Paradox Lost?

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Abstract: In recent years scholars in economics, psychology, and sociology have asserted that the "Easterlin Paradox" is not supported by their empirical research. The principal purpose of this paper is to test whether recently published data from two sources – the United States General Social Survey and the World Values Survey (WVS) – confirm these negative findings. Is it "Paradox Lost" or "Paradox Regained"?

The Paradox states that at a point in time happiness varies directly with income both among and within nations, but over time happiness does not trend upward as income continues to grow. There is no disagreement on the cross section relationship, or that happiness and income *fluctuations* are positively related. The critical test of the Paradox is whether in the long run there is a statistically significant positive *trend* in happiness associated with long-term economic growth.

United States experience continues to support the Paradox: for almost seven decades, from 1946 through 2014, the trend in happiness has been flat or perhaps even negative, while real GDP per capita has tripled. Support for this conclusion on the happiness trend is provided by studies that adjust the data for comparability and by similar findings in other time series data.

The WVS data also support the Paradox: among countries worldwide there is not a statistically significant positive relationship between long-term growth rates of happiness and real GDP per capita. This nil relationship holds separately for developed, transition, and less developed countries, and remains unchanged after adjusting the data for comparability of the happiness question, and eliminating outliers and countries with non-nationally representative surveys.

Why have the Paradox critics come to a different conclusion? The main reason is that they typically include in their studies some happiness time series that are quite short, have only two observations, or fail to span a complete GDP cycle. As a result, the observed growth rates of happiness and income in these series are not trend rates, but those found in a cyclical expansion or contraction. Mixing these short-term growth rates with trend rates shifts the happiness-income regression from a horizontal to positive slope.

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It is encouraging to find scholars from three different disciplines—including two of the founding fathers of the study of self-reported happiness, sociologist Ruut Veenhoven and psychologist Ed Diener – currently addressing an empirical generalization made over four decades ago on the basis of United States data, what has come to be called "the Easterlin Paradox" (Easterlin 1974):

> Sociology. *The 'Easterlin Paradox' holds that economic growth in nations does not buy greater happiness for the average citizen….Later data have disproved most of the empirical claims behind the thesis….Both GDP and happiness have gone up in most nations, and average happiness has risen more in nations where the economy has grown the most*….(Veenhoven and Vergunst 2014, p. 311)
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> Psychology. *What can we learn about the Easterlin debate from these [time series] findings?...We found that rising income is significantly associated with… subjective well-being.* (Diener, Tay, and Oishi 2013, p. 267)
>
> Economics. *The fact that life satisfaction and other measures of subjective well-being rise with income has significant implications…. First, and most importantly, these findings cast doubt on the Easterlin paradox…*(Sacks, Stevenson, and Wolfers 2012, p. 89)

Although these authors conclude that the Paradox is wrong, while the results of my collaborators and myself have heretofore been supportive (Easterlin 1995, 2010; Easterlin and Sawangfa 2010, Easterlin et al. 2010), it is worth noting that we are in agreement on several issues – first, that self-reported feelings of well-being deserve serious study; second, whether economic growth increases feelings

of well-being is an important research question, and third, that time series analysis to answer this question is desirable.

The principal purpose of this article is to test whether recently published data that provide longer time series and broader country coverage confirm the negative findings of these authors. Is it "Paradox Lost" or "Paradox Regained"? The article also points out important analytical differences between the present study and those quoted above that largely account for the contradictory results; hopefully this may contribute to improving future time series studies of the Paradox.[1]

The first section below restates the Paradox – what it says, what it does not say. The second investigates how the Paradox stands up when tested with the latest data. The third notes important analytical differences between the present study and those quoted above.

I. The Paradox

The Paradox states that at a point in time happiness varies directly with income both among and within nations, but over time happiness does not trend upward as income continues to grow.[2] "Happiness" is used here interchangeably with subjective well-being (SWB) as a proxy for all evaluative measures of self-reported feelings of well-being, including life satisfaction and the Cantril ladder-of-life (Cantril 1965). I use "income" as a proxy for real GDP per capita, the standard unitary measure of economic growth. (Hereafter, GDP per capita is, for convenience of exposition, simply called GDP.)

It is worth emphasizing that the Paradox refers to trend relationships. In the short run, happiness and GDP typically go up and down together, as illustrated by the solid lines in Figure 1. Time series data dominated by economic recovery

(the t-p segments of GDP and H in Figure 1) will exhibit a positive happiness-income relationship. So too will data dominated by economic contraction (the p-t segments). The earliest evidence of the short-run positive relationship was for the developed countries (DiTella et al. 2001, Wolfers 2003). Since then, a positive cyclical relationship has also been shown to exist in both less developed nations and countries transitioning from socialism to capitalism (Easterlin 2009, Easterlin et al. 2010). A valuable recent paper by De Neve et al. (2015) explores at length this short-term relationship.

The short-term positive relationship does not signify that the trend relationship must be positive. As illustrated by the broken trend lines in Figure 1, long-term growth in GDP is not necessarily accompanied by growing happiness. This illustrative diagram could, of course, be drawn with a positive or negative tilt in the happiness series. Simply put, the test of the Paradox is whether or not the trends in happiness and income (the broken lines) are positively related, i.e., whether or not they both tilt in the same direction. This is a question of fact, not theory. Hence, the "why' of the Paradox is not discussed here.

[Insert Figure 1 here]

According to Veenhoven and Vergunst: "The Easterlin Paradox holds that happiness tends to remain at the same level, around which is at best some random fluctuation…" (2014, p. 319). In fact, the Paradox does not claim that happiness is constant over time. The 1974 article presenting the Paradox noted that happiness increased in the United States between 1946 and 1956-57 and then declined to 1970. Although the conclusion was that the trend from 1946 to 1970 was essentially nil, it would have been clearly incorrect, in the face of evidence to the contrary, to claim that happiness is constant over time, or that it simply fluctuates about a "setpoint" of happiness. The Paradox is not about the

happiness trend per se, but the relation of the happiness trend to the trend in economic growth.

In a 2008 article Stevenson and Wolfers state that "the core of the Easterlin paradox lies in Easterlin's failure to isolate statistically significant relationships between average levels of happiness and economic growth *through time* (Stevenson and Wolfers 2008, p. 36, emphasis added). However, in the more recent Sacks, Stevenson, and Wolfers article quoted above (hereafter SSW), the authors say that the contradiction is between two types of cross-section evidence: "Recall that the Easterlin Paradox rests on the belief that the relationship between wellbeing and income was stronger within countries than between countries" (2012, pp. 74-75). To suggest that the Paradox relates to cross section relationships is clearly incorrect; the Paradox has always been the contradiction between the time series and cross section relationship of happiness and income.[3]

II. Paradox Regained?

A. United States

In considering recent data, a good place to start is with the evidence leading to the genesis of the Paradox. As noted, the original generalization was based on United States experience from 1946 to 1970, a 24-year time span. What has happened in the more than 40 years since?

The answer is that the happiness trend has, at best, continued to be flat. This is demonstrated in Figure 2, which is simply reproduced here from a recently issued report on trends in psychological well-being published by the General Social Survey (Smith et al. 2015). The General Social Survey (GSS) has been the principal source for United States time series data on self-reported happiness

since 1972. Surveys were conducted almost every year until 1994, after which the GSS became biennial.

