedom of press**	-0.68	-0.69	-0.77	0.42	0.20	-0.25	0.68	1					
9	**Economic freedom**	0.52	0.64	0.70	-0.22	0.23	0.38	-0.33	-0.53	1				
10	**Government expenditure**	0.13	0.08	0.12	-0.46	-0.47	0.17	-0.42	-0.18	-0.29	1			
11	**Ex-Socialist**	-0.59	-0.04	-0.40	-0.15	0.00	-0.13	0.47	0.38	-0.04	-0.23	1		
12	**Education**	0.25	0.77	0.55	-0.43	0.05	0.06	-0.20	-0.53	0.55	-0.10	0.28	1	
13	**Democracy since 1950**	0.59	0.14	0.39	0.06	0.03	0.14	-0.39	-0.49	0.12	0.21	-0.89	-0.15	1

Table 2 Spearman Rank Correlations of country-level variables; N = 24

5. Analysis

We take a multi-level approach to analysing bribery in Europe for its two main analytical advantages: firstly, that country-level and individual-level effects can be modelled simultaneously, and secondly that we can analyse the degree to which each level can explain the observed variance and how that is influenced by the addition of explanatory variables. As well as individual and country, we include region as a 'middle' level of analysis to allow us to test the claim that there is regional variation that is often neglected in studies of corruption (Charron et al. 2014; Glaeser & Saks 2006; Goel & Nelson 2011; Belousava et al. 2014). The region variable is NUTS2 for which there is an average of 11 per country in our sample.

5.1 Descriptive analysis

We begin with some descriptive analysis of corruption across our sample of 24 European countries. We plot the average levels of experiences of bribery by country along with the Corruption Perceptions Index (Transparency International). The results show that countries in which bribery is relatively rare are Northern and Western European and include: Finland, the UK, Netherlands, Switzerland and Iceland at under 1%. At the other end of the scale, in Slovakia, Czech Republic, Greece, Poland and Estonia over 10% have been asked for a bribe in the five years preceding the survey date. On the whole the CPI scores roughly show decline as experienced bribery increases; however, there is a great deal of 'noise' with CPI scores appearing lower than might be expected in France, Ireland, Spain, Slovenia and Turkey, and higher in Estonia, Austria and Luxembourg.

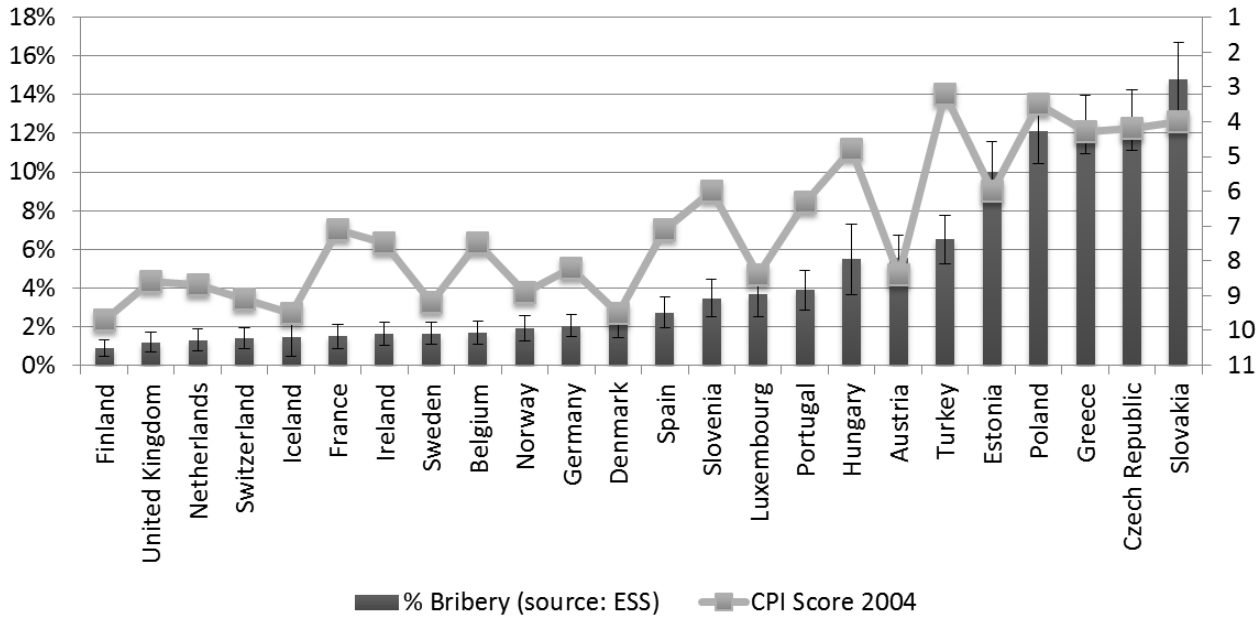

Figure 1 Rates of bribery 2004 (European Social Survey) and CPI scores 2004 (Transparency International) shown on the right-hand axis (reversed so that both scales run in the same direction for comparison)

