Education and Happiness: a Further Explanation to the Easterlin Paradox?

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Abstract

Previous empirical research has found a positive impact of education on happiness, on regional and worldwide scale. In this paper I analyze the effect of absolute income on human well-being by education level. Using data from the World Bank's World Value Survey on more than 118,000 individuals I find that the higher the education level is, the less relevant the absolute income level (GDP per capita measured in PPP constant 2000 international USD) for self-declared life-satisfaction. Higher income makes everybody happier but, everything else being equal, the marginal utility of additional income is higher for less educated people. This might partly explain the Easterlin paradox. Although the GDP level has been constantly rising from the end of World War II onwards, the average life-satisfaction in Western Europe, Japan and the United States has remained almost constant. Furthermore, average happiness levels in rich and poor countries are not as different as GDP levels. Since the average education level has risen a lot over time and is much higher in advanced countries, this might contribute to explain why higher absolute income level has not implied higher life-satisfaction across countries and over time.

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1. Introduction

The theoretical discussion on the role of happiness in economic studies is very old and traces back to the classics. An example of it is this nice quote from Malthus (1798) on Adam Smith's work: "*The professed object of Dr. Adam Smith's inquiry is the nature and the causes of the wealth of nations. There is another inquiry, however, perhaps still more interesting, which he occasionally mixes with it, I mean an inquiry into the causes which affect the happiness of nations*". Additional authors who recognized the importance of happiness are Marshall (1890) and Veblen (1899), among others.

However, for long time the study of happiness was treated almost exclusively by psychologists and, to a lower extent, by sociologists. The topic of happiness has become increasingly popular among economists after the paper by Easterlin (1974) suggested how the main objective function to be maximized by policy makers should be happiness rather than economic growth, income or consumption. In fact, the author showed that average self-reported happiness appears to be the same across rich and poor countries and that economic growth does not raise well-being.

Several theories try to explain this unexpected finding, which is referred to as the "Easterlin paradox". In this paper I present a new theory based on education. Using data on more than 118,000 individuals from the World Bank's World Value Survey (third and fourth waves) I show that the education level affects the importance people attribute to the level of GDP per capita (the "absolute" income). Everything else being equal, the higher the education level is, the less relevant the GDP level for life-satisfaction. The possible explanation is that highly educated persons have on average more interesting jobs and more active and stimulating cultural lives. Consequently, the quantity of material goods a person can buy becomes less important. It is reasonable to believe that a low education level reduces the chances of achieving a high level of job satisfaction and the probability to have a stimulating cultural life, and makes the purchase of material goods a more important determinant of the life-satisfaction.

The rest of the paper is organized as follows. Chapter 2 presents a short literature review. Chapter 3 presents the dataset, the methodology used and the preliminary regression results. Chapter 4 performs robustness checks. Chapter 5 concludes.

2. Literature review

This chapter reviews the most important contributions related to (i) the literature on the economics of happiness and (ii) the link between education and life-satisfaction. In providing a literature review on the economics of happiness I will focus on the Easterlin paradox and on the theories which contribute to explain it, while I will just shortly summarize the main contributions on the other determinants of life-satisfaction.

2.1 The Economics of Happiness

Before presenting a short literature review, two questions need to be answered. First, why do we study happiness? The answer is that happiness studies implicitly overcome three "original sins" of economics: (i) not only consumption levels enter the utility function; many other variables are allowed to enter the utility function; (ii) happiness studies recognize the importance of experience utility, not just that of choice utility; (iii) beyond functional specialization, this field of research moves toward an integration of different social science perspectives. Second question, can we trust happiness data? Alesina, Di Tella and MacCulloch (2004) report three good arguments in their favor: (i) psychologists use them; happiness studies survived a "cultural Darwinian selection" in psychology and sociology; (ii) well-being data pass "validation exercises"; happiness responses are correlated with physical reactions and with suicide rates (Inglehart, 1990); (iii) self-reported life-satisfaction is highly correlated with country indicators of quality of life and of social capital (Frey and Stutzer, 2002a).

As already mentioned, Easterlin (1974) first analyzed the relationship between real GDP per capita and self-declared happiness. Using cross section and time series data for a number of selected countries, the author comes to two unexpected results. First, when making cross country comparisons he finds little correlation between the two variables of interest. For example, in 1960 Cuba and Egypt had higher average life-satisfaction than West Germany, even if the GDP per capita was respectively one third and one ninth. Second, when looking at time series data of GDP per capita and average satisfaction levels for advanced countries like the United States over the post World War II decades, it is evident that "money does not buy happiness". In fact, while the national income has grown by several times, the average well-being has remained almost unchanged.

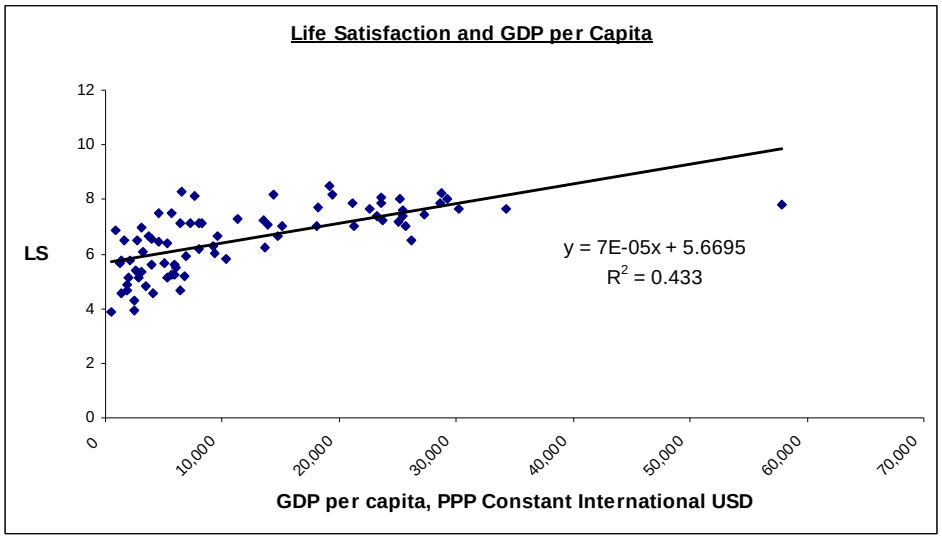
Even if the literature has grown a lot since Easterlin's (1974) seminal paper, the effect of the GDP on life-satisfaction is still source of debate. Over time many studies based on new or better data have followed: results are a bit different with cross section data but quite similar with time-series. Cross-country comparisons with more precise data find a positive effect of income on happiness. If we consider very rich and very poor countries together we see that income has a strong positive effect on life-satisfaction. The database I use in this paper, the third and fourth waves of the WVS, confirms this finding. A simple regression of the average well-being over a constant and the per capita real GDP provides an R^2 equal to 0.43 (see Figure 1).

