

# Multidimensional Poverty Index and Happiness

Harald Strotmann<sup>1</sup> · Jürgen Volkert<sup>1</sup>

Published online: 31 October 2016

© Springer Science+Business Media Dordrecht 2016

**Abstract** In recent years, income concepts have been criticized for being too narrow to capture human well-being. The broader “objective” capability approach and subjective well-being analyses have been highlighted as most prominent approaches which allow for well-being assessments beyond income. Recently, a combination of the capability and of the subjective well-being approach has been recommended to strengthen well-being analyses. Our paper further explores the relations of both approaches. Based upon micro data covering more than 2300 individuals from four villages in rural Karnataka (India), the paper empirically analyses to which degree objective capability deprivation reflected by the *United Nations Development Programme’s* Multidimensional Poverty Index coincides with reduced happiness. We find positive correlations between Multidimensional Poverty Index deprivation and lack of happiness for some dimensions; otherwise the correlation is weak for the majority of Multidimensional Poverty Index indicators. Our results suggest that “relativity” towards other villagers is crucial for happiness. Moreover, from a happiness perspective our findings show the necessity to integrate financial deprivation indicators and further “missing dimensions” of deprivation into the Multidimensional Poverty Index. Furthermore, it may be fruitful to measure multidimensional poverty on a household and individual level.

**Keywords** Happiness · Multidimensional Poverty Index · India · Well-being

**JEL Classification** D10 · I30 · I32

---

✉ Harald Strotmann  
harald.strotmann@hs-pforzheim.de

Jürgen Volkert  
juergen.volkert@hs-pforzheim.de

<sup>1</sup> Pforzheim University, Tiefenbronner Str. 65, 75175 Pforzheim, Germany

## 1 Introduction

In recent years, the question of how to adequately measure people's well-being and poverty has gained new momentum both in varying fields of academic research and politics. Amartya Sen's (2009, 1999, 1992) objective capability approach and subjective well-being approaches are among the most prominent measures that try to broaden the analysis beyond critically narrow income analyses (Binder 2014). It has also been argued with respect to well-being deprivation, that poverty analyses should not be limited only to income poverty assessments as people may suffer from a lack of capabilities in additional respects. As such, the *Oxford Poverty and Human Development Initiative (OPHI)* has suggested an international measure for multidimensional poverty that goes beyond income. It reflects multiple dimensions with respect to education, health and living standards and has been adopted by the *United Nations Development Programme* since its 2010 *Human Development Report*. The Multidimensional Poverty Index (MPI) can thus be considered an objective well-being indicator based on objective assessments of an individual's capabilities and human development.<sup>1</sup> However, it has been argued that a combination of capability and subjective well-being assessments can overcome undesirable characteristics and strengthen the analytical power of both approaches (Binder 2014). Common examples of subjective well-being indicators are those that capture people's overall personal feeling of happiness. Furthermore, Veenhoven (2015: 1064) argues that by strengthening people's capability to choose, average happiness can be increased.

The basic goal of this paper is to empirically examine how and to which degree objective measurement of household poverty in the sense of capability deprivation (as measured by the MPI) does or does not coincide with subjective well-being (as measured by happiness). Thereby, micro data from a rich household survey in four villages in rural Karnataka (South India) are used. Based upon multivariate ordered probit regressions, this paper examines to which degree suffering from multidimensional poverty according to the MPI indicators and their dimensions education, health and standard of living corresponds with a lower level of happiness or not. Furthermore, as the MPI neglects indicators for a household's financial means in its measurement of standard of living we will assess whether this is adequate or not from a subjective well-being point of view. Moreover, the paper aims at analysing whether the potential influence of additional "missing dimensions" of objective or subjectively experienced capability deprivations that are not considered in the MPI so far can narrow the gap between objective MPI and subjective happiness. Finally, as our data allow us not only to measure deprivation in the MPI dimensions at the household level—as the original MPI does—, but also at the individual level, we will analyse potentially different roles of deprivation for happiness on both levels.