The pattern of average bribery experience also fits with the expected (if under-theorised) relationship with GDP, where the countries with lower corruption also tend to be the richer countries while those with higher corruption are the poorer countries in the sample. This relationship is shown in Figure 2. The negative relationship is clear, and the countries with the lowest rates of bribery cluster together at the higher end of the GDP range. On the other hand, there are outliers. Luxembourg has by far the highest GDP of the countries in this sample, yet has a higher incidence of bribery than in other Western European countries. The Czech Republic and Greece also appear to have more bribery than other countries with equivalent GDP (such as Portugal and Slovenia). Turkey, however, has lower rates of reported bribery than its GDP level would predict.

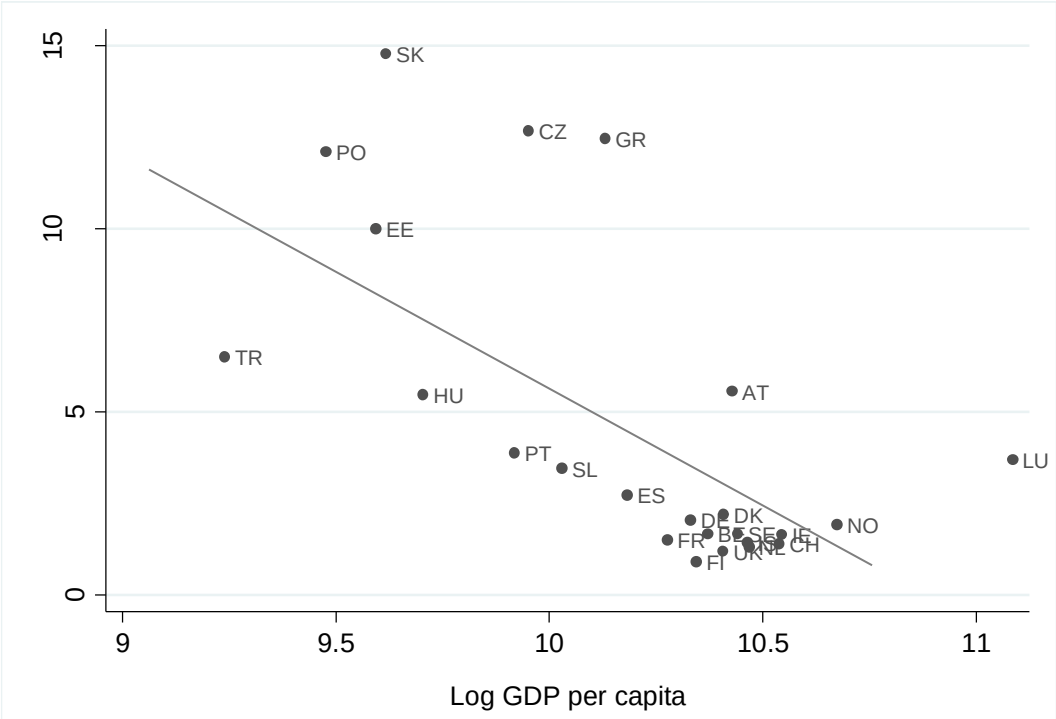

Figure 2 Rates of extortion 2004 (European Social Survey) and log GDP per capita 2004 (World Bank), with regression line. AT Austria; BE Belgium; CH Switzerland; CZ Czech Republic; DE Germany; DK Denmark; EE Estonia; ES Spain; FI Finland; FR France; GB United Kingdom; GR Greece; HU Hungary; IE Ireland; IS Iceland; LU Luxembourg; NL Netherlands; NO Norway; PL Poland; PT Portugal; SE Sweden; SI Slovenia; SK Slovakia; TR Turkey

In Figure 3, we plot norms of corruption against experienced bribery. There is a weak negative relationship whereby countries whose inhabitants feel that bribery is more wrong are also the countries where bribery is a less frequent occurrence. There are some exceptions, however, with France having a surprisingly relaxed attitude on average while the Czech Republic, Greece and Poland take a strong moral stance despite higher levels of experience.

