

Life Satisfaction and Quality of Development

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ABSTRACT

This paper argues that measures of life satisfaction, now being collected annually by the Gallup World Poll in more than 130 countries, permit a much broader view of the quality and consequences of development than other common measures. While these data show the importance of conventionally measured economic development, they also show the importance of many other elements of life that are also affected, whether deliberately or not, by community, national, and international institutions and policies. In estimating the importance of these other factors, this paper pays special attention to the social context of well-being: the norms, networks and relationships within which lives are lived.

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1. Setting the Stage

This paper proposes and applies a fairly simple method for measuring life satisfaction and for using these data to assess the quality of development. The idea, taken straight from Aristotle, is to ask people to evaluate the quality of their lives as a whole. Aristotle hypothesized that these evaluations would show satisfaction with life to be highest among those who found the golden mean between pleasures of the moment (the epicureans) and meaningful working towards building a better life for others (the stoics). In my first attempts to use World Values Survey data from more than 70 countries to test Aristotle's propositions (Helliwell 2003) I was struck by the extent to which his hypotheses seemed to stand the test of exposure to the facts of the world. Only later did I attempt to see how Aristotle's method fitted with other comparative approaches to measuring well-being in development. Before proceeding to a review of the latest results, including a comparison of the earlier World Values Survey results with those from the new and larger Gallup World Poll (Gallup 2007), I shall mention a few issues that might have an important bearing on the measurement and interpretation of life satisfaction.

Amartya Sen's capabilities approach (1990) gives primary importance to capabilities enabling people to achieve their individual and collective ends. This in turn gives a primary importance to freedoms (Sen 1999, 2002). Having these capabilities, and the freedom to exercise them, has for him an importance beyond whatever material resources or outcomes, perhaps including happiness, the person might experience. The Aristotelian view would be that the importance of capabilities would indeed be revealed by the life satisfaction evaluations of reflective individuals.

Within psychology there are two strands of theory and evidence that are potentially threatening to the use of subjective assessments of life satisfaction to measure systematic differences in the quality of lives among individuals or societies. These relate to adaptation and to peer-group effects. The extreme version of adaptation is embodied in the 'set point' view (Brickman and Campbell 1971) wherein each individual has a genetically established personality with given set points for, *inter alia*, happiness, or perhaps even satisfaction with life. Changes in circumstances might lead to temporary gains or losses of happiness, with subsequent adaptation eventually forcing life assessments back to each individual's baseline set point. The primary empirical reference is often to a study showing substantial adaptation among lottery winners and accident victims (Brickman, Coates and Janoff-Bullman 1978), although even in those cases adaptation was not complete. Recent evidence with larger samples of longitudinal data shows large and significant continuing effects of disability on subjective well-being (Lucas 2007). Lucas and Diener, perhaps the most influential proponents of the set point theory, while collaborating on a paper using German panel data to show adaptation to marriage (Lucas et al 2003), have both concluded that adaptation is in general incomplete, and that individual assessments of life satisfaction can differ in the long run because of different life circumstances (Diener, Lucas and Scollon 2006). Indeed, both are now advocating collection of measures of life satisfaction to augment conventional national income and expenditure accounts as measures of individual and national well-being.

As for the effects of relativities, while there is considerable evidence that much of the life satisfaction gained from income is in relative terms, thus leading to negative externalities from higher incomes (Easterlin 1974, Luttmer 2005, Helliwell and Huang 2005, Barrington-Leigh and Helliwell 2007), the evidence of such contextual effects differs considerably from one aspect of life to another, and perhaps from one society to another. Thus it is important in empirical work to look for possible contextual effects. It must be recognized at the outset that it is very difficult to assess international differences in national contextual effects, since any estimates of such contextual effects rely on the assumption that there are groups of countries for which these effects are of similar size. Repeated national surveys, such as are planned for the Gallup World Poll, will help to ease this problem.

Daniel Kahneman and colleagues have found that there are systematic differences between evaluated (remembered) and experienced (momentary) well-being, such that memories of past experiences, and hence evaluations of life satisfaction, differ from evaluations or scores based on the integration of moment-by-moment assessments of the pleasure or pain of a film (Fredrickson and Kahneman 1993) or colonoscopy (Redelmeier and Kahneman 1996). The more global evaluations based on memory are sometimes described as ‘decision utility’, since when decisions are made about future actions, they depend upon remembered assessments rather than the sum of momentary pleasure or pain. Thus recalled enjoyment rather than the sum of moment-by-moment enjoyment predicted the desire to repeat a holiday (Wirtz et al. 2003). Measures of satisfaction with life as a whole, of the sort used in the research reported in this paper, fall into the category of remembered assessments, and hence differ from integrals of moment-by-moment pleasure.

Kahneman describes the retrospective judgments as mistaken: “The choice to repeat the inferior experience (as measured by the sum moment-by-moment experiences) reflects the misguided preferences of the remembering self.” (Kahneman and Riis 2005, p. 286). Whenever the two assessments might differ, he interprets the sum of moment-by-moment experiences as the more valid. He refers to it as ‘objective happiness’ (Kahneman 1999) because it is constructed according to an objective rule, albeit one that aggregates subjective assessments. Kahneman also notes that his preferred method is much in the tradition of Jeremy Bentham, who advocated a very similar integration of moment-by-moment pleasure and pain in his utilitarian calculus (Kahneman, Wakker and Sarin 1997).

While I would agree with Kahneman that both momentary and remembered self-assessments of well-being are worth collecting, in order to better understand their relationships with each other, and with other measures of well-being, I am inclined to give priority to the more reflective remembered assessments. This preference is based on a mix of practical, theoretical and empirical reasons. From a practical point of view, self-assessments of life satisfaction are easy to collect as low-cost add-on questions in surveys conducted for a variety of purposes. By contrast, moment-by-moment assessments are difficult and costly to collect. On theoretical grounds, Aristotle counseled that reflective

answers to broad questions about life satisfaction would provide a better measure of a life well-lived than would momentary accounts of pleasure and pain. On empirical grounds, as will be shown later in the paper, there is evidence that interpersonal and international differences in important life circumstances are more likely to show up in answers to general questions about life satisfaction than in measures of recent pleasure and pain. Finally, the established fact that remembered assessments are the ones that determine subsequent decisions gives them additional importance for researchers interested in predicting individual and policy choices.

There is a related distinction in psychology between hedonic and eudaimonic well-being (Ryan and Deci 2001), with the former referring to the current balance of pleasure and pain, and the latter giving greater weight to reflective considerations of a meaningful life. The latter is more closely related to the Aristotelian idea of a good life, as measured by reflective assessments of life satisfaction, while the former is more closely linked to moment-by-moment hedonic assessments.

One of the principal results of the research reported in this paper is that life satisfaction is driven to a very substantial extent by the perceived quality of social relationships, and especially of the social and institutional context in which people relate to each other. The term ‘social capital’, which in the past 15 years has owed its currency mainly to the work of Robert Putnam (1993, 2000), has been defined as “networks together with shared norms, values and understandings that facilitate co-operation within and among groups” (OECD 2001). What constitutes effective, and hence well-being-increasing, norms and networks might be expected to be culture-specific. Indeed, McGregor (2007,327) defines culture in very similar terms as “dynamic systems of norms, values and rules that are developed by particular communities, founded in their relationships to particular natural and social environments.” This in turn might cause skeptics, especially social anthropologists of a relativist persuasion, to question whether cross-cultural, and especially international, comparison of social capital is possible². One of the purposes of this paper is to see whether there are definitions of social norms and networks that are widely enough shared across cultures that they help to explain differences in life satisfaction within and among communities and nations.

