Maslow's Needs Hierarchy and the Effect of Income on Happiness Levels

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October 2013

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ABSTRACT

Abraham Maslow's theory of hierarchical needs has been employed by a large variety of conceptual frameworks. The theory can also offer additional insights to the research field which investigates the relationship between income and reported happiness levels. The incorporation of needs hierarchy into a happiness framework implies that individuals have a priority approach to happiness. This means that the most important needs must be satisfied first before the secondary needs come into the picture. In terms of income-happiness relationship, it suggests that income is very important for happiness up to a certain level of income. For higher income levels this effect becomes much weaker, given that the satisfaction of non-basic needs becomes important. The chapter tests this idea by using the European Foundation *European Quality of Life Survey 2007* which contains data from 30 European countries and Turkey. In the proposed model, reported happiness is placed as a dependent variable and income level as an independent variable. The ordered probit model (with robust standard errors) is the main statistical tool of the work. The empirical results indicate that there is a strong positive relationship between income and happiness for low income households group, and a non-significant relationship between income and happiness for high income households group. This result supports the presence of hierarchical behaviour. The model also contains personal variables such as gender, age, marital status, educational level, number of children, working hours per week, country dummy variables and employment status. The relationship of these variables to reported happiness levels is also examined. Finally, there is a comparison of the empirical findings to results in the relevant literature.

Keywords: Happiness, Income, Maslow's Hierarchy of Needs

Special thanks are due to Ioannis Theodossiou of the University of Aberdeen, UK.

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INTRODUCTION

The central idea of psychologist Abraham Maslow's theory is that human needs are irreducible and that they exhibit a hierarchical structure. This means that there are primary and secondary needs and that primary needs must be met first. Apart from Psychology, Maslow's theory of hierarchical needs has been influential in many social science fields including Sociology, Politics and Economics. However, it has not received much attention in the relatively new filed of happiness research. In this chapter we argue that the theory can also offer additional insights to the body of research which investigates the relationship between income and reported happiness levels. The incorporation of needs hierarchy into a happiness framework implies that individuals have a priority approach to happiness. The crucial implication here is that the most important needs must be satisfied first before the secondary needs come into the picture. In terms of income-happiness relationship, it suggests that income is very important for happiness up to a certain level of income. For higher income levels this effect becomes much weaker, given that the satisfaction of non-basic needs becomes important.

This chapter tests the above idea by using the European Foundation *European Quality of Life Survey 2007* which contains data from 30 European countries and Turkey. This unique, pan-European survey examines both the objective circumstances of European citizens' lives and how they feel about those circumstances and their lives in general. It is a reliable and widely used large dataset, which covers a range of issues including our topics of interest. In the proposed model, reported happiness is placed as a dependent variable and income level as an independent variable. The ordered probit model (with robust standard errors) is the main statistical tool of the work. The empirical results indicate that there is a strong positive relationship between income and happiness for low income households group, and a non-significant relationship between income and

happiness for high income households group. These findings support the presence of hierarchical behaviour. The relationship of these variables to reported happiness levels is also examined. There is also a comparison of the empirical findings to similar results in the relevant literature.

Section 1 of the chapter will discuss Maslow's needs hierarchy and its incorporation and implications for happiness research. The following section will concentrate on the dataset, the empirical methodology and the empirical results. The final section concludes.

THEORETICAL FRAMEWORK

1. Maslow's Needs Hierarchy

The idea that human needs exhibit a hierarchical structure is an old idea that can be found in many authors. For instance, Plato in his *Republic* states:

"But the first and the greatest of our needs is the provision of food to support existence and life…The second the provision of a dwelling-place, the third of clothing, and so on" (Plato, Republic II, 369).

