

PUBLIC GOODS PROVISION AND WELL-BEING:
EMPIRICAL EVIDENCE FOR THE WARM GLOW ASSUMPTION

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Abstract

Using a broad multi-country sample, we find direct empirical support for the warm-glow hypothesis: individuals who contribute to the public good of environmental protection report higher levels of life satisfaction and happiness. We also find that individuals who think of themselves as socially responsible derive greater satisfaction from their contribution to environmental protection. Our results suggest that one reason that giving generates a warm-glow is that the contribution creates a favorable self image. Interestingly, conforming to a social norm may be a motivation for some individuals, but the presence of this motive depends on attitudes towards social responsibility. Among those who express the highest level of social responsibility, conforming to the norm makes them less satisfied with life. However, individuals with an average level of social responsibility do report higher levels of happiness when their public goods contributions conform to societal norms.

Key words: Public goods; Warm glow; Life satisfaction; Happiness

JEL: H4; Z13; Q5;

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1 Introduction

The question of why people voluntarily contribute to public goods is central to normative and positive analyses of the provision of public goods. One widely assumed answer to this question is contained in the model of warm-glow giving. Under a warm-glow assumption, individuals receive utility both from the simple act of giving and the public good itself. The warm-glow assumption has been invoked in many different areas of economics including public economics, development and growth, experimental economics, environmental economics, and health economics. This paper contributes to this literature by providing direct empirical evidence for this frequently used assumption.

Using a broad multi-country sample of approximately 35,000 individuals in 40 countries, we find support for the warm-glow hypothesis: individuals who contribute to the public good of environmental protection report higher levels of life satisfaction and happiness. We also find that individuals who think of themselves as socially responsible derive greater satisfaction from their contribution to environmental protection, consistent with the idea that the warm glow is generated by creating a more favorable self image. Interestingly, we also show that conforming to a social norm may be a motivation for some individuals, but the presence of this motive depends on attitudes towards social responsibility. Among those who express the highest level of social responsibility, conforming to the norm makes them less satisfied with life. However, individuals with an average level of social responsibility do report higher levels of happiness when their public goods contributions conform to societal norms. Finally, we show that increases in the amount of the contributions to the environment are associated with increases in happiness and satisfaction, however, the warm-glow effect does not increase proportionally with contributions. At some level of provision, further increases in contribution are not associated with further increases in utility. We interpret this as being consistent with the assumption that it is the act of giving per se that generates utility and not the impact of giving on the level of the public good.

It is now accepted that modeling voluntary contributions as a *pure* public good has implications that are inconsistent with the evidence. First, although these theories predict that individuals perceive each other's contributions as being perfect substitutes, there is evidence that in fact individuals are not as sensitive to other people's actions as

the theory suggests (Sugden, 1982; Sugden 1999). Second, Andreoni (1988) has shown that under the assumptions that contributions are a pure public good and individuals are purely altruistic, the proportion of individuals contributing to public goods approaches zero as the size of the economy increases.

To address these inconsistencies, Andreoni (1989, 1990) proposed a theory of impure altruism in which an individual's utility depends on the person's own contribution to the public good as well as on the level of the public good; that is, contributing generates satisfaction or a "warm glow." Sugden (1999) argues that a theory of warm-glow giving is incomplete unless it explains why altruistic acts generate the warm-glow. One such explanation is that individuals follow norms of social behavior that prohibit or limit free-riding and that increased utility results from adjusting behavior to match the social norm. A second approach highlights the expressive value of contributions: individuals derive utility from contributing to a public good because contributions enhance their self-esteem. In other words, in this second approach, an individual has increased utility from contributions to a public good because it allows the individual to think of herself as a "good person." Our paper provides evidence for the warm-glow assumption in general and finds gains in utility from contributions depend on the individuals' attitudes towards free-riding behavior.

A few recent papers have incorporated both expressive and conformity motives. Brekke, Kverndokk, and Nyborg (2003) propose a model in which individuals' utility from contributing depends on the extent to which contributions fulfill self-sanctioned norms. Additionally, individuals' self-sanctioned norms are driven by the desire to think of oneself as socially responsible. These assumptions are motivated by evidence that monetary incentives can actually reduce private contributions. Frey and Oberholzer-Gee (1997), Frey and Goette (1999), and Gneezy and Rustichini (2000) provide experimental and anecdotal evidence of this negative influence of monetary incentives on contributions. Because of the assumption that utility gains depend on the distance between an individual's ideal contribution and her actual contribution, the model developed by Brekke, Kverndokk, and Nyborg results in the possibility that public policies encouraging contributions might reduce utility. Bruvoll and Nyborg (2004) and Nyborg and Rege (2003) have examined the implications of similar warm-glow models.

In another context, McGranahan (2000) reaches similar conclusions: testators may be motivated by their desire to influence how other people in their community will remember them.

Our approach to test the empirical validity of the warm-glow assumption is different than the “objectivist” approach generally adopted in the literature (Frey and Stutzer, 2002). In the objectivist approach, the influence of warm-glow on utility is inferred from observing individual stated or revealed choices. For example, Nunes and Schokkaert (2003) and Schokkaert and Van Ootegem (2000) examine how answers to attitudinal and motivational questions affect willingness to pay to preserve a natural park and charitable giving, respectively. In other empirical papers, results that contradict or cannot be explained by the pure altruism model might be imputed to warm-glow. In an examination of seventeenth-century wills, McGranahan (2000) finds that when testators give money outside their immediate family they are more likely to give that money outside their social circle. McGranahan interprets this finding as an indication that individuals seek the approval of others. There is also ample evidence from laboratory experiments that people cooperate and contribute to public goods more than should be expected given incentives to free-ride and that such behavior appears to be due to the warm-glow of creating a positive externality (see, for example, Andreoni (1995) and, more recently, Park (2000) among many others).

Our approach is different than those discussed above in that we directly look for evidence of a warm glow. Using a broad multi-country sample of approximately 35,000 individuals in 40 countries we examine the direct relationship between public goods provision and self-reported measures of well-being. In this way our work is also related to a new and growing literature on the economics of happiness. See for example, Oswald (1997); DiTella, MacCulloch and Oswald (2001); Easterlin (2001); DiTella, MacCulloch and Oswald (2003); Welsch (2002); Alesina, Di Tella and MacCulloch (2004); or van Praag and Baarsma (2005). Frey and Stutzer (2002) provide a broad discussion of this literature, arguing that self-reported measures of subjective well-being are useful approximations to utility and that these studies provide important policy conclusions as well as implications for economic theory.

In this paper, we follow the approach used in the happiness literature to provide evidence for several hypotheses regarding the relationship between contributions to a public good and life satisfaction and happiness. Our results suggest that the warm-glow assumptions used in many models of individual behavior can be empirically justified.

