

Happiness Decomposition: Female Optimism

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Abstract Using the Gallup World Poll, the World Values Survey and the European Social Survey we present evidence of differences in happiness by gender. Although worldwide women are happier than men, at the country level the happiness gap favors females in some cases and males in others. We decompose the happiness gap between observable characteristics and how male and females react to these characteristics. We find that the observables do not help to explain the gap, quite the contrary, they hide an unfavorable situation of women. That is to say, if females had the same objective individual characteristics than men, they would be even happier than what they currently are. We conclude that females tend to respond to individual happiness determinants in a much “favorable” way than men do. Our results are pervasive among geographic regions and country income groups. We also find a correlation between the observed and unobserved component of the happiness decomposition with gdp per capita, female life expectation and female literacy rate.

Keywords Happiness inequality · Gender · Oaxaca–Blinder decomposition

JEL Classification I31 · J16 · D03

1 Introduction

Differences among men and women in most social outcomes have been more the norm than the exception in almost all countries and times. However, it is possible to argue that, overall, never in history did men and women enjoyed such similar access to educational attainment, employment and civil rights. As these objective dimensions of life tend to converge for both sexes the question of differences in how they impact in personal well being is still open.

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Do men and woman report similar levels of happiness? No, they do not. There is evidence of a persistent gender gap regarding subjective well-being (Blanchflower and Oswald 2001; Stevenson and Wolfers 2009; Guven 2012; Vieira Lima 2011; Graham and Chattopadhyay 2012; Zweig 2014). Most studies evidence that women are happier than men, but there are differences at the country level. Blanchflower and Oswald (2001) evidence that men report lower happiness scores than women both for the United States and Britain using data from the General Social Survey 1972–1998 and the Eurobarometer British Survey from 1975 to 1986. Guven 2012 analyze happiness gaps within married couples concluding that persistent gaps increase the likelihood of divorce. They interpret this finding as resulting from an aversion to unequal sharing of well being inside couples.

In the same line, Stevenson and Wolfers (2009) provide evidence that women are happier than men in the United States but that females have experienced a decline in absolute and relative levels of happiness. They explain this narrowing gap by the raised expectations brought by equalization in gender rights as well as the double burden of working and household duties imposed on females.

Graham and Chattopadhyay (2012) evidence that woman are happier than men at worldwide scale, with exception of poor countries. Using data from Gallup World Poll, World Values Survery and Latinobarometro (2005–2010), they find that levels of subjective well-being are higher in developed countries as well as the gap between male and female happiness. Happiness gaps between genders increase with age, educational level and if woman live in urban areas. Exceptions to these findings appear in the Sub-Saharan African region, where both happiness and expectation of future happiness appear to be higher for males than females, and Latinamerica, where no significant differences between male's and female's reported happiness is found.

Vieira Lima (2011) reports that females are happier than males in a worldwide scale. When analyzing this results by geographical regions, contrary to Graham and Chattopadhyay findings, the authors evidence that in most African and developing countries woman are happier than men, while the contrary happens in around 15 European and other industrialized countries. When trying to find the association between female happiness and the extent of female rights and achievement, the author finds a negative impact on woman's happiness, concluding that women's happiness has a paradoxical component, where better objective conditions do not grant them happiness.

Zweig (2014) uses the Gallup World Poll to investigate the happiness gender gap in 73 countries at different stages of development. She uses country specific ordinary least square regressions which evidence that women are happier than men in almost all the countries of the sample. The magnitude of the female–male happiness gap is not associated with degree of economic development, women's rights, geography or religion.

Some other authors have tried to analyze the intra household factors associated with the happiness gender gap. Sironi and Mencarini (2010) analyze the effect of couples labor division within the household on happiness. Using data of the European Social Survey, 2004, the authors analyze the relationship between the share of housework conducted by women and their happiness, controlling for variables such as age, religiousness, health, number of children and support from anyone outside the household. Furthermore, using a multi-level model, the authors are able to investigate the determinants of women's differing levels of happiness across countries. The empirical evidence suggests that a large share of housework negatively affects women's life satisfaction. They also found that being employed for more than 30 h per week has a negative impact on female subjective well-being, with respect to being employed part-time or being a housewife. These findings would validate the idea that coexistence of traditional gender roles within households and improvements of labor market opportunities for

women may lead them to increase their market effort, without releasing them from their household duties, resulting in a double burden or second shift (Hochschild 1990).

Güven 2012 analyze happiness gaps within married couples concluding that persistent gaps increase the likelihood of divorce, especially when the happiness gap is unfavorable to the wife. They interpret this finding as resulting from an aversion to unequal sharing of well-being inside couples.

The main purpose of this paper is to analyze the happiness gender gap and measure how much of this gap can be attributable to the different objective conditions of men and women and how much can be attributable to the different way men and women react to the same objective conditions. The methodology is based on the Oaxaca–Blinder decomposition (Blinder 1973; Oaxaca 1973). The most popular application to this methodology is to differences in labor incomes that are decomposed between an “explained” term, attributed to endowments (education, experience, etc.) and an “unexplained” term (returns to education, returns to experience, etc.). Oaxaca–Blinder has also been utilized to decompose other variables like promotions, health status, homeownership, education attainment (e.g. Munn and Hussain 2010; Lhila and Long 2012; Jimenez-Rubio and Hernandez-Quevedo 2011; Bauer et al. 2007; Schneeweis 2011; Skoufias and Katayama 2011). The traditional Oaxaca–Blinder methodology decomposes differences in the mean value for the groups of interest. Recently, it has been extended to address decomposition in other points of the distribution by the use of quantile regressions (see for instance Albrecht et al. 2003; Machado and Mata 2005; Melly 2005).

To the best of our knowledge our paper is the first application of a decomposition technique in the happiness and subjective well being literature. The present analysis is performed using multiple datasets, namely the Gallup World Poll, the World Values Survey and the European Social Survey. Results are presented both by geographical areas and by country income levels. Results prove to be generally consistent. At a country level it is not possible to establish a uniform pattern of who are happier males or females but there are substantially more countries where females are happier than males. Considering country aggregates by geographical region or country income level it is possible to establish that, for the most, the happiness gap is in favor of females. The decomposition technique allows analyzing the happiness gap, whether positive or negative, into what can be explained by individual objective characteristics (age, marital status, having a job, income, education) and what cannot be explained by this differences. We find that the objective observable characteristics do not help understand the gap. If females had the males’ characteristics they would be happier than what they are. The other side of the coin is that if males had the females’ characteristics they would be less happy than what they are. In other words, after controlling for observable objective characteristics, there is a happiness gap in favor of women. We conclude that women are more “optimistic” than men and tend to value in a more positive way the objective characteristics of their lives. Our reference to “optimism” is a very broad one. In a sense, it is more a statement of ignorance rather of knowledge. Given all the dimensions of life that we measure we find women being happier than what “they should” be. This is what we call female optimism.

Finally, we try to find a pattern for the happiness gap and for the unexplained part of the happiness gap. To do so we correlate these two variables with various country level macro variables. We find that even if at the aggregate national level differences in happiness between male and female are not correlated with country level variables, the decomposition components of the gap are. In more developed countries and countries where females are better off the explained part of the gap is lower and the unexplained part is higher.