Frey and Stutzer (2002b, p.10) using the second and third waves of the WVS find similar results although the effect of GDP on well-being seems to be stronger for low levels of income, thus allowing for non-linearity hypotheses. It is evident that there is not a one-to-one relationship between absolute income and happiness. On average, the life satisfaction of people living in countries with a GDP per capita of 20,000 $ is not twice as big as that of people living in countries with GDP per capita of 10,000 $. Several other studies

provide evidence that, on average, people living in rich countries are happier than those living in poor ones[1].

On the contrary, when looking at time series of country-average levels the effect of income is sometimes weakly positive, sometimes null and sometimes unclear. In general, there is no strong and evident effect. Examples of studies with time series data include Blanchflower and Oswald (2004) who confirm Easterlin's (1974) results: although the standard of living in the industrialized nations has been steadily increasing over the last decades, reported levels of well-being have declined over the last quarter of a century in the US and have run approximately flat through time in Britain. Frey and Stutzer (2002b, p. 76) review the main studies on the United States. In addition, using data from the World Database of Happiness and the U.S. Bureau of Census, they show a graphic with the time series of the GDP per capita and of the average happiness level of American citizens. From these data it is evident that the GDP has risen constantly while the well-being has not. Veenhoven (1993) finds that average subjective well-being has been stable in Japan over the period 1958-1987, although the real GDP per-capita increased more than fivefold during that period[2].

Figure 1: Life-Satisfaction and Real GDP per Capita in the WVS



[1] See, for example, Diener, Diener and Diener (1995) for an extensive study covering 55 nations.

[2] On the other hand, Diener and Oishi (2000) provide a counterexample: countries like Denmark, Germany and Italy during the '60s and '70s experienced high real per-capita growth rates and (small) increases in self-reported happiness. Oswald (1997) finds that reported happiness in the United States has gone up only fractionally over the post-war period and that in Europe is only slightly higher in the '70s than in the '80s. The gains appear to be so small that a case should be made that economic growth is worthless. However, this conclusion does not mean that economic forces have little impact on people's lives. Since unemployment seems to be one of the most important sources of unhappiness, economic growth remains a primary concern for Governments.

Now, the interesting question is: what "neutralizes" the positive effect of income when countries get richer? Five main theories can help to explain these findings on the irrelevance of GDP for happiness over time and across countries. The first is based on the diminishing marginal utility of absolute income. The higher the absolute income is, the lower the additional utility. Once countries have reached a certain level of wealth it becomes difficult to see any clear effect of additional income. This can be due to the fact that initially income is used to buy indispensable articles (primary goods) and is reflected to the entire society through the improvements of the welfare systems, while afterwards it is used more and more for unnecessary goods and leisure time[3].

The second theory refers to income adaptation. People increase their aspirations over time[4] because they adapt to the new standard of living. If this is true, the GDP growth rate should matter a lot and should contribute to explain why in advanced economies, which typically display higher GDP levels but lower growth rates, money does not buy happiness anymore. The third theory stresses the importance of relative, rather than absolute income. "Riches do bring happiness, provided you are richer than other people" (Layard (1980), p. 737). Life-satisfaction is positively affected by people's own income and negatively affected by the incomes of others. People compare their income with that of their reference group, thus a raise of the absolute income level which leaves unchanged one's position in the income distribution will weakly affect his satisfaction level.

The fourth theory refers to the deteriorating social conditions which accompany economic growth. Since there is various evidence for a worrying deterioration on the quality of the relationships within family and social communities, improvements in the material standards of living may not be sufficient to increase overall well-being[5]. In fact, in most Western countries suicide, divorce and criminality rates have been rising. Over the last two decades average working hours and overtime have increased for both men and, especially, women in the United States and other countries. Fifth, "our tastes are not given – the happiness we get from what we have is largely culturally determined" (Layard (2006), p. 24). Culture and mentality differ across countries and change over time, and a fundamental role in shaping them is played by education, whose level has enormously grown all around the world.

Now, three points have to be stressed. First, time series data usually refer to advanced economies, not to developing ones. As already seen some authors claim that the marginal utility of income is decreasing. If this holds true we may expect a smaller increase of average well-being in high income countries[6]. If we could rely, for Europe and the United

[3] "With regard to growth economics, there is the view that the most developed economies, notably the United States, have entered an era of satiation", Easterlin (1974), p. 120.
[4] See Easterlin (1995).
[5] Becchetti, Londoño and Trovato (2006), with a two-stage model to correct for endogeneity, find a strong and positive relation between relational goods and life-satisfaction.
[6] "Most careful studies find a clear time series relationship between subjective well-being and absolute income at extremely low levels of absolute income. Thus, in a country in which most people lack minimally adequate shelter and nutrition, across-the-board increases in income appear, not surprisingly, to yield significant and lasting improvements in subjective well-being" (Frank (1997), p. 83).

States, on country-average time series back to the 19th century (at the beginning of the industrialization process), we would probably see a significant increase in human well-being. Second, looking at the mere relation between satisfaction and GDP per-capita might be misleading because the positive correlation could be generated by other factors like social and democratic conditions, corruption, freedom and healthcare system rather than by income alone. If this latter variable increases but all the others worsen, the final outcome is uncertain. However, this does not mean that the GDP has no effect on happiness. It just means that higher wealth does not automatically imply a better life. Third, when making cross-country comparisons there might be a problem of substantial cultural and language differences which can be responsible for systematic distortions in the results on the relevance of absolute income. However, when making cross-country regressions this problem should disappear through the use of country dummy variables[7].