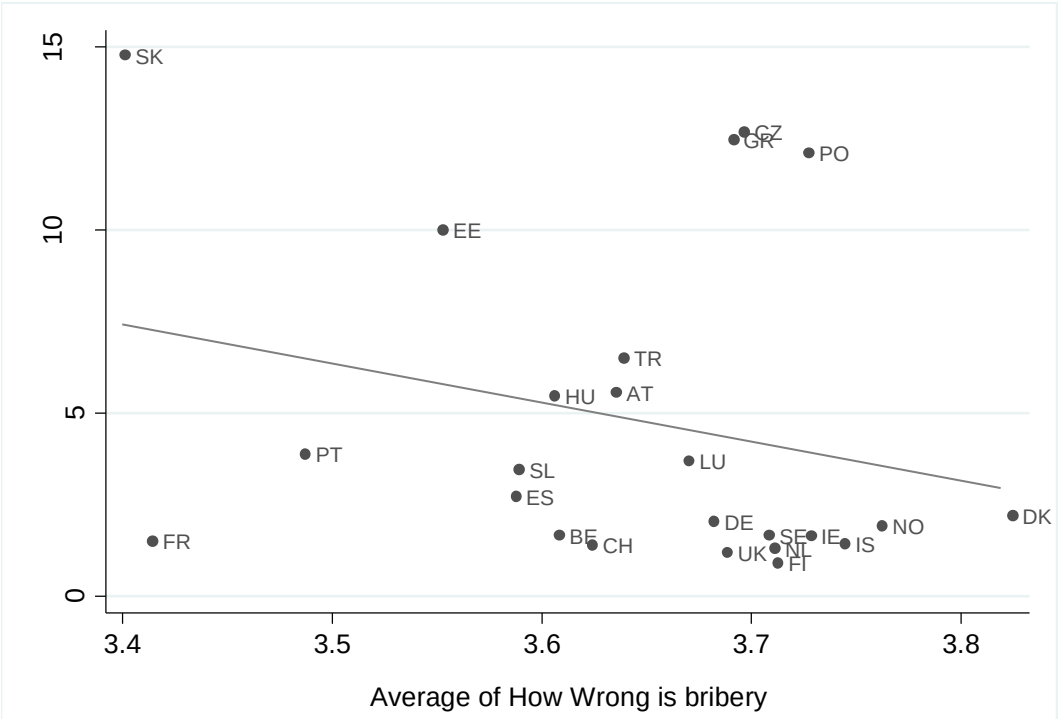

Figure 3 Rates of bribery 2004 (European Social Survey) and mean of 'How Wrong..?', with regression line (See Fig 2 for country codes)

5.2 Multi-level analysis

Firstly in Table 3 we report the null model which enables us to examine the baseline partition of variance before explanatory variables are added. The degree of similarity among the observations within-group and between-group is expressed through the Intra-class Correlation Coefficient (ICC) which functions as an indicator of heterogeneity between groups. In the empty model the ICC shows the proportion of variance being explained at each level before any independent variables are added, thus providing a baseline partition of variability at each level[3]. They show that the country level variances account for around 18% of the total variance while regional differences account for a further 6%. Given that much of the literature explaining corruption has focused on country-level differences, this relative lack of variation at the country level is of substantive interest and suggests that among a sample of countries that are relatively homogeneous (all being developed and European) the individual-level differences may demand greater attention.

[3] Based on the estimated residual variances (τ), the ICCs (ρ) are calculated as follows: $\rho = \frac{\tau_0^2}{\frac{\pi^2}{3} + \tau_0^2}$

Snijders and Bosker (2012) point out that the estimated ICCs in multilevel logistic regression vary according to estimation method and are somewhat arbitrary. However, the method we apply here has the advantage that it can be used to estimate the effects of the explanatory variables on the higher level residual variances.

Experienced bribery	Null Model	Model 1a - indiv level variables	Model 1b - excl. Protestantism	Model 2 - Protestant %	Model 2b + GDP
	b [se]	b [se]	b [se]	b [se]	b [se]
Female		-0.523***	-0.451***	-0.523***	-0.522***
		[0.067]	[0.050]	[0.067]	[0.067]
Age		0.012	0.026**	0.012	0.013
		[0.013]	[0.010]	[0.013]	[0.013]
Age sq/100		-0.029*	-0.041***	-0.029*	-0.029*
		[0.013]	[0.010]	[0.013]	[0.013]
Log income (centred)		0.110*	0.096*	0.103*	0.107*
		[0.050]	[0.038]	[0.050]	[0.049]
Income missing		-0.550*	-0.467*	-0.512+	-0.524+
		[0.274]	[0.210]	[0.276]	[0.271]
Education (ISCED)		0.126***	0.116***	0.127***	0.129***
		[0.029]	[0.023]	[0.029]	[0.029]
Married		0.027	-0.045	0.027	0.024
		[0.077]	[0.056]	[0.077]	[0.077]
Protestant		-0.091		-0.047	-0.048
		[0.152]		[0.154]	[0.154]
In paid work		-0.027	-0.035	-0.024	-0.022
		[0.082]	[0.063]	[0.083]	[0.083]
Full time study		-0.446**	-0.394**	-0.442**	-0.440**
		[0.165]	[0.123]	[0.165]	[0.165]
Trust others		-0.048***	-0.074***	-0.047***	-0.046***
		[0.014]	[0.011]	[0.014]	[0.014]
% Protestant				-1.066	-0.352
				[0.711]	[0.579]
Log GDP					-1.581***
					[0.406]
Constant	-3.481***	-3.149***	-3.410***	-2.907***	12.991**
	[0.184]	[0.382]	[0.290]	[0.407]	[4.097]
Log likelihood	-7159.81	-3799.68	-6792.96	-3798.6	-3792.91
N observations	42275	21781	41372	21781	21781
Country level variance	.86 [0.133]	1.024 [0.363]	.752 [0.236]	.916 [0.327]	.476 [0.182]
Region level variance	.446 [0.047]	.181 [0.051]	.186 [0.040]	.180 [0.051]	.180 [0.050]
Country ICC	0.18	0.24	0.15	0.20	0.06
Region ICC	0.06	0.01	0.01	0.01	0.01

