

NBER WORKING PAPER SERIES

INTERNATIONAL EVIDENCE ON THE SOCIAL CONTEXT OF WELL-BEING

John F. Helliwell  
Christopher P. Barrington-Leigh  
Anthony Harris  
Haifang Huang

Working Paper 14720  
<http://www.nber.org/papers/w14720>

NATIONAL BUREAU OF ECONOMIC RESEARCH  
1050 Massachusetts Avenue  
Cambridge, MA 02138  
February 2009

This paper is part of the ‘Social Interactions, Identity and Well-Being’ research program of the Canadian Institute for Advanced Research, and is also supported by grants from the Social Sciences and Humanities Research Council of Canada. An earlier version was presented in October 2008 at a conference in Princeton on "International Differences in Well-Being". This version is intended to become a chapter in an Oxford University Press volume of the same name, edited by Kahneman, Diener and Helliwell. We are grateful to conference participants for comments and advice. In revising the paper we have been especially aided by the post-conference review by Richard Layard. The views expressed herein are those of the author(s) and do not necessarily reflect the views of the National Bureau of Economic Research.

NBER working papers are circulated for discussion and comment purposes. They have not been peer-reviewed or been subject to the review by the NBER Board of Directors that accompanies official NBER publications.

© 2009 by John F. Helliwell, Christopher P. Barrington-Leigh, Anthony Harris, and Haifang Huang. All rights reserved. Short sections of text, not to exceed two paragraphs, may be quoted without explicit permission provided that full credit, including © notice, is given to the source.

International Evidence on the Social Context of Well-Being  
John F. Helliwell, Christopher P. Barrington-Leigh, Anthony Harris, and Haifang Huang  
NBER Working Paper No. 14720  
February 2009  
JEL No. D6,I3,J1,O0,O10,P51,P52

### **ABSTRACT**

This paper uses the first three waves of the Gallup World Poll to investigate differences across countries, cultures and regions in the factors linked to life satisfaction, paying special attention to the social context. Our principal findings are: First, using the larger pooled sample, we find that answers to the satisfaction with life and Cantril ladder questions provide consistent views of what constitutes a good life, with an average of the two measures providing a clearer picture than either measure on its own. Second, we find strong evidence for the importance of both income and social context variables in explaining within-country and international differences in well-being. For most specifications tested, the combined effects of a few measures of the social and institutional context are as large as those of income in explaining both international and intra-national differences in life satisfaction. Third, the very significant influences of both income and social factors permit the calculation of compensating differentials for social factors. We find very large income-equivalent values for key measures of the social context. Fourth, the international similarity of the estimated equations suggests that the large international differences in average life evaluations are not due to different approaches to the meaning of a good life, but to differing social, institutional, and economic life circumstances.

John F. Helliwell  
Canadian Institute for Advanced Research  
and Department of Economics  
University of British Columbia  
997-1873 East Mall  
Vancouver B.C. V6T 1Z1 CANADA  
and NBER  
john.helliwell@ubc.ca

Christopher P. Barrington-Leigh  
Canadian Institute for Advanced Research  
and Department of Economics  
University of British Columbia  
997 - 1873 East Mall  
Vancouver, B.C. V6T 1Z1 CANADA  
cpbl@wellbeing.econ.ubc.ca

Anthony Harris  
Nuffield College  
New Road  
Oxford OX1 1NF  
UK  
c.Anthony.p.Harris@gmail.com

Haifang Huang  
Department of Economics  
University of Alberta  
8-14 HM Tory  
Edmonton Alberta T6G 2H4 CANADA  
haifang.huang@ualberta.ca

## 1. Introduction

Together, the chapters of this book argue that there are many useful and inter-related ways of measuring well-being. The chapter by Diener, Kahneman, Tov and Arora argues that there appear to be systematic differences between types of measure, with subjective evaluations of life as a whole being more systematically related to life circumstances than are measures of positive or negative affect. They focus on the relative strength of linkages with income, while in this chapter we extend the analysis to estimate and emphasize the importance of the social context as a determinant of well-being both within and among nations. We find that life evaluations accommodate a robust explanatory role for both income and social variables, and thereby permit precise estimates of their relative importance as factors explaining international differences in well-being.

We consider two different ways of evaluating life as a whole. One is the Cantril ladder question used in the Gallup World Poll and the other is the more widely used assessment of satisfaction with life (SWL), as used in several decades of the World Values survey, and now also included in the recent waves of the Gallup World Poll. In our previous work comparing the Cantril ladder with measures of life satisfaction (Helliwell 2008 and Helliwell, Huang and Harris 2009) we argued that life evaluations provide a useful way to assess the quality of development within and across communities and nations. A case was made that previous doubts about the usefulness of comparing measures of subjective well-being across cultures and over time are being resolved in favour of subjective measures<sup>2</sup>.

In Helliwell (2008) we compared results from the first wave of the Gallup World Poll and the World Values Survey, focusing on modeling differences among nations in average scores from different measures of the quality of life. That paper also estimated two-level regressions based on individual data, and argued that most of the cross-country variance in survey measures of life satisfaction can be explained by measurable differences in life circumstances in those countries, under the assumption that people all over the world have similar basic preferences, and answer life satisfaction questions in roughly comparable ways. In Helliwell, Huang and Harris (2009) we dug further into the data to see to what extent the assumption of common preferences is justified. More particularly, we used Gallup World Poll wave 1 data on the quality of life (as measured by the Cantril

---

<sup>2</sup> First, earlier claims that each person has a psychological set-point for subjective well-being to which he or she invariably returns (Brickman and Campbell 1971, Brickman et al 1978, Lucas et al 2003) have been replaced by research showing that adaptation to most changes in life circumstances is partial in nature (Lucas, Diener and Scollon 2006, Lucas 2007). Second, experimental evidence that retrospective assessments of well-being differ from Bentham-like (Kahneman, Wakker and Sarin 1997) integrals of momentary assessments (Kahneman 1999, Frederickson and Kahneman 2003, Kahneman and Riis 2005) was held not to threaten the usefulness of retrospective evaluations of satisfaction, especially as the latter, are what govern future decisions (Wirtz et al 2003). Third, in response to suggestions that freedom and capabilities, which were held to be of fundamental value to well-being (Sen 1990, 1999), would be left out of account by measures of life satisfaction, it was shown that measures of life satisfaction appear to differ from assessments of positive and negative affect in just the ways that make life satisfaction an appropriate measure. Indeed, in this paper we show that a sense of personal freedom is highly significant as a support for higher measures of life satisfaction.

ladder) to estimate cross-sectional life evaluation equations in each of 105 countries. We found that the results on a country-by-country basis were broadly consistent with the use of two-level analysis in which coefficients are assumed to be the same for residents in all countries. The coefficients were strikingly consistent among countries, cultures and regions, although we found confirmation of several experimental results on cross-cultural differences in reporting styles. While these differences were interesting, they were in general not large enough to obscure the broad commonality of results. Thus it would appear that the large international differences in life evaluations are not due to differences in underlying preferences but rather to identifiable differences in life circumstances.

In the current chapter, we extend our earlier analysis in several key ways. We now have three waves of data from the Gallup World Poll, thus increasing substantially the number of countries represented in our analysis, and adding to the sample size for those countries included in both waves. From our perspective, one of the most valuable features of the second and third waves of the Gallup World Poll (conducted in 2007 and 2008) is that for 103 countries the survey included not just the Cantril ladder question on Life Today, but also the standard life satisfaction question used in the World Values Survey and many other national and international surveys.

The recent availability of both ladder and life satisfaction responses for large global samples is of great value, as it permits important issues to be more systematically evaluated. In our earlier comparisons of the wave 1 Gallup World Poll ladder data with the World Values Survey data on life satisfaction, we found that the Gallup World Poll ladder data had a tighter relation to income than did the World Values Survey satisfaction with life (SWL) data. We hypothesized that this difference might be due to the ladder framing of the Cantril ladder question. In particular, we suspected that the vertical nature of the ladder, with the best possible life being that on the top rung, might encourage respondents to think in more materialistic terms, and in a more relative way. We were puzzled that the framing effects would be this large, so we strongly supported the introduction of the SWL question into the Gallup World Poll, so as to be able to analyze the differences between the questions for the same individuals within the context of the same survey.

Our initial hypothesis was encouraged by our first results comparing SWL and ladder responses from the same respondents, drawn from 53 countries in wave 2 of the Gallup World Poll. We found, and reported in the conference version of this chapter, that SWL responses were systematically higher than those for the Cantril ladder, and that the amount by which the SWL responses exceeded the ladder responses was smaller in the richer countries, even within separate groupings of industrial and developing economies. This was just as we would expect if the ladder responses were more inclined to be relative in nature, and more income-oriented, especially if the relative comparisons were global in nature. Diener et al (this volume) also used the same data, found similar results, and added another possible difference between the ladder and the SWL responses: that satisfaction is an emotion, and is therefore likely to share some of the characteristics of the answers to the more explicitly emotional questions, such as those relating to happiness and measures of positive and negative affect. Given this apparent difference

between the results of SWL and ladder questions, some of the conference discussions then turned to which, if either, was to be preferred. Kahneman argued that the ladder and measures of affect were at opposite ends of a one-dimensional continuum between emotional and cognitive measures, with SWL and happiness being interesting but less informative intermediate measures. Helliwell put on an Aristotelian hat and argued that SWL and the ladder had equivalent claims as life evaluations, but if a choice between them had to be made it should favour life satisfaction, to avoid the possible framing effects of the ladder and to provide more overlap with other surveys.

Recognizing the value of larger samples, we deferred our revised analysis for this chapter to await the arrival of data from the 2008 wave 3 of the Gallup World Poll. This has permitted us to almost double the number of countries with data for both SWL and the Cantril ladder. The expanded coverage permits more precise and hopefully more robust conclusions about the nature of the similarities and differences between SWL and the Cantril ladder.

