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## **Economic Development and Happiness: Evidence from 32 Nations<sup>1</sup>**

*Abstract:* Drawing on reference group, relative deprivation, conspicuous consumption and hierarchy of needs theories, this paper tests the hypothesis that goods (material and other) bring more satisfaction if few other people have them. We test this hypothesis by estimating the effect of education and income on happiness in large representative national samples from 32 nations at various levels of economic development. The results indicate that, net of individuals' socio-demographic characteristics and country's level of development, the higher the average education in a given society, the smaller the gain from advanced education on individuals' happiness. Similarly, the richer the society, the less do gains in family income confer gains in individuals' happiness. Thus, the more that goods such as education and income diffuse through a society, the less they enhance people's subjective well-being. However, the nation's level of economic development has a strong, independent positive effect on well-being. Taken together, the quantitative implication of these patterns is that economic growth *enhances* well-being, especially for poor people, and more so in poor nations than in rich nations.

*Keywords:* Happiness; life satisfaction; income; education; economic development; international comparisons; gross national product.

### **Theory**

Our main thesis is that social “goods” such as education, status, income, and wealth typically have both *absolute* aspects that are the same regardless what other people have, or don't have, and also *positional* aspects that reflect their holder's position relative to other people, and hence vary in their impact depending on whether other people are higher, the same, or lower. So, for example, a university MA in mathematics provides skills that can be applied equally to calculate the orbit of a communications satellite in a university lecture at MIT, a high school classroom in Poland, or in an uneducated village in Central Africa. In all, the calculation is the same. But the social standing of a MA in mathematics is not the same: at MIT, surrounded by PhDs and full professors, it is low; in a Polish high school surrounded by BAs in education, it is high; and in Central African illiterate village, it is stellar. Similarly, an income

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of \$10,000 a year is poverty on Wall Street, average in Poland, and stellar in rural Mongolia. We suggest that these positional considerations have broad and pervasive consequences for how people view themselves, how they are viewed by others, how they evaluate their achievements, and therefore on how satisfied they are with their lives. Specifically, we posit that possessing social goods in societies where they are rare and exclusive provides, because of their positional benefits, more subjective well-being than does possessing the same goods in societies where they are common (Zagórski 2005, 2008). We do not deny that the absolute benefits of being well educated and wealthy are large and real. But we suggest that there are further large gains in being better educated and wealthier than others around you.

These arguments primarily stem from middle range theories concerning reference groups and (the mirror image of) relative disadvantage/deprivation; and they are supported by other psychological and economic theories. An important implication is that democratization of opportunity may lead those scrambling up the ladder of success to find less joy than those who climbed the ladder previously. Moreover, newcomers' success reduces the happiness of those already at the top of the ladder, so their ascent may arouse opposition. Thus, our analysis will contribute to the lively research traditions of reference group research and relative deprivation/relative advantage.

Our analysis will also contribute to the burgeoning literature on happiness (also known as life satisfaction or subjective well-being). In economics, for example, it has grown more than twenty-fold in recent years (Kahneman and Krueger 2006). In particular, vast amounts of research have documented the main effects of individuals' characteristics on life satisfaction (e.g. Headey and Wearing 1992; Cummins 2000;), but only recently have data become available that enable us to analyze cross-national similarities and differences in the absolute and relative/ positional benefits of education and income for subjective well-being (e.g. Alesina, Di Tella and MacCulloch 2004). In particular, we can now assess not only the magnitude of the main effects of national prosperity and individual education and prosperity on happiness, but also their conditional or interaction effects, specifically the degree to which the impacts of education and income depend on the level of economic development.

### **Reference Group and Relative Disadvantage**

Reference group theory assumes that people assess their own situation and form their expectations in relative rather than absolute terms. They compare themselves to "the people like us" or to other groups, some of which may serve as positive, others as negative, reference groups (For an overview see: Hyman and Singer 1968). The political importance of such comparisons is evident (Frey and Stutzer 2002; Gurr 1970).