Table 3 Multi-level logistic regression models of Extortion in Europe; random intercepts included for country and region; Significance levels: + p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.001; standard errors in parentheses.

Experienced bribery	Model 3a - trust	3b - trust & GDP	4 - GDP & Gini
	b [se]	b [se]	b [se]
Female	-0.451***	-0.451***	-0.452***
	[0.050]	[0.050]	[0.050]
Age	0.026**	0.026**	0.026**
	[0.010]	[0.010]	[0.010]
Age sq/100	-0.041***	-0.041***	-0.041***
	[0.010]	[0.010]	[0.010]
Log income (centred)	0.085*	0.093*	0.099**
	[0.038]	[0.038]	[0.037]
Income missing	-0.402+	-0.444*	-0.477*
	[0.210]	[0.208]	[0.206]
Education (ISCED)	0.120***	0.119***	0.117***
	[0.023]	[0.023]	[0.022]
Married	-0.045	-0.047	-0.047
	[0.056]	[0.056]	[0.056]
In paid work	-0.03	-0.031	-0.034
	[0.063]	[0.063]	[0.063]
Full time study	-0.389**	-0.391**	-0.394**
	[0.123]	[0.123]	[0.123]
Trust others	-0.072***	-0.072***	-0.073***
	[0.011]	[0.011]	[0.011]
Average trust	-0.547***	-0.227	
	[0.143]	[0.192]	
Log GDP		-1.065*	-1.616***
		[0.473]	[0.379]
Gini			-0.021
			[0.030]
Constant	-0.709	8.543*	13.643**
	[0.748]	[4.163]	[4.413]
Log likelihood	-6787.22	-6784.92	-6785.38
N observations	41372	41372	41372
Country level variance	.442	.352	.357
	[0.146]	[0.119]	[0.124]
Region level variance	.183	.184	.188
	[0.039]	[0.040]	[0.040]
Country ICC	0.06	0.04	0.04
Region ICC	0.01	0.01	0.01

Table 4 Multi-level logistic regression models of Extortion in Europe; random intercepts included for country and region; Significance levels: + p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.001; standard errors in parentheses.

Experienced bribery	5a - 'Norms'	5b Norms + GDP	6 - ethnic diversity
	b [se]	b [se]	b [se]
Female	-0.441***	-0.441***	-0.438***
	[0.051]	[0.051]	[0.053]
Age	0.030**	0.030**	0.026*
	[0.010]	[0.010]	[0.010]
Age sq/100	-0.045***	-0.045***	-0.041***
	[0.010]	[0.010]	[0.011]
Log income (centred)	0.088*	0.090*	0.106**
	[0.038]	[0.037]	[0.039]
Income missing	-0.431*	-0.437*	-0.551*
	[0.211]	[0.207]	[0.218]
Education (ISCED)	0.138***	0.139***	0.138***
	[0.023]	[0.023]	[0.024]
Married	-0.043	-0.045	-0.043
	[0.057]	[0.057]	[0.060]
In paid work	-0.026	-0.024	-0.03
	[0.063]	[0.063]	[0.066]
Full time study	-0.412***	-0.411***	-0.464***
	[0.124]	[0.124]	[0.130]
Trust others	-0.075***	-0.075***	-0.072***
	[0.011]	[0.011]	[0.011]
How wrong..?	-0.416***	-0.416***	-0.425***
	[0.036]	[0.036]	[0.038]
Ethnic minority			0.327**
			[0.126]
Born overseas			-0.045
			[0.109]
Avg. How wrong?	-1.741	0.636	
	[1.773]	[1.427]	
Log GDP		-1.498***	
		[0.351]	
Avg. Eth minority %			0.031
			[0.139]
Avg. born overseas %			-3.479
			[3.027]
Constant	4.257	10.836*	-1.860***
	[6.463]	[5.088]	[0.489]
Log likelihood	-6650.26	-6643.64	-6075.62
N observations	40961	40961	38807
Country level variance	.715	.372	.599
	[0.223]	[0.127]	[0.190]
Region level variance	.176	.178	.176
	[0.039]	[0.039]	[0.039]
Country ICC	0.13	0.04	0.10
Region ICC	0.01	0.01	0.01

Table 5 Multi-level logistic regression models of Extortion in Europe; random intercepts included for country and region; Significance levels: + p < 0.1; * p < 0.05; ** p < 0.01; *** p < 0.001; standard errors in parentheses.

