

Determinants of Happiness in India: Ordered Probit Estimation of Life Satisfaction

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ABSTRACT

Background: Maximising happiness of people is truly the proper measure of social and economic progress and the goal of any public policy. The socioeconomic and demographic factors that affect life satisfaction are so varied that many domains of life events influence happiness. Despite significant income growth and achievements in social indicators, India ranks poorly in the happiness rank. Such a disparity is attributed to the attitude of people towards positional and status concerns and the relative comparison of life evaluation. This paper attempts to identify the determinants of happiness and estimate their effect on life satisfaction among individuals in India. Specifically, this paper examines the relationship between income and life satisfaction in India in an attempt to understand whether money matters for happiness.

Methodology: This study uses the sixth wave (2010-2014) of World Values Survey data across 12 Indian states. Since the response variable, life satisfaction or happiness, is measured in the WVS as an ordered category in the Likert scale, empirical estimation is based on the ordered probit method. The covariates considered as determinants of happiness in India are gender, social class, marital status, income, health status, employment status, education, number of children, age, and religion.

Results: The estimated ordered probit results show that the probability of reporting happiness increases with education, health and social class whereas age, income, employment, children and gender have no statistical effect on happiness in India. Changes in the marginal effects are reported in the case of primary education, health, employment and middle social class. As income changes from high income to low income, people tend to become unhappier.

Conclusion: Income, education, health and social status of people are positively associated with life satisfaction. Poor people and individuals in the middle social category are less happy.

Keywords: Subjective well-being, happiness, life satisfaction, socioeconomic demographic determinants, ordered logit

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INTRODUCTION

Happiness is a subjective measure of quality of life in all domains of life. It is nearly impossible to have an objective textbook definition of any subjective issue and the definition of happiness is one such aspect. This is why less emphasis is given on what happiness is and more emphasis is on people's own perceptions about happiness and the determinants that determine such a dimension of happiness. Though happiness research has long been the domain of psychologists and philosophers, the systematic study of happiness has gained some respectability among economists in recent years, out of the growing dissatisfaction of economists with their conventional measures like utility and welfare as a measure of the quality of life or well-being. Psychologists and social scientists generally attempt to measure happiness simply by asking people how happy they are. However, economists need to objectively measure happiness in order to have meaningful interventions and improvements in the standards of life of the people. Happiness is usually considered to be

the proper measure of social progress and the goal of public policy. Happiness and well-being analysis is widely undertaken to implement better welfare policies by governments for the people as making people's lives better would be the major objective to achieve through policies. Improving the quality of life might not be the only thing that matters, but such improvement is desirable. Indeed, improving people's lives is the explicit focus of much of the policymaking and regulatory works of the governments.

The World Happiness Report 2018 ranks India at 133rd position. India has witnessed a drop of 11 places from 2017 ranking of 122nd rank. In fact, the happiness index of India has been consistently falling since 2014. The happiness index is based on six key factors – income, health, social support, freedom, trust and generosity. Despite being one of the fastest-growing economies in the world, India is well behind its neighbours China, Pakistan and Bangladesh. In fact, India stands higher in healthy life expectancy and freedom to make life choices compared to these countries. This raises a question: despite economic growth, why happiness does not rise with income growth? Why people are not happy with rising income? Does an individual's happiness increase with an increase in money income? Is raising income inadequate to raise the happiness of people? In other words, does money buy happiness? If money can buy material goods for human satisfaction, why money does not buy happiness? If not money, what is that that leads to an individual's happiness? A search for an answer to these perplexing questions has led to a huge literature on the so-called economics of happiness with an elusive answer. Rather, the studies have produced contradicting results and importantly raised more questions than the answers. Yet the simple question of what makes people could not be resolved so far.

