In 1974 Richard Easterlin famously posited that increasing average income did not raise average well-being, a claim that became known as the Easterlin Paradox. However, in recent years new and more comprehensive data has allowed for greater testing of Easterlin’s claim. Studies by us and others have pointed to a robust positive relationship between well-being and income across countries and over time (Deaton 2008; Stevenson and Wolfers 2008; Sacks, Stevenson, and Wolfers 2013). Yet, some researchers have argued for a modified version of Easterlin’s hypothesis, acknowledging the existence of a link between income and well-being among those whose basic needs have not been met, but claiming that beyond a certain income threshold, further income is unrelated to well-being.

The existence of such a saturation point is claimed widely, although there has been no formal statistical evidence presented to support this view. For example Diener and Seligman (2004, p.5) state that “there are only small increases in well-being” above some threshold. While Clark, Frijters and Shields (2008, p.123) state more starkly that “greater economic prosperity at some point ceases to buy more happiness,” a similar claim is made by Di Tella and MacCulloch (2008, p.17): “once basic needs have been satisfied, there is full adaptation to further economic growth.” The income level beyond which further income no longer yields greater well-being is typically said to be somewhere between $8,000 and $25,000. Layard (2003, p.17) argues that “once a country has over $15,000 per head, its level of happiness appears to be independent of its income;” while in subsequent work he argued for a $20,000 threshold (Layard 2005 p.32–33). Frey and Stutzer (2002, p.416) claim that “income provides happiness at low levels of development but once a threshold (around $10,000) is reached, the average income level in a country has little effect on average subjective well-being.”

Many of these claims of a critical level of GDP beyond which happiness and GDP are no longer linked come from cursorily examining plots of well-being against the level of per capita GDP. Such graphs show clearly that increasing income yields diminishing marginal gains in subjective well-being. However this relationship need not reach a point of nirvana beyond which further gains in well-being are absent. For instance Deaton (2008) and Stevenson and Wolfers (2008) find that the well-being–income relationship is roughly a linear-log relationship, such that, while each additional dollar of income yields a greater increment to measured happiness for the poor than for the rich, there is no saturation point.

In this paper we provide a sustained examination of whether there is a critical income level beyond which the well-being–income relationship is qualitatively different, a claim referred to as the modified-Easterlin hypothesis. As a

† We should add a caveat, that this inference of “diminishing marginal well-being” requires taking a stronger stand on the appropriate cardinalization of subjective well-being (Oswald 2008).

2 We should note that the term “modified-Easterlin hypothesis” is something of a misnomer, as Easterlin himself is not among those claiming a saturation point. Instead, Easterlin and Sawangfa (2009) make the even stronger claim that rising aggregate income is not associated with rising subjective well-being at any level of income. While incorrect, it is not uncommon, however, to attribute the “modified Easterlin hypothesis” to Easterlin, and indeed, his
statistical claim, we shall test two versions of
the hypothesis. The first, a stronger version, is
that beyond some level of basic needs, income
is uncorrelated with subjective well-being; the
second, a weaker version, is that the well-being–
income link estimated among the poor differs
from that found among the rich.
Claims of satiation have been made for com-
parisons between rich and poor people within
a country, comparisons between rich and poor
countries, and comparisons of average well-
being in countries over time, as they grow. The
time series analysis is complicated by the
challenges of compiling comparable data over
time and thus we focus in this short paper on
the cross-sectional relationships seen within
and between countries. Recent work by Sacks,
Stevenson, and Wolfers (2013) provide evidence
on the time series relationship that is consistent
with the findings presented here.
To preview, we find no evidence of a satia-
tion point. The well-being–income link that one
finds when examining only the poor, is similar
to that found when examining only the rich. We
show that this finding is robust across a variety
of datasets, for various measures of subjective
well-being, at various thresholds, and that it
holds in roughly equal measure when making
cross-national comparisons between rich and
poor countries as when making comparisons
between rich and poor people within a country.

I. Cross-Country Comparisons

We begin by evaluating whether countries at
different levels of economic development have
different average levels of subjective well-being.
Our measure of economic development is the
log of real GDP per capita, measured at pur-
chasing power parity. In our analysis we follow
Layard (2003), and define “rich” as those people
or countries with income greater than $15,000
per capita, although the online Appendix shows
that our findings are not sensitive to considering
alternative thresholds.