2. Using Multi-Level Analysis to Investigate Life Satisfaction

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. One is to use the individual-level data in equations that are separate for each country. A second is to measure and account for international differences in life satisfaction using national average data, and a third is to use multi-level analysis to explore individual-level and higher-level correlates simultaneously. The advantage of the third approach, which will be the main focus of attention in this paper, is that it permits individual and contextual effects to be separated. Although many

² For a review of these issues in the context of cross-cultural comparisons of subjective measures of health-related well-being, see Schmidt and Bullinger (2007, 220-3).

interesting contextual effects are at the local level (e.g. Luttmer 2005, Barrington-Leigh and Helliwell 2007), the nature of the World Values Survey and Gallup data limits us to two-level analysis, with contextual effects appearing only at the national level. To achieve a more complete multi-level analysis would require some geo-coding of respondents to permit the survey data to be combined with census or other data about the structure of local communities. When attention is focussed on comparative development, and where we wish to cover as many countries as possible, as in the current paper, then it is unrealistic to expect widespread availability of community-level data on a comparable basis.

We shall therefore start with two-level analysis of individual life satisfaction responses for large global samples drawn from the most recent available World Values Survey data (generally from 1999-2000) and the first complete round of the Gallup World Poll, covering up to 130 countries, with data collected mainly during 2006.

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

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

where LS_i is life satisfaction for respondent i , measured on a scale of 1 to 10 for the World Values Survey, and 0 to 10 for the Gallup World Poll, y_{ij} is the level of income of household i in country j , 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-level variables for which we also have household-level observations, in which case the γ coefficients represent contextual effects, or, in other terms, the extent of positive or negative externalities. In those cases where we have national level variables that do not have individual-level counterparts, then the γ coefficients will capture the sum of the individual-level and contextual effects. Our estimations are sometimes by probit and sometimes linear regression, but in either case robust standard errors are estimated assuming errors to be clustered by country.

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 .

3. Two-Level Results from the World Values Survey

Table 1 shows two-level estimation results based on a sample of roughly 100,000 observations from 75 countries in the 1999-2000 wave of the World Values Survey³.

³ The results differ somewhat from those in Helliwell and Putnam (2004), which were based on waves 1 to 3 of the WVS, and also from those in electronic appendix Table 1 of Helliwell and Huang

Several of the key results reported in Helliwell and Putnam (2004) are repeated in the Table 1 analysis of more recent data, but we now have the full equations estimated separately for the 28 OECD and 46 non-OECD countries in the sample. The general U-shape in age is strong in the OECD sample, with life satisfaction lowest in the 45-54 age group, while for the non-OECD countries the partial negative effect of age reaches -0.36 (on a 10-point scale) in the 45-55 age group and remains at that level thereafter.

The positive effects of marriage are much greater in the OECD sample, while the negative effects of both divorce and widowhood are larger and more significant in the non-OECD countries, in both cases relative to being single. Being unemployed is negative and highly significant in both samples (-0.71 in the non-OECD sample). Having education attainment beyond the high school level is associated with higher life satisfaction in the overall sample, although the split regressions show that the effect flows entirely from the non-OECD countries. Results from earlier WVS waves, which had a smaller number of respondents from non-OECD countries, showed a positive and significant simple correlation between education level and life satisfaction. This effect gradually disappeared when other variables were included that are themselves affected by education levels, with the most important of these being income, health, social trust and community involvement (Helliwell 2003, Tables 4 and 5).

Individual assessments of general social trust⁴ and of confidence in police are both strongly correlated with positive life assessments, to a slightly greater extent in the OECD sample. Those for whom religion is very important report significantly higher life satisfaction, especially if social trust is also included in the equation. While religion and social trust are both important to life satisfaction, there is a pattern linking the two variables, across individuals within a country as well as across country averages, with those reporting high values for trust in others tending to report low values for importance of religion, and vice versa. There will be more evidence on this issue in Section 5.

The effects of household income are measured in relative terms in the WVS, and these relative income effects are strongly significant in both sets of countries. There is some evidence that life satisfaction rises less with relative income in the OECD than the non-OECD countries, but the difference is less than was the case for WVS waves 1 to 3, as shown in Figure 17.2 of Helliwell and Putnam (2005).

The contextual effects estimated are relatively weak in both samples of countries. This is at least in part because per capita income and the quality of government are quite highly correlated. In the 4th wave of the WVS, national income tends to have less explanatory

(2007), which are based on 160,000 observation from waves 1 to 4 of the WVS, and divide the countries into two groups by level of income rather than by membership in the OECD. Both the earlier and the larger WVS samples show larger and more significant effects of the quality of government (especially relative to the effects of national income) than are apparent in Table 1. We prefer to use just wave 4 for comparison with the Gallup results, since this gives closer comparability for survey timing and country coverage.

⁴ “In general, do you think that most people can be trusted or, alternatively, that you can’t be too careful when dealing with people.” Those who choose the first answer to this classic question are coded 1.0, while the alternative is coded as 0.0. Those few respondents who choose ‘don’t know’ are coded as 0.5.

power than governmental quality, but to a lesser extent than was the case in waves 1 to 3. I shall return to discuss aggregate income effects in section 5, where the WVS and Gallup results are compared at the aggregate level.

4. Two-Level Results from the Gallup World Poll

Table 2 shows life satisfaction equations using individual-level data from about 70,000 respondents in 105 countries, and for respondents in OECD and non-OECD countries treated separately. Table 3 shows the same equation estimated separately for respondents in each of six geographic, mainly continental, country groupings. Females are more satisfied with their lives than males, just as in the WVS, but in the Gallup data the effect is more precisely estimated, and in both surveys the female advantage is larger in the OECD countries. Table 3 estimated by regions shows that the effect is largest in the two mainly OECD regions: Western Europe and the combined US/Canada/Australia/New Zealand grouping, and in Latin America, while being zero on average in Africa. Country differences will be considered in more detail in section 6.

In the Gallup tables age effects are estimated by a quadratic form in age; in all cases there is a general U-shape, although the implied low point is usually beyond the normal life span⁵.

For the Gallup equations, 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. For all country groups shown in Tables 2 and 3 life satisfaction is higher among those in the married group, with the effect being largest and most significant in the OECD countries, and least so in Latin America and Africa.

In the Gallup sample, the estimated equation shows that those with university-level education are significantly more satisfied with their lives, with the effect being largest in Africa, Asia, the transition countries (Russia and Eastern Europe) and Latin America, and smallest in Western Europe and the English-language foursome of the United States, Canada, Australia and New Zealand. One reason why tertiary education may show a stronger effect in the Gallup equations than in the WVS data is the absence of social trust variables in Gallup, since social trust and education are positively correlated across individuals, communities and countries.

The log of household income is a very strong correlate of individual life satisfaction in the Gallup equations, even where the equations include, as here, responses to other life-circumstance questions determined at least partly by income: higher education, running water in the home, and having enough money for adequate food⁶. The coefficient is if

⁵ Age squared is divided by 100, so that the age and age-squared coefficients can be more easily compared. The ratio of the age to the age-squared coefficients indicates the age of the lower turning point for life satisfaction, as a fraction of 100 years. Country-by-country age effects in the Gallup data are reported by Deaton (2007).

⁶ Sequentially dropping the water, food and education variables (both individual and contextual) from the global equation raises the coefficient on the log of household income by .017, .076 and .024, respectively. This gives an income coefficient, with all those variables eliminated, of .525 ($t=19.4$).

anything higher in the richer countries (as previously noted by Deaton 2007) and shows no obvious tendency to drop as individual income rises, beyond the non-linearity implied by the logarithmic form for income. More research is required to explain the difference between the WVS and Gallup results for income. It is possible that the Gallup life satisfaction question, taking the form of a Cantril ladder, whereby the respondent is asked to think of life as a ladder, invites respondents to think in relative terms more than when they are simply asked, as in the World Values Survey, to assess their life satisfaction on a scale running from 1 to 10. The current version of the Gallup survey is asking the question in both forms, to help answer this question. Attempts are also being made to expand the number of income categories, and thereby to give more income variation in the group of higher income earners. The WVS gets this already, by choosing income categories to match income deciles, and the next rounds of the Gallup survey should be able to provide at least this amount of income detail. In general the Gallup data appear to be of high and comparable quality among countries, as will be suggested in the analysis in the next section of the national-level data.