The literature on the determinants of subjective well-being has grown a lot since Easterlin's (1974) seminal paper and has included many other aspects. As summarized by Frey and Stutzer (2002b), the sources of individual well-being can be differentiated into five groups: (i) personality factors, extensively studied by psychologists; (ii) demographic factors[8]; (iii) micro and macro-economic factors, such as per-capita income, unemployment[9], inflation[10] and inequality[11]; (iv) contextual and situational factors, such as stress due to working or living conditions, relationships with family and friends and health status; (v) institutional conditions, such as the type of political system[12], the design of democratic institutions[13], the level of freedom etc. A sixth source would need to be

[7] As noted by Inglehart (1990), Switzerland is an ideal laboratory to test cultural and linguistic differences. German-speaking, French-speaking and Italian-speaking Swiss all report higher happiness levels than native Germans, French and Italians, which allows to argue that higher income and better institutions plays a significant role in increasing people's satisfaction levels.

[8] Men are usually less satisfied than women. Higher levels of education increase the life satisfaction. Happiness is U-shaped in age. People with a stable sentimental relationship report higher happiness levels. Blanchflower et al. (2000) find that there is a cycle in happiness, especially for men, and that young people's satisfaction seems to be rising over the last thirty years.

[9] Clark and Oswald (1994) and Winkelmann and Winkelmann (1998) show how unemployment is negatively correlated with happiness.

[10] Oswald (1997) finds that individuals have a strong aversion towards inflation and that they are prepared to carry significant costs to avoid it. Di Tella, MacCulloch and Oswald (2001) make an interesting investigation on the preferences over the inflation-unemployment trade-off. Becchetti, Castriota and Giuntella (2006) show that age and Employment Protection Legislation (EPL) heavily affect human preferences over inflation and unemployment and argue that these two elements could contribute to explain the higher concern for the level of economic activity of central bankers in countries with younger population and more flexible labour markets.

[11] See Morawetz (1977) for a study on two small communities in Israel. Alesina, Di Tella and MacCulloch (2004) show that inequality of income distribution affects Europeans and Americans' happiness differently. They propose two explanations: first, Europeans prefer more equal societies; second, in the US social mobility is (perceived to be) higher, thus being poor is not perceived as affecting future income.

[12] Radcliff (2001) claims that "life satisfaction should increase as we move from less to more social democratic welfare states. More generally, life satisfaction should increase with the dominance in government of political parties committed to the social democratic program of limiting human dependence on the market".

[13] Frey and Stutzer (2000) demonstrate that direct democracy, via initiatives and referenda, and federal structure systematically increase the level of self-reported happiness because, presumably, the political outcomes get closer to the voters' preferences.

added to the list: the beauty of the respondents' city, countries' natural characteristics like the climate[14], the proximity to the sea and whatever else does not depend on humans but affects well-being.

2.2 Education and happiness

The relationship between education and happiness has not received much attention so far. Frey and Stutzer (2002b, p. 59) confine themselves to claiming that "the level of education, as such, bears little relationship to happiness. Education is highly correlated with income... Education may indirectly contribute to happiness by allowing a better adaptation to changing environments. But it also tends to raise aspiration levels. It has, for instance, been found that the highly educated are more distressed than the less well educated when they are hit by unemployment (Clark and Oswald, 1994)". In this paragraph I review the main theoretical and empirical results on education and happiness and provide arguments in favor of the positive effects of education on well-being.

Empirical studies usually find a positive effect of education on happiness[15], even after controlling for the income level. The main determinants of education demand and the reasons why education should improve life-satisfaction are the following[16]:

(i) People need a minimum level of capabilities to appear in public without shame[17];
(ii) Acquiring knowledge provides direct utility *per se*, like a normal good;
(iii) Education is a signal: schooling experience reveals information. In addition, people get indirect utility from prestige;
(iv) Higher employment probability: education promotes labor market participation, employability and job protection;
(v) Higher expected salary: education is positively correlated with earnings (see Becker, 1994);
(vi) Higher job quality: the educational attainment helps getting more interesting jobs and fastening promotions (Blanchflower and Oswald, 1994), provides higher autonomy and independence, reduces routines and enhances participation in relevant decisions (Albert and Davia, 2005);
(vii) Positive effect on health, since more educated people are supposed to have less unhealthy habits and to visit their doctor when required[18].

[14] See Rehdanz and Maddison (2005) and Becchetti, Castriota and Londoño (2006).
[15] See, for example, Di Tella, MacCulloch and Oswald (2001) for results obtained using the Eurobarometer, Becchetti Castriota and Londoño (2006) using the World Value Survey, Albert and Davia (2005) using the European Community Household Panel and Hayo and Seifert (2003) for Eastern European countries between 1991 and 1995.
[16] See Checchi (2006), p. 7-15-18-176-215.
[17] "Ignoring what everybody knows is shameful", Aristotle, Rethoric, Ch. II.
[18] The economic literature analyzing health heavily draws on the theoretical work by Grossman (1972). Berger and Leigh (1989) conclude that "the results uniformly indicate that the direct effect of schooling on health is more important than the effect of unobservables" (p. 433). Many other studies find a positive effect of education on health. Hartog and Oosterbeek (1998) conclude their literature review as follows: "In summary, the empirical evidence seems to indicate that the positive correlation between schooling and health is caused by a direct effect of schooling on health" (p. 246).

Obviously, a set of constraints can limit the access to education, the demand being higher if family resources are high, borrowing rates are low, tuition fees are cheap and expected returns are high. Intergenerational persistence in education due to parent imitation, assortative mating, access to credit and territorial segregation can play a significant role as well.

In spite of all these positive effects, the empirical evidence on the link between education and life-satisfaction is not fully conclusive[19]. Some studies (e.g. Clark and Oswald, 1996) find opposite results: after controlling for income, more educated individuals register a lower level of satisfaction. The result could depend on two main factors. First, highly educated people have higher job expectations which are more difficult to fulfill. Being overqualified for a job generates frustration. Individuals are called "over-schooled" when they hold a job which does not require the amount of schooling they have attained. This can be considered inefficient, a waste of resources, although there are other benefits of schooling which contribute significantly to improve the quality of life of individuals and of the society as a whole[20]. Second, the dispersion of incomes increases with education. Comparison with people who have the same education level but higher salary can produce a negative effect.

Education is an investment: it has economic and non-economic costs[21] on one side, and benefits on the other. If the average education level rises, the relative advantage of better education declines. Returns on education are higher where access to education is lower. This is the likely reason why Clark and Oswald (1996) find a negative effect of education on happiness: considering only one advanced economy is very different from analyzing a cross section of rich and poor countries. Again, if we could analyze data for western countries back to the first half of the 20th century, when the returns to education were obviously very high, we would probably find a positive effect of education on life-satisfaction. Nowadays holding a university degree in Europe or in the United States is not anymore a sufficient condition for a high level career, especially in those countries (like Southern Europe) where the education expansion has led to a fast increase in the qualifications of the labor supply but has not been followed by an equal increase in the demand for skills, thus contributing to educational mismatch (see Albert and Davia, 2005).

