THE ECONOMIC IMPACTS OF THE US-CHINA TRADE WAR

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ABSTRACT

The "Easterlin paradox" claims that there is no consistent connection between a country's economic development and its average happiness levels. However, by analyzing a variety of extensive datasets covering many decades, we revisit this idea. Drawing on recent data from a wider range of countries, we find a clear positive correlation between average subjective well-being and GDP per capita across nations. Contrary to the paradox, there is no sign of a threshold beyond which increased wealth fails to boost happiness. Our results are robust across multiple datasets and mirror the positive link between income and well-being observed within individual countries.

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Introduction

Economic growth has long been a key objective of economic policy. However, in recent years, some scholars have questioned whether further increases in material living standards actually enhance well-being. This skepticism largely stems from a notable finding in the literature on subjective well-being known as the "Easterlin paradox." Richard Easterlin's research (1974, 1995, 2005a, 2005b) explores the relationship between happiness and GDP both across countries and within countries over time, finding little consistent evidence that higher aggregate income leads to greater average happiness.

At the same time, there is strong evidence that, within individual countries, people with higher incomes tend to report greater happiness. This apparent contradiction—that income strongly predicts individual happiness but seems unrelated to average happiness at the societal level—has led researchers to develop models emphasizing reference-dependent preferences and relative income comparisons. Layard (2005a) explains this by suggesting that people care more about their income relative to others than about absolute income levels, striving to "keep up with the Joneses" or even surpass them. While absolute income may matter for happiness at very low income levels, Layard argues that beyond a threshold—around $15,000 per capita—the average level of happiness in a country does not significantly increase with further income growth (2003).

If absolute income beyond a certain point has little effect on happiness, this challenges the conventional policy focus on economic growth as a means to improve social welfare. Easterlin (2005c) contends that his findings undermine the idea that economic growth should be society's primary goal. Layard (2005a) even calls for governments to explicitly target maximizing subjective well-being. Furthermore, since relative income comparisons can create negative

externalities—each person's work effort shifts others' reference points, potentially lowering their happiness—Layard advocates for higher taxes on income or consumption to correct these distortions.

However, these strong policy implications require a solid understanding of the true relationship between income and well-being. Early research on the Easterlin paradox was limited by sparse data on subjective well-being across countries and time. The lack of robust evidence led some to conflate an absence of proof with proof of absence regarding the link between GDP and happiness.

In recent years, richer datasets capturing individual life satisfaction and happiness across many countries have become available. Re-examining earlier data alongside new evidence suggests a clear and robust connection between economic development and subjective well-being. Crucially, this relationship holds consistently when comparing income and happiness within countries, across countries, and over time. The well-being-income gradient—the degree to which changes in income correspond to changes in happiness—is not only statistically significant but remarkably stable across contexts.

Our analysis demonstrates that income differences explain a substantial portion of the variation in subjective well-being worldwide. Contrary to earlier claims of a "satiation point" beyond which more income does not increase happiness, we find a strong, positive relationship between income and well-being in both rich and poor countries.

The rest of this paper proceeds as follows: First, we provide background on measuring subjective well-being and the economic analysis of these data. Next, we compare average well-being and income across a broad range of countries, showing a powerful effect of national income on subjective well-being. We then confirm that within countries, wealthier individuals tend to be

happier than poorer ones—a finding that has been consistently supported by large-scale data. Contrary to Easterlin's (1974) earlier claim that the income-happiness gradient is much steeper within countries than between countries, our results reveal that these gradients are quite similar in magnitude.

Some Background on Subjective Well-Being and Income

In this paper, our primary approach is to utilize the breadth of large-scale surveys now available globally to explore and analyze the relationship between subjective well-being and happiness. These extensive surveys often include questions designed specifically to measure how individuals perceive their own happiness or satisfaction with life. For instance, the World Values Survey poses questions such as, "Taking all things together, would you say you are: very happy; quite happy; not very happy; or not at all happy?" In addition, it asks respondents to evaluate their overall satisfaction with life by posing the question, "All things considered, how satisfied are you with your life as a whole these days?" Similarly, the Gallup World Poll employs a slightly different method known as the "ladder analogy," wherein participants are asked to envision a ladder with each rung symbolizing a progressively better quality of life. Respondents then indicate the step on this ladder that best corresponds to their current life situation.

These types of questions—along with many other variants used across numerous surveys—are generally grouped under the term "subjective well-being," a concept widely studied and discussed in psychological and social science literature (Diener, 2006, pp. 399-400). Subjective well-being broadly refers to how people experience and evaluate their lives and specific aspects of their lives. Despite ongoing debates about the absolute validity of self-reported measures of well-being, a

considerable body of evidence supports their usefulness and reliability in capturing important aspects of an individual's personal welfare.

One of the key points supporting the credibility of subjective well-being measures is their demonstrated association with more objective indicators of well-being. For example, studies have found that responses to subjective well-being questions often correlate strongly with observable physical expressions of affective states. These include facial behaviors such as smiling and laughing, physiological measures such as heart rate, sociability levels, and even neurological activity patterns measured through brain imaging techniques (Diener, 1984). These findings suggest that subjective well-being assessments tap into genuine emotional and psychological states rather than being merely abstract or artificial self-evaluations.

Moreover, individual assessments of happiness and life satisfaction tend to correlate positively with other subjective and externally verified indicators of well-being. For instance, independent evaluations by friends and family about a person's well-being often align with that person's own self-reports. Self-assessed health status, quality of sleep, and certain personality traits—such as optimism and emotional stability—also show consistent relationships with reported levels of happiness (Diener, Lucas, and Scollon, 2006; Kahneman and Krueger, 2006). These correlations strengthen the argument that subjective well-being is a meaningful and multi-dimensional construct encompassing more than just momentary feelings; it reflects enduring elements of a person's psychological and social life.

Subjective well-being, however, is not merely a snapshot of fleeting mood but is influenced by two critical components: the individual's inherent personality traits and their response to life events. Personality factors such as temperament, baseline emotional states, and cognitive styles shape how people perceive and interpret their circumstances. At the same time, life experiences—

both positive and negative—cause fluctuations in subjective well-being. Given this dual influence, one would expect that an individual's reported happiness would show a degree of stability over time, but also be sensitive to significant life changes.

Empirical research confirms these expectations. Reliable measures of subjective well-being demonstrate high test-retest correlations, indicating that people's self-reports of happiness are relatively stable when assessed repeatedly over time (Eid and Diener, 2006). This stability suggests that these measures capture enduring aspects of well-being rather than transient moods or random responses. Nonetheless, subjective well-being is not static; it adapts and changes in response to important life circumstances.

For example, significant life events have predictable effects on subjective well-being. Marriage, generally viewed as a positive life event, is associated with increases in reported happiness and life satisfaction. This finding aligns with psychological theories highlighting the benefits of social support, companionship, and emotional intimacy for well-being. Conversely, negative events such as divorce often correspond to declines in subjective well-being, reflecting the emotional distress and social disruption that such experiences can cause. Economic factors, too, play a crucial role: as an individual's income grows, their reported well-being typically rises, reflecting the benefits that financial security and access to resources can bring to a person's quality of life.

The relationship between income and happiness, however, is complex and has been the subject of extensive research and debate. While income growth generally improves subjective well-being by alleviating material hardship and enabling greater life opportunities, the marginal returns of additional income on happiness tend to diminish at higher levels of wealth. This phenomenon highlights the multifaceted nature of happiness and suggests that beyond a certain point, factors

other than income, such as meaningful social connections, health, and personal fulfillment, become increasingly important determinants of subjective well-being.

The robustness of subjective well-being measures is further reinforced by studies that track changes within individuals over time. Longitudinal research shows that when people experience positive life changes—such as entering a stable relationship, securing meaningful employment, or improving their health—their self-reported well-being tends to increase accordingly. Conversely, setbacks like job loss, illness, or bereavement often lead to reductions in reported happiness. This dynamic responsiveness suggests that subjective well-being is sensitive to real-life conditions and provides a valid and valuable window into individuals' lived experiences.

In summary, while subjective well-being remains a somewhat debated concept in terms of measurement precision, the accumulated evidence indicates that it is a meaningful, reliable, and valuable indicator of personal welfare. Large-scale surveys employing well-constructed subjective well-being questions offer important insights into how people perceive and evaluate their own lives. These measures correspond not only with objective markers of affective states and health but also respond predictably to significant life events and personality traits. As a result, subjective well-being has emerged as a vital tool in social science research, policy analysis, and the broader quest to understand what constitutes a good life.

Our strategy in this paper, therefore, is to leverage these comprehensive datasets from global surveys to deepen our understanding of the complex interplay between subjective well-being, happiness, and the myriad factors that influence them. By integrating findings from diverse sources and methodological approaches, we aim to paint a detailed picture of what contributes to human happiness and how it can be enhanced in different cultural, economic, and social contexts.

While findings from various approaches suggest that cross-sectional comparisons of individuals within a population have some validity, there is less conclusive evidence supporting comparisons across different populations. Such cross-population comparisons are often complicated by issues like translation challenges and cultural differences. However, many researchers argue for the existence of a biologically based set of universal emotions that are common to all humans and evident across cultures (Diener and Tov, 2008). For example, studies have shown that people worldwide consistently recognize emotions such as anger, sadness, and joy through facial expressions (Ekman and Friesen, 1971; Ekman et al., 1987). Additionally, when asked what is essential for greater happiness or life satisfaction, people across cultures uniformly cite money, health, and family as key components of a good life (Easterlin, 1974). Diener and Tov (2008) suggest that the presence of these universal emotions supports the idea that subjective well-being can be meaningfully compared across societies.

A similar reasoning applies when making comparisons of subjective well-being within countries over time. One challenge with such time-series analyses is that subtle shifts in how individuals perceive or respond to happiness-related questions may coincide with changes in factors like income, which we seek to relate to subjective well-being. Evidence on aggregate happiness trends over time is mixed. Research has found that aggregate happiness tends to decline when unemployment and inflation rise and fluctuates in line with business cycles (Di Tella, MacCulloch, and Oswald, 2003; Wolfers, 2003). However, an intriguing observation is that women in both the United States and Europe have reported declining happiness relative to men over recent decades—a trend that is difficult to explain based on objective conditions alone (Stevenson and Wolfers, 2007). This paper is motivated by the desire to better understand why previous studies have struggled to isolate a clear link between happiness and economic growth.

A largely overlooked issue in making comparisons over time is the difficulty of compiling truly comparable data. For instance, Smith (1986) demonstrates that even minor changes in the question order of the U.S. General Social Survey caused significant fluctuations in reported happiness. The data also reveal notable day-of-week and seasonal variations. Moreover, assembling long-term data series (e.g., for countries like Japan, the United States, or China) often involves important coding breaks. These challenges increase measurement error, which in turn makes it harder to detect statistically significant results. When sparse data are used to draw strong conclusions about well-being trends over decades, even small measurement errors can produce misleading findings.

Much of the economic literature on subjective well-being has treated "life satisfaction" and "happiness" as interchangeable measures, arguing that they are highly correlated and share similar determinants. However, they capture somewhat distinct aspects of well-being: happiness is more closely related to affect or emotional experience, while satisfaction is more evaluative in nature. Psychological research tends to treat affective and evaluative questions separately. In this study, we examine both the income-happiness and income-satisfaction relationships in parallel. Another subtle measurement issue is that surveys assessing happiness often use shorter response scales (e.g., "very happy," "pretty happy," "not so happy"), whereas life satisfaction questions typically employ more detailed scales, such as the "ladder" technique.