The concept of reference group and relative disadvantage has a long and distinguished history, and in a wide variety of contexts (Gurr 1970; Marx and Engels 1868: 94; Pettigrew 1967; Rainwater 1974; Runciman 1966; Stouffer et al. 1949). It has recently been rediscovered by economists (Clark and Oswald 1996; Ferrer-i-Carbonell

2005; Van Praag and Ferrer-i-Carbonell 2004; Van Praag and Kapteyn 1973; Senik 2008). The idea was elaborated by Merton (1968) to explain, for example, Stouffer's finding from World War II that airmen, whose chances for promotion were quite high, were no more satisfied with them than were the military police, whose actual chances were much slimmer.<sup>2</sup> To give a quite different example, older persons, though physically weaker, are usually as satisfied with their health as the young, since the old see around them many more sick persons than the young (Groot 2000). Both these examples suggest that common goods are less valued than rare ones (e.g. Graham and Pettinato 2001). Merton also developed the concept of relative disadvantage, the idea that people feel disadvantaged not in relation to an abstract standard but rather in relation to other people, whom they see as having more goods or other advantages; this is the mirror-image of relative advantage.<sup>3</sup> Reference group arguments have been applied to topics as diverse as sexual behavior (Cochran et al. 2004), subjective social class (Kelley and Evans 1995), neighborhood satisfaction (Lopez-Turley 2002), and revolution (Gurr 1970).

Though the reference group and relative disadvantage arguments are usually developed with reference to different groups in the same society (e.g. Senik 2008), their assumptions can be applied to people assessing their own situation *vis a vis* the society as a whole, taking the whole society as a reference group, or even some larger group such as the European Union (e.g. Bygren 2004; Daly 2007). This is particularly likely in the modern "globalized" economy, where contacts between nations are extensive and comparisons between them common.<sup>4</sup>

### **Elite Consumption, Mass Consumption and Modernization**

Elite and mass consumption theory also lead to the prediction that attainments held by few will be more satisfying than the same attainments, if held by many. These theories posit that material goods which are commonly available and possessed by many, are consciously or unconsciously, considered by people as less desirable and less satisfying than the goods available to only a few and perceived as rare, exceptional, unaffordable and elitist. That is why elites prove their status by conspicuous consumption of luxury goods (Veblen 1967) or high culture (Bourdieu 1984). The more people have particular kind of consumer goods or have access to a cultural domain, the less desirable these goods are for both the elite and its followers.

All these theories lead to the assumption that the more commonly possessed goods are, whether material or non-material, the less they enhance subjective well-being of their possessors.

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<sup>2</sup> The basic idea is much older, going back at least to the middle of the 19<sup>th</sup> century in Marx's 1849 lectures.

<sup>3</sup> Although theory development and research in this area mostly focus on relative disadvantage (e.g. relative poverty), logically most of these arguments should apply in reverse to relative advantage.

<sup>4</sup> Indeed, the dissatisfaction with communism in Eastern Europe was arguably driven, in addition to political reasons, not so much by the modest absolute standard of living it provided—which was nonetheless higher on the average than these societies enjoyed in the past—as by its failure to catch up with living standards in Western Europe.

That is consistent with Inglehart's modernization theory (Inglehart and Welzel 2005). While economic development associated with satisfaction of subsistence needs causes the shift of emphasize from survival (material) values to self-expression (post-material) values, we can assume that dependency of happiness on material goods diminishes.

### **Implications**

These theories have testable implications about how the impact of possessing a "good" will vary among societies. We will argue in the discussion that this helps explain why subjective well-being rises only slightly with the democratization of opportunity: The very abundance it generates takes some of its sweetness away. We will take up here the examples of education and income, although many others are possible (Zagórski et al. 2005). The reason for looking at more than one example in the same paper is the classic Fisher argument that the hypothesis of causality is greatly strengthened by testing a variety of specific hypotheses that operationalize a middle range hypothesis in diverse concrete instances.

Hypothesis 1: All else being equal, education greatly increases happiness in societies where education is rare, hence well educated people will be much happier than the poorly educated. But in societies where education is common, there will be little difference between them.

Hypothesis 2: All else being equal, in poor societies prosperous people will be much happier than poor people. But in rich societies, there will be little difference between them.