We want to assess well-being measured in
many different datasets, thus we standardize
well-being responses by subtracting the mean,
and dividing by the typical cross-section of hap-
piness within a country at a point in time. This
approach yields “z-score” measures of well-
being that are transparent, easy to calculate,
and comparable across datasets measuring well-
being on differing scales. It also ensures the es-
timated well-being–income gradient is roughly
comparable to earlier research which had ana-
lyzed ordered probit regressions. However, the
disadvantage of this approach is that it is clearly
ad hoc, as it assumes, for instance, that the dif-
ference between being “very happy” and “pretty
happy” is equivalent to the difference between
“very happy” and “not too happy.”

Figure 1 shows average levels of life satisfac-
tion drawn from the five waves of the Gallup
World Poll run between 2008 and 2012 and GDP
per capita, plotted on a log scale. We have data
on 155 countries, which account for over 95 per-
cent of the world’s population, across the spec-
trum of levels of economic development. The
correlation of these variables is 0.79, remark-
ably high. The solid line shows the results from
a simple OLS regression, estimated for the full
sample:

\[ \text{Well-being}_c = \alpha + \beta \log(GDP_c) + \epsilon_c. \]

The estimated well-being–income gradient($\beta$) is
0.335 ($se = 0.018$). The figure also plots a local
linear regression as a dotted line, which allows
for a non-parametric fit of the well-being–
income relationship. If there were a “satiation
point,” this non-parametric fit would flatten out
once basic needs were met. Instead, the line
steepens slightly among the rich nations. Indeed,
the most striking finding is simply how closely
the non-parametric fit lies to the OLS regression
line. That is, the well-being–income relationship

\[ \frac{4}{5} \text{That is, the denominator in this “z-score” is the standard}
\text{deviation of well-being after controlling for country and}
\text{wave fixed effects.}
\]
\[ \text{Fortunately, this issue turns out to be more troubling in}
\text{theory than in practice; Stevenson and Wolfers (2008) show}
\text{alternative approaches using instead ordered probits or log-
\text{its yield estimates of national happiness averages that are}
\text{highly correlated ($\rho > 0.99$).} \]

\[ \text{For most countries GDP comes from the World Bank’s}
\text{World Development Indicators. Detailed information about}
\text{how we fill in missing data is available in Sacks, Stevenson,}
\text{and Wolfers (2013).} \]
among “rich” countries (those with GDP ≥ $k$).

By measuring log\((GDP)\) relative to a “cutoff,”
this functional form allows for a change in the well-being–income gradient (i.e., a “kink” in the regression line) once GDP per capita exceeds the cutoff, but it rules out a discontinuous shift
in well-being once per capita GDP exceeds $k$.
This specification allows us to test both
the “strong” version of the modified-Easterlin hypothesis, which posits that $\beta_{\text{rich}} = 0$, and the
“weak” version, suggesting $\beta_{\text{poor}} > \beta_{\text{rich}}$.

In Table 1 we report results where the cutoff
level of per capita GDP, $k$, is set to $15,000$.
We repeat the results seen in Figure 1 in the first row.
Subsequent rows show the results across
different questions assessing well-being and different datasets. The well-being–income gradient
in the Gallup World Poll clearly remains strong
for the rich countries, and indeed, is somewhat
stronger among countries whose per capita GDP
exceeds $15,000$. These data clearly reject both
the weak and strong versions of the modified-
Easterlin hypothesis.

The next ten rows repeat the analysis using
five rounds of the World Values Survey for both
a life satisfaction question which mirrors that in
the Gallup World Poll, and a question on happiness. The results roughly parallel those above,
albeit with less statistical power.
In seven of the ten rows we can reject the strong claim that $\beta_{\text{rich}} = 0$. In two cases
$\beta_{\text{rich}}$, and $\beta_{\text{poor}}$, are statistically significantly different from each other,
however the well-being–income relationship
is steeper among rich countries than the poor.
Indeed, in all but two cases, the estimate of $\beta_{\text{rich}}$
actually exceeds that for $\beta_{\text{poor}}$ (rather than
the other way around). In the two cases in which
the point estimate of $\beta_{\text{poor}}$ is larger, we cannot reject
the null that $\beta_{\text{rich}} = \beta_{\text{poor}}$.

7 We obtain similar results if instead we estimate
the well-being–income gradient separately for rich and poor
countries.

8 Online Appendix Table 1 shows the results using alternative thresholds of $8,000$ and $25,000$, as well as the
median level of GDP for the sample. Stevenson and Wolfers
(2008) show estimates of ordered probit regressions estimating
the well-being–income gradient for incomes above and
below $15,000$, while Deaton (2008) tested thresholds of
$12,000$ and $20,000$.