Finally, it is important to consider the functional form of the relationship between subjective well-being and income. Early studies frequently examined the link between absolute income and happiness, often finding a curvilinear relationship. Some theorists proposed the existence of a satiation point—beyond which additional income would no longer increase happiness. A more natural approach might be to model well-being as a function of the logarithm of income rather than absolute income. Indeed, recent research shows that the apparent weakening of the happiness-

income relationship at higher income levels disappears when happiness is regressed on log income instead of absolute income (Easterlin, 2001). If happiness is linearly related to log income within countries, cross-country studies should likewise examine the relationship between average subjective well-being and average log income. Assuming economic development leads to proportional increases in individual incomes, average log income will rise or fall in tandem with the log of average income. Consequently, our analysis primarily explores the relationship between well-being and the log of GDP per capita across countries—a somewhat unconventional choice in the literature. We extensively use bivariate scatterplots and nonparametric regression to allow a visual assessment of the functional forms involved.

As with much of the existing research, our focus is on describing correlations between happiness and income rather than establishing definitive causal links. Our aim is to clarify the stylized facts regarding the income–well-being connection. Many related questions remain open, such as whether GDP, broader economic development indicators, or changes in productivity better explain happiness. Unfortunately, limitations in data and statistical power prevent us from addressing these issues conclusively.

Cross-Country Comparisons of Income and Well-Being

In his influential 1974 paper, Easterlin posed the question of whether "richer countries are happier countries" (1974, p. 104). Examining two international datasets, he found the relationship between aggregate happiness and income across countries to be "ambiguous" and, if positive, rather weak (ibid., p. 108). Later research presented a stronger positive correlation between a country's income and the happiness of its citizens, leading Easterlin to acknowledge that "a positive happiness-

income relationship typically turns up in international comparisons" (1995, p. 42). However, this relationship is often argued to hold mainly at lower levels of GDP per capita; once countries become wealthy and basic needs are met, they tend to lie on the "'flat of the curve,' where additional income brings little or no extra happiness" (Clark, Frijters, and Shields, 2008, p. 96). While the literature largely agrees that aggregate happiness rises with GDP in low-income countries, there remains considerable debate about the strength of this relationship and whether a satiation point exists beyond which further GDP increases no longer affect happiness (Deaton, 2008).

Early cross-country studies on income and happiness often involved only a small number of countries with similar income levels, limiting their ability to produce definitive conclusions. Moreover, since the relationship between subjective well-being and the logarithm of income is approximately linear, analyses based on absolute GDP levels likely contributed to the unclear findings among wealthier nations. As we will demonstrate, new large-scale datasets covering many countries reveal a clear and robust relationship between GDP per capita and average subjective well-being. Importantly, we find no evidence of satiation; the positive association between income and happiness holds true for both developed and developing countries.

Our macroeconomic analysis uses real GDP per capita measured at purchasing power parity. For most countries, we rely on the latest data from the World Bank's World Development Indicators database; where data is missing, we supplement it with information from the Penn World Tables (version 6.2) and, if needed, the CIA Factbook. For earlier years, we refer to Maddison (2007). Additionally, we consider the average of log income per person as an alternative aggregate measure, sometimes accounting for the difference between this and the log of average income, known as the mean log deviation.

Measuring average subjective well-being is more challenging, as it involves aggregating individual responses to qualitative survey questions. Since surveys vary in their response categories, we normalize subjective well-being measures using ordered probit regressions of happiness on country (or country-year) fixed effects, without other controls. These fixed effects serve as proxies for average well-being within a country or year. Appendix A compares our ordered probit index with four alternative methods of cardinalizing life satisfaction and happiness, demonstrating that all yield highly correlated well-being aggregates. The key advantage of the ordered probit approach is that its coefficients are interpretable relative to the dispersion of latent well-being within the population, thus highlighting differences in average happiness or life satisfaction between countries relative to within-country variation.

Our analysis is presented chronologically to illustrate the progression of the literature. For easy visual comparison, we maintain consistent scales when graphing happiness and GDP throughout the paper.

Figure 1's top row shows the earliest known cross-country comparisons of subjective well-being, each based on only four to nine countries with similar economic development levels. Consequently, these early comparisons yield imprecise estimates of the happiness-GDP relationship. To aid interpretation, the figures include a dashed ordinary least squares regression line and a shaded band representing the central portion of the happiness distribution with width equal to the cross-sectional standard deviation.

The second row of Figure 1 displays the cross-country comparisons originally presented by Easterlin (1974). Analyzing 1960 data, Easterlin noted that "the association between wealth and happiness indicated by Cantril's international data is not so clear-cut… The inference about a positive association relies heavily on the observations for India and the United States" (ibid., p.

108). Regarding the 1965 World Survey III data, he described the results as "ambiguous," suggesting that if a positive income-happiness link exists, it is weak (ibid.). Rather than emphasizing the regression line's positive slope, Easterlin highlighted that "personal happiness ratings for 10 of the 14 countries lie virtually within a half a point of the midpoint rating of 5 [on a 0-10 scale]… The closeness of the happiness ratings implies a similar lack of association with other economic magnitudes" (ibid., p. 106). The clustering of countries within the shaded area in the charts reflects this argument. Yet, our ordered probit index quantifies larger differences in average happiness relative to within-country variation. Using log income instead of absolute income further clarifies the linear-log relationship. Easterlin also briefly considered 1946 and 1949 data, noting similar results and concluding that any positive association between income and happiness was unclear (ibid., p. 108).

Although the correlation between income and happiness in these early datasets is not strongly convincing, this does not imply that income has only a minor influence on happiness. Other factors, including measurement error, likely affect national happiness aggregates. Notably, three of the five datasets suggest a statistically significant positive relationship between happiness and the natural logarithm of GDP per capita. More importantly, the point estimates consistently show a positive well-being-income association, with a precision-weighted average regression coefficient of 0.45—comparable to gradients observed in within-society comparisons of richer and poorer individuals, a theme we further explore below.

Several surveys conducted from the mid-1960s through the 1970s reveal a consistent pattern regarding the relationship between well-being and GDP. Notably, the ten-nation "Images of the World in the Year 2000" study from 1967 and the twelve-nation Gallup-Kettering Survey from 1975 provide additional evidence supporting a significant and positive correlation between

subjective well-being and GDP. Over time, as cross-country data collection efforts have grown more extensive, the case for a linear-log relationship between subjective well-being and GDP per capita has strengthened. These more recent analyses have largely confirmed the magnitude of the relationship suggested by earlier studies.

Figure 2 presents life satisfaction data from each wave of the World Values Survey, highlighting the increasing availability of data over time. Early survey waves predominantly sampled wealthy countries, limiting income variation and yielding only suggestive evidence of a link between GDP and life satisfaction. However, as the survey expanded to include a broader range of countries, the relationship became more pronounced. In each wave, the regression line slopes upward, with statistically significant and consistent coefficients across waves, and greater precision in later rounds. Locally weighted regressions (lowess) indicate minimal deviations from the linear-log functional form. Combining data from all four waves with wave fixed effects produces an estimated satisfaction-income gradient of 0.40 (standard error = 0.04, clustered by country). An F-test confirms that wave-specific slopes do not differ significantly from a common slope ($F_{3,78} = 1.98$).

However, the inclusion of poorer countries in the World Values Survey often came with sampling limitations. For instance, the 1981-84 wave included Argentina but limited sampling to urban areas until it became nationally representative only in the 1999-2004 wave. Similarly, countries such as Chile, China, India, Mexico, and Nigeria were added in the 1989-93 wave, but samples were skewed toward more educated, urban populations. These sampling biases, clearly documented but often overlooked in subsequent analyses, tend to underestimate the well-being-income gradient by over-representing wealthier (and presumably happier) respondents in poorer countries. Consequently, we exclude from our main analysis countries with clearly unrepresentative samples,

which are marked by hollow squares in Figure 2 and typically lie above the regression line. Appendix B provides further details on the impact of including these countries.

The 2002 Pew Global Attitudes Survey, which interviewed 38,000 respondents across 44 countries at varying stages of development, used Cantril's (1965) "Self-Anchoring Striving Scale" to measure subjective well-being. Respondents were shown a ladder representing the best and worst possible life and asked to select their current position on a scale from 0 to 10. An ordered probit regression of ladder rankings on country fixed effects, compared with the log of GDP per capita in Figure 3, reveals a linear relationship consistent with the World Values Survey findings.

The most comprehensive cross-country data on subjective well-being come from the 2006 Gallup World Poll, which surveyed nationally representative samples in 132 countries. Using questions including a ladder scale similar to Pew's, Figure 4 demonstrates a very strong correlation (above 0.8) between subjective well-being and the log of GDP per capita. The estimated coefficient of 0.42 closely matches results from the World Values Survey, Pew survey, and earlier research including Easterlin's studies. These findings align with Deaton (2008), who emphasizes that the clearer relationship in Gallup data reflects the inclusion of more poor countries.

While economics literature often treats happiness and life satisfaction interchangeably, psychological research distinguishes between these concepts. Figure 5 compares happiness and life satisfaction using the latest World Values Survey wave. Happiness, measured by respondents classifying themselves as 'very happy,' 'quite happy,' 'not very happy,' or 'not at all happy,' shows a somewhat weaker correlation with GDP than life satisfaction. Notably, countries like Tanzania and Nigeria display high average happiness despite very low life satisfaction, contributing to earlier mixed findings. Removing these outliers aligns the well-being-GDP

gradients for both happiness and life satisfaction more closely, although happiness remains less strongly correlated overall.

To further explore differences, Figure 6 consolidates data from the 1975 Gallup-Kettering survey, the 2003 European Quality of Life Survey, and the 2006 Eurobarometer. In each case, happiness and life satisfaction show similar, though sometimes slightly weaker, GDP gradients.

Table 1 summarizes regression analyses of subjective well-being on log GDP per capita across the Gallup World Poll, all four waves of the World Values Survey, and the Pew Global Attitudes Survey. Coefficients from ordered probit regressions of individual well-being are reported alongside models controlling for gender and age, as well as a two-stage approach aggregating to country-level fixed effects. Across datasets and methods, the estimated subjective well-being-GDP gradient consistently centers around 0.4, underscoring the robustness of this relationship.

Using Layard's cutoff, our analysis reveals that the relationship between subjective well-being and the logarithm of GDP per capita is, if anything, stronger in wealthier countries rather than weaker. Although this difference reaches statistical significance only in a few instances, the estimated effects for countries with incomes above $15,000 are roughly three times larger than for those below this threshold. This finding offers no support for the idea of a satiation point. Indeed, a consistent pattern across multiple datasets presented in Table 1 and Figures 1 to 6 is a clear positive association between subjective well-being and GDP per capita, even when focusing exclusively on developed economies.

However, the observation that the coefficient on log GDP per capita may be greater for richer countries should be interpreted with caution. The Gallup data suggest that a 1 percent increase in GDP per capita corresponds to about three times the improvement in measured well-being in

wealthy countries compared to poorer ones. Yet, a 1 percent rise in GDP per capita in the United States represents a much larger absolute income increase than the same percentage rise in Jamaica. For example, a $100 increase in average income would raise log GDP per capita much more in Jamaica than in the U.S., thereby producing about three times the increase in measured well-being in Jamaica. This effect is even more pronounced for the poorest countries: Burundi's GDP per capita is roughly one-sixtieth of that in the U.S., meaning that a $100 income rise there would have an impact on well-being about twenty times greater than the same increase in the U.S.