### **Money and Happiness**

Rapid economic growth is the principal economic goal of most nations, rich as well as poor. However survey data on subjective well-being (happiness, satisfaction with life, positive affect) leave it far from clear that economic growth actually increases well-being in all circumstances. Indeed, many economists, following Easterlin's (1974, 1995, 2001, 2005) famous and pessimistic application of reference group theory to the question of income and happiness, have concluded that economic growth is of little benefit in rich nations (Caporale et al. 2009; Diener and Suh 1999; Frey and Stutzer 2000; Van Praag and Ferrer-i-Carbonell 2004). However, much subsequent work cast doubt on Easterlin's pessimistic conclusion (Clark, Frijters and Shields 2008; Frijters, Haisken-DeNew and Shields 2004; Veenhoven 1984, 1993, 1995; Wolfers and Stevenson 2008). Research has documented strong correlations among economic development, income and happiness in "mid-developed" post-communist countries such as Poland (Zagórski 2010). However, the issue remains open with some state of the art analyses using good data finding weak effects of economic growth on happiness, at least as regards the most devel-

oped and rich countries (e.g. Diener and Biswas-Diener 2002; Schyns 2002; Frey and Stutzer 2002).

We suggest that, regardless of one's income, living in a prosperous society is nicer than living in a poor one, other things being equal. Good economic infrastructure, good social services, quality schools, honest government, and the like are a benefit to all. So we suggest:

Hypothesis 3: Other things being equal, people living in prosperous societies will be happier than those living in poor societies.

Testing these hypotheses requires large international datasets containing adequate individual-level measures of education and income on which to test the hypotheses. We now turn to these matters.

## Measurement, Data and Methods

### Measurement: Happiness

Testing our hypotheses requires a dataset that includes a measure of subjective well-being, good measures of education and income, and a range of standard control variables known to affect happiness but not directly relevant to the issues of this paper. We use the International Social Survey Programme's "Religion-II" surveys conducted around 1998 on representative national samples in 32 societies throughout the world, which is very suitable for our purpose.<sup>5</sup> There are 37,875 cases.

The measure of subjective well-being is a single item:

How happy would you say you are these days?

Very happy	21%	[100 points]
Fairly happy	58%	[75 points]
Not very happy	18%	[25 points]
Not at all happy	4%	[0 points]
	100%	(37,875 cases)
		(Mean = 66 points)

This is not an ideal measure, but it is surprisingly effective for a single item measure and has been very widely used in the literature, and so is comparable with much prior

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<sup>5</sup> The much analyzed World Values study would be a plausible alternative, and would indeed be preferable on the dependent variable (as they have two life satisfaction measures which can be combined into a multiple-item index, thereby reducing random measurement error) and because of their broader coverage of poor nations. But their measurement of independent variables is much weaker, generally following commercial standards rather than the ISSP's more rigorous academic standards. And, as they admit, some of their samples in key poorer nations are decidedly problematic and some of their countries use quota samples unsuitable for the usual tests of significance. So on balance we prefer the higher quality ISSP surveys. Moreover, the ISSP subjective well-being data have been little analyzed so far, and so bring valuable new evidence to bear.

research.<sup>6</sup> It focuses on the more emotional component of subjective well-being, in contrast to the cognitive component measured by life satisfaction questions, another widely used survey measure that leads to strikingly similar results (Diener, Oishi, and Lucas 2003).

Prior research shows that using the four-category happiness variable yields effect parameters of much the same magnitude as when using a more finely graded subjective well-being measure. For example, the effects of marriage on happiness using this variable are virtually identical to those found using a multiple-item index with finer gradations of answer categories in the component items (Evans and Kelley 2004). Accordingly, we use this happiness item as a continuous measure. It is likely that better measurement would further strengthen the results we find.

A large literature shows that subjective quality of life measures are closely linked to a wide variety of behavioral outcomes; see (Diener and Suh 1999: 436–439) and the references cited there. A variety of evidence—including comparisons of multi-lingual nations (like Switzerland) with mono-lingual nations speaking the same languages (like Germany and Italy)—suggests that happiness and other well-being questions can be reliably translated into other languages (Veenhoven 1993), so we anticipate that the findings reported here are not distorted by translation problems.