Even using the current data, the income effects are tightly enough estimated to permit the results to be used to calculate some rough income-equivalent values for other aspects of life. This will be done later. First, we consider two other standard-of-living variables that appear strongly in the Gallup data. These are the presence of running water in the home (wp33), and whether there had been “times in the last twelve months when you did not have enough money to buy food that you or your family needed” (wp40). While both running water and lack of enough money for food attract roughly similar coefficients in the separate equations for respondents in OECD and non-OECD countries, the actual prevalence of these measures of poverty is far higher in the non-OECD countries, although perceived food poverty is much more evenly distributed among countries. For example, running water is found in the homes of 99% of the OECD sample, and 67% of the non-OECD sample. By comparison, lack of enough money for food at some time in the last twelve months was reported more generally -- by 12% of the OECD respondents and 33% of those in the rest of the world.

Turning to measures of the institutional and social context, Tables 2 and 3 show first the extent to which individual life satisfaction is correlated with perceived levels of corruption in business and government (an average of the answers to separate questions). For the global sample on average, an individual who thinks that corruption is widespread in business and government has life satisfaction that is lower by more than .2 on the ten-point scale. Table 3 shows that the estimated effects are largest for those living in the transition (Russia and Eastern Europe) and OECD countries, and lower in Latin America, Asia and Africa. The perceived prevalence of corruption is highest in the transition countries and lowest in the OECD regions. There is a large variation among countries, both within and across regions, with Russia at .94, New Zealand at .22 and Singapore at .20. Regional averages for Asia, Latin America and Africa range from .77 to .79.

At the personal level, having someone to count on is even more important in every region, with a global average of .67. Some other variables indicative of personal or community-level social capital are available for only a subset of the Gallup respondents.

But they all show the high values attached to mutually supportive social connections. Those who think that their lost wallets would be returned by a neighbour or the police are more satisfied with their lives (by .15 and .22 points), as are those who express confidence in the police (.22). Respondents appear to value not only the support they get from others, but 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 (.30) and helping a stranger (.16), as shown by the second equation in Table 4a.

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 in the Gallup data is a dog that does not bark- the fact that average per capita income has no significant effect. Earlier research using more local data has tended to find significant relative income effects, and this seemed to be confirmed by the earlier WVS results. In Tables 2 and 3, 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 Tables estimates of average GDP per capita⁷. 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. It does not, which suggests that in the Gallup ladder data any relative income effects at the national level are being offset by the effects of other excluded variables that support life satisfaction in the richer countries. In particular, the national average should reflect all the tax-funded public good consumption support that is largely missing from measured variables. To see a negative coefficient would mean that the contextual effects dominate these.

The estimation of contextual effects at the national level is limited by small sample sizes and a large number of possible hypotheses. It is especially hard to estimate these effects separately by regional groupings, as the number of countries is limited in each region, and inter-country variations smaller than in the global sample. One contextual variable that does appear significantly relates to food, where people are less satisfied with their own lives if others are going hungry in their country. This effect is significant for the OECD countries as a whole, in Latin America, and in the group of four North American and Australasian countries. This can be interpreted as some form of inequality aversion, although one might not expect it to be significantly identified across countries (e.g. the Nordic countries) where absence of sufficient food is rare and not subject to much variation across countries.

⁷ 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 using the Penn World Table data for average GDP per capita in 2003 measured at Purchasing Power Parity. The contextual variable is the same Penn World Table series. Thus if there are significant relative income effects at the national level the contextual variable should attract a negative coefficient. Our equations also eliminate about 2000 observations where the reported family income is below 2% of the national average. Almost all of these observations report zero income. This adjustment raises and tightens the estimate of the coefficient on log income, as does the use of the Penn World Tables to convert national data to internationally comparable levels.

The most important contextual effect shown in Tables 2 and 3 relates to living in a country where most people feel they have someone they can count on. This appears in the global sample, as well as among the OECD and non-OECD countries treated as sub-groups. Because the comparable individual-level variable is already in the equation, the effect being estimated relates to the extent to which others in the community have people they can rely on. The significant positive coefficient suggests positive spillovers from this type of social connection. People want to have someone to rely on, and they wish the same for others. The estimated effect is quite large- living in a country where 10% more people have someone to rely on is associated with 0.2 higher life satisfaction.

To convert any of these effects into an income equivalent value requires division by the estimated income coefficient. The smallest compensating differentials for non-financial aspects of life are obtained by using the income coefficient obtained if the other income-related variables (food, water, and higher education) are removed from the equation. This gives an income coefficient of just over .5, slightly smaller than the coefficient on having someone to rely on, as estimated in that same equation. Thus having someone to rely on has a life satisfaction effect roughly ten times larger than a 5% change in income (i.e. $10 \approx .54/.05$). On top of that, the contextual effect suggests that to live in a country where an additional one-tenth of the population has someone to count on has more than five times the life satisfaction equivalence as the presumed 5% change in income. There is a possibility that allowing for individual personality differences would lower these estimates, but they are indicative of other survey and experimental evidence showing the importance of a supportive social context. Measures of social trust (which have been validated across countries by correlations with actual returns of experimentally dropped wallets, Knack 2001) show compensating differentials, as do measures of trust in police and trust in management (Helliwell and Huang 2005).

5. Comparison of National-Level World Values and Gallup Results

The basic estimation form for analysis of the national average life satisfaction responses is:

$$(2) LS_j = \alpha + \delta \ln(y_j) + \gamma Z_j + \varepsilon_j$$

where LS_j is average life satisfaction for country j , measured on a scale of 1 to 10 for the World Values Survey, and 0 to 10 for the Gallup World Poll, y_j is average per capita real GDP in country j , and the Z_j are other national-level variables. The national level results estimated in equation (2) combine the individual-level and contextual effects separately estimated in equation (1). The basic explanatory power of equation (1) comes from individual-level variance, some of which is mainly within-country, while some is mainly among countries. Variables that mainly capture individual personality or experience, in an institution-free way, will have most of their variance within countries, while those variables that either measure or are strongly influenced by institutional or social characteristics of the nation will have much more of their variance between nations.

In the introduction of the paper it was alleged, in accordance with Aristotle, that life satisfaction compared to positive affect (e.g. joy) or negative affect (e.g. despair). If this is true, we would expect to find a larger fraction of the global individual variance of life

satisfaction determined by national-level life circumstances. The two parts of Table 4, which still make use of individual-level data, and hence equation (1), provide some support for this in two ways. The first equation in Table 4a adds individual-level measures of positive and negative affect to the basic global equation from Table 2. Although both are strongly correlated with life satisfaction, the pattern and power of the main structural and circumstantial variables remains intact. This confirms that while shorter-term emotions play significantly into life satisfaction, they do so in a way that is largely independent of the effects of deeper and more enduring circumstances and institutions. Table 4b confirms the same interpretation in a different way, by showing that life satisfaction differs significantly from region to region around the globe, while there is almost no region-to-region variance in average values for positive and negative affect. While the regional dummy variables account for only 1% and 4% of the total individual-level variance of negative and positive affect, they account for 15% of total individual-level variance in life satisfaction.

In this section the national-level equation (2) is used to unravel some of the international differences in the quality of life, and in particular to do so in a way that helps to show the similarities and differences between the WVS and the Gallup data. This analysis can only be done at the national level, since the individual-level responses are from different households at different times, using questionnaires with different orders, contents and delivery methods. This makes comparison challenging but possibly very powerful. Results that are common to both bodies of data thereby acquire more credibility, while differences suggest new avenues for research. It is even possible, as we show, to use national averages of responses to one survey as independent variables in the other, thereby providing a strong set of instruments that are free of individual-level causal complexity.