If one couples the experience of this 42-year period, as reported by the GSS, with that of the previous 24 years, one concludes that in the United States the happiness trend has been horizontal or perhaps even negative, fluctuations aside, over a roughly seven-decade stretch in which real GDP per capita more than tripled.[4]

(Insert Figure 2 Here)

The data in Figure 2 are not adjusted for comparability over time. In an earlier paper the author of the figure notes comparability problems with the happiness data (Smith 1990), and, in the 2012 article quoted at the start of this paper, SSW, speaking of the United States data, say that they are "afflicted by important changes in the wording and ordering of the questions, that, if not recognized, can lead to serious interpretation errors" (2012, p. 76).

Fortunately there are two fairly recent studies – one of them, in fact, by Stevenson and Wolfers – that adjust the happiness data for comparability over time. Both cover the period 1972-2006, and both support the inference that American happiness has not increased. In an analysis of United States happiness trends by gender, Stevenson and Wolfers find that through 2006 there was "a decline in women's happiness, but very little change in men's happiness" (Stevenson and Wolfers 2009, p. 196). The change for both sexes combined implied by this statement seems consistent with the nil or negative trend suggested by Figure 2. Subsequently, the authors explicitly recognize that in the United States happiness has not been increasing despite rising GDP (p. 211). They also cite independent "Virginia Slims" surveys conducted at roughly quinquennial intervals from1972 to 2000 that in their words "reveal a strong

downward trend in life satisfaction for both men and women" (p. 203). An analysis by sociologists Firebaugh and Tach also finds a significant negative trend in both adjusted and unadjusted happiness series (Firebaugh and Tach 2012, pp. 269-70 and 284, n. 8). The findings of these studies are consistent in indicating that issues of comparability of happiness over time do not alter the conclusion here that there has been at best a nil trend in happiness in the United States.

Additional evidence supporting the nil trend come from two other studies. In the paper quoted at the start of this article Veenhoven and Vergunst (2014, p.343) pair for a number of countries a fairly recent observation on happiness with one that they take to be based on an identical question asked in the 1940s or 1950s (2014, p.343). They then estimate the annual rate of change in happiness for each country's paired observations. For four United States pairs, the rates of change for periods of around six decades cluster around zero; the mean of the four coefficients is slightly positive -- its value implies that it would take half a century to raise happiness by 0.1 on a scale of 1-10.[5]

The other piece of evidence supporting the nil trend comes from the WVS data used here. An OLS trend line fitted to the seven United States observations spanning the period 1981-2011 yields a slightly negative regression coefficient (Appendix B). It seems, in general, that all of the studies cited here support the conclusion that, despite substantial economic growth, happiness in the United States has not risen over the long run, and may even have declined. As far as United States experience is concerned, it appears that the Paradox, as originally conceived, is still alive and well.

B. Developed, less-developed, and transition countries

Since the initial statement of the Paradox, time series data on subjective well-being have accumulated for a number of countries worldwide and have made

possible more comprehensive time series tests of the happiness-income relationship. The procedure employed here is to compute for each country the annual rate of change in both SWB and GDP over the full period spanned by the SWB data, and then to run a bivariate regression to test directly whether countries with a higher rate of economic growth exhibit a significantly more positive change in happiness.

The life satisfaction data are from the World Values Survey (WVS) and European Values Survey (EVS). The WVS is the most comprehensive source covering fairly long periods with reasonably comparable SWB data for a number of countries worldwide, and has been conducted intermittently since the early 1980s. It is a principal source in the SSW and Veenhoven and Vergunst studies quoted at the start of this paper. The results of wave 6 of the WVS have only recently been released and provide a new opportunity to test the Paradox with longer time series and for more countries (WVS 2014).

The European Values Survey (EVS) was a prototype of the WVS. There is substantial overlap in their survey questionnaires, and the EVS is integrated here with the WVS to increase both country and time coverage (EVS 2011). In both surveys life satisfaction is measured in absolute terms on a 1-10 scale. Growth rates of life satisfaction in the present analysis are the absolute change per year, as given by the slope of an OLS regression line fitted to the SWB time series. The GDP data are from the Penn World Table (PWT), Version 7.1. In the few cases where the PWT series at beginning or end was not long enough, the PWT series was extended by the World Bank GDP series (Heston et al. 2012, WDI 2015). The average percentage change per year of constant dollar GDP is computed from the GDP values at the start and end of the time span covered by each country's SWB observations.

As of wave 6, the WVS and EVS had, in total, conducted surveys in more than 100 countries. The number of surveys per country varies considerably, however, and, outside of the developed world, is frequently small. The criteria used here for including a country is that it must have a population greater than one million, have had at least three SWB surveys, and these surveys must span a minimum of ten years and at least one complete cycle of GDP. These criteria are selected with a view to approximating trends, but they are not costless, because they tend to reduce the number of countries analyzed. Nor are they ironclad; ten years may not be enough to identify trends, as is evident from the experience noted above of the United States from 1946 to 1970.

The resulting number of countries satisfying these criteria and included in the regression analysis is 43 – 21 developed, 14 less-developed, and eight countries transitioning from socialism to capitalism. The median number of SWB observations per country is five; only seven countries have the minimum of three observations. As explained subsequently the data have been adjusted for changes over time and between the WVS and EVS in the comparability of the questions on subjective well-being.

The regression for these 43 countries based on the latest data confirms the results of previous work (e.g., Easterlin 2010) – countries with a higher rate of growth of GDP have no significantly greater change in happiness than countries with a lower rate of economic growth. This lack of relationship holds for the developed, less developed, and transition countries, both pooled and separately (Table 1). Figure 3 plots the pooled data for all 43 countries, with SWB adjusted for comparability. The regression line is virtually horizontal; the slope of 0.00097 is not significantly different from zero (p=0.761).

(Insert Table 1 Here)

(Insert Figure 3 Here)

The regression coefficient of 0.00097 means specifically that an increase of one percentage point in the growth rate of GDP is associated with an increase in the growth rate of life satisfaction by about 0.001 per year on a 1-10 scale. If the increase in the growth rate of GDP were sustained for a century, it would add to life satisfaction an amount equal to 0.1 points. To put this value in perspective, on the WVS's 1-10 scale the range of cross section differences among countries is currently about five points (Helliwell and Wang 2012, Figure 2.6). Adding 0.1 points to a country's life satisfaction in the course of a century would not improve its position very much in the international array of countries.

Adjustment for comparability.—As mentioned, subjective well-being is not always measured in the same way in every survey; there are differences over time and between the WVS and EVS in the measurement of life satisfaction that impair comparability over time (see Appendix A). First, in two surveys (out of a total of 10) a question on financial satisfaction precedes that on life satisfaction, a sequence that tends to depress life satisfaction responses (Easterlin 2010, p. 113). Second, in three surveys the range of response options appears to be greater than usual. The response options typically range from "Dissatisfied" to "Satisfied". In two surveys, however, the range is from "Completely dissatisfied" to "Completely satisfied", and in one, "Very dissatisfied" to "Very satisfied". As a general matter, the bulk of respondents tend toward the positive end of the response scale. If the top end option seems more extreme, as in these three surveys, some respondents tend to be deflected toward a lower response option.

To correct for these problems in the comparability of SWB the following procedure, suggested and implemented by my co-worker, Kelsey J. O'Connor, was adopted. The data for the countries were pooled, and life satisfaction

regressed on country-specific dummies, year (since 1980), the interaction between year and country-dummies, and two question dummies, one for the two surveys in which financial satisfaction preceded life satisfaction, and one for the three surveys with more extreme response options. The coefficients on the question dummies measure the change in life satisfaction associated with the two changes in life satisfaction measurement just mentioned. These coefficients turn out to be significant and in the expected direction. The effect of financial satisfaction preceding life satisfaction is to reduce the life satisfaction response, on average, by almost half a point on a 1-10 scale. A more extreme range of response options reduces the life satisfaction response by 0.2 points. The interaction term in the regression yields the adjusted country-specific rates of change per year in life satisfaction plotted in Figure 3 (see Appendix B, last column, for the individual country data).

