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**IS HAPPINESS DETERMINED BY INDIVIDUAL'S WELL-
BEING? PROPOSING AN ECONOMETRIC MODEL ON
HAPPINESS**

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Abstract

There is no doubt that each and every individual's intent is to get to happiness. Most of its decisions are made to accomplish a mental or emotional condition proper to a certain level of well-being. In our opinion, happiness is, in a way, the synonym of well-being, and well-being is a sum of positive situations that matter morally, and of fulfilled needs such as love, power, fun and freedom, stability, general health, education, so on. As many physical illnesses have psychological roots, a good mental condition gets a high importance related to our life and performance. Vitality, enthusiasm and engagement imply dealing with stress, obtaining a positive mental health and a reduced risk of heart disease, therefore a happier and qualitative life. The aim of the paper is to get an answer if either nor is happiness a determinant of our well-being state, if meeting our needs in responsible ways gives us happiness. Therefore, we propose a model in which the left hand side variable "happiness" is determined by a positive thinking and a general state of "feeling good" and "well-being". The well-being explanatory variables used as determinants in our model include: health, education, employment, age, financial satisfaction, political or religious beliefs, marital status and age.

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1. Introduction

The word *happiness* is frequently used and related to different fields of study such as psychology, biology, anthropology sociology and economics. According to Aristotle, happiness is considered to have at least two aspects: *hedonia* (pleasure) and *eudaimonia* (a life well lived). In modern psychology, happiness is referred to getting a simple pleasure and meaning, combined with engagement. (Seligman, 2002) Therefore, apart from seeing happiness as “the feeling of being happy,”¹ we define it as a combination of the level of satisfaction with personal life (for example, work, relationships, education, hobbies) and how good it feels on a daily basis.² Most psychologists consider happiness as being one of the six basic emotions³. (Ekman, Friesen, 1971) Others say that happiness has three essential components: *emotion* (positive emotions and lack of negative emotions), *life satisfaction* (purposeful life, personal growth and well-being) and *positive relations with others* (love for the others and of the others), (Arggle, 2001) Also, it is proved that social success and individual’s personality and behaviour are influencing general happiness. (Saed, Pour Ehsan, 2008) We try to prove below not only the truth of the affirmations, but which elements are determinants for happiness.

2. Literature Review

Researches were made to describe the term by correlating it not only with individual’s well-being, but also with its mental health saying that the progressive development has had consequences for the human brain. (Angell, 2011) In a 2015 study⁴, students’ general health status, happiness, self-efficacy, perceived stress, hopefulness and life satisfaction were measured using self-reported written questionnaires. The conclusion indicated a significant relation between happiness and psychological well-being. It was found out that the students having strong relationships and those who enjoy being with family and friends are happier and more willing to help the others, they lead their life in a tension-free manner, they smile and laugh, and suffer of less illnesses, they enjoy life and accept that other people are different and they do not criticize or try to change them, they are creative, positive, and self-confident. So, good mental health, life satisfaction and happiness are related. The absence of mental illness or disorders caused by high level stress, feeling content and good with one-self, positivism, having choices lead to a certain level of well-being and finally to happiness. (Glasser,⁵ 1962)

In economics, the approach of happiness is done in terms of utility⁶. Psychological speaking utility is correlated with mental health and well-being, thinking that a person that’s useful and active is more optimistic and positive, therefore, less stressed and mentally healthier, a proper state for being successful. But utility cannot be observable and cannot be measured. Besides, not all human beings are

¹ See Oxford Dictionary as well as other dictionaries.

² According to A. Parks, in a recent research was suggested that an even-keeled mood is more psychologically healthy than a mood, great heights of happiness achieved regularly are impossible, so the mood goes, as frequently, down.

³ The six basic human emotions are: happiness, surprise, sadness, anger, fear and disgust.

⁴ The 2015 study was published in the *Asian Journal of Psychiatry*.

⁵ William Glasser is psychiatrist and professor, founder of choice theory psychology.

⁶ The *utility theory* has been promoted by neoclassical economics as an ordinal notion of measuring human welfare, under the assumption that a rational individual shall ensure its welfare by maximizing the utility.

rational - they are not always maximizing their own satisfaction, but even so they care about their neighbour, their status in society, and they care about their well-being. There is in people's nature to measure their relative welfare, meaning that they measure their own welfare by comparing it with the others. (Oswald, 1997)

Feelings such as satisfaction or its absence, happiness or unhappiness appear to be of great importance in individual's future well-being. Many researchers consider "being happy" as the ultimate goal of human life. Income, wealth or social status are meaningless if these do not make an individual happier and healthier, and only together these give a person a recognisable state of well-being. It has been proved that happiness could be measured subjectively by listening to what human beings have to say about their state of happiness. A simple survey⁷ asking people of their level of happiness can give an honest and real measurement of happiness and subjective utility. So, if happiness is subjective, the stimuli "needed to be happy" are also subjective, different from one individual to another. Sometimes we have a misconception about what makes us happy and about the things we could do to increase our level of happiness and meaning of life, and this comes either from coping the others in terms of needs and behaviour, or because we don't know for sure what exactly do we want.