The paper proceeds as follows. Section 2 presents the data sources and the key variables. Section 3 the decomposition methodology for the happiness gap. Section 4 the results, which are discussed in Sect. 5. Finally, Sect. 6 concludes.

2 Data

In this paper we use three large cross sectional databases with information on subjective wellbeing. They are The Gallup World Poll (GWP), the World Value Survey (WVS) and the European Social Survey (ESS).

The GWP surveys individuals in more than 140 countries representing about 95 percent of the world's adult population. In our study we use data from the 2006 round containing information on about 101,337 individuals from 117 countries. The GWP has a question on satisfaction with life that corresponds to a personal assessment of general well-being. The question in the survey reads "Please imagine a ladder/mountain with steps numbered from 0 at the bottom to 10 at the top. Suppose we say that the top of the ladder/mountain represents the best possible life for you and the bottom of the ladder/mountain represents the worst possible life for you. If the top step is 10 and the bottom step is 0, on which step of the ladder/mountain do you feel you personally stand at the present time?" We use the ordered responses to this question as our measure of reported well-being, and henceforth we do not distinguish it from happiness.

The WVS aggregated files contain data across five waves from 1981 to 2008. In our study we use data on 81,903 individuals from 86 countries. The WVS asks respondents separate questions about their happiness and satisfaction with life. We use the happiness question that reads "Taking all things considered would you say you are: very happy, quite happy, not very happy, not at all happy". In our empirical exercises we input the following values 1 (not at all happy), 2 (not very happy), 3 (quite happy) and 4 (very happy).

For the ESS we use data from the first three rounds conducted from 2002 to 2006 including information on 27 countries. In our study we use data on 54,655 individuals. The key question in the ESS reads "Taking all things together, how happy would you say you are?" Respondents are asked to select a number from 0 to 10.

All the three datasets report information on several variables that are related to individual's happiness like marital status, employment status, education, age and income. Numerous investigations for a wide range of countries have attested the intimate link between marriage and personal well being (Dayton 1936; Durkheim 1987; Robins and Regier 1991; Mastekaasa 1993). It has been widely documented that married people live longer and generally enjoy more physical and emotional health than unmarried people (for instance Waite 1995; Miller et al. 2013).

According to Helliwell (2003), marriage is one of the unambiguous, universally positive and statistically significant correlates of life satisfaction. Basic estimates of happiness always reveal that being married rather than single, divorced or widowed, is strongly associated with higher self-declared happiness. Helliwell also reports that in most countries, married people are also happier with their life than those who cohabit with a partner. One possible interpretation is that marriage provides a structural form of social support, as well as represents a social contract that implies an intimate relationship that can be both stress easing and socially integrative. Marital status in this paper has been categorized by means of four dummy variables: married, single, widow and divorced.

In our estimations, an employment variable has also been included in order to capture the impact of labor on reported well being. The omitted category includes both unemployed and inactive individuals. Empirical studies have found a significant link between having any kind of occupation, either paid or unpaid, and well being, basically through richer social networks and self esteem (Clark and Oswald 1994; Winkelmann and Winkelmann 1998; Clark 2003, 2007).

Age is another control used and is included in the estimations with its square term to allow for no convexity and turning points. In general, happiness literature reports that the relationship between happiness and age is U shaped (Blanchflower and Oswald 2001, 2007; Clark 2007; Dear et al. 2002; Di Tella et al. 2003; Ferrer-i-Cardonel and Frijters 2004; Gandelman and Piani 2013; Gerdtam and Johannesson 2001; Hayo and Seifert 2003; Helliwell 2003; Oswald 1997; Powdthavee 2005; Seifert 2003; Theodossiou 1998; Winkelmann and Winkelmann 1998), reaching a minimum approximately at midlife, between mid and late forties. This finding holds among others for the US, Germany, Britain, Australia, Europe, Uruguay and South Africa. Literature finds three possible explanations to this stylized fact: (1) raised expectations during early years of adulthood; (2) as people mature, they acquire a greater level of acceptance of self-limitations that help to downward expectations; (3) happier people live longer (López Ulloa et al. 2013). Though in a minor extent, some authors find an inverted U shape relationship between happiness and well-being (Mroczek and Spiro 2005; Easterlin 2006; Easterlin and Sawangfa 2007) and even a linear relationship between these two variables (Costa et al. 1987; Myers and Diener 1995).

As predicted by economic theory, the empirical evidence shows that income raises individual happiness levels (Frey and Stutzer 2002; Blanchflower and Oswald 2001; Clark et al. 2008) especially in the lower part of the income distribution (Argyle 1999). The GWP household annual income data is reported in 29 brackets (\$0, less than \$1 a day, \$1–\$2 a day, more than \$730 and less than \$1,099 per year, more than \$1,100 and less than \$1,499 per year, etc.). We use the midpoint of the bracket as the measure of individuals' income. For the top bracket we use a value equal to double the previous midpoint value (i.e. individuals in the bracket from \$75,000 to \$124,999 were assumed to have an annual income of \$100,000 and individuals in the bracket of more than \$125,000 were assumed to have an annual income level of \$200,000). In the WVS household gross income data are reported in 10 brackets. For some countries specific bracket intervals in national currencies are not provided. Therefore, we had to exclude these countries. We use the midpoint of the bracket as the measure of income. For the bottom and top brackets we use a value equal to two-thirds of the bottom-code value and one and a half times the top-code value, respectively. In the ESS household total net income data are reported in 12 brackets. We use the midpoint of the bracket as the measure of income. For the bottom and top brackets we use a value equal to two-thirds of the bottom-code value and one and a half times the top-code value respectively.

Several authors have studied the relationship between education and life satisfaction. On one hand, authors like Clark and Oswald (1994), Frey and Stutzer (2002), Veenhoven (2010) did not find a systematic relationship between both variables. This first group of authors conclude that although education allows better adaptation to changing environments, this higher predisposition to well being is compensated by a proportional increase in aspiration levels. On the other hand, authors such as Helliwell (2003), Salinas-Jiménez et al. (2011), Cuñado and Pérez-Gracia (2011), López and Guijarro (2012) do find a positive and significant relationship between both variables. Education seems to benefit well being through indirect channels such as income, consumption, employment, occupational status and health. The WVS provides data on eight education levels of respondents ranging from elementary education to upper level tertiary certificate. For the ESS we use years of education of respondents. Unfortunately we do not have available data on education for GWP.

3 Methodology

The procedure known as the Oaxaca–Blinder decomposition is an often used methodology to study labor market outcomes by groups. It consists of decomposing a variable of interest based on linear regression models in a counterfactual manner. Most commonly used to analyze wage gaps, this methodology divides the wage differential between two groups (e.g. by gender, race, ethnicity, nationality) into a part that is “explained” by group differences in productivity characteristics or endowments and a part that cannot be accounted for by such differences in wage determinants. This “unexplained” part is often used as a measure of discrimination, but it also subsumes the effects of group differences in unobserved predictors. For instance, more education is often associated with higher wages. Therefore, if group A is more educated than group B it is natural that group A’s wages are higher than group B’s wages. On the other hand, it may be that both groups are equally educated but for some reason those in group A are more economically rewarded by their education than those in group B. Naturally, both things may happen at the same time and the Oaxaca–Blinder procedure decomposes the higher wages of group A in the part that is due to their higher education (the explained part) from the part that is due to them being better rewarded “just for being of group A” (the unexplained part).

