



# Inglehart's scarcity hypothesis revisited: Is postmaterialism a macro- or micro-level phenomenon around the world?

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## Abstract

Inglehart's theory of postmaterialism hinged on the scarcity hypothesis, according to which the spread of postmaterialist values depends on the degree of individuals' and societies' existential security, rooted in macro-level economic conditions. But does a country's level of economic development systematically shape individuals' existential security, and thus postmaterialism? In this article, the authors revisit this question by utilizing 2010–2014 World Values Survey data for testing whether the effect of existential security on postmaterialism varies by macro-conditions across 59 countries representing 72% of the world's population. Based on multilevel models, the authors find strong effects of individuals' socioeconomic conditions on postmaterialism, confirming one aspect of the scarcity hypothesis, but also find weak associations between the effects of those conditions by economic factors at the national level. While there is substantial cross-national variation in the effect of individual scarcity, that variation cannot be accounted for by the macro-conditions predicted by the theory.

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Cross-level interaction, multilevel modelling, postmaterialist values, postmodernization, scarcity hypothesis

At the beginning of the 1970s, Ronald Inglehart's 'The Silent Revolution in Europe: Intergenerational Change in Post-Industrial Societies' (Inglehart, 1971) raised the issue of changing value priorities of people living in highly developed countries. This study, as well as his later work (Inglehart, 1977, 1990, 1997), emphasized that this shift in values was not random, but was brought about by the socialization of successive birth cohorts in a context of economic and physical security, which enabled them to reorient their goals from ensuring basic economic and physical needs, to other non-material priorities. Owing to massive economic growth and generous social welfare systems after the Second World War, citizens in advanced industrial societies could take existential security for granted. This provoked a gradual increase in so-called postmaterialist values, which emphasize individual autonomy, self-expression and environmental stability at the expense of goals related to economic survival and physical security (see Dalton and Welzel, 2014; Inglehart, 2008; Inglehart and Baker, 2000; Inglehart and Oyserman, 2004; Newman, 2002).

The debate on Inglehart's scarcity hypothesis, which holds that the shift in value priorities is attributable to people's socioeconomic situation, is extraordinarily extensive and there is no need to overview it in its entirety. Instead, we strive to highlight one aspect of this hypothesis, which, in our view, has not been settled in the existing literature. It should be emphasized that this study does not intend to challenge the basic supposition that socioeconomic environment determines how people think and what type of goals they prefer, but it makes an effort to clarify which of the two levels where social and economic conditions occur – individual and contextual levels – is more influential for acquiring postmaterialist values.

While Inglehart's work emphasized the significance of individual-level factors, it seems that his theory of postmaterialism is fundamentally a macro-theory (Davis, 2000; Inglehart, 2008; Van Deth and Scarbrough, 1995). One has to only consider the title of one of his greatest works, which deals with a 'culture shift in advanced industrial societies' (Inglehart, 1990), rather than with a shift in the individual values that could occur in the minds of well-off people everywhere. The culture shift may be observed only at the contextual level, because he maintained that people do not change their basic values after reaching adulthood. According to Inglehart, the major force that drives this culture shift is cohort replacement: the emergence of new birth cohorts, whose early socialization took place in socioeconomic macro-conditions more favourable for adoption of postmaterialist values.

Nonetheless, subjective values as well as one's sense of existential security are formed in each individual independently, and it is thus not self-evident that postmaterialist theory is or needs to be a system-level approach, but rather can be regarded as a theory about individuals (Davis, 2000; Van Deth and Scarbrough, 1995). Due to the confounding of these two approaches among scholars of postmaterialism, this article addresses whether the spread of postmaterialist values is rooted more in existential security relating to an

individual's socioeconomic resources and skills, or relating to the level of socioeconomic development of the country in which one lives.

In the next section, therefore, we overview the scarcity hypothesis with respect to the significance of macro- and micro-level factors that the scholarly literature claims to strengthen postmaterialist values. In order to test which of the two approaches best fits the data, the results section reports results from multilevel models in which individual-level postmaterialist values (measured as an index derived from the 12-item battery measuring materialism and postmaterialism) are used as the dependent variable. We additionally test for the relevance of cross-level interactions between major macro- and micro-level determinants of postmaterialism. The empirical analysis utilizes data collected during the sixth wave of the World Values Survey (2010–2014). In total, our dataset comprises 75,735 respondents nested in 59 countries.

### **From where does existential security arise?**

Shortly after the Second World War, several studies pointed out that individuals and societies were undergoing a new stage of development that did not correspond to the predictions of leading modernization theorists such as Marx and Weber (Bell, 1973; Lerner, 1958). According to Ronald Inglehart (1971, 1977, 1990, 1997), this non-linear trend in economic, cultural and political development, observed mostly in advanced industrial societies, was characterized particularly by a gradual change in value orientations. The postwar economic miracle that took place in Western democracies, as well as the substantial increase in social welfare expenditures, created an unprecedented socioeconomic environment in which almost everyone could take survival for granted. This positive change in macro-economic conditions enabled people to 'think otherwise' about their survival and change their priorities towards issues on personal freedom, tolerance to alternative lifestyles and quality of life.

Inglehart's view was that the new *macro-level* economic conditions of advanced industrial societies would first influence *individual* feelings of existential security, which subsequently shapes individual support for postmaterialist values (Inglehart, 1997). The supposition of a causal chain starting in the economic sphere (in which socioeconomic development is the leading force), going through the cultural sphere (shift towards post-modern values) and ending in political change (an increase in non-electoral civic and political participation, and an emphasis on lifestyle issues in politics) is apparent from many sources (Inglehart, 2008; Inglehart and Baker, 2000; Inglehart and Welzel, 2005: Ch. 5; see also figures in Inglehart, 1977: 5 or Inglehart, 1990: 6; cf. DiMaggio, 1994). On the other hand, Inglehart simultaneously points out that his theory proclaims neither economic nor cultural determinism, and that reciprocal relationships between these three spheres are likely (Inglehart, 1997: 50; see also Jackman and Miller, 2004).

Maslow (1954) explained this shift in political culture by the concept of 'need hierarchy', according to which individuals are motivated to achieve a number of goals that are structured hierarchically. Basic needs such as water, food and shelter lie at the lowest level of the need hierarchy. When the aims at the bottom level are satisfied, people often shift their motivations to more intellectual goals related to self-fulfilment, esteem and so forth. In light of this premise, it was not completely surprising that opinion polls since

the 1960s showed that people who grew up in environments providing sufficient existential security, such as the young cohorts socialized during the years of the postwar economic miracle, adopted the set of postmodern values emphasizing human autonomy, tolerance of diversity and self-expression, in place of one's preoccupation with material survival and well-being (for more details, see Abramson, 2014; Dalton, 2014: Ch. 5; Dalton and Welzel, 2014; Inglehart, 1977, 1990, 1997, 2008; Inglehart and Baker, 2000).

For Inglehart (1990, 1997), the materialist/postmaterialist polarity is a core element of the postmodernization process. While a broader set of postmodern values brings about a declining respect for authority, religious and sexual norms, and a growing emphasis on participation in the democratic process, materialist/postmaterialist values deal only with priorities, that is, the relative rank of various goals to be achieved in one's country in the near future. Postmaterialists do not reject the view that economic and physical security is important for their own or other people's lives; however, since they view that security as taken for granted, they orient themselves to goals relating to the quality of life and other non-financial political goals, such as human rights.