We find that with the larger global samples the SWL and ladder responses show very similar correlations with presumed structural factors related to well-being. In addition, the differences in framing and possible emotional content of the two questions seem to be such that a simple average of the individual-level answers to the two questions is more tightly correlated with the presumed structural determinants of well-being than is either measure on its own. Thus we are now inclined to suggest that an average of the individual-level answers to the life satisfaction and ladder questions provides a measure that is more robust and informative than either on its own. The most encouraging feature of our new results is that while the differences in the framing of the two questions may be enough to make it useful to average the two measures, the separate and average measures all provide consistent evaluations of the relative importance of the circumstances of life, both within and among nations.

In the following section we make use of this new-found capacity to compare the similarities and differences in these alternative measures of well-being. We shall make principal use of the satisfaction with life and ladder data from the Gallup World Poll, but shall also link these results with the life satisfaction data and analysis based on the World Values Survey. In all cases we shall make special efforts to assess the importance of variables measuring the quality and nature of the social context facing individuals and nations.

First, a word of clarification about the key dependent variables we are using here to evaluate well-being. For all waves of the Gallup World Poll we use the Cantril ladder question asking respondents to evaluate their lives at present using a ladder with steps numbered from zero at the bottom to 10 at the top, with 0 representing the worst possible life and 10 the best possible life. For 93 countries in the second and third waves of the Gallup World Poll, and for 92 countries in the fourth and fifth waves of the World Values Survey<sup>3</sup>, we use the answers to the standard life satisfaction question, measured for Gallup on a scale of 0 to 10, and for the World Values Survey on a scale of 1 to 10.

---

<sup>3</sup> These two subsamples contain 63 countries in common.

We show in Figure 1 the distribution of individual responses for each of the three alternative measures (Gallup ladder responses are pooled data from all three waves, while the Gallup SWL responses, while also pooled, are available only in some of the wave 2 and wave 3 country surveys. The WVS satisfaction with life responses are drawn from the largest sample possible from the surveys conducted around the late 1990s and the early 2000s. The total sample size, sample means and the number of countries represented are shown in each case. In Figure 2, for greater comparability, we show the distributions only for respondents in countries with data for all three measures. Note that for the Gallup ladder and standard life satisfaction responses shown in Figure 2, the questions are being asked of precisely the same respondents, so that the only differences should relate to question framing and placement.

The distribution shapes of the SWL responses from WVS and Gallup are more similar than either is to the Gallup ladder. The distribution of the ladder responses has a larger central tendency, with a strongly defined mode at the midpoint of the distribution, much as one would expect to find if the ladder framing led respondents to think of their lives in relative terms. The two SWL distributions, by contrast, have modes higher up in the distribution (at least when the country samples are matched), and much fuller right-hand shoulders. Most of the difference between the means of Gallup distributions for the ladder and for SWL is due to differences in the number and distribution of middle and top-half answers, rather than in the number and distribution of those rating their life satisfaction below the mid-point of the scale.

We turn now to our estimation of global, regional and national equations for both ladder and SWL measures of well-being. The basic observations are at the individual level, and we are interested in estimating the extent to which individual life satisfaction depends on circumstances and events at the individual, household, community and national levels. We have developed three inter-related ways of unravelling the data. The most general is to use two-level estimation to account for individual-level and national-level effects simultaneously. The second is to use the individual-level data in equations that are separate for each country, and then to look for international differences in the resulting coefficients. The third is to use country average data to explain international differences in well-being. We shall do all three, starting with the latest two-level results based on the newly expanded Gallup sample.

## 2. Two-Level Global and Regional Equations Based on Individual Responses

The basic estimation form for the two-level analysis of the ordered life satisfaction responses is:

$$(1) LS_{ij} = \alpha + \delta \ln(y_{ij}) + \mu X_{ij} + \gamma Z_j + \varepsilon_{ij}$$

where  $LS_{ij}$  is some measure of life satisfaction, for respondent  $i$  in country  $j$ ,  $y_{ij}$  is the level of household income of the respondent, the  $X_{ij}$  are other individual or household-

level variables, and the  $Z_j$  are national-level variables, with the same value being used for all individual observations in country  $j$ . We use the log form for both household and national average income, to reflect standard economic assumptions and many empirical results suggesting that less affluent agents derive greater utility from extra income. In general, we employ national averages of variables for which we also have household-level observations, in which case the  $\gamma$  coefficients represent contextual effects, or, in other terms, the extent of positive or negative externalities<sup>4</sup>. In all equations robust standard errors are estimated assuming errors to be clustered by country, and a dummy variable is included to permit differences in life satisfaction from one wave to the next..

When we calculate compensating differentials for non-financial determinants of life satisfaction, we take into account the functional form of equation (1). Thus in our theoretically and empirically preferred case where income is in log form and  $X$  is in linear form,  $\beta = \mu / \delta$  will be the log change in income that has for the average respondent the same life satisfaction effect as a change in the non-financial life characteristic  $X$ .

Table 1 shows subjective well-being equations based on global samples ranging from about 50,000 to over 140,000 respondents in 125 countries, with the smaller sample sizes resulting from missing countries and observations for some variables<sup>5</sup>. All equations include gender, age (in quadratic form), marital status, the logarithm of household income, a measure of unmet food needs, a measure of social connectedness (having someone to count on), a measure of the individual's sense of freedom to choose, the individual's perception of the prevalence of corruption in business and government, several measures of pro-social behaviour (donations of time, donations of money, and providing help to a stranger), and two measures of religious attachment, one a measure of the importance of religion in the respondent's life and the other the amount of time devoted to the practice of religion. The exact wording of each question is shown in the appendix, and the basic results for the same equation fitted separately to each of seven world regions are shown in Table 2.

The first equation in Table 1 shows the two-level results for the largest possible three-wave sample of responses to the ladder question, a global sample of more than 140,000 respondents from 116 countries. The next three equations show the results of fitting the same equation to a smaller sample of 52,600 respondents from 80 countries, all of whom provided answers on the same 0-10 scale for the ladder and for satisfaction with life. Equation 2 uses the ladder responses as the dependent variable, equation 3 uses SWL, and equation 4 uses an equally weighted average of the ladder and SWL responses. The first important finding is that the key structural coefficients are very similar in all four equations. The second key result is that the equally weighted average of the ladder and life satisfaction responses produces tighter coefficients, and explains a significantly

---

<sup>4</sup> We do not include national level values for gender, the age variables, and marital status. Although there are some differences among countries and regions in population age structure and marital status, experiments adding the national averages to equation 1 do not reveal significant effects or materially alter the sizes of other coefficients.

<sup>5</sup> The lack of responses to the question of household income is responsible for most of the reduction in sample size.

greater share of the total variance, than does either measure on its own. To explain more than 44% of the individual-level variance of life evaluations on a global basis, using globally uniform coefficients and making no allowance for country or region effects, is quite remarkable. It leads us to suggest that this average might, in due course when full global samples permit, be a preferred measure for life evaluations. For most of this chapter, we shall take advantage of the close similarities of coefficients, and concentrate our analysis on equation 1, which has a much larger sample size and corresponds better with our subsequent analysis based on national equations.

Age effects are estimated by a quadratic form in age. With the exception of Africa, there is a significant U-shape in age in all of the regional equations of Table 2, in all of the regional averages of the age coefficients from the national equations, and in most of the individual national equations. The first age variable is age in years and the second is the square of age/100. Thus the age at which life satisfaction is lowest is younger than 50 if the coefficient on the squared age variable exceeds that on age, and vice versa. As was found by Blanchflower and Oswald (2008) using data from the WVS and other surveys, life evaluations tend to have their lowest point within a few years on either side of age fifty.

Marital status is divided into three categories: married or equivalent, single, and a combination of divorced, separated and widowed, with single being treated as the base case in estimation. The coefficient for married or equivalent is insignificant in the global equation, but significantly positive in regions 2 and 3, comprising Western Europe, North America and Australasia, in comparison with the never-married base case. The coefficient on the combination of divorced, separated and widowed is significantly negative in the largest global sample and in Western Europe, North America, Australasia and Asia.

The log of household income is a very strong correlate of individual life satisfaction in all equations. To ensure that as much as possible of the direct and indirect effects of higher income are captured by the income variables, we have defined the food inadequacy variable to be the residual from an equation explaining the raw variable by the log of household income. As shown in Table 2, which divides the sample by regions, the income coefficient is if anything higher in the richer countries (as previously noted by Deaton 2008) and shows no obvious tendency to drop as individual income rises, beyond the substantial non-linearity implied by the logarithmic form for income.

As already noted, the food inadequacy variable is defined net of its very significant correlation with household income. This has the intended effect of raising the estimated coefficient on household income above what it would have been if the food variable had not been redefined to exclude the variance of income.<sup>6</sup> Looking across countries, the different variance of the income and food adequacy variables, can be interpreted as a

---

<sup>6</sup> The Gallup variable (wp40) for not having enough money for adequate food was regressed on the log of household income, and the residuals are used as the net food variable. If this transformation is not done, the income coefficient in the first equation in Table 1 would be lower by 0.07.



measure of inequality of income distribution, and is strongly correlated<sup>7</sup> with international differences in the inequality of income distribution, as measured by the Gini coefficient.

Our primary measure of social connections is provided by the answers to a question asking whether respondents have relatives or friends they can count on to help them whenever help is needed. In all parts of the world, most respondents in the Gallup sample combining waves 1 to 3 report that they have family or friends they can count on, ranging from 69% in Africa to 78% in Asia to over 90% in most OECD countries. In all regions this social support is tightly linked to life satisfaction, with a global coefficient that exceeds that on log income. As will be shown later, this implies income-equivalent life satisfaction for social connections that are very high indeed. It would appear from the regional differences in the data and estimated coefficients that respondents in Western Europe, North America, Australia and New Zealand are richer in social as well as economic terms than those living elsewhere, and attach even higher absolute and relative values to such social support. On the basis of the largest global sample, obtained by combining all three waves of the Gallup World Poll, the coefficient on having someone to count on is 0.68 in Western Europe, and 0.69 for US+Canada+Australia+New Zealand, compared to .30 in Asia and 0.40 in Africa (see Table 2).