Model 1a includes individual-level explanatory variables and shows that being female and being a student are associated with fewer experiences of bribery, and being trusting of others also reduces the probability of being asked for a bribe. Age has an inverted U-shaped relationship with bribery increasing with age but a negative quadratic term indicating decline after a certain age. On the other hand, household income and educational attainment level are associated with higher chances of experiencing bribery. Model 1b excludes Protestantism due to the high levels of missing data but confirms the findings from model 1a. Overall, the effects of the individual-level covariates are in the expected direction and corroborate other studies of experienced bribery (Chatterjee and Ray, 2012; Nieuwbeerta et al., 2003; Mocan, 2008; Lee and Guvan, 2013). In showing effects of being female, age, income, education, and employment status, we do not infer a direct causal link but rather confirm Rose and Peiffer's (2015) two-step model showing that these factors are associated with a greater degree of contact with public officials and therefore a greater chance for bribery and extortion to occur. The addition of the individual level variables has the effect of reducing the region level ICC to just 1%, while having little effect on the country level residuals.

Unlike previous studies which have been based on wider samples of countries beyond Europe, we find no relationship between identifying as a Protestant and experience of extortion at the individual level. In model 2, Protestantism as a country-level average is added. The coefficient is negative and significant indicating that the proportion of the population that is Protestant reduces the probability of experiencing extortion. The fact that it is the collective, rather than the individual level of Protestantism, indicates that cultural explanations such as Treisman's (2000) are more likely than individual values-based explanations (e.g. Lambsdorff, 2010). However, once log GDP is introduced as a control variable country-level Protestantism loses statistical significance. This could be for one of two reasons; firstly, that the relationship is spurious (Protestantism is a proxy for GDP, having historically facilitated economic growth) or, secondly, that there is a lack of statistical power in our sample of 24 countries to separate out the effects. The addition of population Protestantism does not reduce the country residual variances, while the addition of GDP reduces the residual variance substantially suggesting that of these two variables competing for variance, GDP has the stronger effect. With GDP in the model the level 2 ICC is reduced to 6%.

Country-level trust is added as an explanatory variable to model 3a (Table 4). As would be predicted by theories of generalised trust and civic-ness as properties of the collectivity (Karklins, 2005; Uslaner and Rothstein, 2012), it has a negative coefficient. When GDP (model 3b) is added the coefficient loses statistical significance though maintains its negative sign. Average trust has a strong effect on reducing the country level residual variances similar in magnitude to GDP and it is likely that the sample size is too small to separate out the contributions of these correlated factors ($r = .76$). In the final model of Table 4 we include logged GDP and the Gini coefficient as a measure of income inequality. Income inequality has no effect on the outcome variable within our sample of developed countries.

In Table 5, we develop our examination of the causes of corruption in Europe with a focus on norms of corruption and ethnic heterogeneity. In model 5a, we can see that the individual rating of the acceptability of bribery has a negative relationship with experience. The average level of norms at the country-level has a negative sign but is not statistically significant and on adding log GDP to the model (5b), the sign reverses. Our evidence therefore indicates that the level at which these norms operate is at the individual, not the country level (cf. Dong et al., 2012). Our evidence perhaps

supports Rose and Peiffer's (2015) argument that cultural explanations are over-emphasised, and the cultural tolerance of bribery and corruption is not able to explain levels of corruption.

The different migration histories of countries across Europe mean that different ethnic minorities are present in different countries. We measure ethnic minority status with a single variable where respondents self-identify as belonging to a minority group. To resolve issues of model fit, the population percentages are recoded into quintiles[4]. In addition we measure whether the respondent was born overseas; this is a proxy measure for a first generation migrant. Model 6 shows that individuals belonging to an ethnic minority group have more frequent experiences of being asked for a bribe while there is no difference for those who were born overseas. The elevated chances of experiencing bribery among ethnic minority individuals have in some studies been put down to the fact that those individuals maintain the values and culture of their country of origin (Barr and Serra, 2010). However, such an interpretation may be problematic for two reasons. Firstly, such a causal explanation would lead one to expect greater levels of bribery among first generation immigrants, but this is clearly not the case. Secondly, the model controls for individual perceptions of how acceptable they find bribery to be. The remaining significant effect, of an increased risk for ethnic minority groups, may stem from other causes such as being at an increased vulnerability of extortion due to their minority status. The level-2 variable for the percentage of the population that belong to an ethnic minority group has no effect on the probability of experiencing bribery, and thus there is no support for Glaeser and Saks' (2006) argument that particularized trust increases corruption.

