Corruption on Two Levels: National Comparisons Using Hierarchical Models

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For at least twenty years, much of the focus of empirical research on corruption has been on its prevalence. Why do some countries experience more corruption than others? While a host of countries have been profiled in articles and monographs, most of the hypothesis testing has been done using national comparisons (Triesman, 2000). Corruption levels are estimated by elite analysts, often those with business experience, and models are developed to capture the structure of the data.

Much of the variation among countries in the prevalence of corruption at the national level can be attributed to a relatively small number of economic, cultural and institutional variables. Among the economic variables, per capita income and openness to trade have been persistent predictors. The cultural variables include, perhaps a bit less intuitively, Protestantism and membership in the British Empire. These variables are all associated with lower national corruption levels.

As impressive as this work has been, these studies all suffer from a glaring limitation: they cannot capture the perspectives of citizens within countries. The dependent variable (the prevalence of corruption) is estimated by informed elites, the results are aggregated and each country is given a single score. Differences among respondents in their estimation of corruption go unexplained. Yet corruption is likely experienced differently depending on class or culture. Not everyone is obliged to pay bribes, for example, and not everyone believes is endemic. System-level variables, such as wealth and the size of the state bureaucracy, are obviously relevant in modeling the extent of corruption experienced in a given society, but so are variables that distinguish individuals from one another.

This paper approaches corruption on two levels. Using data from the World Values Study, we acquire corruption estimates from over 30,000 respondents in 33 countries. To these data we add national economic and cultural variables, producing a data set comprised of both individual and system level information. Our task is to estimate the impact of both individual and system variables on estimates of the prevalence of corruption. From the literature on corruption we extract testable hypotheses and proceed to construct and test models using Bayesian estimation procedures. This enables us to move well beyond conventional national comparisons of corruption, toward conclusions about how corruption is evaluated by individuals in a variety of countries.

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The paper begins with a brief comment on current research; it then outlines the hierarchical linear model, locating it within recent work on the methodology of comparative politics. We then isolate two sets of variables, one dealing with wealth—both personal and national—the other with culture—specifically religion and patterns of religious affiliation. Hypotheses are identified and tested. Results and discussion follow.

Corruption Comparisons

Corruption has been theorized as both a systemic and an individual phenomenon. At the individual, or micro, level much of this work has proceeded on the liberal assumption that the essence of corruption is the illegitimate use of public office for private gain. Research has focused on the various ways in which the conflict between private and public interests manifests itself in the decisions of politicians or officials (Stark, 2000; Thompson, 1998). Corruption is also understood as a systemic or macro phenomenon, with attention to generalized breakdown of the rule of law and lack of respect for the public interest. Reference to "corrupt states" or "corrupt governments" is intended to transcend individual malfeasance and paint the picture of a system in which the concept of the public interest does not feature as a constraint on the conduct of public affairs (Dobel, 1978).

It is time to begin joining the macro and the micro in comparative research on political corruption. We are reminded by the legal system, and by recurrent demands for accountability, that it is individuals who ultimately commit acts that others deem corrupt. As Vito Tanzi (1998, 572) notes, "some public officials will be corrupt perhaps because of their own psychological or moral makeup...realistically not all officials respond the same way to the same incentives…agents are heterogeneous." To no one's surprise, surveys reveal that individuals differ from one another in their tolerance for ostensibly corrupt acts (Mancuso, et. al., 2006).

On the other hand, work on macro environments and long term social forces remind us that these heterogeneous individuals do not operate in a vacuum. Their behaviour is inevitably embedded within institutional and historical patterns (Pierson, 2000). Cultures (Lipset and Lenz, 2000), political institutions (Geedis and Thacker, 2004; Kunicova and Rose-Ackerman, 2005) and macro economic policies (Mauro, 1995; Shlieffer and Vishney, 1993) all produce system wide effects. *The key question is how do individual attributes connect with system-level contexts to produce attitudes toward corruption?*

The methodological challenges of uniting the micro and the macro have been taken up in a series of papers revisiting the "small N" problem and seeking to merge qualitative and quantitative techniques (King, Keohane and Verba, 1993; Hanson and Kopstein, 2005). Methodologically, problems arise where general assumptions are made about countries that are internally diverse. Western (1998, 1255) calls this "the fundamental problem of comparative research": wherever contextual variables are invoked, differences in causal processes within countries are related to characteristics that vary across them.

In the classical approach to statistical inference, the investigator forms parameter estimates from a sample population, assuming them to be constant and have a fixed effect on the dependent variable. The classical approach does allow for the possibility that there are 'nestings' or groupings within the sample population, but does not allow for any explanation as to why some groups share common characteristics that are not shared by individuals from other groups in the same sample population. To capture the magnitude of these common characteristics, the classical approach typically employs dummy variables, but, as Steenbergen and Jones (2002, 221) note "dummy variables are only indicators of subgroup differences; they do not explain why the regression regimes for the subgroups are different."[1]

A more promising approach is to develop hierarchical models in which individuals are situated in contexts without presuming that their similarities and differences will manifest themselves identically across those contexts. For the study of corruption this implies that individual beliefs are nested in national experience. Personal attributes like education and ethnicity will not produce the same beliefs regardless of system. On the contrary, we know that there are system effects traceable to wealth, institutions and culture. Our initial concern is to determine how important micro, or individual, effects are relative to macro, or system, effects. Beyond that lies the task of locating individual effects within system effects.

The Hierarchical Linear Model

The HLM6 Hierarchical Linear & Nonlinear Modeling program uses an empirical Bayes-Restricted Maximum Likelihood (EB-REML) method to explain variance in the dependent variable by using independent variables measured at separate levels of analysis (Bryk and Raudenbush, 2002, 408). Research examples include employees within corporations, students within schools (Bryk and Raudenbush, 1985; Browne, et. al., 2002), or, in a three level model, citizens within political parties within states (Steenburgen and Jones, 2002).

The EB- REML method takes into account the variance at all levels of analysis independently. Level 1 represents units at the micro level; Level 2 at the higher level of aggregation. Where significant Level 1 differences exist, these are explained, or controlled for, before proceeding to a Level 2 cross-system analysis.

To form the Hierarchical Linear Model , we start with a Level 1 model in which our dependent variable (Y_{ij}), where $i = 1,2,\ldots n_j$ Level 1 observations, are contained within $j = 1,2,\ldots J$ Level 2 units. This means that the every individual in the sample population (N) is seen as belonging to one of J different subgroups ($\Sigma n_j = N$).