Other variables indicative of personal or community-level social capital show the high values attached to mutually supportive social connections. Respondents appear to value not only the support they get from others, but also their own support for others. For instance, those who in the last month had donated money or time to an organization, or aided a stranger needing help were systematically more satisfied with their lives, especially for donations (.15), followed by donating time (.074) and helping a stranger (.072), as shown by the first equation in Table 1.

Trust questions were included in only a subsample of the wave 1 Gallup countries. As suggested by earlier work (e.g. Helliwell and Putnam 2004) the well-being effects of living in an environment where other people can be trusted<sup>8</sup> are very substantial. For example, as shown in Helliwell (2008) those Gallup respondents who think that their lost wallets would be returned by a neighbour or the police evaluated their lives more highly (by .15 and .22 points), as do those who express confidence in the police (.22).

Returning to the largest global samples represented by the first equation of Table 1, an individual who thinks that corruption is widespread in business and government has life satisfaction that is lower by 0.26 points, more than half the size of the coefficients on income and having family or friends to rely on. Table 2 shows that these coefficients are fairly similar in all regions. The prevalence of perceived corruption, and hence the average life evaluation effect, does differ considerably among regions. The perceived prevalence of corruption is highest in the transition countries (0.88) and lowest in the

---

<sup>7</sup> For the 60 countries for which Gini coefficients are available, the correlation between the Gini and the food inadequacy variable (WP40) is +0.70, and +.35 between the Gini and the food variable adjusted to remove its relation to GDP per capita.

<sup>8</sup> This is especially so for trust in the workplace, as discussed in Helliwell and Huang (2008).

US+Canada+Australia+NZ grouping (0.45) and Western Europe (0.60). Regional averages for Asia, Latin America and Africa range from 0.80 to 0.83. There is a large variation among countries in the level of perceived corruption, both within and across regions, with Bulgaria perceived as most corrupt (0.98), and Finland the least (0.15).

How well are the large international differences in life evaluations explained by international differences in life circumstances, whether related to income, social networks, or corruption? We shall later use national aggregate equations to address that question, but there are other ways. The middle equation panel of Table 1 adds regional dummies to the standard two-level model, while the equations in the right-hand panel include dummy variables for all countries, thus forcing out all of the country-level variables. If the global model with uniform coefficients were seriously mistaken, then the explained variance would increase substantially with the addition of regional or national dummy variables, while the other coefficients might well be unstable. Even though the equation with dummy variables for 100 countries has a larger total explained variance than the one with only a few national variables, this increase is small, and the main structural parameters are unaffected. This provides a first line of evidence that international differences in life evaluations are due to differing life circumstances rather than different structural relations between circumstances and life evaluations.

Table 5 (in the electronic appendix) provides a more precise way of testing for inter-regional differences in coefficients. The equation is estimated using region 1 (the FSU and Eastern Europe) as the base case, and tests for individual-level coefficients in other regions that are different from those in region 1. The equations are estimated for the largest pooled sample for the ladder, as well as the matched samples for the ladder and SWL. Looking only at the differences that are pervasive and significant, we find that the importance of having someone to rely on is greater in region 2 (Europe), region 3 (US+Canada+Australia+NZ) and in region 4 (Latin America and the Caribbean), while being lower in Asia, in each case relative to the base region. A sense of freedom matters more in region 3 and less in Asia and Africa. The effects of national-level corruption are great everywhere, with Table 5 showing no significant differences among regions. The effects of a sense of personal freedom are also lower in Asia, Latin America and Africa than in region 2 and Western Europe, while once again being significantly positive in all regions, as shown by the regional equations in Table 2.

We turn now to consider contextual effects, as measured by the national averages of variables also included at the individual level. One of the more striking results that we found in our earlier studies using the first wave of the Gallup World Poll, with only the ladder variable available as a measure of life satisfaction, was that average per capita income had little effect. Earlier research using more local data has tended to find significant relative income effects<sup>9</sup>, and this was matched by the earlier WVS results. In Tables 1 and 2, household incomes are measured as log levels, converted into common units by the use of purchasing power parities used in the preparation of the Penn World

---

<sup>9</sup> See Luttmer (2005) and Barrington-Leigh and Helliwell (2008). See also Easterlin (1974).

Tables estimates of average GDP per capita<sup>10</sup>. Thus if there are any significant relative income effects at the national level we would expect to find the contextual national GDP per capita entering with a negative sign. The results in Table 1 suggest that any relative income effects at the national level are being substantially offset by the effects of other excluded variables that support life satisfaction in the richer countries<sup>11</sup>. In particular, the national average should reflect all the tax-funded public good consumption and income supports that are largely missing from measured variables.

The estimation of contextual effects at the national level is most reliably done using ladder responses pooled from all three waves of the Gallup World Poll, since that gives the largest number of individual and country observations. We have discussed above the contextual effect of income, which is uneven in sign and generally insignificant. In contrast, the contextual effects of the other variables generally take the same sign as the individual-level effects, showing some significant evidence of positive contextual effects. The contextual effects are large and significant in nations where corruption is low, where more people have others to rely on, and where religious participation is higher. The last result confirms the recent European findings of Clark and Lelkes (2009). The greater importance of participation than of religious beliefs echoes the recent US results of Lim and Putnam (2009). Thus the growing body of international evidence tends to support the earlier findings of Helliwell and Putnam (2004) that the externalities of social context variables are more likely to be positive than are those of income.

### 3. Country-by-Country Modelling of Life Satisfaction

The basic estimation form for analysis of individual life satisfaction within each country is:

$$(2) LS_{ij} = \alpha_j + \delta_j \ln(y_{ij}) + \mu_j X_{ij} + \varepsilon_{ij}$$

where  $LS_{ij}$  is individual life satisfaction measured on a scale of 0 to 10,  $y_{ij}$  is household income, and the  $X_{ij}$  are other individual-level variables. The estimates  $\alpha_j$ ,  $\delta_j$ , and  $\mu_j$  are specific to country  $j$ . The entire explanatory power of equation (2) comes from explaining cross-sectional individual-level variance within a specific country, with differences between countries showing up as differences in constant terms and the estimated coefficients.

The raw national samples are in the first instance approximately 1000 for each survey wave, but are rendered smaller by lack of data on key variables, especially household

---

<sup>10</sup> More precisely, the individual household incomes in the Gallup data are divided by their country means to get relative incomes within each country. These figures are then converted into common level form by adding the resulting relative income to the average GDP per capita in 2005 measured at Purchasing Power Parity (from the World Bank ICP). The contextual variable is the same World Bank series. Thus if there are significant relative income effects at the national level the contextual variable should attract a negative coefficient.

<sup>11</sup> Alternatively, since the biggest reduction in the coefficient on national income happens when the basic needs variables are added, the reduction in the relative income effect may be due to the large positive cross-country correlations between national income and the attainment of basic needs. It is one more reason for the issue to remain open.

income. Figure 3 shows histograms of the coefficients from all 125 country equations. Table 6 (in the electronic appendix) displays the estimated coefficients and standard errors for the 125 countries. The model in these estimations is identical<sup>12</sup> to that in the first equation of Table 1, except that all country-wide contextual variables drop out because there is no within-country variance.

Figure 3 also includes the mean coefficients and 99% confidence range for the corresponding parameters estimated in the two-level global equation. These coefficients are very close to the means of the distributions of national coefficients.

The quadratic pattern of age effects is nearly universal, with almost all countries having coefficients that are negative on age and positive on age squared. The pairs of coefficients are significant for all regional groupings of countries, although not for many individual countries. The gender effect for males is negative in 102 of the 125 countries, although significantly so only for 35. The other demographic variables are also fairly weakly defined in the national samples, reflecting the small sample sizes and the variety of individual experiences.

The log of household income receives a positive coefficient in all but one of the 125 country regressions, and the coefficient is more than twice its standard error for 114 countries. To ensure that all of the effects of income flow through the coefficient on household income, we have redefined the other income-dependent variable, lack of enough money for food, to remove its correlation with income. The variable thus measures the extent to which lack of money for food is greater than would be expected for an average household with the same level of income. The lack of sufficient money for food takes the expected negative coefficient in 123 of the 125 countries, and it is more than double its standard error at least three-quarters of the country equations. The effects of a sense of freedom, and the absence of perceived corruption are also pervasively important, as shown by the coefficient patterns in Figure 3. For all variables the means of the country coefficients are very close to the values estimated in Table 1, as would be expected if the national samples were drawn from a global population with broadly similar responses to these variables.

Finally, it is necessary to address more directly the experimental (e.g. Heine and Norenzayan 2006) and other evidence (e.g. Kahneman 1999, Diener and Suh 2000, Kahneman and Riis 2005) that cross-national comparisons of retrospective assessments of subjective well-being are rendered difficult or possibly uninformative by cultural differences in the ways in which questions are interpreted, scales are used, values are determined and answers are framed (Heine et al 2002, Schmidt and Bullinger 2007, Oishi 2009). What is meant by culture in this context? Matsumoto (2000) defines culture as “a dynamic system of rules – explicit and implicit – established by groups in order to ensure their survival, including attitudes, values, beliefs, norms, and behaviours

---

<sup>12</sup> One small exception is the foodnet variable, for which the definition changes slightly with the change in level of estimation. For the global equations, foodnet is defined net of globally-estimated effects of income on food adequacy, while for the national equations it is the national relation that is used to take the variance of income out of the food variable to create foodnet.

...communicated across generations, relatively stable but with the potential to change across time.”

This bears striking similarities to the OECD (2001) definition of social capital (Putnam 1993, 2000, Halpern 2005) as “networks together with shared norms, values and understandings that facilitate co-operation within and among groups”. In international research into the well-being consequences of differences in the quality of social capital (Helliwell and Putnam 2004), it is presumed that key aspects of social norms (e.g. trust) can be meaningfully measured and compared across cultures and over time. The use of pooled international samples also assumes that the underlying structural relations are reasonably uniform across nations and regions.