#### Measurement: Other Variables

**Education.** The available data include a good details on education (both a “years of education” measure and a “highest level completed”). For education we investigate (1) the contrast in subjective well-being between people with 8 years of education and people with 16 years of education, and (2) the contrast between university graduates and others with less education. For this comparison, we also include in the model the corresponding educational variable for the country as a whole (years of education or the percentage completing university).

We undertake the two comparisons for education, because there are plausible arguments and strong research traditions using each of these specifications.

**Income.** The data include reasonable detail on family income (10 or 12 categories in most societies). Following Kelley and Zagórski (2005), we begin by converting all incomes into US dollars at parity purchasing power. We then contrast people living in families on \$40,000 per year versus \$10,000 a year. Pragmatically speaking, we needed to chose an income level that would be low enough to yield a reasonable number of cases in the poorer countries, but high enough to represent very substantial purchasing power. Because income effects on happiness may be curvilinear as in

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<sup>6</sup> Concerns about its measurement properties would be more acute if our models failed to reveal effects anticipated on the basis of prior research. In fact the effects of well-known variables are all present and of the right order of magnitude. This strongly suggests that the results are on the right track, although naturally, it is to be hoped that they will be replicated using better measurement in future research. In the World Value Survey, this “happiness” question is correlated  $r = .47$  with a standard Michigan-style 10 point “life as a whole” question, based on 53,814 cases from many nations. It also has very similar correlations with a range of demographic questions, consistent with the usual view that the two questions are alternative measures of the same concept.

Poland [Koralewicz and Zagórski (2009) and Zagórski (2009, 2010)], we also include a square term for income.

To derive the relative income effects, we include interactions of GNP in 1998 US\$ at parity purchasing power with the linear and quadratic terms for family income. For this comparison, we remove from the model the corresponding educational variable for the country as a whole (years of education or the percentage completing university). We do all these comparisons through simulations that use regression coefficients to hold all other variables constant (discussed in the methods section below).

**Control variables.** As control variables, we include some well-known determinants of happiness: age (Kalleberg and Loscocco. 1983), gender (Daig, Herschbach, Lehmann, Knoll, and Decker. 2009), church attendance (Evans and Kelley 2004b), political party preference, and marital status (e.g. Evans and Kelley 2004a).

### Data

This article uses data from the “Religion, Round 2” surveys conducted around 1998 by the International Social Survey Program, an international consortium of research groups which run a special topic survey each year on representative national samples. This survey provides us with the variables needed for this analysis on representative national surveys of 32 countries. These surveys are publicly available from the Zentralarchiv of the University of Cologne where they are lodged (Zentralarchiv fuer Empirische Sozialforschung 2000).

### Methods

We use multilevel models to make our estimates, using the xtreg program in Stata 9. The results that we focus on in text are the predicted values from simulations that translate the parameters of the models into predicted values for particular values of the causal variables, one for Eq. 1, one for Eq. 2. This allows us readily to compare the level of happiness enjoyed by people of various educational attainments in societies where advanced education is more and less common. The information from the model would allow us to make any comparisons we choose, and we have chosen a low education society and a high education society because that keeps the graph relatively simple and speaks directly to the issues raised by the theory. The control variables are set to their means.

Formally, education model is:

$$\begin{aligned} \text{Happiness}_{ij} = & b_0 + b_1 \text{Education} + b_2 \text{AverageEducationOfNation} \\ & + b_3 \text{Interaction} \div \text{Education} \times \text{AverageEducationOfNation} \\ & + b_4 \text{Age} + b_5 \text{Male} + b_6 \text{Churchgoing} + b_7 \text{RightParty} + b_8 \text{MarCohab} \\ & + b_9 \text{DivSolo} + b_{10} \text{WidowSolo} + b_{11} \text{Unemployed} + b_{12} \text{GNP} + e_1 \end{aligned} \quad (\text{Eq.1})$$

This gives the total effects of education, including those that are indirect through its effects on income. This is a multi-level model for individuals, indexed by “i”, in nations, indexed by “j”, and we estimate it as such. But for simplicity we omit the “ij” subscripts on the right-hand side of Equations 1 and 2.