In the first research work on the income-happiness relationship in the US in the economics tradition, Easterlin arrives at a startling finding that money does not buy happiness [1]. It has been observed that the average happiness in the United States in the 1970s was not significantly different from what it was in the 1940s despite significant advances and a high rate of growth in income in this period. This has led Easterlin to conclude that, on average, a rise in income raises happiness at a point in time, but over time happiness does not increase with increases in income. Easterlin explains this paradoxical result in terms of relative comparison, which has been subsequently termed as Easterlin Paradox or Easterlin Puzzle. As individuals compare their income with the incomes of others in the society, especially with that of neighbours, a rise in the income levels of all people does not raise the happiness level of individuals. Specifically, a proportionate shift in the relative position does not change the happiness level of individuals. Further, happiness level does not vary much between countries though there are wide income gaps between countries. It has been inferred that while the goods aspirations of higher status people probably exceed those of lower status people, the dispersion in reference norms is less than in the actual incomes of rich and poor.

In the economic happiness literature that followed, the association between subjective well-being and income is examined using various estimation methods [2]. Generally, the results of OLS regression are compared with quantile regression, ordered probit and generalised ordered probit estimates. Overall, income has a strong positive effect on life satisfaction under OLS regression and the quantile regression results reveal that this association is less strong at the upper end and stronger at the lower end of the conditional distribution of life satisfaction. The standard ordered probit model predicts a moderate positive income effect: higher income decreases the probability of dissatisfaction and increases the probability of satisfaction. Contrary to this, the generalised ordered probit model shows a more negative effect on lower satisfaction levels and income does not affect the probability of the highest satisfaction level.

There also exists mounting evidence that not only does money not buy happiness, but it also may not even fully be convertible in terms of the satisfaction of having money [3]. Possible reasoning for this is that satisfaction of one's standard of living depends on comparison with the standard of living of others. While absolute household welfare measure plays an important role in happiness, there is no role for a relative measure in determining life satisfaction [4].

In the social sphere, subjective attitudes that describe an individual's perceived power rank, respect rank and economic value in society have consistent and positive significant effects on happiness [5]. Anomic feelings, positivity and self-esteem are highly important for life satisfaction [6]. While self-satisfaction is not significant for earning income, self-esteem is the most accurate predictor of income [7]. Further, social capital is significant for life satisfaction as the area we live in, the people we have as our neighbours are important in lifting happiness levels [3].

In the Indian context, existing studies are micro in nature and empirically analyse the relationship between income and happiness mostly using primary sample data [8-11]. An important question raised for the analysis is 'If money does not buy happiness, why most people are after money and material pursuits?'. The often estimated ordered probit results show a significant positive effect of both absolute and relative income on happiness, suggesting that money does influence happiness and well-being and the individual's life satisfaction is also influenced by his relative status [9]. It has also been observed that in India an increase in absolute income may raise happiness but beyond a certain threshold level people develop aspirations for status positions and hence more money may not bring more happiness.

The relationship between happiness and several correlates of happiness such as unemployment, poverty, literacy rate, life expectancy, inflation rate, crime rate and political stability [10]. The survey of the literature shows that employed are more satisfied than unemployed, married are happier than divorced, separated and widowed, etc [11]. It has also been inferred that the Easterlin Paradox – the nil relationship between income and happiness on average, does not hold in the case of India [9]. This implies that in India happiness may be more sensitive to absolute than relative income. A justification is also provided for the results in the Indian scenario.

Global comparative studies, which also include India as well, challenge the view that happiness levels of entire society remain fixed with growing income due to relative comparison [12-16]. A cross-section analysis of 52 nations for which substantial time series are available shows a positive relationship between income and happiness at the aggregate level in most developing countries [12]. The shift towards rising happiness spans the spectrum from low income to high-income countries and cuts across cultural zones. It has been noted that the difference between rich and poor countries must be due to some fixed cultural differences in the meaning of happiness. Among the countries, India, a low-income country, show a steep rise in happiness.

A study of the 2006 Gallup World Poll data that analyse the effects of income and age on self-reported well-being in 132 countries also includes India [13]. Because the survey used the same questionnaire in all countries, it provides an opportunity to make cross-country comparisons, while at the same time providing enough data to permit within-country disaggregation, for example, by age, sex, ethnicity or education. It is observed that India is less happy than rich countries.