One possible explanation for the discrepancy between our findings and earlier reports of a satiation point is the different functional forms used to model the relationship between well-being and GDP. While we analyze well-being as a function of log GDP per capita, previous studies often used the absolute GDP level. Figure 7 illustrates that the log specification provides a better fit, although the improvement is modest (Deaton, 2008, p. 58). Regardless of specification, strong evidence persists for a positive link between well-being and income in rich countries. When we re-estimate the relationship using GDP per capita in levels, we find the gradient to be about twice as steep for poor countries compared to rich countries. This aligns with our earlier conclusion: a $100 income increase is associated with a larger well-being gain in poorer countries, while a 1 percent increase in GDP per capita yields larger absolute income and well-being gains in richer countries.

Therefore, our conclusion—that there is strong evidence against a satiation point—holds whether well-being is modeled against log GDP per capita or its absolute value. As Figure 7 shows, even with data from 131 countries, we cannot definitively determine the best functional form, though the evidence favors a linear-log relationship. In the following section, we examine within-country comparisons, which benefit from much larger samples. These individual-level analyses clearly

indicate that well-being increases with log income, a finding that informs our choice of functional form for cross-country comparisons.

Income and Happiness: Comparing Within-Country and Between-Country Estimates

A simple way to assess the size of the between-country well-being-GDP relationship (usually around 0.4) is to compare it with the well-being-income relationship observed within countries. Easterlin famously noted that the happiness differences one might expect between rich and poor countries, based on differences seen within countries by income, do not match international data (1974, pp. 106-107). So, we now focus on comparing the happiness levels of richer and poorer people within the same country at a given point in time.

On this topic, there is a strong consensus. Easterlin summarized it well: “In every representative national survey ever done, a significant relationship between happiness and income has been found” (2005, p. 67). Our own research, covering over 100 countries, has found no exceptions to this. Although there is some debate about how large this effect is, income clearly plays an important role in happiness. Frank (2005, p. 67) highlights this by saying: “When we plot average happiness versus average income for groups within a country at a given time, richer people are much happier than poorer people. The difference is surprisingly large — moving from the bottom 5 percent to the top 5 percent of income ranks improves happiness more than any other imaginable change.”

To illustrate this, we examined the relationship between happiness and income in the United States from 1972 to 2006 using the General Social Survey (GSS) data from the National Opinion

Research Center. Figure 8 shows coefficients from an ordered probit regression of happiness on income categories, controlling for year effects, plotted against family income. Income categories were converted to dollar amounts by assuming income follows a log-normal distribution. Each point in the figure represents an income group in a specific year, with circle sizes proportional to the group's population. The statistical significance is clear, due to large sample sizes of over 1,000 respondents each year. The figure also reveals the functional form: the relationship between happiness and family income follows a linear-log pattern across the income distribution.

We tested this linear-log relationship in other countries using different datasets and found similar results. For example, Figure 9 uses the Gallup World Poll, covering 113 countries, to show estimates from regressions of life satisfaction on income categories controlling for country effects. Coefficients are plotted against the log of household income normalized by subtracting the country average. This again points to a strong linear relationship between subjective well-being and log income, with no sign of saturation at higher income levels.

This contrast between the strong within-country income-happiness gradient and the weak or insignificant cross-country and time-series relationships is the core of the Easterlin paradox. Theories focusing on relative income comparisons predict a smaller between-country gradient than within-country gradient, assuming people mainly compare income within their own country. However, comparisons of the gradients suggest the opposite: the between-country gradient appears larger than the within-country one.

While Figure 9 shows the overall within-country gradient pooling all countries, it is informative to estimate these gradients separately for each country to see their variation. For each country, we ran an ordered probit of life satisfaction on the natural log of household income, controlling for gender and a quartic age term (separately for men and women). Figure 10 presents these country-

specific coefficient estimates as a histogram. The average within-country well-being-income gradient is about 0.38, with most estimates between 0.25 and 0.45, and 90 percent falling between 0.07 and 0.72. Much of this spread is likely due to sampling variation, as typical standard errors range from 0.04 to 0.11.

Figure 11 offers another way to visualize this data by comparing within-country and between-country gradients directly. Each solid circle plots a country's GDP per capita against its average well-being (the between-country gradient), while arrows fitted to each circle represent that country's within-country well-being-income slope. The slopes of these arrows are remarkably consistent across countries and closely match the between-country slope (shown by a thick dashed line). Figure 12 replicates this analysis using data from the World Values Survey (1999-2004), finding a similar pattern. Comparable results also appear in Pew survey data.

Finally, Table 2 combines national surveys to summarize the within-country well-being-income gradient. We run ordered probit regressions of subjective well-being on log household income with controls for country fixed effects (or country-wave fixed effects in the World Values Survey) to account for cross-country GDP differences and currency variations. The first column shows basic estimates controlling only for these fixed effects; the second adds controls for gender, age, and their interactions. Comparing these to between-country estimates (Table 1) reveals that within-country gradients are generally slightly smaller but roughly similar, typically centered near 0.3.

A simple back-of-the-envelope calculation can help estimate how much these issues might distort the comparisons in Tables 1 and 2. Suppose all cross-country differences in GDP per capita are permanent and people perfectly smooth consumption over time. In that case, the coefficients in Table 1 represent how well-being responds to a consumption shock. Studies from the United States show that about half of the variation in annual income is transitory, and a $1 change in transitory

income typically causes only a $0.05 change in permanent income. This means a $1 change in measured income corresponds to roughly a $0.525 change in permanent income. Under this assumption, the estimates in Table 2 should be increased by about 90 percent (1 ÷ 0.525) to reflect the true relationship between well-being and permanent income or consumption. If instead we accept Campbell and Mankiw's (1990) estimate that half of income is earned by "rule-of-thumb" consumers who spend current income similarly to permanent income, the needed adjustment drops to about 30 percent. This smaller adjustment would bring the within- and between-country estimates closer together.

We can also test this issue empirically. The last column of Table 2 uses educational attainment as an instrument for income within each country (Rivers and Vuong, 1988) to isolate the effect of permanent income on well-being. While this approach likely captures permanent rather than transitory income variation, we doubt that education affects well-being only through income. Since education probably has additional positive effects on well-being, these instrumental variable estimates may overstate the true income-well-being link. Indeed, in most cases, the instrumental estimates are larger than the ordered probit estimates relating well-being to income. In the largest dataset—the Gallup World Poll—the estimated gradient is about 0.6.

So far, we have assumed that transitory income shocks affect well-being less than permanent shocks. However, evidence from business cycle fluctuations suggests otherwise. Figure 13 shows that well-being responds strongly to changes in the output gap, with the well-being-transitory income gradient estimated to be about five times larger than the well-being-GDP gradient in Table 1. If this pattern holds, our estimates in Table 2 may actually overstate the link between well-being and permanent income within countries.

While our analysis provides a useful measurement of the bivariate relationship between income and well-being across and within countries, it may not capture the true causal effect of income on well-being. The within-country income-well-being gradient could be biased upward by reverse causality—happier individuals may earn more, especially in some occupations. Kahneman et al. (2006) also suggest that within-country comparisons might overstate this relationship due to a "focusing illusion," where people judge their life satisfaction by comparing income to others, overemphasizing income differences. Furthermore, the between-country relationship might reflect the influence of third factors—such as democracy, governance quality, health, or climate—that boost both GDP per capita and well-being (Kenny, 1999). Conversely, factors like higher savings rates, less leisure, or materialistic values may increase GDP per capita while reducing subjective well-being. We cannot fully address these complexities here but highlight the urgent need for research to better identify these causal effects.

Economic Growth and Happiness

Previous sections have demonstrated that wealthier societies tend to report higher levels of subjective well-being compared to poorer societies, and within any given society, wealthier individuals generally experience greater happiness than those with less wealth. This naturally raises the question: as societies grow richer over time, do they also become happier?

Easterlin (1995) emphasizes the importance of examining national time series data to understand the relationship between economic development and subjective well-being, cautioning against the confounding influence of cultural differences in cross-country comparisons. The core of the Easterlin paradox lies in his inability to find statistically significant evidence that average

happiness rises alongside economic growth over time. His seminal studies from 1974 and 1995 analyzed happiness trends across Europe, Japan, and the United States to explore this issue.

Our analysis considers three key points about what existing datasets can reveal. First, a lack of evidence should not be mistaken for evidence of no effect. This distinction is crucial given the variability in happiness measures across surveys and the relatively limited variation in GDP over time within countries compared to differences between countries. Second, upon reexamining these datasets, we find that happiness has indeed increased in Japan and Europe, although the United States remains an intriguing outlier where average happiness has not shown a clear upward trend. Third, as additional data have accumulated—especially from longer national time series and more countries—support for a positive relationship between happiness and GDP per capita over time has grown.

For instance, the World Values Survey, which has collected data since 1981 across multiple waves and countries, provides repeated measures of well-being and economic conditions. Figure 14 illustrates changes in life satisfaction and real GDP per capita over time for countries with multiple survey waves. Using ordered probit regressions with country-by-wave fixed effects, each country's movement in the well-being–income space is tracked, with arrows indicating the direction of change between consecutive observations.

Several patterns emerge. Generally, economic growth correlates with improvements in subjective well-being (arrows tend to point northeast), while economic decline, notably in former Eastern bloc countries, aligns with declines in well-being (arrows point southwest). Out of 89 observed changes, 62 show happiness and GDP moving in the same direction—53 rising together and 9 declining together—while in 27 cases they move oppositely. Life satisfaction data, however,

present a weaker link, with concordant movements in only about half the cases, partly due to changes in survey design.

Moreover, when averaging these country-specific estimates, the strength of the well-being-income relationship over time resembles that found in pooled cross-country comparisons. Yet, considerable variation remains, likely reflecting other factors influencing well-being.

Importantly, changes in survey question order—such as introducing questions about financial satisfaction before life satisfaction in certain waves—may have influenced respondents' answers. Financial satisfaction tends to be rated lower than life satisfaction, which could have biased reported life satisfaction levels downward in some waves. By contrast, the happiness question was not positioned near financial satisfaction questions and showed a stable correlation with financial satisfaction over time. These methodological nuances complicate direct wave-to-wave comparisons but are less problematic when analyzing changes within countries over time.

Figure 15 examines differences in life satisfaction and GDP across survey waves, confirming that greater GDP growth is associated with larger increases in life satisfaction, with the gradient centered near 0.4. A parallel analysis of happiness yields similar but weaker results.

Table 3 presents panel regression analyses combining life satisfaction and happiness data from the World Values Survey. Initial bivariate regressions show positive relationships between well-being and log GDP per capita, with coefficients around 0.4 for life satisfaction and 0.2 for happiness. Controlling for country fixed effects (to isolate within-country changes over time) produces similar gradients. Adding wave fixed effects to adjust for survey differences strengthens the life satisfaction-GDP association and slightly weakens the happiness-GDP link. Using first differences

and longer-term differences confirms a significant positive relationship between changes in life satisfaction and economic growth, with somewhat smaller and less precise estimates for happiness.