The income model adds income and its square (to allow for curvilinearity), and their interactions with GNP of nation:

$$\begin{aligned} \text{Happiness}_{ij} = & \text{Eq. 1} + b_{13}\text{FamilyIncome} + b_{14}\text{FamilyIncomeSquared} \\ & + b_{15}\text{Interaction} \div \text{GNP} \times \text{Family income} \\ & + b_{16}\text{Interaction} \div \text{GNP} \times \text{FamilyIncomeSquared} + e_2 \end{aligned} \quad (\text{Eq.2})$$

The results are in Table 1.

Table 1  
Multi-level Regression Estimates

	Education model			Income model		
	b	s.e.	z	b	s.e.	z
Age	-0.12	.01	-13.12	-0.12	.01	-11.49
Male	-0.50	.24	-2.12	-0.61	.26	-2.30
Church going (ln)	0.86	.08	11.49	0.90	.08	10.68
Single (reference group)						
Married	5.47	.32	17.05	5.06	.36	13.86
Divorced	-4.75	.51	-9.30	-4.46	.57	-7.82
Widowed	-3.68	.57	-6.39	-3.31	.64	-5.15
Unemployed	-8.89	.52	-17.19	-8.16	.58	-13.97
GDP of nation	0.90	.15	5.87	0.82	.14	5.88
Education	0.67	.04	18.58	0.44	.04	10.60
Average education of nation	1.40	.76	1.84	1.57	.69	2.27
Interaction: Ed X Ed of nation	-0.16	.02	-7.71	-0.13	.02	-5.70
Family income (PPP)				0.27	.02	12.09
Family income squared				0.00	.00	-6.22
Interaction: GNP X Income				-0.01	.00	-8.09
Interaction: GNP X income squared				0.00	.00	4.87
Intercept	31.08	8.16	3.81	29.24	7.41	3.95
Rho	.06			.04		
(Nations)	32			31		
(Cases)	37,240			30,618		

Source: International Social Survey Programme.

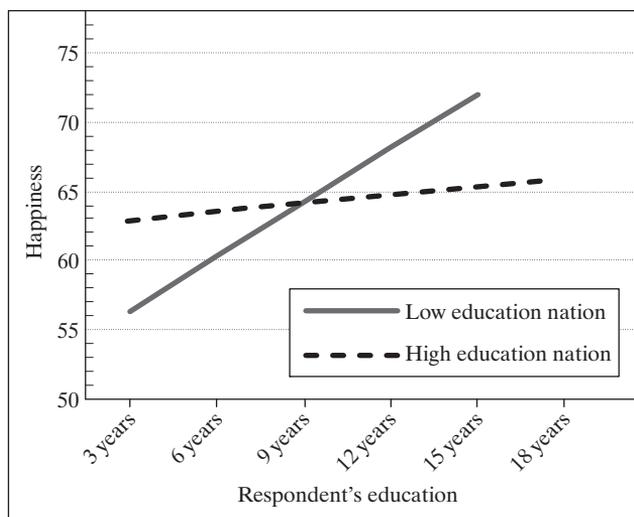
We conducted a number of sensitivity tests using different specifications of the causal variables (for example with both education and income broken up into dummy

variables); the results were closely similar to those we present, so we feel confident that these results are not artifacts of the particular specification we used.

### Results: Education

Recall that H1 predicts that advanced education will bring more pleasure to those who achieve it if few others do, all else equal. This does indeed seem to be the case in our regression analysis of 33 societies, adjusting for the influence of other factors listed in the measurement section. Our simulation using the regression results shows that, for example, after adjusting for the influence of other factors, in a society in which the average educational attainment is only 7 years,<sup>7</sup> people with 16 years of education are much happier than are otherwise similar people with 8 years of education, by around 10 points out of 100, a very substantial difference (Figure 1). But that difference shrinks, as the average level of education in the society rises. By the time the average person in a society has 14 years of education, those with 14 years of education are only 3 points out of 100 happier than those with 8, all else equal.

Figure 1  
Years of Education & Happiness



<sup>7</sup> Setting the bottom category to 7 years is basically an arbitrary decision, involving both the theoretical concern that it be low enough to test the theory, and the practical concern that it not be so low as to have disappeared from the advanced societies. We chose 7 years as a compromise between those systems where primary education ends after Year 6 and those where it ends after Year 8. In the event, it does not matter substantively, because the differences between these and higher education would be a little bigger in the beginning if we worked with 6 years of education as the low education baseline, and a little smaller if we had worked with 8 years of education as the low education baseline, but the substantive interpretation—that the “happiness gap” between those with little education and those with a lot—would remain unchanged.