5.3 Correlates of GDP

Across almost all empirical studies both of corruption indices and of experience of bribery specifically, regardless of the sample of countries, higher GDP is associated with lower levels of corruption, and our analysis confirms this pattern. There is no single theory that might explain this but rather a set of proposed factors that are associated with economic development which might offer explanations of a more specific nature. These include economic freedom, freedom of the press, individual political freedom, government expenditure, higher levels of education and being democratic. Because of the constraints of the sample size, we tested these factors one by one. While our findings (summarised in Table 6) corroborate the importance of economic freedom, freedom of the press and political freedoms, none of these can explain the effect of GDP which remains significant throughout. Further, with GDP controlled, having been consistently a democracy for the last half century, or being an ex-socialist country has no association with experience of bribery in this sample.

[4] The coefficient estimate of the raw percentage is positive (i.e. increases the risk of bribery) and borderline significant, but the model does not fit well. Investigation shows that Estonia is the outlier here with a large proportion identifying as belonging to an ethnic minority. The largest minority ethnic group in Estonia is Russians. In her study in Estonia, Tavits (2010) finds no difference in incidence of bribery by ethnic group.

Country-level covariate	Relationship (individual factors controlled)	Relationship (also with GDP controlled)
Log GDP	**Lower risk, significant**	n/a
Political Freedom (Freedom House)	**Lower risk, significant**	Non-significant
Freedom of Press	**Lower risk, significant**	Non-significant
Economic freedom	Non-significant	Non-significant
Government expenditure	Non-significant	Non-significant
Ex-socialist	**Higher risk, significant**	Borderline significant (p = 0.08)
Average education	Non-significant	Non-significant
Democratic since 1950	**Lower risk, significant**	Non-significant

Table 6 The effect of country-level covariates on bribery with and without GDP controlled.

5.4 Model residuals

In order to examine how well our model predicted the probability of bribery, we plot the residuals in Figure 4. These are based on model 3b which includes average trust and GDP as well as the individual-level controls. Where the residuals are positive this indicates that the model under-estimates the incidence of bribery and a negative residual indicates an over-estimate. Several countries have residuals close to zero suggesting that, having accounted for these individual-level attributes and national GDP and trust, these countries have a level of bribery that is 'expected'. Examples include Sweden, Ireland, the Netherlands, Iceland and Switzerland. Several countries are doing a little better than might be expected: Turkey, France, the UK, Finland and Belgium. As we also saw in Figure 2, Turkey stands out with its low GDP as having low levels of bribery among its public officials. However, the largest country-level residuals are positive and seen for Austria, the Czech Republic, Slovakia, Estonia, Greece and Luxembourg. The relatively high incidence of bribery in these countries is worthy of further explanation.

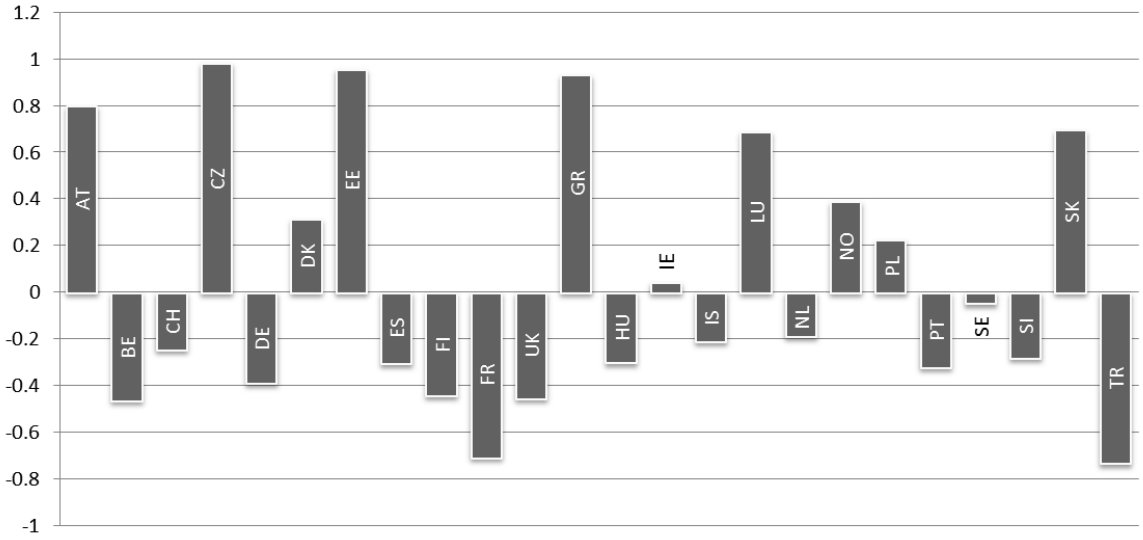

Figure 4 Random Effects: Residual variances by country after controlling for log GDP and average trust. Based on Model 3b

6. Discussion

In the empirical literature using country as the unit to analyse the corruption, the vast majority of studies use samples comprising both developing and developed countries. However, in our sample of highly developed European countries, many of these factors appear not to hold any explanatory power. Average education level, for example, income inequality and economic freedom, have no influence on the probability of being asked for a bribe. There are a number of ways to reconcile the null finding with previous studies; it is plausible that these factors have non-linear relationships, deterring corrupt activity when levels of corruption are high, but having little effect when corruption is a more unusual event. Education may have a causal effect on reducing corruption when average education is low but once the majority of the population is literate the effect peters out.