Let H_i be the happiness level of the i th group with $i = M, F$ (male or female). Given a set of explanatory variables, the question to address is how much of the mean outcome in happiness is accounted for by group differences in these variables. The mean happiness gender gap is defined as:

$$R = E(H_M) - E(H_F) \quad (1)$$

where $E(H_i)$ denotes the expected happiness level for group i .

Happiness is postulated to follow a linear representation of the type $Y_i = x_i\beta_i + \varepsilon_i$ with again $i = M, F$, where $E(\varepsilon_i) = 0$, x_i is a vector containing explanatory variables; β is a vector of parameters, and ε_i is the error term. The mean outcome difference in happiness between groups can be expressed as the difference in the linear predictions at the group specific mean of the regressor. In that manner, Eq. (1) can be rewritten as follows:

$$R = E(H_F) - E(H_M) = E(x_F)\beta_F - E(x_M)\beta_M \quad (2)$$

Assuming the existence of some non-discriminatory coefficient vector (β^*),¹ it can be used to determine the contribution of the differences in the explanatory variables. The outcome difference between female and male happiness can then be rewritten as:

$$R = [E(x_F) - E(x_M)]\beta^* + [E(x_F)(\beta_F - \beta^*) + E(x_M)(\beta^* - \beta_M)] \quad (3)$$

The first summand $[E(x_F) - E(x_M)]\beta^*$ is the part of the outcome differential that is “explained” by group differences in explanatory variables of happiness, also known as the “quantity effect”. The second summand $[E(x_F)(\beta_F - \beta^*) + E(x_M)(\beta^* - \beta_M)]$ is the “unexplained” part.² In the labor market literature, this latter term is usually interpreted as the difference in the returns to human capital (and other) characteristics of the individuals. In the case of happiness differentials this term should be interpreted as capturing the different way in which men and woman value objective characteristics of their lives.

¹ The literature presents several ways for determining this non-discriminatory coefficient β^* . In this paper we compute it from a pooled model over both groups (males and females) including a gender dummy.

² For a complete discussion of this issue see Oaxaca and Ransom (1994).

To provide some intuition of the type of results to be presented latter suppose that household income is positively associated with happiness and that is the only observable variable considered. On one hand, if females in our sample have higher household income than males they should be happier. On the other hand, if females and males have about the same household income but females “require” less income they may feel happier than males. For instance it may be that poverty affects more males’ happiness than females’ happiness due to the traditional role of the family income provider assigned to men. Naturally, both things can happen at the same time. That is to say, there may be differences in income levels and differences in the way males and females subjective well being responds to their income level. The decomposition technique divides how much of the average happiness differential is due to differences in income and how much is due to differences in the way men and women respond to income.

Qualitatively there may be three types of results:

1. The group with higher happiness has higher income and a tendency to better reward income than the other group. In this case the decomposition will report a positive explained and a positive unexplained component.
2. The group with higher happiness has higher income but a tendency to reward income less than the other group (they require more to be equally happy). In this case, the explained term will be positive and the unexplained term will be negative. In other words, if the happier group were to respond to income the same way as the other does they will be even happier. There is sort of pessimism in them that does not allow them to fully enjoy their objectively better position.
3. The group with higher happiness has lower income but a tendency to reward income more than the other group (they require less to be equally happy). In this case, the explained term will be negative and the unexplained term will be positive. In other words, if the happier group were to have the income level of the other group they will be even happier. There is a sort of optimism in them that makes them happier even if their objective measurable characteristics suggest they should not be.

The first is the most common type of result found in the labor market literature when decompositions are performed for differences in race or ethnicity. When decompositions are performed by gender there is more variation. For instance Carrillo et al. (2014) performing wage decomposition at several points of the wage distribution for several Latin American countries report that the higher educational level of females hides part of the wage discrimination against them (a third type result).

4 Results

4.1 Descriptive

Before presenting estimates we first present some summary statistics of our data. Table 1 presents the summary statistics of the measure of subjective well being and the explanatory variables used in our analysis.

The three databases report that females have lower income and employment level than men do. In the GWP and in the ESS females in the sample are older than male as expected by the larger life expectancy of women. In the WVS, on average, they are about the same age. The distribution among marital status is about the same in the three databases. Married is the most common marital status followed by single both for men and women.

Table 1 Mean statistics by gender, standard deviation in parenthesis

	Happiness	Income	Age	Employment	Single	Married	Divorced	Widow
<i>Gallup World Poll</i>								
Male	5.35 (2.18)	17,245 (24,654)	39.8 (17.3)	53 % (49 %)	34 % (47 %)	53 % (49 %)	4 % (19 %)	3 % (16 %)
Female	5.50 (2.24)	15,734 (22,157)	40.4 (17.3)	36 % (48 %)	25 % (43 %)	53 % (49 %)	7 % (24 %)	10 % (30 %)
Total	5.43 (2.22)	16,431 (23,355)	40.1 (17.3)	44 % (49 %)	29 % (45 %)	53 % (49 %)	5 % (22 %)	7 % (25 %)
<i>World Values Survey</i>								
Male	3.02 (0.74)	313,899 (1,521,467)	40.3 (15.9)	63 % (48 %)	28 % (44 %)	64 % (47 %)	4 % (18 %)	3 % (15 %)
Female	3.03 (0.75)	312,035 (1,528,602)	40.2 (15.8)	40 % (49 %)	21 % (40 %)	62 % (48 %)	6 % (23 %)	9 % (28 %)
Total	3.02 (0.75)	312,948 (1,525,102)	40.3 (15.9)	51 % (5 %)	24 % (43 %)	63 % (48 %)	5 % (21 %)	5 % (23 %)
<i>European Social Survey</i>								
Male	7.19 (1.98)	30,757 (29,319)	46.1 (18.2)	90 % (29 %)	30 % (46 %)	55 % (49 %)	8 % (26 %)	4 % (20 %)
Female	7.12 (2.11)	26,249 (26,637)	47.7 (18.6)	89 % (31 %)	23 % (42 %)	50 % (49 %)	10 % (30 %)	14 % (35 %)
Total	7.15 (2.05)	28,386 (28,032)	47.0 (18.4)	89 % (3 %)	26 % (44 %)	53 % (49 %)	9 % (28 %)	10 % (29 %)

Source: Authors elaboration based on Gallup World Poll, World Values Survey, European Social Survey

No education variables available for Gallup World Poll. In World Values Survey education variable ranges from 1 (less educated) to 8 (more educated). In European Social Survey education variable represents years of education

Also, the tree databases show small differences on the aggregate between females and males happiness. In Table 2 we present summary results of country level differences in happiness by gender. We find higher female happiness in 43 countries out of 87 in the WVS, in 61 countries out of 117 in the GWP and in 16 out of 29 countries in ESS. At this level of aggregation differences in mean happiness by gender are in many cases not statistically significant. In Table 9, in the Appendix, we present results on *t* test of mean differences in happiness by country. They show statistically significant differences in favor of females in 16, 24 and 7 countries in the GWP, WVS and ESS respectively. Men are happier than females at a statistically significant level only in 8, 13 and 8 countries in the GWP, WVS and ESS respectively. The combination of multiple datasets, as in our case, brings the concern of how coherent are the result in the different databases. As can be seen there are many cases where the differences are not statistically significance in at least one of the surveys. In the total of 129 countries analyzed taking together the GWP, WVS and ESS, we find only one statistically significant contradiction. In Israel, according to the WVS females are happier than male at a statically significance level while according to the ESS the opposite is the case.