[1] Steenbergen and Jones (2002, 221) also discuss the use of 'interactive modeling' where subgroup observations are included as main effects in a classical model. Difficulties arise here due to the assumption of no random errors at the group level, which the authors note "is a very strong assumption that will usually prove to be false."

The unconditional Level 1 model can be defined as:

$$Y_{ij} = \beta_{0j} + e_{ij} \tag{1}$$

where the Level 1 random error (e_{ij}) represents the deviation of each observation i c j from each $\beta_{0j,}$ (j= 1, 2, … J). We assume e_{ij} to have a normal distribution with a mean of zero and a constant variance.e_{ij} ~N(0, σ²).[2]

If we estimate (1) using an Ordinary Least Squares (OLS) approach, for each separate nesting (j = 1,2,…,J), we get:

$$\tilde{Y}_{\cdot j} = \beta_{0j} + \hat{e}_{\cdot j} \tag{2}$$

where each β_{0j} is simply estimated as the mean value of the outcome variable within group j. $\beta_{0j} = (\Sigma Y_{ij} / n_j)$. This gives us separate estimates for each j unit. In the case above where the outcome is unconditional, each estimated true mean (β_{0j}) is simply the mean value of Y_i associated with each j. The random error term above ($\hat{e}_{\cdot j}$) can be interpreted as the average deviation of the estimated $\hat{Y}_i$ from it true value (β_{0j}) within a given j. Assuming e_{ij} ~N(0, σ²), then $\hat{e}_{\cdot j} = \Sigma e_{ij}/n_j$ and $\hat{e}_{\cdot j}$ ~N(0, σ^2/n_j).

At Level 2, β_{0j} is estimated as:

$$\beta_{0j} = \gamma_{00} + u_{0j} \tag{3}$$

where γ_{00} is the constant grand mean across all Level 2 mean values of Y_{ij}. The Level 2 random error term u_{0j} is the deviation of the mean values for each j unit from the grand mean. We assume β_{0j} to also be normally distributed with a mean value of zero and a constant variance. β_{0j} ~N(0,τ_{00}).

Plugging (3) into (2) gives the unconditional Analysis of Variance (ANOVA) hierarchical model:

$$\tilde{Y}_{\cdot j} = \gamma_{00} + u_{0j} + \hat{e}_{\cdot j} \tag{4}$$

One of the distinguishing features of hierarchical modeling is the ability to partition the variance into two or more levels of analysis. This feature is captured in (4) where there are two error terms associated with our estimate of $\tilde{Y}$: *i*) within-group random errors ($\hat{e}_{\cdot j}$), and, *ii*) between-group random errors (u_{0j}).

This is more clearly demonstrated if we take the variance of $\tilde{Y}_{\cdot j}$:

$$\mathrm{Var}(\tilde{Y}_{\cdot j}) = \mathrm{Var}(\beta_{0j}) + \mathrm{Var}(\hat{e}_{\cdot j}) = \tau_{00} + \sigma^2/n_j \tag{5}$$

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[2] In the case of possible Level 1 heterogeneity, it is possible to model the natural log of the Level 1 variance as a function of the Level 1 or Level 2 variables: $\ln(\sigma_{ij}^2) = \alpha_0 + \Sigma\alpha_j X_j$ where the α coefficients are estimated via Maximum Likelihood and can be tested for homogeneity across the Level 1 or 2 variable of interest (X_j) using the z statistic.

where

> $Var(\beta_{0j}) = \tau_{00}$ is the fixed level 2 variance or, *parameter variance* (Bryk and Raudenbush, 2002), and,
>
> $Var(\hat{e}_{\cdot j}) = V_j = \sigma^2/n_j$ is the level 1 variance which varies with n_j, the number of units within group j.

The ability to partition the variance between the levels of analysis allows us to form a measurement for the reliability (λ_j) of the group level estimate ($\tilde{Y}_{\cdot j}$) for the parameter β_{0j}. The reliability is estimated as the proportion of variance that is located at level 2 relative to the total variance. A low reliability would indicate that the estimated mean ($\tilde{Y}_{\cdot j}$) is not a good indicator of the true country specific mean (β_{0j}), whereas a high reliability would indicate that the estimated sample mean is a good indicator of the true country specific mean.

Another advantage of partitioning the variance is the ability to estimate the proportion of variance in the outcome variable associated with individual (1-ρ) and group (ρ) level effects, or, the *intraclass correlation* (Bryk and Raudenbush, 2002). Initial estimates of ρ from the unconditional ANOVA model (4) give an indication of where the majority of the total variance in the dependent variable lies.

Using the reliability estimates (λ_j), we can define our Empirical Bayes (EB) estimators as:

$$\beta_{0j}^{*} = \lambda_j \tilde{Y}_{\cdot j} + (1- \lambda_j)\, \gamma_{00}^{*} \tag{6}$$

Where the group specific estimate for each j ($\tilde{Y}_{\cdot j}$) is pulled towards a fixed grand mean estimate (γ_{00}^{*}). The extent of the pull is dependent on the reliability of $\tilde{Y}_{\cdot j}$ as a good estimate of the true β_{0j}, for j, relative to γ_{00}^{*}. For example, where the majority of the variance is located at Level 1, the estimated reliability will be low, implying that the Level 2 estimate (γ_{00}^{*}) is a better estimate of the true outcome (β_{0j}^{*}) relative to the Level 1 estimate ($\tilde{Y}_{\cdot j}$). The EB estimate takes into account the fact that the Level 2 estimate is more closely associated with the true outcome and therefore gives it more weight in estimation.

The fixed, grand mean, or Level 2 effects are estimated using Weighted Least Squares with weights equal to the precision (Δ_j^{-1}), or, inverse of the variance, of $\tilde{Y}_{\cdot j}$.