Several other attributes of the country were shown to be associated with reduced levels of bribery in our sample, but reduced to non-significance in the presence of a control for GDP per capita. These include political freedom, freedom of the press, economic freedom, and a history of democracy. These correlate moderately with log GDP (see Table 2) and it is likely that our sample of 24 countries is insufficient to disentangle these features of development and GDP. However, as we are unable to 'explain away' GDP, it remains an open question. Just what is it about economic development that reduces the incidence of bribery? It is unlikely that higher salaries (of the general public or civil servants) can be the single answer given that higher incomes at the individual level are linked to higher probability of experiencing bribery.

Generalized trust is theorised to operate at the level of the collectivity by reducing the 'free rider problem' (Uslaner and Rothstein, 2012), and our initial model of trust supports this claim. Here too the significance level drops off once GDP is controlled but it is worth noting that trust reduces the level-2 residual variance by a similar magnitude to that of GDP. Though our small sample limits the possibility to parse out the effects of trust and the strength of the economy, trust is among the stronger candidates for explaining why prosperity is linked to lower levels of bribery. However, experiences of bribery are also likely to undermine trust.

Our analysis shows that countries with larger ethnic minority populations have higher levels of bribery and this is over and above the increased risk to ethnic minority individuals of experiencing bribery. It is ethnic minority status rather than immigrant status that brings about increased risk; thus explanations based upon cultural norms and values from the homeland hold little sway. The particularized trust theory is difficult to confirm. Our dependent variable captures corrupt exchanges initiated by the public official so it is possible that people of ethnic minority backgrounds are vulnerable to being extorted due to their minority status and the 'power differentials' between the agent and client (Heath et al., forthcoming).

One weakness of our dependent variable, however, is that we do not know if the survey respondent was complicit in setting up the corrupt exchange. Perhaps paying a little extra for an expedited service, for example, can be to the benefit of both parties. The fact that individual-level ratings of the acceptability of bribery are associated with lower risks of experience suggests that the exchange is not always entirely one way. These norms of acceptability are almost certainly better labelled as 'values' than 'norms' since they operate at the level of the individual, not the collectivity. Weber Abramo (2008) showed that the relationship between opinion and experience varies 'haphazardly'

between countries. In Europe it also appears that the strength of the moral stance against bribery and incidence of bribery are only weakly related.

Overall, our analysis of relatively homogeneous countries seems to call for much greater attention to the individual-level explanations for corruption, where the majority of the variance is. Perhaps the costs and incentives framework has potential to yield explanatory power when applied to specific situations, rather than the legal and structural attributes of the whole country.

6.1 Limitations

One major limitation of using cross-national surveys is that we cannot know how respondents themselves interpret the meaning of the question asked. There is the risk that equivalence of meaning may not hold across countries. A linked issue may be that the question wording specifies "public officials" this being the 'traditional' home of corrupt activity. However, in countries with high levels of privatization it is possible that bribery occurs within the setting of the private sector. Public transport workers, traffic wardens, and utility providers may be a few examples where in countries with large public sectors, these may provide opportunity for exchange with 'public officials' but elsewhere these workers belong to, and are thought of, as belonging to the private sector. This is a way in which the assumption of equivalence of meaning is violated, and also a way in which levels of bribery may be underestimated in developed countries. A second limitation is that the individual-level predictors do little more than predict contact with public officials in many cases (Rose and Peiffer 2015), though individual-level variables such as trust are unlikely to be linked to contact. It is also not clear why ethnic minority status should be associated with greater levels of contact, and thus sociological explanations based on power differentials may be a fruitful line of enquiry for future studies.

References

Ariely G, Uslaner EM. 2014. Corruption, Fairness, and Inequality. Available at SSRN 2460399 http://ssrn.com/abstract=2460399

Barr A, Serra D. 2010. Corruption and culture: An experimental analysis. *J Public Econ* 94: 862-69

Belousova V, Goel RK, Korhonen I. 2014. Corruption perceptions versus corruption incidence: Competition for rents across Russian regions. *Journal of Economics and Finance* http://link.springer.com/article/10.1007/s12197-014-9298-y: 1-16

Brunetti A, Weder B. 2003. A free press is bad news for corruption. *J Public Econ* 87: 1801-24

Charron N, Dijkstra L, Lapuente V. 2014. Regional governance matters: quality of government within European Union member states. *Reg Stud* 48: 68-90

Chatterjee I, Ray R. 2012. Does the evidence on corruption depend on how it is measured? Results from a cross-country study on microdata sets. *Applied Economics* 44: 3215-27

Della Porta D, Vannucci A. 1999. *Corrupt exchanges : actors, resources, and mechanisms of political corruption*. New York: Aldine de Gruyter