In time, it has been developed a trend in measuring "utility" in terms of "happiness"⁸, so economists have been trying to construct a model to explain the determinants of a person's happiness, by using socio-economic variables. Maybe the most important result are those showing that no matter the socio-economic and cultural differences, people express similar opinions regarding happiness, but other results were relevant as well. Reported happiness does not depend on income as much as predicted by standard utility theory. Although there is a statistically significant positive relationship between income and happiness - higher incomes and greater happiness are linked (Schnittker, 2008), it was proved that the relationship is really weak. (Walker, Kavedžija, 2015) However, Easterline (1974) studying the US population has found that happiness depends on relative income⁹, not on absolute income of people. Later on, he got on the conclusion that happiness strongly depends on household health status. Other studies conducted in Latin America or Europe confirmed Easterline's findings. (Gerdham, Johannesson, 1997) Also, Oswald (1997) said that reported happiness is higher among people who are married, healthy, women, well educated, Caucasians, self-employed, retired and those looking after a home. He observed that age has an U-shaped impact on happiness: children and elderly are happier than adults, and people become happier after their 30s. Stevenson and Wolfer (2008) in his studies about race and happiness stated that there is a gap between black-white happiness, but the gap is decreasing. Other findings showed that people who have strong religious beliefs or strong political views tend to be happier than those without these beliefs. Religion persuades happiness for a number of reasons as studies showed: gives people a sense of purpose and positivism, serves as a resource for dealing with negative life experiences and existential fears, and not at last, religion promotes a sense of belonging, a social

⁷ The survey could be simple: "All together, how happy do you think you are: very happy, happy, or not happy", or more complex: "All together, how happy you would say you are: very happy, quite happy, happy, not very happy, and not at all happy?"

⁸ Happiness represents a subjective approach for economists in studying human welfare.

⁹ Relative income depends on income of one individual compared to his friends, neighbours or other people he knows.

connectedness. Thus, statistics studies on social relationships tend to eliminate the association between religiosity and well-being. Their argument is that religious people report having more social ties, which being taken into account statistically shows that religion by itself does not predict happiness. (Seligman, 2002) In 2009, Levinson claimed that happiness relates to not only relative income, but also to air/ environment quality, some others relate it with individual’s emotional intelligence, his social success and his personality. (Saed, Pour Ehsan, 2008)

To summarize the works on happiness we are saying that there are common patterns in what determines happiness. Happiness, and life satisfaction tends to be higher among women, people with social skills (with diverse activities, with family and/ or lot of friends), very young people and old people, married and cohabiting people (those who are not alone), the highly educated (finding satisfaction in their profession), the healthy (there is no dividing between physically and mentally healthy) here being included people with low blood pressure (who are more calm and less stressed) and people who exercise especially outdoors (hiking, so on), those with high income (with a certain status and level of well-being), the self-employed people, those who have sex at least once a week with the same partner, the right-wing voters, the religious people, members of non-church organizations, volunteers, and those who live in western countries. (Blanchflower, 2008)

3. Developing a Model On Happiness

3.1 Methodology

In order to see the relevance of a certain variable, if it determines or not happiness we propose to develop a model - a difficult task in econometrics. A statistically significant variable may have no economic reason to be included in the model and vice versa. (Gujarati, 1995) So, based on the literature we identify few representative variables for making people happy or unhappy. Most of these variables are proving a certain level of well-being. We include them in a table alongside the possible answers: level of education, health status, relative financial position/income, marital status, sexual life, gender, race, age, work status, air and environmental quality, vacation, religious devotion and political view. (Table 1)

Table 1. Variables related to well-being

Happy	Health	Race	Nationality
very happy	excellent	white	natural
happy	good	black	immigrant
not happy	fair	others	
	poor		
Age	Education: professional level	Love life/ sex	Marital status
elderly	PhD	weekly	married
adult	master	monthly	widowed
young	college	sometimes	divorced
teenager	high school	never	separated
child	middle school		never married
Relative Financial Situation/Social Success		Work Status	Personality
Income Satisfaction	Class		

satisfied lower more or less not at all	lower class working class middle class upper class	working full time working part time temporary, unemployed, laid off retired school keeping house other	friendly, social skills, extroverted unfriendly, no social skills, introverted
			Gender
			male female
Air and Environmental Park and recreation nearby		Attends of Religious service	Political Views
lose average far		never nearly once a year once a year several times a year once a month nearly every week every week more than once week	extremely liberal liberal slightly liberal moderate slightly conservative conservative extremely conservative nihilist
Vacation			
more times a year once a year every few years none			

The first step in the model development is to find a statistical community and to apply the questionnaires to the selected people. Data should be manipulated which means that we delete the observations with missing variables, keeping only the complete, qualitative data that would be used and checked for meaningfulness.