Our research and results suggest that some of the key inter-cultural differences in norms and values emphasized in the literature are supported in the subjective well-being data of the Gallup World Poll. For example, the well-being costs of living in a society with high perceived levels of corruption in business and government appear to be slightly less in countries where corruption is an established feature of the status quo (-.27 vs -.33, if we divide the global sample into countries with above-average and below-average levels of perceived corruption). Similarly, the well-being value attached to a sense of personal freedom is slightly higher in societies classed as individualistic rather than collectivist. But while these differences qualitatively confirm some key experimental cross-cultural findings, what appears to us remarkable is that application of the same well-being equation to 125 different national societies shows the same factors coming into play in much the same way and to much the same degree. This is illustrated by Figure 4 (in the electronic appendix), which shows actual and predicted values of life satisfaction obtained by applying the same model, with coefficients restricted to be the same for all countries<sup>13</sup>. One interesting exception is the significant positive boost to life satisfaction in South and Central America<sup>14</sup>. Is this perhaps related to some as yet unmeasured features of the Latin American family or broader social context? With this interesting exception, the international differences in predicted values are entirely due to differences in their underlying circumstances, even without making any provision for international differences in equation structure and coefficients.

The international similarity of the estimated structure of life evaluations means that the large international differences in average life evaluations are not due to different approaches to the meaning of a good life, but to differences in the social, institutional, and economic circumstances of life in different nations. This is exactly in line with the chapter by Kahneman et al (2009) comparing the lives of French and American women. They find, consistent with our results, that international differences in life satisfaction are due to differences in the content of life rather than in the structure of the process of evaluation.

#### **4. How Much Does the Social Context Matter for Life Evaluations?**

---

<sup>13</sup> The equation is that shown in the first column of Table 1.

<sup>14</sup> As shown by the significant positive coefficient on the dummy variable for region 4 in the (SWL+ladder)/2 equation in the centre panel of Table 1

It is time to review and summarize our findings on the social determinants of well-being. There are several ways of doing this: from two-level models pooling individual-level data from all countries, from the averages of national-level coefficients, and from aggregate equations making use of national average data. We can also choose among different ways of evaluating the quality of life: satisfaction with life, the Cantril ladder, and our preferred index averaging the two measures. For any sample of dependent variable and model type, the importance of social context variables can be assessed either individually or in groups, and measured either in terms of their direct life satisfaction effects or relation to the effects of income.

Some of our main findings seem to apply broadly across alternative models and data, and are hence worth spelling out in summary form.

First, we now find that the two alternative life evaluation measures we have assessed in large samples produce very similar estimates of the relative importance of the economic and non-economic correlates of well-being, especially in models based on individual data. Indeed the remaining differences between the two measures<sup>15</sup> can be seen as an advantage, because a simple average of the two measures appears to increase the signal-to-noise ratio significantly, resulting in models with tighter structural form and lower standard errors of estimation.

Second, we find that the log of household income is a robust explanatory variable in almost all countries and regions, with a global coefficient in the region of .4 to .5 in equations where food adequacy is redefined to exclude the effect of income, thus forcing income effects to flow through the income variable. This is about ten times its standard error, making it possible to evaluate other factors reasonably precisely in income-equivalent terms.

Third, since we now find that SWL and the ladder produce quite similar estimates, and since we do not yet have large enough samples for SWL to employ our preferred measure that averages SWL and the ladder, we can without too much likely bias use global, national, and country average equations for the ladder to estimate the importance of the social context.

In doing this evaluation, we shall use three methods: the first based on the global two-level equation of Table 1, the second based on average coefficients from the national-level equations of Table 6, and the third based on an equation using only national average data, as shown in Table 3.

All three methods show that there are several features of the social context that have large and significant effects on well-being in all regions of the world. For example the individual-level 'friends to count on' coefficient in the global two-level equation is as large as that on the log of household income, implying that having someone to count on

---

<sup>15</sup> Measured across all individuals asked both questions on the same survey, the correlation between SWL and the ladder is 0.61.

is more than twice as important as a 50% higher income. But even that ignores the social context effect- that people make a more positive evaluation of their lives if they live in a society where others, and not just themselves, have people to rely on. This is shown by the large and significant positive coefficient on the national average for the 'count on friends' variable.

In order to assess the total effects of differences in the social context using two-level modelling, we need to calculate the income-equivalent changes in well-being through both channels. We do this by assuming a social context change that moves some fraction, say one-tenth, of the respondents from a 0 to a 1, thus raising the value of a typical individual's social context variable by 0.1, which is also the amount by which the national average increases. The standard deviations of the national averages of the social context variables for the 140-odd Gallup World Poll countries range from .1 to .2, so that a change of .1 is of moderate size in relation to the current range of differences across countries. Our estimate of the direct plus contextual effects from method 2 thus involves simply summing the two coefficient ratios from the left-hand column of Table 4.

Our second method for estimating compensating differentials is to base them entirely on the national-level equations. This requires the use of the averages of coefficients from equations applied separately to each national sample. The averages are shown in Figure 3, as vertical lines in the distributions of estimated coefficients<sup>16</sup>. The ratios of these coefficients to those on the log of household income, and estimates of the standard errors of those ratios, are shown in the middle column of Table 4.

Our third method relies on equations based entirely on national average data for the countries for which there are values for average per capita national income, food inadequacy, health-adjusted life expectancy, and eight six social context variables. One advantage of using estimates based on national average data, is that they are less open to the possibility that individual-level personality differences are responsible for individuals reporting more frequent and higher-quality social interactions as well as higher life satisfaction. A similar argument has been applied for income; people with more optimistic and outgoing personalities may be more likely to find and report higher paying jobs and higher levels of life satisfaction. It is not clear what the net effect would be on the relative importance of income and social context variables. In any event, averaging across all 1000 respondents in each nation-wave should reduce substantially or eliminate that source of personality-driven bias. Another advantage of using the national level data is that the average individual-level and contextual effects are automatically (if indistinguishably) combined to provide estimates of total effects from social and economic variables. The corresponding disadvantage, in contrast to our two-level modelling, is that it is not possible to separate the individual-level and context effects of the key variables. Another disadvantage of using the national average data is the limited number of observations, coupled with a large number of correlated candidate variables.

---

<sup>16</sup> The global averages of the national-level coefficients are weighted by the inverse square of the estimated standard error of each of each coefficient. The exact data used are shown at the bottom of Table 6, in the electronic appendix.

The resulting coefficients are thus sensitive to changes in the number and nature of countries and variables.

Table 3 shows the results of re-estimating the first equation of Table 1 using national average data for the countries with available data. Since we wish our estimates of the value of the income-equivalent value of the social context to err if anything on the conservative side, the two variables that have high correlations with income: inadequate money for food, and health-adjusted life expectancy, have been redefined to exclude their correlation with income, thus giving GDP per capita the whole credit for circumstances that might be responsible for both higher incomes and greater life expectancy. The social context variables by themselves explain 73.4% of the cross-country variance of the Gallup ladder, adjusted for degrees of freedom. This rises slightly to 73.5% when food adequacy (net of income effects) is added, no further with the addition of net healthy life expectancy and then to 84.9% when average per capita income is added. Starting from the other side, per capita income explains 71.2% of the cross-country variance of the ladder. This rises to 74.2% with the addition of food adequacy, no further with the addition of healthy life expectancy, and finally once again to 84.9% with the addition of the six social context variables. Thus even with the national level ladder data, the social context matters as much as income in explaining international differences in well-being.

Finally, we can use the coefficients from the aggregate equation, just as we have used the two-level global model, and the results from the country regressions, to calculate compensating differentials, and these have been entered in the third column of Table 4.

Table 4 brings together estimates of compensating differentials of various social context variables obtained from three different sources: the two-level modelling of Table 1, from the weighted averages of coefficients estimated in national equations, and finally from the Table 3 equation using national average data. As we have already noted, there are good reasons why these estimates should differ. Methods 1 and 3 both take externalities into account, and may for that reason be higher if externalities are more positive for the social context variables than for income. In method 2, based on coefficient averages from separate national equations, the national-level contextual effects are implicitly contained in the constant terms of each national equation. However, in methods 1 and 2 there might be an upward bias to the individual-level estimates of compensating differentials if individual-level personality differences are more likely to generate positive covariance between life evaluations and social reports than between life evaluations and income. Method 3 avoids this risk by using only national level data for social context variables in estimating the coefficients used to calculate the compensating differentials, but at the cost of small samples and inability to distinguish individual-level and contextual effects.

In summary, if methods 1 and 3 give higher estimates of compensating differentials than does method 2, then we would infer that contextual effects (externalities) are larger for the social variables than for income. Method 1, which includes both individual-level and contextual effects, should probably provide the largest estimate of their combined size, but only if the externalities are positive, so that the individual-level and national-level receive coefficients of the same size.



Table 4 shows the ratios of the social context coefficients to the coefficient on the relevant log income variable, with the estimated standard error of that ratio shown below. These differentials are estimates of the change in the (log of) household income that would have a life satisfaction effect equivalent to a unit change in the corresponding measure of social structure. For example, consider a change where 10% more of a country's population thought that they had someone to count on. The individual effect for those having the improved social connections would be a log change of income of 1.08, roughly equivalent to a trebling of family income. On top of this, and received by all people, including those whose own social support had not improved, would be the contextual effect, with a log equivalent value of  $.1 * 3.77 = .377$ , or more than a one-third increase of family income. The typical individual in this more-connected country would have life satisfaction increase by  $.1 * (3.77 + 1.08) = .485$ , equivalent to an increase of family income of more than 60%.

These very large compensating differentials must be viewed in the context of actual individual and international differences in per capita incomes and social circumstances. In a typical country, 80% of the respondents have someone to rely on, and the standard deviation of this measure across countries is just over one-sixth as large, while the national average per capita income, measured in purchasing power parity as a fraction of that in the United States, is .30, with a standard deviation across countries of .34, reflecting the large number of very poor countries. Thus it is not too surprising to find that even very large differences in life satisfaction across countries are dwarfed by the corresponding differences in material income. One of the things that supports life satisfaction in the poorer countries is that while they are also more socially deprived, on average, according to almost all of the Gallup measures, than are those living in the richer countries, their relative social deprivation is less than their relative economic deprivation<sup>17</sup>.