It is important to note, however, that these time-series estimates are imprecise and sensitive to the economic trajectories of a few countries experiencing rapid growth or decline. While cross-country comparisons provide strong contrasts between poor and wealthy nations, the variation in GDP within countries over time is smaller, making definitive conclusions more challenging. Still, most analyses contradict the Easterlin hypothesis that no relationship exists between changes in GDP and happiness over time.

In summary, our findings reconcile previous conflicting results by offering a quantitative benchmark for the well-being–income gradient. Even with some imprecision, the evidence suggests that, on average, as countries become wealthier, their citizens tend to become happier as well.

Europe

We now turn to another major source of repeated international cross-sectional data: the Eurobarometer Survey. This data collection tracks public opinion across the European Union (EU). Our dataset is drawn from the Mannheim Eurobarometer Trendfile, which compiles available microdata from 1970 to 2002, supplemented with data extracted from printed Eurobarometer Reports from 2002 through 2007. The surveys initially questioned respondents in the original nine EU member states about their life satisfaction. A life satisfaction question has been asked at least annually (often semi-annually) since 1973, with the exceptions of 1974 and 1996. As the EU expanded, the survey coverage grew, including fifteen countries by 2002 (with separate surveys

for East and West Germany), and currently encompassing thirty countries—including three candidate countries—resulting in a broad but unbalanced panel. Although a happiness question was asked during limited periods (1975–1986, except 1980 and 1981, and in a different format in 2006), data gaps lead us to focus primarily on life satisfaction. For analytical consistency, we treat West Germany separately from East Germany, enabling us to analyze a continuous well-being sample for West Germans over 35 years.

We begin by examining the relationship between life satisfaction and GDP for the original nine countries surveyed in 1973. Easterlin's earlier work, which analyzed this group through 1989, concluded that satisfaction "drifts upward in some countries, downward in others," but overall shows "little or no trend" despite real GDP per capita rising by 25 to 50 percent in all these countries during that period (1995, p. 38). He later reaffirmed this conclusion (2005a, p. 434).

Figure 16 updates this analysis by adding eighteen more years of data (represented by hollow circles). In eight out of the nine countries, rising GDP per capita correlates with increased life satisfaction, six of which show statistically significant positive associations ($p < 0.10$, using Newey-West standard errors to account for first-order autocorrelation). The figure also reveals some anomalies: Belgium exhibits a significant declining trend in satisfaction, and Ireland experienced falling life satisfaction in the 1970s and 1980s, followed by rising satisfaction during the "Irish Miracle" economic boom. Notably, the first Irish survey showed unusually high satisfaction; excluding this outlier produces a statistically significant coefficient of 0.14 (standard error 0.05) for log GDP per capita over the full sample period. While our intent is not to simply count statistically significant results, these findings suggest that for the original nine large European countries with long time series, life satisfaction generally increased alongside GDP per capita. The estimated satisfaction-GDP gradients vary but average around 0.25.

The upward trend in life satisfaction across the EU is not widely recognized. Figure 17 helps explain why this trend has been obscured. A straightforward method to construct an EU-wide time series of life satisfaction is to calculate a population-weighted average of the member countries' satisfaction levels at each point in time. However, as the EU expanded to include poorer countries with lower average satisfaction, this compositional change artificially lowered the overall EU average despite most countries experiencing rising satisfaction internally. This effect is evident when comparing to the EU-9 countries, whose population-weighted average satisfaction shows a clear upward trend over time.

To better utilize data from all member states without compositional bias, we constructed a regression-adjusted series. This involved running an OLS regression of national satisfaction indices on time (survey round) fixed effects, weighted by population and controlling for country fixed effects. This adjustment accounts for different baseline well-being levels among new member countries. The time fixed effects from this model, also plotted in Figure 17, reveal a rising trend similar to the EU-9 average. Additionally, a spliced series created by summing first differences in a fixed-weight average of satisfaction yields a closely matching pattern. These adjusted measures highlight that simple averaging conceals much of the actual rise in satisfaction within member nations.

Even after accounting for compositional changes, the data available up to 1989 would make it difficult to detect a clear positive trend. However, extending the analysis through 2007 reveals a statistically significant upward trend in life satisfaction, approximately 0.006 units per year. Over the same period, log GDP per capita rose by about 0.020 per year. Taken together, these trends imply a long-run satisfaction-GDP gradient near 0.3.

Japan

One of the strongest pieces of evidence supporting the Easterlin paradox comes from Japan, which serves as a compelling case study due to its remarkable postwar economic growth—real GDP has increased sixfold since World War II—and because the government has been believed to have continuously collected consistent data on subjective well-being through the "Life in Nation" surveys since 1958. Earlier studies, such as those summarized by Veenhoven (1993), noted that average well-being levels appeared to remain flat despite this rapid economic expansion (Easterlin, 1995, pp. 39–40).

However, a closer examination reveals that the Japanese data are less straightforward than previously assumed, and the trend is not actually flat. By revisiting the original survey codebooks and translating the questions anew, we uncovered several significant breaks in the series. Table 5 details these changes by showing both literal and idiomatic translations of the survey questions as they evolved.

Three key insights emerge from this analysis. First, in 1964, the response categories changed substantially. The top category shifted from a broad statement—"Although I am not innumerably satisfied, I am generally satisfied with life now"—to a much stricter "Completely satisfied." As expected, this caused the proportion of respondents choosing the highest category to drop sharply, from 18.3% to 4.4%. The second-highest category also became more demanding, changing from "Although I can't say that I am satisfied, if life continues in this way, it will be okay" to "Although I can't say I am completely satisfied, I am satisfied." The lowest category changed from "Life now is very unbearable" to "Completely dissatisfied," but the share selecting this category remained roughly the same. Second, the focus of the question shifted after 1969; prior to 1970, questions

targeted feelings about “life at home,” whereas from 1970 onward, they addressed overall life satisfaction. Third, both the questions and the permitted responses changed again in 1992.

Taking these breaks into account, the data can be divided into four distinct periods for which meaningful assessments of subjective well-being trends can be made. A preliminary look at Table 5 suggests an upward trend in well-being from 1958 to 1963, continuing with the new question format during 1964–1969, followed by a slower increase from 1970 to 1991. This pattern broadly mirrors Japan’s GDP growth over the same intervals. From 1992 to 2007, however, life satisfaction declined, coinciding with the end of Japan’s economic boom and the start of a prolonged slump. Overall, these findings indicate that subjective well-being in Japan largely increased alongside GDP per capita, especially during the periods of rapid economic growth.

Having established that the qualitative evidence aligns with a positive relationship between satisfaction and GDP, we proceed to quantify the strength of this link. We treat the four periods as separate datasets and replicate our earlier analytical approach. Within each continuous subseries, we generate a time series of average well-being by estimating an ordered probit model of subjective well-being on time fixed effects. By design, the levels across these four series are not directly comparable, so only comparisons within each period are valid. Figure 18 illustrates the relationship between home or life satisfaction and GDP within each period, showing a consistent rise in subjective well-being as Japan moved from poverty to affluence during the first three periods. The final panel shows that since 1992, economic growth has stagnated, and life satisfaction has dropped sharply.

Figure 19 presents a time-series overview of Japan’s economic progress and subjective well-being. The top panel highlights three economic phases aligned roughly with the survey changes: spectacular growth from 1958 to 1969 (covering one survey break), slower growth from 1970 to

1991, and anemic growth from 1992 onward, which also saw rising unemployment. The bottom panel plots the corresponding movements in subjective well-being within these separate periods, noting that data are not comparable across periods.

To reconcile these series into a consistent long-term dataset, we pool the four subseries and run a regression that estimates the effects of the survey breaks while controlling for both secular trends and cyclical factors.

$$\begin{aligned} \textit{Well-being}_t = {} & \underset{(0.49)}{-1.67} \; \underset{(0.07)}{-0.26 * I(1964 \le year \le 1969)} \; \underset{(0.11)}{-0.54 * I(1970 \le year \le 1991)} \; \underset{(0.14)}{-0.59 * I(1992 \le year)} \\ & \underset{(0.02)}{-0.06 * \textit{Unemployment rate}_t} \; \underset{(0.06)}{+0.24 * \log(\textit{GDP per capita}_t)} \qquad n=51 \end{aligned}$$

The coefficients on the three dummy variables indicate that changes in the survey questions did indeed produce statistically significant—and economically meaningful—shifts in estimated well-being. Adjusting for these series breaks, as suggested by the regression, yields the gray line in the bottom panel of Figure 19. This adjusted time series shows that subjective well-being in Japan grew substantially during the period of strong GDP growth. The regression also highlights the significant impact of unemployment, which largely explains the sharp decline in well-being throughout the 1990s and its recent rebound as unemployment rates have fallen. The unemployment coefficient estimated here is roughly comparable to, though slightly larger than, similar estimates for other OECD countries (Wolfers, 2003). Using this coefficient, we can construct a "cyclically adjusted" well-being series for Japan, also shown in the bottom panel of Figure 19. This series closely follows GDP per capita, and the estimated coefficient of 0.24 aligns well with other time-series results.

Additional data further support the link between well-being and Japan's economic development. From 1974 to 1991, the same survey asked respondents, "How do you feel about your life now?" with the proportion answering "perfectly complete" or "somewhat complete" rising steadily. Between 1992 and 2007, a slightly different question was used, during which these proportions declined slowly. The World Values Survey offers further time-series insights: the share of Japanese respondents reporting being "very happy" increased from 16% in 1981 to 18% in 1990, then rose sharply to 34% in 1995 before dropping slightly to 29% in 2000. Life satisfaction data from the same survey are less definitive, but accounting for changes in question order suggests that Japan's decline in life satisfaction was smaller than that experienced by most other countries. Earlier well-being assessments shown in Figure 1 also place Japan's subjective well-being in line with its moderate economic development at the time. More recent surveys, including the World Values Survey and the Gallup World Poll, indicate that Japan's well-being now corresponds with its current status as a prosperous nation.

United States

The General Social Survey (GSS) is the most widely used dataset for studying happiness trends in the United States. It is conducted on a nationally representative sample of approximately 1,500 respondents annually from 1972 to 1993 (except for 1992), increasing to around 3,000 respondents every two years from 1994 to 2004, and reaching 4,500 respondents in 2006. The survey consistently asks, "Taken all together, how would you say things are these days—would you say that you are very happy, pretty happy, or not too happy?" Numerous studies analyzing this data have reached a common conclusion: over this period, happiness in the U.S. has not increased and may have even slightly declined (Easterlin, 1995). Our own analysis supports these findings. The

top panel of Figure 20 presents the coefficients from an ordered probit regression of happiness on year fixed effects, showing a very slight downward trend (slope = -0.0010, standard error = 0.0008). This corresponds to an estimated decline of about 0.035 points in the happiness index between 1972 and 2006, with a 95% confidence interval ranging from -0.09 to +0.02.

Meanwhile, the middle panel of Figure 20 shows that real GDP per capita (logged) increased by 0.66 (or 66 log points) during the same timeframe. The juxtaposition of rising income alongside a flat happiness trend appears to confirm the Easterlin paradox. Based on a typical happiness-income gradient of 0.4, one would have expected the happiness index to rise by about 0.26 points. Translating this expectation into individual happiness categories, U.S. economic growth would suggest that by 2006, roughly 10% more people should classify themselves as "very happy," with the shares of "not too happy" and "fairly happy" individuals dropping by about 4 and 6 percentage points, respectively. However, this predicted increase in happiness is not observed, and the data clearly reject the notion that happiness grew in line with income gains over time within the U.S. While the U.S. trend thus supports the Easterlin paradox, it also stands out as an intriguing exception that merits further examination.