In Table 3 we present evidence that average happiness levels for male and females are different at traditional statistical levels of significance. In Table 4 using the GWP and the WVS that have richer country coverage than the ESS we report *t* tests of mean differences for the various groups of countries classified by geographical region and by country income level.

In East Asia Pacific (EAP), Western Europe (WE), Middle East and Northern Africa (MENA), North America (NA), Sub-Saharan African (SSA) and South East Asia (SEA) we find that statistically significant difference in mean happiness in favor of females at least from one of the two databases. In Latin America and the Caribbean (LAC) we have

Table 2 Are women happier than men?

	GWP	WVS	ESS
<i>t</i> Test of equality of means			
Countries	117	85	29
Yes	61	43	16
Yes significant	16	24	7
No significant	8	13	8

Source: Authors elaboration based on Gallup World Poll, World Values Survey, European Social Survey
 “Significant” refers to statistically significant at least at 10 % level

Table 3 *t* Tests for equally of means of happiness

	Males		Females		<i>t</i> stat	<i>p</i> value
	Mean	SE	Mean	SE		
GWP (117 countries)	5.35	0.0094	5.50	0.0089	-11.61	0.000
WVS (85 countries)	3.02	0.0021	3.03	0.0021	-3.89	0.001
ESS (29 countries)	7.19	0.0068	7.12	0.007	7.25	0.000

Source: Authors elaboration based on Gallup World Poll, World Values Survey, European Social Survey

Table 4 *t* Tests for equality of means of happiness by geographical areas

		Males		Females		<i>t</i> stat	<i>p</i> value	Countries
		Mean	SE	Mean	SE			
<i>Geographical areas</i>								
East Asia Pacific (EAP)	GWP	5.58	0.0190	5.67	0.021	-3.23	0.001	15
	WVS	3.09	0.0054	3.14	0.005	-5.54	0.000	9
East Central Asia (ECA)	GWP	5.06	0.0180	5.05	0.016	0.39	0.695	27
	WVS	2.75	0.0046	2.72	0.004	4.60	0.000	21
Western Europe (WE)	GWP	7.15	0.0213	7.23	0.019	-2.77	0.006	15
	WVS	3.17	0.0052	3.19	0.006	-3.09	0.002	11
Middle East and Northern Africa (MENA)	GWP	6.25	0.0504	6.17	0.047	1.19	0.234	4
	WVS	2.85	0.0070	2.96	0.006	-11.06	0.000	8
Latin America and the Caribbean (LAC)	GWP	5.81	0.0261	5.92	0.025	-2.98	0.003	23
	WVS	3.16	0.0052	3.15	0.006	2.20	0.028	11
North America (NA)	GWP	7.31	0.0510	7.34	0.048	-0.45	0.655	2
	WVS	3.35	0.0100	3.39	0.009	-2.59	0.010	2
Sub-Saharan Africa (SSA)	GWP	4.23	0.0150	4.22	0.016	0.54	0.591	26
	WVS	3.12	0.0066	3.16	0.0070	-4.81	0.000	10
South East Asia (SA)	GWP	4.71	0.0360	4.96	0.034	-5.00	0.000	5
	WVS	2.97	0.0084	2.96	0.0094	0.88	0.377	3
<i>Countries by income classification</i>								
High income	GWP	5.58	0.0190	5.67	0.021	-3.23	0.001	35
	WVS	3.12	0.0033	3.16	0.0033	-7.05	0.000	32
Upper-middle income	GWP	5.06	0.0180	5.05	0.016	0.39	0.695	28
	WVS	2.96	0.0033	2.97	0.0034	-1.55	0.120	29
Low-middle income	GWP	7.15	0.0213	7.23	0.019	-2.77	0.006	22
	WVS	2.99	0.0048	2.97	0.0042	3.19	0.001	16
Low income	GWP	6.25	0.0504	6.17	0.047	1.19	0.234	28
	WVS	3.02	0.0089	3.01	0.0093	0.61	0.537	9

Source: Authors elaboration based on Gallup World Poll and World Values Survey

contradicting evidence. According to the GWP females are happier than males while the opposite happens according to the WVS. Probably the difference is due to the lower country coverage of the WVS for this region. Finally, the WVS reports that in East Central Asia (ECA) mean happiness of males is statistically higher than for females while the GWP fails to find significant differences. Considering the mean differences by income country level we find that females are happier than males in every single income region except in the low income countries where the difference is not statistically significant.

Although interesting these *t* tests do not control for individual characteristics that could in principle explain the reported happiness gap. This is reported in the next subsection.

4.2 Econometrics

Table 5 reports the regressions for the determinants of happiness levels using our three databases. This estimates corresponds to the “non-discriminatory coefficient” (β^*) used in the decomposition. Although the county coverage in the three databases is different the

Table 5 Happiness determinants

	GWP	WVS	ESS
Age	-0.04155 (0.002)**	-0.02106 (0.001)**	-0.07825 (0.000)**
Age ²	0.00051 (0.000)**	0.00023 (0.000)**	0.00082 (0.000)**
Married	-0.008 (0.017)	0.165 (0.007)**	0.373 (0.0199)**
Divorced	-0.092 (0.031)**	-0.057 (0.013)**	-0.2029 (0.0291)**
Widow	-0.424 (0.031)**	-0.089 (0.014)**	-0.6564 (0.0560)**
Income	0.000 (0.000)**	0.000 (0.000)**	0.000 (0.000)**
Employment	0.464 (0.014)**	0.062 (0.006)**	0.8329 (0.0260)**
Years of education	-	-	0.0259 (0.0020)**
Elementary education	-	0.098 (0.010)**	-
Incomplete secondary	-	0.154 (0.013)**	-
Complete secondary	-	0.182 (0.010)**	-
Intermediate qualification	-	0.198 (0.011)**	-
University preparatory qualification	-	0.227 (0.010)**	-
Lower level tertiary certificate	-	0.259 (0.012)**	-
Upper level tertiary certificate	-	0.269 (0.010)**	-
Female	0.295 (0.013)**	0.078 (0.005)**	0.1413 (0.002)**
Constant	5.207 (0.039)**	3.191 (0.021)**	7 (0.085)**
Observations	101,337	81,903	54,655
R-squared	0.14	0.03	0.09

Source: Authors elaboration based on Gallup World Poll, World Values Survey and European Social Survey

Education variable not available for Gallup World Poll

Standard errors in parenthesis

** Significant at 1 %, * significant at 5 %

results are rather robust. The estimations present for the most part the expected signs in the coefficients of the explanatory variables and are in line with the literature briefly reviewed in the previous section.

The dummy for females has a positive and statistically significant coefficient, evidencing women higher reported happiness levels. This is one step above the t tests from the previous subsection in the sense that in these estimations we are already controlling for other determinants of happiness. The age coefficient is negative and its squared positive implying that the relationship between happiness and age is U shaped. Happiness decreases with age up to a turning point in the forties (41 according to the GWP, 46 according to WVS and 48 according to ESS) when minimum happiness is attained. After that, age and happiness are positively correlated. Divorced and widowed people appear to be less happy than single ones, which is the omitted category in the regression. The WVS and the ESS report that married people are the happiest of all while according to Gallup there are no statistically significant differences between married and single individuals. Income and employment enter the equation with the expected positive signs, i.e. richer people and having a job are positively correlated with happiness. The WVS and the ESS allows including controls for educational level. We find that the higher the educational level the higher the level of happiness. This is clear from the rising coefficient of the dummy variables indicating higher educational levels in WVS and from the positive coefficient in the variable indicating the amount of years of education in ESS.