Using the precision of $\tilde{Y}_{\cdot j}$, we can estimate the Level 2 grand mean with Weighted Least Squares as:

$$\gamma_{00}^{*} = \Sigma\Delta^{-1}_{j}\, \tilde{Y}_{\cdot j} / \Sigma\Delta^{-1}_{j} \tag{7}$$

In conditional models Level 1 effects can estimated by plugging any of q (q= 1, 2, …,Q) individual level 1 variables associated with Y_{ij}, into (1):

$$Y_{ij} = \beta_{0j} + \Sigma\beta_{qj}X_{qij} + e_{ij} \quad (8i)$$
or
$$Y_{ij} = \beta_{0j} + \Sigma\beta_{qj}(X_{qij} - X_{q\cdot j}) + e_{ij} \quad (8ii)$$
or
$$Y_{ij} = \beta_{0j} + \Sigma\beta_{qj}(X_{qij} - X_{q\cdot\cdot}) + e_{ij} \quad (8iii)$$

Whether to use equation (8*i*), (8*ii*), or, (8*iii*) depends on the centering decision deemed most appropriate by the investigator given the nature of the data (Gavin and Hofman, 1998).[3]

There are three ways to define the Level 1 effects β_{qj} at level 2. Each of the Q+1 equations for β_{qj} can be defined as:

$$\beta_{qj} = \gamma_{q0}^{*} \quad (9i)$$

or
$$\beta_{qj} = \gamma_{q0}^{*} + u_{qj} \quad (9ii)$$

or
$$\beta_{qj} = \gamma_{q0}^{*} + \Sigma\gamma_{qk}^{*}Z_{kj} + u_{qj} \quad (9iii)$$

with fixed effects γ_{q0}^{*} and k = 1, 2, …, K possible level 2 group effects γ_{qk}^{*} on level 2 variables Z_{kj}. We assume the level 2 error term (u_{qj}) to be normally distributed with a mean of zero and constant variance. $u_{qj} \sim N(0, \tau_{qq})$

Where the Level 1 effect β_{qj} is fixed or homogenous across all level 2 units, there is no significant variance across level 2 units, implying that the error term is equal to zero. ($u_{qj} = 0$) Where the Level 1 effect is homogenous across level 2, 9*i* will be used. Where the Level 1 effect β_{qj} is heterogeneous across level 2 ($u_{qj} \neq 0$), but not explainable by level 2 variables, 9*ii* will be used. In both 9*i* and 9*ii*, the expected outcome for β_{qj} is the grand mean estimate ($E[\beta_{qj}] = \gamma_{q0}^{*}$), but the differentiating factor in 12*ii* is the existence of random variation in β_{qj}, or the hypothesis H_o: $\tau_{qq} = 0$ is rejected; whereas in 9*i* the hypothesis H_o: $\tau_{qq} = 0$ would be accepted. In 9*iii* β_{qj} is seen as non-randomly varying across Level 2 units where some of the variation can be explained by Level 2 variables

[3] Using a *grand mean centering* approach (8-*iii*), each X_{qij} is centered around the mean of all means ($X_{q\cdot\cdot}$), implying that each intercept term β_{0j} is the mean value $Y_{\cdot j}$ adjusted for a difference among the level 2 units in X_{qij}. Where an individual score on all q variables, X_{qij}, is equal to the average level 2 score $X_{q\cdot\cdot}$, the intercept will represent the outcome for that individual. Also, the β_{qj} coefficients will represent the effect of a deviation for the grand mean value on $X_{q..}$ for X_{qij}. Using a *group mean centering* approach (8-*ii*), each X_{qij} is centered on its group specific mean, $X_{q\cdot j}$ implying that the intercept term represents the unadjusted mean for group j. Where an individual score on all q variables, X_{qij}, is equal to the average within his/her nesting or country $X_{q\cdot j}$, the intercept (β_{0j}) will represent the outcome for that individual. The β_{qj} parameters will represent the effect of a deviation for the mean level 1 value on $X_{q.j}$ for X_{qij}. And finally, using *a raw metric* approach (8*i*) leaves the level 1 variable uncentered.

Z_{kj} (k= 1,2,…,K; j= 1,2,…,J) and some of the variance possibly remains unexplainable across level 2 ($u_{qj} \neq 0$).[4]

Each Level 1 parameter (β_{qj}) has a variance of:

$$Var(\beta_{qj}) = Var(u_{qj}) = \tau_{qq} \tag{10}$$

And covariances:

$$Cov(\beta_{qj}, \beta_{q'j}) = \tau_{qq'} \; (q' \neq q) \tag{11}$$

Where there exists heterogeneity at level 2 ($u_{qj} \neq 0$), in a trivariate Level 1 model, the dispersion of random effects can be defined in the variance-covariance matrix:

$$\mathbf{T} \;=\; \begin{array}{l} Var(\beta_{0j}) \\ Var(\beta_{1j}) = \\ Var(\beta_{2j}) \end{array} \quad \begin{array}{l} \tau_{00}\,\tau_{01}\tau_{03} \\ \tau_{10}\,\tau_{11}\tau_{12} \\ \tau_{20}\,\tau_{21}\tau_{22} \end{array} \tag{12}$$

The Level 2 effects Z_{kj} (k=1,2,…,K; j=1,2,…,J) are also estimated with precision weighted averages:

$$\gamma_{qk}^{*} = \Sigma\Delta^{-1}{}_{qj}(Z_{kj} - Z_{q\cdot}^{*})(\tilde{Y}_{\cdot j} - \tilde{Y}_{\cdot\cdot}^{*}) / \Sigma\Delta^{-1}{}_{qj}(Z_{qj} - Z_{q\cdot}*)^2 \tag{13}$$

where $Z_{q\cdot}^{*}$ and $\tilde{Y}_{\cdot\cdot}^{*}$ are also precision weighted:

$$Z_{q\cdot}^{*} = \Sigma\Delta^{-1}{}_{j}Z_j/\Sigma\Delta^{-1}{}_{j} \tag{14i}$$

and

$$\tilde{Y}_{\cdot\cdot}^{*} = \Sigma\Delta^{-1}{}_{j}\tilde{Y}_{\cdot j}/\Sigma\Delta^{-1}{}_{j} \tag{14ii}$$

Using reliability estimates (λ_{qj}), we can derive Empirical Bayes estimators for these parameters. Each q = 1, 2, …,(Q+1) level 1 parameter is estimated as:

$$\beta_{qj}^{*} = \lambda_{qj}\,\tilde{Y}_{\cdot j} + (1-\lambda_{qj})(\gamma_{q0}^{*} + \Sigma\gamma_{qk}^{*}Z_{kj}) \tag{15}$$

The Hierarchical Linear Model can be formed by plugging in the appropriate estimate for each Level 1 estimate (β_{qj}; q = 1, 2, …,(Q+1)) from 9*i*, 9*ii* or 9*iii* into one of 8*i*, 8*ii*, or, 8*iii*.