To better understand these patterns, we analyzed income growth distribution in more detail. Economic gains during this period were highly uneven (Stevenson and Wolfers, 2008). From 1972 to 2005, data from the Current Population Survey (CPS) show that average real household income increased by only 15–20% for the bottom three income quintiles, about 30% for the fourth quintile, and 59% for the top quintile (DeNavas-Walt, Proctor, and Lee, 2006). Correspondingly, happiness increased modestly among the top two quintiles but declined for the bottom three. Family income data from the GSS align with this pattern, showing roughly a 32% average income increase overall, though the lowest quintile experienced real income declines. Although CPS data are more reliable

for capturing national income trends, the GSS income data reflect the particular sample for which happiness was measured.

This unequal distribution of income growth raises the question of how micro-level income-happiness relationships aggregate to the macro level. If income gains were distributed proportionally, the individual-level relationship between happiness and log income would translate directly into a linear relationship between average log income and average happiness. However, the rise in inequality creates a gap between the increase in the log of average income (a common macroeconomic measure) and the average of log income (the relevant aggregate for happiness).

We quantified the rise in income inequality using both CPS and GSS data. Between 1972 and 2006, the CPS shows that the log of average real household income rose by 41 log points, while inequality—measured by the mean log deviation—increased by 19 log points. Together, these figures imply that the average of log household income rose by only 22 log points during this period. For the GSS, the log of average family income increased by 32 log points, with inequality rising by 15 log points. Consequently, the average of the log of family income in the GSS sample rose by about 17 log points since 1972, which corresponds to an annual growth rate of roughly 0.5%.

Applying a happiness-income gradient of 0.4 suggests that happiness in the U.S. would have remained essentially flat over this period, or risen by only about 0.07 points (0.4×0.17). Refocusing on this appropriate macroeconomic aggregate, shown in the bottom panel of Figure 20, indicates that the U.S. experience is broadly consistent with a robust positive link between happiness and income once inequality is accounted for.

Alternative Measures of Subjective Well-Being

Our discussion so far has focused on three basic measures of subjective well-being: self-reports of happiness, life satisfaction, and well-being expressed through a "ladder" scale, where respondents rate their lives from worst to best. However, these measures alone do not fully capture the nuanced subjective experiences of individuals across different income levels. Fortunately, recent advances in international data collection have begun to provide a more comprehensive understanding of subjective well-being.

We start by examining the set of ten questions known as the Bradburn Affect Balance Scale, included in the first two waves of the World Values Survey (Bradburn, 1969). This scale aims to separately measure positive and negative affect by asking respondents whether they have experienced certain pleasant or unpleasant feelings in recent weeks. Specifically, respondents report if they have had any of five positive experiences—such as feeling proud after receiving a compliment, being excited about something, or feeling on top of the world—and five negative experiences—such as feeling bored, criticized, restless, lonely, or depressed (Bradburn, 1969, chapter 4).

In Table 6, we analyze each question individually using probit regressions because the outcome variable is binary (whether or not the respondent experienced a given feeling). To distinguish the effects of income differences within countries from those between countries, we run two sets of regressions: one using log GDP per capita as the independent variable for cross-country comparisons, and another using log household income while controlling for country fixed effects to isolate within-country variation. We report the probit coefficients directly to keep the units consistent.

The first panel of Table 6 reveals that both within and between countries, positive affects tend to increase with income, while negative affects tend to decrease. Although the within-country estimates are often statistically significant, their precision is lower due to fewer country-level observations, with standard errors clustered by country. The magnitudes of the income effects on affect are similar in both within- and between-country analyses, with within-country estimates usually falling within the 95% confidence intervals of the between-country estimates. When combining these results into a net affect measure—calculated as the average number of positive experiences minus the average number of negative experiences—this pattern holds consistently.

The analysis reveals a strong relationship between both log household income and log GDP per capita, with these estimates indicating that income influences positive and negative affect in roughly equal proportions. Figure 21 presents a visual comparison across countries. The top row shows that in wealthier countries, a larger share of the population tends to report experiencing positive emotions—except for feeling "particularly excited or interested in something." Conversely, the bottom row illustrates that fewer people in richer countries typically report negative emotions. The regressions in the figure highlight how the proportion of people endorsing each feeling changes with log GDP per capita, and these estimates are scaled differently from the probit coefficients shown in Table 6. Notably, Nigeria, the poorest country represented, stands out as an outlier for positive affect measures, with Nigerians reporting a higher likelihood of positive feelings than residents of other low-income nations. However, for negative emotions, Nigerians' experiences align more closely with what would be expected given their income level.

Next, we examine detailed well-being questions from the Gallup World Poll, which asks respondents whether they experienced specific feelings "during a lot of the day yesterday," including enjoyment, physical pain, worry, sadness, boredom, depression, anger, and love. Table

6's lower panel shows that among positive emotions, enjoyment has a clear positive gradient with income, both between and within countries. Higher income is consistently linked to more frequent experiences of enjoyment throughout the day. Love, however, has a less consistent relationship with income, though within countries, more income correlates with a greater likelihood of feeling love. Negative emotions such as physical pain, boredom, depression, and sadness decline as income increases, both nationally and individually. Additionally, within-country analyses show that worry and anger also decrease with higher income.

Figure 22 further explores how the share of people experiencing these emotions relates to GDP per capita. The percentage of people who enjoyed the previous day rises from about 65% in low-income countries to 80% in the wealthiest nations. Meanwhile, depression, pain, boredom, and anger decrease roughly linearly as log GDP per capita increases. The scale of these effects is substantial: compared to the poorest countries, residents of the richest countries are about one-third less likely to suffer pain or depression and one-fifth less likely to feel bored.

Finally, regressions analyze income's relationship with more specific life experiences, such as feeling respected, smiling, engaging in interesting activities, feeling proud, and learning. Income is positively associated with wanting more days like yesterday, feeling well-rested, being treated with respect, having control over how time is spent, smiling or laughing, feeling proud, doing interesting things, and eating good food. For many of these indicators, the within-country effects of income are larger than the between-country effects, though some exceptions exist. Figure 23 plots the proportion of people reporting these experiences against GDP per capita, with feeling respected and eating good food showing particularly strong associations. Smiling or laughing increases with income both within and between countries, and this measure is especially noteworthy because smiling correlates with higher reported happiness and life satisfaction. Indeed,

individuals who smile more also tend to report greater overall life satisfaction. Moreover, Table 6 and Figure 23 indicate that as income rises, people gain more ability to choose how they spend their time during the day.

Overall, these alternative well-being measures offer a nuanced understanding of how rich and poor individuals experience life differently both within and across countries. The data consistently point to a strong and robust relationship between higher income and greater reported well-being. We anticipate that these rich new cross-country datasets will inspire further research to better uncover the key factors driving this well-being–income gradient.

Discussion

This paper undertakes a comprehensive reassessment—and, where necessary, revision—of the established stylized facts regarding the relationship between subjective well-being and income. Subjective well-being, typically measured through self-reported happiness or life satisfaction, has long been studied in economics and psychology to understand how income impacts individual and collective welfare. Our analysis synthesizes virtually all extant data linking subjective well-being with income, drawing from a wide range of surveys spanning multiple decades, countries, and population groups. Importantly, we present this body of evidence within a coherent and unified framework designed to enable meaningful comparisons across diverse datasets and various measurement approaches to subjective well-being.

The motivation for this work stems from a desire to better understand the so-called Easterlin paradox, a puzzle first articulated by Richard Easterlin in the 1970s. Easterlin observed that while within a given country, richer individuals report higher happiness than poorer individuals,

increases in average income over time do not necessarily lead to corresponding increases in average happiness at the population level. This paradox raises questions about the roles of absolute income versus relative income—that is, whether people's happiness depends primarily on their own income or on how their income compares to that of others.

To explore this issue, we analyze three distinct types of relationships between income and subjective well-being:

1. **Within-country differences**: Comparing happiness levels between richer and poorer individuals living in the same country at a given point in time.
2. **Between-country differences**: Comparing average happiness levels across countries with differing average incomes.
3. **Time-series changes**: Examining how average happiness levels within countries change over time as their average incomes rise or fall.

Our measurement framework allows us to examine these relationships side-by-side and assess their similarities and differences systematically.

Key Findings on Income-Well-being Gradients

Our central finding is that the association between subjective well-being and income within countries closely mirrors the relationship observed between countries, which in turn is similar to the relationship revealed in time-series data. Across numerous datasets encompassing diverse populations and several decades, the estimated gradients linking well-being and income typically cluster around a value of approximately 0.4. This suggests a moderate but consistent positive relationship: as income rises, subjective well-being tends to increase.

While the income-well-being gradient is slightly steeper in cross-country comparisons than within countries, the differences are not statistically significant when sampling errors are accounted for. Consequently, we cannot reject the hypothesis that these gradients are essentially the same regardless of whether one compares individuals within countries or averages across countries. Similarly, the time-series evidence—although inherently noisier due to the scarcity and variability of repeated subjective well-being surveys—supports the presence of a positive association between income growth and increases in happiness over time.

Time-Series Evidence: Economic Growth and Happiness Trends

The time-series component of our analysis deserves particular attention given its historical significance for the Easterlin paradox. Repeated, comparable surveys of subjective well-being over time are relatively rare and often subject to noise, which complicates drawing definitive conclusions. Nonetheless, we observe that in many countries, average happiness tends to rise during periods of economic expansion and rises more rapidly when economic growth accelerates.

Several countries illustrate this relationship with notable clarity. Japan, for example, experienced a remarkable increase in happiness concurrent with its period of rapid economic growth in the latter half of the twentieth century. Similarly, many European countries have seen upward trends in life satisfaction aligned with robust economic performance. These patterns collectively suggest that economic growth generally brings about improvements in subjective well-being.

However, the United States presents a striking exception. Over the past thirty-five years, average happiness in the U.S. has remained flat, with some evidence indicating a decline in happiness among American women. This anomalous trend has drawn considerable attention and highlights

the complexity of the income-well-being relationship, as it suggests that factors beyond income may significantly influence happiness in certain contexts.

Quantitatively, the time-series well-being-GDP gradient is of a similar magnitude to those found in cross-sectional analyses, reinforcing the view that income plays a meaningful role in shaping happiness over time as well as across groups and countries. Taken together, these findings challenge earlier assertions that economic growth fails to yield improvements in subjective well-being, suggesting instead that growth typically confers happiness benefits, although exceptions exist.

Reevaluating the Role of Relative Income and Adaptation

Much of the previous literature on subjective well-being has emphasized the importance of relative income comparisons. Easterlin and others argued that differences in happiness between richer and poorer individuals within a country are more pronounced than differences between countries, interpreting this as evidence that relative income—and by extension, social comparisons—plays a dominant role in determining well-being. This interpretation has often been framed in terms of the "hedonic treadmill" hypothesis, which posits that as people's incomes increase, their aspirations and expectations rise in tandem, resulting in little or no lasting gains in happiness beyond a baseline set point.

In its strongest form, this hypothesis implies that neither individuals nor public policy can achieve lasting improvements in happiness through income growth, since people rapidly adapt to changes and revert to their baseline level of well-being. Our findings, however, clearly reject this strong version of adaptation. We find robust evidence that individuals who enjoy better material

circumstances also report higher subjective well-being, and that sustained increases in living standards correspond with rising happiness over time.

