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Using World Values Survey data from dozens of countries around the world, this article analyzes the relationship between postmaterialist values and attitudes towards bribery in a multi-level framework. This is an inherently interesting and under-researched topic because the various propensities attributed to postmaterialism lead to conflicting expectations about how these values affect attitudes towards bribery. On one hand, the alleged tendency of postmaterialists towards impartiality should lead them to condemn bribery. On the other hand, condemning bribery is a social desirability issue and postmaterialists are known to be less susceptible to desirability pressures and more relaxed about norm deviations. From this point of view, postmaterialists might be more tolerant toward bribery. Reflecting these conflicting expectations, we obtain an ambivalent result, evident in an inverted U-shaped relationship: as we move from pure materialism to mixed positions, people tend to justify bribery more, but then moving from mixed positions to pure postmaterialism, people become again more dismissive of bribery. What is more, the demographic prevalence of postmaterialists in a country moderates these values' effect on bribery: where postmaterialists are more prevalent, the disapproving effect on bribery outweighs the approving effect. This finding contributes to a better understanding of the pronounced negative correlation between corruption and postmaterialism at the country level and has some important implications.

Keywords: corruption, bribery, social values, postmaterialism, impartiality, norm deviations.

JEL Codes: D73, A13, K42, Z10.

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Introduction

Corruption, often defined as misuse of public office or power for private benefit, is a topic of hundreds of studies. Although in some cases corruption may serve for good by "greasing the wheels of economy" (Meon and Sekkat, 2005), generally scholars agree on that it has a negative impact on societies. Consequently, numerous studies are aimed to understand determinants of corruption. They underline the importance of different economic and political factors such as the level of a country's economic development, the type of political system, the quality of institutions, the size of government and degree of its decentralization, the relative level of salaries in the public sector, the country's openness to trade, etc. (see literature surveys by Treisman, 2000, 2007; Svensson, 2005; Lambsdorff, 2006; Pellegrini and Gerlagh, 2008).

There is also a large group of studies that show that corruption is strongly associated with socio-cultural factors including social values (e.g., Husted, 1999; Lipset and Lenz, 2000; Paldam, 2002; Welzel et al., 2003; Sandholz and Taagepera, 2005; Uslaner, 2004; Barr and Serra, 2010; O'Connor and Fisher, 2011). This is what may help to explain some stylized facts about corruption. One of them is that corruption is a very persistent phenomenon (e.g., Hauk and Saez-Marti, 2002). Another fact established in virtually all cross-country studies is a negative correlation between the prevalence of corruption and the level of economic development. While rising incomes *per se* cannot constrain bribery, this negative correlation might be explained if one assumes that values incompatible with corrupt behavior gradually diffuse within the society when incomes rise. Finally, it is recognized that the introduction of formal democratic procedures *per se* does not lead to lower corruption, but rather the duration of democracy in the country (e.g., Treisman, 2000; Pellegrini and Gerlagh, 2008). This suggests that adopting democracy will not work as an anti-dote against corruption unless people's social values are reoriented in opposition to corruption.[5]

This paper continues the broad strand of literature that emphasizes the importance of social values in shaping corruption in different societies. We focus on the materialist/postmaterialist values dimension, which has received great attention in the literature since the seminal paper by R. Inglehart (1971).[6] Studies that examined the relationship between postmaterialism and

[5] According to Welzel et al., (2003), values have an important intermediate position between socioeconomic development and democratization of societies. Socioeconomic development increases available individual resources. In turn, "growing individual resources widen the scope of possible human activities, the strive for self-realization, autonomy and emancipation finds greater leverage" (p.345). Finally, democratization institutionalizes legal rights that guarantee choices in people's private and public activity. This suggests that if economic development does not induce value shifts, or democratization is only formal (ineffective) and is not supported by corresponding values, neither growing incomes nor democratization can help to depress corruption. As the authors note, "To be practiced effectively, formal rights need corresponding values, but cannot create them. Formal rights are only an institutional offer that cannot by itself create the demands that make it effective" (p. 50). See also Welzel (2007).

[6] Originally, Inglehart named these values or priorities as "acquisitive" and "post-bourgeois," but subsequently he introduced the more famous terms "materialist" and "postmaterialist" (Inglehart, 1977). See an excellent review of the development of this concept as well as its critiques by Abramson (2011).

corruption at the country level agree that corruption levels are lower in countries with higher scores of postmaterialism (Welzel et al., 2003; Sandholz and Taagepera, 2005; O'Connor and Fisher, 2011). It suggests that the spread of postmaterialism in a society will contribute to corruption containment. This may sound encouraging for developing and transition countries suffering from pervasive and persistent corruption, as it may be expected that value shifts will be gradually taking place in these countries along with further economic development.

The principal aim of this article is to warn that such an evolutionary mechanism of corruption reduction may not work. Our concern is caused by the fact that postmaterialism contains various propensities that might shape its relationship to corruption in opposite ways. On one hand, postmaterialism is linked to civic and political activism, support for democracy and transparency, interpersonal trust, and social justice and impartiality (e.g., Inglehart, 1981, 2008; Welzel et al., 2003; Wilson, 2005; Welzel, 2009; Welzel and Inglehart, 2008, 2010). As all these qualities are in opposition to corruption, the spread of postmaterialism in the society should indeed depress it.

On the other hand (and this side is usually neglected in existing cross-country studies), postmaterialism is strongly associated with relativism about norm deviations. Postmaterialists are more emancipated people, who do not take for granted traditional political, social, religious and sexual norms (e.g., Inglehart, 1997). They may either deviate from norms themselves or justify deviations of others. This inherent quality of postmaterialists is strengthened by a tendency towards individualization, which coincides with the shift from materialism to postmaterialism (e.g., Ester et al., 1994; Beck and Beck-Gernsheim, 2002; Oyserman et al., 2002; Inglehart and Welzel, 2005). "The process of individualization encouraged the unrestrained endeavor to pursue private needs and aspirations, resulting in assigning top priority to personal need fulfillment" (Halman and Luijukx, 2008, p. 179). This suggests that postmaterialists have a higher propensity to deviate from such a norm as "do not give/take bribes" when pursuing their own interests. In this case, the spread of postmaterialism will not actually help to reduce corruption and may even promote it.

In this paper, unlike other studies, we analyze the relationship between postmaterialist values and attitudes towards bribery in a multilevel framework and take into account both opposite sides of postmaterialism. We use micro-data from the last three waves of the World Values Survey which have been used to construct countries' postmaterialism/self-expression average scores in all previous studies on postmaterialism conducted at the aggregated level. Reflecting the inherent ambivalence of postmaterialism, we find that at the individual level this relationship is non-linear and has an inverted U-shaped form: as we move from pure materialism to mixed positions, people tend to justify bribery more but then moving from mixed positions to

pure postmaterialism, people become again more dismissive of bribery. If we model this relationship in a linear form (treating the postmaterialism values index as a continuous variable), we receive a *positive* coefficient.

These findings at the individual level clearly do not agree with existing findings at the aggregated level. We reconcile them estimating cross-level effects. We show that individual postmaterialists' attitudes towards corruption significantly depend on the extent to which postmaterialism values are spread in the country: a higher share of postmaterialists makes their individual attitudes towards corruption more negative. Thus, even though postmaterialism is associated with both an appreciation of fairness and non-conformity, the former outweighs the latter as postmaterialism becomes more widespread. While the tendency of individual postmaterialists towards impartiality is strengthened even more with the spread of postmaterialism in the society, propensities of individual postmaterialists to norm deviations are not strengthened. This pattern is a new discovery helping to justify the negative country-level relationship between postmaterialism and corruption.

The remainder of the paper is organized in four sections. Section one presents the review of the relevant literature and formulates our main hypotheses. The second section describes the data and methodology used to test these hypotheses. Section three presents our findings. Finally, the concluding section discusses the broader implications of our findings.