Given the contrasting empirical evidence on the relationship between socioeconomic and demographic characteristics and happiness, this paper attempts to identify the determinants of happiness among individuals in India. Specifically, this paper examines the relationship between income and life satisfaction in India in an attempt to understand whether money matters for happiness. The data for the empirical analysis is derived from the 6th wave (2010-2014) of the World Values Survey (WVS) pertaining to India. Since the response variable, life satisfaction or happiness, is measured in the WVS as ordered categorical in the Likert scale, this empirical analysis is based on the ordered probit method.

METHODOLOGY

The World Values Survey (WVS) is the largest source of cross-national public opinion surveys in this world in terms of countries covered and years for studying subjective well-being related issues. The WVS is organised in waves conducted every 5 years. Since 1981, the WVS has conducted 7 waves till 2020, offering a time series for 39 years. The first wave was conducted during 1980-84 in 21 countries and the sixth wave conducted between 2010 and 2014 included 60 countries. The WVS consists of nationally representative surveys and covers almost 90% of the world's population, using a common questionnaire. The WVS methodology is face-to-face interviews with a detailed questionnaire consisting of about 250 questions with some 400 to 800 measurable variables. The WVS provides information on various aspects of the respondents' life, ranging from income to employment status, religion, education, health status and religion, besides information on personal values and attitudes towards a wide range of social issues such as life satisfaction, family, work and democracy. The WVS has been conducted in all major states and union territories of India. The years of survey for India are 1990, 1995, 2001, 2006 and 2014. India did not take part in the 2017-21 seventh wave survey. Same states are sampled in all waves with additional states added over time. The second (1990) wave includes 12 states and 2 union territories (Delhi and Chandigarh) in India. The sixth

wave (2010-2014) includes 22 states and 2 union territories (Delhi and Puducherry) consisting of a sample of 4078 respondents.

The WVS respondents are asked to give a qualitative assessment of their happiness on a Likert scale. The question in WVS that measures the feeling of happiness is: "Taking all things together, would you say you are: 1 - very happy, 2- rather happy, 3 - not very happy and 4 - not at all happy". The data for this study consists of 1581 observations from the sixth wave (2010-2014) of WVS for India. Since the dependent variable in the study is a qualitative variable or an ordinal variable measured on a Likert scale, the ordered probit model is used to analyse the determinants of happiness in India.

ORDERED LOGIT REGRESSION METHOD

The ordered probit model is usually used to estimate the relationship between an ordinal dependent variable and a set of independent variables. The ordered probit model assumes an underlying latent ordinal dependent variable (y^*) which is related linearly to the set of independent variables as:

$$y_i^* = \beta x_i + u_i \quad (1)$$

The latent dependent variable (y^*) is the feeling of happiness which is not directly observed, instead the feeling of happiness is measured in ordinal form y (1= not happy, 2=happy, 3=very happy). The respondents choose an appropriate category that describes best their feeling of happiness (y^*). The y ranges between the ordinal categories 1 and 3. Assuming j answer categories, ($j=3$), the observed happiness function is:

$$y_i = j \quad \text{if } \lambda_{j-1} \leq y_i^* < \lambda_j \quad (2)$$

where $\lambda_1, \lambda_2, \lambda_3$ are the cut-points, certain threshold values of the latent variable at which the outcome variable changes.

Then, the probability of observing $y=j$ for given values of the independent variables is:

$$\begin{aligned} \Pr(y_i = j|x_i) &= \Pr(\lambda_{j-1} \leq y_i^* < \lambda_j | x_i) \\ &= \Pr(y_i^* < \lambda_j | x_i) - \Pr(y_i^* < \lambda_{j-1} | x_i) \end{aligned} \quad (3)$$

If the true satisfaction y^* falls below the threshold λ_1 , then the individual chooses the lowest category; if the true satisfaction falls between λ_1 and λ_2 , the individual will pick the second category; if the true satisfaction falls above the cut point λ_2 the individual chooses the highest category of happiness. Hence, the observed feeling of happiness would be as follows:

$$y_i = 1 \quad \text{if } y_i^* \leq \lambda_1; \quad y_i = 2 \quad \text{if } \lambda_1 \leq y_i^* \leq \lambda_2; \quad y_i = 3 \quad \text{if } y_i^* > \lambda_2 \quad (4)$$