The very large size of the estimated compensating differentials for social variables in all regions suggests the importance of focussing on ways of supporting and improving the social context in developing countries. In the richer countries, the case for increased importance to the social context is even stronger, given the diminishing life satisfaction effect of higher incomes implied by the empirically preferred log-linear form.

## 5. Conclusion

We find strong evidence for the importance of both income and social context variables in explaining differences in well-being. For most specifications tested, the combined effects of a few measures of the social and institutional context exceed that of income in equations explaining international differences in life satisfaction. Calculation of compensating differentials also reveals large income-equivalent values for improvements in the social context, with much of this value flowing via positive national spillover effects for key social variables.

---

<sup>17</sup> In the macro equation of Table 3, the standardized beta on income is .66 for the log of GDP per capita, compared to .43 for the non-income variables.

In a preliminary version of this chapter, based on data for a smaller number of countries, we found evidence suggesting that average answers to the standard life satisfaction question were higher than for the Cantril ladder, with this difference being larger for the poorer countries. We hypothesized that this was because the ladder framing encouraged respondents to think in more relative terms, and that these comparisons were global in nature. However, as the sample of countries with both SWL and ladder data has grown, we have found that both measures show similar correlations with the key structural variables. The SWL answers remain higher on average than those for the ladder, but by a smaller amount than we found using data from a smaller number of countries, and the difference between the two measures is no longer related significantly to per capita incomes.

Reflecting the facts that the ladder and the SWL questions are related in very similar ways to the underlying structural determinants, that they are both evaluations of life as a whole, that they are framed differently, and asked at different parts of the interview, we hypothesized that an average of the two measures might have a higher signal-to-noise ratio than either on its own<sup>18</sup>. Our tests to date appear to confirm this hypothesis, as the average is significantly better predicted than either measure alone, and has a smaller standard deviation and a smaller standard error of the estimate. The global cross-sectional equation for the average of life satisfaction and the ladder explains 44% of the variance for the 52,000 individuals for whom both assessments are currently available. This is substantially the highest explained variance we have ever seen for a cross-sectional explanation for subjective well-being. This is especially remarkable since the simple model used constrains parameters to be equal in all countries. This suggests that both measures are tapping into life in similarly evaluative ways, with their slightly different framing, and their different positions in the body of the survey, giving some random differences that become smaller when the two measures are averaged. It also suggests that despite cross-cultural differences in the ways in which social and economic institutions are designed, and in how people assess and are influenced by these characteristics, a relatively small number of key structural variables appears to explain a large fraction of differences in subjective life evaluations around the world.

## References

- Barrington-Leigh, C.P., and J.F. Helliwell (2008) "Empathy and Emulation: Subjective Well-Being and the Geography of Comparison Groups." **NBER Working Paper** No. 14593.
- Blanchflower, D.G. and A.J. Oswald (2008) "Is Well-Being U-Shaped Over the Life Cycle?" **Social Science and Medicine** 66: 1733-49.

---

<sup>18</sup> This tends to confirm the point, made at several places in this volume, that multiple measures of well-being should be collected where feasible, and used to form combined measures and/or guide the selection among alternative measures,

- Brickman, P. and D.T. Campbell (1971) "Hedonic Relativism and Planning the Good Society." In M.H. Appley, ed., **Adaptation Level Theory: A Symposium**. (New York: Academic Press) 287-302.
- Brickman, P., D. Coates and R. Janoff-Bullman (1978) "Lottery Winners and Accident Victims: Is Happiness Relative?" **Journal of Personality and Social Psychology** **36**: 917-27.
- Clark, A.E. and O. Lelkes (2009) "Let Us Pray: Religious Interactions in Life Satisfaction." (Working Paper: Paris School of Economics).
- Deaton, Angus (2008) "Income, Health and Well-Being around the World: Evidence from the Gallup World Poll." **Journal of Economic Perspectives** **22**(2): 53-72
- Diener, E. and E.M. Suh, eds. (2000) **Culture and Subjective Well-Being**. (Cambridge MA: MIT Press)
- Diener, E., R.E. Lucas and C.N. Scollon (2006) "Beyond the Hedonic Treadmill: Revising the Adaptation Theory of Well-Being." **American Psychologist** **61**(4): 305-14.
- Diener, E., D. Kahneman, W. Tov and R. Arora (2009) "Income's Differential Impact on Judgments of Life versus Affective Well-Being" (this volume).
- Easterlin, Richard (1974) "Does Economic Growth Improve the Human Lot? Some Empirical Evidence" In P.A. David and M. Reder, eds., **Nations and Households in Economic Growth** (New York: Academic Press), 89-125.
- Frederickson, B.L. and D. Kahneman (2003) "Duration Neglect in Retrospective Evaluations of Affective Episodes." **Journal of Personality and Social Psychology** **65**: 45-55.
- Fowler, J.H. and N.A. Christakis (2008) "The Dynamic Spread of Happiness in a Large Social Network." **British Medical Journal** (forthcoming)
- Gallup Organization (2007) **The State of Global Well-Being** (New York: Gallup Press)
- Halpern, David (2005) **Social Capital** (Cambridge: Polity Press)
- Heine, S. and A. Norenzayan (2006) "Towards a Psychological Science for a Cultural Species". **Perspectives on Psychological Science** **1**(3): 251-69
- Heine S. et al. (2002). "What's Wrong with Cross-Cultural Comparisons of Subjective Likert Scales?: The Reference Group Effect" **Journal of Personality and Social Psychology** **82**(6): 903-18

- Helliwell, John F. and Robert D. Putnam (2004) "The social context of well-being" **Phil Trans R. Soc Lon. B** **359**: 1435-46. Reprinted in F.A. Huppert, B. Keverne and N. Baylis, eds., **The Science of Well-Being**. (London: Oxford University Press, 2005, 435-59).
- Helliwell, John F. and Haifang Huang (2008) "Well-Being and Trust in the Workplace." **NBER Working Paper** No. 14589)
- Helliwell, John F. (2008) "Life Satisfaction and Quality of Development." **NBER Working Paper** No. 14507.
- Helliwell, John F., Haifang Huang and Anthony Harris (2009) "International Differences in the Determinants of Life Satisfaction." In Tridip Ray, E. Somanathan and Bhaskar Dutta, eds. **New and Enduring Themes in Development Economics** (World Scientific, Singapore).
- Kahneman, D. (1999) "Objective Happiness." In E. Diener, N. Schwarz and D. Kahneman, eds., **Well-Being: The Foundations of Hedonic Psychology** (New York: Russell Sage).
- Kahneman, D. and Jason Riis (2005) "Living, and Thinking About it: Two Perspectives on Life". In F.A. Huppert, N. Baylis and B. Keverne, eds., **The Science of Well-Being**. (Oxford: Oxford University Press).
- Kahneman, D., P.P. Wakker, and R. Sarin (1997) "Back to Bentham? Exploration of Experienced Utility." **Quarterly Journal of Economics** **112**: 375-405.
- Kahneman, D., D.A. Schkade, C. Fischler, A.B. Krueger and A. Krilla (2009) "The Structure of Well-Being in Two Cities." (this volume).
- Lim, Chaeyoon and Robert D. Putnam (2009) "Praying Alone is not Fun: Religion, Social Networks and Subjective Well-Being." (working paper).
- Lucas, Richard E. (2007) "Long-Term Disability is associated with Lasting Changes in Subjective Well-Being: Evidence from Two Nationally Representative Longitudinal Studies." **Journal of Personality and Social Psychology** **92**(4): 717-30.
- Lucas, R.E., A.E. Clark, Y. Georgellis and E. Diener (2003) "Re-examining Adaptation and the Set Point Model of Happiness: Reactions to Changes in Marital Status." **Journal of Personality and Social Psychology** **84**(3): 527-39.
- Luttmer, Erzo F.P. (2005) "Neighbours as Negatives: Relative Earnings and Well-Being." **Quarterly Journal of Economics** (January): 963-1002.

- Matsumoto, D. (2000) **Culture and Psychology**. (2<sup>nd</sup> ed., Pacific Grove: Brooks Cole)
- Oishi, S. (2009) “Culture and Well-Being: Conceptual and Methodological Issues.” ( this volume).
- Organization for Economic Co-operation and Development (2001) “**The Well-Being of Nations: The Role of Human and Social Capital**. (Paris: OECD)
- Putnam, Robert D. (1993) **Making Democracy Work** (Princeton: Princeton University Press).
- Putnam, Robert D. (2000) **Bowling Alone: The Collapse and Revival of American Community** (New York: Simon and Schuster).
- Sen, A. (1990) “Development as Capability Expansion.” In K. Griffin and J. Knight, eds., **Human Development and the International Development Strategy for the 1990s**. (London: Macmillan)
- Sen, A. (1999) **Development as Freedom**. (New York: Knopf Press)
- Schmidt, S., and M. Bullinger (2007) “Cross-cultural Quality of Life Assessment Approaches and Experiences from the Health Care Field.” In Gough and McGregor, eds. **Well-Being in Developing Countries: from Theory to Research**. (Cambridge, Cambridge University Press) 219-41.
- Stevenson, B., and J. Wolfers (2008) “Economic Growth and Subjective Well-Being: Reassessing the Easterlin Paradox” **NBER Working Paper** No. 14283. (Cambridge: National Bureau of Economic Research)
- Wirtz, D., J. Kruger, C.N. Scollon, and E. Diener (2003) “What to Do on Spring Break? The Role of Predicted, On-Line and Remembered Experience in Future Choice.” **Psychological Science** 14(5): 520-4.

Table 1: Global equation with full set of social context variables.