1. Literature review and research hypotheses

The shift from materialist to postmaterialist values (or, similarly, from survival to self-expression values), started in most western European countries in the period after the World War II, is well documented and discussed in the literature nowadays. In an environment of relative physical and economic security many people began to value freedom of speech, self-expression and self-realization, esthetical satisfaction, and environment protection more than strong defense forces or strong economic growth and low inflation (e.g., Inglehart, 1971, 1977, 1981, 2008; Inglehart and Backer, 2000; Inglehart and Welzel, 2005). This shift from materialist to postmaterialist values conforms to Maslow's hierarchy of needs (Maslow, 1954): when basic needs for security are satisfied people tend to satisfy needs of a higher order. Another base of the values shift, making this process relatively slow, is the alternation of generations. After absorbing postmaterialistic orientations during formative years in conditions of existential security, young people need time to reach influential positions in their society to promote and institutionalize new values, for example, through corresponding legislation (e.g., equal opportunity laws, environmental protection laws, same-sex marriage laws, etc.)

In more principled ways, Welzel (2013) describes the same process as ascension on the 'utility ladder of freedoms.' As people's existential conditions become more secure and promising, the nature of life changes profoundly, turning from a source of threats to suffer into a source of opportunities to thrive. During this process, people ascend on the utility ladder of freedoms: practicing and tolerating universal freedoms becomes increasingly important to take advantage of what a more promising life has to offer.

Looking at the propensities that the literature attributes to postmaterialism, conflicting expectations can be formulated about its relation to corruption. To begin with, one might assume that postmaterialists condemn corruption or, at least, that they justify it less than materialists. People who express postmaterialist views supposedly need to pay bribes less frequently because these people tend to live under secure conditions. We may expect that they do not need to defend themselves or their families from "the grabbing hand" (Shleifer and Vishny, 2002). Materialists, in turn, tend to live under less secure conditions and may accept bribery as a means to cope with their insecurity. As noted by Johnston (2005: p.121), poverty, insecurity and the need for protection, often associated with materialist values, nurture corruption. There is a bulk of studies linking the atmosphere of insecurity to corruption, especially to one of its particular forms: clientelistic relations (Boissevain, 1966; Huntington, 1968; Scott, 1972; Lemarchand and Legg, 1972; Roniger, 2004). Patron-client relations are considered in this literature as a personal security mechanism, used when legal institutions do not guarantee protection and security.[7]

Another set of findings that supports the first view is postmaterialism's linkage to civic and political activism, civic-mindedness over personal gain, support for democracy and transparency, interpersonal trust, and social justice and impartiality[8] (e.g., Inglehart, 1981, 2008; Welzel et al., 2003; Wilson, 2005; Welzel, 2009; Welzel and Inglehart, 2008, 2010). These are all qualities in opposition to corruption.

By contrast, other attributes of postmaterialism suggest that postmaterialists are inclined to participate in corruption or justify it more than materialists. The reason for this assumption relates to some of postmaterialism's inherent ambivalences. While postmaterialism associates with impartiality, it also associates with relativism about norm deviations. This quality of postmaterialists was discussed by R. Inglehart. According to him, the shift to postmaterialism is associated with a decline of traditional political, social, religious and sexual norms (e.g.,

[7] This may be also linked to the theory of R. Merton. He suggested that delinquent behavior is caused by the stress associated with a perceived discrepancy between people's aspirations and legal opportunities to achieve their goals (Merton, 1957). The main aspiration which is shared by the most people all over the world is to take their existence for granted. But in some countries there are not enough legal ways to achieve this goal. Thus, people take part in corruption driven by the aspiration to feel more secure.

[8] Corruption may be viewed as socially unjust because it increases inequality and rich people benefit from corruption more than poor (e.g., Gupta et al, 2002). Moreover, corruption may be incompatible not only with social justice, but also with justice defined in a broader sense, see You (2007).

Inglehart, 1997: p.40). Postmaterialists do not tend to take any more for granted the norms prescribed by external sources of authority, including the family, religion or the state. They decide for themselves which social rules they are willing to follow.

The shift to postmaterialism is inseparably associated with a tendency towards individualization (Ester et al., 1994; Beck and Beck-Gernsheim, 2002; Oyserman et al., 2002; Inglehart and Welzel, 2005; Halman and Luijukx, 2008). As Beck and Beck-Gernsheim note, "individualization means the disintegration of previously existing social norms – for example, the increasing fragility of such categories as class and social status, gender roles, status, neighborhood, etc" (Beck and Beck-Gernsheim, 2002: p.2). People receive the freedom (which, at the same time, is a burden) of personal choice in almost all aspects of their lives, and, at the same time, they begin to take greater responsibility and risk for their lives. We may assume that in such an atmosphere of "precarious freedom" people start to justify various deviations from norms, if these deviations help them to reduce risks and to implement their own interests. Thus, if giving a bribe can serve personal interests, it could be acceptable.

So far, the relationship between postmaterialism and corruption has been examined mostly at the societal level. Sandholz and Taagepera (2005) show that higher self-expression values are negatively associated with the corruption perception index (CPI) across countries, lately confirmed by O'Connor and Fisher (2011). Welzel et al., (2003) find that the more people emphasize emancipation, the higher level of effective democracy in the country becomes. As the measure of effective democracy used by these authors is an intersection of Freedom House scores with CPI, this result also implies a negative correlation between corruption and self-expression values.

In this vein, studies conducted at the country level also find a negative correlation between corruption and general trust (e.g., Uslaner, 2004), which is a component of the conventional survival/self-expression values index. Consequently, in order to reduce corruption one needs to increase interpersonal trust, which is a longstanding process associated with the decline of economic inequality (Uslaner, 2004), as well as with human empowerment and modernization in general (Delhey and Welzel, 2012).

Husted (1999) analyzed a linkage between Hofstede's values dimensions (Hofstede, 1997) and corruption. Two of these dimensions – collectivism/individualism and power distance – are closely related to the concept of emancipation and strongly correlate with survival/self-expression values index (Inglehart and Oyserman, 2004). Collectivism/individualism dimension reflect people's autonomy, emphasis on individual choice and self-fulfillment versus in-group commitment and acknowledgement of group constraints. The power distance dimension refers to the perceived inequality of power distribution and measures the degree of people's dependence

from those in power constraining their individual autonomy. Husted found a positive correlation between power distance and corruption perceptions (measured by CPI) across countries, which echoes the negative correlation between postmaterialism and corruption discussed above. However, the link between corruption level and individualism turned out to be insignificant (possibly due to the small number of observations and multicollinearity).[9]

This short review of studies conducted on the aggregated level suggests that corruption is negatively associated with people's emancipation as measured by a survival/self-expression values index as well as by other measures that capture very similar concepts. However, theoretical considerations allow this correlation to be both negative and positive. Why is it still negative at the aggregated level?[10] Highly neglected in previous studies, this paper seeks to formally redress this question.

At first, we examine the correlation between postmaterialism and corruption at the individual level and disentangle opposite propensities of postmaterialists with respect to corruption.[11] Looking ahead, we note that our results confirm theoretical predictions about two sets of postmaterialism qualities which are opposite with respect to bribery. Therefore, we can re-formulate the question above and ask: why does the propensity "against bribery" outweigh the propensity "for bribery" when postmaterialist values are spreading within a society?

In this paper, we propose the following hypothesis. When the proportion of postmaterialists grows, people's emphasis on impartiality becomes more widespread. This, in turn, creates social confirmation: individual postmaterialists feel more confirmed in their emphasis on impartiality and, thus, emphasize impartiality even more when there are more postmaterialists. This is a manifestation of a more general phenomenon, which may be called "social cross-fertilization": an attitude's inner tendency is strengthened when there more people share this attitude (see Welzel, 2013). As impartiality is a quality of postmaterialism, which is in opposition to corruption, a growing proportion of postmaterialists leads to their stronger disapproval of corruption.

It should also be mentioned that the spread of impartiality norms (and some other qualities of postmaterialism) in opposition to corruption creates the demand for appropriate institutions (e.g., Welzel et al., 2003; Welzel, 2007). For example, a growing proportion of people with an

[9] This result echoes our finding of ambiguous relationship between postmaterialism and attitude towards corruption at the individual level.