In modern times, the prominent psychologist Abraham Maslow is the basic proponent of the needs hierarchy theory (Maslow, 1943; 1954). Although there have been other psychologists with similar ideas (see for example, Alderfer 1969), Maslow's work has been identified with this approach. Maslow's theory did not have substantial impact initially, but gradually it started to become influential in psychological research (see for instance Tversky, 1969; Bernstein and Crosby, 1980; Deci & Ryan, 2000). In the last few decades, it has also made its way to other social sciences such as politics and sociology (see for example, Ardrey, 1970; Doyal & Gough, 1984; Wolbring et al, 2011). A number of economists such as Little (1957), Encarnacion (1964) and Georgescu-Roegen (1966), were among the first to realize the importance of needs hierarchy for economic theory and especially for microeconomic theory. More recently, a number of authors have applied Maslow's hierarchy theory to a wide range of economic issues. The

works of Earl (1986), Falkinger (1990), Pfouts (2002), Lavoie (2004) are indicative examples (For a review see Drakopoulos, 1994; Drakopoulos & Karayiannis, 2004).

Hierarchical choice consists of two interconnected central ideas: The first is that human needs are of varying importance and the second is that human needs must be satisfied at a specific order. These two ideas imply that there are primary needs and secondary needs that cannot be substituted. Therefore primary needs must reach a given level of satisfaction first before the secondary ones are considered. In more technical terms, preferences are hierarchical in the sense that higher priority choice variables must reach certain levels before lower priority choice variables are considered. At this point, the issue of the definition of primary and secondary needs arises. According to Maslow, primary needs refer to mainly to physical needs like the need for food, clothing and shelter while secondary needs refer to intellectual or non-material needs (for a discussion of the definition of primary and secondary needs, see Max-Neef, 1995; Gasper, 2005).

In terms of empirical research and as one would expect, the presence of hierarchical needs should be found in consumption patterns. The hierarchical approach predicts that when income is low, a very high percentage of it would be spent on food, since food satisfies a basic need. Indeed, there are a number of empirical studies which confirm this prediction. In particular, many studies have found a significant and positive impact of household income on food variety. This is in line with the hypothesis that consumption evolves along a hierarchical order as income increases (for relevant empirical work in a number of countries, see for instance, Lluch, Powel, & Ross, 1977; Canterbery, 1979; Jackson & Marks, 1999; Thiele & Weiss, 2003). There other research sub-fields where the idea has been utilized (see for instance, Canova, Rattazzi, & Webley, 2005). However, its application to happiness research has not received much attention.

2. Income and Hierarchical Needs

According to main body of relevant literature, income is related to the level of reported happiness (Easterlin, 2001). There have been many inter and intra country empirical studies examining the income-happiness relationship. Most of the studies find a positive correlation between income and reported happiness (for a review, see Layard, 2005). However, many studies also find a curvilinear relationship which implies that after a certain level of income the relationship becomes weak or sometimes ceases to exist (see Frey and Stutzer, 2002, p.75). Furthermore, many cross-sectional empirical studies indicate that more developed countries do not report higher happiness levels once GDP per capita exceeds half that in the US in mid-1990s (see for instance, Kenny 1999; Helliwell 2003). As Frey and Stutzer state:

"Income provides happiness at low levels of development, but once a certain threshold has been passed, income has little or no effect on happiness" (Frey and Stutzer, 2002, p.75).

There have been many explanations of the curvilinear relationship (see Layard, 2005; Drakopoulos, 2008). The incorporation of Maslow's theory, however, can provide an important additional insight, if we make the reasonable assumption that basic needs are best satisfied by income. The central notion here is that once a level of income that satisfies the basic needs has been reached, further increases of income do not provide the same increases on happiness because secondary needs come into the picture. In more formal terms the life satisfaction function or happiness function can be written as:

$$H = H(I, I^*, X) \qquad (1)$$

where H is happiness level or life satisfaction, I is the level of income, I* is the level of income which satisfies basic needs and X is a vector of characteristics comprising variables that affect happiness. There is no accepted list of these

variables but it can include social capital, social aspiration, freedom, emotions, goal completion and meaning (Clark et al., 2008). These variables may or may not affect income. The target level of income I* satisfies the basic needs and its inclusion in equation (1) reflects the essence of hierarchy; (for a discussion concerning the determination of I*, see Ferrer-i-Carbonell, 2005). The other variables (X) satisfy secondary needs and are taken into consideration only when I reaches a satisfactory level or target I*. We can incorporate all the above by taking a two-part happiness function:

$$H(I,X) = \{H_L(I,X), H_H(I,X)\} \qquad (2)$$

where $H(I,X) = H_L$ for $I \leq I^*$ and $H(I,X) = H_H$ for $I > I^*$

with the following conditions:

$$\partial H_L/\partial I > 0, \quad \partial H_H/\partial I > 0 \text{ and } \partial H_L/\partial I > \partial H_H/\partial I \qquad (3)$$

The conditions describe the nature of the hierarchical approach to happiness. The first two conditions imply that income has a positive effect on happiness. The last condition indicates that income does not provide the same rate of happiness once a given level (I*) has been reached (although it continues to have a positive effect). Moreover, it also implies that other factors start playing a role. One idea which has been suggested in this context, is the income comparisons argument: after a given level of income, individuals do not extract much happiness from their absolute income but from their position relative to other people's incomes (Frank, 1985; Easterlin, 2001; Drakopoulos, 2011). In terms of our framework, income comparisons might arise after the satisfactory level I* has been achieved.

The above formulation of happiness can be used as an additional explanation of the observed curvilinear relation between income and happiness:

income has strong impact on happiness but after a certain income level, the effect becomes much weaker. In the following sections of this chapter, we will test this idea by using a large European dataset.

EMPIRICAL ANALYSIS

1. Data & Participants

The data used in this chapter was drawn from the European Quality of Life Survey 2007 (EQLS)[1], a representative, questionnaire-based household survey series from the European Foundation for the Improvement of Living and Working Conditions. This research was conducted in the last quarter of 2007 (face-to-face interviews) and contains data from thirty European countries and Turkey. The target of 1000 interviews was set for most countries. The participants were adults (aged 18 years and over), and were selected by the method of multistage stratified random sample. They responded to a questionnaire of about 36 minutes duration, comprising of 74 questions relating to issues such as employment, income, happiness, education, family, work-life balance and perceived quality of society. The data were weighted by population size of the participant countries, region, household size, urbanization level, age and gender (European Foundation for the Improvement of Living and Working Conditions, 2009). Owing to missing information on some variables for some participants, and after necessary data processing, the final sample consists of 10234 individuals.

The questionnaire data of interest included happiness and household income levels variables. It also included employment status (five dummy variables: employed [56,4%], sort term unemployed [2,4%], long term unemployed [4%], retired [29,2%], homemaker [4,8%], other [3,2%]), marital status (three dummy variables: married [62,4%], unmarried [14,8%], divorced-widowed [22,8%]),

[1] Further information on the project can be found at http://www.eurofound.europa.eu/surveys/eqls/2007/index.htm

number of children, and working hours per week. In terms of countries, the sample consisted of thirty one dummy variables: Austria [2,5%], Belgium [3,1%], Bulgaria [3,2%], Croatia [2,9%], Cyprus [3%], Czech Republic [3,6%], Denmark [3,7%], Estonia [3,8%], Finland [3,8%], France [5%], Germany [6,1%], Greece [2,9%], Hungary [3,2%], Ireland [1,7%], Italy [1,5%], Latvia [2,8%], Lithuania [3,6%], Luxembourg [2,3%], Former Yugoslav Republic of Macedonia or FYROM [2,6%], Malta [2,4%], Netherlands [3,6%], Norway [4%], Poland [4,4%], Portugal [1,6%], Romania [2,9%], Slovakia [3,5%], Slovenia [2,9%], Spain [2%], Sweden [4,3%], Turkey [3,3%], United Kingdom [3,7%]. Finally, the data contained personal variables such as age (three dummy variables: young 18 – 34 [23,8%], middle age 35 – 64 [56,8%], old 65 – 95 [19,4%]), gender (4818 males & 5416 females [47,1%] and [52,9%]) and educational level (three dummy variables: none & primary education [11,4%], secondary, including lower, upper & post secondary education [62,7%] and tertiary, including advanced level of tertiary education [25,9%]).