Inglehart's arguments can be summarized by two basic suppositions, a scarcity hypothesis and a socialization hypothesis (Inglehart, 1977: 22–23; 1990: 56; 1997: 33). First, the scarcity hypothesis anticipates that an individual's priorities largely reflect his or her socioeconomic environment, and that he or she places the greatest subjective value on those things that are in relatively short supply. Therefore, when asking someone about priorities for the future, he or she would favour unmet needs from the need hierarchy. Most likely, homeless people would first and foremost seek to obtain food and shelter, while well-off university students, whose studies are subsidized by parents and/or the state, would be attracted to the values of tolerating alternative lifestyles and autonomous decision-making.

In terms of whether the scarcity hypothesis fundamentally depends on macro- or micro-level factors, Inglehart (1977, 1990, 1997) seems to maintain a macro-level interpretation of the 'structure–culture' relationship. He broadly discusses the coming of postindustrial or postmodern society, economic miracles and the rise in welfare states that were capable of producing existential security for almost all people, which has enabled complex cultural changes involving the shift from materialist to postmaterialist value priorities (see also Davis, 2000; Van Deth and Scarbrough, 1995). In pure statistical terms, therefore, increasing levels of national wealth are significantly responsible for the higher percentages of people who exhibit the postmaterialist orientation, and thus rich countries should have higher proportions of postmaterialists than poor ones.

It should be added that a country's socioeconomic development can be expressed by various indicators (Grabowski et al., 2007; Inglehart and Welzel, 2010; World Bank, 2016), the most common of which is GDP per capita. GDP per capita, however, may say little about a society's living standard (which represents an 'objective' indicator of aggregate existential security), especially if large shares of public expenditure are allocated to the military instead of social welfare and infrastructure. Aggregate existential security might be better indicated by the Human Development Index (HDI), which is a composite statistic composed of life expectancy, years of schooling and gross national income per capita. In addition to HDI and GDP per capita, other possible indicators include those based on the size of the welfare state (indexes of economic inequality, measures of

relative poverty, etc.) or the size of the service sector of the economy. Nonetheless, all these measures face the same problem, as they indicate only the aggregate level of existential security, not individual feelings of existential security, which should be responsible for one's postmaterialist orientation.

The role of micro- and macro-level factors are also confounded in the socialization hypothesis, according to which the effect of the socioeconomic environment on value priorities is based on the conditions prevailing in one's pre-adult years (Inglehart, 1977, 1990, 1997, 2008). After reaching adulthood, values are regarded as resistant to change (Hyman, 1959; Jennings, 2007; Sigel, 1970; cf. Sapiro, 2004; Mishler and Rose, 2007); thus formative existential security is expected to be much more important for the adoption of postmaterialist values than current existential security.

Especially in the 1990s, this additional hypothesis was under great attack, and several studies attempted to demonstrate that not formative, but current economic conditions determine to what extent people regard their survival as secured (Clarke and Dutt, 1991; Clarke et al., 1997; Duch and Taylor, 1993, 1994; responses in Abramson and Inglehart, 1994, 1995; Abramson et al., 1997; Inglehart and Abramson, 1994, 1999). In post-Soviet Russia, for example, adults were able to acquire values congruent with democracy (Mishler and Rose, 2007). While basic values may be resistant to change throughout the life course, their change cannot be ruled out (see Sapiro, 2004; Tormos, 2012). This major re-evaluation of the original theory greatly diminished the importance of the socialization hypothesis, whose validity became increasingly hard for Inglehart to justify in light of multivariate analysis (see Duch and Taylor, 1994: 820).

Given the doubts concerning the impact of the macro-level environment, the crucial point of this study is to determine whether economic conditions affect one's *individual* sense of existential security, which is regarded as the mediating element in the causal chain that bridges macro-level economic conditions and one's postmaterialist values. As Duch and Taylor (1993: 752) point out, 'levels of economic development are not necessarily a good measure of economic security'. Hence, it is not surprising that since the 1990s, there have been a growing number of studies that translate Inglehart's scarcity hypothesis to the individual level, assuming that such factors as age, education, family income, subjective class, occupation or religion should influence one's sense of existential security in the first place (Davis and Davenport, 1999; Pavlović, 2009; Scarbrough, 1995; Tranter and Western, 2003; see also Trump, 1991).

Putting the macro-level perspective aside, these scholars assume that within any society, postmaterialist values should be more widespread among the more affluent strata, i.e. those who have sufficient amounts of material and cognitive resources, while the less affluent strata will emphasize survival priorities. Inglehart does not exclude this possibility in full (see Inglehart, 1977: Ch. 3; Inglehart, 1990: Ch. 5; Inglehart, 1997: 46, 124, 134; Inglehart and Abramson, 1999). In terms of measurement at the micro-level, material resources can be indicated by personal or family income; but since responses to such questions can be biased or omitted by the respondent, it is also possible to ascertain how satisfied they are with their own financial situation or what class they would say they belong to.

For a substantial part of the literature, formal education is a very important factor that cultivates postmaterialist values (Abramson and Inglehart, 1994, 1995: Ch. 5; Duch and

Taylor, 1993; Scarbrough, 1995), though there is disagreement on how to interpret it. For Inglehart (1997: 152), education is an excellent indicator of how economically secure one was during one's formative years, because economically secure parents give their children more schooling than economically insecure parents. In his interpretation, therefore, education serves as a proxy that indicates existential security during childhood socialization, and its positive effect on postmaterialist values is fully consistent with his hypothesis about the role of generational replacement.

On the other hand, education may also reflect the *current* socioeconomic status of a respondent, because education manifests itself in current economic benefits, which might contribute a great deal to his or her sense of existential security. Another interpretation is that educational institutions are responsible for indoctrinating values promoting individual rights and encouraging pro-democratic values (Abramson and Inglehart, 1994; Duch and Taylor, 1993; see also Dahl, 1971). Regardless of what type of interpretation we prefer, it can be hypothesized that highly educated people at the time of the survey, in particular those who attained a university degree (Scarbrough, 1995; Tranter and Western, 2003), should be more likely to favour postmaterialist goals compared to poorly educated respondents.

In summary, different scholars contend that the sense of existential security that drives people's orientations may arise from either contextual or individual socioeconomic factors, or perhaps both. When specifying this effect of structure on culture, we must stress that the impact of macro- or micro-level variables is not direct, but moderated by an individual's sense of existential security, which links directly to measured factors relating to one's objective socioeconomic situation and postmaterialist values, no matter which level of analysis is chosen (see Inglehart, 1997: 32). Although previous research is exceptionally important, we lack a clear answer to whether macro-level or micro-level determinants of the socioeconomic environment are more influential, and thus whether postmaterialism is more likely a macro- or micro-level phenomenon.

As specified below, the best way to test these competing views is by using multilevel models in which individual, contextual and between-level determinants of postmaterialism are included. The interaction term is particularly important because it expresses the contingent effect of macro-level factors on the impact of micro-level determinants, and vice versa (Brambor et al., 2006; Dalton and Anderson, 2011; Kam and Franzese, 2007). The inclusion of interaction terms is warranted because it is reasonable to expect that an individual's threshold for feeling existentially secure could vary by both his or her relative within-country socioeconomic situation as well as the relative socioeconomic situation of his or her country compared to other countries. That is, the effect of individual-level socioeconomic factors on postmaterialist values may vary at different levels of context-level development, as well as the impact of context-level socioeconomic factors on postmaterialist values can differ for social groups at varying socioeconomic levels.