[10] There is a concern that the negative correlation between postmaterialism and corruption commonly found at the aggregate may be caused by some other factor(s). It stems from the fact that when estimating this correlation, existing studies controlled only for a limited number of (observable) countries characteristics and did not try to take into account unobserved heterogeneity of countries. Hence, the estimates may be biased due to omitted variables which are correlated both with postmaterialism and corruption.

[11] We are not aware of studies which have examined the correlation between corruption and postmaterialist values at the individual level. There is a small but growing body of papers that analyze factors determining individual willingness to engage in corruption or propensity to justify it (e.g., Sawamy et al., 2001; Mocan, 2008; Torgler and Dong, 2008), but they do not pay much attention to social values.

active civic position create a demand for fair and transparent elections and the independence of courts. These institutions being reflected in formal laws, in turn, tend to depress corruption.

At the same time, the propensity to deviate from social norms, which makes postmaterialists more tolerant to corruption, does not receive such "reinforcements" when the proportion of postmaterialists grows. Deviations from norms and rules, by definition, are individualistic and cannot take a form of collective action. If, in the extreme case, propensities to deviate from social norms became a mass orientation, then a society would fall to pieces. Moreover, propensities to deviate, especially if it comes to non-observance of laws, are restrained by possible punishment.

The review of literature and discussion presented above help to formulate several research hypotheses. According to theoretical predictions, the sign of the relationship between postmaterialist values and corruption may be both positive and negative, depending on which of the opposite tendencies embedded in postmaterialism prevails. We also should recognize that the relationship may turn out to be insignificant if opposite tendencies cancel each other. Therefore, we make a set of three alternative hypotheses:

(H1.1): *The individual-level correlation between postmaterialist values and the attitudes towards bribery is negative.*

(H1.2): *The individual-level correlation between postmaterialist values and the attitudes towards bribery is positive.*

(H1.3): *The individual-level correlation between postmaterialist values and the attitudes towards bribery is insignificant.*

Additionally, we may also assume and test a non-linear relationship between postmaterialist values and corruption:

(H1.4): *The individual-level relationship between postmaterialist values and the attitudes towards bribery is negative.*

We acknowledge that whatever empirical result we get will conform to theoretical expectations due to their ambiguousness. Therefore, we cannot be completely sure that our theoretical considerations are still relevant in practice. To solve this uncertainty, we examine how the correlation between postmaterialist values and attitudes towards bribery is affected by the propensity for norm deviations and impartiality testing two additional hypotheses:

(H2.1): *The general propensity of postmaterialists to norm deviations makes the individual-level correlation between postmaterialist values and the attitudes towards bribery (more) positive.*

(H2.2): *The general propensity of postmaterialists to impartiality makes the individual-level correlation between postmaterialist values and the attitudes towards bribery (more) negative.*

If these hypotheses do not hold true, then our arguments are not valid whatever relationship between postmaterialist values and the attitudes towards bribery we will receive at the individual level.

Our next hypotheses concern cross-level effects. The first one concerns the main effect of postmaterialism on the justification of bribery. We follow existing aggregated level studies and assume:

(H3): *A higher (lower) proportion of postmaterialists in a country leads to fewer (more) people justifying bribery in this country.*

The second hypothesis concerns the cross-level effect of postmaterialism on the justification of bribery. We expect that the extent to which postmaterialism has spread throughout a society (visible in the demographic share of postmaterialists) shapes the way in which the individuals' postmaterialist values affect their attitudes towards bribery. More specifically:

(H4): *Individual postmaterialists justify corruption less (more) in countries with higher (lower) shares of postmaterialists.*

2. Data and methodology

2.1. Data and Sample Description

In this paper we use freely available micro-data from the World Values Survey (WVS). It has been conducted since 1981 in dozens of countries by a worldwide network of social scientists. The first round of WVS was conducted between 1981 and 1984 as an expansion of the European Values Survey. At present, the data from five rounds of WVS are available, with coverage of 87 countries across all inhabited continents.

In most countries, the survey was carried out by professional survey organizations, using face-to-face interviews. The master questionnaire was prepared in English and translated into the various national languages; and, in many cases, the translated questionnaire was then independently translated back into English to check the accuracy of the translation. In most countries, the translated questionnaire was then pre-tested to help identify questions or concepts, for which the translation was problematic. In some cases, certain problematic questions were omitted from the national questionnaire. All national questionnaires were structured uniformly.

All national samples were drawn from the residential population of 18 years and older and have a minimum sample size of 1,000 individuals. In most countries, some form of stratified multistage random sampling was used to obtain representative national samples. In the first stage, a random selection of sampling points was made based on the given society's statistical regions, districts, census units, election sections, electoral registers, or voting stations, and central population registers. In most countries, the population size and/or degree of urbanization of these primary sampling units (PSUs) were taken into account. In the second stage, the list of addresses within each PSU was chosen using standard random route procedures. In the third stage, various methods were used to select respondents within households (such as the Kish grid, the Troldahl-Carter method, last or next birthday method, quota sampling on the basis of gender and age, and sometimes also on education or profession). In most countries, substitution of respondents was allowed.

The WVS data have been utilized in hundreds of publications on various topics in more than a dozen languages. They are particularly well suited for the study of the relationship between attitudes towards bribery and postmaterialist values. These data were originally used to document the shift from materialist to postmaterialist values in developed countries (Inglehart 1971; 1977), and also to construct countries' average scores of postmaterialism or self-expression values in studies on the relationship between corruption and values at the societal level (e.g., Sandholz and Taagepera, 2005; O'Connor and Fisher, 2011). At the same time, WVS data proved to be useful in studies on the justifiability of corruption at the individual level (e.g., Swamy et al., 2001; Dong et al., 2012).

The data sample used in our paper was drawn from the WVS aggregated file, combining individual-level data from all five waves of the survey.[12] For each country, these data present repeated cross-sections of individuals (but not a panel in the sense that individuals were not traced from wave to wave). Because the number of countries covered in the first two rounds of surveys was relatively small (i.e., below 40), one obtains the WVS's full country coverage by rounds three (1995-1997), four (1999-2000) and five (2005-2008). Thus, we use pooled data only from the third to fifth rounds of WVS. This subsample contains data on more than 220,000 individuals from 87 different countries. Not all countries were represented in all three waves; however, we do not restrict our sample only to those countries represented in each wave in order to keep the maximum coverage. The full list of covered countries is presented in Table A1 (see Appendix). These countries represent all regions of the globe, both developed, developing, and transition countries with the biggest populations and largest economies.

[12] *WORLD VALUES SURVEY 1981-2008 OFFICIAL AGGREGATE v.20090901, 2009.* Aggregate File Producer*: ASEP/JDS, Madrid.* This dataset along with the integrated questionnaire and codebook is freely available at the WVS official website.

We match WVS micro-data with several country-level variables taken from different sources (see below) assigning the same value of a country-level variable to each individual from the same country.

2.2. Variables and Measurement

Individual-level variables

We measure individual attitudes towards bribery using the following question of the WVS questionnaire: "*Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between".* The statement is *"someone accepting a bribe in the course of their duties".* Answers to this question may range from 1 (never justifiable) to 10 (always justifiable). This variable is our key dependent variable.

In order to measure the extent to which an individual expresses postmaterialist values we employ the 12-item postmaterialism/materialism values index, which is supplied with the WVS dataset. This index is the conventional measure of postmaterialist values as introduced by Inglehart (1973). The index is based on the first choice and second choice ranking options from three four-item batteries, as listed in Table A2 of the Appendix. If a respondent chooses a "postmaterialist answer" (e.g., "give people more say...") *either* as the first choice *or* as the second choice, then she/he receives 1 point. In all other cases she/he receives 0 points. After summing up all points for each respondent the index may take 6 different values ranging from 0 (pure materialist) to 5 (pure postmaterialist). All scores between these two extremes (from 1 to 4) characterize mixed value positions. This index presents our main independent variable.