Happiness was measured by self-reports on how happy or unhappy the participants were, taking all things together, using a 1-10 Likert scale (1 was very unhappy and 10 was very happy). Subsequently, three grouped scale points were created, combing the first three scale points (1 to 3: unhappy), the following four (4 to 7: middle levels of happiness) and the last three ones (8 to 10: happy). According to the sample, 5,3% of the respondents reported to be very unhappy to unhappy (scale 1 to 3), 38% reported to be somewhat happy (scale 4 to 7) and 56,7% reported to be happy to very happy (scale 8 to 10). The income level variable was assessed by reports on the level of weekly, monthly or annual household net income of the participants (exact figure, an estimate or an approximate range). Given that the income variable is not continuous, we applied the required transformation by assessing the median from each of the reported approximate range. The distribution of the variable was examined and was found to be normal. The data was also grouped into 4 income quartiles (1 being the

poorest and 4 being the wealthiest). The household income quartile grouping is used to disaggregate the sample of individuals to those with low household income and to those with high household income. The former contains 4642 individuals (45,4%) while the latter contains 5592 individuals (54,6%). It appears that the performed split to low and high income household groups is appropriate given that the Kolmogorov-Smirnov test indicated that the income distributions are different.

(Table 1 about here)

2. Empirical Methodology

In the econometric models which will be employed in this chapter, happiness will be the dependent variable. This variable is determined by a number of variables including household income. The dependent variable is categorical (ordinal) with ranked categories from low to high, which implies that the weak assumptions of the linear regression model are not satisfied, giving very misleading results. Therefore, the Ordered Probit model, one of the most popular ordinal regression techniques, has been suggested as more appropriate for dealing with ordered categorical variables (see for instance, Cameron & Trivedi, 1986; Greene, 1993). The Ordered Probit model is a latent variable model, appropriate for categorical data which can be described in ordinal terms. It offers a data generating process for this type of dependent variables, estimating both the effects of the independent variables and the thresholds of the dependent variable at the same time. With the Ordered Probit model, partial effects can be computed for each of the observed values of depended variable. Many discrete outcomes have a natural ordering but no quantitative interpretation. Moreover, because of the lack of interpretation of the coefficients in the Ordered Probit, the marginal effects method will be utilized, estimating the partial effects on the predicted probabilities. Therefore, separate ordered probit equations are estimated for each group of low and high household income respectively in order to assess whether the level of household income affects the level of individual happiness with a

different intensity. In addition, the marginal effects methodology is employed in order to interpret the statistical output substantively and also to report standard errors and discrete changes (Yang & Raehsler, 2005; Long & Freese, 2006; Williams, 2008; Green & Hensher, 2010).

At this point, a limitation of the research methodology needs to be acknowledged. The limitation concerns the self-reporting measure of happiness which was utilized in the survey. This implies that the information presented by participants is based upon their subjective perceptions. Although participants were assured of confidentiality, it is therefore possible that they either over- or under-reported their level of happiness (see for instance, Fernandez-Duque & Landers, 2008). However, self-reporting measures are widely used in many similar contemporary empirical studies (see for instance, Fordyce, 1988; Charness & Grosskopf, 2001).

3. Results

In line with the theoretical part and with our discussion of the empirical methodology section, our equation of interest for low income households group is:

$$H^{L}_{i} = \alpha_0 + \alpha_1 I_i + \alpha_2 X_i + \varepsilon_i \qquad (4)$$

whereas for high income households group is:

$$H^{H}_{i} = b_0 + b_1 I_i + b_2 X_i + \varepsilon_i \qquad (5)$$

It is assumed that individual Happiness (H), the ordinal dependent variable (scale points 1-3), is determined by a variety of factors: I is the household income, which is the basic independent variable; X is a vector of other individual socioeconomic variables, such as *age, gender, marital status, education level,*

employment status, number of children, hours of work, country dummy variables, assumed to influence happiness (Layard, 2005). The α and b are the associated coefficients, and ε_i is a normally distributed error term.