Robustness checks.—Do the present results depend on the adjustment for comparability? The answer is no; the results are much the same if no adjustment is made. Column 2 of Table 2 presents the regression results based on the unadjusted data; for ease of comparison, column 1 repeats the regression results reported in Table 1 (see Appendix B, next to last column for the basic SWB data used in the column 2 regression). Once again, countries with a higher rate of economic growth do not have a significantly higher growth rate of life satisfaction.

(Insert Table 2 Here)

Stevenson and Wolfers (2008, Appendix B) express concern that estimates of the happiness-income coefficient may be biased by the inclusion of countries whose survey coverage is not always nationally representative. Five countries are included here that are in their list of countries with non-representative samples –

Argentina, Chile, Egypt, Nigeria, and South Africa.[6] Omitting these countries from the present analysis does not alter the results; the happiness-income coefficient is still not statistically significant (Table 2, column 3).

Korea and China are outliers in Figure 3. If we omit these countries the results remain much the same; the regression coefficient, though somewhat larger, is still not significant (col. 4). In column 5, we adopt the regression procedure of SSW and rerun the regression of Table 1 replacing annual rates of change, the usual measure of growth, with the total change in happiness and GDP over the full period spanned by the happiness data. A disadvantage of the SSW procedure is that the results are based on only the first and last observations of happiness. In the present case this means that of the 207 SWB observations for the 43 countries in Table 1 only 86 are used. Nevertheless, the results remain much the same. The regression coefficient once again is not statistically significant. Though not shown here, in all of the regressions reported in Table 2, the lack of statistical significance is true for the developed, less developed, and transition countries separately as well as pooled. As with the United States data in the preceding section, it appears that it is "Paradox Regained."

III. Analytical Differences

Why do the authors quoted at the start of this article reach a different conclusion about the Paradox from that found here? The present analysis, of course, has the advantage of including more recent data, but the difference in results existed also in earlier studies (cf. e.g., Easterlin 2010, Easterlin et al. 2010). The most likely reasons for the difference are indicated below. In what follows illustrations based on the present data are often used to demonstrate a point.

Length of time series/ number of observations.—As has been indicated, to test the Paradox it is necessary to identify *trends* in happiness and GDP. The shorter the time series and the fewer the observations, the less the likelihood of identifying longer term trends. Compared with the present analysis and those cited in the preceding paragraph, all of the papers quoted at the start of this article include a number of series that are shorter, have fewer observations, or both.

The Diener, Tay, and Oishi (2013) paper is based entirely on short time series. The Gallup World Poll, the data set used in their paper, only started in 2005-6, and the time series used in their paper are at best only six or seven years in length, too short to test the Paradox. The authors are perhaps aware of this, for they caution toward the end of their paper, "[a]n important caveat in interpreting our findings is that our study examined relatively short-term changes in income over a period of several years, not changes over decades" (p. 275). It seems reasonable to infer that their finding of a positive association between happiness and income reflects the short-term, not long-term, relationship, and hence does not contradict the Paradox as they claim.

The SSW article is based on two data sets, the World Values Survey (waves 1-4) and the Eurobarometer. Although SSW do not state specific criteria, they report that they include WVS countries which they observe "multiple times", and that for these countries "the average difference in time between the first and last observations is about eleven years" (p.80). There are around 50 countries in waves one though four of the WVS with multiple observations. For about two-thirds of them the number of observations is three or four; for the remaining one-third, two. As noted previously SSW's analysis is based on the total change between the first and last observations for a country; hence their WVS analysis is, in fact, based on only two SWB observations for every country and fails to take full account of the available information. The data for Korea provide an example

of how including all observations may affect the results. There are five life satisfaction observations for Korea in the latest WVS data set. The average annual rate of change in SWB based on only the first and last observations, those for 1982 and 2010, is 0.042. If, however, a regression line is fitted to all five observations, the average annual rate of change falls to 0.028, a third less than the value when only the first and last observations are the basis of the estimate.

As regards SSW's average series length of eleven years, about half of the countries included in the average have a time span of less than ten years, and about one-third have a time span of only 3 to 7 years. An average, of course, combines values above and below the mean. The number below the average is emphasized here because it signifies that among the countries included in their analysis there is a substantial number for which the happiness-income relationship is the short-term, not long-term, one. As will be shown subsequently, mixing short-term and long-term observations tends to tilt the happiness-GDP regression in a positive direction.

A puzzling aspect of the SSW analysis is that they do not include data from wave 5 of the WVS. These data became available four years prior to publication of their 2012 paper and were already included in Easterlin (2010) and Easterlin and Sawangfa (2010). The result of their omitting wave 5 is to shorten the length of the time series they analyze, for most countries by about five to seven years. Another puzzle – in this case in regard to their other data set, the Eurobarometer – is that they subdivide the individual country time series, some of which are as long as 30 or more years, into 10 year segments (pp. 82-84). As with the treatment of the WVS data, the result is to shorten the length of their time series, yielding a happiness-income regression based on data more likely to reflect the short-term relationship.

Mixing short-term with long-term observations.—One of the criteria for including a country in the WVS analysis here is that the SWB data must span at least one full GDP cycle. If they do not, the resulting estimate of the average annual rate of change in SWB will be dominated by the short-term happiness-income rates of change during contraction or expansion. If these short-term data are then mixed with long-term data for other countries, the result, as shown below, is to tilt the regression relationship in a positive direction. The focus in what follows is on the transition countries, because for a large subset of them SWB data limitations ensure that the observed happiness-income relation is short-term.

In the Penn World Table the GDP data for countries transitioning from socialism to capitalism show without exception a contraction-expansion cycle—a sharp downturn in GDP followed eventually by recovery (Heston et al. 2012). Typically, unemployment rises sharply in the contraction phase and declines in the expansion phase, while the extensive social safety net that existed under socialism progressively breaks down (Campos and Coricelli 2002, Easterlin 2009, 2014b; Svegnar 2002).

The present WVS/EVS data set includes 23 transition countries. Although they all exhibit the collapse and recovery of GDP, there are only eight countries whose happiness data span the contraction as well as expansion phase of the GDP cycle. For these eight countries SWB collapses and recovers along with GDP – there is a transition cycle in SWB, like that in GDP (Easterlin 2009).

The SWB data for the other 15 transition countries cover only the phase of economic expansion, and miss the preceding phase of economic collapse. Hereafter, the 15 countries with no SWB data for the contraction phase of the transition cycle are referred to as ETCs, for "expansion-only transition countries", to distinguish them from the eight "full-cycle" transition countries.

The data for Slovenia, plotted in Figure 4, provide a graphical illustration of the situation of the 15 ETCs. Slovenia's GDP declines sharply from 1986 to 1992 and then turns upward. But the SWB series, which does not start until 1992, misses completely the phase of economic contraction. Regression lines for SWB and GDP fitted to data starting at the date of the first SWB observation capture only the short-term positive happiness-income relationship during the expansion phase of the economy, not the long-term trend (see the shaded area of Figure 4).