Significance: 1%\* 5% 10%\*

	ladder (all)	ladder (matched)	SWL (matched)	$\frac{1}{2}(\text{ladder}+\text{SWL})$	ladder (all)	$\frac{1}{2}(\text{ladder}+\text{SWL})$	ladder (all)	$\frac{1}{2}(\text{ladder}+\text{SWL})$
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
log(household income)	<b>.42*</b> (.025)	<b>.37*</b> (.034)	<b>.44*</b> (.055)	<b>.40*</b> (.042)	<b>.43*</b> (.025)	<b>.41*</b> (.042)	<b>.44*</b> (.025)	<b>.41*</b> (.046)
male	<b>-.11*</b> (.019)	<b>-.12*</b> (.025)	<b>-.095*</b> (.025)	<b>-.11*</b> (.022)	<b>-.11*</b> (.019)	<b>-.12*</b> (.022)	<b>-.12*</b> (.018)	<b>-.12*</b> (.021)
age	<b>-.030*</b> (.004)	<b>-.028*</b> (.005)	<b>-.031*</b> (.005)	<b>-.029*</b> (.004)	<b>-.030*</b> (.004)	<b>-.029*</b> (.004)	<b>-.031*</b> (.004)	<b>-.026*</b> (.004)
(age/10) <sup>2</sup>	<b>.024*</b> (.004)	<b>.022*</b> (.005)	<b>.029*</b> (.006)	<b>.025*</b> (.005)	<b>.023*</b> (.004)	<b>.024*</b> (.004)	<b>.025*</b> (.004)	<b>.022*</b> (.004)
(as) married	.008 (.036)	.076 (.058)	.078 (.064)	.077 (.054)	.014 (.034)	.073 (.046)	.009 (.022)	.045 (.030)
separated, divorced, or widowed	<b>-.13*</b> (.045)	-.11 (.071)	-.10 (.086)	-.10 (.071)	<b>-.14*</b> (.043)	<b>-.12*</b> (.063)	<b>-.14*</b> (.031)	<b>-.16*</b> (.047)
not enough money: food(net)	<b>-.63*</b> (.025)	<b>-.68*</b> (.043)	<b>-.73*</b> (.036)	<b>-.71*</b> (.032)	<b>-.63*</b> (.025)	<b>-.70*</b> (.032)	<b>-.62*</b> (.024)	<b>-.71*</b> (.032)
friends to count on	<b>.46*</b> (.027)	<b>.49*</b> (.038)	<b>.45*</b> (.045)	<b>.47*</b> (.034)	<b>.46*</b> (.027)	<b>.47*</b> (.032)	<b>.46*</b> (.027)	<b>.46*</b> (.031)
freedom to choose	<b>.31*</b> (.023)	<b>.36*</b> (.033)	<b>.47*</b> (.052)	<b>.42*</b> (.039)	<b>.31*</b> (.022)	<b>.41*</b> (.037)	<b>.32*</b> (.022)	<b>.41*</b> (.035)
perception of corruption	<b>-.26*</b> (.025)	<b>-.22*</b> (.041)	<b>-.25*</b> (.047)	<b>-.24*</b> (.038)	<b>-.26*</b> (.025)	<b>-.24*</b> (.038)	<b>-.26*</b> (.023)	<b>-.22*</b> (.037)
donated time	<b>.077*</b> (.023)	<b>.15*</b> (.031)	<b>.22*</b> (.040)	<b>.18*</b> (.030)	<b>.078*</b> (.023)	<b>.18*</b> (.030)	<b>.082*</b> (.023)	<b>.18*</b> (.029)
donatedMoney	<b>.16*</b> (.020)	<b>.19*</b> (.034)	<b>.32*</b> (.046)	<b>.25*</b> (.035)	<b>.16*</b> (.020)	<b>.25*</b> (.035)	<b>.17*</b> (.020)	<b>.24*</b> (.032)
helped a stranger	<b>.083*</b> (.022)	<b>.070*</b> (.023)	<b>.054*</b> (.031)	<b>.062*</b> (.024)	<b>.081*</b> (.021)	<b>.057</b> (.024)	<b>.085*</b> (.020)	<b>.052</b> (.023)
importance of religion	.010 (.023)	.026 (.038)	<b>.13*</b> (.040)	<b>.078</b> (.035)	.013 (.023)	<b>.083</b> (.034)	.005 (.022)	<b>.076</b> (.032)
attended church/etc	<b>.047</b> (.019)	<b>.058</b> (.028)	.040 (.035)	<b>.049*</b> (.027)	<b>.046</b> (.019)	<b>.046*</b> (.027)	<b>.042</b> (.018)	.035 (.027)
nation: log(GDP per cap)	.051 (.064)	<b>.19</b> (.082)	.13 (.13)	<b>.16*</b> (.095)	.006 (.060)	.11 (.080)		
nation: not enough money: food(net)	-.17 (.36)	-.21 (.46)	-.25 (.64)	-.23 (.48)	<b>-.69*</b> (.37)	<b>-.83*</b> (.47)		
nation: friends to count on	<b>1.60*</b> (.48)	<b>1.12*</b> (.66)	1.19 (.91)	1.16 (.73)	<b>1.05</b> (.46)	.56 (.71)		

Continued on next page

	ladder (all) (1)	ladder (matched) (2)	SWL (matched) (3)	$\frac{1}{2}(\text{ladder}+\text{SWL})$ (4)	ladder (all) (5)	$\frac{1}{2}(\text{ladder}+\text{SWL})$ (6)	ladder (all) (7)	$\frac{1}{2}(\text{ladder}+\text{SWL})$ (8)
<i>nation</i> : freedom to choose	.55* (.30)	.76* (.45)	<b>1.24</b> (.59)	<b>1.00</b> (.42)	<b>.79</b> (.34)	<b>1.14</b> (.47)		
<i>nation</i> : perception of corruption	−1.53* (.31)	−1.34* (.39)	−.97* (.56)	−1.15* (.37)	−1.01 (.40)	−.73 (.36)		
<i>nation</i> : donated time	−.64 (.50)	−.27 (.64)	.92 (.86)	.33 (.67)	−.73 (.46)	−.21 (.54)		
<i>nation</i> : donatedMoney	.12 (.27)	−.25 (.36)	−.85* (.48)	−.55 (.38)	.20 (.29)	−.13 (.37)		
<i>nation</i> : helped a stranger	.032 (.35)	−.10 (.45)	.77 (.55)	.33 (.38)	−.18 (.32)	.049 (.38)		
<i>nation</i> : importance of religion	−.57 (.42)	−.65 (.48)	−1.04 (.76)	−.84 (.54)	−.55 (.39)	−.74* (.43)		
<i>nation</i> : attended church/etc	<b>1.33*</b> (.48)	<b>1.38*</b> (.49)	<b>1.39</b> (.62)	<b>1.39*</b> (.52)	<b>1.12*</b> (.42)	<b>1.29*</b> (.39)		
healthy life expectancy (net)	<b>.020*</b> (.007)	<b>.020</b> (.010)	<b>.051*</b> (.012)	<b>.035*</b> (.009)	.013 (.009)	.019* (.010)		
wave 2	<b>.27*</b> (.073)				<b>.27*</b> (.071)		<b>.18*</b> (.070)	−.078 (.063)
wave 3	<b>.24*</b> (.058)	−.013 (.14)	−.79* (.18)	−.40* (.15)	<b>.25*</b> (.055)	−.081 (.15)	<b>.20*</b> (.063)	
constant	<b>5.96*</b> (.56)	<b>6.39*</b> (.85)	<b>6.17*</b> (1.28)	<b>6.28*</b> (1.01)	<b>5.76*</b> (.63)	<b>5.51*</b> (.82)	<b>6.53*</b> (.13)	<b>6.98*</b> (.15)
dRegion1					.051 (.47)	.60 (.39)		
dRegion2					.38 (.44)	<b>.84</b> (.39)		
dRegion3					.54 (.44)	<b>.79</b> (.39)		
dRegion4					.33 (.43)	<b>1.18*</b> (.42)		
dRegion5					−.12 (.45)	.48 (.43)		
dRegion6					.075 (.41)	.37 (.31)		
region fixed effects					✓	✓		
country fixed effects							✓	✓
obs.	140267	52657	52657	52657	140267	52657	146217	53174
$R^2(\text{adj})$	.296	.338	.387	.441	.299	.452	.321	.481
N <sub>clusters</sub>	116	80	80	80	116	80	124	81

Table 2: **Sample separated by world region (ladder).** Regions: 1: Former Soviet Union Countries and Eastern European Countries; 2: European Countries; 3: United States, Canada, Australia, New Zealand; 4: Latin America and Caribbean; 5: Asia; 6: Africa; 7: Persian and Mid-east, including Israel. Countries in regions 3 and 6 were not asked the SWL question. OLS standard errors are calculated using clustering at the country level. Significance: 1%\* 5% 10%\*