Donchev D, Ujhelyi G. 2014. What do corruption indices measure? *Economics & Politics* 26: 309-31

Dong B, Dulleck U, Torgler B. 2012. Conditional corruption. *Journal of Economic Psychology* 33: 609-27

Glaeser EL, Saks RE. 2006. Corruption in america. *J Public Econ* 90: 1053-72

Goel RK, Nelson MA. 2011. Measures of corruption and determinants of US corruption. *Economics of Governance* 12: 155-76

Heath A, Richards L, de Graaf ND. Forthcoming. Explaining Corruption in the developed world: The potential of sociological approaches. *Annu Rev Sociol*

Heywood PM, Rose J. 2014. "Close but no Cigar": the measurement of corruption. *Journal of Public Policy* 34: 507-29

Hogg MA. 2010. Influence and Leadership. In *Handbook of social psychology*, ed. ST Fiske, DT Gilbert, G Lindzey, AE Jongsma. Hoboken, N.J.: Wiley

Granovetter M. 2007. The social construction of corruption. In *On capitalism*, ed. V Nee, R Swedberg, pp. 152-74. Stanford, Calif.: Stanford University Press

Jancsics D. 2013. Petty corruption in Central and Eastern Europe: the client's perspective. *Crime, law and social change* 60: 319-41

Jowell R, Team CC-o. 2005. *European Social Survey 2004/2005: Technical Report*, Centre for Comparative Social Surveys, City University, London

Karklins R. 2005. *The system made me do it: corruption in post-communist societies*. New York: ME Sharpe

La Porta R, Lopez-de-Silanes F, Shleifer A, Vishny R. 1999. The quality of government. *Journal of Law, Economics, and organization* 15: 222-79

Lambsdorff JG. 2010. Who accepts bribery? Evidence from a global household survey. http://www.econstor.eu/bitstream/10419/55011/1/684339161.pdf

Lee W-S, Guven C. 2013. Engaging in corruption: The influence of cultural values and contagion effects at the microlevel. *Journal of Economic Psychology* 39: 287-300

Mauro P. 1995. Corruption and growth. *The quarterly journal of economics* 110: 681-712

Mocan N. 2008. What determines corruption? International evidence from microdata. *Economic Inquiry* 46: 493-510

Nieuwbeerta P, De Geest G, Siegers J. 2003. Street-level corruption in industrialized and developing countries. *Eur Soc* 5: 139-65

Paldam M. 2002. The cross-country pattern of corruption: economics, culture and the seesaw dynamics. *European Journal of Political Economy* 18: 215-40

Philp M. 2006. Corruption definition and measurement. In *Measuring corruption*, ed. CJ Sampford, AH Shacklock, C Connors, F Galtung. Aldershot, UK: Ashgate

Rose-Ackerman S. 1975. The economics of corruption. *J Public Econ* 4: 187-203

Rose R, Peiffer C. 2015. *Paying Bribes for Public Services: A Global Guide to Grass-Roots Corruption*: Palgrave Macmillan

Rothstein B, Stolle D. 2001. *Social capital and street-level bureaucracy: An institutional theory of generalized trust*. Presented at ESF Conference Social Capital: Interdisciplinary Perspectives, Exeter, UK September15-20

Shen C, Williamson JB. 2005. Corruption, Democracy, Economic Freedom, and State Strength A Cross-national Analysis. *International Journal of Comparative Sociology* 46: 327-45

Snijders TAB, Bosker RJ. 2012. *Multilevel analysis : an introduction to basic and advanced multilevel modeling*. Los Angeles ; London: SAGE. xi, 354 p. pp.

Svensson J. 2005. Eight questions about corruption. *The Journal of Economic Perspectives* 19: 19-42

Tavits M. 2010. Why do people engage in corruption? The case of Estonia. *Soc Forces* 88: 1257-79

Transparency International. 2004. *Corruption Perceptions Index*, http://www.transparency.org/research/cpi/cpi_2004 Accessed 21/04/2016

Treisman D. 2000. The causes of corruption: a cross-national study. *J Public Econ* 76: 399-457

Treisman D. 2007. What have we learned about the causes of corruption from ten years of cross-national empirical research? *Annu. Rev. Polit. Sci.* 10: 211-44

Uslaner EM, Rothstein B. 2012. Mass Education, State-Building and Equality: Searching for the Roots of Corruption. *QoG Working Paper Series* 2012

Van Rijckeghem C, Weder B. 2001. Bureaucratic corruption and the rate of temptation: do wages in the civil service affect corruption, and by how much? *Journal of development economics* 65: 307-31

Weber Abramo C. 2008. How much do perceptions of corruption really tell us? *Economics: The Open-Access, Open-Assessment E-Journal* 2: 3

You J-S, Khagram S. 2005. A comparative study of inequality and corruption. *Am Sociol Rev* 70: 136-57