For example, using a raw metric centering approach with q= 0,1,2, Level 1 variables our Level 1 model would look like:

$$Y_{ij} = \beta_{0j} + \beta_{1j}X_{1ij} + \beta_{2j}X_{2ij} + e_{ij} \tag{16}$$

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[4] This can be testing the hypothesis H_o: $\tau_{qq} = 0$. Where all level 2 units have sufficient data to compute OLS coefficients, this can be tested by using the statistic $\Sigma\,(\beta_{qj} - \gamma_{q0}^{*} + \Sigma\gamma_{qk}^{*}Z_{kj})^2/V_{qqj}$ which is distributed as ❹² with J- K – 1 degrees of freedom.

Where at Level 2 we can run all k = 1,2 variables in all q =1,2,3 equations for each β_{qj} :

$$\beta_{0j} = \gamma_{00} + \gamma_{01}Z_{1j} + \gamma_{02}Z_{2j} + u_{0j} \quad (17\text{-}i)$$
$$\beta_{1j} = \gamma_{10} + \gamma_{11}Z_{1j} + \gamma_{12}Z_{2j} + u_{1j} \quad (17\text{-}ii)$$
$$\beta_{2j} = \gamma_{20} + \gamma_{21}Z_{1j} + \gamma_{22}Z_{2j} + u_{2j} \quad (17\text{-}iii)$$

This gives the conditional Hierarchical Linear Model:

$$Y_{ij} = \gamma_{00} + \gamma_{01}Z_{1j} + \gamma_{02}Z_{2j} + u_{0j} + (\gamma_{10} + \gamma_{11}Z_{1j} + \gamma_{12}Z_{2j} + u_{1j})X_{1ij} + (\gamma_{20} + \gamma_{21}Z_{1j} + \gamma_{22}Z_{2j} + u_{2j})X_{2ij} + e_{ij} =$$

$$\gamma_{00} + \gamma_{01}Z_{1j} + \gamma_{02}Z_{2j} + \gamma_{10}X_{1ij} + \gamma_{11}Z_{1j}X_{1ij} + \gamma_{12}Z_{2j}X_{1ij} + \gamma_{20}X_{2ij} + \gamma_{21}Z_{1j}X_{2ij} + \gamma_{22}Z_{2j}X_{2ij} + u_{0j} + u_{1j}X_{1ij} + u_{2j}X_{2ij} + e_{ij} \quad (18)$$

Where Level 1 intercept values are defined as a function of Level 2 variables ($\gamma_{00} + \gamma_{01}Z_{1j} + \gamma_{02}Z_{2j}$), and Level 1 effects β_{qj} are defined as a cross effect between Level 1 and Level 2 variables ($\gamma_{qk}\sum Z_{kj} X_{qij}$).

Unlike the more commonly employed Ordinary Least Squares approach, the Hierarchical Linear Model allows for the investigation of: *i*) individual effects (β_{qj}); *ii*) group level or cross national effects (γ_{qk}), as well as; *iii*) cross level effects between the two levels. Using statistics obtained by partitioning the variance, we can gauge where the majority of the variance in the dependent variable lies, and how reliable the Level 1 estimates are as representative of the true values. With respect to analyzing corruption, we can now examine not only cross national differences in perceptions of corruption, but individual differences as well as the cross effects of individuals and states.

Corruption as a Multi-Level Phenomenon

The study of corruption using hierarchical models requires information on individual beliefs about corruption (Level 1) and system level constraints on those beliefs (Level 2). The most comprehensive information on individuals and their political beliefs is found in the World Values Study. Set up in waves of research, this body of data contains information on thousands of individuals collected in a host of countries. Our research questions are as follows: How do citizens in diverse countries formulate an evaluation of the prevalence of corruption? How important are micro level variables versus macro level variables?

To consider of these questions, we have selected two sets of variables both of which are known to affect corruption at the system level and both of which have individual level analogues. The first of these is national wealth and personal income. We know that the overall wealth of countries has an effect on estimates of corruption tendered by political and economic elites. Richer countries, other things being equal, have lower corruption scores (Triesman, 2000, 440). We do not know whether being rich affects someone's assessment of corruption; that is whether individual wealth as opposed to national wealth is of any importance. Neither do we know if being rich matters more in rich countries than in poor countries. Hierarchical models allow us to determine how big the wealth effect is at each level and in what nations the effect exists.

Why should wealth matter at all? Wealthy individuals may underestimate the PREVALENCE of corruption either because they benefit from it or because they are able to ignore its effects. Wealthier citizens can be expected to suffer smaller marginal losses from acts of corruption, relative to those who are less affluent because even if corruption imposes equal costs on all citizens of a state with respect to lost government services, the relative impact on the wealthy is much smaller. Higher levels of income decrease the relative marginal losses (*ceteris paribus*).

Of course the effect of personal wealth may be dependent on the overall wealth of the state. Rich individuals in poor countries may be more inclined to attribute their own income status to personal character and less to the opportunities presented by the state. They might be expected, under these conditions, to find corruption quite prevalent. These same affluent individuals, living in wealthy countries, should, on this argument, be less likely to find corruption rampant. In affluent countries, the marginal cost of corruption for the average individual decreases as their personal economic prosperity increases. So as the general economic conditions of a country improve, the effect of personal income levels on perceptions of corruption should become incrementally smaller.

For the second set of variables we look to religion. We know that Protestantism, in the form of a large number of Protestant co-religionists, is associated with lower levels of corruption as measured and studied at Level 2 (Triesman, 2000, 427). The most resonant explanation takes us back to liberalism. Protestantism, in this interpretation, is the theological inspiration for the liberal values of individualism, value pluralism, and state-society distinctions. As Vernon puts it, "An individualistic moral epistemology, particularly strong in Protestant versions of Christianity, is taken over by liberals, detheologized, and made into the basis of a new view of life" (Vernon, 1999, 20). The idea of a personal, private God takes the kernel of individualism that exists in all Christian teaching, and raises it to the self-conscious level. Here it inspires both the material striving that Weber cites as the foundation of economic growth and the self-abnegation that discourages corruption.

This is precisely the explanation that researchers have reached for to account for their findings. Sandholtz and Koetzle (2000, 44) cite "the Protestant emphasis on individual responsibility and rectitude" which "carries over" into lower tolerance for corruption. This position is echoed by Lipset and Lenz who suggest that Protestants are more norm-adhering" and see themselves as "personally responsible for avoiding sin" (Lipset and Lenz, 120).