In the Appendix, in Tables 10 and 11 we report happiness determinants by geographical regions and by country income levels. This is done using the GWP and the WVS. They are an intermediate input to perform the happiness decomposition for these groups of countries. We find females have statistically larger happiness levels in almost all cases. In the analysis by geographical zones we have eight regions estimated with two databases for a total of sixteen regressions. In thirteen the coefficient of females is positive and statistically significant. In three cases is not statistically significant (MENA using GWP, LAC using WVS and SSA using GWP). In the regressions by country income group, in all cases, females are happier than males.

The rest of the variables have for the most the expected signs. The coefficient for married is positive and statistically significant in almost all cases. Divorced is associated with lower level of happiness. The results for widows are similar but somewhat less robust in their statistical significance. Higher income, employment and education are also associated with being happier all over the world.

The estimations presented in Table 5 assume implicitly that in the happiness estimations the coefficients of the control variables for females and males are the same. That is to say, they assume that females and males respond in the same way to aging, having a job, etc. The decomposition exercise proposed assumes on the contrary that male and females can differ in the way they respond to objective characteristics of life. Table 6 presents the decomposition of the happiness gap in a part “explained” by differences in objective variables and a part “unexplained” by this objective variables that refers to the different way in which male and females respond to these objective dimensions of life (Eq. 3 in the methodology section).

In labor economics when the Blinder–Oaxaca decomposition is performed to address differences in wages between two racial groups, many times it is found that part of the wage differential is due to lower human capital of the disadvantaged group. The results are read that from an X % wage differential Y % can be attributed to objective differences that make the disadvantage group less successful in the job market. The difference $(X - Y)$ % is due to discriminatory practices, i.e. lower returns to their human capital.

Table 6 presents a striking result. The “explained” part of the decomposition has negative sign for GWP and WVS. This means that the observed characteristics not only do not explain the happiness gender gap, rather they disguise the existing differentials. The

Table 6 Blinder–Oaxaca happiness decomposition

	GWS	WVS	ESS
HF-HM	0.132**	0.041**	0.049**
Explained	−0.162**	−0.037**	0.045
Unexplained	0.295**	0.078**	0.004

Source: Authors elaboration based on Gallup World Poll and World Values Survey

** Significant at 1 %, * significant at 5 %

Table 7 Blinder–Oaxaca happiness decomposition by geographic areas

		Happiness: (female–male)	Explained	Unexplained
<i>Geographical areas</i>				
East Asia Pacific (EAP)	GWP	0.087**	−0.198***	0.285***
	WVS	0.080**	0.011**	0.098**
East Central Asia (ECA)	GWP	−0.018	−0.156***	0.138***
	WVS	.051**	−0.013**	0.064**
Western Europe (WE)	GWP	.062**	−0.133***	.195**
	WVS	.021	−0.034	0.055
Middle East and Northern Africa (MENA)	GWP	−0.087	−0.148***	0.060
	WVS	0.082**	0.018**	0.100**
Latin America and the Caribbean (LAC)	GWP	0.101**	−0.149***	0.250***
	WVS	−0.029**	−0.020**	−0.009**
North America (NA)	GWP	0.015	−0.133***	0.148***
	WVS	0.049	−0.020	0.070
Sub-Saharan Africa (SSA)	GWP	−0.021	−0.058***	0.0370
	WVS	0.075*	(0.033)*	0.108**
South East Asia (SA)	GWP	0.223***	0.028	0.194***
	WVS	0.022	−0.039	0.061
<i>Countries by income classification</i>				
High income	GWP	0.013	−0.214***	0.228***
	WVS	0.055**	−0.024**	0.079**
Upper-middle income	GWP	0.040	−0.173***	0.213***
	WVS	0.025**	−0.030**	0.055**
Low-middle income	GWP	0.068**	−0.082***	0.151***
	WVS	0.010	−0.028**	0.046*
Low income	GWP	0.067***	−0.060***	0.127***
	WVS	0.070*	−0.092**	0.169**

Source: Authors elaboration based on Gallup World Poll and World Values Survey

** Significant at 1 %, * significant at 5 %

other side of the coin is that the unobserved term is much higher in absolute value than the actual happiness gap. This is the third type of result explained in the methodology section.

This result is pervasive among geographical regions and income level country classifications, as reported in Table 7, with the exception of WE (using the WVS) and SA with both databases where the explained part is not statistically different from zero.

4.3 What Explains the Happiness Gap

In this section we present preliminary evidence that the happiness gap at the country level can be attributed to nationwide differences. In order to do this we computed the happiness decomposition exercise country by country using data from the GWP that has the wider country coverage among the databases consider in this paper.

Table 8 present simple correlations between the happiness gap, the explained part of the gap and the unexplained part of the gap with three macro variables: gross domestic product per capita, female life expectancy and female literacy rate. It is interesting to note that although the happiness gap does not present any statistically significant correlation with the three chosen variables, the explained and unexplained do. Due to the signs of the explained and unexplained correlations running in contrary directions is that the aggregate happiness gap is uncorrelated with the chosen macro variables. This highlights the importance of decomposing the happiness gap into what can be attributed to observable characteristics and what cannot. Figure 1 presents the corresponding scatter plots with a tendency line.

Table 8 Correlations of happiness gap and decomposition with various variables

	Happiness: (female–male)	Explained	Unexplained
GDP per capita (in logs, constant dollars of 2005)	0.1184	−0.357**	0.293**
Female life expectancy	0.0533	−0.3387**	0.2223*
Female literacy rate	0.0864	−0.394**	0.3218*

Source: Authors elaboration based on Gallup World Poll

** Significant at 1 %, * significant at 5 %

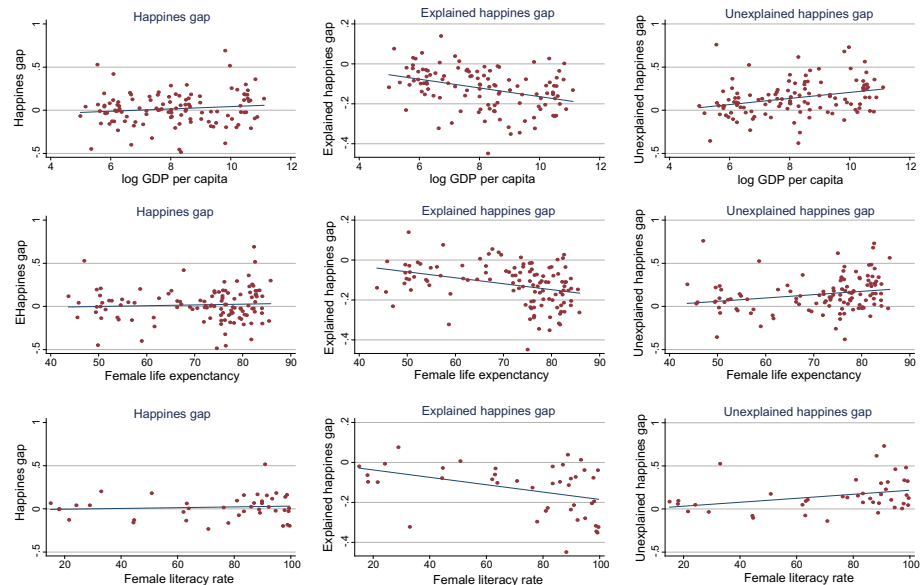


Fig. 1 Scatter plot of happiness gap and decomposition with various variables

The pattern for the three variables is the same. The richer the country (larger GDP per capita) the smaller the explained part of the happiness decomposition and the larger the unexplained part. Similarly, the larger female life expectancy and female literacy rate, the lower the explained part of the happiness gap and the larger the unexplained part.