However, a disadvantage of this index is that it does not take into account the full variation in postmaterialist priorities because it ignores the priority difference between first and second choice. For this reason, we also construct a modified index that weights a first-choice postmaterialist priority twice as high (assigning it a weight of 1) as a second-choice postmaterialist priority (which has a weight of 0.5). The construction procedure is detailed in Table A2 of the Appendix. After summing up all points, the index for each respondent may take 10 different values, from 0 (pure materialist) to 4.5 (pure postmaterialist). All individuals with index values between these two extremes are classified as mixed type individuals. We use this modified index as an alternative independent variable when we perform robustness checks of our estimation results.[13]

When examining the relationship between attitudes towards bribery and postmaterialism at the individual level one needs to control a wide list of individual characteristics that may

[13] The individual-level correlation between these two indexes is at $r = 0.87$ and highly significant. When doing various robustness checks we also tried the 4-item index of postmaterialist values supplied with the WVS data.

correlate with both of them. As suggested by studies on corruption at the individual level (e.g., Swamy et al., 2001; Mocan, 2008), among such characteristics (*Controls*) we consider age, gender, marital status, the number of children, education level, employment status, and relative income level.[14] In order to facilitate our estimations, some of these variables - initially categorical - were transformed to binary ones. Education was transformed into a binary variable, equal to 1 in the case of university education and 0 for all other educational levels; the number of children was 1 if a respondent had at least one child and 0 if she/he did not have any; employment status was 1 if a respondent was employed and equaled 0 in all other cases. Income level was included not as a set of dummy variables, but as a continuous variable.

In order to measure an individual emphasis on impartiality, we looked at answers to two questions from the WVS questionnaire: "When jobs are scarce, men should have more right to a job than women (question c001)" and "When jobs are scarce, employers should give priority to [NATION] people over immigrants (question c002)". For each question we modified the initial scale of answers and attributed a code of 0 to a respondent who agreed with the statement, attributed 1 if he/she disagreed, and 0.5 if he/she neither agreed nor disagreed. Then we constructed an individual impartiality index (II) following the formative logic of index construction (Blalock, 1964; Edwards and Bagozzi, 2000; Diamantopoulos and Winklhofer, 2001). We combined items taking into account not the correlation between them but the substantive meaning of the concept. We summed up answers to these questions and divided by the number of items (equal to 2). The resulting index can take 5 different values in the range from 0 to 1, namely: 0, 0.25, 0.5, 0.75 and 1.

In order to measure the propensity to deviate from social norms we constructed a norm deviations index (NDI) combining several items indicating a respondent's willingness to justify the non-observance of some religious, moral or legal norms. We used question "*Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between*". The statements were: "*Avoiding a fare on public transport* ", "*Cheating on taxes if you have a chance*", "*Abortion*", "*Divorce*", "*Euthanasia ending the life of the incurably sick*". An answer to any of these five statements may change from 1 (never justifiable) to 10 (always justifiable). We constructed the NDI using the same approach as for II described above, i.e., we summed up answers to these five questions and divided the sum by fifty. The resulting index ranges from 0.1 to 1.

Country-level variables

[14] The only variable we omitted was city size, because the inclusion of this variable significantly reduces the number of observations in regressions.

The key independent variable at the aggregated level is the percentage of pure postmaterialists in the country (*PostShare*). It is calculated on WVS data using the original 12-item postmaterialism/materialism index.

In our regressions we also control for a country's level of socio-economic development and democratization, as suggested by studies that examined the correlation between corruption and postmaterialism at the aggregated level. As a measure of a country's economic development, we employ the Human Development Index (*HDI*) published by the UNDP, which combines GDP per capita (at purchasing power parity), educational level (which is a combination of adult literacy rate and gross enrolment ratio), and life expectancy at birth in a country. To measure the degree of a country's democratization (*Demo*) we use the polity index from the *Polity IV Project* (Marshall et al., 2011). This index is linked to the difference between democratic and autocratic features of a country's political regime. It takes 21 different values ranging from -10 (pure autocracy) to 10 (perfect democracy).[15] We used average values of both *HDI* and *Demo* over the period constituting each of three rounds of WVS.[16]

2.3 Models Specifications

The main approach in our paper is to use a hierarchical linear modeling framework (HLM) as suggested by Bryk and Raudenbush (2002). The reason is the 'nested' structure of our data, with individuals nested within countries. We distinguish the individual level (Level 1) and the country level (Level 2) and estimate a series of different two-level models, moving from simpler to more complex specifications. In all models, we treat the same country presented in different waves as separate countries.[17]

The first of our models (Model 1) is the following[18]:

Level 1: $AB_{ij} = \beta 0_j + \beta 1*PMVS_{ij} + \beta 2*Controls_{ij} + r_{ij}$

Level 2: $\beta 0_j = \gamma 00 + \gamma 04*Wave4 + \gamma 05*Wave5 + u0_j$

where the index *i* refers to individuals and the index *j* to countries; *AB* is an individual's attitude towards bribery; *PMVS* is an individual's postmaterialist values score and β_1 is the set of corresponding coefficients; *Controls* is the set of individual characteristics and β_2 is the set of corresponding coefficients; $\beta 0$ is a global constant; *Wave4* and *Wave5* are dummies for the fourth and the fifth waves of WVS, respectively; *r* is a conventional error term reflecting random variation across individuals. The Level 2 term in the above equation allows the intercept (β_0) to

[15] For more details see the official website of the *Polity IV Project* at http://www.systemicpeace.org/polity/polity4.htm

[16] We also tried alternative indicators both for the country's level of economic development and for the degree of democratization. For the former we used GDP per capita, and for the latter we tried two indicators: the Freedom House index of democracy and a measure of democracy duration from Alvarez et al. (1996). The latter is a dummy variable which equals 1 if a country has been consistently democratic since 1950 and equals 0 otherwise. We obtained qualitatively similar results.

[17] We recognize that this causes the correlation of errors in time within countries and made a special robustness check for that.

[18] To estimate our models we used the HLM statistical package (Version 7).

vary both across countries and in time, i.e., that the average level of bribery justification may differ across countries and in time. This assumption takes into account the clustering of individuals within different country contexts, which avoids the otherwise very likely underestimation of the standard error of the constant term.

We estimate two alternative specifications of Model 1. In the first specification (Model 1.1), we include PMVS as the set of dummy variables and take pure materialists as a reference group. This allows to test the presence of a non-linear relationship between postmaterialism and the justification of bribery at the individual level (Hypothesis 1.4).

However, the disadvantage of this specification is that it complicates the estimation of subsequent multilevel models that allow the correlation between postmaterialist values and the attitude towards bribery to vary across countries. For the sake of simplicity and in order to compare Model 1 with these models, we also estimate the second specification (Model 1.2) where we include PMVS as a continuous variable. In this case, we can differentiate between Hypotheses 1.1-1.3.

Next, we expand Model 1 including two indices which measure opposite propensities embedded in postmaterialism (Models 1.21 and 1.22, respectively). The first one is a norm deviations index (NDI) which measures individual propensity to deviate from social norms. According to our expectations, this propensity should make postmaterialists' attitudes towards bribery less negative (or even positive). (Hypothesis 2.1) The second index is an impartiality index (II) measuring individual emphasis on impartiality. This propensity should make postmaterialists' attitudes towards bribery more negative. (Hypothesis 2.2)

At the next step, we turn to the more complex Model 2 which allows the correlation between postmaterialist values and the attitude towards bribery (which is captured by β_1) to vary across countries[19]:

Level 1: $AB_{ij} = \beta 0_j + \beta 1_j * PMVS_{ij} + \beta 2_j * Controls_{ij} + r_{ij}$,

Level 2: $\beta 0_j = \gamma 00 + \gamma 04 * Wave4 + \gamma 05 * Wave5 + u0_j$

$\beta 1_j = \gamma 10 + \gamma 14 * Wave4 + \gamma 15 * Wave5 + u1_j$

In this model, intercept ($\beta 0$) and slope ($\beta 1$) are each composed of a fixed part that is constant across countries ($\gamma 00$ and $\gamma 10$, respectively) and a variable part that differs across countries ($u0_j$ and $u1_j$, respectively). We need to test whether the variance of u_1 is significant, i.e., whether postmaterialists have different attitudes to bribery in different countries. This is an essential step before estimating cross-level effects of country-level variables on individual

[19] In any our model, we do not interpret the β_1-coefficient in terms of a *causal* relationship between postmaterialism and attitudes towards corruption, but rather interpret it as a *correlation*. The reason is that postmaterialism and attitudes towards corruption may be determined simultaneously by a third factor, such as personality traits (see Connely and Onse, 2008).

postmaterialists. We note that in Model 2 and all subsequent models with cross-level effects we include PMVS as a continuous variable.