As intriguing as this explanation is, there is a mystery at its core. If Protestantism discourages corruption, do we have the attitudes of Protestants themselves to thank, or is it the Protestant ethos, "detheologized" as Vernon (1999) suggests, that is responsible? Certainly Weber's thesis, with its stress on the virtues of honesty, hard work and acquisition, did not anticipate an individual level relationship. Norris and Inglehart (2004, 161) summarize the Weberian perspective:

> He [Weber]...did not expect an individual-level relationship to exist between, piety, churchgoing habit, and adherence to the Protestant work ethic…Instead this cultural ethos was thought to be pervasive, influencing devout and atheists alike within Protestant societies. Any attempt to analyze to Weberian theory should therefore be tested at the macro-level not the individual-level.

Still, researchers continue to hint that the social practices of Protestants, including "righteous living" in accordance with concrete precepts, is the source of reduced corruption (Lipset and Lenz, 2000, 121).

With most analysts following Weber and opting for a "Protestant ethos" interpretation of corruption scores, there is little reason to expect individual Protestants to differ from Catholics, Muslims or atheists in their estimation of the prevalence of corruption. Of course, as we have been emphasizing, individual effects may show up in some countries and not others, but this seems less likely in the case of religion. Even if an individual's religious adherence had an effect on perceptions of corruption, there is no reason to presume that this effect will be influenced by the country in which the person resides. Put another way, if religious affiliation is globally homogeneous, a Protestant in country x should have beliefs similar to a Protestant in country y. Respondents in different countries will estimate corruption differently, but religion will have the same relative effect on those estimates, to the extent it has any effect at all.

Testing Hypotheses with Multi-Level Models

The Dependent Variable

Most of the work on corruption has been done at the country Level (Level 2) and uses well known national indicators such as Kaufmann, Kraay, Zoido-Lobaton (KKZ) Governance indicators (1999; 1999a) and Transparency International's Corruption Perception Index (CPI) as the dependent variable. Business leaders and country analysts are polled regarding overall levels of corruption and their responses used to create a single corruption score for each country.

Hierarchical models require that the dependent variable be constructed at Level 1. To construct a Level 1 dependent variable requires an indicator of corruption provided by individuals located in multiple countries. In this study, all Level 1 variables are taken from the third wave of the World Values Survey data. Polls were conducted in 52 countries between the years 1995-1998. We focused on the maximum number of states that had sufficient observations, at both Level 1 and Level 2, for all of the variables being considered.[5] This strategy yields 38,063 observations within 33 countries. We have labeled the dependent variable "PREVALENCE." It is generated by asking "How

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[5] Any states where regional surveys were conducted separately were merged at Level one: for example, East and West Germany, all regions of Spain, and Serbia-Montenegro. It would be possible to account for regional differences by adding another Level to the model. (individual-Level 1, region- Level 2, state- Level 3).

widespread do you think bribe taking and corruption is in this country?"[6] Responses were recorded on a four-point scale where a one implies no officials are corrupt and four implies all are corrupt.

Table I provides the means and standard deviations on PREVALENCE across a variety of countries. The overall mean score on the PREVALENCE four point scale is 2.89; the standard deviation is .832. Compare these parameters to the CPI index where, on a 10 point scale, the mean score is 4.451 and the standard deviation 2.362. Of particular importance in comparing these dependent variables is their correlation. The mean estimates of perceived corruption by individuals (Level 1) correlate very highly with estimates of corruption from national indices (Level 2) such as CPI and KKZ. Specifically, the correlation between PREVALENCE and KKZ (1996) is r = -.873; with KKZ (1998) the correlation is -.816.[7]

These relatively high correlations implies that average citizens and the business elites whose aggregated views comprise the country score are in broad agreement regarding the prevalence of corruption in any given state (Inglehart, 1997). If we are prepared to assume, as most analysts are, that elite estimates are a sound proxy for the real levels of corruption found in a society, then differences in sub-group estimates of the PREVALENCE of corruption can reasonably be construed as over or under estimates of the true values, or at least the values estimated by informed observers.

Partitioning Variance

The first step in the application of the Hierarchical Linear Model is to determine where most of the variation in individual PREVALENCE scores resides. If it is at Level 2, then variations in individual assessment of corruption are largely a function of where people live; put another way, there is a high level of agreement among citizens as to the prevalence of corruption in their respective states and relatively more variation between countries. This would imply that citizens perceive corruption using a common pool of knowledge. If, on the other hand, most of the variation exists at Level 1, then personal background characteristics and experiences are the main source of variance in perceptions of corruption. In that case, variation in assessments across states is principally a function of the characteristics of citizens living within them.

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[6] The questionnaire containing this variable and the education and income variables can be accessed at : http://www.worldvaluessurvey.org/services/index.html or http://wvs.isr.umich.edu/ques3.shtml

[7] The negative sign arises because the scales run in opposite directions.

Table I: Sample Countries

	PREVALENCE Means (WVS)	Sample Size	CPI Score
Germany	2.53	1955	8.27
Spain	2.89	1125	4.31
USA	2.61	1438	7.66
Mexico	3.15	1396	3.30
Australia	2.33	1970	8.60
Norway	2.02	1099	8.61
Sweden	2.32	991	9.08
Argentina	3.13	1032	3.41
Finland	2.19	910	9.05
South Korea	2.83	1246	5.02
Poland	2.92	995	5.37
Switzerland	2.30	1110	8.76
Brazil	3.41	1096	2.96
Nigeria	3.47	1882	.69
Chile	2.58	949	6.80
Belarus	3.24	1962	
India	3.01	1742	2.63
Turkey	2.95	1783	3.54
Lithuania	3.34	950	3.80
Latvia	3.11	1137	2.70
Estonia	2.89	911	5.70
Ukraine	3.30	2539	2.80
Russia	3.35	2311	2.58
Peru	3.00	1129	4.50
Venezuela	3.16	1106	2.50
Uruguay	2.55	906	4.14
Moldova	3.09	905	2.60
Georgia	3.25	2363	2.30
Armenia	3.30	1863	3.30
Azerbaijan	2.94	1156	1.70
Dominican Republic	3.42	412	
Bangladesh	2.77	1414	2.29
Croatia	2.91	1027	2.70

There will, of course, be variance at both Levels. Intuition and national indices tell us that countries differ in terms of the amount of corruption they experience and this cannot be irrelevant to individual assessments. All the more likely then, that ordinary citizens will base their estimates of corruption on their own personal experiences which will almost certainly differ from the experiences of other citizens within the same state. In fact, because that experience is highly heterogeneous, it is likely that *most of the variation in individual estimates of the PREVALENCE of corruption will be found at Level 1.* In other words, we should expect substantial disagreement between citizens in the same state as to the extent of corruption within that state.