(Insert Figure 4 here)

Generally speaking, the growth rate in the expansion phase of a cycle is above the trend rate; in the contraction phase, below the trend rate. Consistent with this pattern, one finds that for both happiness and GDP the growth rates of the 15 ETCs – which are based on data for the expansion phase – are, on average, considerably above those of the eight "full-cycle" transition countries, those whose rates more nearly approximate the trend (Table 3, cols. 1 and 2). In comparison with all 43 countries of Figure 3, the ETCS have an even greater excess in the mean growth rates of SWB and GDP (Table 3, cols. 1 and 3). The ETCs also have a shorter mean length of their time series than the other two country groups, which is what one would expect if the ETC data only cover one phase of a cycle. Note that the mean length of series for the ETCs is 14 years – evidence, like that for the United States, 1946-1970, that a time series ten years in length is not enough to ensure in itself that a trend estimate of SWB will be obtained.

(Insert Table 3 Here)

What is the effect on the regression results if the short-term growth rates of the ETCs are mixed with the longer-term trend rates of the 43 countries, the basic data of Figure 3? Since the ETC growth rates of both happiness and GDP

are, on average, greater than those of the 43 "full-cycle" countries, the ETC observations in a scattergram of both sets of countries will tend to be to the right and above those of the full cycle countries and tilt the fitted regression line upward. If a regression line is fitted to the data for all 58 countries, the result is a significantly positive happiness-income relationship (Figure 5 and Table 4). This outcome is no doubt typical when countries whose data are dominated by the short-term relationship in the recovery of an economy are mixed with those whose data reflect the trend relationship.

[Insert here Table 4 and Figure5]

The same outcome also results if countries are included whose data are dominated by the contraction phase of the economy, because the short-term group will typically have lower-than-trend growth rates of both SWB and GDP that in a scattergram will lie to the left and below those of the trend-rate countries. SSW's exclusion of the wave 5 data of the WVS provides an example. For a number of transition countries their shortening of the time series to end with wave 4 (around 1999-2001) eliminates much of the recovery phase of the transition cycle, and turns these countries, in effect, into opposites of the ETCs—that is, into contraction-only transition countries. As a result, these countries end up in SSW's analysis with growth rates of SWB and GDP that are below trend, the counterpart of the above-trend growth rates of the ETCS, making, as do the ETCS, for a positively inclined regression line (see e.g., the observations for Russia, Latvia, Lithuania, Serbia, Belarus, Romania, and Macedonia in Figure 6, p. 81 of SSW's 2012 article). In general, the effect of mixing countries whose data are dominated by short-term expansion or contraction with longer term trend-rate countries is to tilt the regression line in the direction of the short-term happiness-income relationship. All three of the articles cited at the start of this

paper include ETCs in estimating trends. As a result, their regression lines are tilted positively.

Constant versus current dollar GDP.—It hardly seems necessary to point out the need for using constant dollar GDP in estimating the happiness-income relationship. But surprisingly the Veenhoven and Vergunst (2014) article uses current dollar GDP. In Figure 3 here the *maximum* GDP growth rate is about four per cent, China and Korea aside. In the total of 199 observations in Veenhoven and Vergunst's three happiness-income graphs (pp. 326-327) the *median* annual growth rate over a period of at least 10 years is seven per cent. A growth rate of real GDP of seven per cent or higher sustained over a decade or more has almost never been recorded, China excepted. Needless to say, because of substantial international differences in inflation rates, the difference between current and constant dollar GDP growth rates varies greatly among countries, and the use of current dollar GDP growth rates distorts the long-term happiness-income relationship.

Comparability of SWB data.—The World Database of Happiness compiled by Veenhoven and his collaborators has been an exceptional resource for happiness research. Of particular value has been their careful classification of different survey questions and response options. It is this work that doubtless provides the basis for Veenhoven and Vergunst's statement that in their analysis of SWB trends they are comparing "identical questions" (ibid., p. 318). However, despite the valuable catalogue in the Database of questions and response options, problems of comparability remain. It would be an enormous task to examine all of the survey questions treated as identical by Veenhoven and Vergunst, but here are two examples of cases in which comparability over time is questionable, and which play a significant role in their findings.

The first relates to the question on happiness in the WVS. Unlike the life satisfaction question, that on happiness contains only four response options, ranging from "very happy" down to "not at all happy". Between waves 2 and 3 of the WVS there was a change in interviewer instructions that tended, on average, to bias upward the wave 3 happiness responses relative to wave 2. In wave 2 of the WVS interviewers were instructed to alternate the response options to the happiness question from one person to the next; in wave 3 no such instruction was included, and all respondents were presented with the most favorable response option first. The survey literature has long identified a "primacy bias", the tendency for respondents to favor earlier over later choices (Belson 1966, Chan 1991, Schumann and Presser 1981). Hence, happiness responses in wave 3 would tend, on average, to be higher than those in wave 2, ceteris paribus. The survey questions in waves 2 and 3 may have appeared to be identical, but the change in interviewer instructions undermined this apparent likeness. Veenhoven and Vergunst's analysis includes happiness trends based on these upward-biased responses for a number of countries (cf. their Appendix B, the column headed 0HL4). In the WVS question on life satisfaction used here, there was no change in the interviewer instructions across the various waves.

Another example of a comparability problem is Veenhoven and Vergunst's treatment of the ladder-of-life responses in Cantril (1965) as comparable to ladder-of-life answers in recent surveys. In Cantril's survey, before respondents were presented with the ladder-of-life question, they were exposed to a lengthy interview in which they were asked, first, to describe the "best of all possible worlds", and then, the "worst of all possible worlds." It seems likely that having just dwelled on the worst of all possible worlds, respondents were put in a fairly negative frame of mind prior to being asked their standing on the ladder-of-life, just as a question on financial satisfaction tends to depress

responses on an immediately following query on life satisfaction, as shown above. Ladder-of-life questions in current surveys have no counterpart to the preamble to Cantril's ladder-of-life question, and hence would not be similarly biased downward. The downward bias in the Cantril survey responses relative to later ladder-of-life answers would lead to an upward-biased trend in happiness, other things constant. At least 11 of the 18 observations that make up the 40+ year happiness-income graph in the Veenhoven and Vergunst article are biased in this way.

IV. Summary

In recent years scholars in economics, psychology, and sociology have asserted that the so-called "Easterlin Paradox" is not supported by their empirical research. The principal purpose of the present paper is to test whether recently published data from two sources confirm these negative findings. Is it Paradox Lost or Paradox Regained?

A second purpose is to point out analytical differences between the present approach and those followed by the Paradox critics. These differences make for differing conclusions, and awareness of them may contribute to improved time series analysis of the Paradox in the future.

The Paradox states that at a point in time happiness varies directly with income both within and among nations, but over time happiness does not trend upward as income continues to grow. "Happiness" as used here is a proxy term for all evaluative measures of subjective well-being, and includes not just overall feelings of happiness in general, but also satisfaction with life, and the Cantril ladder-of-life. "Income" is a proxy for real GDP per capita, the common unitary measure of economic growth.

There is no disagreement on the positive cross section relationship between happiness and income, whether within or among countries. Nor is there disagreement about the short-term time series relationship, that happiness and income *fluctuations* are positively related. The critical test of the Paradox, and the focus of the present empirical analysis, is whether in the long run there is a statistically significant positive *trend* in happiness associated with long-term economic growth.

The first set of data used here is from the National Opinion Research Center's General Social Survey, which has become the principal source for studying long-term trends in subjective well-being in the United States. The results for 2014 have only recently been published.

The other data set is the World Values Survey. This has been a major source for many happiness researchers, because it includes data for a substantial number of countries worldwide over a period reaching back to the 1980s. The WVS is an important source for two of the three studies quoted at the start of this article. The recent publication of data from the latest (sixth) wave of the World Values Survey provides, together with data from the WVS's prototype, the European Values Survey, an opportunity for a reexamination of the relation between trends in happiness and economic growth throughout the world.