Further, we estimate Model 3:

Level 1:

$$AB_{ij} = \beta 0_j + \beta 1_j * PMVS_{ij} + \beta 2_j * Controls_{ij} + r_{ij} ,$$

Level 2:

$$\beta 0_j = \gamma 00 + \gamma 01 * PostShare_j + \gamma 02 * HDI_j + \gamma 03 * Demo_j + \gamma 04 * Wave4 + \gamma 05 * Wave5 + u0_j$$

$$\beta 1_j = \gamma 10 + \gamma 11 * PostShare_j + \gamma 12 * HDI_j + \gamma 13 * Demo_j + \gamma 14 * Wave4 + \gamma 15 * Wave5 + u1_j$$

Compared to Model 2, Model 3 allows to estimate both main and interaction effects of several country-related characteristics. Of primary interest for us is the percentage of pure postmaterialists in a country (*PostShare*). According to Hypothesis 2, the higher (lower) is the share of postmaterialists in the country, the less (more) people in this country justify bribery. In turn, Hypothesis 3 assumes that a higher percentage of pure postmaterialists in a country motivates individual postmaterialists to condemn bribery more strongly.

We include a country's HDI and the level of democratization (*Demo*) as control variables acknowledging that despite the fact that postmaterialists feel existentially more secure than other people in the same country, their feelings are affected by general societal conditions. A higher level of socio-economic development should strengthen individual feelings of security and help individual postmaterialists to be "more postmaterialistic".[20] The level of a country's democratization should have an impact on attitudes towards corruption as well. It is known that democracy is negatively associated with corruption because it offers effective mechanisms of social control and accountability (e.g., Brunetti and Weder 2003; Lederman et al., 2005).

Hypothesis 4 stems from the idea that a growing number of postmaterialists strengthen the emphasis on impartiality of individual postmaterialists, but not their propensities to deviate from norms. This mechanism may be also tested empirically using a two-level model (Model 4):

Level 1:

$$II_{ij} \text{ (alternatively, } NDI_{ij}) = \beta 0_j + \beta 1_j * PMVS_{ij} + \beta 2_j * Controls_{ij} + r_{ij},$$

Level 2:

$$\beta 0_j = \gamma 00 + \gamma 01 * PostShare_j + \gamma 02 * HDI_j + \gamma 03 * Demo_j + \gamma 04 * Wave4 + \gamma 05 * Wave5 + u0_j$$

$$\beta 1_j = \gamma 10 + \gamma 11 * PostShare_j + \gamma 12 * HDI_j + \gamma 13 * Demo_j$$

[20] In this vein, some authors notice that as postmaterialist values indexes were originally constructed to document a shift in values in developed countries, they may have only limited application for developing and transition countries. In other words, postmaterialists from developed countries and postmaterialists from other countries are not the same (e.g., Kyvelidis, 2001).

$$+\gamma 14*\text{Wave4} + \gamma 15*\text{Wave5} + u1_j$$

This model is the same as Model 3 but the impartiality index and norm deviations index are taken here as independent variables. If we find that *γ11* from the specification for II is positive and significant, but *γ11* from the specification for NDI is not significant, this would support our explanation.

3. Findings

3.1 Descriptive analysis

Descriptive statistics on all individual-level variables used in our study are presented in the top panel of Table 1. Our key dependent variable, individual attitude towards bribery (AB), has a rather uneven distribution. Its values range from 1 to 10 with the mean value equaling to 1.8. The reason is that about 75% of individuals in the WVS sample choose the answer that bribery is never justifiable. That is why, although, for the sake of simplicity, in all our econometric models we treat individual AB as a continuous variable, we also check how our estimation results change if we treat AB as a binary variable (see robustness checks section). Descriptive statistics for all country-level variables are presented in the bottom panel of Table 1.

We start our analysis with a brief comparison of pure postmaterialists with mixed positions and pure materialists. As Table 2 shows, pure postmaterialists are more likely to be men, employed, younger, better educated, and have higher incomes than pure materialists.

Concerning the attitude towards bribery, the raw data show that the percentage of those who think bribery is never justifiable is slightly higher among pure postmaterialists than among pure materialists. However, individuals of mixed types condemn bribery more than either of the other two groups. Therefore, the raw data suggest a non-linear relationship between postmaterialism and approval of bribery. At the same time, mean values of both norms deviation and impartiality indexes are significantly higher among pure postmaterialists than among mixed positions or pure materialists.[21] Hence, postmaterialism indeed includes some propensities that are tolerant towards bribery and other propensities for intolerance towards bribery. It is, thus, worthwhile to examine which of these propensities prevails under which country-level constellations.

3.2. Multivariate analysis

[21] Auxiliary regressions show that these relationships between postmaterialilsm and indexes remain highly significant even if we control for the full set of personal characteristics presented in Table 1.

The estimations results of Model 1.1 are presented in Table 3. The first thing to note is that the variance component at the country level is highly significant (X2 = 9608, p-value<0.001). This indicates that HLM is an appropriate method in our case. Concerning our key variable, we find a non-linear U-shaped relationship between the attitude towards bribery and the postmaterialism values index. As we move from pure materialism to mixed positions, people tend to become less dismissive of bribery but then moving from mixed positions to postmaterialism, people are more dismissive of bribery. The difference between pure materialists and pure postmaterialists is not significant. Thus, we confirm Hypothesis 1.4.

At the same time, most correlations between the attitude towards bribery and the other individual characteristics are in line with expectations and results of previous studies. First, we find that women justify bribe-taking less than men. This result confirms results by a study of Swamy et al., (2001) for the first and second waves of WVS.[22] Second, there is a negative correlation between the justification of bribery and age. Older people justify bribe-taking less than younger ones do. This evidence corroborates findings by Torgler and Dong (2008) (for the 3rd wave of WVS) and supports the idea that factors associated with aging restrict individuals' corrupt behavior (see Torgler and Valev, 2006). Third, married people and people with more children justify bribery more than do unmarried people and people with fewer or no children. Perhaps, this indicates that people with more traditional family ties have a stronger in-group orientation and are, thus, more willing to resort to bribery for the sake of their in-group. For now, this must be left as a speculative hypothesis. Fourth, more educated people tend to justify bribery less: usually educated people have internalized stronger impartiality norms and are, hence, more dismissive of behaviors that give undue advantage to one party over another such as bribery. Fifth, we do not find a significant difference in attitudes between employed and non-employed.[23] Finally, richer people tend to justify bribery more than the poorer ones. This is in line with the view that higher incomes provide more means to get something through bribes (Gupta et al., 2002).

At the next step, we re-estimate Model 1 with the postmaterialist value score included not as the set of dummy variables, but as a continuous variable. In this case, as the second column of Table 4 shows (Model 1.2), the correlation of the justification of bribery with the postmaterialist values score is positive and insignificant. This confirms our Hypothesis 1.3.

[22] Like these authors, "we do not claim to have discovered some essential, permanent, or biologically determined differences between men and women. Indeed, the gender differences we observe may be attributable to socialization, or to differences in access to networks of corruption, or in knowledge of how to engage in corrupt practices, or to other factors. We do not attempt to identify these underlying factors, but rather to document several statistically robust relationships...". (Swamy et al., 2001) We share this position; providing exact explanations for this finding goes far beyond the scope of this paper.