At the outset, it is important to make three points regarding the interpretation of our results. First, we select pro-environment behaviors as our measures of contributions to the public good because unlike other public goods, environmental quality can be privately provided by individuals in many different ways. To gain evidence that results documenting a positive association between contributions and measures of well-being are robust, we examine five different pro-environment behaviors: recycling, purchasing environment-friendly products, conserving water, contributing to environmental groups, and attending meetings of environmental groups. Although we hypothesize these five measures of contributions are positively correlated with self-reported measures of well-being, we should not expect to find the same point estimates since these behaviors differ in their potential effects on environmental quality and can have different monetary as well as symbolic implications for households.

Second, an issue with the interpretation of our results that document an association between well-being and public goods contributions using cross-section data is that such association might be due to some unobserved underlying individual characteristic influencing both the likelihood of contributing and well-being. As we explain in detail in the next section, we include in our models a measure of general attitudes toward social responsibility to control for social values that might correlate with activism and well-being simultaneously.¹

Finally, our results indicate correlations and not necessarily causation. One might argue that, rather than public goods contributions causing well-being, that happy and more satisfied people are more likely to make these contributions. It is difficult to find instruments for public goods contributions in our data to address this issue with statistical methods. However, we stand on firm theoretical ground as our empirical approach is

¹ Ferrer-i-Carbonell and Frijters (2004) develop a fixed-effects ordered logit model to be used in estimating the determinants of happiness. However, in order to implement this model, panel data are necessary. Instead, our approach attempts to control for individual characteristics by including general measures of social values that are available to us in the cross-sectional data.

motivated by the desire to look for evidence of the warm-glow hypothesis which rests on the standard assumption that behavior determines the level of utility, not that the level of utility determines behavior.

We address these issues in more detail when discussing results. We also estimate several models and find that our qualitative results are robust to changes in model specification. Thus, we are confident that the major contribution of our paper is the empirical findings documenting an association between pro-environment behaviors and measures of life satisfaction and happiness in an internationally diverse sample of individuals that are consistent with warm-glow models.

The rest of the paper proceeds as follows: Section 2 describes our empirical framework and our data, Section 3 discusses our results, and Section 4 concludes.

2 Empirical Framework and Data

To study how contributing to public goods and an individual's social responsibility affect life satisfaction, we assume in our base model that life satisfaction of individual i is a latent variable determined by

$$(1) \quad SATISFACTION_i^* = \beta_0 + \beta_1 CONTRIBUTION_i + \beta_2 CIVIC_i + \gamma X_i + \alpha_{i,c}$$

where CONTRIBUTION is one of several different measures of contributions to the public good made by individual i , CIVIC measures general attitudes toward social responsibility, X is a vector of demographic controls that may be related to an individual's happiness, and $\alpha_{i,c}$ is a dummy variable for the country in which individual i lives. We do not observe SATISFACTION* in our data. Rather we observe SATISFACTION as an ordinal variable, measured on a scale from 1 to 10. Thus, we explore the determinants of life satisfaction by estimating an ordered probit model.

$$(2) \quad P(SATISFACTION_i = J) = \Phi(\mu_J - \beta_0 - \beta_1 CONTRIBUTION_i - \beta_2 CIVIC_i - \gamma X_i - \alpha_{i,c}) - \Phi(\mu_{J-1} - \beta_0 - \beta_1 CONTRIBUTION_i - \beta_2 CIVIC_i - \gamma X_i - \alpha_{i,c})$$

where J takes on values from 1 to 10, μ_J is defined such that SATISFACTION = J when $\mu_{J-1} < SATISFACTION^* \leq \mu_J$, and Φ is the cumulative normal distribution. We also estimate Equation 2 using a different dependent variable that is derived from a question regarding happiness, HAPPINESS. The responses for this variable fall into 4 categories

and J takes on values from 1 to 4. As we describe in more detail later in the paper, we make further modifications to the base specification in Equation 2 by including an interaction between CIVIC and CONTRIBUTION and also by using a measure of CONTRIBUTION that considers the variety of the altruistic behavior (e.g., how many contributions an individual makes). Further detail on our data is provided below.

If individuals receive utility from a warm-glow effect, then we would expect β_1 to be positive. Furthermore, if utility is derived from an expressive motive, that is, if individuals want to think of themselves as socially responsible, then civic-minded individuals should have higher levels of life satisfaction ($\beta_2 > 0$), and civic-minded people may receive even greater increases in satisfaction from contributing to the public good (i.e., the coefficient on the interaction of CIVIC and CONTRIBUTION should also be positive.) We vary our measure of CONTRIBUTION and report several different specifications, some of which examine the impact of a single contribution, while others examine the effects of additional contributions. Under the warm-glow hypothesis, individuals derive utility from the act of giving per se. If the warm-glow does not increase with the number of contributions, individuals who make more contributions will not necessarily report greater well-being (Nunes and Schokkaert, 2003). Thus, we also present more direct evidence on the warm-glow motive by comparing the impact on well-being of making few contributions to the public good versus making many.

Our data are derived from the third wave of the World Values Survey. The third wave of the World Values Survey (WVS) was conducted in 1995 and contains data on attitudes, behavior, and demographic characteristics from over 70,000 people in 55 countries.² Although many of the same questions are asked in all countries in the WVS, the questionnaires used in each country are not identical. In our study, the measures of public good contributions that we utilize are several pro-environment behaviors. Therefore, our data are limited to the countries in which questions regarding contributing to the public good of the environment are asked, that is, countries where those behaviors are possible. For example, individuals are not asked about making contributions to pro-environment groups in countries in which pro-environment groups do not exist.

Nonetheless, our data set is quite extensive, containing observations on approximately 35,000 individuals in 40 countries. Table A in the Appendix lists the countries that are part of our sample. Below we describe in detail how we measure each of the variables in our analysis.

Life Satisfaction and Happiness

As mentioned above, we use two different dependent variables, self-reported satisfaction with life and self-reported happiness. We construct the variable SATISFACTION from the answer to the question, “All things considered, how satisfied are you with your life as a whole these days?” SATISFACTION is measured on a scale from 1 to 10, with 10 being the highest level of satisfaction. The sample median equals 6 and the 25- and 75-percentile are 4 and 8, respectively. As an alternative measure of well-being, we also use the variable HAPPINESS from the answer to the question, “Taking all things together, would you say you are: Very happy, Quite happy, Not very happy, Not at all happy.” It is measured on a scale from 1 to 4, with 1 being “not at all happy” and 4 being “very happy”. The sample median is 3 and the 25- and 75-percentile are 2 and 3, respectively. Although related, happiness and satisfaction may measure two slightly different concepts. As argued by Frey and Stutzer (2002), happiness may be a more temporary emotion while life satisfaction could reflect a deeper evaluation of one’s life long circumstances. Nonetheless, the two measures are correlated: 64 percent of the people who report the highest level of happiness (HAPPINESS=4), also report life satisfaction levels of 8, 9, or 10; and Chi-square tests strongly reject the null hypothesis that the responses to HAPPINESS and SATISFACTION are not related.