Furthermore, countries with a centralized or coordinated collective bargaining should display a more negative effect of education on job satisfaction since people with a high education level do not observe significant salary gaps with respect to people with a low education level. However, as mentioned in the beginning of the paragraph, studies with pooled cross-section data find a positive effect of education on life-satisfaction, not only

[19] "Education correlates strongly (and positively) with happiness scores in poor nations and weakly in rich nations. Recently, in developed nations even negative correlations are found", Hartog and Oosterbeek (1998), p. 247.

[20] In their extensive survey, Haveman and Wolfe (1984) list 24 different outcomes that are believed to be affected by schooling.

[21] The economic costs refer to the tuition fees, all the other expenditures and the opportunity-cost of studying. When studying an individual does not earn any salary and does not pay any deductions for insurance. The non-economic costs refer to the effort.

for samples of countries with very different income levels but also for samples of homogenous countries (e.g. Western European).

3. Dataset, methodology and regression results

The data source is the World Bank's World Value Survey (third and fourth waves), which is a pooled cross-section of more than 118,000 people living in 81 countries in the years 1995 and 2000. The dataset contains information on self-reported satisfaction levels and personal characteristics such as age, gender, employment status, education, income level, marital status and town population size. Table 1 describes the variables used. The GDP is from the World Bank's World Development Indicators and is expressed in per capita PPP constant 2000 international US $.

Table 1: Description of the variables used

Variable name	Source	Description
Life satisfaction	WVS	Self-declared life-satisfaction level from 1 (not at all satisfied) to 10 (very satisfied)
Age	WVS	Age of the respondent in years
Male	WVS	DV which takes value 1 if the respondent is male, 0 otherwise
Full-time	WVS	DV which takes value 1 if the respondent is full-time employed, 0 otherwise
Part-time	WVS	DV which takes value 1 if the respondent is part-time employed, 0 otherwise
Self-employed	WVS	DV which takes value 1 if the respondent is self-employed, 0 otherwise
Unemployed	WVS	DV which takes value 1 if the respondent is unemployed, 0 otherwise
Retired	WVS	DV which takes value 1 if the respondent is retired, 0 otherwise
Housewife	WVS	DV which takes value 1 if the respondent is a housewife, 0 otherwise
Student	WVS	DV which takes value 1 if the respondent is student, 0 otherwise
Other	WVS	DV which takes value 1 if the respondent's working status is not listed, 0 otherwise
Low education	WVS	DV which takes value 1 if the respondent has an elementary education, 0 otherwise
Mid education	WVS	DV which takes value 1 if the respondent has a secondary education (maturity certificate), 0 otherwise
Upper education	WVS	DV which takes value 1 if the respondent has a higher education (tertiary certificate), 0 otherwise
Decile x	WVS	DV which takes value 1 if the respondent belongs to the xth income decile, 0 otherwise
Married	WVS	DV which takes value 1 if the respondent is married, 0 otherwise
Living together	WVS	DV which takes value 1 if the respondent is lives with a partner but is not married, 0 otherwise
Divorced	WVS	DV which takes value 1 if the respondent is divorced, 0 otherwise
Separated	WVS	DV which takes value 1 if the respondent is separated, 0 otherwise
Widowed	WVS	DV which takes value 1 if the respondent is widowed, 0 otherwise
Single	WVS	DV which takes value 1 if the respondent is single, 0 otherwise
Marital other	WVS	DV which takes value 1 if the respondent's marital status is not listed, 0 otherwise
Size of town	WVS	Population size of town from 1 (very small) to 8 (very big)
GDP per capita	WDI	GDP per capita, PPP constant 2000 international US $ divided by 10,000

Since the dependent variable is the life-satisfaction level which takes value 1 to 10, the econometric analysis is performed by use of ordered Logit regressions with robust standard errors. The structure of the equations estimated is quite standard in the literature (see, for example, Di Tella, MacCulloch and Oswald ,2003):

$$S_{ijt} = \alpha_j + \lambda_t + \sum_{k=1}^{K} \beta_k X_{kijt} + \gamma \cdot GDP_{jt} + \varepsilon_{ijt}$$

The satisfaction level S of individual i in country j at time t is given by a country dummy variable α_j which captures all the economic, political, social etc. unobserved domestic characteristics, a year dummy λ_t, a set of standard personal characteristics X_{kijt} and the GDP per capita in PPP constant 2000 international US $ divided by 10,000, while ε_{ijt} is a country-time-individual idiosyncratic error. In order to avoid the "dummy variable trap" I take Albania, the year 1995, Female, Full-time, Low-education, 5-th decile and Single as a base.

Table 2 reports preliminary results for the full sample (column 1) and for three subgroups (columns 2-4): low income (deciles 1-3), middle income (deciles 4-5) and high income (deciles 6-10). When doing the sample split, the target was to obtain groups with a similar number of observations, as can be seen from the bottom of the three regressions. Since few people think they belong to the highest part of the income distribution, I had to consider the five highest deciles together. The table presents only coefficients and t-values of the GDP and of the GDP slope dummies for middle (ME) and upper (UE) education level. In columns 2-4, low education (LE) is the reference. Coefficients and t-values of all other personal characteristics are omitted for reasons of space (the full table is available in the appendix).

Table 2: Life-Satisfaction Equations by Income Sub-Groups

	(1) Full Sample	(2) Low Income	(3) Middle Income	(4) High Income
GDP	0.394	0.477	0.456	0.49
	(25.50)	(14.83)	(10.63)	(14.21)
GDP ME		-0.047	-0.0659	-0.11
		(-1.86)	(-2.1)	(-3.29)
GDP UE		-0.141	-0.139	-0.21
		(-3.78)	(-3.67)	(-5.98)
βh/βl	-	0.704	0.695	0.571
(Pseudo) R2	0.067	0.067	0.064	0.059
Number of obs.	67,479	23,194	19,849	24,436

Notes: T-values are in parentheses. Results are from ordered-logit regressions with robust standard errors. All regressions include country and year dummies. Female, full-time, low education, decile 1-4-6, single, Albania and the year 1995 are the base.