Table 5 first shows the strength of the association between national average per capita income, in log form, and life satisfaction as measured by wave 4 of the WVS and Gallup World Poll questions. This is done for a common set of 75 countries and then for the full set of 129 Gallup World Poll countries. Log income is very important in both surveys, but is larger and more significant when explaining the Gallup data. It explains 42% of the WVS compared to 66% of the Gallup variance for the common set of 75 countries, rising to 71% of the Gallup variance for 129 countries. Does this cross-country correlation between average incomes and life satisfaction confirm the previous conclusion, based on individual data, that life satisfaction captures more enduring aspects of life circumstance? That this is so is suggested even by the simple correlations, which are far higher between average per capita incomes and WVS and Gallup life satisfaction (.62 and .82, respectively, for the 75 overlapping countries) than between income and positive affect (+.44) and negative affect (-.47) for the same 75 countries.

This high degree of cross-country correlation between average incomes and life satisfaction has convinced some previous sceptics to take the life satisfaction data more seriously as genuine measures of well-being. However, that same high correlation might tempt others to ask what would be the point in measuring life satisfaction if it can be shown to move closely with income, since income is already being tracked. One way of

addressing the latter point is to ask whether there are important aspects of life satisfaction that are tapped into by both surveys (and hence not just artefacts of a particular set of questions) but not captured by average per capita incomes. This can be done, for the sample of 75 countries, by regressing the WVS and Gallup measures of life satisfaction on income alone, and then adding the residuals, which are taken to represent those features of life satisfaction that are not correlated with average national income, to the income-based equation explaining the other survey's measure of life satisfaction. Because income alone explains a higher fraction of the variance of the Gallup measure, there is less explanatory power added from the non-income variance from the other survey. Nonetheless, the explained variance rises from .66 to .77. For the WVS equation, the explained variance rises from .41 to .60. Thus we have strong evidence that the WVS and Gallup surveys are exposing some important sustained factors in life satisfaction going well beyond their mutual links to per capita incomes.

Now that we have seen important common content in the WVS and Gallup measures that goes well beyond their dependence on income, it is time to consider some of their differences. First, Table 5 shows, for the 75 countries in common, regressions for cross-country differences in life satisfaction by per capita incomes and the quality of delivery of government services, as measured by the same average of four World Bank indices found most important in explaining earlier waves of WVS data. The value for the year 2000 is used, since it matches the timing of the 4th wave of the WVS and has more explanatory power for the Gallup variable than do measures of the same variable for more recent years. Although government service quality and per capita incomes are highly correlated across countries (+.85), it is nonetheless possible to estimate significant effects for both income and the quality of government services in equations for both measures of life satisfaction. The WVS equation explains 50% of the variance, and the quality of government is more important than income (betas of .58 and .16 respectively). The Gallup equation is tighter-fitting, explaining 69% of the variance, and income is more important than the quality of government (betas of .51 and .36 respectively).

There is another respect in which the two surveys appear to tap into life in different ways, possibly because, as suggested earlier, the use of the Cantril ladder causes people to think more in terms of pecking order. When the Gallup average measures of positive and negative affect are added to income-based equations using the 68 countries for which the affect measures and the WVS data are available, it can be seen, as shown in Table 5, that the WVS life satisfaction is closely correlated with positive affect, but not with negative affect, while the Gallup ladder measure of life satisfaction is less than half as much related to positive affect, and has an equally large coefficient on negative affect. The greater importance of income to the Gallup than to the WVS measure remains in these equations adding affect.

Whether these differences between the Gallup and WVS measures are enduring features of framing of the responses, to other survey differences, or to random factors, remains unknown for now. When fresh Gallup data become available from alternative versions of the life satisfaction question, it should be possible to find some answers. There is a pattern of results in psychology suggesting that positive and negative affect have

differing implications for health outcomes (Cohen and Pressman 2006), much in the way suggested by the WVS results for life satisfaction. For example, when volunteers were dosed with cold virus, they were less likely to develop symptoms, and the symptoms were likely to be less severe, the higher was their initial measure of positive affect. The link with negative affect had the expected sign, but was insignificant. Similarly, nuns in their twenties who used positive expressions in their autobiographical summaries lived significantly longer than their peers, while there was no corresponding link to the absence of negative expressions. There have as yet been no corresponding experiments testing for the prophylactic power of life satisfaction.

In the meantime, we can in a preliminary way use the larger Gallup sample to dig further into what factors are most likely to explain why the quality of development, as measured by life satisfaction, differs among countries at similar levels of income per capita. We start with our previous result that the quality of government services and the average level of income per capita together explain 72% of the cross-country variance in life satisfaction among 129 countries in the Gallup sample, with income being the more important variable. When some of the possible intermediating variables are added, the overall power of the equation is increased, while the remaining importance attached to income and quality of government is reduced. Both simple correlations and regression analysis suggest that perceived corruption is more closely related to quality of government than to the level of income, while the reverse is the case for the availability of running water, food adequacy, and having someone to rely on. The equation with all of these variables explains 81% of the adjusted cross-country variation of life satisfaction for the 120 countries with the necessary data, and both income and governmental quality are left with equal and modestly significant residual roles. The beta coefficients suggest food and water (.32) and having someone to rely on (.22) as the most important contributors, followed by absence of corruption (.19) and quality of government (.17).

When international differences in positive and negative affect are added to the equation, they increase the effect of adequate food and water, leave the income effect unchanged, lower the corruption effect slightly, with larger reductions for the quality of government and having someone to rely on. The close connection between affect and having someone to rely on is already expected from the micro analysis, and for both variables most of the variance is within rather than between countries.

Finally, we tested the addition of a measure of health satisfaction. While it attracted a large and significant positive coefficient (even when used to explain WVS life satisfaction), its interpretation is problematic. First, as already noted by Angus Deaton (2007), its cross-country variance is not closely linked to that of World Health Organization measures of life expectancy and healthy life expectancy (+.31 and +.33). It may be less descriptive of objective health status than are other subjective measures of health status, since it is only binary, and asks not about the state of health but about whether the respondent is satisfied with their state of health. This should lead respondents to allow for what they feel they have a right to expect. For example, Canadian and WVS answers to 5-point subjective assessments respondents' state of physical health show a strong downward trend with age. But when Canadian respondents in another survey were

asked to rate the state of their physical health using other people of their age as the point of comparison, their assessments showed no downward trend with age. This in turn suggests that measures of health satisfaction are less likely to reflect objective health than are subjective assessments of health status. And we might also expect that international differences in health satisfaction might in turn be associated with international differences in positive affect, as indeed they are ($r=+.60$).

Adding health satisfaction, as shown in the last equation of Table 5, explains an adjusted 85% of the cross-country variance, leaving significant remaining roles for all other variables except the quality of government. This is consistent with earlier WVS findings (Helliwell and Huang 2007) suggesting that a substantial part of the life satisfaction effects of the quality of government services are mediated by international differences in subjective and objective measures of health status.

We turn in Table 6 to consider the role of religion in explaining international differences in life satisfaction. Both the WVS and the Gallup World Poll asked separate questions about the importance of religion in the respondent's lives, and about the frequency of church attendance. Across countries, there is a remarkable consistency between the two surveys in their assessments of national religiosity and church attendance. For both importance of religion ($r=+.92$ between the two surveys, for the 73 overlapping countries) and frequency of attendance at religious services ($r=+.87$) the correlations are even higher than the within-survey correlations between religion and church attendance, which are $r=+.80$ (WVS) and $r=+.86$ (Gallup). In both surveys, the cross-country correlations between either measure of religion and life satisfaction were negative, and more strongly so between the measures of religion and any of the direct or proxy measures of trust. The cross-country correlation between trust and church-going, although negative, was less so than that between trust and the importance of religion.