The measures of well-being, HAPPINESS and SATISFACTION, are not cardinal measures of well being, but ordinal. By estimating ordered probit models, we treat these variables qualitatively. Although there is no objective scale of well-being and individuals may interpret the questions differently, if these differences are treated as measurement error in the dependent variable then they can be captured by the error term. Frey and Stutzer (2002) and DiTella, MacCulloch and Oswald (2003) discuss research that shows

² These data were first introduced broadly to the economics literature in Knack and Keefer (1997). Since then, several others have used these data in investigating economic phenomena, including Israel and Levinson (2004) and Alesina, Glaeser, and Sacerdote (2001).

the validity and reliability of these measures of subjective well-being. These authors also argue that the study of these measures provides a useful complementary approach to the “objectivist” approach in which utility is inferred from observing individual behavior.³ Our measure of happiness and the econometric approach is similar to that in Alesina, Glaeser, and Sacerdote (2001); Alesina, Di Tella, and MacCulloch (2004); and Di Tella, and MacCulloch (2001, 2003).⁴

Measures of public goods contributions and attitudes towards free riding behavior

Although the warm-glow hypothesis applies to all kinds of public goods contributions, our data allow us to test hypotheses about one specific kind: contributions to the public good of environmental protection. The third wave of the WVS contains a series of questions about activities that individuals have undertaken in the past 12 months “out of concern for the environment.” We construct five different dummy variables from the response to this question. These activities are: choosing household products that “you think are better for the environment,” (PRODUCT), deciding “for environmental reasons to reuse or recycle something rather than throw it away” (RECYCLE), “tried to reduce water consumption for environmental reasons” (WATER), “attended a meeting or signed a petition aimed at protecting the environment” (MEETING), “contributed to an environmental organization (CONTRIBUTE). Each of these 5 variables is coded as 1 if individuals have done the activity in the last 12 months, 0 otherwise. Although we hypothesize that all these behaviors correlate positively with well-being, we expect that they will have different coefficients since they differ in their potential effects on environmental quality and can have different monetary as well as symbolic implications for households. For example, households can save money by conserving water but purchasing environment-friendly products imposes a cost, everything else equal. On the

³ Frey and Stutzer also cite other work that justifies the interpersonal comparability of these self-reported measures inherent in a cross-sectional approach. For example, Sandvik, Diener, and Seidlitz (1993), and Costa and McCrae (1988) show that people who self-report higher levels of happiness are also rated as being more happy by friends and family.

⁴ These researchers treat the measures of self-reported well-being as ordinal variables and estimate either ordered probit or ordered logit models. The measures of well-being could also be treated as nominal variables and multinomial logit models could be estimated. Although a multinomial logit specification is less efficient than an ordered model, the former avoids potential bias (Long, 1997). We have estimated multinomial logit models and find the results are qualitatively similar and main conclusions of the paper remain unaltered. For ease of interpretation and to conform to the standard practice in the literature on happiness, we present results from ordered probit models.

other hand, for some individuals, purchasing environment-friendly products might have a greater symbolic value than conserving water.

From these data, we also construct a variable that measures the total number of different activities individuals undertake. If individuals receive utility from the act of giving per se rather than from their actual contribution to the public good, then the relationship between well-being and number of activities could be nonlinear. To explore the presence of non-linear effects, in some of our estimations we employ dummy variables for the total number of activities in which the individual participates.

We also construct a variable that measures individuals' attitudes towards free-riding behavior. Following Brekke, Kverndokk, and Nyborg (2003), if individuals want to think of themselves as socially responsible and contributing to a public good enhances their self-esteem, then attitudes toward free-riding are likely related to well-being. We follow Knack and Keefer (1997) who use data from the World Values Survey to formulate an indicator of social responsibility by adding responses to questions regarding whether certain free-riding behaviors can ever be justified. Specifically, for each of the following five free-riding behaviors, we add a 1 to CIVIC each time the respondent states that behavior is never justifiable. The behaviors examined are: (i) "Claiming government benefits to which you are not entitled;" (ii) "Avoiding a fare on public transport;" (iii) "Cheating on taxes if you have a chance;" (iv) "Someone accepting a bribe in the course of their duties," and (v) "Buying something you knew was stolen." Thus, CIVIC takes on values of 0 to 5, with 5 being associated with the highest levels of civic cooperation.

It could be possible that when individuals respond to these questions their responses follow societal norms rather than their true beliefs either because people might have internalized their society's norms or because they feel compelled to answer the survey as a good citizen would. However, within-country variability in attitudes towards free-riding behavior is substantial. While the sample mean of CIVIC is 3.35, within-country standard deviation is, on average, 1.61 (with a minimum standard deviation of .78 and a maximum standard deviation of 2.07). In addition, if individuals were to overestimate their level of civic responsibility, then the estimate of the coefficient on CIVIC would be biased downward and it would be more difficult to obtain a statistically

significant result, after including country dummy variables to control for unobserved country effects.

Other demographic factors related to well-being

We include a number of demographic factors that have been found to be associated with happiness and life satisfaction as control variables in our estimations (Frey and Stutzer, 2002). Specifically, the vector X in Equation 2 contains dummy variables for employment status (UNEMPLOYMENT), gender (FEMALE), and whether or not a person considers themselves to be religious (RELIGIOUS). The vector X also contains a set of dummy variables for education level (there are nine levels of education from no schooling to university education), income quintiles, size of town (eight categories), and marital status. Finally, we include as an explanatory variable the number of children that individual i has as well as a variable measuring self-reported health status (on a scale of 1 to 5, with 5 indicating “very good” and 1 indicating “very poor”).

Descriptive statistics are presented in Table 1. The median level of life satisfaction and happiness are 7 (out of 10) and 3 (out of 4), respectively. The average number of pro-environment activities is 1.7, with the most common activity being water conservation (51 percent of the sample). Forty-six percent of our sample reports recycling and using environmentally friendly products. A smaller fraction contributes to environmental groups or has attended a meeting about the environment, 13 and 12 percent respectively. Only 3 percent of the sample claim they engage in all 5 activities while almost 26 percent do not engage in any.

Those who do not engage in any of these activities do report a lower median level of happiness and lower median level of life satisfaction (2 for happiness and 5 for life satisfaction). They also tend to be older, more likely to be female, less likely to have a university degree, and more likely to have household income in the bottom two quintiles of the income distribution. Conversely, those who report the highest level of well-being engage in an above average number of pro-environment activities, have higher levels of civic engagement, are younger, healthier, richer, more educated, more likely to be married, and more likely to be male. In the following section we explore more

systematically the relationship between happiness, life satisfaction and public goods contributions suggested by these descriptive statistics.

3 Results

Section 3.1 discusses the results of ordered probit models in which the dependent variable is SATISFACTION while Section 3.2 presents corroborating results using the alternative dependent variable, HAPPINESS. In Section 3.3 we discuss results from specifications examining the effect of engaging in a variety of behaviors on well-being. Finally, in Section 3.4 we explore the hypothesis that individuals receive utility by conforming to a social norm.