The effect of personal characteristics and GDP on human well-being is robust and in line with previous research. Happiness is U-shaped with age. Female and employed persons are more satisfied. Finally, income decile, education, stable relationships and higher GDP have a positive effect on well-being. In every income group (columns 2-4) it is evident that the importance of the GDP per capita diminishes with education. The higher the education level, the lower the coefficient of the GDP (given by the sum of the GDP coefficient and that of the slope dummy variables, when present). Notice that every regression includes income deciles as independent variable to correct for the fact that we are considering individuals belonging to two or more income deciles together. The bottom of the table reports the ratio between the GDP coefficient of people with high education (βh) and the GDP coefficient of people with low education (βl). Highly educated people value the GDP 30% to 43% less than people with low education level, the difference getting bigger with income.

Table 3: School Enrolment Rates by World Regions

Country	1960	1970	1980	1990	1995
			Primary Education		
OECD Countries	98.3	97.4	98.9	99.1	99.3
North Africa & Middle East	62.6	72.1	87.9	91.1	94.3
Sub-Saharan Africa	41.3	53.8	71.8	72.6	77.6
South Asia	44.1	57.1	76.3	80.6	89.5
Far East and Pacific	85.4	90.8	96.0	97.5	95.4
Latin America and the Caribbean	85.5	91.5	95.4	95.2	95.7
Centrally Planned Economies	100.0	96.5	98.8	91.3	96.1
			Secondary Education		
OECD Countries	49.0	69.5	81.0	90.9	96.7
North Africa & Middle East	20.7	31.8	48.6	62.0	62.8
Sub-Saharan Africa	3.5	7.8	16.5	21.2	24.5
South Asia	11.9	20.3	26.2	32.4	37.8
Far East and Pacific	25.8	42.1	58.4	56.7	59.7
Latin America and the Caribbean	18.9	31.3	46.1	50.8	55.4
Centrally Planned Economies	36.5	53.0	69.3	68.0	76.2
			Tertiary Education		
OECD Countries	8.9	16.2	24.7	38.1	49.4
North Africa & Middle East	1.7	3.9	9.1	13.2	16.7
Sub-Saharan Africa	0.2	0.6	1.5	2.5	3.1
South Asia	0.9	2.6	3.6	4.2	4.8
Far East and Pacific	4.3	7.7	12.4	20.5	24.1
Latin America and the Caribbean	2.8	6.2	13.3	18.6	19.1
Centrally Planned Economies	7.8	13.3	17.4	14.2	22.0

Source: Checchi (2006), Table 1.1, p. 2-3.

There are two possible explanations for such marked differences among income classes. The first is that people with high education, having on average higher job satisfaction and a more stimulating cultural life, consider less important the consumption level they can achieve. Getting a promotion and becoming the manager of a new interesting project can be far more valuable than buying a new utility car. If, on the opposite, a person has a very repetitive job and limited consumption of cultural goods, life becomes more material goods-dependent. The second possible explanation is that, everything else being equal, people with a limited education level have lower employability and, especially, lower job protection. In case of dismissal, a higher GDP implies that the new absolute standard of living of the unemployed person will be at least at a "survivorship" level, even because countries with higher GDP have on average higher unemployment benefits and better welfare systems whose aim is avoiding extreme poverty.

Whatever the reason for these findings is, the important point is that the education level seems to reduce the weight people attach to the GDP per capita. Table 3 reports school enrolment rates by world regions. Two main facts emerge. First, enrolment rates have been constantly rising all over the world, the only exception being Eastern European countries immediately after the end of the communism (year 1990). Second, enrolment rates are much higher in rich than in poor countries, the difference getting bigger for higher education levels. Jointly considered, the empirical findings and the education dynamics around the world might contribute to explain why higher absolute income levels have not automatically implied higher life-satisfaction over time and across countries.

4. Robustness checks

In this section two types of robustness checks will be performed. Both approaches provide results which are strongly consistent with the previous findings. The first consists in running regressions on the full sample with slope dummy-variables for the GDP where the income and education levels are interacted. Table 4 shows the results (see the appendix for the full table). The GDP level always exerts a positive effect on happiness, although higher education reduces its positive effect on well-being.

Columns 1-2-3 presents results for regressions ran on the whole sample with education slope dummies for low-middle-high income level: the ratio $\beta h/\beta l$ is, respectively, 0.93-0.74-0.81. Column 4 is the most important and shows the results of a regression with the full sample and 8 slope dummy variables (low education-low income being the base). The slope dummy variables are always strongly significant and consistent with previous findings. The ratio $\beta h/\beta l$ ranges from a minimum of 0.62 to a maximum of 0.79: people with high education level value the GDP 21% to 38% less than people with low education level.

Table 4: Life-Satisfaction Equations: Entire Sample with Interacted Slope Dummies for Education and Income

	(1) Low Income	(2) Middle Income	(3) High Income	(4) Full Sample
GDP	0.343	0.388	0.481	0.56
	(21.67)	(24.79)	(27.70)	(23.48)
GDP LE-LI	0.185			
	(9.47)			
GDP ME-LI	0.164			-0.055
	(9.74)			(-2.51)
GDP UE-LI	0.149			-0.118
	(6.13)			(-4.07)
GDP LE-MI		0.077		-0.057
		(3.44)		(-2.20)
GDP ME-MI		0.017		-0.144
		(1.05)		(-5.86)
GDP UE-MI		-0.044		-0.247
		(-2.09)		(-8.53)
GDP LE-HI			-0.135	-0.188
			(-6.06)	(-7.29)
GDP ME-HI			-0.157	-0.241
			(-10.51)	(-10.25)
GDP UE-HI			-0.2	-0.314
			(-12.63)	(-13.08)
βh/βl	0.932	0.740	0.812	*
(Pseudo) R2	0.068	0.068	0.068	0.068
Number of obs.	67,479	67,479	67,479	67,479

Notes: T-values are in parentheses. Results are from ordered-logit regressions with robust standard errors. All regressions include country and year dummies. Female, full-time, low education, decile 1-4-6, single, Albania and the year 1995 are the base.
* βh/βl for low-middle-high income are respectively 0.789, 0.621 and 0.661.