When added to a more fully specified equation, however, either religious importance or church attendance added somewhat to life satisfaction, as shown by the first two equations in Table 5. If both measures are included, they are too correlated to achieve significance. An equation that uses the average of the two measures is slightly better than either alone. The next equation repeats the same equation for the smaller sample of WVS countries, while the following one adds the WVS measure of social trust. This last equation replicates a standard finding from the earlier WVS waves, that the negative correlation between social trust and importance of religion leads to stronger effects for both when either is added to an equation containing the other. One possible reason for this might be some form of substitution of two quite different types of trust, that in other people and that in religion, as means of supporting life satisfaction.

6. Country-by-Country Analysis of Individual Data

Finally, we turn to a third way of using the Gallup data to measure the quality of development. Previous estimation at the individual and national levels generally assumed that preference differences among individuals could be treated as random variables, so that it was appropriate to estimate common parameters. This assumption was relaxed to some extent in Tables 2 and 3, where coefficients were allowed to be different by groups

of country. In this section we carry that strategy further, estimating life satisfaction equations separately for each country, and then looking for commonalities and interesting patterns in the resulting cross-country differences in parameter estimates. The national samples are fairly small, averaging 1000 in the first place, but rendered smaller by lack of data on key variables, especially household income. As further annual waves of the Gallup World Poll are undertaken, it should be able to identify more precisely any resulting cross-country or cross-cultural differences in the correlates of life satisfaction. Preliminary assessment of the cross-country distributions of coefficients seem consistent with the view that most of the variables found to be important at the individual level in the global sample are also significant in most of the individual countries. For example, the coefficients on the food variable, which has substantial variance within each country, has significant (as measured by an absolute t -value > 2) negative coefficients in 81 of the 105 individual country regressions, while the running water variable, which has much more of its variance between countries, has significant positive coefficients in only 26 of the 105 regressions. The social support variable 'has someone to rely on' has significant positive coefficients in 69 of the regressions, and the corruption variable in 35.

The quadratic pattern of age effects is almost universal, with 89 countries having coefficients that are negative on age and positive on age squared. The gender effect for males is negative in 78 of the 105 countries, although significantly so in only 23. 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 coefficient on the marriage variable is positive in 74 of the 105 regressions, although significantly so in only 16, relative in all cases to the unmarried alternative.

The log of household income is positive in 103 of the 105 country regressions, and significantly so in 91 cases. This is so even though the equations contain two other income-dependent variables: adequacy of money for food, and running water in the home. For all variables the means of the country coefficients are very close to the values estimated in Table 2, as would be expected if the national samples were drawn from a global population with broadly similar responses to these variables. As further rounds of the Gallup World Poll become available it should be possible to investigate more finely the nature of possible differences in life satisfaction coefficients, and by inference the structure of preferences, in different countries and country-groupings. For the moment, the similarity of the country regressions, when combined with the high explanatory power of the cross-country regressions, tends to support the view that international differences in average life satisfaction are in fact largely due to systematic differences in the quality of life in different countries.

7. Conclusion

The three ways of analyzing the global samples of life satisfaction data all tend to support the view that these assessments tap into the quality of life in meaningful ways. While the new Gallup results confirm the continuing importance of economic development, they also suggest important ways in which the quality of development could and should be improved. Continuing availability of life satisfaction data on an internationally comparable basis, as promised by the Gallup World Poll, provides the possibility for

corresponding increases in the breadth and richness of the assessment of development performance and objectives. In particular, if the social context of well-being is to be better understood and improved, better data will need to be collected in large, geo-coded samples, permitting a better understanding of the nature and sources of high quality community and national development. In particular, while the role of trust in communities, workplaces and nations has been shown to be closely linked to life satisfaction in several studies, it is not yet regularly monitored sufficiently in global and national surveys.

To those responsible for the design and application of development strategies within and among nations, a strong case can be made for collecting baseline and regular re-assessments of life satisfaction to allow the monitoring of the quality of life in a much finer-grained way. I have attempted in this paper to show how life satisfaction data provide a fairly easily collected basis for judgements of the quality of development. The results reported here relate mainly to cross-national comparisons. However, one of the strengths of life satisfaction assessments is that they can relatively easily provide the capacity to assess the quality of life on a much finer geographic and institutional scale. As national and international policy-makers move toward more evidence-based choices among alternative institutional arrangements and policy-delivery mechanisms, there is a natural role for assessments of life satisfaction to become a standard part of the information collected as part of assessment exercises. Where experimental design is used explicitly, then life satisfaction assessments are necessary for the control groups as well as the treatment groups, both before and after the policy changes.

The case I am making is that when people evaluate their life satisfaction they mean what they say, and their answers are meaningfully comparable across communities, nations and cultures, and through time. The success of the cross-national explanations of life satisfaction, and their consistency with within-country estimation, suggests that international differences in life satisfaction reflect international differences in the quality of life, and deserve to be taken seriously. In broad terms, people in different nations tend to value different aspects of their lives in similar terms. Finer grained analysis, which will require much larger and longer panels of data, will no doubt reveal many fine-grained differences in what people want. But such analysis is more likely to qualify than to overturn the main commonalities that appear in the existing global samples.

How much could it matter to focus on life satisfaction as a measure of the quality of development? There is a growing amount of survey and experimental research showing that the ways in which people relate to each other, and the extent to which they are effectively engaged in helping themselves, and especially each other, are strongly related to their satisfaction with life. Various measurable features of the social context, such as the extent to which people trust their neighbours, the police, and their colleagues and employers, have such large values, measured in terms of their income-equivalence, to demand much more attention than they have received from individuals, business, communities, governments and development agencies.

References

- Barrington-Leigh, C.P., and J.F. Helliwell (2007) "Empathy and Emulation: Subjective Well-Being and the Geography of Comparison Groups." Paper presented at the Annual Meetings of the Canadian Economics Association, Halifax, June 2007.
- 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.
- Cohen, Sheldon and Sarah D. Pressman (2006) "Positive Affect and Health." **Current Directions in Psychological Science** **15**(3): 122-5.
- Deaton, Angus (2007) "Income, Aging, Health and Well-Being around the World: Evidence from the Gallup World Poll." **NBER Working Paper** No. 13317. (Cambridge: National Bureau of Economic Research)
- 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
- 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.
- Gallup Organization (2007) **The State of Global Well-Being** (New York: Gallup Press)
- Gough, Ian, and J. A. McGregor, eds (2007) **Well-Being in Developing Countries: from Theory to Research**. (Cambridge, Cambridge University Press).
- Halpern, David (2005) **Social Capital** (Cambridge: Polity Press)
- Helliwell, John F. (2003) "How's Life: Combining Individual and National Variables to Explain Subjective Well-Being." **Economic Modelling** **20**: 331-60.
- Helliwell, John F., and Haifang Huang (2005) "How's the Job? Well-Being and Social Capital in the Workplace." **NBER Working Paper No. 11759**. (Cambridge: National Bureau of Economic Research).

- Helliwell, John F., and Haifang Huang (2007) "How's your Government? International Evidence Linking Good Government and Well-Being." **British Journal of Political Science** (forthcoming). An earlier version is available as **NBER Working Paper No. 11988**, January 2006. (Cambridge: National Bureau of Economic Research).
- 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. Kaverne and N. Baylis, eds., **The Science of Well-Being**. (London: Oxford University Press, 2005, 435-59).
- Helliwell, John F. (2006) "Well-Being, Social Capital and Public Policy: What's New?" **Economic Journal** **116**: C34-45.
- 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.
- Knack, S. (2001) "Trust, Associational Life and Economic Performance." In J.F. Helliwell and A. Bonikowska, eds. **The Contribution of Human and Social Capital to Sustained Economic Growth and Well-Being: International Symposium Report** (Ottawa: Human Resources Development Canada and OECD) 172-202.
- Layard, Richard (2005) **Happiness: Lessons from a New Science**. (London and New York: Penguin).
- 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.