3.1 Life Satisfaction and Pro-Environment Behaviors

Tables 2A and 2B present the results of estimating Equation 2 using life satisfaction as the dependent variable. Prior to discussing the results associated with the individual measures of contributions, we first discuss the results regarding the demographic control variables. We report the full set of coefficients only in Table 2A in which RECYCLE is used as the measure of public goods contribution. The results for these control variables in the remaining specifications with different measures of environmental contributions are qualitatively similar. We report in Table 2B only the coefficients on the environmental contribution, CIVIC, and the interaction between the two for the remaining estimations.⁵

Focusing first on the results for the demographic controls reported in Table 2A, we see that older individuals are less likely to self-report they are satisfied with their life while the quadratic term for age is positive but very small. Gender is not a statistically significant predictor of self-reported levels of satisfaction. Self-reported health status, if the respondent is religious, number of children, and if the respondent is unemployed are statistically significant explanatory variables and have the expected signs. Marital status also affects happiness, with marriage being associated with higher levels of life satisfaction and individuals who are divorced or separated being the least satisfied.

⁵ A full set of results for all estimations is available from the authors upon request.

Education also affects well-being, with respondents who have not earned a university degree being more likely to self-report they are not satisfied with their lives than individuals who have completed university. Income has similar effects with those in the fifth quintile being more likely to report higher levels of life satisfaction. Living in large cities also seems to have a negative effect on well-being: size of town dummies (not reported in the tables) indicate that individuals who live in the largest cities are more likely to have the lowest levels of life satisfaction.

Focusing now on the coefficients for the pro-environment behavior, CIVIC, and the interaction between the two presented in Table 2A, we see that recycling and being socially responsible are associated with higher levels of life satisfaction when entered individually or jointly in the specification (columns 2 through 4 of Table 2A). When we include an interaction with CIVIC and RECYCLE (column 5), it has a positive coefficient, indicating that recycling is associated with greater life satisfaction, the more socially responsible an individual is. Although the point estimate on the recycle coefficient is negative in column 5 of Table 2A, its magnitude indicates that recycling is associated with less utility only for the small number of people in our sample who have $CIVIC < 2$. In other words, these people might be considered socially irresponsible in the sense that they believe that most of the examples of free-riding behavior in the WVS can be justifiable. (We discuss this result further in section 3.3.)

The evidence for the warm-glow hypothesis that we find in Table 2A is corroborated in Table 2B in which we present selected coefficients from the estimation of Equation 2 using four other measures of pro-environment behavior. The coefficient on the index of civic cooperation is positive and statistically significant at the 1 percent level in all specifications. These findings provide evidence for the hypothesis that thinking of oneself as being socially responsible increases one's level of satisfaction with life as a whole, everything else equal. When we do not include an interaction between CIVIC and the pro-environment behaviors, recycling, purchasing environment-friendly household products, consuming less water, and contributing to environmental organizations all increase self-reported life satisfaction. Attending pro-environment meetings is the only behavior that does not have a statistically significant effect on SATISFACTION. When we include an interaction between CIVIC and the pro-environment behavior, we see that

pro-environment behaviors only affect significantly life satisfaction in conjunction with an individual's attitudes about free-riding behavior. For all the environmental behaviors in Table 2B, we find that they are associated with higher life satisfaction except for the cases in which CIVIC is equal to 0. (Recall that CIVIC=0 corresponds to individuals who believe that taking bribes, cheating on taxes, avoiding fares on public transportation, purchasing stolen goods, *and* claiming government benefits to which you are not entitled can all sometimes be justifiable behavior.)

3.2 Happiness and Pro-Environment Behaviors

Table 3 presents selected coefficients from the estimation of Equation 2, using an alternative measure of utility, HAPPINESS, and the five different measures of environmental contribution. Although similar, "happiness" and "life satisfaction" may be measuring different concepts. Frey and Stutzer (2002) write that while "affect" or happiness reflects a person's mood or emotion, satisfaction reflects "the rational intellectual aspects of subjective well-being."

In spite of the possibility that HAPPINESS and SATISFACTION may be measuring different aspects of well-being, we draw similar conclusions regarding the effect of being socially responsible and the effect of performing specific actions associated with contributing to the public good of the environment. Specifically, the index of civic norms, a measure of an individual's attitude toward social responsibility, is also positive and statistically significant at the 1 percent level in all specifications reported in Table 3. The magnitude of the effect is also meaningful. For example, in the model with PRODUCT, moving from the lowest value of CIVIC (CIVIC=0) to the maximum value (CIVIC=5) increases the predicted probability that an average individual reports to be "Very happy" by .024, everything else constant. Given that only 16.6% of our sample reports being very happy, this is a notable increase. This finding provides evidence for the hypothesis that thinking of oneself as being socially responsible increases one's happiness, everything else equal.

The evidence in Table 3 suggests that engaging in activities that are beneficial to the environment are positively associated with happiness, however, the increased happiness depends on an individual's level of civic engagement. Specifically, in the

specifications that do not include an interaction term between CIVIC and the activity, recycling (Panel A of Table 3), purchasing environment-friendly household products, (Panel B of Table 3) consuming less water (Panel C, Table 3), and contributing to environmental organizations (Panel D, Table 3) decrease the likelihood that individuals report they are not happy at all and increase the likelihood they report they are very happy with their life. Only one behavior, attending meetings of environmental groups (Panel E, Table 3), does not have a statistically significant effect on self-reported happiness. When the interaction term between CIVIC and the activity is included, we again see that the marginal effects of public goods contributions depend on the individual's level of social responsibility. The estimate of the interaction term between CIVIC and three of the five environmental activities is positive and significant at the 1 percent level or better. The point estimates of the coefficients suggest that only those with the lowest level of civic cooperation do not experience higher levels of happiness when they recycle, consume less water, or contribute to environmental organizations.⁶ If individuals are gaining utility from the expressive motive, this finding does make sense in that it shows that the action of contributing to a public good must interact with an individual's belief system about justifiable behavior in order to yield utility.

The magnitude of the effects are relatively small but meaningful if we consider that engaging in pro-environment activities is generally not a very important part of an average individual's life. For example, moving from the lowest value of the interaction term in Panel B of Table 3 (not consuming less water and/or CIVIC=0) to the maximum value (consuming less water and CIVIC=5) increases the predicted probability of "Very happy" by .014. Likewise, moving from the lowest value of the interaction term in Panel C of Table 3 (not contributing and/or CIVIC=0) to the maximum value (contributing and CIVIC=5) increases the predicted probability of "Very happy" by .029.

Before we explore how the number of pro-environment behaviors influences well-being, we discuss two issues regarding the robustness of the finding that public goods contributions and well-being are positively related. As we discuss in the introduction, it is possible that the positive association between well-being and contributions might be due to an omitted variable that would increase both the likelihood of giving and well-being.

⁶ Only 10 percent of our sample has values of CIVIC equal to 0.