The results of Ordered Probit model (with robust standard errors) are not straightforward (Greene, 1993). We can identify the significance of the variables but neither the signs nor the magnitude of the coefficients are informative about the results, and this makes the direct interpretation of coefficients fundamentally ambiguous. Therefore, we will report the marginal effects for better interpretation.

(Table 2 about here)

The empirical results indicate that the coefficient of the household income for high income households group has a positive sign but it has an insignificant effect on individual's happiness. However, the coefficient of the household income has a highly significant positive effect on the happiness of low income households group. According to the results, the predicted probability of independent variables among marginal effect outcomes did not differ in terms of significance. Thus, the results support our theoretical discussion concerning hierarchical needs, income levels and reported happiness.

Most of the predictors exhibited significant relationship to happiness at 1% to 5% level. Furthermore, the rest of the results are consistent with the theoretical predictions found in the relevant literature (e.g. Gerdtham and Johannesson, 2001; Gudmundsdottir, 2013). Thus, happiness increases with both education and income, and decreases with being single and unemployed.

We also find that the predicted value is lower for male gender, which implies that women are happier than men. Nevertheless, gender is insignificantly related to happiness for both segments. With regards to age, we find a U-shaped significant relationship between age and happiness, with happiness being lowest in the middle age-group (35-64 years). The direct effect of age on happiness is positive, indicating that individuals in the youngest (18-34 years) and highest age group (>65 years) are happier than individuals in the middle age group. Education

has a positive effect on happiness, and both the education dummy variables are significant for both segments. Individuals with none or primary and secondary education seem to be unhappier than those with tertiary education. Variables describing unmarried and divorced or widowed status seem to decrease happiness. Thus, individuals that reported to be married were happier. The employment status is strongly related to happiness but only for low income households group. According to the results, long term unemployed individuals reported less happiness than employed, short term unemployed, retired, homemakers and other. Moreover, the number of children and the weekly hours of work do not exert any statistically significant influence on individuals' happiness. Finally in terms of country differences, more than half of the European countries report higher happiness than Greece (omitted variable). With respect to Greece, it should be mentioned that happiness level is significantly lower compared to Nordic countries such as Denmark, Finland, Netherlands and Sweden and significantly higher compared to southern contiguous countries such as Italy, Bulgaria, Turkey and FYROM.

(Table 3 about here)

CONCLUSION

According to Maslow's psychological theory, the hierarchical structure of needs implies that the most important needs must be satisfied first before the secondary needs are considered. In the framework of income-happiness relationship, the theory would predict that income is very important for happiness up to a certain level of income. For higher levels of income, income is still important but much less so, given that other factors affecting happiness come into the picture. This chapter utilized a large sample to test the above income - happiness relationship by using data from 30 European countries and Turkey. In particular, the results indicated that the household income for high income households group has an insignificant effect on individual happiness but it has a

highly significant effect on the happiness of low income households group, indicating the presence of hierarchical behavior.

Although the relevant literature is not very extensive, some prior works provide insights regarding the main variables. Our results are consistent with the theoretical predictions found in related research. In particular, males are less happy, although insignificantly, than females and this is in line with literature demonstrating that women are usually slightly happier than men (e.g. Dolan et al. 2008; Huppert 2009; Guilbert and Paul, 2009). One of the main explanations for this result might be that women have more intense emotions which allow them to experience more joy, and therefore to be happier in good times (Fujita et al. 1991). Furthermore, our findings indicate that happiness is lower in the middle age group than in the youngest and older age groups. Many studies on the determinants of happiness and wellbeing, suggest a U-shaped relationship between age and happiness where the youngest and the oldest are happiest while the middle age groups are the least happy. One explanation here has to do with the higher expectations of the younger age group compared to older individuals (Clark and Oswald, 1994; Gertham and Johannesson, 2001). Individuals with none or primary and secondary education seemed to be unhappy, implying that higher education enhances happiness which is consistent with many relevant studies (e.g. Gertham and Johannesson, 2001; Gudmundsdottir, 2013).