The original statement of the Paradox was based on intermittent happiness data for the United States during the period from 1946 through 1970. The first question addressed in this article is whether experience since 1970, as evidenced by the GSS, continues to support the Paradox. The answer is affirmative – one can now say that for almost seven decades, from 1946 through 2014, happiness has been flat or perhaps even negative, despite a tripling of real GDP. This finding on the nil or negative happiness trend is supported by two independent studies that

adjust the GSS data for problems of comparability over time. It is also supported by data other than the GSS that provide estimates of long-term trends in United States happiness.

The WVS data also support the Paradox: among 43 countries worldwide a higher long-term growth rate of GDP is not accompanied by a statistically significant higher growth rate of happiness. The happiness-income regression coefficient is slightly positive, but too small to be of economic significance. (In a 2014 study of Eurobarometer data, Beja similarly notes that the estimated regression coefficients lack economic significance; cf. Beja 2014.) This nil relationship holds separately for developed, transition, and less developed counties, as well as when the countries are pooled. The relationship also holds (for countries both separately and pooled) when the data are adjusted for comparability of the happiness question over time, and also when outliers and countries with non-nationally representative sample surveys are eliminated. Finally, the relationship holds if, instead of growth rates, one tests the relationship, as do SSW, with the total change in happiness and income over the period that happiness is observed. A drawback in this procedure is that it omits from the analysis all SWB observations other than the initial and terminal ones.

Why have the Paradox critics come to a different conclusion? A principal reason, aside from problems of data comparability over time, is that their studies do not focus on identifying long-term trends in SWB. They typically include some time series that are short, have few observations (as little as two), or fail to span a complete GDP cycle. As a result, the observed growth rates of happiness and income in these series tend to be those found in a cyclical expansion or contraction, not long-term trend rates. Mixing short-term growth rates of happiness and income for some countries with long-term trend rates for others tilts a fitted regression line in a positive direction.

The principal aim here has been to test the Paradox with recently available data. Both data sets suggest the same answer to the question posed at the start of tis article: it is Paradox Regained. It is perhaps time now to move on. The great value of measures of subjective well-being is that they reflect dimensions of well-being such as health, work, and family and social relations that are missed in traditional economic measures. Although differences among countries in trends in SWB are not related to rates of economic growth, there are, nevertheless, sizeable differences in the trends. The analysis of subjective well-being is still virtually in its infancy, but there has already accumulated a valuable body of research on the factors influencing SWB, both positively and negatively (see, e.g., Layard et al. 2012). Most of this research, however, is based on cross section evidence. There is need now to tackle the task of identifying the specific factors responsible for shaping the observed time series trends.

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ENDNOTES

[1] Not all recent studies bearing on the Paradox are negative; cf. Beja 2014; and De Neve et al 2015.

[2] Some Paradox critics suggest that the positive cross section relationship between happiness and income proves that the absence of a time series relationship must be wrong (Bok 2010, Guriev and Zhuravskaya 2009). One might equally say that the nil time series relationship proves that the positive cross section is in error. The essence of "paradox" is a contradiction in terms; one cannot use one term to disprove the other.

[3] There are several papers on the Paradox by Stevenson and Wolfers since 2008, jointly and collaborative. The focus here is on the most recently published one that addresses the time series relationship (Sacks, Stevenson, and Wolfers 2012, the section on pp.76-84).

[4] The figure taken from Smith (2015) uses the per cent very happy to measure happiness. The trend is essentially the same if the more customary procedure of computing mean happiness is used, based on values assigned to the three response options from 3(= very happy) down to 1.

[5] There is a fifth United States pair whose beginning observation is from Cantril 1965. As explained below in the section on "comparability of data", slope coefficients in which the initial observation is based on Cantril's data tend to be biased upward. Hence this coefficient was omitted from the mean given above.

[6] Although China is also in their list, the trend in the Chinese series used here has been validated in a separate study (Easterlin et al 2012; a shortened version appears in Easterlin 2014a: see also Easterlin 2014b).

Figure 1. Short-term Fluctuations and Long-term Trends in Happiness (H) and Income (Y): An Illustration

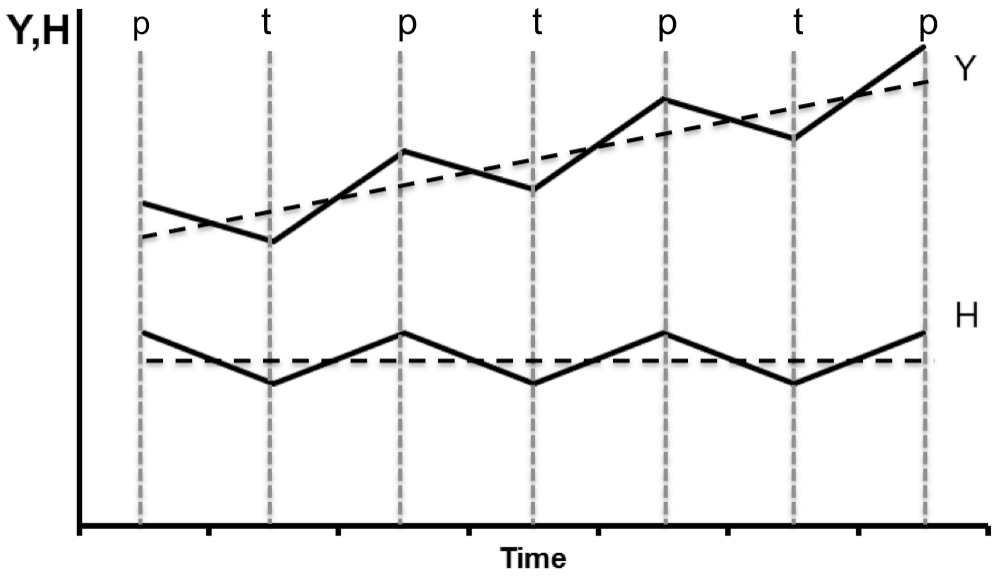
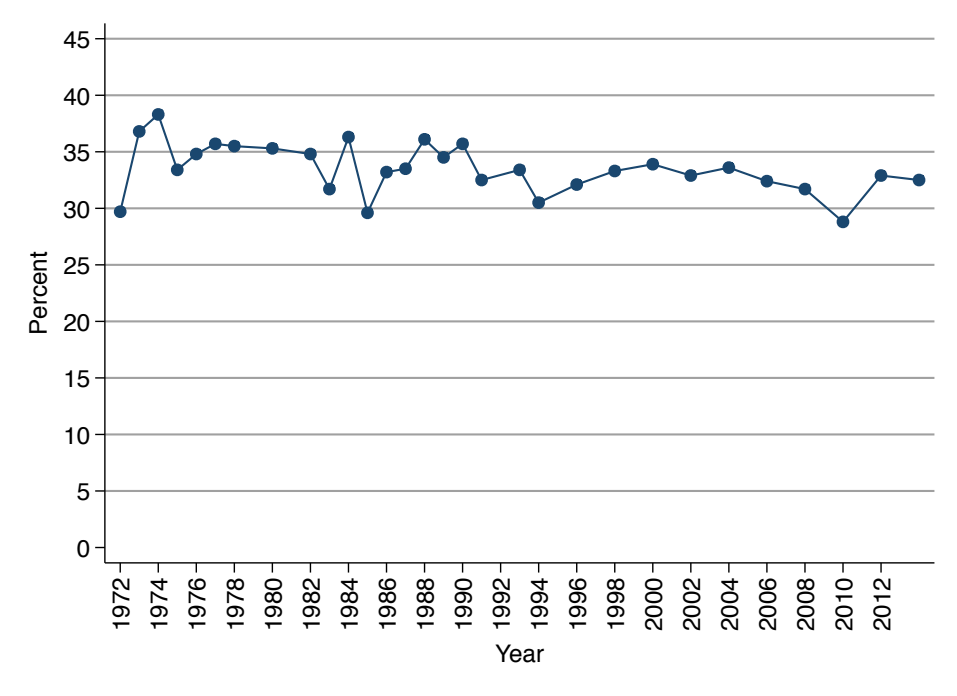
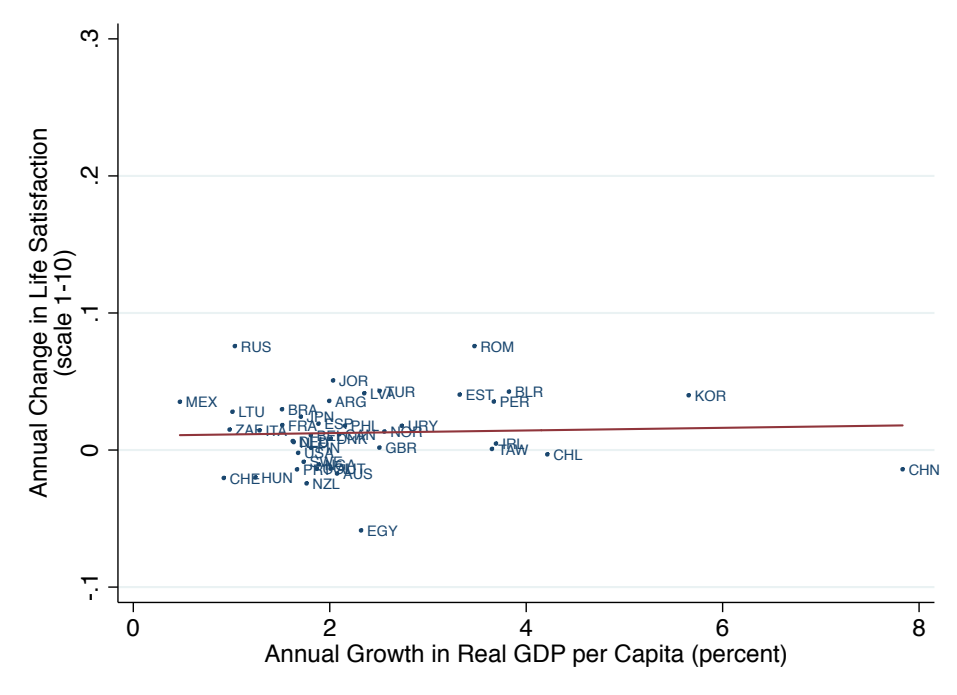