In that case, we would overestimate the marginal effects of the pro-environment behaviors. We have noted that CIVIC should proxy for individual characteristics that influence the likelihood of engaging in pro-environment behaviors. Results already presented can provide some reassurance that CIVIC is performing this role and that omitted variables are not causing an overestimation of the marginal effects of engaging in pro-environment behavior. Specifically, the first column of Table 2A presents results for the estimation of Equation 2 with socio-demographic variables and country dummies only. Subsequent columns of Table 2A add the pro-environment behaviors and CIVIC. Comparing across columns, we see that including CIVIC does affect the estimates of RECYCLE in the expected direction. CIVIC reduces the magnitude of the estimate of RECYCLE by 7 percent in the SATISFACTION model. We also note that the signs of the other explanatory variables do not change and the magnitudes of the point estimates vary very little across specifications. Although not reported in detail in the tables, similar results are obtained for the other pro-environment behaviors and the alternative dependent variable, HAPPINESS. Thus, we are confident that our main qualitative results are not seriously affected by model misspecification of this type.

Another issue is the possibility that the effect of engaging in pro-environment behaviors on happiness and satisfaction depends on region-specific institutional features. To look for these effects, we group the 40 countries into eight geographic regions and we estimate our base models for each region. Although point estimates and p-values differ across regions, we find that all the statistically significant slopes are positive except for MEETING in the SATISFACTION model for India and Bangladesh. Thus, the positive association between well-being and pro-environment behaviors is broadly consistent across geographical regions, reducing the concern that our results are driven by region-specific institutional features.⁷

⁷ The eight geographic regions are Australia, Bangladesh and India, Central and South America, China and Taiwan, Eastern Europe, Western Europe, Nigeria and the USA. We also tried to estimate separate regressions by country. Because the models include a large number of explanatory variables and there are fewer observations, the models in some countries could not be estimated unless some variables were dropped. In addition to the models not being comparable, fewer observations and less variability in the explanatory variables create larger standard errors and many insignificant results for some countries.

3.3 Well-Being and the Number of Pro-Environment Behaviors

In determining the effect of pro-environment behavior on life satisfaction and happiness, we also explore how the number of activities an individual engages in affects well-being. If individuals receive utility from the act of giving per se rather than from the actual contribution to the public good, then we could expect to find that the relationship between well-being and number of activities is nonlinear. To test this idea, we construct a series of dummy variables indicating the number of pro-environment behaviors in which individuals participate. Note that these dummy variables are constructed only for those individuals which have non-missing values for all five activities. Table 1 presents summary statistics.

We enter these dummy variables into Equation 2 instead of the specific activities and report the results in Table 4, where the excluded category is not undertaking any activity. As can be seen in Table 4, the coefficients on all the dummy variables are positive and statistically significant, indicating that undertaking at least one pro-environment activity is associated with increased life satisfaction compared to engaging in no pro-environment activities. To examine whether doing more activities is associated with greater increases in well-being, we test whether the coefficients on the dummy variables indicating one more activity are different than the coefficients on the variable indicating one less activity. We find that individuals who undertake two activities are more satisfied than individuals who undertake one activity but individuals who undertake three or more activities are not more likely to state they are very satisfied with their lives than individuals who undertake two activities.

We find similar results when we estimate ordered probit models for happiness (Table 5). The estimates of the indicator variables are all positive and statistically significant at the 1 percent significance level. When we test the hypotheses that the coefficients are not different from each other, the tests show that with one exception, individuals who do one more activity do not report statistically different levels of happiness than those who do one less. (The exception is the statistically significant difference between the coefficient on Activity3 and Activity2.).

These findings suggest that increases in self-reported well-being are not proportional to the increases in the number of activities undertaken. On average engaging

in many pro-environment activities does not yield greater happiness and satisfaction than engaging in a few activities. Assuming that individuals believe that participating in more pro-environment activities has a greater impact on the environment, we interpret this finding as being supportive of the warm-glow hypothesis in that it is consistent with the idea that individuals gain utility from the act of contributing and not the impact of the contribution. However, we draw this conclusion cautiously as we do not observe the actual contribution and level of participation in each of these pro-environment behaviors.⁸

Due to the collinearity induced by generating interaction terms with CIVIC and each of the dummy variables, we have not included in Tables 4 and 5 interaction terms between the degree of social responsibility and the indicator variables for activities undertaken. To explore how civic-mindedness influences the happiness and satisfaction derived from engaging in one or more activities, we estimate separate ordered probit models for each level of CIVIC. The results for life satisfaction are presented in Table 6. We obtain results consistent with those reported earlier. When CIVIC equals 0 or 1 there is weak or no evidence that participating in pro-environment behavior increases life satisfaction. At higher levels of social responsibility, however, the results are similar to those presented in Table 4 (although the levels of statistical significance vary). Although we do not report them in detail here, we find similar results in the estimation of happiness.

3.4 Well-Being and Conforming to Social Norms

The results presented thus far have consistently shown that public goods contributions made in the form of pro-environment behaviors are associated with higher levels of happiness and life satisfaction for all except those who have the lowest level of civic-mindedness. Taken together with the evidence that engaging in more activities does not proportionally increase the probabilities of reporting high levels of happiness and life satisfaction, these findings suggest support for a warm glow motive driven by an individual's desire to think of herself as a socially responsible person. In this section, we

⁸ We draw qualitatively similar conclusions when we remove the dummy variables and use the number of activities and the number of activities squared instead. In that estimation, we find a positive coefficient on the number of activities and a negative coefficient on the square of the number of activities, indicating that

briefly explore the evidence for the theory that the increased utility may also be derived from conforming to a social norm.

We augment the specification reported in Tables 4 and 5 with an additional variable that represents the degree to which individuals conform to the norm for their country. Specifically, we calculate the negative of the square of the difference between the number of pro-environment activities that an individual engages in and the average for her country and we call this variable CONFORMITY.⁹ Low values of CONFORMITY indicate that individuals deviate from the social norm either by contributing more or less than average for their country. Given that the desire to conform to a norm may be influenced by the individual's sense of social responsibility, we estimate this specification for each level of CIVIC. Estimation results using this variable are reported in Table 7 and Table 8.

At low levels of civic responsibility, conforming to the norm has no statistically significant effect on reported happiness or satisfaction. At middle levels, when CIVIC equals 2 and 3, conforming to the norm has a statistically significant and positive effect on happiness (positive and insignificant on life satisfaction). At high levels of social responsibility, conformity has a negative effect on well-being. The estimates are insignificant for happiness and statistically significant for satisfaction. Overall, these findings suggest that individuals with a weak sense of social responsibility are not bothered by the fact that their behavior deviates from their countries' norm regarding pro-environment activities. Individuals with an average sense of social responsibility report higher levels of happiness the more their contributions conform to the norm. However, individuals with a strong sense of responsibility actually report lower levels of life satisfaction, the closer their behavior is to the social norm. Although this last result might appear puzzling, it is consistent with the argument proposed by Brekke, Kverndokk, and Nyborg (2003) that appealing to the public's sense of social responsibility might decrease utility. Individuals who are or think of themselves as above-average regarding their sense of social responsibility might suffer a loss in utility if due to monetary or other constraints they cannot excel in pro-social activities.

probabilities of reporting high levels of happiness and life satisfaction are not proportionally increased by engaging in more pro-environment behaviors.