9 In several countries the surveys were not nationally rep-
resentative, focusing instead on urban areas or more educated
members of society. Our analysis drops particularly unrepresentative observations as detailed in Stevenson

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Deaton (2008) and Stevenson and Wolfers (2008) make
similar arguments using 2006 data from the Gallup World
Poll.
### Table 1—Cross Country Evidence

<table>
<thead>
<tr>
<th>Well-being data</th>
<th>$\beta_{rich}$</th>
<th>$\beta_{poor}$</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Panel A. Gallup World Poll 2005–2012</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction ladder</td>
<td>0.674***</td>
<td>0.252***</td>
<td>0.422***</td>
</tr>
<tr>
<td>(0.103)</td>
<td>(0.023)</td>
<td>(0.123)</td>
<td></td>
</tr>
<tr>
<td>Life satisfaction</td>
<td>0.720***</td>
<td>0.361***</td>
<td>0.360*</td>
</tr>
<tr>
<td>(0.160)</td>
<td>(0.051)</td>
<td>(0.198)</td>
<td></td>
</tr>
<tr>
<td><strong>Panel B. World Values Survey</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Life satisfaction: 1981–1984 wave</td>
<td>0.185</td>
<td>0.668</td>
<td>−0.484</td>
</tr>
<tr>
<td>(0.418)</td>
<td>(0.430)</td>
<td>(0.772)</td>
<td></td>
</tr>
<tr>
<td>Life satisfaction: 1989–1993 wave</td>
<td>0.694***</td>
<td>0.515*</td>
<td>0.179</td>
</tr>
<tr>
<td>(0.241)</td>
<td>(0.284)</td>
<td>(0.488)</td>
<td></td>
</tr>
<tr>
<td>Life satisfaction: 1994–1999 wave</td>
<td>0.640***</td>
<td>0.445***</td>
<td>0.195</td>
</tr>
<tr>
<td>(0.185)</td>
<td>(0.105)</td>
<td>(0.259)</td>
<td></td>
</tr>
<tr>
<td>Life satisfaction: 2000–2004 wave</td>
<td>0.755***</td>
<td>0.209***</td>
<td>0.546**</td>
</tr>
<tr>
<td>(0.152)</td>
<td>(0.066)</td>
<td>(0.201)</td>
<td></td>
</tr>
<tr>
<td>Life satisfaction: 2005–2009 wave</td>
<td>0.176</td>
<td>0.254***</td>
<td>−0.078</td>
</tr>
<tr>
<td>(0.137)</td>
<td>(0.056)</td>
<td>(0.179)</td>
<td></td>
</tr>
<tr>
<td>Happiness: 1981–1984 wave</td>
<td>0.567</td>
<td>0.087</td>
<td>0.481</td>
</tr>
<tr>
<td>(0.387)</td>
<td>(0.338)</td>
<td>(0.685)</td>
<td></td>
</tr>
<tr>
<td>Happiness: 1989–1993 wave</td>
<td>0.945***</td>
<td>0.430</td>
<td>0.515</td>
</tr>
<tr>
<td>(0.231)</td>
<td>(0.281)</td>
<td>(0.472)</td>
<td></td>
</tr>
<tr>
<td>Happiness: 1994–1999 wave</td>
<td>0.599***</td>
<td>0.241**</td>
<td>0.357</td>
</tr>
<tr>
<td>(0.184)</td>
<td>(0.106)</td>
<td>(0.260)</td>
<td></td>
</tr>
<tr>
<td>Happiness: 2000–2004 wave</td>
<td>0.796***</td>
<td>−0.068</td>
<td>0.864***</td>
</tr>
<tr>
<td>(0.164)</td>
<td>(0.075)</td>
<td>(0.222)</td>
<td></td>
</tr>
<tr>
<td>Happiness: 2005–2009 wave</td>
<td>0.332**</td>
<td>0.055</td>
<td>0.277</td>
</tr>
<tr>
<td>(0.135)</td>
<td>(0.061)</td>
<td>(0.182)</td>
<td></td>
</tr>
<tr>
<td><strong>Panel C. Pew Global Attitudes Survey</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Satisfaction ladder: 2002</td>
<td>0.716***</td>
<td>0.163**</td>
<td>0.552**</td>
</tr>
<tr>
<td>(0.205)</td>
<td>(0.079)</td>
<td>(0.270)</td>
<td></td>
</tr>
<tr>
<td>Satisfaction ladder: 2007</td>
<td>0.405**</td>
<td>0.208***</td>
<td>0.197</td>
</tr>
<tr>
<td>(0.175)</td>
<td>(0.072)</td>
<td>(0.233)</td>
<td></td>
</tr>
<tr>
<td>Satisfaction ladder: 2010</td>
<td>0.279**</td>
<td>0.248*</td>
<td>0.031</td>
</tr>
<tr>
<td>(0.295)</td>
<td>(0.126)</td>
<td>(0.411)</td>
<td></td>
</tr>
<tr>
<td><strong>Panel D. ISSP</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Happiness 2008</td>
<td>0.449***</td>
<td>−0.245</td>
<td>0.694**</td>
</tr>
<tr>
<td>(0.162)</td>
<td>(0.190)</td>
<td>(0.292)</td>
<td></td>
</tr>
<tr>
<td>Happiness 2007</td>
<td>0.424***</td>
<td>−0.364**</td>
<td>0.788***</td>
</tr>
<tr>
<td>(0.149)</td>
<td>(0.148)</td>
<td>(0.270)</td>
<td></td>
</tr>
<tr>
<td>Happiness 2001</td>
<td>0.713***</td>
<td>−0.247**</td>
<td>0.960***</td>
</tr>
<tr>
<td>(0.232)</td>
<td>(0.111)</td>
<td>(0.252)</td>
<td></td>
</tr>
<tr>
<td>Happiness 1998</td>
<td>0.925***</td>
<td>−0.076</td>
<td>1.000***</td>
</tr>
<tr>
<td>(0.193)</td>
<td>(0.223)</td>
<td>(0.362)</td>
<td></td>
</tr>
<tr>
<td>Happiness 1991</td>
<td>0.923***</td>
<td>−0.177</td>
<td>1.100***</td>
</tr>
<tr>
<td>(0.262)</td>
<td>(0.127)</td>
<td>(0.370)</td>
<td></td>
</tr>
</tbody>
</table>