That said, more moderate or nuanced versions of adaptation remain compatible with our evidence. For example, while absolute income appears to play a substantial role, relative income comparisons might still influence happiness to a smaller degree. Our findings suggest that absolute income is the primary driver, but they do not definitively exclude a role for relative income.

Quantifying Absolute Versus Relative Income Effects

Our analysis points to a prominent role for absolute income in determining happiness, with relative income comparisons playing a lesser role than previously believed. The within-country well-being-income gradient typically measures around 0.3, though it may be downward biased due to transitory fluctuations in income that are not fully captured in cross-sectional data. Adjusting for this potential bias, the true within-country gradient may be closer to 0.45. Meanwhile, the between-country gradient tends to be approximately 0.36, and the time-series gradient slightly smaller.

This pattern is consistent with a model in which both absolute and relative income influence well-being, but with absolute income exerting roughly four times the impact of relative income. Thus, while relative income comparisons may contribute to subjective well-being, their magnitude is bounded and considerably smaller than that of absolute income.

Given these findings, it is premature to dismiss the potential influence of relative income entirely. Instead, our results suggest that relative income matters, but its effect size is modest relative to absolute income. Future research focusing on direct evidence from relative income shocks—such as those studied by Luttmer (2005)—will be crucial for further clarifying this issue.

Limitations and Directions for Future Research

While our comparison of within- and between-country gradients casts doubt on a dominant role for intranational relative income comparisons in shaping happiness, the data do not directly address international relative income comparisons. Early surveys from the 1940s report between-country well-being-income gradients similar to those observed today. However, the limited number of data points from these early surveys precludes confident conclusions regarding changes over time in international relative income effects, particularly given the increased global awareness of others' opportunities in recent decades.

In this regard, the most compelling evidence favoring absolute income over relative income may ultimately derive from time-series analyses that track changes in well-being as incomes evolve. These longitudinal data can help separate lasting income effects from transient or comparative influences.

Finally, it is important to emphasize that this paper focuses primarily on establishing the size and consistency of the bivariate relationship between subjective well-being and income. We do not attempt to definitively identify the causal pathways through which income influences happiness. Understanding causality—whether income increases well-being directly by enabling better living standards or indirectly through social comparisons or other mechanisms—remains a vital avenue for future research.

Conclusion

In sum, our comprehensive reanalysis challenges earlier conceptions of the income-happiness relationship by showing that:

- The positive association between income and subjective well-being is similar in magnitude when comparing individuals within countries, comparing across countries, and tracking changes over time.
- Economic growth tends to correspond with increases in average happiness, contrary to claims that growth fails to enhance well-being.
- Absolute income plays a primary role in shaping subjective well-being, while relative income comparisons contribute to a lesser extent.
- The strong "hedonic treadmill" hypothesis, which predicts no lasting gains in happiness from income increases, is not supported.
- More refined and causally informative research is needed to better understand the complex mechanisms linking income and happiness.

Our findings thus provide a more nuanced and empirically grounded understanding of the factors influencing subjective well-being and highlight the continuing importance of economic growth for improving human welfare.

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Appendix A Cardinalizing Happiness and Life Satisfaction

Our method for constructing an index of average well-being in a country-year (or country-wave) relies on the coefficient estimates from an ordered probit regression of subjective well-being on country-by-year (or country-by-wave) fixed effects. This appendix aims to clarify this approach and explain how it relates to alternative methods.

A straightforward way to aggregate subjective well-being data is to assign numeric scores based on the rank order of qualitative categories. For example, in the World Values Survey, responses range from "not at all happy" (scored 1) to "very happy" (scored 4), and average well-being is calculated as the simple mean of these scores. This method is common but has important limitations. Because different surveys use varying scales (e.g., 3-point, 4-point, 7-point, 10-point scales), the numeric values assigned and resulting averages are not comparable across surveys and lack clear economic interpretation.

A more refined approach involves normalizing the dependent variable by subtracting its mean and dividing by its standard deviation. This produces a standardized measure of well-being that can be compared across surveys and interpreted economically as deviations relative to the cross-sectional variation in well-being. Our results closely align with this standardized approach.

However, both methods impose a linear structure, assuming equal spacing between categories (e.g., the difference between "not very happy" and "not at all happy" is the same as between "quite happy" and "not very happy"). While some psychological research accepts this, we can relax this assumption by leveraging population proportions reporting each category.

The ordered probit model assumes an underlying continuous latent well-being variable with a standard normal distribution (mean zero, standard deviation one). The fixed effects estimated for

each country-year or country-wave represent shifts in this latent distribution's mean. The "values" assigned to each response category in our method correspond to the expected value of a standard normal variable conditional on the latent variable falling between the estimated cutoff points. This approach, described by Van Praag and Ferrer-i-Carbonell (2004) as "probit-adapted OLS," provides a flexible and theoretically grounded cardinalization of ordinal data.

Table A1 illustrates the mapping between raw categorical responses, their standardized counterparts, and our ordered probit–based scaling. As shown, our method produces cardinalizations very similar to those from simple standardization, offering a practical way to translate results across studies: dividing well-being–income gradient estimates from other research by the standard deviation of well-being approximates our scale.

Figure A2 further visualizes the close correspondence between our ordered probit scaling and the simpler linear transformations used in three key datasets.

We also compare our approach with four alternative well-being metrics commonly used in the literature:

1. **Means**: The basic method of treating ordinal ranks as cardinal values, especially relevant for cardinal response scales like the 1-to-10 life satisfaction question in the World Values Survey.

2. **Population Proportions**: Reporting the share of respondents in particular categories (e.g., "quite happy" or "very happy") offers a natural 0-to-1 scale with straightforward interpretation. However, changes in happiness dispersion can affect these proportions, potentially conflating dispersion with mean-level changes. To reduce this risk, thresholds

are often set near the median response, though this median can differ markedly between poor and rich countries.

3. **Ordered Logits**: Similar to ordered probits but assume a logistic distribution for the latent well-being variable, which has slightly heavier tails and a fixed variance of $\pi^2/3$. This results in different coefficient scaling compared to ordered probits.

4. **Heteroscedastic Ordered Probit**: Extends the ordered probit by allowing variance as well as mean of latent happiness to vary across country-year units. This relaxes the assumption of common cutoff points, letting threshold parameters shift proportionally by country-year.

Figures A3 to A5 compare these alternative aggregators with our ordered probit estimates using data from the Gallup World Poll and World Values Survey. The high correlations across methods indicate that different aggregation strategies tend to yield consistent measures of subjective well-being.

Appendix B Comparing Countries in the World Values Survey

Several low-income countries surveyed in specific waves of the World Values Survey were not intended to be fully representative of their entire populations. These selected samples introduce measurement errors that are often correlated with factors such as income, education, and other variables linked to subjective well-being. In many cases, this non-representative sampling tends to overestimate average subjective well-being compared to the true population mean. Furthermore, non-representative sampling typically occurred in countries with low per capita GDP. For many of these countries, later survey waves expanded the sampling frame to better represent the entire population—often coinciding with economic growth. Consequently, we should expect that average subjective well-being in these populations may appear to decline over time as more rural, lower-income, and less-educated groups are included.

In the analyses presented throughout this paper, we have excluded certain country-wave observations where the survey explicitly states that the sampling frame was not representative of the whole country and where no sampling weights are available to adjust for this bias. In this appendix, we provide details on these exclusions and assess how including these observations would affect our results. Below, we document the specific sampling issues for the affected countries:

- **Argentina:** Surveyed across all four waves, but the first three waves sampled only the urbanized central region, resulting in a wealthier and more educated subset than the national average. Only the 1999-2004 wave used a nationally representative sample, so we limit our analysis to this wave.

- **Bangladesh:** Participated in two waves; the 1994-99 wave oversampled men and urban residents “to reflect higher awareness in urban areas.” Since no sampling weights are provided to correct this bias, only the 1999-2004 wave, which was representative, is included in our analysis.
- **Chile:** Included in three waves, but the 1989-93 and 1994-99 waves sampled only the central region, which covers about two-thirds of the population and has an average income roughly 40% higher than the national average. The 1999-2004 wave sampled 29 selected cities but still did not represent the entire country. Due to these sampling limitations, we exclude Chile from all analyses.
- **China:** Surveyed in three waves. The 1989-93 wave undersampled illiterate individuals and oversampled urban and more educated groups. The survey notes that these oversampled groups tend to share similar orientations, indicating bias.

Table 1. Cross-Country Regressions of Subjective Well-Being on GDP per Capita

Survey	Ordered probit regressions, micro data		OLS regressions, national data			Sample size
	Without controls	With controls	All countries	GDP per capita > $15,000	GDP per capita < $15,000	
Gallup World Poll, 2006: Ladder question	0.396***	0.422***	0.418***	1.076***†	0.348***	139,051
	(0.023)	(0.023)	(0.022)	(0.211)	(0.037)	(113 countries)
World Values Survey: Life Satisfaction						
1981-84 wave	0.525**	0.291	0.498*	1.677**	0.722	23,537
	(0.263)	(0.331)	(0.252)	(0.703)	(0.582)	(19 countries)
1989-93 wave	0.551***	0.551***	0.558***	0.504	0.391	50,553
	(0.096)	(0.096)	(0.096)	(0.467)	(0.256)	(35 countries)
1994-99 wave	0.408***	0.418***	0.462***	0.327	0.394***	65,779
	(0.054)	(0.054)	(0.051)	(0.421)	(0.084)	(45 countries)
1999-2004 wave	0.321***	0.329***	0.346***	0.455**	0.208**	94,224
	(0.041)	(0.041)	(0.046)	(0.223)	(0.090)	(67 countries)
Combined, with wave fixed effects	0.373***	0.377***	0.398***	0.477**	0.280***	234,093
	(0.038)	(0.037)	(0.040)	(0.198)	(0.073)	(79 countries)
World Values Survey: Happiness						
1981-84 wave	0.650***	0.523***	0.569**	1.662	0.550	22,294
	(0.250)	(0.263)	(0.230)	(0.987)	(0.688)	(18 countries)
1989-93 wave	0.710***	0.725***	0.708***	0.328	0.144	49,281
	(0.130)	(0.128)	(0.123)	(0.475)	(0.309)	(35 countries)
1994-99 wave	0.319***	0.335***	0.354***	0.248	0.212**	63,785
	(0.056)	(0.056)	(0.058)	(0.235)	(0.082)	(46 countries)
1999-2004 wave	0.118*	0.138**	0.126*	0.766***†	-0.146	92,799
	(0.062)	(0.061)	(0.073)	(0.218)	(0.117)	(66 countries)
Combined, with wave fixed effects	0.229***	0.245***	0.244***	0.612***†	-0.015	228,159
	(0.055)	(0.055)	(0.063)	(0.170)	(0.100)	(79 countries)
Pew Global Attitudes, 2002: Ladder question	0.223***	0.242***	0.224***	0.466**	0.168**	37,974
	(0.041)	(0.040)	(0.041)	(0.191)	(0.082)	(44 countries)

Notes: Table reports results of regressions of the indicated measure of well-being on log real GDP per capita. Numbers in parentheses are robust standard errors, clustered by country. Asterisks indicate statistically significant from zero at the *10 percent, **5 percent, and ***1 percent level; † denotes that the coefficient estimate for rich countries is statistically significantly larger than that for poor countries, at the 1 percent level.