The first step in assessing where the majority of variance resides requires an unconditional Analysis of Variance model (ANOVA), where no independent variables are considered. The unconditional Level 1 model is defined as:

$$Y_{ij} = \beta_{0j} + e_{ij} \tag{19}$$

Where,

Y_{ij} represents person i's (i= 1, 2,…,38,063) PREVALENCE scores in country j;

β_{0j} represents the average PREVALENCE for corruption in country j. (j = 1,2,…,33); and

e_{ij} represents individual i's deviation from his/her country mean PREVALENCE score.

At Level 2 the unconditional model is defined as:

$$\beta_{0j} = \gamma_{00} + u_{0j} \tag{20}$$

where,

γ_{00} represents the grand mean Level of perceived corruption for all j= 1, 2,…,33 states, and

u_{0j} represents the variance of each observed β_{0j} from its predicted grand mean value γ_{00}

From (1) and (2) we derive the multilevel model:

$$Y_{ij} = \gamma_{00} + u_{0j} + e_{ij} \tag{21}$$

As was seen in equation (5), the multilevel model allows for the partitioning of the variance between two error terms: e_{ij} represents the individual variance, and u_{0j} represents the cross-national variance. The ability to account for variance at two Levels differentiates multilevel modeling from OLS which assumes either that no variance exists within states or no variance exists between them.[8]

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[8] For example, using OLS at Level 1 would not allow for a measurement of the error term u_{0j}, implying that all states have the same level of corruption and the only differentiating factor in estimates of corruption is a function of individual characteristics. The more common approach has been to use OLS at Level 2. This assumes that states do differ in their levels of corruption, but implies that all individuals within a given state share the same estimate of its prevalence.

Table II gives the estimated variance components for the unconditional ANOVA where the dependent variable is PREVALENCE.

Table II
Unconditional ANOVA for PREVALENCE
of Political Corruption

Parameter	**Estimate**
Fixed Effects	γ_{00}
Constant	2.903* (.0700)
Variance Components	
τ_{00} (country level)	.1600*
σ^2 (individual level)	.5503*

* Significant at the 0.01 level

From equation (7) we obtain the intraclass correlation:

$$\rho = .1600/(.1600+.5503) = .225 \sim 23\%$$

This correlation suggests that approximately 23 per cent of the variance in perceptions of the prevalence of corruption is located at Level 2, or the country level, leaving the majority of the variance—77 percent (1- ρ)—at Level 1, or, the individual level. In short, when their views are aggregated and compared to the assessments of experts, individuals are relatively good at estimating the prevalence of corruption in their country, but they still disagree significantly among themselves. Countries differ from one another in the overall scores, but the variation among countries is four times less than the variation among citizens within countries.

It is worth emphasizing that explaining the 23 percent of variation among countries is likely to be much easier than explaining the remaining variation located at Level 1. The context that produces corruption at the country level has been theorized at length and is more systematically rooted than are individual perceptions. Individual estimates of corruption have not received as much theoretical attention and the sources of these estimates are likely to be multiple and elusive in the context of comparative analysis. As outlined above, we begin the task by focusing at Level 1 on two variables, religion and personal income.

Hypotheses at Level 1
Recall that Level 1 hypotheses involve the views of individuals regarding the prevalence of corruption. From the preceding section we identify two Level 1 hypotheses.

H1: *The effect of belonging to the Protestant denomination on the degree of perceived corruption (PREVALENCE) at Level 1 will be negligible.* The perceptions of individual Protestants may be affected by the historical legacy of Protestant dominated states (measured at Level 2), but citizens (including Protestants) will not consult or be influenced by their personal religious convictions in estimating the prevalence of corruption.

H2: *There will be a significant negative relationship between personal income and estimates of the PREVALENCE of corruption.* As personal income increases the impact of corruption becomes less keenly felt.

To test these hypotheses we begin with the following multilevel model for PREVALENCE:

$$\begin{aligned} Y_{ij} = \; & \gamma_{00} + \gamma_{10}(\text{Catholic})_{ij} + \gamma_{20}(\text{Protestant})_{ij} + \gamma_{30}(\text{Jew})_{ij} + \\ & \gamma_{40}(\text{Hindu})_{ij} + \gamma_{50}(\text{Income}_{ij} - \text{Income}_{.j}) + \\ & \gamma_{70}(\text{Education}_{ij} - \text{Education}_{.j}) + u_{0j} + u_{5j} + u_{6j} + e_{ij} \end{aligned} \tag{22}$$

Where,

Y_{ij} represents person i's (i= 1, 2,…,38063) perception of the PREVALENCE of political corruption in country j.

β_{0j} represents the extent of perceived corruption for citizens who belong to a different religious denomination than those in the model, or, to no religious denomination, and, have income and education levels, equal to the average person within their respective state.

β_{qj} (q=1,2,3,4) represent the individual Catholic, Protestant, Jewish and Hindu effect, respectively, on perception of corruption relative to citizens belonging to other religious denominations than those listed above, or, no religious denomination at all.

β_{qj} (q = 5,6) represents the effect of income and education, relative to their mean levels in each j country (j = 1,2,…,33).

Two points need to be made about the variables in this model. First, even if Protestantism is not significant at Level 1, other religious denominations might be. We have included, therefore, variables representing membership in a number of other religious denominations to determine whether there is any religious effect beyond membership in a Protestant denomination. Second, we have controlled for education in this model. To the extent that income and education are correlated, it is important to sort out their independent effects.

A further important point needs to be made regarding the error terms. The model includes Level 2 error terms for Income (u_{5j}) and Education (u_{6j}) but not for any of the religious denominations. This means that the Level 1 effects of income and education are not fixed at Level 1. Put another way, this model allows these variables to take on different values across Level 2, leaving open the possibility that their effects might be explained by country level factors. The Level 2 model for income and education can be defined as:

$$\beta_{qj} = \gamma_{q0} + u_{qj} \quad (q = 5,6) \tag{23}$$

where,

γ_{q0} $(q = 5,6)$ is the Level 2 fixed effect, or cross national effect, of, income and education on the Prevalence of corruption;

u_{0j} represents the variance of each observed β_{0j} from it's predicted grand mean for PREVALENCE; and,

u_{qj} $(q = 5,6)$ represents the deviation of country j from the grand mean effect of the above mentioned variables. This implies that the effects of these variables vary cross nationally, as well as within the state.

For the religious affiliation variables, on the other hand, we fix their effects at Level 1. As discussed in the previous section, this assumption is tantamount to arguing that vis-à-vis attitudes toward corruption, Protestants, Catholics, Jews, Hindus, and so on, approach these topics roughly the same way what regardless of the countries in which they live. If so, we are justified in treating the Level 2 error terms u_{qj} $(q=1,2,3,4)$ as if they are equal to zero and therefore exclude them from the model.