The probability of feeling happiness for each category is given by:

$$\Pr(y_i = 1|x_i) = \Pr(y_i^* < \lambda_1 | x_i) = \text{Not happy}$$

$$\Pr(y_i = 2|x_i) = \Pr(\lambda_1 \leq y_i^* < \lambda_2 | x_i) = \Pr(y_i^* < \lambda_2 | x_i) - \Pr(y_i^* < \lambda_1 | x_i) = \text{Happy}$$

$$\Pr(y_i = 3|x_i) = \Pr(\lambda_2 \leq y_i^* < \lambda_3 | x_i) = \Pr(y_i^* < \lambda_3 | x_i) - \Pr(y_i^* < \lambda_2 | x_i) = \text{Very happy}$$

The β coefficients are the probabilities of the effect of independent variables on the individual's happiness levels. If there are J categories of the ordered outcome variable, there will be $j-1$ cut-points or threshold values dividing the range of possible values for the latent variable y^* . Using the CDF and the linear relationship between the latent dependent variable and the independent variables, the predicted probabilities can be expressed as:

$$\Pr(y_i = 1|x_i) = \Phi(\lambda_j - \beta x_i) - \Phi(\lambda_{j-1} - \beta x_i) \quad (5)$$

The coefficients β and cut-points λ are obtained by maximizing the following log-likelihood function:

$$\text{Log}L = \sum_{i=1}^n \sum_{j=1}^J I(y_i = j) \log[\Phi(u_j - \beta x_i) - \Phi(u_{j-1} - \beta x_i)] \quad (6)$$

where I is a binary indicator function that equals 1 if $y_i = j$ and 0 otherwise. The marginal probability effects (MPE) are the partial effects of the independent variables on the outcome probability. Since marginal probability effects measure the change in the outcome probabilities, the sum of these effects will be zero. The MPE for outcome j can be calculated as:

$$\text{MPE}_j(x_i) = \frac{\partial \Pr(y_i = 1|x_i)}{\partial x_i} = [\phi(u_{j-1} - \beta x_i) - \phi(u_j - \beta x_i)]\beta \quad (7)$$

RESULTS

The empirical specification for estimating the feeling of happiness is given as:

$$\text{Happiness}_i = \beta_0 + \beta_1 \text{Income} + \beta_2 \text{Gender} + \beta_3 \text{Employment} + \beta_4 \text{Marital Status} + \beta_5 \text{Social Class} + \beta_6 \text{Health Status} + \beta_7 \text{Religion} + \beta_8 \text{Education} + \beta_9 \text{Age} + \beta_{10} \text{Children} + u_i \quad (8)$$

Table 1 presents descriptive statistics of the variables used in the empirical analysis. Nearly 80% of the respondents self-reported happiness, compared to only 19% reporting unhappiness. Only one-fifth of the samples are higher educated. Most respondents belong to lower and middle-income households. Nearly two-thirds of respondents belong to the middle social class, the backward community, and reported good health. About half of the respondents are unemployed and have more than two children. The majority of the respondents are married and Hindus.

Table 1: Descriptive Statistics of Variables

Variable	Mean	Variable	Mean
Very happy	0.35 (0.47)	Upper social class	0.14 (0.35)
Happy	0.46 (0.50)	Middle social class	0.62 (0.48)
Not happy	0.19 (0.39)	Lower social class	0.24 (0.43)
Hindu	0.70 (0.46)	Male	0.62 (0.49)
Non-Hindu	0.30 (0.46)	Female	0.38 (0.48)
Primary education	0.47 (0.50)	Low income	0.39 (0.49)
Secondary education	0.42 (0.49)	Middle income	0.37 (0.48)
Higher education	0.11 (0.31)	High income	0.24 (0.43)
Married	0.81 (0.39)	Employed	0.49 (0.50)
Single	0.19 (0.39)	Unemployed	0.51 (0.50)
Poor health	0.31 (0.46)	No child	0.27 (0.44)
Good health	0.62 (0.49)	One child	0.18 (0.38)
Very good health	0.07 (0.25)	More than two children	0.55 (0.50)
Age	39.88 (14.19)		

Note: Figures in parentheses are standard deviations.