## Alternative explanations

In addition to the factors described above, other conditions may also be responsible for the adoption of postmaterialist values and should not be omitted from the analysis. As noted earlier, aside from the scarcity hypothesis, Inglehart's work also presumed the socialization

hypothesis, which stems from the expectation that basic values are largely formed during childhood socialization. In terms of the ‘structure–culture’ link, it is expected that those who grew up with taking survival for granted should be more prone to adopt the postmaterialist orientation. Given the growing levels of wealth and rise in welfare state expenditures over time, this sense might be symptomatic in particular for younger birth cohorts who experienced better economic conditions during their childhood compared to their parents. Hence, youth should be more prone to favour postmaterialist values.

Since we do not use panel data, it is not possible to distinguish between life-cycle and birth cohort effects, which are instead confounded in one variable. However, as previous studies have demonstrated, the cohort effect is much more obvious than the life-cycle effect (Dalton, 1977; Inglehart, 1997, 2008; Inglehart and Abramson, 1994; cf. Shively, 1991; Tormos, 2012), though the latter cannot be ruled out. For example, we might hypothesize that younger people are more inclined to postmaterialism because they experience ‘youthful idealism’ and have fewer social obligations, but those traits disappear in adulthood (Pavlović, 2009). In order to maximize parsimony of the models below, we work with the variable age (not birth cohort) and take the age as a continuous variable, which is common in the literature on postmaterialism (cf. Inglehart and Abramson, 1999; Pavlović, 2009; Scarbrough, 1995; Tranter and Western, 2003).

We might also hypothesize that postmaterialist values are affected by the degree of an individual’s social integration. When people are members of organized social groups, in particular those that subscribe to postmodern values, their own belief systems may correspond to that value system as well (Habermas, 1979; Putnam, 1993, 1995). Therefore, membership in civic associations, such as environmental clubs or humanitarian organizations, likely strengthens postmaterialist values.

Marital status may also contribute to one’s social integration. While membership in civic associations might encourage postmaterialist values, marriage is an institution based on traditional sexual and familial norms that may not be entirely acceptable to those cherishing postmaterialism (Inglehart, 2008). We should therefore expect that marriage would be negatively associated with postmaterialist values, and given that married respondents are typically older than non-married, both variables should have negative coefficients.

In terms of the importance of other context-level variables, we should take into account the degree of democratic institutionalization. Inglehart acknowledged that sociopolitical factors could significantly shape one’s values (Inglehart, 1990: 3; Inglehart, 1997: 178–179; Inglehart and Welzel, 2010; see also Jackman and Miller, 2004; Sapiro, 2004; Tranter and Western, 2003). In each political regime, there is a political opportunity structure influencing citizen attitudes and behaviour. People may grow in an environment more or less unfriendly to democracy, or even in totalitarian regimes. Even among democracies, legal and social acceptance of civic activism, political participation and social and political trust can vary considerably. We therefore take into account indicators of democratic maturity and the quality of democracy in the Polity IV dataset.

## Data and methods

To investigate the impact of individual and contextual determinants of the materialist/postmaterialist polarity, we utilize the sixth wave of the World Values Survey (WVS,

2016), which was administered in 60 countries between 2010 and 2014. The countries included range from some of the poorest to the richest nations in the world, as well as from some of the most brutal dictatorships to the most advanced democracies. After necessary restrictions (the 12-item battery on postmaterialism was not asked in Kuwait), our dataset comprises 75,735 respondents from 59 contexts, representing 72% of the global population.<sup>1</sup>

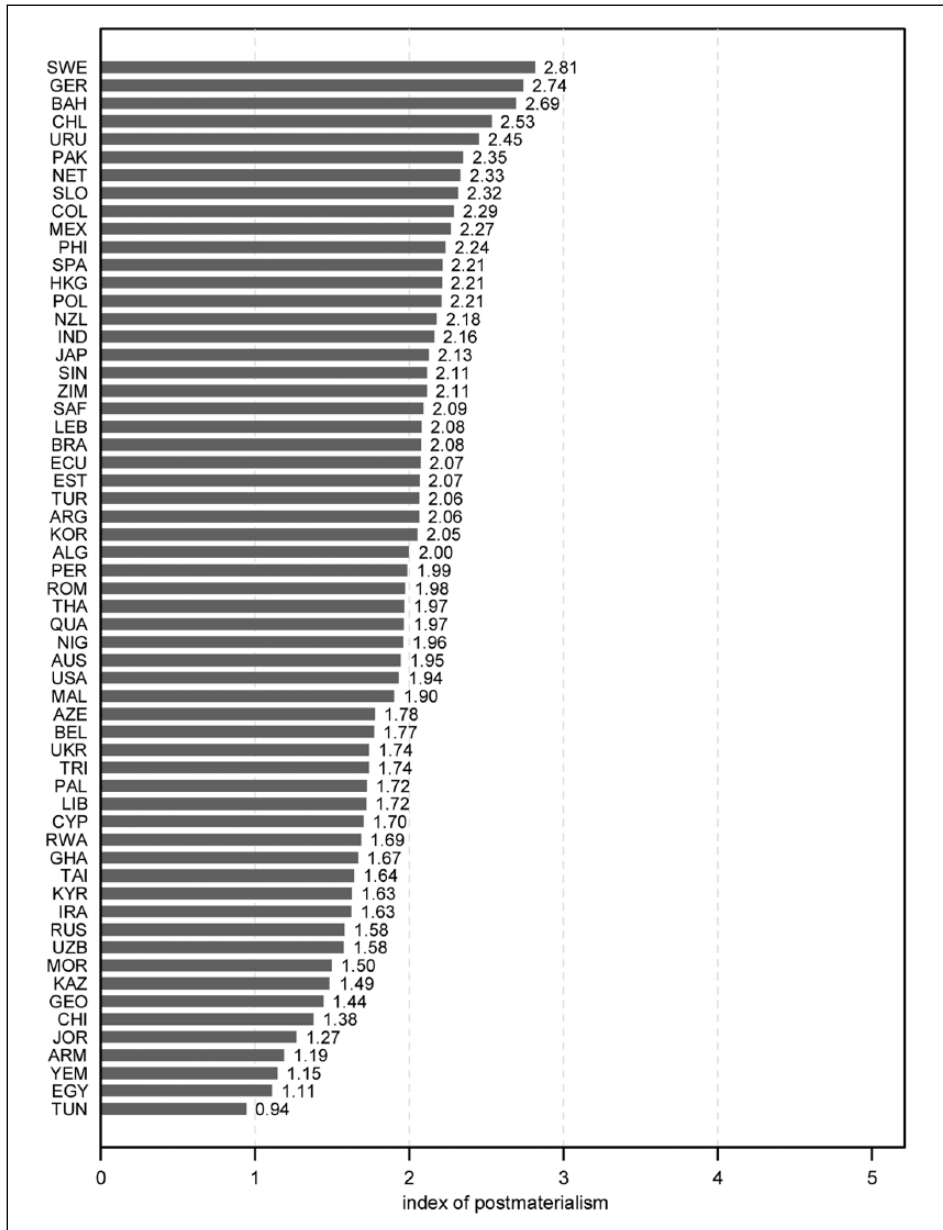
In order to test the competing hypotheses of what kinds of socioeconomic determinants are crucial for the postmaterialist orientation and whether these micro-level and macro-level factors interact with each other, we ran a series of multilevel models that are presented below (for details on this method, see Gelman and Hill, 2007; Hox, 2010; Rabe-Hesketh and Skrondal, 2012), beginning with the null random intercept model (in which no covariates are taken into account) and continue by adding relevant covariates in a random-slope model with cross-level interaction term. In all multilevel models, the dependent variable is the postmaterialist index (Inglehart, 1997: Ch. 4), which is based on the well-established 12-item battery on respondents' priorities towards the future goals of the country. Among these 12 goals, six items indicate survival needs – fighting rising prices, maintaining order in the nation, or a stable economy – with the remaining goals indicating postmaterialist priorities (Inglehart and Abramson, 1999; for a critique, see Clarke et al., 1997; Davis and Davenport, 1999; Davis et al., 1999; Tasić and Ratković, 2012).