Table 2. Within-Country Ordered Probit Regressions of Subjective Well-Being on Income

Survey	Without controls	With controls	Instrumental variables	Sample size
Gallup World Poll, 2006	0.321***	0.318***	0.592***	102,583
Ladder question	(0.005)	(0.005)	(0.014)	(113 countries)
World Values Survey: Life satisfaction				
1981-84 wave	0.167***	0.199***	n.a.	12,198
	(0.019)	(0.022)		(10 countries)
1989-93 wave	0.130***	0.153***	0.001	32,371
	(0.011)	(0.011)	(0.041)	(26 countries)
1994-99 wave	0.225***	0.243***	0.233***	11,924
	(0.012)	(0.013)	(0.021)	(9 countries)
1999-2004 wave	0.277***	0.286***	0.305***	60,988
	(0.007)	(0.007)	(0.018)	(52 countries)
Combined, with country	0.232***	0.249***	0.258***	117,481
× wave fixed effects	(0.007)	(0.007)	(0.013)	(62 countries)
World Values Survey: Happiness				
1981-84 wave	0.324***	0.281***	n.a.	12,021
	(0.021)	(0.023)		(10 countries)
1989-93 wave	0.198***	0.188***	0.064	31,475
	(0.012)	(0.013)	(0.047)	(26 countries)
1994-99 wave	0.208***	0.209***	0.269***	13,176
	(0.013)	(0.013)	(0.022)	(10 countries)
1999-2004 wave	0.259***	0.248***	0.292***	60,627
	(0.008)	(0.008)	(0.020)	(52 countries)
Combined, with country	0.244***	0.234***	0.266***	117,299
× wave fixed effects	(0.008)	(0.008)	(0.015)	(62 countries)
Pew Global Attitudes Survey, 2002:	0.320***	0.324***	0.451***	32,463
Ladder question	(0.008)	(0.008)	(0.016)	(43 countries)

Notes: Table reports results of ordered probit regressions of the indicated measure of well-being on log household income, controlling for country fixed effects or country × wave fixed effects where noted. See the notes to table 1 for wording of survey questions. Observations are weighted to give equal weight to each country × wave. Numbers in parentheses are robust standard errors, clustered by country. Asterisks indicate statistical significance at the *10 percent, **5 percent, and ***1 percent level.
Controls: include sex, a quartic in age, and their interaction, and indicators for missing age or sex.

Table 3. Panel Regressions of Subjective Well-Being on GDP per Capita: World Values Survey

Dependent variable and specification	Micro data estimates	Macro data estimates	Sample
Life satisfaction, 1981-2004			
Levels	0.386***	0.414***	234,093
	(0.039)	(0.041)	(166 country-waves)
Levels with country fixed effects	0.307***	0.301***	234,093
	(0.065)	(0.091)	(166 country-waves)
Levels w/ country & wave fixed effects	0.579***	0.552***	234,093
	(0.088)	(0.118)	(166 country-waves)
First differences	n.a	0.596***	87 differences
		(0.082)	
Long differences	0.575***	0.314***	133,900
	(0.116)	(0.072)	(98 country-years = 49 differences)
Happiness, 1981-2004			
Levels	0.213***	0.230***	228,159
	(0.056)	(0.064)	(165 country-waves)
Levels with country fixed effects	0.388***	0.363***	228,159
	(0.093)	(0.131)	(165 country-waves)
Levels w/ country & wave fixed effects	0.263**	0.216	228,159
	(0.111)	(0.187)	(165 country-waves)
First differences	n.a	0.215	86 differences
		(0.136)	
Long differences	0.305**	0.114	132,662
	(0.147)	(0.103)	(98 country-waves = 49 differences)

Sources: World Values Surveys, 1981-2004.

Notes: Table reports results of regressions of the indicated measure of well-being on log real GDP per capita. Sample pools observations from all nationally representative samples in the four waves of the World Values Survey. Numbers in parentheses are robust standard errors, clustered by country. Asterisks indicate statistical significance at the *10 percent, **5 percent, and ***1 percent level.

Micro data: Ordered probit regression of subjective well-being, using data by respondent, on log real GDP per capita for the respondent's country, weighting observations to give equal weight to each country × wave. Standard errors are clustered by country-wave.

Macro data: National well-being index, using data by country-wave, is regressed on log real GDP per capita. The index is calculated in a previous ordered probit regression of well-being on country × wave fixed effects.

Table 4. Panel Regressions of Subjective Well-Being on GDP per Capita: Eurobarometer

	Micro data estimates	Macro data estimates
Dependent variable: Life satisfaction, 1973-2007		
Levels	0.737***	0.769***
	(0.181)	(0.177)
Levels and country fixed effects	0.192***	0.194***
	(0.066)	(0.059)
Levels and country & wave fixed effects	0.208**	0.193**
	(0.099)	(0.094)
First differences, five year averages	n.a.	.579***
		(.181)
First differences, decadal averages	n.a.	.333
		(.231)
Dependent variable: Happiness, 1975-86		
Levels	0.422	0.448
	(0.517)	(0.489)
Levels and country fixed effects	0.554	0.626*
	(0.351)	(0.346)
Levels and country & wave fixed effects	1.037	1.262
	(0.993)	(0.904)
First differences, five year averages	n.a.	0.107
		(.840)
First differences, decadal averages	n.a.	2.108
		(1.678)

Sources: 1973-2002 data are drawn from Eurobarometer Trendfile, and 2002-07 from biannual Eurobarometer reports.
Notes: Table reports results of regressions of the indicated measure of well-being on log real GDP per capita. Sample pools observations from all Eurobarometer samples, using sample weights to typically yield around 1,000 nationally representative respondents in each country and wave (keeping East and West Germany separate). Numbers in parentheses are robust standard errors, clustered by country. Asterisks indicate statistical significance at the *10 percent, **5 percent, and *1 percent level.
Micro data: Ordered probit regression of subjective well-being, using data by respondent, on log real GDP per capita for the respondent's country, weighting observations to give equal weight to each country × wave. Standard errors are clustered by country-wave.

Japanese *Literal* Idiomatic	**あなたは，現在の暮らしについてどう思っていらっしゃいますか，この中ではどうでしょうか，** ***How do you feel about your life now? Which of the following?*** How do you feel about your life now? Please choose one of the following.					
	十分満足している *Completely satisfied* **Completely satisfied**	十分満足しているとはいえないが，一応満足している *Although I can't say I am completely satisfied, I am satisfied.* **Satisfied**	まだまだ不満だ *Somewhat dissatisfied* **Somewhat dissatisfied**	きわめて不満だ *Completely dissatisfied* **Completely dissatisfied**	不明 *Unclear* **Not sure**	**Sample**
Jan 1970[91]	6.0%	58.9%	29.4%	3.8%	2.0%	16739
Jan 1971	4.8%	52.6%	36.0%	4.8%	1.8%	16399
Jan 1972	5.4%	54.1%	34.8%	4.5%	1.2%	16985
Jan 1973	10.0%	50.5%	32.4%	5.5%	1.6%	16338
Jan 1974	3.5%	50.4%	38.0%	6.7%	1.3%	16552
Nov 1974	3.8%	46.6%	39.9%	8.0%	1.6%	8123
May 1975	5.5%	54.8%	33.6%	4.7%	1.4%	8145
Nov 1975	4.4%	53.9%	35.1%	5.2%	1.4%	8188
May 1976	5.8%	55.4%	33.2%	4.6%	1.1%	8343
Nov 1976	4.7%	55.6%	33.9%	4.5%	1.4%	8225
May 1977	9.1%	55.1%	29.7%	4.7%	1.4%	8219
May 1978	5.4%	58.9%	30.6%	3.8%	1.3%	8116
May 1979	7.1%	60.4%	28.5%	3.1%	0.9%	8239
May 1980	5.4%	57.2%	31.7%	4.5%	1.1%	8373
May 1981	5.4%	58.5%	30.5%	4.5%	1.1%	8348
May 1982	5.7%	60.1%	29.0%	4.0%	1.2%	8303
May 1983	5.8%	59.0%	30.2%	4.0%	0.9%	8106
May 1984	5.8%	59.6%	29.8%	3.9%	0.9%	8031
May 1985	7.3%	63.3%	25.0%	3.6%	0.9%	7878
May 1986	6.2%	62.0%	26.9%	4.0%	0.9%	7857
May 1987	6.0%	58.6%	30.5%	4.1%	0.9%	7981
May 1988	6.2%	58.4%	30.4%	4.1%	0.9%	7711
May 1989	5.4%	57.7%	30.8%	5.1%	1.0%	7735
May 1990	7.1%	59.7%	27.8%	4.3%	1.1%	7629
May 1991	6.7%	60.4%	28.4%	3.7%	0.8%	7639

Gallup World Poll, 2006 **"Now, please think about yesterday, from the morning until the end of the day. Think about where you were, what you were doing, who you were with, and how you felt."**			
Would you like to have more days like yesterday?	66.9	0.032**	0.120***
		(0.016)	(0.007)
Did you feel well rested?	65.7	0.027*	0.067***
		(0.014)	(0.006)
Were you treated with respect?	84.6	0.146***	0.135***
		(0.028)	(0.008)
Were you able to choose how you spent your time all day?	70.0	0.035*	0.030***
		(0.018)	(0.006)
Did you smile or laugh a lot yesterday?	70.6	0.103***	0.148***
		(0.017)	(0.007)
Were you proud of something you did?	59.3	0.012	0.120***
		(0.023)	(0.007)
Did you learn or do something interesting?	52.5	0.029	0.149***
		(0.022)	(0.007)
Did you eat good tasting food?	74.1	0.194***	0.222***
		(0.021)	(0.007)

Notes: The (binary) dependent variable in each regression is the answer (yes or no) to the survey question. All regressions control for respondent gender, a quartic in age, their interaction, and indicators for missing age or gender. Numbers in parentheses are robust standard errors. Asterisks indicate statistical significance at the *10 percent, **5 percent, and ***1 percent level.

Between-country estimates: Probit regression of affect measure on log real GDP per capita, clustering standard errors by country. Sample sizes vary by question, but the Gallup World Poll typically yielded around 134,000 respondents from 130 countries, while the World Values Survey yielded around 66,000 respondents from 31 or 32 countries with nationally representative samples.

Within-country estimates: Probit regression on log household income, further controlling for country fixed effects (and hence exploiting only within-country income comparisons). Because these regressions also require valid household income data, the sample size was smaller: typically the Gallup World Poll yielded around 100,000 respondents from 113 countries, while the World Values Survey yielded around 42,000 respondents from 24 countries.

Table A1. Alternative Scaling of Survey Responses

World Values Survey: Happiness				World Values Survey: Life satisfaction			Gallup World Poll: Life satisfaction		
Verbal description	*Simple coding*	*Standard-ized*	*Our method*	*Simple coding*	*Standard-ized*	*Our method*	*Simple coding*	*Standard-ized*	*Our method*
Not at all happy	1	-2.70	-2.41	1	-2.24	-2.27	0	-2.37	-2.65
Not very happy	2	-1.35	-1.32	2	-1.84	-1.73	1	-1.92	-2.06
Quite happy	3	-0.01	-0.05	3	-1.44	-1.41	2	-1.48	-1.65
Very happy	4	1.34	1.33	4	-1.04	-1.12	3	-1.03	-1.20
				5	-0.64	-0.72	4	-0.59	-0.75
				6	-0.24	-0.33	5	-0.14	-0.17
				7	0.16	0.02	6	0.30	0.39
				8	0.56	0.48	7	0.75	0.83
				9	0.96	0.98	8	1.19	1.36
				10	1.36	1.70	9	1.64	1.88
							10	2.08	2.46

Simple coding: Coding fives each category a score equal to its ordered rank.