More specifically, much as their teachers would like to think that the joys of learning are inherently rewarding, and so that finding ways to enable students to persist further in study will be fulfilling, the findings of our regression analysis suggest that the rewards of education are linked strongly to its exclusivity. In fact, the level of well-being of those with 16 years of education actually declines rather strongly, by 7 points out of 100, between a society with 7 years of education on average and a society in which people have on average 14 years of education. So more people are studying long to achieve a goal that used to be satisfying but that, when reached by them and their many fellows, brings little joy.

This is not an artifact of the years of education measure. A parallel analysis using university completion as the dependent variable also shows that the “happiness advantage” of the highly educated declines, perhaps even to the vanishing point, as the prevalence of advanced education increases. In other words, as more people complete university degrees, the average happiness of university graduates declines, all else equal. In a society where just 5 percent of the population finish university, university graduates are 5 points out of 100 happier than those with less education, all else equal. That dwindles to just 2 points for a society with 35 percent holding university degrees.

Moreover, the same pattern holds in an alternative analysis of high education and low education countries separately. That model allows for all possible interactions between a country’s educational level and the individual level variables. In it, the effect of education on happiness in less educated nations is .78 (with a standard error of 0.05) , compared to just over half that in more educated nations, only .42 (with s.e. = 0.05).<sup>8</sup>

Thus, the key result is that the “happiness advantage” of the highly educated is large in societies where post-basic education is a rarity, but small, or even perhaps nil, in societies in which education is widely diffused. This holds regardless of whether education is measured as years of education or as the possession of a university degree. These results support H1, the hypothesis that the “happiness reward” to success in education dwindles as such success becomes more widely shared.

### **Results: Income**

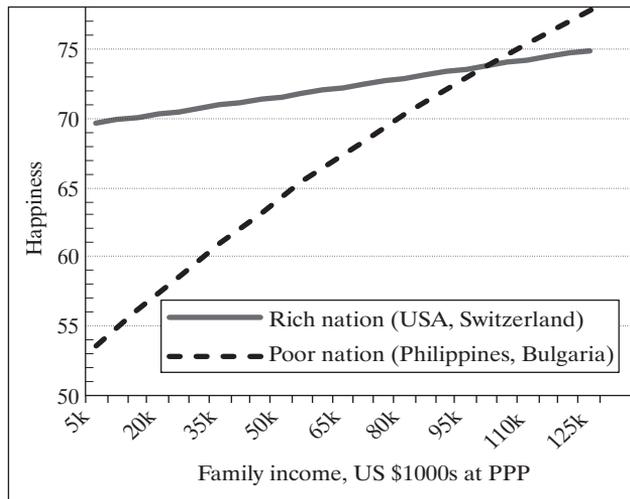
Is the relative advantage effect also evident with income? Recall that H2 posits that the magnitude of the effect of income on subjective well-being declines, as societal incomes rise. In other words, the difference in happiness generated by any income high enough to be rare in a poor society and a lower income more commonly held is greater than the difference between these same income levels in a rich society where the higher level is less rare. For example, consider the difference in happiness between someone on a family income of \$40,000 a year and someone on a family income of \$10,000 a year. In a poor society with a per capita GNP of \$3,000 the happiness gap

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<sup>8</sup> The same pattern holds if nations are split into low and high GNP, with slopes of .86 (s.e. =,0.05) and .38 (s.e. = 0.05).

between these two persons would be 9 points out of 100, on average and all else equal (Figure 2). It would be 7 points of 100 in a society with a GNP of \$10,000, and just 3 points out of 100 in a society with a GNP of \$25,000. Were per capita GNP to continue to grow to \$35,000, the difference would disappear entirely. For a rich society with a GNP of \$25,000 per year today, a two percent growth rate would bring that disappearance about in 15.5 years.