The latter decision can be justified empirically. Testing for the hypothesis that no variance exists at level 2 (H_0: $\tau_{qq} = 0$, $(q=1,2,3,4)$)[9] determined that this hypothesis could be accepted in all cases except members of the rather heterogeneous category "Orthodox". There is no significant variation from country to country among members of other religious affiliations in their assessment of corruption.

In order to capture only the individual effects of belonging to a given religious denomination, we leave the Level 2 intercept model unconditional as in (20). With the assumption of intra-state homogeneity amongst religious denominations, we can fix the Level 1 effects ($\beta_{qj;\, q = 1,2,3,4}$) at Level 2. The Level 2 model can be defined as:

$$\beta_{qj} = \gamma_{qq}, \quad (q=1,2,3,4) \tag{24}$$

[9] Tests for H_0: $\tau_{qq} = 0$ were obtained from the statistic $\sum(\beta_{qj} - \gamma_{q0}) / V_{qj}$ which is distributed approximately χ^2 with $(J - 1)$ degrees of freedom. For all denominations, with the exception of Orthodox, the hypothesis H_0: $\tau_{qq} = 0$ was accepted.

Hypotheses at Level 2
H3: *As the proportion of Protestants in a country increases, estimates of the* PREVALENCE *of corruption will correspondingly decrease.* Protestantism may not be a factor at Level 1, in other words, but we should expect it to be a factor at Level 2 as it has been in previous studies.[10]

H4: *Estimates of corruption (*PREVALENCE*) will be lower the wealthier the country in which these estimates are made.* A country's wealth has been a reliable guide to the amount of estimated corruption in virtually all studies of the topic.[11]

The Level 2 model is defined as:

$$\beta_{0j} = \gamma_{00} + \gamma_{01}(\%\text{ Protestant})_j + \gamma_{02}(\text{ Log GDP per cap})_j + u_{0j} \tag{25}$$

where

γ_{00} represents the global average Level of perceptions with respect to corruption for a state with no Protestant representation and no economic growth;

γ_{01} represents the effect of a percentage increase in the Protestant population on perceptions of corruption;

γ_{02} represents the effect of an increase in the average economic prosperity of the state.

u_{0j} represents the conditional Level 2 error term after taking into account the percentage representation of Protestants and average economic prosperity of citizens in the state.

We leave the Level 1 effects (β_{qj}, q = 1,2,…,6) unconditional across Level 2 as in (24) giving the following multilevel model for PREVALENCE:

$$\begin{aligned} Y_{ij} = \gamma_{00} &+ \gamma_{01}(\%\text{Protestant})_j + \gamma_{02}(\text{ Log GDP per cap})_j + \\ &\gamma_{10}(\text{Catholic})_{ij} + \gamma_{20}(\text{Protestant})_{ij} + \gamma_{30}(\text{Jew})_{ij} + \gamma_{40}(\text{Hindu})_{ij} + \\ &\gamma_{50}(\text{Income}_{ij} - \text{Income}_{.j}) + \gamma_{60}(\text{Education}_{ij} - \text{Education}_{.j}) + \\ &u_{0j} + u_{5j} + u_{6j} + e_{ij} \end{aligned} \tag{26}$$

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[10] The proportion of religious affiliations in each country was obtained from Barrett, Kurian, and Johnson, 2001. Aggregates of World values Survey data pertaining to religious denominations by country were correlated with Brown, Kurian and Johnson data for true percentage distributions of religious denominations. These correlations were significant at the .001 level which implies that the denominational distribution of respondents in the World Values Survey by country is well representative of their true distribution.

[11] World Bank data for GDP per capita was computed for the years 1996, 1997, and, 1998 and applied to the appropriate year during which the survey was conducted in each country.

Cross Level Hypotheses
With religious affiliation fixed, the only possible cross-level effects are those related to income and education. Our interest, as explained earlier, is in income.

H5: *The negative effect of personal wealth on estimates of the* PREVALENCE *of corruption will be magnified in wealthier countries.* Again, wealthy people in wealthy countries are sufficiently invested in the status quo to misread, either intentionally or unintentionally, the PREVALENCE of corruption in their midst.

To test this hypothesis, we use the same Level 1 model as in (22) and our Level 2 model for β_{0j} remains the same as in (25), but we now model the Level 1 random effects as a function of Level 2 GDP per capita:

$$\beta_{5j} = \gamma_{50} + \gamma_{51}(\text{logGDPpercap})_j + u_{5j} \tag{27}$$
$$\beta_{6j} = \gamma_{60} + \gamma_{61}(\text{logGDPpercap})_j + u_{6j} \tag{28}$$

This gives the multilevel model for PREVALENCE:

$$\begin{aligned} Y_{ij} = {} & \gamma_{00} + \gamma_{01}(\%\text{Protestant})_j + \gamma_{02}(\text{ Log GDP per cap})_j + \\ & \gamma_{10}(\text{Catholic})_{ij} + \gamma_{20}(\text{Protestant})_{ij} + \gamma_{30}(\text{Jew})_{ij} + \\ & \gamma_{40}(\text{Hindu})_{ij} + \gamma_{50}(\text{Income}_{ij} - \text{Income}_{.j}) + \\ & \gamma_{60}(\text{Education}_{ij} - \text{Education}_{.j}) + \gamma_{61}(\text{Income}_{ij} - \text{Income}_{.j}) * (\text{logGDPpercap})_j + \\ & \gamma_{71}(\text{Education}_{ij} - \text{Education}_{.j}) * (\text{logGDPpercap})_j + u_{0j} + \\ & u_{5j}(\text{Income}_{ij} - \text{Income}_{.j}) + u_{6j}(\text{Education}_{ij} - \text{Education}_{.j}) + e_{ij} \end{aligned} \tag{29}$$

This allows for a further investigation into the cross-national variance in the effects of income and education on perceptions of corruption.

The Results

Table 3 summarizes the results of the three models defined in equations (22), (26), and (29). Model 1 contains the results for equation (22) where no level 2 variables are considered. Note the significant differences in the coefficients for the OLS model compared with HLM. The OLS results presume that all states have the same level of corruption, a kind of global corruption score. HLM, on the other hand, acknowledges that countries have differing levels of corruption and that the impact of independent variables is calculated based on 33 different country means. Because account must be taken of the variance between states as well as within them, the result is that the HLM coefficients are much smaller than those produced by OLS.