Figure 2. Percent Very Happy, General Social Survey, United States, 1972 - 2014



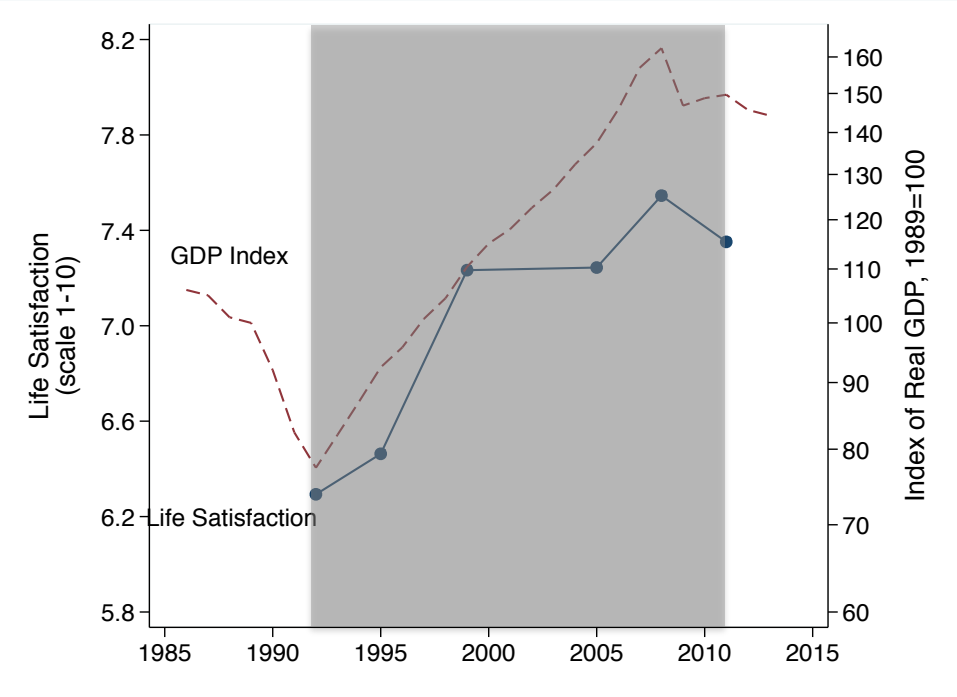
Source: Reproduced from Smith et al. 2015, p. 53.

Figure 3. Growth Rate of Life Satisfaction and GDP per Capita, 43 Countries, Data Adjusted for Comparability of SWB[a]
(Time spans, 12 – 32 years, mean = 23 years)



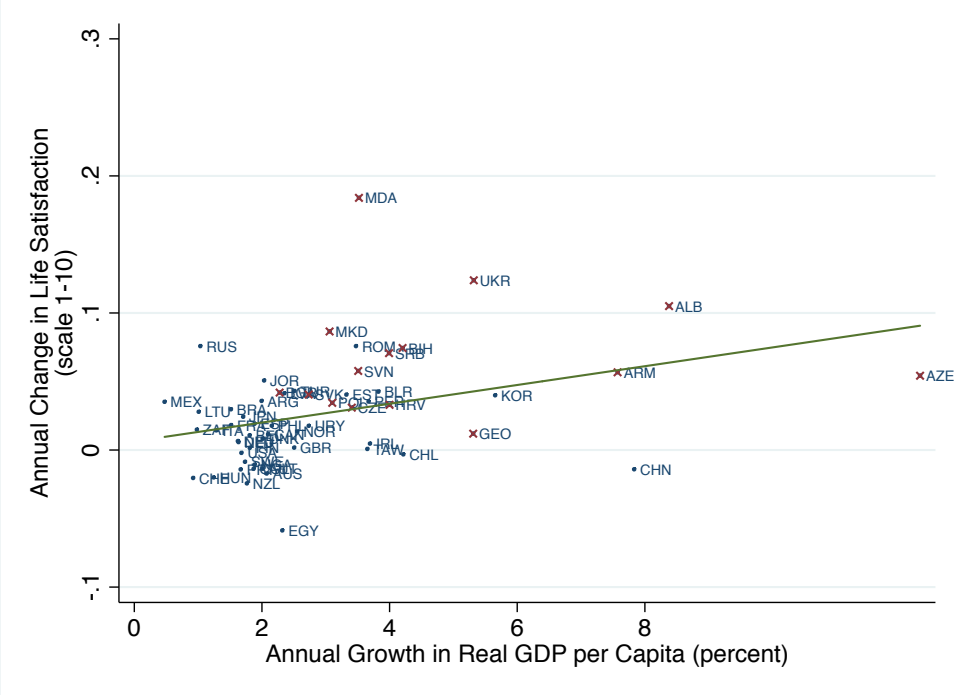
Source: Appendix B and Table 1.
a. The data are adjusted for differences in the measurement of life satisfaction over time and between WVS and EVS surveys. The growth rate of life satisfation is the absolute change per year on a 1-10 scale; of GDP, the percentage change per year.