⁹ In calculating the country averages, we use the sampling weights provided by the World Values Survey.

4 Conclusion

We consistently find that contributing to the public good of the environment is positively associated with self-reported life satisfaction and happiness. Consistent with a warm-glow motive, we find little evidence that engaging in more activities increases the probabilities of being very happy or satisfied. The fact that higher levels of civic cooperation yield even greater probabilities of being very happy or very satisfied suggest that one reason why a warm glow is generated by contributing to the public good is that these contributions make individuals feel better about themselves (i.e., the expressive motive). We also find some evidence for the idea that a warm-glow is derived from conforming to the social norm among individuals with middle levels of civic responsibility. We find the qualitative results and conclusions are robust to model specification and hold across different geographical areas. Thus, the major contribution of our paper is the empirical findings that document a relationship between behavior and utility in an internationally diverse sample of individuals that is consistent with warm-glow models.

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Table 1: Descriptive Statistics

Variable	Mean (Median)	Std. Dev.
HAPPINESS	2.63 (3)	.864
SATISFACTION	6.17 (6)	2.63
PRODUCT	.459	.498
RECYCLE	.462	.498
WATER	.513	.499
MEETING	.116	.319
CONTRIBUTE	.130	.337
CIVIC	3.35	1.726
FEMALE	.523	.499
AGE	43.29	17.44
HEALTH	4.41 (5)	1.25
RELIGIOUS	.673	.469
UNEMPLOYED	.063	.243
MARRIED	.780	.415
DIVORCED	.047	.212
SEPARATED	.025	.155
CHILDREN	2.39	1.42
EDUC1	.043	.202
EDUC2	.089	.284
EDUC3	.154	.361
EDUC4	.096	.295
EDUC5	.232	.422
EDUC6	.054	.225
EDUC7	.148	.355
EDUC8	.049	.218
EDUC9	.135	.342
INCOME1	.274	.446
INCOME2	.269	.443
INCOME3	.200	.400
INCOME4	.137	.344
INCOME5	.086	.280
ALL (= 1 if individuals undertakes all five activities)	.031	.17
Activity4 (= 1 if individual undertakes any four activities)	.071	.26
Activity3 (= 1 if individual undertakes any three activities)	.202	.40
Activity2 (= 1 if individual undertakes any two activities)	.216	.41
Activity1(= 1 if individual undertakes any one activities)	.223	.42
NONE = 1 if individual undertakes no activities)	.256	.44

Table 2A: SATISFACTION-RECYCLE: Ordered Probit Models

	SATISFACTION	SATISFACTION	SATISFACTION	SATISFACTION	SATISFACTION
CIVIC			0.041	0.040	0.023
			(0.004)***	(0.004)***	(0.005)***
RECYCLE		0.084		0.078	-0.058
		(0.014)***		(0.014)***	(0.029)**
CIVICRECYCLE					0.040
					(0.007)***
FEMALE	0.028	0.026	0.023	0.021	0.021
	(0.013)**	(0.013)**	(0.013)*	(0.013)*	(0.013)
AGE	-0.030	-0.030	-0.031	-0.031	-0.031
	(0.003)***	(0.003)***	(0.003)***	(0.003)***	(0.003)***
AGE2	0.000	0.000	0.000	0.000	0.000
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
HEALTH	0.016	0.017	0.018	0.019	0.020
	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
RELIGIOUS	0.118	0.117	0.110	0.109	0.108
	(0.015)***	(0.015)***	(0.015)***	(0.015)***	(0.015)***
UNEMPLOYED	-0.191	-0.189	-0.192	-0.190	-0.191
	(0.026)***	(0.026)***	(0.026)***	(0.026)***	(0.026)***
MARRIED	0.154	0.152	0.144	0.142	0.136
	(0.042)***	(0.042)***	(0.042)***	(0.042)***	(0.042)***
DIVORCED	-0.060	-0.059	-0.057	-0.057	-0.061
	(0.036)*	(0.036)*	(0.036)	(0.036)	(0.036)*
SEPARATED	-0.181	-0.181	-0.175	-0.175	-0.177
	(0.046)***	(0.046)***	(0.046)***	(0.046)***	(0.046)***
CHILDREN	0.019	0.019	0.019	0.019	0.019
	(0.005)***	(0.005)***	(0.005)***	(0.005)***	(0.005)***
EDUC1	-0.321	-0.305	-0.320	-0.305	-0.304
	(0.038)***	(0.038)***	(0.038)***	(0.038)***	(0.038)***
EDUC2	-0.234	-0.223	-0.235	-0.225	-0.226
	(0.030)***	(0.031)***	(0.031)***	(0.031)***	(0.031)***
EDUC3	-0.130	-0.123	-0.131	-0.125	-0.127
	(0.025)***	(0.025)***	(0.025)***	(0.025)***	(0.025)***
EDUC4	-0.138	-0.133	-0.135	-0.130	-0.132
	(0.028)***	(0.028)***	(0.028)***	(0.028)***	(0.028)***
EDUC5	-0.065	-0.062	-0.066	-0.063	-0.064
	(0.022)***	(0.022)***	(0.022)***	(0.022)***	(0.022)***
EDUC6	-0.213	-0.209	-0.208	-0.205	-0.207
	(0.032)***	(0.032)***	(0.032)***	(0.032)***	(0.032)***
EDUC7	-0.082	-0.078	-0.081	-0.078	-0.078
	(0.024)***	(0.024)***	(0.024)***	(0.024)***	(0.024)***
EDUC8	-0.135	-0.135	-0.135	-0.135	-0.135
	(0.031)***	(0.031)***	(0.031)***	(0.031)***	(0.031)***
INC1	-0.655	-0.650	-0.662	-0.657	-0.657
	(0.029)***	(0.029)***	(0.029)***	(0.029)***	(0.029)***
INC2	-0.458	-0.455	-0.463	-0.461	-0.460
	(0.027)***	(0.027)***	(0.027)***	(0.027)***	(0.027)***
INC3	-0.279	-0.278	-0.282	-0.281	-0.281
	(0.026)***	(0.026)***	(0.026)***	(0.026)***	(0.026)***
INC4	-0.156	-0.156	-0.157	-0.157	-0.157
	(0.027)***	(0.027)***	(0.027)***	(0.027)***	(0.027)***
Observations	27576	27576	27576	27576	27576

Standard errors in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%; includes country and size-of-town dummy variables

Table 2B: Coefficients from ordered probit models using alternative measures of contributions
 Dependent Variable: SATISFACTION