[23] However, if we distinguish different groups of employed, we find that part-time employees, self-employed and unemployed justify corruption more than employed full-time. Possibly, the reason is that the latter are less involved in informal activities bordering with corruption than the former. These results are available upon request.

When we expand Model 1 with the norm deviations index, the correlation of the justification of bribery with postmaterialist values score changes from positive and insignificant to negative and significant (see Model 1.21 in Table 4). In other words, when the individual propensity to deviate from social norms is taken into account, postmaterialism implies more disapproving attitude to bribery. Therefore, Hypothesis 2.1 is verified. As it might be expected, the propensity for norm deviations itself is positively correlated with the justification of bribery, i.e., individuals with a higher propensity to norms deviations tend to justify bribery more. We also note that the inclusion of the norm deviations index substantially increases R-squared of our regression. The general propensity for norm deviations appears to be a very important determinant of corruption justification at the individual level.

By contrast, as the estimation results of Model 1.22 in Table 2 show, the inclusion of the impartiality index changes neither the sign nor the significance of the coefficient between postmaterialism and the approval of bribery. It is worth mentioning, however, that the coefficient slightly increased. This change is in line with Hypothesis 2.2. The impartiality index itself is negatively correlated with the justification of bribery meaning that people with stronger internalized impartiality norms are more dismissive of bribery.

Next, we turn to Model 2 which allows the correlation between postmaterialism and the approval of bribery to vary across countries. We find that the coefficient of PMVS ($\beta 1$) contains a significant random part that differs across countries ($X2 = 665$ with p-value<0.001).[24] Therefore, we proceed to Model 3. Its estimation results are presented in Table 5. First, we estimate only the main effects of the country-level predictors (Model 3.1). We find that individuals condemn bribery more in countries with higher levels of human development. This result echoes the repeated finding from country-level studies that corruption is lower when socio-economic development is higher.

At the same time, our democracy measure is positively correlated with individual approval of bribery, which indicates that in more democratic countries people tend to justify corruption more. The positive correlation remains when we employ two alternative measures of democratization - the Freedom House Index and a dummy for uninterrupted democracy; however in these cases the correlation becomes insignificant. We also tested a non-linear relationship between a country's democratization level and citizens' attitudes towards bribery (inspired by Montinola and Jackman, 2002), but it appeared to be insignificant.

However, we do not find a significant correlation between individual approval of bribery and the share of postmaterialists in a country. It turns out that the extent to which

[24] We note that even if we include PMVS as the set of dummies, all corresponding coefficients have a significant random part.

postmaterialism values are spread in a country does not influence all people's approval of bribery. This contradicts Hypothesis 3.

Next, we turn to the interaction effects (see Model 3.2 in Table 5). Although the share of postmaterialists in the country does not affect the average level of bribery justification, it has a highly significant impact on how individual postmaterialists regard bribery. A higher share of postmaterialists turns the individuals' postmaterialism into a more disapproving factor with respect to bribery. This result supports Hypothesis 4.

A higher level of socio-economic development makes the correlation between postmaterialist values and the justification of bribery more negative as well, but this effect is not statistically significant. An auxiliary regression shows that HDI becomes insignificant after the inclusion of the postmaterialists share. We find qualitatively the same results when we employ GDP per capita instead of HDI. This indicates that it is not the country's economic development *per se*, but the spread of postmaterialist values in the society that makes individual postmaterialists condemn bribery more.

The polity score in a country has a positive and significant effect on the correlation between postmaterialist values and justification of bribery at the individual level. It is also positive and significant when the polity score is included in the right-hand side alone. This indicates that in more democratic countries postmaterialists are more likely to justify bribery than materialists. The use of two alternative measures of democratization leads to the same conclusion.

Thus, our empirical results confirm the proposition that the spread of postmaterialism in a society makes attitudes of individual postmaterialists towards bribery more negative. Further exploring this idea, we estimate Model 4 and find that the share of postmaterialists in a country has a strong and highly significant impact on the correlation between individual impartiality norms and postmaterialist values (see Table 6). The larger the share is, the more individual postmaterialists express views supporting impartiality principles. At the same time, the impact of the share of postmaterialists on the correlation between individual propensity to deviate from norms and postmaterialist values is not significant. The growing number of postmaterialists does not lead to stronger support for norm deviations. It is noteworthy that although in the case of the impartiality index the standard error of the coefficient estimate is almost two times larger than in the case of norms deviation index, the impact of the share of postmaterialists on the impartiality index is still significant due to a much larger coefficient. This technical observation only reinforces our interpretations.

Finally, we make a useful empirical exercise which helps to compare contribution of mass postmaterialistic orientations to giving rise to stronger disapprovals of bribery with contributions

of a country's economic development and democratization. We examine whether a high share of postmaterialists in a country is a sufficient condition under which the correlation between individual postmaterialist values and justification of corruption (which is measured by β1 in all our models) becomes negative. Will this correlation be negative without a high enough level of economic development and/or level of democratization? In order to explore this issue, we estimate individual-level correlations (based on Model 3.2) between approvals of bribery and postmaterialist values in countries with different combinations of postmaterialist share, HDI and degree of democratization. We form eight different combinations taking each of these three country-level variables alternately on their maximum and minimum levels.[25] The estimates along with their standard errors are shown in the last two columns of the Table 7.

These results show that the individual-level correlation between approving bribes and supporting postmaterialism is negative and statistically significant only in Combinations 1 and 2. In other words, postmaterialists tend to condemn corruption only in countries with both a high share of postmaterialists and high level of HDI, regardless of their degree of democratization.[26] (Note: as our democracy measure positively affects the correlation between values and justification of corruption at the individual level, we tried it not only at its minimum, but also at its maximum). In countries with a relatively high share of postmaterialists but low HDI, the correlation remains negative but insignificant (see Combinations 3 and 4). This suggests that the spread of postmaterialist values in a population should be accompanied by relatively high socioeconomic development in order for these values to make individual attitudes towards corruption more negative. At the same time, a high level of economic development is not enough without a relatively high portion of the population sharing postmaterialist values (see Combinations 5 and 6). Finally, in countries with a weak presence of postmaterialist values and low economic development, postmaterialists justify bribery significantly more than materialists do (see Combinations 7 and 8).

3.3. Robustness checks

We conducted several checks for robustness of our findings (all corresponding results are available upon request). To begin with, we re-estimated all our models using our modified

[25] To fix a variable on its maximum we subtracted from all values of this variable its maximum. As a result, its maximum becomes equal to zero. Similarly, in order to fix a variable on its minimum we subtracted from all values of this variable its minimum. These manipulations do not affect the interaction effects, but the main effect (*γ10)* will present an estimate of the correlation conditional on chosen values of societal level variables.

[26] For this empirical exercise it is not important whether countries satisfying these conditions exist or not. Its aim is to show what individual-level correlation between postmaterialism and the approval of bribery will be if parameters of our models are taken at their extreme values.

postmaterialist values index instead of the original one. This exercise has not changed the shape of the relationship between postmaterialist values and the justification of bribery.

Second, as we already mentioned throughout the paper, we employed alternative indicators for the level of economic development and democratization, and this did not changed our findings.

Third, in order to check whether our results may be driven by the binomial distribution of the dependent variable, we re-estimated all our models assuming that the justification of corruption is a binary variable and takes only two values of 0 if bribery is never justifiable and 1 in all other cases. However, all our principal findings remained substantively the same.

Fourth, as we estimated all our models on the pooled sample from three waves of WVS, at Level 2 we treated interactions between country and year dummies as different countries. On the one hand, this increased the number of observations compared to when data from only one round of surveys were used, thus making our estimates more precise. On the other hand, this procedure ignores a possible correlation of errors in time within the same countries, which may lead to the underestimation of t-statistics (Duelmer and Klein, 2005). In order to be on the safe side, we have checked the validity of our results by re-estimating the same specifications only for the 5th wave of WVS.[27] Although the number of observations decreases in this case, the postmaterialist share keeps its negative sign and significance. Results for the HDI and democracy measure remain very similar to the main results described above.