We have constructed our postmaterialist index from Inglehart's six original postmaterialist priorities. But because one of these priorities – related to trying to make our cities and countryside more beautiful – has been cast into doubt (see Inglehart, 1997: Ch. 4), we drop that item and use only the remaining five: (1) seeing that people have more say about how things are done at their jobs and in their communities, (2) giving people more say in important government decisions, (3) protecting freedom of speech, (4) progress towards a less impersonal and more humane society, and (5) progress towards a society in which ideas count more than money. The index is therefore composed of a wide range of postmaterialist items, rather than just one. We construct the index by giving a score of 1 to each postmaterialist priority expressed by the respondent (0 means not expressed). Thus, a respondent expressing full postmaterialist priorities would have a score of 5, a respondent expressing no postmaterialist priorities at all would have a score of 0 (i.e. the range of the index is from 0 to 5).

Figure 1 shows the mean of the postmaterialist index in all countries analysed.<sup>2</sup> Not surprisingly, the acceptance of the postmaterialist orientation varies significantly across countries, the highest being in Sweden and Germany, with high results also in Bahrain, Chile and Uruguay. The lowest postmaterialist orientation can be found in Tunisia, Egypt and Yemen.

In terms of demographic factors, we suppose that age influences postmaterialist orientation. In terms of socioeconomic factors, we include education, satisfaction with one's own financial situation and subjective class at the individual level, and by GDP per capita at the contextual level (transformed in natural logarithm in the analysis).<sup>3</sup> For education, we use a dummy variable indicating whether the respondent has achieved tertiary education (= 1) or not (= 0), which is an appropriate approach given that there is tremendous variation and institutional diversity at lower levels of education across the 59





**Figure 1.** Postmaterialist orientation in 59 countries (mean of index of postmaterialism).  
 Source: WVVS VI (2016). Country abbreviations are explained in endnote 1.

countries examined here.<sup>4</sup> While we have also collected contextual data for the Human Development Index, and indicators for the proportion of the workforce in services and

**Table 1.** Descriptive statistics.

Variable	Mean	SD	Min.	Max.
<i>Individual level</i>				
Postmaterialism	1.93	1.16	0	5
Age	41.74	16.4	18	90
Education (dummy)	0.26	0.44	0	1
Satisfaction with finances	5.93	2.44	1	10
Subjective class	2.73	1.00	1	5
Organizational membership	1.23	2.18	0	12
Marital status (dummy)	0.56	0.50	0	1
<i>Contextual level</i>				
GDP per capita (ln)	9.63	0.93	7.32	11.81
Democratic maturity (ln)	-0.43	3.95	-4.61	5.31
Quality of democracy	3.42	1.88	1	7

Sources: WVS VI (2016), World Bank (2016), Polity IV Project (2016) and Freedom House (2016).  
 N = 75,735 (59 countries).

for relative poverty, these indicators are strongly correlated with GDP per capita (Pearson  $r > .75$ ), and we thus exclude them in favour of the most established measure of economic development.

In light of the evidence that current socioeconomic conditions, rather than childhood socialization, matter more for postmaterialism, our socioeconomic indicators are all measured at the time of the survey, and thus, refer to current existential security. This choice is also made by necessity, because it would be nearly impossible to collect reliably comparable GDP per capita data for all 59 countries many decades into the past; the measurement error would be prohibitively large. While it would be ideal to measure formative existential security at the micro-level – such as in terms of parental occupation or income – such factors are fraught with recall bias, measurement error, and other problems (see Inglehart, 1997: 150–156), and they are also not available in the WVS data. Lastly, organizational membership and marital status are also included in the analysis, as are the maturity (transformed in natural logarithm in the analysis) and quality of a country's democracy. The summary statistics of all variables in the analysis are reported in Table 1. Appendix A shows these statistics for all countries (age is not presented, GDP and democracy maturity are in the original version, not transformed in natural logarithm) and a detailed description of all variables is available in Appendix B.

## Results

Our analytic results are reported in Table 2. The interclass coefficient (ICC) in the null model 0 reveals the degree of variance in the dependent variable that is attributable to context-level forces. While the model has no explanatory variables, it already suggests that postmaterialism is likely shaped by variation at the individual level, because only 12% of the variance in the postmaterialist index stems from context-level forces.

**Table 2.** Determinants of postmaterialist orientation (multilevel models).

	Model 0		Model 1		Model 2		Model 3		Model 4	
	$\beta$	SE	$\beta$	SE	$\beta$	SE	$\beta$	SE	$\beta$	SE
<i>Individual level</i>										
Age			-0.004***	(0.000)	-0.004***	(0.000)	-0.004***	(0.000)	-0.004***	(0.000)
Education: no tertiary			ref.		ref.		ref.		ref.	
Tertiary			0.188***	(0.010)	0.197***	(0.026)	0.196***	(0.026)	-0.278	(0.267)
Satisfaction with finances			0.008***	(0.002)	0.008***	(0.002)	0.008***	(0.002)	0.008***	(0.002)
Subjective class			0.015***	(0.004)	0.016***	(0.004)	0.016***	(0.004)	0.016***	(0.004)
Organizational membership			0.039***	(0.002)	0.038***	(0.002)	0.038***	(0.002)	0.038***	(0.002)
Marital status: other			ref.		ref.		ref.		ref.	
Married			-0.047***	(0.009)	-0.048***	(0.009)	-0.048***	(0.009)	-0.048***	(0.009)
Constant	1.932***	(0.052)	1.952***	(0.053)	1.948***	(0.052)	1.049**	(0.540)	1.065**	(0.540)
<i>Contextual level</i>										
GDP per capita (ln)							0.097**	(0.049)	0.096**	(0.049)
Democratic maturity (ln)							0.038**	(0.020)	0.038*	(0.020)
Quality of democracy							-0.006	(0.044)	-0.006	(0.044)
Education*GDP per capita									0.049*	(0.028)
<i>Random effects parameters</i>										
Variance (constant)	0.157		0.147		0.137		0.093		0.093	
Variance (education)					0.034		0.034		0.031	
ICC							11.19%			
LL			11.66%		-113467.26		-113352.64		-113341.55	
N / Groups			75,735 / 59		75,735 / 59		75,735 / 59		75,735 / 59	

Sources: WVS VI (2016), World Bank (2016), Polity IV Project (2016) and Freedom House (2016). Notes: Dependent variable is postmaterialist index (0–5). Standard errors are in parentheses. Xrmixed command in Stata 11 used to obtain this table. \*  $p \leq .10$ , \*\*  $p \leq .05$ , \*\*\*  $p \leq .01$ .