	SATISFACTION	SATISFACTION
Panel A: WATER		
WATER	0.079 (0.012)***	-0.028 (0.026)
CIVIC	0.030 (0.004)***	0.014 (0.005)***
CIVICWATER		0.032 (0.007)***
Panel B: PRODUCT		
PRODUCT	0.120 (0.14)***	-0.18 (0.029)
CIVIC	0.039 (0.004)***	0.023 (.005)***
CIVIC*WATER		0.040 (0.007)***
Panel C: CONTRIBUTE		
CONTRIBUTE	0.072 (0.018)***	-0.007 (0.041)
CIVIC	0.032 (0.004)***	0.029 (0.004)***
CIVIC*CONTRIBUTE		0.023 (0.010)**
Panel D: MEETING		
MEETING	0.015 (0.019)	-0.050 (0.041)
CIVIC	0.031 (.004)***	0.029 (0.004)***
CIVIC*MEETING		0.019 (0.011)*

Standard errors in parentheses: * significant at 10%; ** significant at 5%; *** significant at 1%; all estimations include the full set of control variables reported in Table 2A plus country and size of town dummies

Table 3: Coefficients from ordered probit models using alternative measures of contributions
 Dependent Variable: HAPPINESS

Panel A: RECYCLE		
RECYCLE	.083 (0.016)***	.038 (0.031)
CIVIC	.026 (0.004)***	0.020 (0.005)***
CIVIC*RECYCLE		0.013 (0.008)*
Panel B: PRODUCT		
PRODUCT	0.091 (0.015)***	0.065 (0.031)**
CIVIC	0.027 (0.004)***	0.023 (0.005)***
CIVIC*PRODUCT		0.008 (.008)
Panel C: WATER		
WATER	0.056 (0.013)***	0.006 (.028)
CIVIC	0.024 (.004)***	0.017 (.005)**
CIVIC*WATER		0.015 (.007)**
Panel D: CONTRIBUTE		
CONTRIBUTE	0.073 (.019)***	-.030 (0.044)
CIVIC	0.027 (.004)***	0.024 (0.004)***
CIVIC*CONTRIBUTE		0.029 (0.011)***
Panel E: MEETING		
MEETING	0.022 (0.020)	-.005 (0.044)
CIVIC	0.027 (.004)***	0.026 (0.004)***
CIVIC*MEETING		.008 (.011)

Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%; all estimations include the full set of control variables reported in Table 2A plus country and size of town dummies

Table 4: Ordered Probit Models with Number of Activities: SATISFACTION

	SATISFACTION	SATISFACTION
CIVIC	0.034	0.039
	(0.003)***	(0.004)***
ALL		0.179
		(0.041)***
Activity4		0.183
		(0.029)***
Activity3		0.179
		(0.021)***
Activity2		0.153
		(0.020)***
Activity1		0.074
		(0.019)***
FEMALE	0.018	0.014
	(0.011)	(0.013)
AGE	-0.032	-0.031
	(0.002)***	(0.003)***
AGE2	0.000	0.000
	(0.000)***	(0.000)***
HEALTH	0.030	0.013
	(0.011)***	(0.013)
RELIGIOUS	0.118	0.107
	(0.013)***	(0.015)***
UNEMPLOYED	-0.196	-0.188
	(0.023)***	(0.027)***
MARRIED	0.078	0.148
	(0.034)**	(0.044)***
DIVORCED	-0.083	-0.068
	(0.031)***	(0.037)*
SEPARATED	-0.149	-0.209
	(0.039)***	(0.048)***
CHILDREN	0.019	0.016
	(0.005)***	(0.005)***
EDUC1	-0.357	-0.239
	(0.035)***	(0.040)***
EDUC2	-0.262	-0.180
	(0.027)***	(0.032)***
EDUC3	-0.153	-0.085
	(0.023)***	(0.026)***
EDUC4	-0.147	-0.093
	(0.025)***	(0.029)***
EDUC5	-0.079	-0.048
	(0.019)***	(0.023)**
EDUC6	-0.237	-0.174
	(0.029)***	(0.033)***
EDUC7	-0.118	-0.056
	(0.021)***	(0.025)**
EDUC8	-0.147	-0.124
	(0.030)***	(0.032)***
INC1	-0.669	-0.651
	(0.026)***	(0.030)***
INC2	-0.468	-0.459
	(0.024)***	(0.028)***
INC3	-0.306	-0.278
	(0.024)***	(0.027)***
INC4	-0.162	-0.151
	(0.024)***	(0.028)***
Observations	35121	25625

Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%; includes country and size-of-town dummy variables

Table 5: Selected Coefficients, Ordered Probit Models with Number of Activities: HAPPINESS

	HAPPINESS	HAPPINESS
CIVIC	0.023	0.027
	(0.004)***	(0.004)***
ALL		0.158
		(0.044)***
Activity4		0.122
		(0.032)***
Activity3		0.152
		(0.023)***
Activity2		0.075
		(0.021)***
Activity1		0.043
		(0.021)**

Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%; includes country and size-of-town dummy variables