Figure 4. Slovenia: GDP, 1986 – 2013 and Life Satisfaction, 1992 - 2011



Source: WVS (2014), EVS (2011), and Heston et al. (2012).

Figure 5. Growth Rate of Life Satisfaction and GDP per Capita, 43 Countries of Figure 3 plus 15 ETCs[a], Data Adjusted for Comparability of SWB
(Time spans, 10 – 32 years, mean = 21 years)



a. ETCs (values marked with X) are transition countries where SWB data only cover the expansion (recovery) phase of the transition cycle in GDP.
Source: Appendix B and Table 4, Panel A.

Table 1. Regression Statistics: Annual Growth Rate of Life Satisfaction against Annual Growth Rate of GDP per Capita, Data Adjusted for Comparability of SWB[a]
(absolute value of t-stat in parentheses)

	(1)	(2)	(3)	(4)
Country Group	All Countries	Developed	Less Developed	Transition
Regression Coefficient	0.00097	0.00205	0.00163	-0.00514
	(0.31)	(0.44)	(0.26)	(-0.84)
Constant	0.0104	-0.0022	0.0127	0.04918*
	(1.24)	(-0.22)	(0.72)	(2.19)
Adjusted R^2	-0.022	-0.042	-0.077	-0.044
Number of Observations	43	21	14	8

a. The data are adjusted for differences in the measurement of life satisfaction over time and between WVS and EVS surveys. The growth rate of life satisfaction is the absolute change per year on a 1-10 scale; of GDP, the percentage change per year.

* significant at 10 percent level.

Table 2. Robustness Checks: Regression Statistics,[a] Specified Model
(absolute value of t-stat in parentheses)

	(1)	(2)	(3)	(4)	(5)
	Comparability of SWB		Countries Omitted		
	Adjusted	Unadjusted	Non-Representative Surveys[b]	China and Korea Omitted	Total Change in H, GDP
Regression Coefficient	0.00097	0.00159	0.00148	0.00418	0.00045
	(0.31)	(0.49)	(0.48)	(0.86)	(0.18)
Constant	0.01040	0.00928	0.01143	0.00384	0.00130
	(1.24)	(1.07)	(1.38)	(0.35)	(0.87)
Adjusted R^2	-0.022	-0.018	-0.021	-0.007	-0.024
Number of Observations	43	43	38	41	43

a. Life satisfaction on GDP; the basic data in columns 1-4 are annual rates of change; in column 5, total change over period spanned by SWB. Data in columns 1, 3, 4, 5 are adjusted for differences in measurement of life satisfaction over time and between WVS and EVS surveys.

b. Countries with about 70 per cent population coverage in early surveys (Argentina, Chile, Egypt, Nigeria, South Africa).

Table 3. Mean GDP and SWB Growth Rate and Mean Time Span: 15 ETCs[a] Compared with Specified Country Group

	(1) Expansion-only TCs	(2) Full Cycle TCs	(3) All Countries in Figure 3
Number of countries	15	8	43
Mean growth rate per year:			
GDP	4.8%	3.0%	2.3%
SWB	0.067	0.034	0.013
Mean time span of SWB, years	14.4	20.9	23.3

a. ETCs are transition countries where SWB data only cover the expansion (recovery) phase of the transition cycle in GDP.
Source: Appendix B.

Table 4. Regression Statistics with 15 ETCs[a] Added to 43 Countries of Tables 1 and 2
Adjusted and Unadjusted Data
(absolute value of t-stat in parentheses)

Country Group	(1) Regression Coefficient	(2) Constant	(3) Adjusted R^2	(4) Number of Observations
		A. Adjusted Data[b]		
All Countries	0.00685***	0.00634	0.112	58
	(2.87)	(0.73)		
Developed	0.00205	-0.00215	-0.042	21
	(0.44)	(0.22)		
Less Developed	0.00163	0.01272	-0.077	14
	(0.26)	(0.72)		
Transition	0.00143	0.04943**	-0.040	23
	(0.40)	(2.80)		
		B. Unadjusted Data		
All Countries	0.01070***	0.00152	0.180	58
	(3.67)	(0.14)		
Developed	0.00508	-0.01086	0.033	21
	(1.30)	(1.33)		
Less Developed	0.00185	0.01678	-0.075	14
	(0.30)	(0.99)		
Transition	0.00421	0.05412**	-0.008	23
	(0.91)	(2.38)		

a. ETCs are transition countries where SWB data only cover the expansion (recovery) phase of the transition cycle in GDP.
b. Adjusted for differences in measurement of life satisfaction over time and between WVS and EVS surveys.
*** significant at 1 percent level
** significant at 5 percent level
* significant at 10 percent level

Appendix A. Life Satisfaction Response Options and Type of Preceding Question
World Values Survey (WVS) and European Values Survey (EVS) 1981 - 2014

Survey	Years	Card or Read Out	Response Options - Anchors (1/10)	Preceding Question	Coded here
WVS1	1981 - 1984	Card	Dissatisfied / Satisfied	Happiness	1
EVS1	1981 - 1984	Card	Dissatisfied / Satisfied	Happiness	1
EVS2	1990 - 1993	Card	Dissatisfied / Satisfied	Freedom of Choice	1
WVS2	1990 - 1994	Card	Dissatisfied / Satisfied	Freedom of Choice	1
WVS3	1995 - 1998	Card	Dissatisfied / Satisfied	Financial satisfaction	2
EVS3	1999 - 2001	Card and Read Out	Very dissatisfied / Very satisfied	Freedom of Choice	3
WVS4	1999 - 2004	Card	Dissatisfied / Satisfied	Financial satisfaction	2
WVS5	2005 - 2009	Card and verbal description	Completely dissatisfied / completely satisfied	Important for children's learning	3
EVS4	2008 - 2010	Card	Dissatisfied / Satisfied	Freedom of Choice	1
WVS6	2010 - 2014	Card and verbal description	Completely dissatisfied / completely satisfied	Important for children's learning	3

Source: WVS (2014) and EVS (2011)