5 Discussion

This paper provides evidence that women are happier than men at a worldwide scale. This means that although there may be differences at country specific level, females tend to report higher levels of happiness when large geographic or income regions are considered. These findings are in line with previous research evidence provided by Blanchflower and Oswald (2001), Stevenson and Wolfers (2009), Guven (2012), Vieira Lima (2011), Graham and Chattopadhyay (2012) and Zweig (2014). However, this paper sheds light on a new dimension of the gender happiness gap: what makes females happier than men? Is it that they are really better from an objective point of view? Do they have better life conditions? Or is it the way they react to facts of life? Zweig (2014) points out this question in her research. The decomposition technique used in this study enables us to isolate objective characteristics and analyze the impact of these variables on happiness. In the samples analyzed women are on average less educated, live in households with lower household income, have less probability of being employed and larger chances of being divorced or widowed than men. This paper evidences that it is the way in which females value their characteristics that make them happier than males.

There are some limitations to our study. In our view the most important one refers to potential problems with the databases. Heffetz and Rabin (2013) analyze response rates of the University of Michigan's Surveys of Consumers and conclude that easy-to-reach women are happier than easy-to-reach men, but hard-to-reach men are happier than hard-to-reach women. This implies that the sample of men and female are not random samples of the universe of men and females. The sample analyzed by Heffetz and Rabin is biased towards an over representation of unhappy men. We do not have evidence on how general this result is and whether the GWP, WVS or the ESS suffer from this bias that could affect our results.

Second, our paper suffers the classic limitations to cross sectional with respect to panel data and possible bias due to omitted variables. When using panel data, the same people are followed through different years and there are techniques that allow to eliminate common unobserved individual characteristics that remain unchanged over time. Though according to happiness literature the most relevant variables have been included in our regression, it is important to point out that other variables such as past marital status or health status, not present in our analysis, may enrich the results.

Finally, we conclude that female are more optimistic than men but we do not provide a formal definition of optimism neither we explain what produces this optimism. We show that given a relevant size of objective determinants of life, females are in worse objective conditions than men are, and in spite of this, they report higher happiness (a measure of subjective well being). This is what we call optimism. Given what we can observe we should expect females to report lower levels of happiness of what they actually do. Our broad definition of optimism is more a statement of ignorance than of knowledge. There is need for more research on what can explain this different reaction of females and in respect to which key variable is more important (age, education, income, marital status, etc.). There are many alternative theories and our research does not illuminate in neither of them. Without pretending to provide an exhaustive list the following are some possibilities that

are worth exploring. As previously suggested it might be that men and female react difference to household income given the traditional role of family income provider attached to men. Also related to traditional roles, it might be that marital status and having children affects different men and women. On a different line of reasoning females that are not in the labor market tend to enjoy more free time than men do. Leisure time and income may be complements in the sense that without leisure time it is more difficult to enjoy household income. Thinking of complements there might be other variables that potentiate the enjoyment of objective conditions even within the observed variables used in this paper. For instance, females in the GWP and the ESS were on average older than men and that could help them in the way they appraise other dimensions of life.

6 Conclusions

In this paper we have presented evidence that although at a country level the differences in happiness between males and females go in either way, when considering larger country aggregates by regions or income levels women tend to report higher levels of happiness than men do.

Differences in happiness levels between groups can be due to observable characteristics (i.e. one group having better conditions in some objective dimensions of life like income, work, and education) or may be due to the different way groups respond to these observable characteristics. There is ample evidence in the psychological literature (see Shibley 2007 for a review) that men and female have sizeable differences in the way they think, feel and behave. Based on that intuition and using a technique borrowed from the labor economics literature we decompose the happiness gap between observed and unobserved characteristics.

We find that the for the most happiness gap cannot be explained by observables, quite the contrary, the difference in the objective individual determinants of happiness suggest that woman should be less happy than men. This means that the happiness gap is reduced due to some sort of female optimism. In other words, if we were to compute the female happiness that would prevail if women had the observable characteristics of men, it would be larger than the actual level of female happiness. This counterfactual female happiness would imply a larger happiness gap in favor of females than what is actually observed.

Bottom line, we conclude that females tend to value happiness determinants in much “favorable” way than men do, they seem to have a more optimistic viewpoint of life. Providing and explanation of this optimism is beyond the scope of this paper and is probably one of its main limitations. Our results call for more theoretical and empirical work that could explain the process behind our broadly defined optimism.

Finally, we present preliminary evidence that even if differences in happiness levels between males and females are at the national level not correlated with country level variables as also reported in Zweig (2014), the decomposition components of the gap are. In more developed countries and countries where females are in better condition (larger per capita GDP, larger female life expectancy, larger female literacy) the explained part of the gap is lower and the unexplained part is higher. This highlights the importance of decomposing the gap into its explained and unexplained parts.

Appendix

Table 9 Are women happier than men?

	GWP	WVS	ESS	GWP	WVS	ESS	GWP	WVS	ESS	GWP	WVS	ESS
<i>t Tests for equality of means</i>												
Afghanistan	Yes***	-	-	Germany	Yes	No	Yes	Nigeria	Yes	Yes***	-	-
Albania	No	-	-	Ghana	Yes	No	-	Norway	Yes	Yes	Yes	Yes
Algeria	No	Yes***	-	Greece	Yes	-	No***	Pakistan	-	No	-	-
Andorra	-	No**	-	Guatemala	No	No	-	Panama	Yes	-	-	-
Angola	Yes	-	-	Haiti	No	-	-	Paraguay	Yes	-	-	-
Argentina	Yes**	No	-	Honduras	Yes	-	-	Peru	No	No	-	-
Armenia	Yes	No**	-	Hong Kong	No	Yes***	-	Philippines	-	Yes***	-	-
Australia	Yes	-	-	Hungary	No	No	Yes	Poland	Yes	No	Yes	-
Austria	Yes	-	Yes	India	Yes**	No	-	Portugal	No**	-	No***	-
Azerbaijan	No	No*	-	Indonesia	No	Yes	-	Puerto Rico	Yes*	Yes*	-	-
Bangladesh	Yes***	No	-	Iraq	-	Yes***	-	Romania	Yes	Yes	-	-
Belarus	No	No**	-	Iran	-	Yes***	-	Russia	No	No***	No***	-
Belgium	Yes	-	Yes**	Ireland	Yes**	-	Yes**	Rwanda	No*	No***	-	-
Benin	Yes	-	-	Israel	Yes	Yes**	No**	Saudi Arabia	-	Yes	-	-
Bolivia	Yes	-	-	Italy	Yes	No	No***	Senegal	Yes**	-	-	-
Bosnia Herzegovina	No	Yes	-	Jamaica	No	-	-	Serbia	Yes	No	-	-
Botswana	No	-	-	Japan	Yes**	Yes***	-	Sierra Leone	Yes	-	-	-
Brazil	Yes	No**	-	Jordan	-	Yes*	-	Singapore	No	Yes***	-	-
Burkina Faso	No	Yes*	-	Kazakhstan	Yes	-	-	Slovakia	No	No	No	No
Bulgaria	No**	No	No	Kenya	Yes	-	-	Slovenia	No	No	No	No
Burundi	No	-	-	Kosovo	Yes	-	-	South Africa	Yes	Yes**	-	-
Cambodia	No**	-	-	Kyrgyzstan	No	No	-	South Korea	Yes***	Yes	-	-
Cameroon	No	-	-	Laos	Yes	-	-	Spain	No	No*	No**	-
Canada	Yes**	Yes**	-	Latvia	-	No	-	Sri Lanka	No	-	-	-
Chad	No	-	-	Lithuania	No	No	-	Sweden	Yes	Yes***	Yes***	Yes***