The second robustness check consists in running nine separate regressions by income and education subgroup. The difference between the slope dummy-variable models in Table 3 and the separate regressions like in Table 5 is that in the first case the model is restricted and only the parameter of the variable of interest (GDP) is allowed to change, while in the second the model is unrestricted and all the parameters are free to vary. Running nine separate regressions reduces enormously the number of observations in every regression and makes results more volatile. Consequently, obtaining consistent results with subsample splits is much harder than with a slope dummy-variable model on the full sample. Table 5 presents the nine regressions. In every income group the coefficient of the GDP diminishes with income. The ratio βh/βl is always lower than 1.

Table 5: Life-Satisfaction Equations with Subgroups by Income and Education Levels

	Low Income			Middle Income			High Income		
	(1) Low Educ.	(2) Middle Educ.	(3) High Educ.	(4) Low Educ.	(5) Middle Educ.	(6) High Educ.	(7) Low Educ.	(8) Middle Educ.	(9) High Educ.
Age	-0.0248606	-0.067859	-0.0582614	-0.0354821	-0.0468336	-0.0772228	-0.0246755	-0.044206	-0.0478277
	(-3.49)	(-9.57)	(-4.03)	(-3.40)	(-5.93)	(-5.22)	(-1.71)	(-5.01)	(-4.06)
Age2	0.0002964	0.0007034	0.0006585	0.0003511	0.0004872	0.0007995	0.0002226	0.0004568	0.0004916
	(4.23)	(9.20)	(4.19)	(3.32)	(5.40)	(4.79)	(1.50)	(4.51)	(3.65)
Male	-0.0793463	-0.0022319	-0.2310377	-0.1450056	-0.1138423	-0.0496283	-0.0944413	-0.1271352	-0.0433368
	(-1.75)	(-0.06)	(-3.13)	(-2.44)	(-2.97)	(-0.78)	(-1.39)	(-3.64)	(-1.03)
Part-time	0.1209471	0.1324706	-0.0905624	0.0495254	-0.1488577	0.0531579	-0.0993599	-0.0447833	-0.0408869
	(1.35)	(1.96)	(-0.83)	(0.45)	(-2.02)	(0.50)	(-0.89)	(-0.73)	(-0.59)
Self-empl	0.0366044	0.060183	-0.020234	0.0099671	0.019901	-0.2358822	0.1203925	0.0030502	-0.0891316
	(0.50)	(0.80)	(-0.12)	(0.12)	(0.29)	(-2.05)	(1.26)	(0.05)	(-1.26)
Unempl	-0.481204	-0.4387466	-0.6399952	-0.1938503	-0.3593127	-0.524221	-0.529588	-0.4905281	-0.3589965
	(-6.02)	(-7.57)	(-4.50)	(-1.74)	(-5.21)	(-4.28)	(-3.55)	(-5.79)	(-2.59)
Retired	0.12941	-0.0292631	-0.4185388	0.0879573	0.0430907	0.2614043	0.1651626	-0.0832028	0.0086481
	(1.91)	(-0.43)	(-2.72)	(0.96)	(0.53)	(1.60)	(1.34)	(-0.93)	(0.07)
Housewife	0.1331399	0.0020346	-0.082165	0.024166	-0.0070131	0.2877187	0.012956	0.0547429	0.3103886
	(1.94)	(0.03)	(-0.48)	(0.29)	(-0.11)	(2.01)	(0.12)	(0.81)	(2.97)
Student	-0.00413	0.2371442	-0.1783681	-0.013592	0.0714567	-0.1494525	0.0489079	-0.0497815	0.0019917
	(-0.04)	(3.08)	(-1.48)	(-0.07)	(0.92)	(-1.42)	(0.27)	(-0.66)	(0.02)
Decile 2	0.1911396	0.1114038	0.0322277						
	(3.39)	(2.18)	(0.29)						
Decile 3	0.4062087	0.2677287	0.0994248						
	(7.00)	(5.26)	(0.96)						
Decile 5				0.0979414	0.1216715	0.1254938			
				(1.87)	(3.38)	(2.01)			
Decile 7							0.1707044	0.1663233	0.1573709
							(2.23)	(3.88)	(2.53)
Decile 8							0.2191925	0.2291587	0.3123142
							(2.40)	(4.85)	(5.21)
Decile 9							0.1770063	0.3963581	0.3289025
							(1.48)	(6.90)	(4.79)
Decile 10							0.1865905	0.5341232	0.5063528
							(1.59)	(8.51)	(7.86)
Married	0.0126648	0.4068424	0.2309608	0.1950461	0.1344799	0.3517941	0.3413328	0.2763025	0.371226
	(0.18)	(7.86)	(2.32)	(2.11)	(2.57)	(4.39)	(2.96)	(5.00)	(6.43)
Liv. Tog	0.0176545	0.0595273	-0.0132598	0.2269729	-0.0246261	0.3020406	0.161589	0.3795214	0.2783466
	(0.13)	(0.49)	(-0.07)	(1.36)	(-0.23)	(1.79)	(0.69)	(3.43)	(2.45)
Divorced	-0.5253004	0.0118248	-0.1131982	-0.4342951	-0.1543197	0.0771081	-0.0188919	-0.0585074	0.0098854
	(-4.92)	0.16	(-0.78)	(-2.51)	(-1.65)	0.51	(-0.09)	(-0.56)	0.09
Separated	-0.4997642	-0.3300637	-0.5198005	0.0160805	-0.310661	-0.0907542	-0.3609176	-0.1055957	-0.3956313
	(-3.32)	(-2.71)	(-2.60)	(0.06)	(-1.93)	(-0.46)	(-0.87)	(-0.62)	(-2.46)
Widowed	-0.3722275	0.0274625	-0.2323053	-0.1056974	-0.2517644	-0.2256005	-0.0625319	-0.0424917	0.499735
	(-4.43)	(0.34)	(-1.33)	(-0.76)	(-2.24)	(-1.30)	(-0.36)	(-0.31)	(2.36)
Size town	-0.011396	-0.0099748	-0.0294806	-0.0026522	-0.0141444	-0.0096332	0.0348036	-0.0218188	-0.0037192
	(-1.28)	(-1.35)	(-1.78)	(-0.22)	(-1.77)	(-0.66)	(2.42)	(-2.82)	(-0.34)
GDP	**0.438**	**0.444**	**0.272**	**0.443**	**0.373**	**0.299**	**0.401**	**0.363**	**0.348**
	(10.46)	**(9.58)**	**(1.41)**	**(6.66)**	**(8.39)**	**(2.36)**	**(8.76)**	**(11.08)**	**(7.70)**
(Pseudo) R2	0.068	0.070	0.067	0.064	0.066	0.073	0.058	0.063	0.054
Number of obs.	9,564	10,934	2,696	5,332	10,664	3,853	3,626	12,293	8,517

Notes: T-values are in parentheses. Results are from ordered-logit regressions with robust standard errors. All regressions include country and year dummies. Female, full-time, low education, decile 1-4-6, single, Albania and the year 1995 are the base. βh/βl for low-middle-high income are respectively 0 (because the parameter of the GDP for the high educated people is not statistically different from zero), 0.674 and 0.867.