Table 6: Ordered Probit Models With Number of Activities: SATISFACTION

	CIVIC = 0	CIVIC = 1	CIVIC = 2	CIVIC = 3	CIVIC = 4	CIVIC = 5
	SATISFACTION	SATISFACTION	SATISFACTION	SATISFACTION	SATISFACTION	SATISFACTION
ALL	-0.076 (0.150)	0.120 (0.159)	0.328 (0.128)**	0.069 (0.122)	0.239 (0.104)**	0.226 (0.060)***
Activity4	0.157 (0.110)	0.211 (0.109)*	0.217 (0.098)**	0.200 (0.085)**	0.176 (0.069)**	0.202 (0.045)***
Activity3	0.113 (0.072)	0.085 (0.077)	0.247 (0.067)***	0.239 (0.061)***	0.063 (0.052)	0.226 (0.033)***
Activity2	0.018 (0.065)	0.120 (0.068)*	0.270 (0.058)***	0.221 (0.056)***	0.091 (0.049)*	0.182 (0.032)***
Activity1	0.075 (0.058)	0.051 (0.062)	0.220 (0.055)***	0.069 (0.054)	-0.050 (0.048)	0.095 (0.031)***
FEMALE	0.012 (0.043)	-0.012 (0.047)	0.017 (0.041)	-0.009 (0.038)	0.034 (0.033)	0.013 (0.021)
AGE	-0.008 (0.009)	-0.029 (0.010)***	-0.038 (0.009)***	-0.050 (0.008)***	-0.025 (0.007)***	-0.030 (0.005)***
AGE2	0.000 (0.000)	0.000 (0.000)**	0.000 (0.000)***	0.000 (0.000)***	0.000 (0.000)***	0.000 (0.000)***
HEALTH	-0.038 (0.043)	-0.011 (0.047)	0.030 (0.041)	0.034 (0.038)	0.062 (0.031)**	0.007 (0.023)
RELIGIOUS	0.085 (0.047)*	0.101 (0.052)*	0.121 (0.045)***	0.112 (0.043)***	0.028 (0.037)	0.146 (0.025)***
UNEMPLOYED	-0.219 (0.084)***	-0.131 (0.090)	-0.228 (0.080)***	-0.112 (0.074)	-0.209 (0.066)***	-0.207 (0.045)***
MARRIED	0.337 (0.133)**	0.254 (0.140)*	0.093 (0.124)	0.131 (0.118)	0.032 (0.101)	0.123 (0.078)
DIVORCED	-0.038 (0.114)	-0.014 (0.122)	-0.036 (0.101)	0.012 (0.099)	-0.075 (0.087)	-0.156 (0.065)**
SEPARATED	-0.085 (0.147)	-0.301 (0.165)*	-0.412 (0.148)***	0.079 (0.134)	-0.217 (0.116)*	-0.234 (0.079)***
CHILDREN	0.016 (0.018)	0.012 (0.021)	0.022 (0.018)	0.024 (0.016)	0.009 (0.013)	0.017 (0.008)**
EDUC1	-0.222 (0.145)	-0.050 (0.159)	-0.129 (0.141)	-0.301 (0.130)**	-0.121 (0.099)	-0.307 (0.058)***
EDUC2	-0.169 (0.114)	-0.046 (0.121)	-0.097 (0.104)	-0.349 (0.095)***	-0.076 (0.076)	-0.248 (0.049)***
EDUC3	-0.241 (0.091)***	0.117 (0.094)	0.048 (0.080)	-0.076 (0.073)	-0.047 (0.061)	-0.159 (0.041)***
EDUC4	-0.122 (0.097)	-0.036 (0.101)	-0.082 (0.089)	-0.269 (0.082)***	-0.027 (0.069)	-0.088 (0.046)*
EDUC5	-0.066 (0.076)	0.047 (0.075)	0.015 (0.064)	-0.096 (0.061)	-0.065 (0.054)	-0.082 (0.039)**
EDUC6	-0.268 (0.103)***	-0.122 (0.120)	-0.049 (0.096)	-0.147 (0.095)	-0.006 (0.083)	-0.265 (0.054)***
EDUC7	0.063 (0.080)	-0.032 (0.084)	0.016 (0.072)	-0.221 (0.068)***	-0.053 (0.062)	-0.068 (0.043)
EDUC8	-0.087 (0.110)	0.047 (0.126)	-0.092 (0.103)	-0.214 (0.087)**	-0.126 (0.076)*	-0.156 (0.051)***
INC1	-0.735 (0.097)***	-0.799 (0.101)***	-0.876 (0.087)***	-0.610 (0.084)***	-0.604 (0.074)***	-0.560 (0.051)***
INC2	-0.615 (0.089)***	-0.608 (0.093)***	-0.632 (0.080)***	-0.465 (0.077)***	-0.371 (0.068)***	-0.373 (0.047)***
INC3	-0.409 (0.087)***	-0.371 (0.089)***	-0.392 (0.076)***	-0.313 (0.074)***	-0.259 (0.066)***	-0.168 (0.047)***
INC4	-0.299 (0.087)***	-0.181 (0.088)**	-0.214 (0.074)***	-0.149 (0.074)**	-0.100 (0.066)	-0.102 (0.048)**
Observation	2433	2131	2897	3270	4481	10413

Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%; includes country and size-of-town dummy variables

Table 7: Coefficients from ordered probit models by level of CIVIC
 Dependent Variable: SATISFACTION

	CIVIC = 0	CIVIC = 1	CIVIC = 2	CIVIC = 3	CIVIC = 4	CIVIC = 5
ALL	0.030	0.076	0.466	0.076	0.008	0.105
	(0.221)	(0.226)	(0.196)**	(0.172)	(0.146)	(0.089)
Activity4	0.215	0.190	0.286	0.204	0.073	0.150
	(0.141)	(0.132)	(0.123)**	(0.102)**	(0.083)	(0.053)***
Activity3	0.131	0.078	0.273	0.240	0.032	0.214
	(0.077)*	(0.081)	(0.072)***	(0.064)***	(0.054)	(0.034)***
Activity2	0.015	0.121	0.269	0.221	0.102	0.190
	(0.065)	(0.068)*	(0.058)***	(0.057)***	(0.049)**	(0.033)***
Activity1	0.067	0.055	0.209	0.068	-0.027	0.108
	(0.060)	(0.064)	(0.056)***	(0.055)	(0.049)	(0.032)***
CONFORMITY	0.011	-0.005	0.014	0.001	-0.026	-0.013
	(0.017)	(0.016)	(0.015)	(0.013)	(0.011)**	(0.007)*
Observations	2433	2131	2897	3270	4481	10413

Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%; all estimations include the full set of control variables reported in Table 6 plus country and size of town dummies.

Table 8: Coefficients from ordered probit models by level of CIVIC
 Dependent Variable: HAPPINESS

	CIVIC = 0	CIVIC = 1	CIVIC = 2	CIVIC = 3	CIVIC=4	CIVIC = 5
ALL	-0.330	-0.021	0.656	0.687	0.085	0.138
	(0.237)	(0.244)	(0.214)***	(0.192)***	(0.157)	(0.095)
Activity4	0.335	0.057	0.419	0.204	0.178	0.071
	(0.153)**	(0.143)	(0.134)***	(0.112)*	(0.090)**	(0.057)
Activity3	0.185	0.083	0.234	0.314	0.114	0.134
	(0.083)**	(0.088)	(0.079)***	(0.070)***	(0.058)**	(0.036)***
Activity2	0.017	0.029	0.080	0.095	0.113	0.079
	(0.070)	(0.073)	(0.063)	(0.061)	(0.053)**	(0.035)**
Activity1	-0.008	0.011	0.104	0.070	0.033	0.032
	(0.064)	(0.069)	(0.061)*	(0.060)	(0.053)	(0.034)
CONFORMITY	-0.007	0.008	0.042	0.036	-0.003	-0.005
	(0.018)	(0.017)	(0.016)**	(0.015)**	(0.012)	(0.008)
Observations	2397	2109	2848	3197	4406	10233

Standard errors in parentheses; * significant at 10%; ** significant at 5%; *** significant at 1%; all estimations include the full set of control variables reported in Table 6 plus country and size of town dummies.

Appendix Table A: Countries in Sample

COUNTRY	OBSERVATIONS
Armenia	1182
Australia	1151
Azerbaijan	969
Bangladesh	1315
Belarus	1338
Bosnia	869
Brazil	670
Bulgaria	704
Chile	597
China	1080
Colombia	2057
Croatia	767
Dominican Republic	133
East Germany	649
Estonia	751
Finland	565
Georgia	1715
India	1033
Latvia	751
Lithuania	654
Macedonia	478
Mexico	752
Moldova	715
Montenegro	145
Nigeria	950
Norway	733
Peru	591
Poland	816
Russia	1356
Serbia	837
Spain	2791
Sweden	619
Switzerland	635
Taiwan	361
Tambov	276
Ukraine	1500
Uruguay	671
USA	943
Venezuela	717
West Germany	485