Table 2 shows the association between the feeling of happiness and the socioeconomic and demographic variables. The chi-square values show that education, income and health of respondents are significantly associated with feeling happiness, whereas there is no statistically significant association between feeling happiness and gender, marital status and social class.

Table 3 presents the results of the ordered probit estimation of the social, economic and demographic determinants of the feeling of happiness in India. The probability of reporting happiness increases with education, health and social class. The probability of middle class and lower class being happy is higher by 0.172 and 0.102 respectively compared to the upper-class respondents. Primary education is more important to happiness than higher education.

Table 2: Association between Feeling Happiness and Its Determinants

Variable	Category	Not happy	Happy	Very happy	Chi-square
Gender	Male	182 (60.1)	471 (64.6)	329 (60.5)	Chi-sq. = 3.068 Prob. = 0.216
	Female	121 (39.9)	258 (35.4)	215 (39.5)	
Marital status	Married	246 (81.2)	600 (82.3)	531(79.2)	Chi-sq. = 1.924 Prob. = 0.382
	Single	57 (18.8)	129 (17.7)	113(20.8)	
Employment status	Employed	109 (38.7)	375 (56.6)	238 (45.7)	Chi-sq. = 29.81 Prob. = 0.000
	Unemployed	173 (61.3)	287 (43.4)	283 (54.3)	
Education	Primary	146 (49.8)	291 (41.1)	288 (53.7)	Chi-sq. = 20.55* Prob. = 0.000
	Secondary	111 (37.9)	329 (46.5)	203 (37.9)	
	University	36 (12.3)	88 (12.4)	45 (8.4)	
Social class	Upper	48 (16.1)	101 (14.0)	67 (12.4)	Chi-sq. = 4.527 Prob. = 0.193
	Middle	171 (57.2)	454 (63.1)	337 (62.5)	
	Lower	80 (26.8)	165 (22.9)	135 (25.0)	
Income class	Low	130 (43.5)	246 (34.1)	225 (41.7)	Chi-sq. = 11.26* Prob. = 0.004
	Middle	110 (36.8)	283 (39.3)	192 (35.6)	
	High	59 (19.7)	192 (26.6)	123 (22.8)	
Health status	Poor	47 (15.6)	219 (30.2)	226 (41.7)	Chi-sq. = 18.14* Prob. = 0.000
	Good	193 (63.9)	480 (66.1)	296 (54.6)	
	Very good	62 (20.5)	27 (3.7)	20 (3.7)	

Note: Figures in parentheses are column percentages.

Table 3: Ordered Probit Estimates of Happiness

Variable	Dependent variable: Feeling happiness		
	ORPROBIT with social variables	ORPROBIT with economic and demographic variables	ORPROBIT with social, economic and demographic variables
Non-Hindu	0.020 (0.063)	-	-0.005 (0.065)
Primary education	0.253*** (0.097)	-	0.284* (0.103)
Secondary education	0.148 (0.097)	-	0.194 (0.100)
Single/unmarried	0.140* (0.075)	-	0.151*(0.082)
Poor health	1.236* (0.126)	-	1.23* (0.128)
Good health	0.790* (0.120)	-	0.786* (0.122)
Middle social class	0.156* (0.087)	-	0.178** (0.089)
Lower social class	0.072 (0.098)	-	0.102 (0.101)
Age	-	0.0003 (0.002)	0.0007 (0.002)
Male	-	-0.036 (0.064)	-0.023 (0.067)
Low income	-	-0.049 (0.077)	-0.051 (0.080)
Middle income	-	-0.078 (0.077)	-0.083 (0.079)
Employed	-	0.050 (0.062)	0.83(0.064)
No child	-	0.019 (0.035)	0.004 (0.038)
Cut-point 1	0.288 (0.156)	-0.873 (0.117)	0.334 (0.197)
Cut-point 2	1.617 (0.159)	0.364 (0.116)	1.638 (0.199)
Log-likelihood	-1527.1246	-1523.5879	-1431.4233
Pseudo R ²	0.0391	0.0007	0.0419
No. of observations	1527	1460	1431

Note: Figures in parentheses are absolute t-values.

Statistical significance at 1, 5, 10% levels are denoted by ***, **, *.