Figure 2  
Income & Happiness



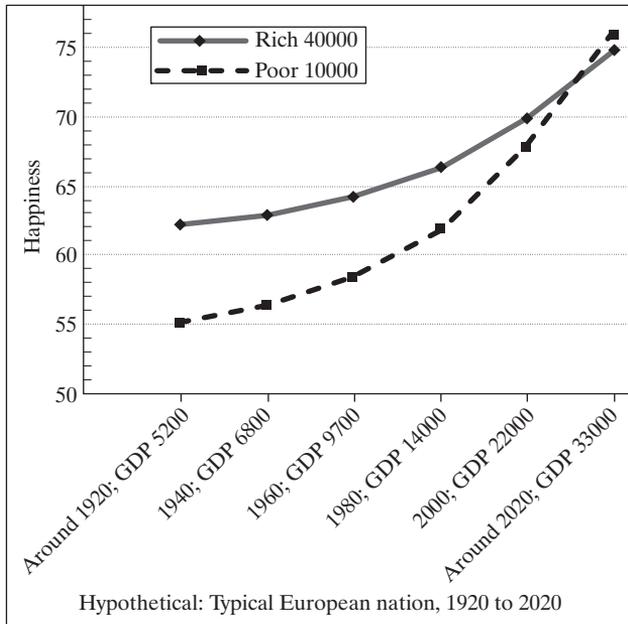
These results are based on a continuous measure of income—the parity purchasing power equivalent in US dollars, including both a linear term and a square to allow for curvilinearity. The particular amounts in the graph are chosen for illustrative purposes; other comparison points yield similar substantive results. For sensitivity tests, we have conducted a parallel analysis with income chopped into dummy variables representing ranges of incomes, and those, too, yield similar results.

### Simulation: Effects of economic development

Let us consider an example of how this might work in a particular society. Britain is a “higher-middle” rank developed society, convenient for this purpose, but other examples would show the same pattern. Throughout this example, we “net out” the effects of other social changes by using the simulation that incorporates the parameter estimates from our regression equation and the means on the control variables for the sample as a whole. So we are, in effect, examining what would have happened in Britain if their age structure and marital status distribution etc had held steady throughout the period at the average values for our 33 countries in 1998.

In 1920, just after WWI, Britain had a per capita GNP of \$5,208 in current US dollars at parity purchasing power. According to the simulation, the “happiness gap” between people on \$10,000 a year and on \$40,000 a year would have amounted to 8.7 points out of 100 on average (Figure 3). Twenty years later, in 1940, the GNP had risen to \$6809, and so the expected “happiness gap” would have shrunk to 8.2 points. So the process would continue, with the gap dwindling to 3.4 points in the year 2000 when GNP reached \$22190. Should GNP grow at 2 per cent in the future (not hugely quickly, but not halting either), the happiness gap will have dwindled to 0.1 points out of 100 in 2020 and will have vanished away entirely by 2040.

Figure 3  
Economic Development and Differences Between Rich & Poor in Happiness



Thus, one of the remarkable features of economic growth appears to be a diminution in the impact of a family’s income on their happiness. Note that this is *not* the diminishing marginal utility of money, for we are comparing happiness at fixed levels of income. Rather it suggests that rich countries generate for all their citizens a quality of life that is not heavily income dependent.<sup>9</sup>

<sup>9</sup> This appears to be an effect of being in a rich country per se rather than being in a welfare state (which some, but not all, of the rich countries are). It is easy to overload a multilevel model when there are only 33 higher level cases, and it is to be acknowledged that there are no poor welfare states. That said, when we included a welfare-state measure in our model, it did not contribute significantly to the explained variance. That suggests that it is reasonable to take as a working hypothesis the view that GNP per se equalizes the happiness of those on high and low incomes.

## Discussion

This paper has used regression analysis to examine the difference in self-reported happiness for highly educated people in societies in which such achievements are rare and those in which they are commonplace. Large, representative national surveys of 33 countries enable us to estimate these effects with precision, and with adjustments for a good range of potentially confounding influences.

We find that highly educated people are a good deal happier than their less educated peers in countries with low educational levels, but that, as the average educational attainment in a country rises, the smaller the gain in happiness associated with educational success. For example, a university graduate in a poor society is 10 points out of 100 happier than someone who left school after 8<sup>th</sup> grade, but this advantage has shriveled to 3 points in the highly educated societies. This supports H1 which posited that the difference in happiness between those with basic and those with advanced education shrinks as more people achieve advanced education.