- McGregor, J.A. (2007) "Researching Well-Being: From Concepts to Methodology." In Gough and McGregor, eds. **Well-Being in Developing Countries: from Theory to Research**. (Cambridge, Cambridge University Press) 316-50.
- Møller, V. (2007) Researching Quality of Life in a Developing Country: Lessons from the South African Case". In Gough and McGregor, eds. **Well-Being in Developing Countries: from Theory to Research**. (Cambridge, Cambridge University Press) 242-58.
- 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).
- Redelmeier, D. and D. Kahneman (1996) "Patients' Memories of Painful Medical Treatments: Real-Time and Retrospective Evaluations of Two Minimally Invasive Procedures." **Pain 116**: 3-8.
- Ryan, R. and E.L. Deci (2001) "On Happiness and Human Potentials: A Review of Research on Hedonic and Eudaimonic Well-Being." **Annual Review of Psychology 52**: 141-66.
- 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)
- Sen, A. (2002) **Rationality and Freedom**. (Cambridge MA: Belknap 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.
- Soroka, Stuart, John F. Helliwell and Richard Johnston (2006) "Measuring and Modelling Interpersonal Trust." In Fiona Kay and Richard Johnston, eds., **Diversity, Social Capital and the Welfare State** (Vancouver: UBC Press, 2006, 95-132).

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: Results of two-level equation using WVS 4

Dependent Variable: Life Satisfaction			
Number of Countries:	75	29	46
	Full WVS Sample	OECD	Non-OECD
<i>Male</i>	-0.081 [0.049]	-0.102 [0.084]	-0.064 [0.049]
<i>Age group: 25 - 34</i>	-0.236 [0.048]**	-0.257 [0.062]**	-0.218 [0.065]**
<i>Age group: 35 - 44</i>	-0.388 [0.074]**	-0.508 [0.069]**	-0.314 [0.094]**
<i>Age group: 45 - 54</i>	-0.449 [0.072]**	-0.597 [0.060]**	-0.36 [0.096]**
<i>Age group: 55 - 64</i>	-0.344 [0.074]**	-0.357 [0.070]**	-0.367 [0.098]**
<i>Age group: 65 and up</i>	-0.194 [0.098]	-0.17 [0.104]	-0.345 [0.143]*
<i>Marital status: married</i>	0.129 [0.080]	0.375 [0.058]**	0.015 [0.103]
<i>Marital status: as married</i>	0.571 [0.201]**	0.278 [0.098]**	0.548 [0.209]*
<i>Marital status: divorced</i>	-0.351 [0.104]**	-0.022 [0.071]	-0.685 [0.169]**
<i>Marital status: separated</i>	-0.163 [0.141]	-0.407 [0.148]*	-0.045 [0.156]
<i>Marital status: widowed</i>	-0.391 [0.091]**	-0.139 [0.052]*	-0.502 [0.126]**
<i>Education: H.S. equivl.</i>	0.111 [0.058]	0.018 [0.061]	0.137 [0.089]
<i>Education: in between</i>	0.253 [0.093]**	-0.018 [0.099]	0.385 [0.119]**
<i>Education: Univ. equivl.</i>	0.282 [0.095]**	-0.033 [0.105]	0.411 [0.132]**
<i>LFS, unemployed</i>	-0.751 [0.081]**	-0.916 [0.099]**	-0.708 [0.093]**
<i>Income decile, 2nd</i>	0.284 [0.146]	0.232 [0.068]**	0.29 [0.210]
<i>Income decile, 3rd</i>	0.284 [0.125]*	0.488 [0.106]**	0.164 [0.164]
<i>Income decile, 4th</i>	0.843 [0.241]**	0.661 [0.120]**	0.898 [0.318]**
<i>Income decile, 5th</i>	0.846 [0.138]**	0.851 [0.178]**	0.852 [0.186]**

Table 1: Results of two-level equation using WVS 4

Dependent Variable: Life Satisfaction			
Number of Countries:	75	29	46
	Full WVS Sample	OECD	Non-OECD
<i>Income decile, 6th</i>	1.157 [0.193]**	0.961 [0.194]**	1.257 [0.247]**
<i>Income decile, 7th</i>	1.173 [0.174]**	1.135 [0.194]**	1.189 [0.236]**
<i>Income decile, 8th</i>	1.352 [0.193]**	1.107 [0.200]**	1.497 [0.254]**
<i>Income decile, 9th</i>	1.328 [0.198]**	1.168 [0.197]**	1.473 [0.291]**
<i>Income decile, 10th</i>	1.584 [0.194]**	1.334 [0.200]**	1.774 [0.257]**
<i>Missing income information</i>	0.899 [0.148]**	0.851 [0.188]**	0.872 [0.202]**
<i>Log of GDP per capita in year 2000</i>	0.531 [0.284]	0.574 [0.291]	0.533 [0.314]
<i>Trust in police, 0~1</i>	0.533 [0.146]**	0.603 [0.233]*	0.472 [0.187]*
<i>General Trust, 0~1</i>	0.223 [0.035]**	0.31 [0.039]**	0.198 [0.052]**
<i>Importance of god, 0~1</i>	0.33 [0.041]**	0.34 [0.041]**	0.316 [0.061]**
<i>Frequency of going to church, 0~1</i>	0.226 [0.095]*	0.096 [0.094]	0.267 [0.130]*
<i>National Average for general trust</i>	-0.492 [0.664]	0.625 [0.770]	-1.361 [1.048]
<i>National average for importance of god</i>	0.608 [0.393]	0.599 [0.730]	0.673 [0.452]
<i>Governance Quality: aggregate</i>	0.51 [0.234]*	0.455 [0.311]	0.333 [0.313]
<i>Constant</i>	5.7 [0.512]**	5.483 [0.483]**	5.81 [0.634]**
Observations	102713	41096	61617
R-squared	0.17	0.16	0.11

Standard errors in brackets

* significant at 5%; ** significant at 1%

Table 2: Results of two-level equation using Gallup World Poll

Dependent Variable: Life Satisfaction			
Number of Countries:	105	27	78
	All Countries	OECD	Non-OECD
<i>Male</i>	-0.086 [0.025]**	-0.204 [0.040]**	-0.051 [0.028]
<i>Age</i>	-0.043 [0.006]**	-0.065 [0.010]**	-0.035 [0.006]**
<i>Age squared/100</i>	0.038 [0.005]**	0.062 [0.009]**	0.029 [0.006]**
<i>Married or as if married</i>	0.229 [0.037]**	0.326 [0.044]**	0.177 [0.049]**
<i>Separated or divorced</i>	-0.107 [0.052]*	0.006 [0.058]	-0.117 [0.070]
<i>Attained tertiary education</i>	0.296 [0.036]**	0.222 [0.050]**	0.342 [0.044]**
<i>Log of hshld. income</i>	0.408 [0.027]**	0.504 [0.047]**	0.378 [0.028]**
<i>Home has running water</i>	0.196 [0.057]**	-0.27 [0.309]	0.226 [0.056]**
<i>Not enough money for food in last 12 months</i>	-0.596 [0.036]**	-0.735 [0.076]**	-0.572 [0.038]**
<i>Perception of corruption</i>	-0.228 [0.042]**	-0.291 [0.053]**	-0.19 [0.053]**
<i>Has someone to count on</i>	0.541 [0.034]**	0.858 [0.081]**	0.495 [0.035]**
<i>Percentage with tertiary education</i>	-0.043 [0.470]	-0.463 [0.578]	-0.071 [1.048]
<i>Log of GDP per capita in year 2003</i>	-0.036 [0.106]	0.612 [0.359]	-0.108 [0.118]
<i>Average: Running water</i>	0.305 [0.318]	-0.976 [8.077]	0.399 [0.329]
<i>Average: Not enough money for food</i>	-0.053 [0.394]	2.521 [1.224]*	-0.132 [0.439]
<i>Average: Perception of corruption</i>	-1.398 [0.314]**	-1.388 [0.383]**	-0.691 [0.363]
<i>Average: Has someone to count on</i>	2.011 [0.659]**	2.977 [1.438]*	1.877 [0.671]**
<i>Constant</i>	6.044 [0.774]**	7.301 [7.512]	5.168 [0.774]**
Observations	69806	17002	52804
R-squared	0.32	0.24	0.22