Table 9 continued

	GWP	WVS	ESS	GWP	WVS	ESS	GWP	WVS	ESS
Chile	Yes	Yes	-	Luxemburg	-	Yes	Switzerland	Yes	Yes**
China	Yes**	Yes*	-	Macedonia	Yes*	-	Taiwan	Yes**	Yes***
Colombia	No	No	-	Madagascar	No	-	Tajikistan	No	-
Costa Rica	Yes	-	-	Malawi	No***	-	Tanzania	No	-
Croatia	No	No	-	Malaysia	No	-	Thailand	Yes	-
Cuba	No	-	-	Mali	No	-	Togo	No	-
Cyprus	No	Yes	No***	Mauritania	No***	-	Trinidad & Tobago	Yes	-
Czech Republic	No	No	No	Mexico	Yes	-	Turkey	-	Yes
Denmark	No	-	Yes	Moldova	No	-	Uganda	No	-
Dominican Republic	No	Yes	-	Montenegro	No*	-	Ukraine	No	No***
Ecuador	No	-	-	Morocco	-	Yes***	United Kingdom	Yes**	No
Egypt	-	Yes	-	Mozambique	Yes	-	United States	No	-
El Salvador	Yes	No	-	Myanmar	Yes	-	Uruguay	Yes	-
Estonia	No	No	Yes***	Nepal	Yes	-	Uzbekistan	Yes	-
Ethiopia	Yes	No**	-	Netherlands	Yes	Yes	Venezuela	No	-
Finland	Yes*	Yes**	Yes**	New Zealand	Yes**	-	Vietnam	No	No***
France	No	Yes**	Yes**	Nicaragua	No	-	Zambia	No	-
Georgia	No**	No**	-	Niger	Yes	-	Zimbabwe	Yes	Yes**

Source: Authors elaboration based on Gallup World Poll and World Values Survey

*** Significant at 1 %, ** significant at 5 %, * significant at 10 %

Table 10 Happiness determinants by geographic areas from the Gallup World Poll (GWP) and World Value Survey (WVS)

	EAP		MENA		WE		ECA	
	GWP	WVS	GWP	WVS	GWP	WVS	GWP	WVS
Age	-0.069 (14.99)**	-0.023 (0.002)**	-0.051 (4.26)**	-0.014 (0.003)**	-0.024 (4.44)**	-0.021 (0.002)**	-0.068 (15.52)**	-0.027 (0.003)**
Age ²	0.001 (15.34)**	0.000 (0.000)**	0.000 (2.60)**	0.000 (0.000)**	0.000 (5.12)**	0.000 (0.000)**	0.001 (13.69)**	0.000 (0.000)**
Married	0.197 (6.02)**	0.219 (0.018)**	0.631 (6.72)**	0.172 (0.021)**	0.266 (6.13)**	0.250 (0.018)**	0.005 (0.13)	0.244 (0.023)**
Divorced	0.498 (5.41)**	0.009 (0.033)	-0.017 (0.08)	-0.191 (0.044)**	-0.335 (5.05)**	-0.053 (0.026)*	-0.274 (4.43)**	-0.221 (0.044)**
Widow	0.083 (0.96)	0.049 (0.037)	0.321 (1.55)	0.034 (0.046)	-0.128 (1.71)	-0.074 (0.032)*	-0.273 (4.67)**	-0.100 (0.038)**
Income	0.000 (40.98)**	0.000 (0.000)**	0.000 (9.25)**	0.000 (0.000)**	0.000 (17.44)**	0.000 (0.000)**	0.000 (35.39)**	0.000 (0.000)**
Employment	0.626 (19.80)**	0.046 (0.012)**	0.503 (6.11)**	0.038 (0.017)*	0.366 (9.32)**	0.064 (0.015)**	0.476 (16.70)**	-0.016 (0.016)
Elementary Education	-	0.021 (0.033)	-	0.036 (0.026)	-	0.111 (0.026)**	-	0.060 (0.026)*
Incomplete secondary	-	0.229	-	0.014	-	0.113	-	-0.131
Complete secondary	-	0.153 (0.032)**	-	0.038 (0.038)	-	0.277 (0.031)**	-	0.008 (0.037)**
Intermediate qualification	-	0.197	-	0.024** (0.024)**	-	0.219 (0.025)**	-	-0.052 (0.027)
University preparatory qualification	-	0.062 (0.037)**	-	0.201 (0.036)	-	0.200 (0.034)**	-	0.034 (0.050)
	-	0.031)* (0.031)*	-	0.023)** (0.023)**	-	0.028)** (0.028)**	-	0.029) (0.029)

Table 10 continued

	EAP		MENA		WE		ECA	
	GWP	WVS	GWP	WVS	GWP	WVS	GWP	WVS
Lower level tertiary certificate	-	0.161 (0.032)**	-	0.058 (0.031)	-	0.288 (0.031)**	-	0.030 (0.041)
Upper level tertiary certificate	-	0.207 (0.031)**	-	0.184 (0.024)**	-	0.262 (0.026)**	-	0.092 (0.030)**
Female	0.286 (9.84)**	0.098 (0.011)**	0.060 (0.78)	0.101 (0.016)**	0.196 (6.00)**	0.056 (0.013)**	0.138 (5.31)**	0.065 (0.015)**
Constant	5.919 (62.98)**	3.224 (0.055)**	6.395 (26.95)**	3.102 (0.058)**	6.773 (56.85)**	3.299 (0.053)**	5.939 (70.13)**	3.353 (0.061)**
Observations	16,271	11,940	3,217	8,486	11,135	9,577	24,499	12,676
R-squared	0.15	0.04	0.07	0.04	0.06	0.07	0.10	0.05
	LAC		NA		SSA		SA	
	GWP	WVS	GWP	WVS	GWP	WVS	GWP	WVS
Age	-0.070 (11.89)**	-0.016 (0.002)**	-0.050 (4.94)**	-0.019 (0.003)**	-0.009 (2.28)**	-0.028 (0.004)**	-0.025 (3.06)**	-0.09 (0.005)**
Age ²	0.001 (9.62)**	0.000 (0.000)**	0.001 (6.14)**	0.000 (0.000)**	0.000 (1.45)	0.000 (0.000)**	0.000 (2.93)**	0.000 (0.000)**
Married	0.212 (4.32)**	0.141 (0.014)**	0.335 (3.33)**	0.232 (0.022)**	-0.072 (2.44)**	0.159 (0.025)**	-0.039 (0.51)	0.093 (0.038)**
Divorced	-0.192 (2.48)*	-0.108 (0.025)**	-0.244 (1.87)	0.012 (0.030)	-0.165 (2.50)**	-0.100 (0.049)**	0.277 (0.95)	-0.092 (0.158)**
Widow	-0.072 (0.78)	-0.070 (0.031)*	-0.388 (2.13)**	0.068 (0.039)	-0.240 (3.92)**	-0.024 (0.048)	-0.514 (3.24)**	-0.099 (0.076)