When it comes to marital status, the unmarried and divorced or widowed are the least happy whereas being married contributes to happiness. The positive relation between marriage and happiness has been consistently replicated, emphasizing the importance of personal relationships to happiness increased levels (Gertham and Johannesson, 2001; Huppert, 2009; Gudmundsdottir, 2013). Moreover, individuals who are unemployed or out of the labour force are less happy compared to those who are employed. Nevertheless, the effect is statistically significant only for low income households group. According to the literature, unemployment is a strong predictor of unhappiness, since it reduces

happiness considerably (Clark and Oswald, 1994). Although the effect is statistically insignificant, there is a negative relationship between working hours and happiness, implying that individuals who have longer work hours report lower happiness. The evidence is consistent with other empirical work such as Galay (2007). In addition, there is no effect of number of children on happiness. The evidence concerning the happiness – number of children relationship is mixed and ambiguous, suggesting either negative effect or no effect at all (Dolan et al., 2008; Bartolini et al., 2013). Finally, happiness is higher for Nordic countries and lower for southern contiguous countries compared to Greece.

The main empirical finding of this chapter supports the notion of needs hierarchy and its relation to income level. Income seems to be more important for happiness for low income individuals. Furthermore, it seems that income looses its importance for high earners and this is consistent with the incorporation of Maslow's ideas in the context of happiness research. It is hoped that these results will provide the stimulus for further research on this important topic.

Table 1. Summary Statistics & Definitions of variables.

Variables/ Definitions	Low income households group		High income households group	
	Mean	S D	Mean	S D
Happiness (scale points 1-3)	2.354	0.644	2.646	0.518
Males = 1, Females = 0	0.411	0.492	0.521	0.499
Young Age (18 - 34) = 1, otherwise = 0	0.192	0.394	0.276	0.447
Old (65 - 95) = 1, otherwise = 0	0.292	0.455	0.111	0.315
Unmarried = 1, otherwise = 0	0.141	0.348	0.153	0.360
Divorced_widowed = 1, otherwise = 0	0.335	0.472	0.138	0.345
None_primary Education = 1, otherwise = 0	0.2	0.4	0.043	0.203
Secondary Education = 1, otherwise = 0	0.701	0.458	0.566	0.496
Employed = 1, otherwise = 0	0.332	0.471	0.756	0.429
Unemployed (short term) = 1, otherwise = 0	0.043	0.203	0.008	0.087
Retired_unable = 1, otherwise = 0	0.422	0.494	0.184	0.388
Homemaker = 1, otherwise = 0	0.077	0.266	0.023	0.151
Other = 1, otherwise = 0	0.049	0.215	0.019	0.137
Number of children	1.969	1.49	1.377	1.178
Working hours per week	37.213	12.077	38.485	10.336
Household Income (monthly)	801.997	784.868	2534.083	1529.908
Belgium =1, otherwise = 0	0.031	0.172	0.031	0.175
Denmark =1, otherwise = 0	0.039	0.196	0.034	0.183
Germany =1, otherwise = 0	0.062	0.241	0.059	0.236
Spain = 1, otherwise = 0	0.017	0.132	0.021	0.144
Finland = 1, otherwise = 0	0.038	.192	0.037	0.189
France = 1, otherwise = 0	0.051	.221	0.049	0.217
Ireland = 1, otherwise = 0	0.016	0.127	0.017	0.131
Italy = 1, otherwise = 0	0.011	0.104	0.019	0.137
Luxembourg = 1, otherwise = 0	0.023	0.151	0.024	0.152
Netherlands = 1, otherwise = 0	0.039	0.194	0.035	0.183
Austria = 1, otherwise = 0	0.025	0.155	0.025	0.157
Portugal = 1, otherwise = 0	0.017	0.128	0.016	0.127
Sweden = 1, otherwise = 0	0.047	0.211	0.039	0.195
UK = 1, otherwise = 0	0.038	0.192	0.036	0.187
Bulgaria = 1, otherwise = 0	0.034	0.181	0.029	0.169
Cyprus = 1, otherwise = 0	0.028	0.166	0.031	0.172
Czech republic = 1, otherwise = 0	0.039	0.193	0.034	0.18
Estonia = 1, otherwise = 0	0.04	0.196	0.036	0.185
Hungary = 1, otherwise = 0	0.031	0.173	0.032	0.176
Latvia = 1, otherwise = 0	0.027	0.163	0.028	0.165
Lithuania = 1, otherwise = 0	0.037	0.188	0.036	0.185
Malta = 1, otherwise = 0	0.024	0.153	0.025	0.157
Poland = 1, otherwise = 0	0.045	0.208	0.044	0.204
Romania = 1, otherwise = 0	0.028	0.164	0.031	0.173
Slovakia = 1, otherwise = 0	0.039	0.194	0.031	0.174
Slovenia = 1, otherwise = 0	0.028	0.166	0.029	0.169
Turkey = 1, otherwise = 0	0.028	0.166	0.037	0.189
Croatia = 1, otherwise = 0	0.024	0.152	0.033	0.179
Norway = 1, otherwise = 0	0.043	0.202	0.038	0.191
FYROM =1, otherwise = 0	0.021	0.142	0.031	0.174