The probability of happiness is higher by 0.151 for unmarried/single individuals than for married respondents. The probability of happiness is higher by 0.284 for primary education than for higher education. While income has a negative effect on the probability of feeling happiness, its effect is statistically insignificant. Similarly, neither employment nor age has any significant effect on happiness. So also religion has no effect on the feeling of happiness in India. The probability of males being happy is less by 0.023 than females. The number of children has no statistical effect on the probability of happiness. The estimated cut-points show that at 0.34, the self-reported feeling of happiness changes from not happy to happy and at 1.64 the feeling of happiness changes from happy to very happy in India. The pseudo-R-square log-likelihood values imply a better fit of the ordered probit estimation of the socioeconomic and demographic determinants in explaining the feeling of happiness in India.

The ordered probit estimation only shows the probability of reporting happiness and it does not reveal the effects of the covariates on the changes in the probability. The marginal probability effects show the change in probability when the predictor or independent variable increases by one unit. The marginal effect of an increase in a regressor on the probability of selecting an alternative j , as given by equation (7), is presented in Table 4. The change in probability of being happy when income changes from high income to low-income increases 2 percentage points and increases by 2 points to the middle class. The change in probability of being happy when health status changes from very good health to good health and poor health decreases by 22 percentage points and 26 points respectively. The change in probability of reporting happiness decreases by 4% and 2 percentage points when social class changes from upper class to the middle class and lower class respectively. The probability of being happy when the marital status changes from married to single decreases by 3 percentage points. The change in probability of being happy when health status changes from very good health to good health and poor health decreases by 22 percentage points and 26 points respectively. The change in probability of being happy when employment status changes from unemployed to employed decreases by 1%.

Table 4: Marginal Effects of the Determinants of Happiness

Variable	ORPROBIT with social variables	ORPROBIT with economic and demographic variables	ORPROBIT with social, economic and demographic variables
Non-Hindu	-0.005 (0.016)	-	0.001 (0.017)
Primary education	-0.066* (0.025)	-	-0.074** (0.026)
Secondary education	-0.038 (0.025)	-	-0.050 (0.025)
Single/unmarried	-0.035** (0.182)	-	-0.037** (0.055)
Poor health	-0.260*** (0.022)	-	0.259*** (0.023)
Good health	-0.223*** (0.036)	-	-0.221*** (0.036)
Middle social class	-0.041** (0.023)	-	-0.047** (0.024)
Lower social class	-0.018 (0.024)	-	-0.026 (0.025)
Age	-	-0.0001 (0.0005)	-0.0001 (0.0006)
Male	-	0.009 (0.175)	0.006 (0.017)
Low income	-	0.013 (0.021)	-0.026 (0.021)
Middle income	-	0.021 (0.021)	0.022 (0.021)
Employed	-	-0.013 (0.017)	-0.021*** (0.036)
No child	-	-0.005 (0.009)	-0.0009 (0.010)

Note: Figures in parentheses are standard errors.

*Statistical significance at 1, 5, 10% levels are denoted by ***, **, *.*

CONCLUSION

Identifying the determinants of happiness, both theoretically and empirically, has always been a puzzling issue for social science. The concept of happiness is not easily amenable for defining as well as for quantification as there is not a single set of approaches to understanding what constitutes happiness and what the dimensions of happiness are. However, most people agree that happiness is a feeling and it can be

clearly understood by the subject himself therefore self-reported measures of happiness are valid and reliable for empirical analysis. The main aim of this paper is to estimate the effects of the socioeconomic and demographic determinants on feeling happiness in Indian individuals. The econometric estimation method of the ordered probit model is applied to the sixth wave (2010-1014) World Values Survey data of India as happiness is a qualitative variable measured by a four-point Likert scale and the responses are in ascending order. The covariates considered in this study as determinants of happiness in India are gender, social class, marital status, income, health status, employment status, education, number of children, age, and religion. The estimated ordered probit results show that the probability of reporting happiness increases with education, health and social class whereas age, income, employment, children and gender have no statistical effect on happiness in India. Changes in the marginal effects are reported in the case of primary education, health, employment and middle social class. As income changes from high income to low income, people tend to become unhappier.

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