Table 10 continued

	LAC		NA		SSA		SA	
	GWP	WVS	GWP	WVS	GWP	WVS	GWP	WVS
Income	0.000 (23.02)**	0.000 (0.000)**	0.000 (10.27)**	0.000 (0.000)**	0.000 (32.83)**	0.000 (0.000)	0.000 (16.27)**	0.000 (0.000)
Employment	0.282 (6.81)**	0.014 (0.012)	0.195 (2.23)*	0.000 (0.000)**	0.162 (6.37)**	0.075 (0.020)**	-0.097 (1.63)	0.076 (0.028)
Elementary Education	-	0.022 (0.020)	-	-0.017 (0.060)	-	0.066 (0.035)	-	0.097 (0.044)*
Incomplete secondary	-	-0.078 (0.026)**	-	0.048 (0.055)	-	0.108 (0.058)	-	-
Complete secondary	-	-0.040 (0.021)	-	0.010 (0.054)	-	0.354 (0.040)**	-	-
Intermediate qualification	-	0.090 (0.025)**	-	-0.001 (0.057)	-	0.361 (0.027)**	-	0.177 (0.038)**
University preparatory qualification	-	0.172 (0.021)**	-	0.019 (0.055)	-	0.538 (0.029)**	-	0.188 (0.040)**
Lower level tertiary certificate	-	0.134 (0.027)**	-	0.007 (0.057)	-	0.526 (0.051)**	-	0.2033 (0.035)**
Upper level tertiary certificate	-	0.173 (0.022)**	-	0.042 (0.056)	-	0.562 (0.035)**	-	0.231 (0.036)**
Female	0.251 (6.32)**	-0.009 (0.012)	0.148 (2.05)*	0.070 (0.016)**	0.037 (1.49)	0.109 (0.018)**	0.195 (3.25)**	0.061 (0.028)**
Constant	6.784 (61.73)**	3.407 (0.045)**	7.057 (31.68)**	3.457 (0.075)**	4.136 (61.10)**	3.040 (0.075)**	5.037 (34.48)**	2.966 (0.102)**
Observations	15,676	20,239	2,132	5,865	22,422	8,780	5,985	4,340

Table 10 continued

	LAC		NA		SSA		SA	
	GWP	WVS	GWP	WVS	GWP	WVS	GWP	WVS
R-squared	0.06	0.03	0.10	0.05	0.05	0.08	0.05	0.02

Source: Authors elaboration based on Gallup World Poll and World Values Survey

Standard errors in parenthesis

EAP East Asia Pacific, ECA East Central Asia, WE Western Europe, MENA Middle East and Northern Africa, LAC Latin America and the Caribbean, NA North America, SSA Sub-Saharan African, SEA South East Asia

** Significant at 1 %, * significant at 5 %

Table 11 Happiness determinants by country's income level from the Gallup World Poll (GWP) and World Value Survey (WVS)

	Low income		Low-middle income		Up middle income		High income	
	GWP	WVS	GWP	WVS	GWP	WVS	GWP	WVS
Age	-0.001 (0.20)	-0.032 (0.010)**	-0.056 (13.87)**	-0.012 (0.003)**	-0.075 (15.92)**	-0.021 (0.002)**	-0.054 (14.42)**	-0.022 (0.001)**
Age ²	0.000 (0.05)	0.000 (0.000)**	0.000 (10.88)**	0.000 (0.000)**	0.001 (13.14)**	0.000 (0.000)**	0.001 (14.54)**	0.000 (0.000)**
Married	-0.090 (3.28)**	0.0252 (0.063)	0.191 (6.13)**	0.079 (0.022)**	0.099 (2.54)*	0.175 (0.011)**	0.132 (4.10)**	0.233 (0.011)**
Divorced	-0.294 (4.79)**	-0.274 (0.120)*	-0.118 (1.59)	-0.161 (0.055)**	-0.126 (1.96)	-0.093 (0.021)**	-0.213 (4.23)**	-0.005 (0.016)
Widow	-0.322 (5.77)**	-0.857 (0.130)	-0.310 (4.74)**	-0.144 (0.040)**	-0.268 (3.99)**	-0.081 (0.022)**	-0.348 (6.32)**	0.022 (0.021)
Income	0.000 (27.72)**	0.000 (0.000)**	0.000 (29.67)**	0.000 (0.000)	0.000 (23.52)**	0.000 (0.000)	0.000 (40.92)**	0.000 (0.000)
Employment	0.194 (8.55)**	0.078 (0.052)**	0.239 (7.97)**	0.037 (0.017)*	0.436 (13.94)**	0.040 (0.009)**	0.435 (15.99)**	0.084 (0.008)**
Elementary education	-	-0.037 (0.083)	-	0.054 (0.026)*	-	0.073 (0.014)**	-	0.092 (0.019)**
Incomplete secondary	-	0.084 (0.084)	-	0.025 (0.040)	-	0.018 (0.021)	-	0.206 (0.021)**
Complete secondary	-	0.076 (0.081)	-	-0.006 (0.027)	-	0.074 (0.015)**	-	0.250 (0.018)**
Intermediate qualification	-	0.198 (0.089)	-	0.019 (0.027)	-	0.180 (0.017)**	-	0.211 (0.022)**
University preparatory qualification	-	0.218 (0.107)*	-	0.057 (0.025)*	-	0.235 (0.015)**	-	0.138 (0.018)**

Table 11 continued

	Low income		Low-middle income		Up middle income		High income	
	GWP	WVS	GWP	WVS	GWP	WVS	GWP	WVS
Lower level tertiary certificate	-	0.474 (0.124)*	-	0.102 (0.033)**	-	0.219 (0.020)**	-	0.195 (0.020)**
Upper level tertiary certificate	-	-	-	0.061 (0.023)**	-	0.260 (0.016)**	-	0.231 (0.019)**
Female	0.127 (5.70)**	0.169 (0.048)**	0.151 (5.53)**	0.047 (0.016)**	0.213 (7.22)**	0.056 (0.008)**	0.228 (9.66)**	0.080 (0.007)**
Constant	4,001 (63.81)**	3,235 (0.198)**	5,784 (73.24)**	3,186 (0.060)**	6,664 (74.25)**	3,236 (0.033)**	6,780 (87.93)**	3,272 (0.032)**
Observations	26,072	1,381	23,070	10,342	24,485	41,448	27,710	28,732
R-squared	0.04	0.07	0.06	0.02	0.06	0.03	0.09	0.04

Source: Authors elaboration based on Gallup World Poll and World Values Survey

Standard errors in parenthesis

** Significant at 1 %, * significant at 5 %

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