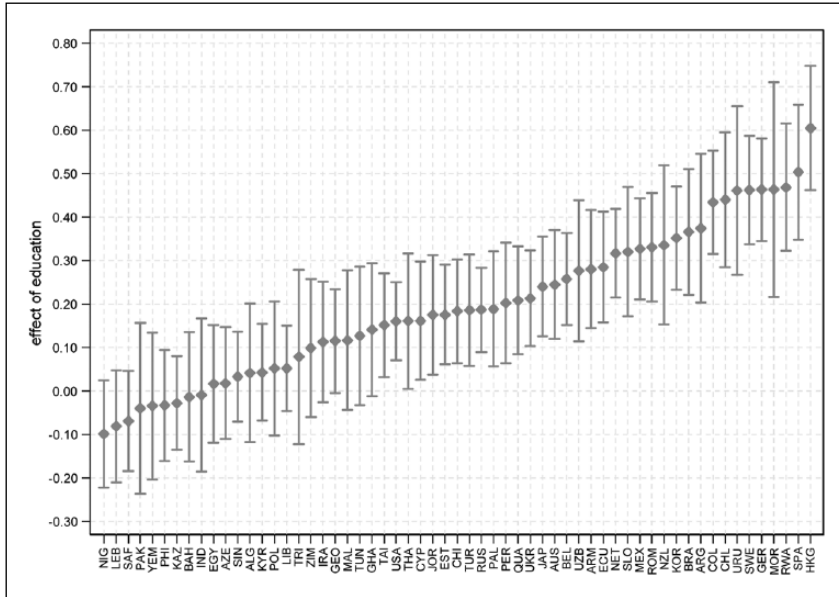
When individual-level factors are added to the null model (model 1 in Table 2), we can see a small decline in the interclass coefficient and a considerable improvement in the LL statistic, the latter of which implies that these variables markedly increase model fit. We evaluated the significance of the change by using a likelihood-ratio test (see Rabe-Hesketh and Skrondal, 2012), whose value can be easily derived from the difference in LL criteria of the compared models.

All the individual-level variables are statistically significant and their  $\beta$ -coefficients correspond to the theoretical expectations discussed earlier. First, the postmaterialist values depend on age negatively. Younger respondents are more postmaterialist than older respondents. The postmaterialist orientation largely depends on one's socioeconomic characteristics: those who are satisfied with their financial situation and members of higher social classes are more likely to be postmaterialists than others. A university education strongly encourages postmaterialist values, which supports the initial hypothesis that the feeling of existential security is crucial for preferring postmaterialist goals. In addition, the causal effect of social integration works in the expected direction: members of civic organizations are more postmaterialist than those with fewer memberships. Finally, the effect of marriage is negative: married respondents are more materialist than others.

Model 1 assumes fixed effects for all explanatory variables. But since it cannot be ruled out that some of these factors influence postmaterialism differently by country (cf. Scarbrough, 1995), in the next step we allowed the slopes of those factors, in particular those referring to one's existential security, to vary randomly across contexts. We estimated several models to test whether the effect of the selected variables of socioeconomic status were fixed or random. As reported in model 2, we found that the effect of education is the most random of all variables examined (its fixed effect was estimated at  $\beta_{\text{EDU}} = 0.197$  and its random effect [ $\sigma^2_{\text{EDU}}$ ] at 0.034) and thus used education as the variable of choice in subsequent cross-level interactions. The downside of this approach is that it is not possible to calculate the interclass correlation when a random effect is present in the model (cf. Kreft and De Leeuw, 1998), but that is a small price to pay for a better specified model.

Given the random variation in the effect of education across contexts, it can be assumed that the effect is normally distributed around the fixed effect, which means that 95% of its values lie in the range of  $\pm 2\sigma$  around the mean. On the basis of this assumption, we can estimate the range in which particular country effects of education on postmaterialism oscillate, which is calculated as  $\beta_{\text{EDU}} = 0.197 \pm 2 * 0.184$ , i.e. from  $-0.171$  to  $0.565$ . In some countries, therefore, education is actually beneficial for postmaterialist values, as the positive fixed effect of  $0.197$  would signify, but there are also contexts in which highly educated people show no statistically different preferences for postmaterialist goals than others, or they are even less likely to exhibit these preferences compared to less educated individuals.

In which countries does education affect postmaterialism positively, negatively, or not at all? Figure 2 reports those results for particular countries. While a number of very poor countries, such as Nigeria, Lebanon, South Africa, Pakistan, Yemen or Philippines, exhibit negative effects, the 95% confidence intervals suggest that those coefficients are not statistically different from zero. At the other extreme, education impacts postmaterialism the

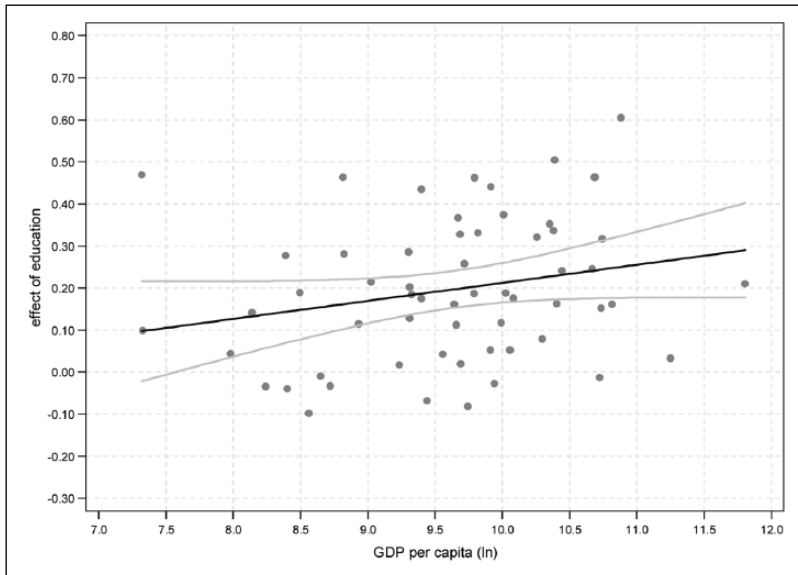


**Figure 2.** The effect of education on postmaterialist orientation by country. Source: WVS VI (2016). Notes: The country effects of education were derived from model 2 (see Table 2). The 95% confidence interval is displayed. Country abbreviations are explained in endnote 1.

most in Hong Kong, Spain, Rwanda, Morocco, Germany and Sweden – and generally speaking, in richer countries. While there are some obvious outliers, such as Rwanda and Morocco, it seems that there might be an association – though not an entirely convincing one – between the effect of education and macro-level socioeconomic development across the examined countries.