Summary and conclusions

Using WVS data we examined the linkage between people's approval of bribery and postmaterialist values in a multi-level setting. At the individual level, we find that the relationship between the justification of corruption and expressing postmaterialistic views is non-linear and has an inverted U-shape form. As we move from pure materialism to mixed positions, people tend to justify bribery more, but then moving from mixed positions to postmaterialism, people are more disapproving of bribery. Moreover, we do *not* find a statistically significant difference between the two opposed groups - pure postmaterialists and pure materialists - in their attitudes towards corruption.

This finding is in line with theoretical predictions that postmaterialistic values include conflicting propensities with respect to bribery. On one hand, postmaterialism implies more civic activism, support for democracy and transparency, trust in people, and support of impartiality

[27] We choose this wave because it covers more countries than the third or fourth wave.

norms - qualities which are in opposition to corruption. On the other hand, condemning bribery is a social desirability issue and postmaterialists are known to be less susceptible to desirability pressures and more relaxed about norm deviations. From this point of view, postmaterialists might be more tolerant of bribery.

While several cross-country studies find that corruption levels are lower in countries with larger shares of postmaterialists, against the background of our previously mentioned findings it is not clear what individual-level mechanism is behind this pattern. Solving this issue is the main point of our analyses.

We show that the share of postmaterialists in a country shapes which of their two conflicting propensities dominates: as the share of postmaterialists increases, the propensity of postmaterialists to internalize impartiality norms outweighs their propensity to support norm deviations. Hence, individual postmaterialists tend to become more dismissive of bribery as their share in the population grows. This robust mechanism explains why earlier studies repeatedly found a strongly negative relationship between corruption and postmaterialism at the country-level. Now, we know the multi-level mechanisms accounting for this relationship. However, we note that a high proportion of postmaterialists in a country is a necessary but not a sufficient condition to make individual postmaterialists dismissive of bribery. A large share of postmaterialists needs to go hand in hand with an advanced level of socio-economic development to make individual postmaterialists dismissive of bribery. Vice versa, an advanced level of economic development enhances disapproval of bribery only where it creates widespread postmaterialism.

Our findings have several implications. To begin with, we support the general expectation that the spread of postmaterialism in a society will help to restrain corruption. However, we would not recommend pinning all hopes on this evolutionary process. It is important to realize strict anti-corruption policies in order to constrain growing individual propensities for non-observance of rules.

We may also suggest some additional perspective on the non-linear relationship between democracy and corruption found in several papers: corruption levels in nascent democracies are usually higher than in autocracies, but at the later stages of the democratization process, corruption declines. This relationship resonates with the ambiguous association between postmaterialist values and disapproval of corruption found in this paper. In nascent democracies where the shift to postmaterialism is only at its initial stages, corruption may be more justifiable than in autocracies because propensities to deviate from norms are already not constrained by strict rules, but desires for justice, impartiality, and fairness are not yet as strong as in mature

democracies. At the later stages, the growing number of postmaterialists makes individual attitudes towards corruption more negative.

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Table 1. Descriptive Statistics on Individual (Level-1) and Societal (Level-2) Variables.

Variables	N	Mean	Std. Dev.	Min	Max
Individual Level Variables (Level 1)					
Attitude towards bribery (the level of justification of bribery)	209805	1.778	1.799	1	10
Postmaterialist values score (PMVS)	190215	0.388	0.239	0	1
Age	222227	40.427	15.970	15	99
Gender (1-male, 2 - female)	222523	1.516	0.500	1	2
Educational level (1 - university education, 0-all other levels)	218696	0.143	0.350	0	1
Marital status (1-married, 0 non-married)	219169	0.579	0.494	0	1
Children (1-yes, 0 -no)	211360	0.715	0.452	0	1
Employment status (1-employed, 0 - non-employed)	214773	0.530	0.499	0	1
Income level (from 1 - first decile, to 10 - tenth decile)	197826	4.532	2.395	1	10
Norm deviation index (NDI)	169239	0.338	0.191	0.1	1
Impartiality index (II)	196773	0.372	0.332	0	1
Country Level Variables (Level 2)					
Share of pure postmaterialists (postshare)	144	0.023	0.025	0	0.103
Human development index (HDI)	132	0.676	0.160	0.232	0.935
Polity score (Demo)	137	5.438	5.717	-10	10

Table 2. Individual Characteristics of Pure Postmaterialists, Mixed Positions and Pure Materialists.

	Pure materialists	Mixed positions	Pure postmaterialists
Mean age, years	43.21	39.87	38.04
Gender, %			
male	47.81	49.09	51.13
female	52.19	50.91	48.87
Marital status, %			
married	64.98	58.06	45.88
not married	35.02	41.94	54.12
Education level, %			
university with degree	9.92	15.06	30.43
all other education levels	90.08	84.94	69.57
Income level, %			
low	37.54	33.15	24.67
medium	37.05	37.50	33.55
high	25.41	29.35	41.78
Employment status, %			
employed	50.62	54.79	63.10
non-employed	49.38	45.21	36.90
Having children, %			
yes	79.49	72.62	62.13
no	20.51	27.38	37.87
Norms deviation index, mean value	0.30	0.34	0.48
Impartiality index, mean value	0.27	0.38	0.71
Attitude towards bribery			
bribery is never justifiable, %	76.59	74.56	78.12
mean value	1.70	1.80	1.62

Note: The pure materialists, mixed positions and pure postmaterialists groups are defined using the original 12-item postmaterialist index supplied with the WVS dataset. Individuals with index equal to 0 belong to the pure materialists groups, individuals with index equal to 1, 2, 3, or 4 were attributed to the mixed positions group, and individuals with index equal to 5 were defined as pure postmaterialists.

Table 3. Relationship Between Justification of Bribery and Postmaterialist Values at the Individual Level (HLM Estimation of Model 1.1 Using Data from the Third (1995-1997), Fourth (1999-2001) and Fifth (2005-2008) Rounds of WVS.)

	Model 1.1	
	Coefficient estimate	Robust s.e.
Variables		
Postmaterialism values score (ref. group = pure materialists)		
1	0.090***	0.029
2	0.127***	0.033
3	0.128***	0.042
4	0.080	0.054
5 (pure postmaterialists)	0.037	0.060
Female	-0.108***	0.013
Age	-0.009***	0.001
Employed	-0.005	0.016
Have at least 1 child	-0.002	0.007
Married	-0.071***	0.015
Higher education	-0.128***	0.028
Income decile	0.077	0.065
Intercept	2.166***	0.066
Variance components:		
Intercept, u	0.259	
(reliability estimate)	(0.988)	
Level 1, r	2.841	
Intraclass correlation	0.084	
N of countries	101	
N of individuals	100835	
R squared, level 1,%	1.09	

Note: ***p-value<0.01, ** p-value<0.05, * p-value<0.1 (2-tailed tests). Wave dummies are included. N of countries is the number of interactions between country and wave dummies. The inaccessibility of different individual and country-level variables needed for our analysis substantially reduces the number of country-wave units and corresponding individual observations. To achieve the comparability of our results across different models we make all our estimations on the most restricted sample which contains only those individuals who have non-missing values for all variables used in Model 3.2.

Table 4. Relationship between Justification of Bribery and Postmaterialist Values at the Individual Level (HLM Estimation of Model 1.2, Model 1.21 and Model 1.22 Using Data From the Third (1995-1997), Fourth (1999-2001) and Fifth (2005-2008) Rounds of WVS.).