	ladder (1)	ladder (2)	ladder (3)	ladder (4)	ladder (5)	ladder (6)	ladder (7)
log(household income)	<b>.56*</b> (.045)	<b>.37*</b> (.051)	<b>.42*</b> (.023)	<b>.54*</b> (.043)	<b>.53*</b> (.039)	<b>.30*</b> (.033)	<b>.65*</b> (.14)
male	-.017 (.029)	-.19* (.039)	-.32* (.055)	-.17* (.036)	-.23* (.039)	-.022 (.024)	-.24* (.078)
age	-.049* (.010)	-.041* (.009)	-.062* (.011)	-.051* (.005)	-.025* (.008)	.001 (.006)	-.056* (.017)
(age/10) <sup>2</sup>	<b>.037*</b> (.010)	<b>.036*</b> (.008)	<b>.067*</b> (.009)	<b>.040*</b> (.006)	<b>.025*</b> (.008)	-.006 (.006)	<b>.048</b> (.019)
(as) married	.051 (.082)	<b>.21*</b> (.060)	<b>.24*</b> (.14)	-.099* (.029)	-.088 (.056)	-.071 (.054)	<b>.27*</b> (.083)
separated, divorced, or widowed	-.007 (.094)	-.29* (.081)	-.28* (.10)	-.12* (.064)	-.29* (.080)	-.073 (.064)	.17 (.23)
not enough money: food(net)	-.76* (.057)	-.86* (.094)	-.90* (.15)	-.66* (.044)	-.61* (.052)	-.48* (.034)	-.64* (.11)
friends to count on	<b>.42*</b> (.051)	<b>.74*</b> (.056)	<b>.73*</b> (.12)	<b>.60*</b> (.055)	<b>.32*</b> (.051)	<b>.42*</b> (.043)	<b>.54*</b> (.093)
freedom to choose	<b>.42*</b> (.042)	<b>.50*</b> (.068)	<b>.62*</b> (.17)	<b>.27*</b> (.050)	<b>.23*</b> (.039)	<b>.27*</b> (.040)	<b>.36*</b> (.041)
perception of corruption	-.39* (.061)	-.34* (.060)	-.17 (.083)	-.24* (.045)	-.22* (.047)	-.24* (.042)	-.083 (.23)
donated time	.057 (.063)	<b>.16*</b> (.035)	<b>.19*</b> (.11)	<b>.13*</b> (.065)	.007 (.043)	.048 (.035)	<b>.15</b> (.062)
donatedMoney	<b>.22*</b> (.061)	<b>.20*</b> (.043)	<b>.21*</b> (.047)	<b>.15*</b> (.032)	<b>.11*</b> (.025)	<b>.17*</b> (.045)	.10 (.20)
helped a stranger	<b>.12*</b> (.033)	<b>.041</b> (.020)	-.028 (.042)	<b>.11*</b> (.038)	<b>.096*</b> (.037)	<b>.088*</b> (.050)	.13 (.17)
importance of religion	-.005 (.058)	-.004 (.034)	-.013 (.048)	.054 (.041)	-.079 (.059)	<b>.12</b> (.050)	.078 (.092)
attended church/etc	.027 (.034)	.007 (.045)	.047 (.085)	<b>.096*</b> (.031)	<b>.072</b> (.034)	.010 (.043)	.011 (.10)
log(GDP per cap.,PPP,2003/5)	-.23 (.18)	-.18 (.50)	<b>1.15*</b> (.17)	.25 (.17)	.13 (.13)	-.007 (.083)	<b>1.02*</b> (.28)
nation: not enough money: food(net)	-1.52 (.94)	<b>3.13*</b> (1.87)		-.284* (.85)	-.114 (.49)	-.043 (.58)	

Continued on next page



	ladder (1)	ladder (2)	ladder (3)	ladder (4)	ladder (5)	ladder (6)	ladder (7)
<i>nation</i> : friends to count on	<b>2.92</b> (1.19)	4.47 (3.40)		3.56 (2.30)	-.92 (1.86)	<b>1.23</b> (.55)	
<i>nation</i> : freedom to choose	.72 (1.01)	.28 (2.28)		.072 (1.46)	<b>1.13</b> (.47)	.43 (.44)	
<i>nation</i> : perception of corruption	-.041 (.60)	<b>-1.10</b> (.48)	<b>-3.06*</b> (.45)	.55 (.91)	1.10 (.83)	<b>-1.07*</b> (.63)	<b>-2.80*</b> (.68)
<i>nation</i> : donated time	-.49 (1.19)	.76 (.91)		-1.25 (.97)	<b>-1.41*</b> (.79)	-1.01 (1.24)	
<i>nation</i> : donatedMoney	<b>-1.87</b> (.85)	.26 (.72)		.46 (.45)	-.10 (.55)	1.12 (1.06)	
<i>nation</i> : helped a stranger	.99 (.95)	-.43 (.80)		1.61 (1.12)	.50 (.42)	-.45 (.58)	
<i>nation</i> : importance of religion	<b>1.17</b> (.55)	.33 (1.17)	<b>.93*</b> (.081)	<b>-1.71</b> (.84)	.48 (.59)	-.81 (1.02)	<b>-2.40*</b> (.31)
<i>nation</i> : attended church/etc	.61 (.82)	-.51 (1.12)		<b>2.47*</b> (.60)	-.060 (.92)	.63 (.71)	
wave 2	-.049 (.14)	<b>.23</b> (.095)	<b>-.18*</b> (.033)	.15 (.14)	<b>.37</b> (.18)	<b>.31</b> (.12)	-.094 (.14)
wave 3	<b>.17*</b> (.097)	<b>.33*</b> (.075)	<b>.083</b> (.034)	.21 (.14)	.22 (.17)	<b>.24</b> (.11)	
constant	<b>3.00*</b> (1.06)	3.01 (2.58)	<b>8.55*</b> (.39)	<b>3.92</b> (1.54)	<b>5.61*</b> (1.15)	<b>5.25*</b> (1.30)	<b>12.3*</b> (.64)
region	1	2	3	4	5	6	7
obs.	18024	15860	4688	32125	26211	44855	4454
$R^2$ (adj)	.199	.323	.166	.178	.190	.146	.309
N <sub>clusters</sub>	22	19	4	23	18	34	4

Table 3: **Macro-level estimates.** Macro-level estimates  
Significance: 1%\* 5% 10%\*

	ladder (1)	SWL (2)	$\frac{1}{2}$ (ladder+SWL) (3)	ladder (4)	SWL (5)	$\frac{1}{2}$ (ladder+SWL) (6)
<i>nation:</i> log(GDP per cap)	<b>.58*</b> (.057)	<b>.62*</b> (.090)	<b>.61*</b> (.066)	<b>.54*</b> (.058)	<b>.52*</b> (.072)	<b>.52*</b> (.053)
<i>nation:</i> not enough money: food(net)	<b>-1.03*</b> (.39)	-.20 (.63)	-.55 (.42)	<b>-1.74*</b> (.38)	<b>-1.35*</b> (.44)	<b>-1.32*</b> (.36)
<i>nation:</i> friends to count on	<b>1.57</b> (.61)	<b>3.05*</b> (.84)	<b>2.42*</b> (.65)	.98 (.61)	<b>1.58</b> (.66)	<b>1.50</b> (.61)
<i>nation:</i> freedom to choose	<b>.94*</b> (.33)	<b>1.94*</b> (.62)	<b>1.47*</b> (.45)	<b>1.24*</b> (.39)	<b>1.75*</b> (.52)	<b>1.46*</b> (.44)
<i>nation:</i> perception of corruption	<b>-1.14*</b> (.33)	-.51 (.32)	<b>-.72*</b> (.28)	<b>-.70</b> (.33)	<b>-.60*</b> (.33)	<b>-.67</b> (.29)
<i>nation:</i> donated time	.055 (.51)	-.26 (.61)	-.31 (.53)	.21 (.48)	-.25 (.53)	-.38 (.50)
<i>nation:</i> donatedMoney	.13 (.33)	.28 (.46)	.22 (.35)	-.079 (.39)	.50 (.50)	.32 (.42)
<i>nation:</i> helped a stranger	.45 (.37)	.74 (.48)	<b>.64*</b> (.38)	-.15 (.35)	.43 (.43)	.35 (.38)
<i>nation:</i> importance of religion	-.31 (.38)	.024 (.50)	-.32 (.39)	-.42 (.33)	-.14 (.37)	-.33 (.32)
<i>nation:</i> attended church/etc	<b>1.27*</b> (.43)	<b>1.29</b> (.53)	<b>1.38*</b> (.44)	<b>.90</b> (.38)	<b>.86*</b> (.45)	<b>1.13*</b> (.35)
healthy life expectancy (net)	<b>.024*</b> (.007)	<b>.070*</b> (.010)	<b>.047*</b> (.007)	<b>.017</b> (.008)	<b>.029*</b> (.009)	<b>.022*</b> (.008)
constant	<b>4.88*</b> (.74)	<b>2.63</b> (1.03)	<b>3.71*</b> (.81)	<b>5.28*</b> (.72)	<b>4.42*</b> (.77)	<b>4.80*</b> (.70)
region fixed effects				✓	✓	✓
obs.	128	99	99	128	99	99
$R^2$ (adj)	.849	.863	.897	.869	.921	.922

**Table 4: Compensating differentials**

Significance: 1%\* 5% 10%

	Method-1, From two-level regressions	Method-2, From within-nation regressions	Method-3, From regressions on national averages
perception of corruption	<b>-0.62*</b> [0.07]	<b>-0.43*</b> [0.03]	
nation: perception of corruption	<b>-3.62*</b> [0.77]		<b>-1.92*</b> [0.53]
freedom to choose	<b>0.73*</b> [0.07]	<b>0.45*</b> [0.03]	
nation: freedom to choose	<b>1.30</b> [0.71]		<b>1.57</b> [0.66]
friends to count on	<b>1.08*</b> [0.09]	<b>0.61*</b> [0.03]	
nation: friends to count on	<b>3.77*</b> [1.17]		<b>2.64*</b> [0.99]
not enough money: food(net)	<b>-1.50*</b> [0.08]	<b>-1.04*</b> [0.03]	
nation: not enough money: food(net)	-0.19 [0.83]		<b>-1.74*</b> [0.62]
donatedMoney	<b>0.38*</b> [0.05]	<b>0.22*</b> [0.03]	
nation: donatedMoney	0.37 [0.63]		0.21 [0.61]
donatedTime	<b>0.18*</b> [0.05]	<b>0.13*</b> [0.03]	
nation: donated time	-1.59 [1.17]		0.09 [0.9]
helped a stranger	<b>0.20*</b> [0.05]	<b>0.13*</b> [0.02]	
nation: helped a stranger	0.04 [0.82]		0.76 [0.66]
importance of religion	0.02 [0.05]	0.01 [0.03]	
nation: importance of religion	-1.37 [0.98]		-0.52 [0.58]
attended church/etc	<b>0.11*</b> [0.04]	<b>0.10*</b> [0.03]	
nation: attended church/etc	<b>3.14*</b> [1.12]		<b>2.13*</b> [0.68]
nation: healthy life expectancy (net)	<b>0.05*</b> [0.02]		<b>0.04*</b> [0.01]

**Note:**

1. Compensating differentials are defined as the ratio of the coefficient of the variable to the left of the table, over the coefficient of the log of household income. In the case of method 2, the compensating differential is the weighted average of the country-specific compensating differentials derived from within-country regressions. The weight is the inverse of the square of standard errors.