In model 3 of Table 2, we added three context-level variables to the previous model: GDP per capita (ln), democratic maturity (ln) and the quality of democracy. As can be observed, these factors influence postmaterialism in the expected manner, although the effect of the quality of democracy is too small to be significant. Given the hypotheses above, the most important finding is that GDP per capita is positively associated with one’s tendency to favour postmaterialist goals. In addition, the political context also seems to be relevant for adopting postmaterialist values: model 3 shows that the willingness to advocate postmaterialist goals is stronger in established democracies. In addition, while the LL criterion has improved after including the context-level factors, this change is rather small compared to the shift in the criterion from model 0 to model 1. This again confirms that postmaterialism is mostly determined by micro-level factors.

Given the previous results on the random effect of education, model 4 includes a cross-level interaction term that expresses the joint effect of education and GDP per capita. The interaction term is positive and significant (although only at .10 level), which implies that there is some contingent effect of variables of interest. Its  $\beta$ -coefficient ( $\beta_{EDU * GDP} = 0.049$ ) may be interpreted in two distinct ways (Brambor et al., 2006;



**Figure 3.** The relationship between economic development and country effects of education on postmaterialist orientation.

Sources: WVVS VI (2016) and World Bank (2016). Note: The 95% confidence interval is displayed.

Kam and Franzese, 2007). First, it demonstrates how context moderates the effect of education. If GDP per capita was zero, the effect of education on postmaterialism would be negative, but not significant (see  $\beta$ -coefficient of  $-0.278$  of education in model 4). When the interval of real values of logged GDP per capita is taken into account – which ranges from 7 to 12, as reported in Table 1 – at the lowest level of economic development, education has almost no effect on postmaterialism ( $\beta_{\text{EDU}|\text{GDP}7} = -0.278 + 7 * 0.049 = 0.065$ ). Nevertheless, as a country becomes more affluent, those who are highly educated are more prone to favour postmaterialist goals than others (when logged GDP per capita is 12, then the effect is  $\beta_{\text{EDU}|\text{GDP}12} = -0.278 + 12 * 0.049 = 0.310$ ). Thus higher degrees of economic development increase the difference between highly and lowly educated respondents in terms of their adoption of postmaterialist goals. This contingent effect may be also depicted graphically, as in Figure 3. The graph reveals the positive slope of education across countries and its 95% confidence interval, which is higher than 0 in almost the whole interval of real values of logged GDP per capita.

The second option of how to interpret the same interaction term ( $\beta_{\text{EDU}} * \text{GDP} = 0.049$ ) is to identify how different groups of the sample adopt the postmaterialist orientation by different levels of GDP per capita. Given the coding of education, we can only assess how tertiary educated respondents are sensitive to different levels of economic development compared to those without tertiary education. For the latter, the effect of GDP per capita on postmaterialism is positive ( $\beta_{\text{GDP}|\text{EDU}0} = 0.096$ ), whereas the highly educated strata are more sensitive to the influence of economic development in terms of their postmaterialist values ( $\beta_{\text{GDP}|\text{EDU}1} = 0.096 + 0.049 = 0.145$ ).

From both interpretations of the contingent effect, we can confirm the hypothesis of a substantial interaction between micro- and macro-levels of analysis. On the other hand, the results above do not fully correspond with the theoretical expectations, because a better socioeconomic situation at one level does not reduce the impact of the same type of factors at the second level, and vice versa. By contrast, the positive direction of the interaction term signifies that as a result of higher socioeconomic development, the gap between those who come from the more secure strata and the others actually widens in terms of adopting postmaterialist values.

Why might this be the case? A plausible explanation is that in low income societies, there are only a few people in the highly secure strata, and thus there might be a number of respondents who hold postmaterialist values but do not have a university degree or other markers of high socioeconomic status. By contrast, in advanced countries, tertiary education and a decent standard of living is common for a substantial part of the population. In this context, as we would expect, postmaterialist values should be widespread first and foremost among those who belong to the more secure strata, and thus the impact of individual-level variables on postmaterialism is much stronger.

## Conclusion

A wide range of social surveys in recent decades have demonstrated that value priorities in many countries are gradually changing. Since in many advanced societies existential security can be taken for granted, people gain the capacity to shift from prioritizing basic material needs towards the goals at higher levels of the need hierarchy, including postmaterialist values. For this study, we did not question per se the structure–culture relationship emphasized in Inglehart’s theory of cultural change, but rather attempted to clarify and specify it in terms of the competing macro–micro factors. In his work, Inglehart strongly highlights that the increase in affluence of many nations has triggered the culture shift towards postmodern values, including postmaterialism. Of course, he undoubtedly points out that individual socioeconomic status might be relevant for adopting the postmaterialist orientation as well, but in his theory this takes a back seat to his broader macro-narrative about changing socioeconomic conditions of advanced industrial societies.

This article has demonstrated that although the context matters when it comes to people’s value priorities, postmaterialism stems rather from individual-level factors that contribute to one’s feeling of existential security. In other words, the results indicate that for an individual, the adoption of postmaterialist priorities depends much more on his or her socioeconomic status than the environment in which he or she lives. Hence, in such countries as Rwanda or Zimbabwe, a certain group of postmaterialists may exist, even if the national level of socioeconomic development is exceptionally low over a long period, while in Germany, Sweden and other affluent states, not all people (indeed, only a small minority) prefer such goals as protecting freedom of speech at the expense of a stable economy.

In addition, we found that the macro-level economic development and characteristics of one’s socioeconomic status interact with each other. The analysis revealed that higher levels of national economic development can strengthen the effect of individual-level

variables related to social background, in particular education. In addition, context-level socioeconomic incentives to accept postmaterialist values do not influence different groups of people in the same way. Thus, neither individual nor contextual factors may be omitted when explaining why people favour postmaterialist values.

Of course, due to data limitations, the findings introduced in this article have a number of caveats. Because of the large number and diversity of countries we studied, we could include only a modest number of explanatory variables in the multilevel models, and therefore, the model fit was relatively low, as is the case in other cross-national studies of post-materialism (see Duch and Taylor, 1993; Pavlović, 2009; Scarbrough, 1995; Tranter and Western, 2003). Our use of a smaller number of variables, as well as our use of a dummy variable for education, reflects a cautious approach towards the fact that there may be differences in data collection and sampling or other sources of survey bias across such a diverse set of countries. In addition, some might take issue with the fact that we substituted formative existential security for current existential security, even if we had very compelling reasons to do so. Lastly, even if the random effect of education is modest, the variation in its effect cross-nationally was larger than other socioeconomic variables we examined, which suggests that for those other variables cross-level interactions are not significant.

Despite these issues, we have shown that one specific, but quite important, aspect of Inglehart's theory has been overlooked up to now, and hopefully this may encourage other scholars to continue in examining the competing role of micro- and macro-level factors shaping postmaterialism around the world.