	Model 1.2		Model 1.21		Model 1.22	
	Coefficient estimate	Robust s.e	Coefficient estimate	Robust s.e	Coefficient estimate	Robust s.e
Variables						
Postmaterialist values score (PMVS)	0.081	0.068	-0.119**	0.050	0.095	0.067
Norm deviation index (NDI)			3.769***	0.253		
Impartiality index (II)					-0.095***	0.036
Variance components:						
Intercept, u (reliability estimate)	0.26 (0.988)		0.31 (0.991)		0.259 (0.988)	
Level 1, r	2.843		2.388		2.842	
Intraclass correlation	0.084		0.115		0.084	
N of countries	101		101		101	
N of individuals	100835		100835		100835	
R squared level 1,%	1.1		15.5		1.1	

Note: ***p-value<0.01, ** p-value<0.05, * p-value<0.1 (2-tailed tests). All individual variables presented in Table 3 were controlled, but we do not show results on them because they are not in our research focus. PMVS is included as a continuous variable. Wave dummies are included. N of countries is the number of interactions between country and wave dummies. The inaccessibility of different individual and country-level variables needed for our analysis substantially reduces the number of country-wave units and corresponding individual observations. To achieve the comparability of our results across different models we make all our estimations on the most restricted sample which contains only those individuals who have non-missing values for all variables used in Model 3.2.

Table 5. Main and Interaction Effects of Societal-level Variables on Individual Justification of Bribery (HLM Estimation of Model 3.1 and 3.2 Using Data from the Third (1995-1997), Fourth (1999-2001) and Fifth (2005-2008) Rounds of WVS.).

	Model 3.1		Model 3.2	
	Coefficient estimate	Robust s.e	Coefficient estimate	Robust s.e
Main effects				
Variables				
Human development index	-0.866**	0.397	-0.681.	0.410
Polity score	0.019*	0.010	0.011	0.011
Postmaterialists share	-2.753	1.699	-0.247	2.012
Intercept	2.350***	0.204	2.332***	0.232
Effects of interaction with individual PMVS				
Variables				
Human development index			-0.693	0.540
Polity score			0.032**	0.014
Postmaterialist share			-9.038***	2.406
Intercept			0.131	0.568
Variance components:				
Intercept, u0	0.47		0.462	
(reliability estimate)	(0.865)		(0.863)	
PMVI, slope	0.318		0.275	
(reliability estimate)	(0.830)		(0.809)	
Level 1, r	2.792		2.792	
N of countries	101		101	
N of individuals	100835		100835	
R squared level 1.%	2.0		2.1	
R squared level 2.%	13.5		13.1	

Note: ***p-value<0.01, ** p-value<0.05, * p-value<0.1 (2-tailed tests). All individual variables presented in Table 3 were controlled, but we do not show results on them because they are not in our research focus. The effects for all these control variables are random. Wave dummies are included. N of countries is the number of interactions between country and wave dummies. The inaccessibility of different individual and country-level variables needed for our analysis substantially reduces the number of country-wave units and corresponding individual observations. To achieve the comparability of our results across different models we make all our estimations on the most restricted sample which contains only those individuals who have non-missing values for all variables used in Model 3.2.

Table 6. Main and Interaction Effects of Societal-level Variables on Individual Norm Deviation and Impartiality Indices (HLM Estimation of Model 4.1 and Model 4.2 Using Data from the Third (1995-1997), Fourth (1999-2001) and Fifth (2005-2008) Rounds of WVS).

	Model 4.1 Dependent variable: norm deviation index		Model 4.2 Dependent variable: impartiality index	
	Coefficient estimate	Robust s.e	Coefficient estimate	Robust s.e
Main effects				
Variables				
Human development index	0.241***	0.040	0.004	0.112
Polity score	0.001	0.001	0.005 **	0.002
Postmaterialist share	-0.233	0.328	1.221*	0.676
Intercept	0.190***	0.029	0.216***	0.047
Effects of interaction with individual PMVS				
Variables				
Human development index	0.004	0.066	0.154**	0.066
Polity score	0.003**	0.001	0.002	0.001
Postmaterialist share	0.295	0.231	1.609***	0.412
Intercept	-0.009	0.020	-0.001	0.040
Variance components:				
Intercept, u0	0.012		0.020	
(reliability estimate)	(0.933)		(0.906)	
PMVI, slope	0.003		0.006	
(reliability estimate)	(0.783)		(0.760)	
Level 1, r	0.031		0.078	
N of countries	101		101	
N of individuals	100835		100835	
R squared level 1,%	16.8		15.6	
R squared level 2,%	52.0		47.3	

Note: ***p-value<0.01, ** p-value<0.05, * p-value<0.1 (2-tailed tests). All individual variables presented in Table 3 were controlled, but we do not show results on them because they are not in our research focus. The effects for all these control variables are random. Wave dummies are included. N of countries is the number of interactions between country and wave dummies. The inaccessibility of different individual and country-level variables needed for our analysis substantially reduces the number of country-wave units and corresponding individual observations. To achieve the comparability of our results across different models we make all our estimations on the most restricted sample which contains only those individuals who have non-missing values for all variables used in Model 3.2.

Table 7. Individual-level Correlations between Justification of Bribery and Postmaterialist Values in Countries with Different Combinations of Posmaterialist share, HDI and Degree of Democratization (All Estimations Are Based on Model 3.2 in Table 5).

Combination number	Post-materialist share	HDI	Polity score	Individual-level correlation (β1)	Robust st. errors
1	Max	Max	Max	-0.644 ***	0.144
2	Max	Max	Min	-1.167***	0.312
3	Max	Min	Min	-0.105	0.320
4	Max	Min	Max	-0.139	0.345
5	Min	Max	Max	0.203	0.148
6	Min	Max	Min	-0.320	0.314
7	Min	Min	Min	0.184	0.216
8	Min	Min	Max	0.707***	0.240

Note: ***p-value<0.01, ** p-value<0.05, * p-value<0.1 (2-tailed tests).

Appendix

Table A1. List of Countries Covered in the Third, Fourth and Filth Waves of WVS.

Type of Country	Country
Developed Countries (N=20)	Andorra, Australia, Austria, Canada, Cyprus, Finland, France, Germany, Great Britain, Hong Kong, Israel, Italy, Japan, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, USA
Developing Countries (N=44)	Algeria, Argentina, Bangladesh, Brazil, Burkina Faso, Chile, China, Colombia, Dominican Republic, Egypt, El Salvador, Ethiopia, Ghana, Guatemala, India, Indonesia, Iran, Iraq, Jordan, Malaysia, Mali, Mexico, Morocco, Nigeria, Pakistan, Peru, Philippines, Puerto Rico, Rwanda, Saudi Arabia, Singapore, South Africa, South Korea, Taiwan, Tanzania, Thailand, Trinidad & Tobago, Turkey, Uganda, Uruguay, Venezuela, Vietnam, Zambia, Zimbabwe
Transition Countries:	
CEE Countries (N=15)	Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Poland, Romania, Serbia and Montenegro (in the fifth wave: Serbia), Slovakia, Slovenia.
CIS Countries (N=8)	Armenia, Azerbaijan, Belarus, Georgia, Kyrgyzstan, Moldova, Russia, Ukraine

Note: In this table we used the UN classification of countries, which is based on the Human Development Index. Within this classification countries are divided into two groups, developed and developing. As countries of Central and Eastern Europe and CIS are not included in the UN classification, we placed these countries into a separate group called “transition countries”.

Table A2. Construction of a Modified 12-item Index of Postmaterialist Values.

Question in WVS	First Choice	Second Choice
People sometimes talk what the aims of this country should be for the next ten years. On this card are listed some of the goals which different people will give top priority. Would you please say which one of these you, yourself, consider the most important? (E001 and E002)		
A high level of economic growth	0	0
Strong defense forces	0	0
People have more say about how things are done	1	0.5
Trying to make our cities and countryside more beautiful	1	0.5
If you had to choose which one of the things on this card would you say is the most important? (E003 and E004)		
Fighting rising prices	0	0
Give people more say	1	0.5
Maintaining order in the nation	0	0
Protecting freedom of speech	1	0.5
In your opinion which one of these is most important? (E005 and E006)		
A stable economy	0	0
Progress toward a less impersonal and more human society	1	0.5
Ideas count more than money	1	0.5
The fight against crime	0	0

Note: The modified index may take 10 different values: 0, 0.5, 1, 1.5, 2, 2.5, 3, 3.5, 4, and 4.5.

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