2. The standard error for a compensating differential, which is defined as a ratio of coefficients, is calculated from the variance-covariance matrix of estimated coefficients using the Delta method. In the case of method 2, the standard error for the weighted average is calculated from the standard errors of country-specific compensating differentials, while assuming that each nation-sample represents a random sample from the same distribution.

Figure 1: Distribution of responses to alternative measures

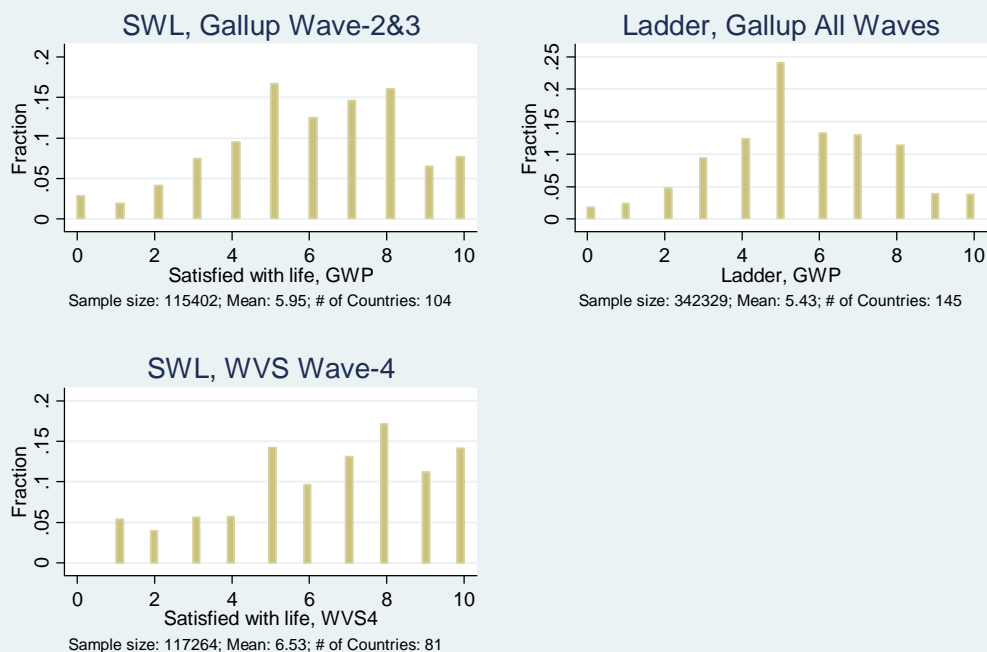


Figure 2: Figure 1 reproduced for countries with all three measures

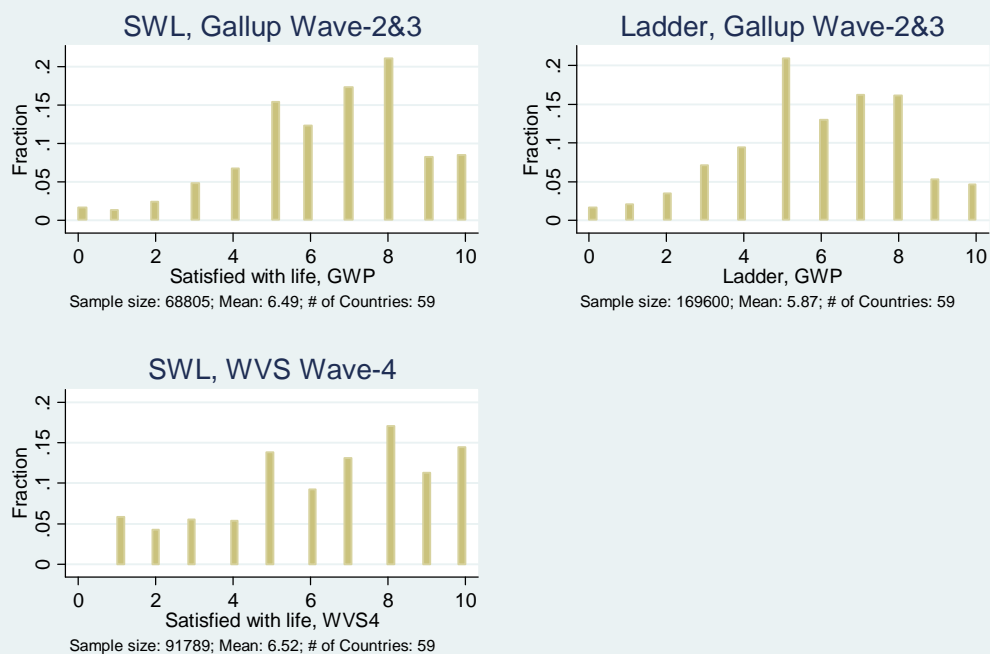
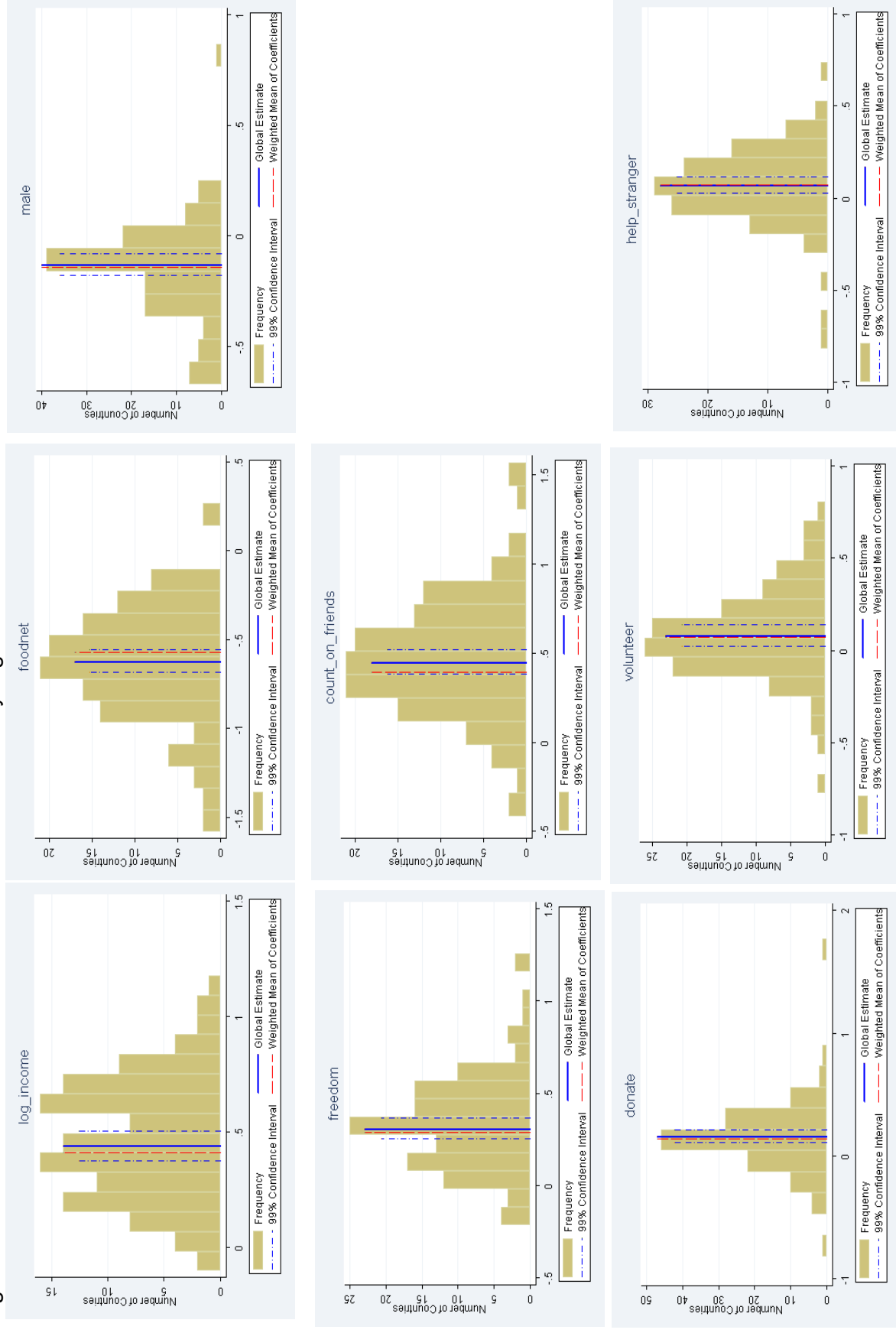


Figure 3: Distribution of coefficient values from within-country regressions



## **Appendix: Wording of Key Questions From Gallup World Poll**

### Life Today as Ladder

Please imagine a ladder with steps numbered from zero at the bottom to ten at the top. Suppose we say that the top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible. If the top step is 10 and the bottom step is 0, on which step of the ladder do you feel you personally stand at the present time?

### SWL:

All things considered, how satisfied are you with your life as a whole these days? Use a 0 to 10 scale, where 0 is dissatisfied and 10 is satisfied.

### CountOnFriends

If you were in trouble, do you have relatives or friends you can count on to help you whenever you need them, or not?

### CannotAffordFood

Have there been times in the past twelve months when you did not have enough money to buy food that you or your family needed?

### Corrupt: average of the following two responses

1. Is corruption widespread within businesses located in (county of interview), or not? 2. Is corruption widespread throughout the government in (county of interview), or not?

### Freedom

In (county of interview), are you satisfied or dissatisfied with your freedom to choose what you do with your life?

### DonateMoney

Have you done any of the following in the past month? How about Donated money to a charity?

### DonateTime

Have you done any of the following in the past month? How about Volunteered your time to an organization?

### HelpStranger

Have you done any of the following in the past month? How about Helped a stranger or someone you didnt know who needed help?

### Religion Importance

Is religion an important part of your daily life?

### Attended church/etc

Have you attended a place of worship or religious service within the last seven days?

## **From World Value Survey**

### SWL:

All things considered, how satisfied are you with your life as a whole these days? Please use this card to help with your answer. Dissatisfied (1) 2 3 4 ... Satisfied (10)