Standardized values: Values take the simple coding, subtract its mean, and divide by the standard deviation

Our method: Our method involves running an ordered probit of well-being on country × wave fixed effects. Estimates shown are the expected value of a latent happiness index, conditional on being in each category.

Figure 1. Early Cross-Country Surveys of Subjective Well-Being

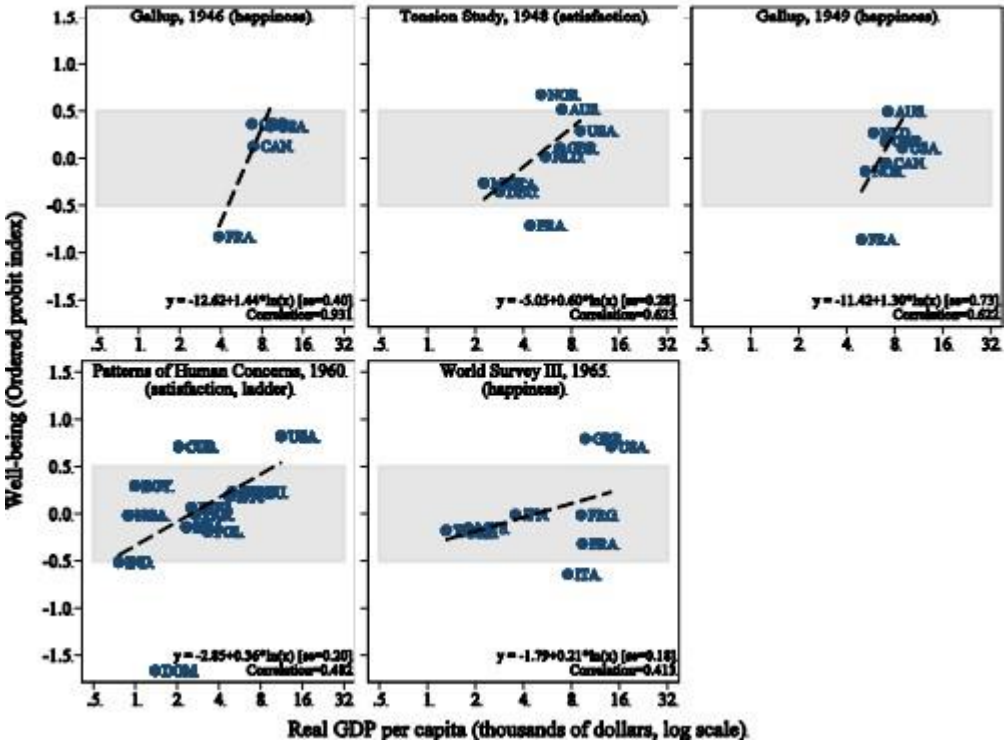

Figure 2. Life Satisfaction and Real GDP per Capita: World Values Survey

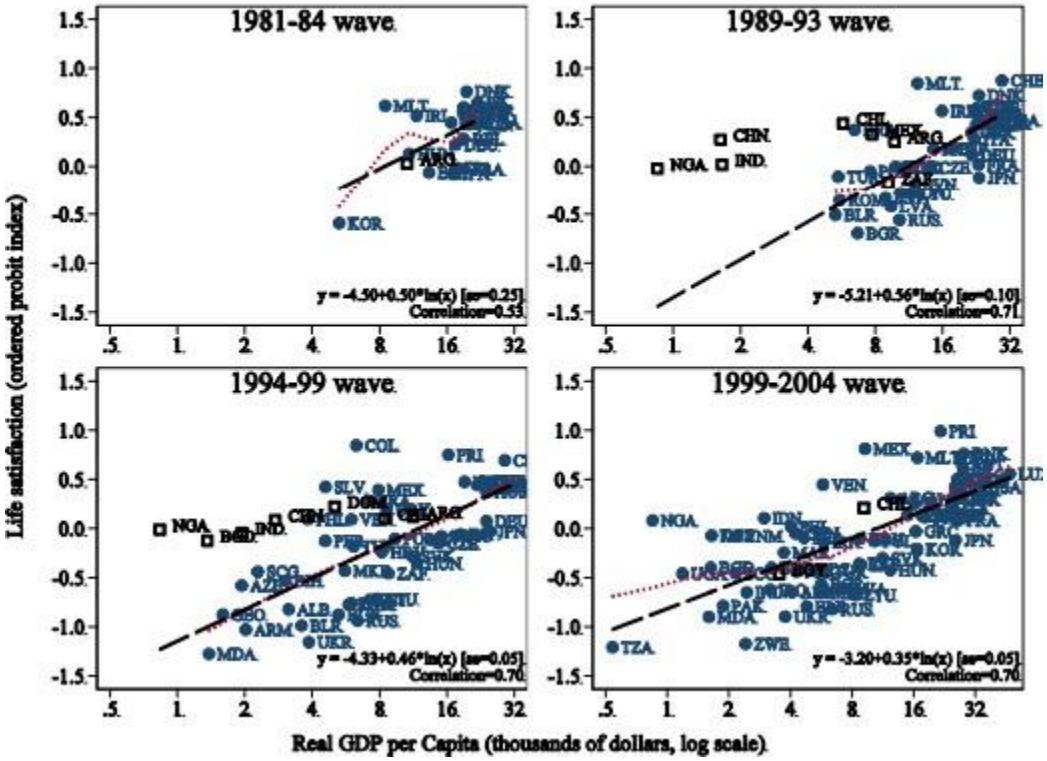

Figure 3. Life Satisfaction and Real GDP per Capita: Pew Global Attitudes Survey

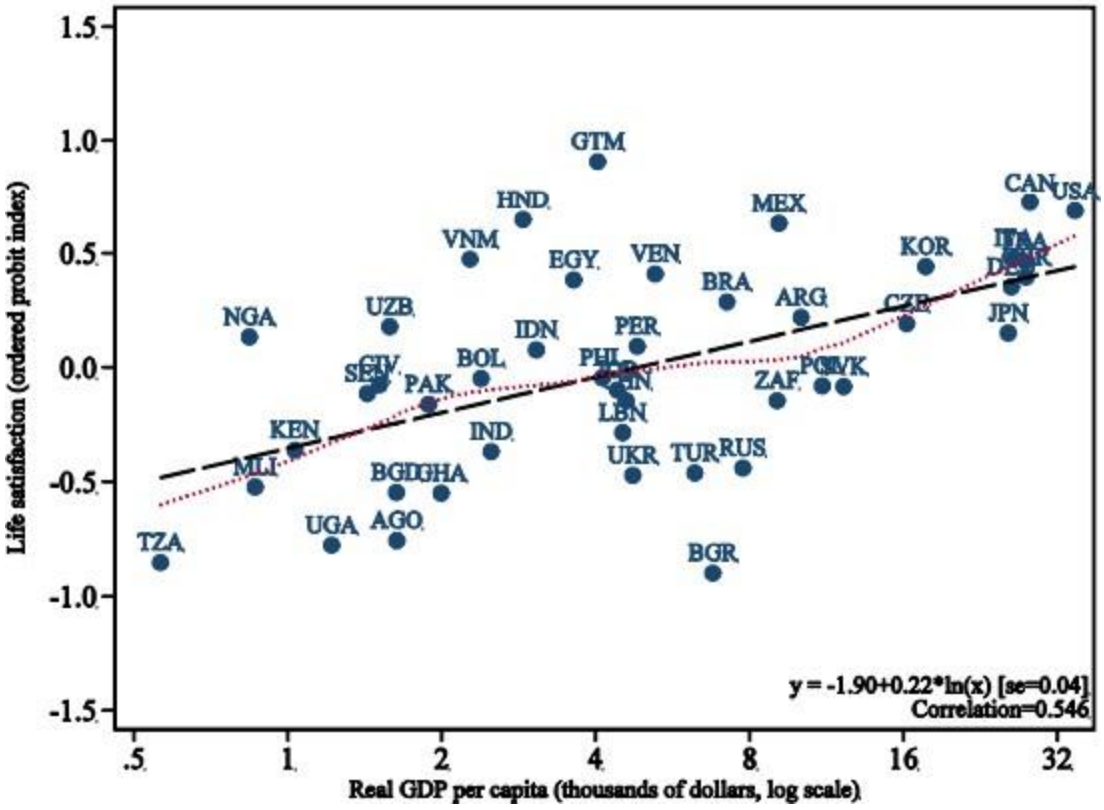

Figure 4. Life Satisfaction and Real GDP per Capita: Gallup World Poll

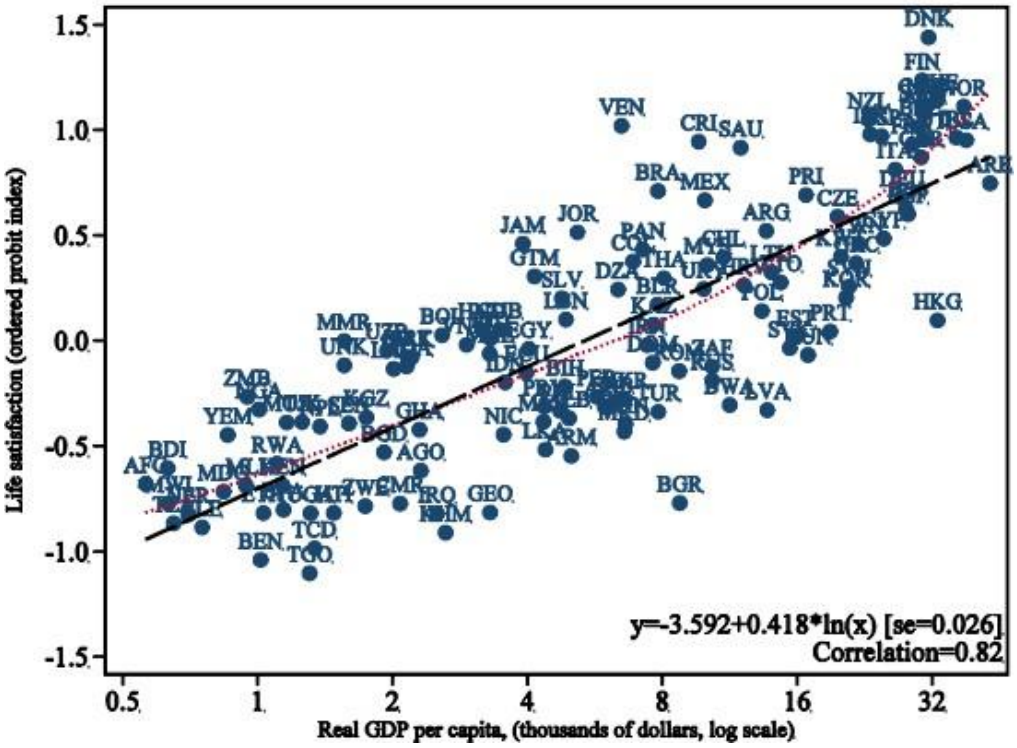

Figure 5. Subjective Well-Being and Real GDP per Capita: 1999-2004 World Values Survey