Table 2. Ordered Probit Model - dependent variable: Happiness.

Variables	Low income households group	High income households group
Males	-0.073 (0.041)	-0.0007 (0.037)
Young	0.309 (0.057)**	0.225 (0.047)**
Old	0.254 (0.054)**	0.088 (0.078)
Unmarried	-0.36 (0.064)**	-0.367 (0.057)**
Divorced_widowed	-0.479 (0.046)**	-0.559 (0.052)**
None_primary Education	-0.029 (0.077)**	-0.369 (0.091)**
Secondary Education	-0.116 (0.064)	-0.1 (0.039)*
Employed	0.376 (0.069)**	0.033 (0.199)
Unemployed (short term)	0.089 (0.097)	-0.292 (0.259)
Retired_unable	0.186 (0.075)*	-0.056 (0.206)
Homemaker	0.345 (0.094)**	0.079 (0.232)
Other	0.574 (0.112)**	0.198 (0.242)
Number of children	0.026 (0.014)	0.02 (0.019)
Working hours per week	-0.0005 (0.002)	-0.002 (0.002)
Household Income	0.0002 (0.00005)**	0.00004 (0.00002)
Belgium	0.248 (0.143)	0.267 (0.137)
Denmark	0.719 (0.151)**	0.459 (0.145)**
Germany	-0.199 (0.134)	0.165 (0.119)
Spain	0.276 (0.155)	0.155 (0.145)
Finland	0.829 (0.152)**	0.955 (0.157)**
France	0.221 (0.134)	0.097 (0.119)
Ireland	0.136 (0.164)	0.439 (0.169)*
Italy	-0.226 (0.176)	-0.496 (0.153)**
Luxembourg	0.038 (0.168)	0.545 (0.161)**
Netherlands	0.334 (0.147)*	0.602 (0.144)**
Austria	-0.282 (0.157)	-0.013 (0.139)
Portugal	-0.053 (0.162)	-0.212 (0.149)
Sweden	0.496 (0.149)**	0.518 (0.147)**
UK	0.237 (0.149)	0.179 (0.14)
Bulgaria	-0.957 (0.139)**	-0.693 (0.126)**
Cyprus	0.181 (0.152)	0.164 (0.134)
Czech republic	0.071 (0.141)	0.238 (0.133)
Estonia	0.127 (0.139)	-0.162 (0.124)
Hungary	-0.174 (0.145)	-0.082 (0.13)
Latvia	-0.102 (0.152)	-0.069 (0.132)
Lithuania	-0.134 (0.144)	0.364 (0.133)**
Malta	0.308 (0.162)	0.457 (0.148)**
Poland	0.039 (0.138)	0.224 (0.128)
Romania	-0.241 (0.152)	0.195 (0.139)
Slovakia	-0.007 (0.138)	0.026 (0.128)
Slovenia	0.089 (0.153)	0.155 (0.129)
Turkey	-0.561 (0.157)**	-0.415 (0.125)**
Croatia	-0.337 (0.152)*	0.209 (0.131)
Norway	0.081 (0.159)	0.309 (0.14)*
FYROM	-0.597 (0.167)**	-0.329 (0.138)*
Observations	4642	5592
Pseudo R^2	0.114	0.087
Log likelihood	-3857.838	-3636.583