H1 predicted a negligible effect for religious affiliation, and that is largely borne out, at least in the case of Protestants. Interestingly, the Jewish community has by far the strongest tendency to underestimate the prevalence of corruption. Relative to people with no religious affiliation, the Jewish community perceives, on average, 7 per cent less corruption. The Hindu community perceives just under 3 per cent less corruption, the

Catholic community a little over 2 per cent, and the Protestant community a little more than one percent less corruption. These results are all statistically significant, whereas Muslims, Buddhists, and members of the "Orthodox" community were indistinguishable from one another or from those with no religious affiliation. In short, the members of some religious communities do underestimate the amount of corruption that exists within their country, but apart for those in the Jewish community these are substantively modest differences. The addition of independent variables in the succeeding models has little effect on these coefficients or their standard errors.

As expected (**H2**) the random effects of education and income have a negative effect on individual perceptions of corruption, implying that the better educated and wealthier citizens of any state have a tendency to underestimate the prevalence of corruption. These results, however, do change with the addition of Level 2 variables in both Models 2 and 3.

Model 2 provides the results for equation 26 in which Level 2 variables (GDP/capita and size of the Protestant population) are introduced. Although we did not limit our investigation to Protestantism, we found that only this religious group had a significant effect on individual perceptions of corruption. This is further evidence, this time in a multilevel model, for **H3**. In Protestant countries, and only Protestant countries, corruption is perceived as relatively low. Model 2 also shows a tendency to reduce corruption estimates based on a country's overall affluence, evidence for **H4.** By including GDP per capita and % Protestant at level 2 in the multilevel model, we explain (0652/.1567) = .416 ~ 42% of the cross national variance in PREVALENCE.

In model 3 we consider level 1 effects, level 2 effects and cross level effects as defined in (29) where the varying level 1 coefficients (β_{qj}, q=5,6) are partially explained by the overall wealth of the country's population. This is the most interesting and unique characteristic of multilevel modeling and produces some very interesting results that were not seen in Models 1 or 2.

Table III – Level 1, Level 2, and Cross-Level Effects on PREVALENCE of Corruption

	Model 1		Model 2	Model 3
Fixed Effects (Level 1)				
	B_q (OLS)	γ_{qq} (HLM)	γ_{qq} (HLM)	γ_{qq} (HLM)
Catholic	-.1804*** (.0092)	-.0890*** (.0118)	-.0884*** (.0118)	-.0884*** (.0118)
Protestant	-.5809*** (.0126)	-.0501*** (.0155)	-.0478*** (.0156)	-.0476*** (.0155)
Jew	-.5344*** (.0870)	-.2899*** (.0799)	-.2879*** (.0799)	-.2872*** (.0799)
Hindu	-.0990*** (.0260)	-.1087*** (.0379)	-.1120*** (.0379)	-.1111*** (.0379)
Random Effects				
Education	-.0163*** (.0061)	-.0142*** (.0050)	-.0140*** (.0050)	.0665*** (.0234)
Education* Log GDP per cap				-.0099*** (.0028)
Income	-.0075*** (.0021)	-.0065* (.0035)	-.0069* (.0036)	.0396** (.0187)
Income * Log GDP per cap				-.0056** (.0022)
Fixed Effects (Level 2)				
% Protestant			-.0056** (.0022)	-.0055** (.0022)
Log GDP per cap			-.0890** (.0370)	-.1260*** (.0379)
Constant	3.033*** (.0060)	2.945*** (.0693)	3.762*** (.2840)	4.063*** (.2920)
Variance Components				
τ_{00} (country level)		.1567***	.0652***	.0625***
τ_{77} (income)		.0003***	.0003***	.0002***
τ_{88} (education)		.0007***	.0007***	.0004***
σ^2 (individual level)	.6552	.5413	.5433	.5434

*** Significant at the 0.01 level
** Significant at the 0.05 level
* Significant at the 0.10 level

The level 1 fixed effects of religious affiliation remain fairly consistent, but the level 1 random effects of individual income and education, which are now modeled as a function of level 2 variables, experience dramatic changes. When per capita GDP is taken into account, the effects of both education and income at the individual level become positive for relatively less affluent countries, implying that the relationship posited by **H2** applies over a restricted range of countries, specifically those that are more affluent. In these countries people with relatively high incomes perceive less corruption. But similarly wealthy citizens, in a relatively poor country, will perceive more corruption. Personal wealth does not discourage harsh judgements about corruption in poor countries; in wealthier countries it does.[12] This is evidence in support of **H5** and suggests that **H2** only holds true in relatively poor countries. Roughly the same effect occurs in the case of the education variable. In wealthier countries the more educated are inclined to perceive less corruption.[13]

Notice that the effect of per capita GDP is substantial on its own. Quite apart from the wealthy and well educated, anyone who lives in a relatively wealthy country can be relied upon to perceive less corruption, making country wealth a very strong determinant of perceptions of corruption. The effect of Protestantism is much more modest and the effect of actually being a Protestant, relative to being a Jew, Hindu, or Catholic, is negligible. When it comes to the prevalence of corruption, belonging to a Protestant dominated county is far more important than actually being a Protestant.

Conclusion

There is no question that there are large, slow moving social forces associated with the prevalence of corruption. National wealth is the most conspicuous, but religious traditions, democratic practice and institutional arrangements are strong contenders as well. As important as these variables are in helping us understand corruption, they are not the only factors that structure personal assessments of corruption. It is encouraging that ordinary citizens and economic elites generally agree on the amount of corruption to be found in a given country, but it is sobering to realize that there is substantial variation in individual assessments and that some of that variation depends on the context in which the judgement is being rendered.

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[12] The effect of income levels on perceptions of corruption is now defined as $\beta_{5j} = .0396 - .0056$ (Log GDP per cap), where the intercept term represents the effect of personal income.

[13] The effect of education levels on perceptions of corruption is now defined as $\beta_{6j} = .0665 - .0099$(Log GDP per cap), where the intercept term represents the effect of individual education level on perceptions of corruption.

Hierarchical modeling affords researchers an opportunity to work at more than one level of analysis simultaneously and in this manner to better understand why individuals vary in their views about corruption. Yes, the context matters. States that experience high levels of corruption can expect citizens to be harsh in their judgements. But most of the variation in corruption estimates that we have investigated is not attributable to differences in context but differences among individual citizens. This is a salutary reminder that corruption is felt by individuals and that some individuals, wealthy well educated ones in particular, can shield themselves from it.

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