***Significant at the 1 percent level.
**Significant at the 5 percent level.
*Significant at the 10 percent level.
There are two other useful cross-country studies that are worth analyzing, the Pew Global Attitudes studies, which posed the satisfaction ladder question in 44 countries in 2002, 47 countries in 2007, and 22 countries in 2010, and the International Social Survey Program, which asked a consistent happiness question in 1991, 1998, 2001, 2007, and 2008. Each of these datasets strongly reject the null that \( \beta_{\text{rich}} = 0 \). Moreover, to the extent that the well-being–income relationship changes, it appears stronger for rich countries. Somewhat paradoxically, the ISSP data appear to show a negative well-being–income gradient among poor nations, but this is entirely due to a single influential observation, the Philippines (whose influence is even greater given that these samples contain mostly medium- and high-income countries).

All told, comparisons of average levels of subjective well-being and GDP per capita across countries suggest that the well-being–income relationship observed among poor countries holds in at least equal measure among rich countries. In the few cases where we cannot reject \( \beta_{\text{rich}} = 0 \), we also cannot reject \( \beta_{\text{rich}} = \beta_{\text{poor}} \). Our larger datasets emphatically reject the weak and strong forms of the modified-Easterlin hypothesis, while the smaller samples are sufficiently imprecise as to provide no statistically significant evidence in support of (or against) it.

II. Within-Country Cross-Sectional Comparisons

We now turn to analyzing the relationship between well-being and income that one obtains when comparing rich and poor people within a country. We begin by analyzing data from the United States, and in particular, the Gallup poll conducted on December 6–9, 2007. These data are particularly useful because the top income code is unusually high, allowing respondents to report household income in categories up to $500,000. If we are to find evidence of satisfaction, these data seem like the right place to look. Table 2 shows a simple cross-tab of happiness and household income. The positive association between family income and reported well-being is remarkably consistent. When we analyze these data more formally in regressions (not shown) we find no evidence of a significant break in either the happiness-income relationship, nor in the life satisfaction-income relationship, even at annual incomes up to half a million dollars. This finding contrasts with a claim made by Frey and Stutzer (2002, p.409) whose informal visual assessment of data from the General Social Survey (for 1972–1974 and 1994–1996) led them to conclude that “the same proportional increase in income yields a lower increase in happiness at higher income levels.” In our re-analysis of that same dataset (not shown) we used data from all years, but even with these larger samples could not reject the null that proportional increases in income continue to yield the same increase in happiness at higher income levels.