Note: Robust stand. err. statistics in parentheses. * Significant at 5%; ** significant at 1%.

Table 3. Marginal effects (*outcome 3)* for Low and High Income Households groups - Dependent variable: Happiness.

Variables/ Definitions	Low income households group	High income households group
	Happiness outcome (3)	Happiness outcome (3)
Males	-0.029 (0.016)	-0.0002 (0.013)
Young	0.123 (0.023)**	0.079 (0.016)**
Old	0.101 (0.022)**	0.031 (0.027)
Unmarried	-0.137 (0.023)**	-0.137 (0.022)**
Divorced_widowed	-0.185 (0.017)**	-0.213 (0.021)**
None_primary Education	-0.111 (0.029)**	-0.14 (0.036)**
Secondary Education	-0.046 (0.025)	-0.036 (0.014)*
Employed	0.148 (0.027)**	0.012 (0.071)
Unemployed (short term)	0.035 (0.039)	-0.109 (0.102)
Retired_unable	0.073 (0.029)*	-0.02 (0.074)
Homemaker	0.137 (0.037)**	0.028 (0.079)
Other	0.225 (0.041)**	0.067 (0.078)
Number of children	0.01 (0.006)	0.007 (0.007)
Working hours per week	-0.0002 (0.0006)	-0.0008 (0.0006)
Household Income	0.00008 (0.00002)**	0.00001 (0.00001)
Belgium	0.098 (0.057)	0.089 (0.042)*
Denmark	0.276 (0.052)**	0.144 (0.038)**
Germany	-0.077 (0.051)	0.057 (0.039)
Spain	0.109 (0.061)	0.053 (0.048)
Finland	0.314 (0.049)**	0.249 (0.025)**
France	0.088 (0.053)	0.034 (0.041)
Ireland	0.054 (0.065)	0.138 (0.045)**
Italy	-0.087 (0.065)	-0.191 (0.061)**
Luxembourg	0.015 (0.067)	0.165 (0.039)**
Netherlands	0.133 (0.058)*	0.179 (0.034)**
Austria	-0.108 (0.057)	-0.005 (0.05)
Portugal	-0.021 (0.063)	-0.079 (0.058)
Sweden	0.195 (0.057)**	0.159 (0.037)**
UK	0.094 (0.059)	0.061 (0.046)
Bulgaria	-0.311 (0.032)**	-0.268 (0.049)**
Cyprus	0.072 (0.06)	0.056 (0.044)
Czech republic	0.028 (0.056)	0.08 (0.042)
Estonia	0.051 (0.055)	-0.059 (0.047)
Hungary	-0.068 (0.055)	-0.029 (0.048)
Latvia	-0.039 (0.059)	-0.025 (0.048)
Lithuania	-0.052 (0.055)	0.118 (0.038)**
Malta	0.122 (0.064)	0.143 (0.039)**
Poland	0.016 (0.055)	0.076 (0.041)
Romania	-0.092 (0.057)	0.066 (0.045)
Slovakia	-0.003 (0.054)	0.009 (0.045)*
Slovenia	0.035 (0.061)	0.053 (0.043)
Turkey	-0.203 (0.049)**	-0.158 (0.049)**
Croatia	-0.127 (0.054)*	0.071 (0.042)
Norway	0.032 (0.063)	0.102 (0.042)*
FYROM	-0.214 (0.051)**	-0.124 (0.054)*
y	0.439	0.682

Note: Robust stand. err. statistics in parentheses. * Significant at 5%; ** significant at 1%.

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