One final remark before concluding. One might wonder why the regressions focus on the effect of the GDP per capita instead of that of the real personal income. This is so because, unfortunately, the World Value Survey provides only information on the income deciles, which are a measure of the relative income. However, once we insert in the regressions the income deciles and the country dummies, the slope dummies for different education levels tell us the marginal contribution of the GDP per capita PPP to the life satisfaction of a citizen in a certain country with a certain education level. In other words,

it tells us to what extent the average standard of living of his county contributes to his life satisfaction, given his educational background. On average the standard of living of a British person is higher than that of a Sri Lankan or a Ugandan person, the disturbance term being partly captured by the income decile and the country dummy.

Obviously, it would have been better to have personal income. On the other side, the advantage of the WVS is that it contains individuals from 81 countries representing more than 80% of the world population, thus guaranteeing high heterogeneity of the sample and a more complete view. Finally, results are extremely robust. Thus, even if the GDP per capita PPP is only a proxy of people's real personal purchasing power, we can reasonably conclude that education has some effect on the way people enjoy money.

5. Conclusions

Education plays an important role in human life. It affects well-being directly and indirectly. Direct influences include the positive effect on self-confidence and self-estimation, and pleasure from acquiring knowledge. Indirect influences refer to higher employment probability, better job quality, higher expected salary and better health. Although the empirical evidence on the link between education and life-satisfaction is not fully conclusive, the majority of studies find a positive effect of education on happiness, even after controlling for income levels.

In this paper I focus on the effect of education on the importance people attach to the GDP level. Using data from the World Bank's World Value Survey (third and fourth waves) on more than 118,000 individuals living in 81 countries I find that, everything else being equal, the higher the education level attained is, the lower the weight attributed to the GDP. The weight attached by people with high education versus people with low education is around 30% to 40% lower, according to the econometric methodology adopted. I propose two different explanations for these findings, the most likely being that people with high education have on average higher job satisfaction and a more stimulating cultural life, thus they end up considering less important the consumption level they can achieve.

The empirical results of this research can help to explain the Easterlin Paradox. Since all over the world the average education level has risen a lot over the last decades, the number of people considering the absolute income level less relevant for life-satisfaction has considerably grown. In addition to diminishing marginal utility of income, to adaptation and worsening social conditions, this latter variable might have contributed to "neutralize" the positive effect of higher GDP on human well-being.

This research presents two weak points. First, it would have been interesting to check whether the results are robust to the use of absolute personal income instead of the GDP per capita. Unfortunately, the WVS provides only the self-declared income decile, not the actual income in USD or local currency. Thus, the effect of education on the importance

people attach to income is proxied by the use of GDP, by income group. Belonging to the middle income group of Germans, which has a certain GDP per capita, provides a good approximation of the purchasing power and standard of living of the interviewed person. Second, it would have been better to have panel data in order to perform a dynamic analysis of the effect of education on the coefficient of the GDP. In other words, with a cross section we “take a picture” of the relationship between education and income at a certain point in the time line, while a dynamic model would allow us to check the effect of education over time. Unfortunately, such a database does not exist on a worldwide scale.

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APPENDIX

Table 2: Life-Satisfaction Equations by Income Sub-Groups

	(1) Full Sample	(2) Low Income	(3) Middle Income	(4) High Income
Age	-0.0478958	-0.0449987	-0.0448554	-0.0413348
	(-15.74)	(-9.84)	(-8.01)	(-6.72)
Age2	0.0005122	0.0004856	0.0004672	0.0004185
	(15.49)	(10.26)	(7.62)	(6.03)
Male	-0.0734882	-0.0486808	-0.094575	-0.085809
	(-4.92)	(-1.84)	(-3.36)	(-3.50)
Part-time	0.0003861	0.0975714	-0.0572711	-0.043157
	(0.01)	(2.04)	(-1.09)	(-1.04)
Self-empl	0.0164812	0.0291147	-0.0147438	0.0165719
	(0.65)	(0.59)	(-0.31)	(0.42)
Unempl	-0.4512407	-0.4860712	-0.332989	-0.4614615
	(-15.39)	(-11.04)	(-6.39)	(-7.24)
Retired	-0.0087587	-0.032179	0.0638694	-0.005957
	(-0.29)	(-0.73)	(1.14)	(-0.10)
Housewife	0.0799803	0.0632547	0.0471237	0.1173463
	(3.03)	(1.42)	(1.02)	(2.38)
Student	0.041549	0.0960898	0.0302222	-0.0281755
	(1.36)	(1.83)	(0.55)	(-0.52)
Mid. Educ.	0.1142058	0.1562377	0.1451434	0.3015163
	(5.92)	(3.65)	(2.87)	(4.68)
Up. Educ.	0.2147241	0.3865159	0.2953186	0.5623671
	(9.35)	(5.80)	(4.83)	(8.10)
Decile 2	0.1815296	0.1334496		
	(4.90)	(3.77)		
Decile 3	0.2941023	0.2973298		
	(8.16)	(8.39)		
Decile 4	0.5143554			
	(14.33)			
Decile 5	0.594448		0.1169273	
	(16.20)		(4.43)	
Decile 6	0.7061222			
	(18.69)			
Decile 7	0.8298971			0.1573339
	(21.09)			(4.95)
Decile 8	0.8697305			0.2421578
	(21.18)			(7.17)
Decile 9	0.8970809			0.316998
	(20.01)			(7.87)
Decile 10	0.9789695			0.445872
	(21.90)			(11.10)
Married	0.2312982	0.2330426	0.1856758	0.3174927
	(10.85)	(6.25)	(4.81)	(8.58)
Liv. tog	0.1879288	0.0497448	0.1138772	0.3399921
	(4.21)	(0.61)	(1.46)	(4.62)
Divorced	-0.1383756	-0.1853109	-0.1518985	-0.0318912
	(-3.76)	(-3.41)	(-2.14)	(-0.45)
Separated	-0.3004955	-0.4222619	-0.2066742	-0.241796
	(-5.16)	(-5.01)	(-1.84)	(-2.16)
Widowed	-0.158815	-0.1643613	-0.1819196	0.0379482
	(-4.17)	(-3.14)	(-2.38)	(0.41)
Size town	-0.0041572	-0.0094036	-0.0086106	-0.005163
	(-1.31)	(-1.78)	(-1.47)	(-0.90)
GDP	0.394	0.477	0.456	0.49
	(25.50)	(14.83)	(10.63)	(14.21)
GDP ME		-0.047	-0.0659	-0.11
		(-1.86)	(-2.1)	(-3.29)
GDP UE		-0.141	-0.139	-0.21
		(-3.78)	(-3.67)	(-5.98)
βh/βl	-	0.704	0.695	0.571
(Pseudo) R2	0.067	0.067	0.064	0.059
Number of obs.	67,479	23,194	19,849	24,436