Looking beyond the United States, we can use the individual country data in the Gallup World Poll to examine the within-country well-being–income gradients in each nation. In Figure 2, we perform separate local linear (“lowess”) regressions estimating the satisfaction-income relationship non-parametrically for each of the world’s 25 most populous countries. These results are shown for those respondents whose annual household income lies between the tenth and ninetieth percentiles of their national income distributions. While there are differences in the location of these non-parametric fits, and even some differences in the slopes, the more remarkable feature is simply that for

<table>
<thead>
<tr>
<th>Annual household income</th>
<th>Very happy (percent)</th>
<th>Fairly happy (percent)</th>
<th>Not too happy (percent)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;$10k</td>
<td>35</td>
<td>44</td>
<td>21</td>
</tr>
<tr>
<td>$10k–$20k</td>
<td>42</td>
<td>42</td>
<td>15</td>
</tr>
<tr>
<td>$20k–$30k</td>
<td>43</td>
<td>52</td>
<td>5</td>
</tr>
<tr>
<td>$30k–$40k</td>
<td>55</td>
<td>41</td>
<td>4</td>
</tr>
<tr>
<td>$40k–$50k</td>
<td>46</td>
<td>46</td>
<td>9</td>
</tr>
<tr>
<td>$50k–$75k</td>
<td>55</td>
<td>40</td>
<td>5</td>
</tr>
<tr>
<td>$75k–$100k</td>
<td>60</td>
<td>36</td>
<td>4</td>
</tr>
<tr>
<td>$100k–$150k</td>
<td>60</td>
<td>40</td>
<td>0</td>
</tr>
<tr>
<td>$150k–$250k</td>
<td>70</td>
<td>30</td>
<td>0</td>
</tr>
<tr>
<td>$250k–$500k</td>
<td>83</td>
<td>17</td>
<td>0</td>
</tr>
<tr>
<td>&gt;$500k</td>
<td>100</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Note: Author’s calculations, based on Gallup Poll conducted December 6–9, 2007.
Subjective Well-being and income: Is there any evidence of Satiation?

In every country the relationship estimated at low incomes appears to hold in roughly equal measure at higher incomes. In particular, there is no evidence that the slope flattens out beyond any particular “satiation point” in any nation.

In order to provide a more formal assessment, we repeat the earlier exercise, estimating an analog to equation (2), but analyzing individual well-being and household income, rather than national averages, and allowing the slope to change for household incomes above $15,000 per annum. We repeat this exercise for 98 countries in which we have at least 200 respondents both above and below the threshold. We report the results of these 98 regressions compactly in Figure 3. The vertical axis shows $\beta_{rich}$, the estimated well-being–income gradient over the “rich” part of the sample, while the horizontal axis shows $\beta_{poor}$, the gradient over the “poor” part of the sample. The strong form of modified-Easterlin hypothesis suggests that the well-being–income gradient is zero for the rich part of the sample, suggesting that the data should cluster along the horizontal axis. The weaker form of this hypothesis suggests a sharp break in this gradient among the “rich,” and hence that most country-level estimates will lie beneath the 45-degree line. In fact, we find 61 nations above this line, and only 37 below.

We also try various alternative specifications, changing the cutoff level of $k$ across countries (using alternative cutoffs at $8,000$ and $25,000$); in others, $k$ depends on parameters of a country’s income distribution—it’s median, twenty-fifth or seventy-fifth percentile. In no case do we find evidence in favor of the modified-Easterlin hypothesis.

III. Conclusions

While the idea that there is some critical level of income beyond which income no longer impacts well-being is intuitively appealing, it is at odds with the data. As we have shown, there is no major well-being dataset that supports this commonly-made claim. To be clear, our analysis in this paper has been confined to the sorts of evaluative measures of life satisfaction and happiness that have been the focus of proponents of the (modified) Easterlin hypothesis. In an interesting recent contribution, Kahneman and Deaton (2010) have shown that in the United States, people earning above $75,000 do not appear to enjoy either more positive affect or less negative affect than those earning just below that. We are intrigued by these findings, although we conclude by noting that they are based on very different measures of well-being, and so they are not necessarily in tension with our results. Indeed, those authors also find no satiation point for evaluative measures of well-being.

REFERENCES

- Clark, Andrew E., Paul Frijters, and Michael A. Shields. 2008. “Relative Income, Happiness,