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## Notes

1. The countries included in the analysis are (abbreviation and year in which the survey was conducted are in parentheses): Algeria (ALG, 2014), Argentina (ARG, 2013), Armenia (ARM, 2011), Australia (AUS, 2012), Azerbaijan (AZE, 2012), Bahrain (BAH, 2014), Belarus (BEL, 2011), Brazil (BRA, 2014), Chile (CHL, 2011), China (CHI, 2012), Colombia (COL, 2012), Cyprus (CYP, 2011), Ecuador (ECU, 2013), Egypt (EGY, 2012), Estonia (EST, 2011), Georgia (GEO, 2014), Germany (GER, 2013), Ghana (GHA, 2011), Hong Kong (HKG, 2013), India (IND, 2014), Iraq (IRA, 2013), Japan (JAP, 2010), Jordan (JOR, 2014), Kazakhstan (KAZ, 2011), Kyrgyzstan (KYR, 2011), Lebanon (LEB, 2013), Libya (LIB, 2013), Malaysia (MAL, 2011), Mexico (MEX, 2012), Morocco (MOR, 2011), Netherlands (NET, 2012), New Zealand (NZL, 2011), Nigeria (NIG, 2011), Pakistan (PAK, 2012), Palestine (PAL, 2013), Peru (PER, 2012), Philippines (PHI, 2012), Poland (POL, 2012), Qatar (QUA, 2010), Romania (ROM, 2012), Russia (RUS, 2011), Rwanda (RWA, 2012), Singapore (SIN, 2012), Slovenia (SLO, 2011), South Africa (SAF, 2013), South Korea (KOR, 2010), Spain (SPA, 2011), Sweden (SWE, 2011), Taiwan (TAI, 2012), Thailand (THA, 2013), Trinidad and Tobago (TRI, 2010), Tunisia (TUN, 2013), Turkey (TUR, 2011), Ukraine (UKR, 2011), United States (USA, 2011), Uruguay (URU, 2011), Uzbekistan (UZB, 2011), Yemen (YEM, 2013) and Zimbabwe (ZIM, 2011).
2. In all the following analyses, we have used weights available in the dataset, which modify the results so that they correspond proportionately to the population in each country.
3. Variable transformation in natural logarithm (ln) means improving variable normality and linearity as well as fitting the variable into a statistical model.



4. The proportion of people with highest/tertiary education indicates the educational level of a population that is comparable across populations with different educational systems (cf. Inglehart and Welzel, 2010). This indicator is also widely used in comparative social stratification or educational research (Ganzeboom et al., 1991; Treiman and Ganzeboom, 2000).

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## Résumé

La théorie du postmatérialisme d'Inglehart reposait sur l'hypothèse de la pénurie, selon laquelle le développement des valeurs postmatérialistes dépend du degré de sécurité matérielle et physique des individus et des sociétés, lequel est lié aux conditions macro-économiques. Mais le niveau de développement économique d'un pays détermine-t-il nécessairement la sécurité matérielle et physique des individus, et par conséquent, leur postmatérialisme ? Nous réexaminons cette question à partir des données du *World Values Survey 2010-2014*, afin d'évaluer si l'incidence de la sécurité matérielle et physique sur le postmatérialisme varie en fonction des conditions macro-économiques dans 59 pays représentant 72% de la population mondiale. En nous appuyant sur des modèles multiniveau, nous trouvons une forte incidence des conditions socio-économiques des individus sur le postmatérialisme, ce qui confirme un aspect de l'hypothèse de la pénurie. Mais nous trouvons par ailleurs qu'il y a peu de rapport entre l'incidence de ces conditions et les facteurs économiques à l'échelle nationale. Si l'on observe certes des variations importantes d'un pays à l'autre dans l'incidence de la pénurie individuelle, ces variations ne peuvent pas être attribuées aux conditions macro avancées par la théorie d'Inglehart.

## Mots-clés

Hypothèse de la pénurie, interaction entre niveaux, modélisation multiniveau, postmodernisation, valeurs postmatérialistes

## Resumen

La teoría del post-materialismo de Inglehart se basaba en la hipótesis de la escasez, según la cual la difusión de los valores post-materialistas depende del grado de seguridad existencial de los individuos y de las sociedades, el cual está ligado a las condiciones macroeconómicas. Pero, ¿el nivel de desarrollo económico de un país conforma sistemáticamente la seguridad existencial de los individuos y, por lo tanto, el post-materialismo? Retomamos esta pregunta utilizando los datos de la Encuesta de Valores Mundiales 2010-2014 para probar si el efecto de la seguridad existencial sobre el post-materialismo varía según las condiciones macroeconómicas en 59 países que representan el 72% de la población mundial. A partir de modelos multinivel, hemos encontrado una fuerte influencia de las condiciones socioeconómicas de los individuos sobre el post-materialismo, confirmando un aspecto de la hipótesis de la escasez. Pero también hemos encontrado una asociación débil entre el efecto de esas condiciones y los factores económicos a nivel nacional. Si bien existe una variación sustancial entre países en el efecto de la escasez individual, esa variación no puede ser explicada por las condiciones macro predichas por la teoría.

## Palabras clave

Hipótesis de la escasez, interacción multinivel, modelos multinivel, post-modernización, valores post-materialistas

**Appendix A.** Descriptive statistics in analysed countries.

Country	Abbreviation	Postmaterialist index (scale 0–5)	Education in % (university level)	Satisfaction with financial situation (scale 0–10)	Subjective class (scale 1–5)	Organizational membership (scale 0–12)	Marital status (married in %)	GDP per capita (int. \$)	Democratic maturity	Quality of democracy
Algeria	ALG	2.00	20.94	6.32	2.94	0.44	49.59	14,193	0.01	5.50
Argentina	ARG	2.06	13.45	6.55	2.53	1.17	35.20	22,302	30.00	2.00
Armenia	ARM	1.19	32.45	4.31	2.79	0.15	65.72	6804	0.01	5.00
Australia	AUS	1.95	35.42	6.31	2.92	2.45	52.15	43,098	111.00	1.00
Azerbaijan	AZE	1.78	16.83	5.59	3.16	0.12	63.51	16,173	0.01	5.50
Bahrain	BAH	2.69	22.78	6.57	3.25	1.87	55.72	45,500	0.01	6.00
Belarus	BEL	1.77	44.41	4.77	2.85	0.31	53.51	16,603	0.01	6.50
Brazil	BRA	2.08	17.59	6.29	2.20	0.81	41.26	15,838	29.00	2.00
Colombia	COL	2.29	26.45	6.69	2.18	1.67	29.02	12,053	55.00	3.50
Cyprus	CYP	1.70	35.59	5.87	2.95	1.00	54.13	32,983	43.00	1.00
Ecuador	ECU	2.07	27.55	6.66	2.57	0.64	40.32	10,978	0.01	3.00
Egypt	EGY	1.11	25.80	4.86	2.52	0.03	66.65	10,248	0.01	5.50
Estonia	EST	2.07	33.88	5.36	2.64	0.67	39.96	23,955	12.00	1.00
Georgia	GEO	1.44	38.44	4.03	2.76	0.06	62.33	7582	2.00	3.00
Germany	GER	2.74	12.43	6.65	2.98	1.19	50.86	44,065	64.00	1.00
Ghana	GHA	1.67	8.32	4.52	2.30	1.43	48.79	3431	7.00	1.50
Hong Kong	HKG	2.21	28.62	6.64	2.74	1.93	61.36	53,367	0.01	3.50
Chile	CHL	2.53	20.21	6.03	2.84	1.20	47.59	20,266	22.00	1.00
China	CHI	1.38	11.86	6.21	2.31	0.32	84.02	11,215	0.01	6.50
India	IND	2.16	5.51	4.81	3.25	3.98	63.27	5701	64.00	2.50
Iraq	IRA	1.63	22.56	5.85	2.78	0.40	69.43	15,625	0.01	6.00
Japan	JAP	2.13	27.15	6.01	2.68	0.81	69.01	34,315	60.00	1.50
Jordan	JOR	1.27	21.99	5.32	2.52	0.48	71.78	12,050	0.01	5.50
Kazakhstan	KAZ	1.49	36.26	6.05	2.91	0.56	59.00	20,772	0.01	5.50
Kyrgyzstan	KYR	1.63	37.77	6.40	3.17	1.56	73.73	2921	1.00	5.00
Lebanon	LEB	2.08	41.02	5.99	3.07	1.54	50.16	17,074	0.01	4.50
Libya	LIB	1.72	40.34	6.82	3.24	1.12	55.19	20,205	0.01	4.50
Malaysia	MAL	1.90	12.43	6.49	2.40	0.90	68.21	21,866	0.01	4.00
Mexico	MEX	2.27	18.84	7.00	2.70	1.84	44.89	16,117	12.00	3.00
Morocco	MOR	1.50	5.09	5.65	2.27	0.44	51.61	6747	0.01	4.50
Netherlands	NET	2.33	36.17	6.97	3.10	1.69	54.51	46,379	67.00	1.00
New Zealand	NZL	2.18	61.04	6.86	3.01	2.75	60.55	32,283	134.00	1.00