Similarly, we examined the difference that income makes to happiness, and found that it is much greater in poor societies than in rich ones: where high incomes are common they do not bring much more pleasure than low ones. This supports H2, that the “happiness advantage” of any given higher income compared to any particular lower income depends on how prevalent the higher income is. For example, in poor societies, families on \$40,000 are 9 points out of 100 happier than families on \$10,000 a year, but in rich societies it is only about 3 points out of 100, and would disappear altogether in about 16 years if economies grew at 2 percent over that period.

Thus, our results support the view that relative advantage in education or in income is an important component of the pleasures that they bring. The most advanced societies, in which these rewards are widely available, are those in which extra endeavor brings the least reward. One of the paradoxes of modernity then, is that equalization of opportunity by its very nature robs the fruits of success of some of their sweetness. This may have important implications for youth and achievement orientations; perhaps it may help explain the otherwise puzzling phenomenon of the “education reversal”—a new pattern that has emerged in the US of youth failing to pursue education as diligently as their predecessors (Evans, Breznau, Lowman, Harris 2009).

As to the generality of our findings, analyses of regional-level Polish data (as opposed to the national-level data used here) find the same relationship of subjective well-being to contextual affluence. Comparing regions in the cross-section shows that the functional form of the relationship between household’s income and satisfaction with material living conditions (as well as life in general) is not only curvilinear, but is also steeper in poor than rich regions (Zagórski 2009). Similarly, analysis of changes over time in Poland as a whole between 1994 and 2008 (Zagórski 2010), i.e. in the post-transformation period, during which the GDP has increased by about 80% and average per capita household income has increased by almost 90%, also finds linkages between subjective well-being and personal and contextual affluence that mirror those we find in this paper cross-nationally.

From a slightly different angle, this suggests that the material and subjective investments necessary to achieve given levels of education or income may have very low, possible even negative, returns in the advanced societies.

### **Is Economic Development a Worthwhile Policy for Governments to Pursue?**

Economic growth is the principal economic goal of most nations, rich as well as poor. However survey data on subjective well-being leave it far from clear that economic growth beyond certain level constantly increases well-being. The best new analyses seem to be returning, with better data from many countries of different level of economic development, and more rigorous methods, to Easterlin's pessimistic conclusions concerning well-to-do people in the most developed societies (Diener and Biswas-Diener 2002: 161–162).

“A fundamental finding of the present review is that for middle- and upper-income people in economically developed nations, acquiring more income is not likely to strongly enhance subjective well-being. Indeed, some studies find that rising wages predict less well-being. ... As the world enters a new era of material abundance, a new paradigm is needed in which greater emphasis is placed on fulfilling vocations that benefit society, and on preventing the involuntary poverty that is associated with a higher risk of unhappiness.”

So the conventional wisdom is back to reference group theory, reaching with good data and rigorous analysis a conclusion Easterlin originally intuited from modest data and feeble analysis.

However, policy prescription based solely on this result is fundamentally mistaken for two important reasons. First, economic growth still improves the material conditions of life, especially for poorer people and poorer societies. Second, such a prescription neglects the *main* effect of GNP<sup>10</sup> on happiness, independent of personal income. Living in a richer country makes average persons happier, more so the poor. Taking this properly into account shows that increasing a nation's GNP does increase happiness even in rich nations, and especially for poor people. Indeed economic growth increases nations' well-being *more* in recent decades than ever in the past.

Economic development increases subjective well-being in rich nations and poor nations alike. Jeremy Bentham would hearty approve; so should 21<sup>st</sup> century policy-makers. That may be especially important for post-transformation countries such as Poland, where—after initial turbulence—consolidation of free market and parliamentary democracy has enabled economic growth and rising life satisfaction (Czapiński and Panek 2007; Koralewicz and Zagórski 2009; Zagórski 2010), albeit the relation between economy and happiness may weaken with further economic development.

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<sup>10</sup> We mean here the main effect as opposed to the interaction effect, the latter increasing total effect for poor people and decreasing it for the rich.

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