Second step includes choosing the model. We think of using a logistic regression since the response variable is binary¹⁰, on the model:

$$z = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \dots + \beta_n x_n \quad (1)$$

This model is fitted to the equation:

$$f(z) = \frac{1}{1 + e^{-z}} \quad (2)$$

STATA is used to look if our variables are positively correlated with happiness and statistically significant as we were expecting.

A brief description of the variables shows the following:

- *Happiness*: The dependent variable *happy* is a qualitative variable, therefore it is used to conduct the analysis. We create the variable *d_happy* that takes the value 1 if the respondent claims to be very or pretty happy, and the value 0 if the answer was not happy. (Table 2)
- *Explanatory variables*: All the right hand side variables are transformed into binary variables to conduct the *logit and probit estimations*. We choose relevant variables we are being confident about.

Our proposed model becomes:

$$d_happy = \beta_0 + \beta_1 d_health + \beta_2 d_race + \beta_3 d_nat + \beta_4 d_age + \beta_5 d_educ + \beta_6 d_sex + \beta_7 d_m + \beta_8 d_satfin + \beta_9 d_wrkst + \beta_{10} d_pers + \beta_{11} d_gender + \beta_{12} d_park + \beta_{13} d_vac + \beta_{14} d_attend + \beta_{15} d_polview + error$$

¹⁰ A linear regression would give doubtful results since conditions like homoscedasticity are not being satisfied.

We have:

Table 2. Dependent variables

d_happy	d_health	d_race	d_nat
=1 if very happy, pretty happy =0 if not too happy	=1 if excellent, good, fair =0 if poor	=1 if white =0 if black, others	=1 if natural =0 if immigrant
d_age	d_educ	d_sex	d_marital
=1 if elderly, adult =0 if young, teenager, child	=1 if PhD, master, college =0 if high school, middle school	=1 if weekly, monthly =0 if sometimes, never	=1 if married =0 if widowed, divorced, separated, never married
d_satfin	d_pers	d_gender	d_park
=1 if more satisfied, middle, upper class =0 less or not at all satisfied, working, lower class	=1 if friendly, extroverted, social skills =0 if unfriendly, no social skills, introverted	=1 if female =0 if male	=0 if far =1 if average, close
d_vac	d_attend	d_polview	
=1 if more times a year, once a year =0 if every few years, none	=1 if every week, more than once week =0 if otherwise	=1 slightly conservative, conservative, extremely conservative =0 otherwise	

A logistic regression is being run focusing on certain variables that we think they can predict happiness.

3.2 Results

The results from STATA show the convergence, if our variables are positively correlated with happiness and statistically significant as we were expecting, if they are explanatory variables on happiness or not. The interpretation should be rather straightforward indicating the percentage of confidence interval on the positive real line which shows the variable as being indeed an indicator of happiness.

3.3 Discussions

A model is judged based on how well its right hand side variables can predict the variable happiness using the *estat classification* command in STATA with several cut-off values that will maximize the specific number. We also run a logistic regression on doubtful variables, seeing whether or not these variables can predict happiness with a percentage of confidence level, if they are statistically significant and positively correlated. Next, we run a third logistic regression with the merged significant variables. The results could show us that in the merged model some variables are no longer statistically significant. However, a high percentage of correctly predicted response variables could show an improvement from the previous attempts. All other variables remained statistically significant.

Finally, to make sure that the found significant variables have a statistical impact on happiness, it is useful to re-run the logistic regression with these variables and to analyze the results.

Diagnostic testing is run for *heteroscedasticity*,¹¹ *multicollinearity*,¹² and the *goodness of fit*. The magnitude of significant variables allows us to understand the degree of importance of each explanatory variables and direction of relationship, and to interpret the marginal effect in terms of probability.

4. Conclusion

The model we ended up with is considered by us simple and good, but only after running it we have the level of prediction, the percentage of correct classification, the number of explanatory variables and an actual conclusion about the correlation between happiness the explanatory variables. Then we could answer to questions such as: is happiness determined by individual's well-being, which individual is more likely to be happy: the richer, the healthier, the most faithful one? Until we actually run the model on real data to see its relevance we assume that there is a certain correlation between happiness and well-being represented by health, as a general physical health, age, social success and relative financial situation and work status, and a relative correlation of happiness with race, nationality, love life, level of education or political and religious beliefs.

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¹¹ If cross sectional data is used, there is a possibility of heteroscedasticity in the model. Heteroscedasticity means variance of error term is not constant across observations. If heteroscedasticity is found in this model, then should be used *robust heteroscedasticity standard errors techniques*.

¹² It is calculated the Variance Inflation Factor (VIF); if a problem is detected some explanatory variables can be dropped.

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