## Appendix A. (Continued)

Country	Abbreviation	Postmaterialist index (scale 0–5)	Education in % (university level)	Satisfaction with financial situation (scale 0–10)	Subjective class (scale 1–5)	Organizational membership (scale 0–12)	Marital status (married in %)	GDP per capita (int. \$)	Democratic maturity	Quality of democracy
Nigeria	NIG	1.96	12.61	5.69	2.15	2.29	51.57	5231	0.01	4.00
Pakistan	PAK	2.35	7.37	6.80	2.83	0.45	73.23	4459	1.00	4.50
Palestine	PAL	1.72	38.79	4.68	2.72	0.85	67.50	4900	0.01	6.00
Peru	PER	1.99	25.45	6.11	2.69	1.06	32.68	11,046	11.00	2.50
Philippines	PHI	2.24	26.80	6.33	2.74	2.22	70.41	6150	27.00	3.00
Poland	POL	2.21	22.39	5.80	2.67	0.64	59.19	23,340	21.00	1.00
Qatar	QUA	1.97	43.86	7.71	3.68	1.45	68.68	134,117	0.01	5.50
Romania	ROM	1.98	25.08	5.87	2.65	0.46	59.88	18,420	16.00	2.00
Russia	RUS	1.58	31.87	4.88	2.51	0.24	49.99	22,570	0.01	5.50
Rwanda	RWA	1.69	13.35	6.10	2.34	2.71	45.34	1510	0.01	5.50
Singapore	SIN	2.11	23.51	6.42	2.91	1.08	62.66	76,988	0.01	4.00
Slovenia	SLO	2.32	28.52	6.14	2.86	1.21	52.79	28,514	20.00	1.00
South Africa	SAF	8.91	8.91	6.11	2.00	2.71	34.09	12,597	19.00	2.00
South Korea	KOR	2.05	38.38	5.73	2.97	1.11	62.88	31,327	12.00	1.50
Spain	SPA	2.21	16.37	5.57	2.72	0.55	50.43	32,530	33.00	1.00
Sweden	SWE	2.81	30.77	6.98	3.08	1.92	42.20	43,709	94.00	1.00
Taiwan	TAI	1.64	47.49	6.45	2.86	3.06	59.97	46,036	20.00	1.50
Thailand	THA	1.97	17.15	6.13	2.87	2.23	67.41	15,438	3.00	4.00
Trinidad and Tobago	TRI	1.74	8.74	5.97	2.69	1.74	35.59	29,765	48.00	2.00
Tunisia	TUN	0.94	14.59	4.98	2.63	0.18	49.96	11,068	0.01	3.50
Turkey	TUR	2.06	14.81	6.22	2.91	0.20	67.83	17,874	28.00	3.00
Ukraine	UKR	1.74	33.08	4.54	2.55	0.28	53.58	8282	0.01	3.00
United States	USA	1.94	55.71	6.16	2.86	1.78	54.67	49,781	202.00	1.00
Uruguay	URU	2.45	13.22	6.75	2.52	0.62	36.24	17,905	26.00	1.00
Uzbekistan	UZB	1.58	15.22	4.09	2.90	0.50	71.77	4413	0.01	7.00
Yemen	YEM	1.15	15.80	4.71	2.34	0.41	78.32	3785	0.01	6.00
Zimbabwe	ZIM	2.11	6.63	4.52	2.25	1.60	54.56	1524	0.01	6.00

**Appendix B.** Description of variables included in the analysis.

Variable	WVS item	Question wording / description	Values after transformation
<i>Individual level</i>			
Postmaterialism	V60–V65	People sometimes talk about 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 would give top priority. Would you please say which one of these you, yourself, consider the most important? And which would be the next most important?	0–5 index where 5 means full postmaterialist, the value for each respondent depends on how many postmaterialist items he or she has chosen from 12-item battery
Age	V242	Can you tell me your year of birth, please? – This means you are (X) years old.	Years
Education	V248	What is the highest educational level that you have attained?	1 – tertiary (some university level education, with or without degree), 0 – others (no formal education, primary or secondary)
Satisfaction with financial situation	V59	How satisfied are you with the financial situation of your household?	Scale where 10 means completely satisfied and 0 completely dissatisfied
Subjective class	V238	People sometimes describe themselves as belonging to the working class, the middle class, or the upper or lower class. Would you describe yourself as belonging to the (1) upper class, (2) upper middle class, (3) lower middle class, (4) working class, or (5) lower class?	Original scale 1–5 was reversed. In the analysis above, then, 5 means upper class and 1 lower class
Organizational membership	V26, V27, V30, V32, V33, V34	Now I am going to read off a list of voluntary organizations. For each organization, could you tell me whether you are an active member, an inactive member or not a member of that type of organization? (V26) Sport or recreational organization, (V27) art, music or educational organization, (V30) environmental organization, (V32) humanitarian or charitable organization, (V33) consumer organization, (V34) self-help group, mutual aid group.	Scale 0–12, where 12 means that a respondent is active member in all six organizations which were mentioned (active membership in each organization is evaluated by +2 points, inactive membership by +1 point)

**Appendix B.** (Continued)

Variable	WVS item	Question wording / description	Values after transformation
Marital status	V57	Are you currently (1) married, (2) living together as married, (3) divorced, (4) separated, (5) widowed, or (6) single?	1 – married, 0 – others
<i>Contextual level</i>			
GDP per capita	–	GDP per capita indicates current country level of socioeconomic development. Source: World Bank (2016).	Natural logarithm (ln) of GDP per capita based on purchasing power parity (PPP) and converted to current international dollars
Democratic maturity	–	The number of years through the survey during which a democracy scored +7 to +10 in Polity score without any interruption. This threshold was chosen according to the work of Jaggers and Gurr (1995: 474). Source: Polity IV Project (2016).	Natural logarithm (ln) of years
Quality of democracy	–	Freedom House Index for the year in which the survey was conducted. Source: Freedom House (2016).	The mean score of ratings for political rights and civil liberties, with 1 representing the freest countries

Sources: WVS VI (2016), World Bank (2016), Polity IV Project (2016) and Freedom House (2016).