Standard errors in brackets; * significant at 5%; ** significant at 1%

Table 3: Gallup results by region

Dependent Variable: Life Satisfaction				
Number of Countries:	20	17	4	22
	E. Europe and FSU	W. Europe	USA, CAN, AUS, NZ	L. America and Caribbean
<i>Male</i>	-0.038	-0.181	-0.26	-0.196
	[0.029]	[0.039]**	[0.099]	[0.054]**
<i>Age</i>	-0.068	-0.045	-0.052	-0.065
	[0.010]**	[0.012]**	[0.011]*	[0.009]**
<i>Age squared/100</i>	0.058	0.045	0.062	0.053
	[0.010]**	[0.010]**	[0.012]*	[0.009]**
<i>Married or as if married</i>	0.131	0.222	0.41	0.217
	[0.055]*	[0.057]**	[0.066]**	[0.093]*
<i>Separated or divorced</i>	0.033	0.01	-0.102	-0.047
	[0.077]	[0.064]	[0.014]**	[0.119]
<i>Attained tertiary education</i>	0.34	0.14	0.125	0.277
	[0.068]**	[0.046]**	[0.072]	[0.049]**
<i>Log of hshld. income</i>	0.486	0.613	0.426	0.472
	[0.058]**	[0.070]**	[0.051]**	[0.047]**
<i>Home has running water</i>	0.168	0.027	1.001	0.271
	[0.084]	[0.334]	[0.348]	[0.115]*
<i>Not enough money for food in last 12 months</i>	-0.733	-0.69	-0.571	-0.603
	[0.062]**	[0.138]**	[0.174]*	[0.078]**
<i>Perception of corruption</i>	-0.398	-0.278	-0.382	-0.188
	[0.102]**	[0.067]**	[0.110]*	[0.091]
<i>Has someone to count on</i>	0.657	0.925	0.818	0.629
	[0.066]**	[0.118]**	[0.159]*	[0.092]**
<i>Percentage with tertiary education</i>	0.047	-1.186	-0.102	2.484
	[0.821]	[0.804]	[0.063]	[1.474]
<i>Log of GDP per capita in year 2003</i>	-0.246	0.557	-0.357	-0.54
	[0.165]	[0.716]	[0.150]	[0.226]*
<i>Average: Running water</i>	-0.954	14.573	0	0.541
	[0.857]	[14.177]	[0.000]	[1.117]
<i>Average: Not enough money for food</i>	-0.71	2.952	-1.7	-3.516
	[1.180]	[1.446]	[0.226]**	[1.174]**
<i>Average: Perception of corruption</i>	0.675	-1.002	0	0.173
	[0.787]	[0.403]*	[0.000]	[1.232]
<i>Average: Has someone to count on</i>	1.944	7.867	0	3.756
	[1.388]	[3.033]*	[0.000]	[2.110]
<i>Constant</i>	5.684	-13.611	6.923	3.855
	[2.008]*	[14.217]	[0.339]**	[2.421]
Observations	13617	10087	3459	12082
R-squared	0.19	0.20	0.14	0.16

Standard errors in brackets; * significant at 5%; ** significant at 1%

Table 3: Gallup results by region

Dependent Variable: Life Satisfaction				
Number of Countries:	15	26	21	64
	Asia	Africa	W. Europe, US, NZ, CAN, AUS	All Other Regions
<i>Male</i>	-0.117	-0.007	-0.203	-0.082
	[0.082]	[0.041]	[0.037]**	[0.036]*
<i>Age</i>	-0.043	-0.003	-0.045	-0.033
	[0.009]**	[0.010]	[0.009]**	[0.007]**
<i>Age squared/100</i>	0.046	0.001	0.048	0.029
	[0.009]**	[0.011]	[0.009]**	[0.007]**
<i>Married or as if married</i>	0.268	0.101	0.291	0.154
	[0.096]*	[0.063]	[0.052]**	[0.060]*
<i>Separated or divorced</i>	-0.148	-0.126	-0.045	-0.059
	[0.103]	[0.110]	[0.052]	[0.081]
<i>Attained tertiary education</i>	0.424	0.449	0.147	0.39
	[0.118]**	[0.171]*	[0.042]**	[0.059]**
<i>Log of hshld. income</i>	0.38	0.271	0.545	0.352
	[0.038]**	[0.037]**	[0.055]**	[0.028]**
<i>Home has running water</i>	0.211	0.265	0.199	0.223
	[0.123]	[0.090]**	[0.312]	[0.068]**
<i>Not enough money for food in last 12 months</i>	-0.737	-0.405	-0.661	-0.533
	[0.039]**	[0.056]**	[0.103]**	[0.042]**
<i>Perception of corruption</i>	-0.068	-0.123	-0.304	-0.135
	[0.086]	[0.106]	[0.054]**	[0.057]*
<i>Has someone to count on</i>	0.434	0.432	0.924	0.462
	[0.081]**	[0.048]**	[0.098]**	[0.038]**
<i>Percentage with tertiary education</i>	-0.555	-6.235	-0.767	0.03
	[1.571]	[3.820]	[0.652]	[0.886]
<i>Log of GDP per capita in year 2003</i>	0.127	-0.115	0.43	-0.122
	[0.201]	[0.122]	[0.489]	[0.126]
<i>Average: Running water</i>	0.201	0.433	15.284	0.886
	[0.776]	[0.522]	[12.778]	[0.351]*
<i>Average: Not enough money for food</i>	0.094	-0.736	1.698	-0.095
	[1.161]	[0.767]	[0.975]	[0.508]
<i>Average: Perception of corruption</i>	0.417	-0.882	-0.98	-0.418
	[1.016]	[0.614]	[0.402]*	[0.387]
<i>Average: Has someone to count on</i>	-0.299	1.845	6.019	1.261
	[1.587]	[0.616]**	[2.785]*	[0.764]
<i>Constant</i>	6.683	4.58	-12.874	5.047
	[1.638]**	[0.826]**	[12.488]	[0.804]**
Observations	11499	18502	13546	42643
R-squared	0.24	0.12	0.19	0.25

Standard errors in brackets; * significant at 5%; ** significant at 1%

Table 4a: Adding positive and negative affect, social capital to two-level Gallup equation**Dependent Variable: Life Satisfaction**