Notes: T-values are in parentheses. Results are from ordered- logit regressions with robust standard errors. All regressions include country and year dummies. Female, full-time, low education, decile 1-4-6, single, Albania and the year 1995 are the base.

Table 4: Life-Satisfaction Equations: Full Sample with Interacted Slope Dummies for Education and Income

	(1) Low Income	(2) Middle Income	(3) High Income	(4) Full Sample
Age	-0.0462794	-0.0480743	-0.0470233	-0.046074
	(-15.19)	(-15.79)	(-15.45)	(-15.12)
Age2	0.0004912	0.0005144	0.0005003	0.0004893
	(14.84)	(15.55)	(15.13)	(14.78)
Male	-0.0722923	-0.0745019	-0.0736668	-0.0741236
	(-4.84)	(-4.98)	(-4.93)	(-4.96)
Part-time	0.0033195	-0.0004321	0.0038351	0.0048985
	(0.13)	(-0.02)	(0.15)	(0.19)
Self-empl.	0.0149803	0.0184184	0.0188264	0.0247266
	(0.59)	(0.72)	(0.74)	(0.97)
Unempl.	-0.4535166	-0.4524164	-0.4526783	-0.4548346
	(-15.43)	(-15.42)	(-15.41)	(-15.46)
Retired	-0.0132392	-0.0112534	-0.0169922	-0.0205549
	(-0.44)	(-0.38)	(-0.57)	(-0.69)
Housewife	0.0785378	0.0801936	0.0747344	0.0811279
	(2.98)	(3.04)	(2.83)	(3.07)
Student	0.0357534	0.0394541	0.0331063	0.0302436
	(1.17)	(1.29)	(1.09)	(0.99)
Mid. Educ.	0.1163005	0.135152	0.1116242	0.1754697
	(5.39)	(6.42)	(5.35)	(6.10)
Up. Educ.	0.2160678	0.2539571	0.243851	0.373266
	(8.69)	(10.21)	(9.29)	(10.68)
Decile1	-0.7953228	-0.5695596	-0.5960875	-0.6979615
	(-19.19)	(-13.90)	(-16.23)	(-16.19)
Decile2	-0.6167375	-0.387749	-0.4203013	-0.520937
	(-17.83)	(-11.47)	(-14.61)	(-14.28)
Decile3	-0.4896326	-0.2774483	-0.3018939	-0.3981081
	(-15.7)	(-9.03)	(-11.73)	(-12.04)
Decile4	-0.080081	-0.0841348	-0.0782184	-0.0797701
	(-3.26)	(-3.43)	(-3.19)	(-3.25)
Decile6	0.1187828	0.1279816	0.3013873	0.2290646
	(4.55)	(4.09)	(9.62)	(6.99)
Decile7	0.2497383	0.2518136	0.4450088	0.3699538
	(8.76)	(7.39)	(12.92)	(10.32)
Decile8	0.2900995	0.2896043	0.4891553	0.4120171
	(9.45)	(8.04)	(13.47)	(10.93)
Decile9	0.3301882	0.3174032	0.5483195	0.4700282
	(9.18)	(7.67)	(12.97)	(10.81)
Decile10	0.4128301	0.3972885	0.6337952	0.5536932
	(11.62)	(9.72)	(15.21)	(12.90)
Married	0.2435532	0.2294903	0.246141	0.2455292
	(11.40)	(10.76)	(11.52)	(11.48)
Liv. tog.	0.2002493	0.1882332	0.2059009	0.2098374
	(4.49)	(4.21)	(4.61)	(4.70)
Divorced	-0.1453651	-0.1379612	-0.1458819	-0.1474738
	(-3.94)	(-3.74)	(-3.96)	(-4.00)
Separated	-0.3096438	-0.2991446	-0.3087733	-0.3097069
	(-5.31)	(-5.13)	(-5.28)	(-5.30)
Widowed	-0.1569659	-0.1563237	-0.1469622	-0.1493332
	(-4.12)	(-4.10)	(-3.85)	(-3.91)
Size town	-0.0066761	-0.004331	-0.0068053	-0.0080556
	(-2.11)	(-1.37)	(-2.15)	(-2.54)
GDP	0.343	0.388	0.481	0.56
	(21.67)	(24.79)	(27.70)	(23.48)
GDP LE-LI	0.185			
	(9.47)			
GDP ME-LI	0.164			-0.055
	(9.74)			(-2.51)
GDP UE-LI	0.149			-0.118
	(6.13)			(-4.07)
GDP LE-MI		0.077		-0.057
		(3.44)		(-2.20)
GDP ME-MI		0.017		-0.144

		(1.05)		(-5.86)
GDP UE-MI		-0.044		-0.247
		(-2.09)		(-8.53)
GDP LE-HI			-0.135	-0.188
			(-6.06)	(-7.29)
GDP ME-HI			-0.157	-0.241
			(-10.51)	(-10.25)
GDP UE-HI			-0.2	-0.314
			(-12.63)	(-13.08)
βh/βl	0.932	0.740	0.812	*
(Pseudo) R2	0.068	0.068	0.068	0.068
Number of obs.	67,479	67,479	67,479	67,479

Notes: T-values are in parentheses. Results are from ordered-logit regressions with robust standard errors. All regressions include country and year dummies. Ffemale, full-time, low education, decile 1-4-6, single, Albania and the year 1995 are the base.
* βh/βl for low-middle-high income are respectively 0.789, 0.621 and 0.661.