Appendix B. Basic Data for Regressions

Country	Number of SWB Obs.	Period	Time Span (yrs)
Australia (AUS)	4	1981 - 2012	31
Austria (AUT)	3	1990 - 2008	18
Belgium (BEL)	4	1981 - 2009	28
Canada (CAN)	4	1982 - 2006	24
Denmark (DNK)	4	1981 - 2008	27
Finland (FIN)	6	1981 - 2009	28
France (FRA)	5	1981 - 2008	27
Germany (DEU)	7	1981 - 2013	32
Ireland (IRL)	4	1981 - 2008	27
Italy (ITA)	5	1981 - 2009	28
Japan (JPN)	5	1981 - 2010	29
Netherlands (NLD)	6	1981 - 2012	31
New Zealand (NZL)	3	1998 - 2011	13
Norway (NOR)	5	1982 - 2008	26
Portugal (PRT)	3	1990 - 2008	18
Spain (ESP)	8	1981 - 2011	30
Sweden (SWE)	8	1981 - 2011	30
Switzerland (CHE)	4	1989 - 2008	19
Taiwan (TAW)	3	1994 - 2012	18
United Kingdom (GBR)	6	1981 - 2009	28
United States (USA)	7	1981 - 2011	30
Mean (21 DCs)	4.95		25.81
Belarus (BLR)	5	1990 - 2011	21
China (CHN)	5	1990 - 2012	22
Estonia (EST)	5	1990 - 2011	21
Hungary (HUN)	6	1982 - 2009	27
Latvia (LVA)	4	1990 - 2008	18
Lithuania (LTU)	4	1990 - 2008	18
Romania (ROM)	6	1993 - 2012	19
Russian Federation (RUS)	6	1990 - 2011	21
Mean (8 TCs)	5.13		20.88
Argentina (ARG)	6	1984 - 2013	29
Brazil (BRA)	3	1991 - 2014	23
Chile (CHL)	5	1990 - 2011	21
Colombia (COL)	4	1997 - 2012	15
Egypt, Arab Rep. (EGY)	3	2001 - 2013	12
Jordan (JOR)	3	2001 - 2014	13
Korea, Rep. (KOR)	5	1982 - 2010	28
Mexico (MEX)	7	1981 - 2012	31
Nigeria (NGA)	4	1990 - 2011	21
Peru (PER)	4	1996 - 2012	16
Philippines (PHL)	3	1996 - 2012	16
South Africa (ZAF)	6	1982 - 2013	31
Turkey (TUR)	6	1990 - 2011	21
Uruguay (URY)	3	1996 - 2011	15
Mean (14 LDCs)	4.43		20.86
Grand Mean (43 Countries)	4.81		23.28

Country	Number of SWB Obs.	Period	Time Span (yrs)
Albania (ALB)	3	1998 - 2008	10
Armenia (ARM)	3	1997 - 2011	14
Azerbaijan (AZE)	3	1997 - 2011	14
Bosnia (BIH)	3	1998 - 2008	10
Bulgaria (BGR)	5	1991 - 2008	17
Croatia (HRV)	3	1996 - 2008	12
Czech Republic (CZE)	4	1991 - 2008	17
Georgia (GEO)	3	1996 - 2009	13
Macedonia (MKD)	3	1998 - 2008	10
Moldova (MDA)	4	1996 - 2008	12
Poland (POL)	7	1989 - 2012	23
Serbia (SRB)	4	1996 - 2008	12
Slovak Republic (SVK)	5	1990 - 2008	18
Slovenia (SVN)	6	1992 - 2011	19
Ukraine (UKR)	5	1996 - 2011	15
Mean (15 ETCs)	4.07		14.40
Grand Mean (Including 58 ETCs)	4.62		20.98

	GDP per capita			LS Reg. Coef. (abs. change /yr.)	
Country	**Initial yr.**	**Last yr.**	**Percent change /yr**	**Unadj.**	**Adj.**
Australia (AUS)	22389	42307	2.1	-0.023	-0.017
Austria (AUT)	27501	39336	2.0	-0.014	-0.014
Belgium (BEL)	21092	34826	1.8	0.009	0.011
Canada (CAN)	22719	37380	2.1	-0.004	0.011
Denmark (DNK)	20948	35854	2.0	0.006	0.008
Finland (FIN)	19209	31734	1.8	-0.002	0.002
France (FRA)	21435	32176	1.5	0.013	0.018
Germany (DEU)	21502	35992	1.6	0.002	0.007
Ireland (IRL)	15030	40004	3.7	0.002	0.005
Italy (ITA)	19586	28006	1.3	0.010	0.014
Japan (JPN)	19256	31447	1.7	0.013	0.024
Netherlands (NLD)	22936	37892	1.6	0.000	0.006
New Zealand (NZL)	22463	28195	1.8	-0.005	-0.024
Norway (NOR)	26764	51576	2.6	0.009	0.013
Portugal (PRT)	15201	20468	1.7	-0.014	-0.014
Spain (ESP)	15461	27066	1.9	0.015	0.019
Sweden (SWE)	21979	36816	1.7	-0.015	-0.009
Switzerland (CHE)	33603	39998	0.9	-0.019	-0.020
Taiwan (TAW)	17581	33527	3.7	0.016	0.001
United Kingdom (GBR)	16586	33157	2.5	-0.004	0.002
United States (USA)	25329	41723	1.7	-0.012	-0.002
Mean (21 DCs)			2.0	-0.001	0.002
Belarus (BLR)	6492	14277	3.8	0.044	0.043
China (CHN)	1718	9027	7.8	-0.017	-0.014
Estonia (EST)	9300	18476	3.3	0.042	0.040
Hungary (HUN)	11684	16310	1.2	-0.025	-0.020
Latvia (LVA)	9646	14656	2.4	0.047	0.041
Lithuania (LTU)	13309	15945	1.0	0.032	0.028
Romania (ROM)	5076	9710	3.5	0.077	0.076
Russian Federation (RUS)	12608	15647	1.0	0.078	0.076
Mean (8 TCs)			3.0	0.035	0.034
Argentina (ARG)	7647	13558	2.0	0.028	0.036
Brazil (BRA)	6107	8628[a]	1.5	0.019	0.030
Chile (CHL)	5520	13135	4.2	-0.007	-0.003
Colombia (COL)	6164	8138	1.9	0.006	-0.014
Egypt, Arab Rep. (EGY)	3726	4905	2.3	-0.036	-0.059
Jordan (JOR)	3481	4522[a]	2.0	0.070	0.051
Korea, Rep. (KOR)	5704	26609	5.7	0.028	0.040
Mexico (MEX)	10882	12601	0.5	0.027	0.035
Nigeria (NGA)	1168	1730	1.9	-0.016	-0.011
Peru (PER)	4584	8161	3.7	0.055	0.035
Philippines (PHL)	2429	3417	2.2	0.035	0.018
South Africa (ZAF)	5769	7806	1.0	0.006	0.015
Turkey (TUR)	6665	11211	2.5	0.045	0.043
Uruguay (URY)	8365	12535	2.7	0.036	0.018
Mean (14 LDCs)			2.4	0.021	0.017
Grand Mean (43 Countries)			2.3	0.013	0.013

Appendix B. Basic Data for Regressions (continued)

	GDP per capita			LS Reg. Coef. (abs. change /yr.)	
Country	**Initial yr.**	**Last yr.**	**Percent change /yr**	**Unadj.**	**Adj.**
Albania (ALB)	2955	6608	8.4	0.156	0.105
Armenia (ARM)	2038	5664	7.6	0.082	0.057
Azerbaijan (AZE)	1842	9358	12.3	0.080	0.054
Bosnia (BIH)	3990	6022	4.2	0.126	0.074
Bulgaria (BGR)	7352	10781	2.3	0.045	0.042
Croatia (HRV)	9902	15853	4.0	0.070	0.033
Czech Republic (CZE)	13441	23759	3.4	0.034	0.031
Georgia (GEO)	2530	4957	5.3	0.040	0.012
Macedonia (MKD)	5658	7648	3.1	0.138	0.086
Moldova (MDA)	1662	2517	3.5	0.222	0.184
Poland (POL)	8741	17646	3.1	0.030	0.034
Serbia (SRB)	5382	8608	4.0	0.111	0.071
Slovak Republic (SVK)	11938	19394	2.7	0.037	0.040
Slovenia (SVN)	12986	25003	3.5	0.061	0.058
Ukraine (UKR)	3418	7437	5.3	0.143	0.124
Mean (15 ETCs)			4.8	0.092	0.067
Grand Mean (Including 58 ETCs)			3.0	0.033	0.027

a. GDP per capita for 2013.

Source: SWB, WVS (2014) and EVS (2011); GDP, Heston et al (2012) and WDI (2015)