Number of Countries:	101	83
	Adding positive and negative affect	Moving closer to social capital
<i>Positive affect</i>	0.877 [0.064]**	
<i>Negative affect</i>	-0.69 [0.092]**	
<i>Donated money</i>		0.301 [0.044]**
<i>Volunteered time</i>		0.089 [0.040]*
<i>Helped a stranger</i>		0.162 [0.038]**
<i>Male</i>	-0.097 [0.029]**	-0.089 [0.026]**
<i>Age</i>	-0.037 [0.006]**	-0.038 [0.006]**
<i>Age squared/100</i>	0.034 [0.006]**	0.033 [0.006]**
<i>Married or as if married</i>	0.193 [0.039]**	0.146 [0.037]**
<i>Separated or divorced</i>	-0.091 [0.047]	-0.111 [0.058]
<i>Attained tertiary education</i>	0.269 [0.038]**	0.298 [0.043]**
<i>Log of hshld. income</i>	0.364 [0.024]**	0.385 [0.027]**
<i>Home has running water</i>	0.187 [0.065]**	0.162 [0.049]**
<i>Not enough money for food in last 12 months</i>	-0.484 [0.035]**	-0.566 [0.037]**
<i>Perception of corruption</i>	-0.158 [0.044]**	-0.222 [0.049]**
<i>Has someone to count on</i>	0.415 [0.032]**	0.468 [0.034]**

Table 4a: Adding positive and negative affect, social capital to two-level Gallup equation**Dependent Variable: Life Satisfaction**

Number of Countries:	101	83
	Adding positive and negative affect	Moving closer to social capital
<i>Percentage with tertiary education</i>	0.015 [0.465]	0.427 [0.599]
<i>Log of GDP per capita in year 2003</i>	-0.056 [0.096]	-0.149 [0.098]
<i>Average: Running water</i>	0.528 [0.296]	0.417 [0.258]
<i>Average: Not enough money for food</i>	-0.336 [0.362]	-0.053 [0.353]
<i>Average: Perception of corruption</i>	-1.328 [0.288]**	-1.383 [0.318]**
<i>Average: Has someone to count on</i>	1.399 [0.599]*	2.339 [0.536]**
<i>Constant</i>	5.754 [0.712]**	5.1 [0.619]**
Observations	62075	54745
R-squared	0.35	0.3

Standard errors in brackets

* significant at 5%; ** significant at 1%

Table 4b: Comparing life satisfaction and positive, negative affect in Gallup

Dependent Variable:	Positive Affect	Negative Affect	Life Satisfaction Today
Number of Countries:	128	116	129
	Equation 1	Equation 2	Equation 3
<i>Eastern Europe and Former Soviet Union</i>	-0.056 [0.020]**	0.017 [0.016]	1.199 [0.166]**
<i>Western Europe</i>	0.054 [0.022]*	-0.022 [0.017]	2.888 [0.258]**
<i>US, Canada, Australia, New Zealand</i>	0.16 [0.018]**	-0.016 [0.015]	3.445 [0.142]**
<i>Latin America and Caribbean</i>	0.115 [0.020]**	0.025 [0.016]	1.895 [0.209]**
<i>Asia</i>	-0.028 [0.025]	0.005 [0.018]	1.28 [0.220]**
<i>Africa</i>	0.001 [0.005]	0.02 [0.006]**	0.255 [0.057]**
<i>Constant</i>	0.645 [0.016]**	0.159 [0.012]**	3.867 [0.128]**
Observations	123429	117992	136955
R-squared	0.04	0.01	0.15

Standard errors in brackets

* significant at 5%; ** significant at 1%

Table 5: Comparison of national-level World Values and Gallup results**Dependent Variable:** Life Satisfaction

Number of Countries:	75		75		129		68		68	
	WVS-4	Beta	Gallup	Beta	Full Gallup Sample		WVS with pos. and neg. affect	Beta	Gallup with pos. and neg. affect	Beta
<i>Log of GDP per capita in year 2003</i>	0.199 [0.196]	0.16	0.619 [0.148]**	0.509	0.647 [0.076]**		0.201 [0.166]	0.157	0.659 [0.134]**	0.538
<i>Governance quality: Delivery, 2000</i>	0.67 [0.180]**	0.58	0.403 [0.136]**	0.360	0.285 [0.091]**		0.326 [0.164]	0.276	0.119 [0.132]	0.105
<i>Positive Affect</i>							6.187 [1.003]**	0.528	3.025 [0.808]**	0.270
<i>Negative Affect</i>							-0.214 [1.605]	-0.011	-2.864 [1.291]*	-0.156
<i>Average: Perception of corruption</i>										
<i>Adequate Food and Water</i>										
<i>Average: Has someone to count on</i>										
<i>Average: Satisfied with personal health</i>										
<i>Constant</i>	6.494 [0.338]**		6.492 [0.255]**		6.589 [0.154]**		2.584 [0.801]**		5.153 [0.645]**	
Observations	75		75		129		68		68	
Adjusted R-Squared	0.496		0.691		0.724		0.679		0.768	

Standard errors in brackets

* significant at 5%; ** significant at 1%

Note: Beta values represent the standardized regression coefficients

Table 5: Comparison of National-Level World Values and Gallup Results**Dependent Variable:** Life Satisfaction

Number of Countries:	116	120		111		120	
	Full gallup sample with affect	More fully specified equation using gallup	Beta	More fully specified equation adding affect	Beta	More fully specified equation using health	Beta
<i>Log of GDP per capita in year 2003</i>	0.646 [0.069]**	0.214 [0.104]*	0.211	0.243 [0.098]*	0.241	0.435 [0.080]**	0.428
<i>Governance quality: Delivery, 2000</i>	0.143 [0.085]	0.2 [0.092]*	0.166	0.069 [0.083]	0.057		
<i>Positive Affect</i>	2.911 [0.575]**			2.527 [0.582]**	0.201		
<i>Negative Affect</i>	-2.29 [0.909]*			-2.658 [0.894]**	-0.128		
<i>Average: Perception of corruption</i>		-1.21 [0.318]**	-0.188	-0.948 [0.284]**	-0.146	-1.134 [0.260]**	-0.176
<i>Adequate Food and Water</i>		1.467 [0.354]**	0.324	2.078 [0.362]**	0.454	0.989 [0.325]**	0.218
<i>Average: Has someone to count on</i>		2.431 [0.643]**	0.224	0.064 [0.685]	0.006	1.586 [0.600]**	0.146
<i>Average: Satisfied with personal health</i>						3.023 [0.528]**	0.236
<i>Constant</i>	5.057 [0.474]**	4.346 [0.662]**		4.915 [0.677]**		3.156 [0.636]**	
Observations	116	120		111		120	
Adjusted R-Squared	0.806	0.812		0.864		0.848	

Standard errors in brackets

* significant at 5%; ** significant at 1%

Note: Beta values represent the standardized regression coefficients

Table 6: Role of religion in explaining international differences in life satisfaction**Dependent Variable:** Life Satisfaction**Number of Countries:**

120

120

73

73

	Equation 1	Beta	Equation 2	Beta	Equation 3	Equation 4
<i>Log of GDP per capita in year 2003</i>	0.41	0.403	0.385	0.379	0.503	0.415
	[0.093]**		[0.089]**		[0.152]**	[0.145]**
<i>Average: Perception of corruption</i>	-1.713	-0.27	-1.596	-0.25	-1.751	-1.168
	[0.287]**		[0.276]**		[0.371]**	[0.390]**
<i>Adequate Food and Water</i>	1.478	0.326	1.542	0.34	1.365	1.42
	[0.354]**		[0.354]**		[0.634]*	[0.593]*
<i>Average: Has someone to count on</i>	2.559	0.235	2.712	0.249	2.992	4.074
	[0.640]**		[0.637]**		[1.179]*	[1.150]**
<i>National average for importance of religion</i>	0.655	0.134			0.832	1.247
	[0.294]*				[0.379]*	[0.376]**
<i>National average for attended place of worship</i>			0.783	0.137		
			[0.301]*			
<i>National average for general trust</i>						1.888
						[0.576]**
<i>Constant</i>	4.537		4.372		4.254	1.969
	[0.643]**		[0.647]**		[1.230]**	[1.344]
Observations	120		120		73	73
Adjusted R-Squared	0.812		0.815		0.757	0.788

Standard errors in brackets

* significant at 5%; ** significant at 1%

Note: Beta values represent the standardized regression coefficients