The structure of this paper is as follows: in Sect. 2, we first briefly summarize the strengths and weaknesses of objective and subjective well-being indicators. Moreover, the concept of the MPI and the subjective well-being concept of happiness are introduced, followed by a brief survey of existing research on the determinants of happiness. In Sect. 3, we present the micro data used for our empirical analyses in this paper. Based upon descriptive results, we sketch the situation in the villages according to the MPI and to

---

<sup>1</sup> For more on the foundation and dimensions of Human Development refer to Sen (2009), Robeyns (2005) or to Veenhoven (2003) who discusses different capability sets required to achieve a happy life. For further information on the MPI see Sect. 2.2 or refer to Alkire and Robles (2015).

subjective happiness. In Sect. 4, we discuss the methodology used and present and interpret results from multivariate ordered probit regressions. We conclude with Sect. 5 and discuss implications of our empirical findings for the measurement of objective and subjective well-being.

## 2 Assessing Objective and Subjective Well-being

### 2.1 Controversy About Objective and Subjective Measurement of Well-being

Well-being is a very indistinct concept that encompasses varying and diverse aspects of human life. Gasper (2005: 178f.) emphasises that the distinction between “objective well-being indicators” and “subjective well-being indicators” lies not in the method of measurement (self-report vs. no self-report), but in what is measured. While assessments of subjective well-being focus on measurement of feelings, objective measures of well-being focus on “non-feelings” (Gasper 2005: 178), i.e. objective aspects of human life which can typically be assessed by external people, but also by the people themselves in a well-informed mode. However, this does not imply that objective measures of well-being are value-free as also empirical studies are inherently committed to specific, sometimes implicit value judgements (see Crespo and Mesurado 2015: 932).

Proponents of subjective well-being indicators argue that a large variety of differing aspects like culture, personality, experiences, knowledge and the well-being of other people have individually diverse impacts on different people. These are hard to capture objectively as each person’s evaluations are different. Therefore, proponents of subjective approaches argue that the well-being of people should be assessed subjectively (see e.g. Helliwell and Barrington-Leigh 2010).

However, proponents of objective well-being indicators see a lack of precision in subjective well-being indicator definitions and risks of biased results due to the wording or placement of survey questions. They also argue that the current personal mood can influence reported happiness (see e.g. Graham 2005: 201ff. or Helliwell and Barrington-Leigh 2010). Contrary to these arguments, research by Kahnemann et al. (1999) indicates that there are reliable ways to measure subjective well-being (see also Diener et al. 2009 or Gasper 2005: 178). Veenhofen (1984: 41) puts into perspective the reproach that claimed happiness responses might be dependent on mood swings by conducting studies that point to high stability of answers in cases of repetition. From this perspective and contrary to the critique, measurement issues may even be an argument in favour of subjective well-being assessments, notably for developing countries in which objective indicators like income are difficult to measure (see Graham 2005: 211f.). Nevertheless, objective well-being researchers also challenge the theoretical informational value of subjective well-being assessments. They argue that empirical studies show a rather large share of people who claim to be happy or even very happy with their life even in the poorest countries. Several reasons can lead to happiness despite objectively severe well-being deficits. These reasons include ignorance and lack of information, the dependence of people’s feelings on what they are used to, on what they perceive as important and on their expectations (“framing effects”, see Gasper 2005: 183f.). Moreover, adaptation may serve as a sort of human “defence mechanism” (Graham 2011: 105) thereby challenging the meaningfulness of happiness for well-being assessments. Another critique of subjective well-being

assessments claims that citizens might not want to become happy slaves or delirious vassals (Sen 1999)—even if people would not be less happy with less freedom and violated human rights. This highlights the political challenge that subjective happiness can make objective deprivation persistent or deny objective improvements if aspirations increase with objective well-being. Critics also emphasise that human actions may not make people happier but can be motivated by political commitments, obligations, and responsibilities, concepts that are often absent in (happiness) economics (see Pressman and Summerfield 2002: 92f.).

Graham (2005: 211f.) points to limitations of subjective well-being measures, but also emphasises that studies of happiness may help to explain how poverty dynamics and inequalities affect individual well-being. Schimmel (2009) calls for combining subjective perceptions and objective well-being findings. He argues that this allows enlarging the existing UNDP approach of looking at “‘having’, ‘being’ and ‘doing’” by “the ‘feeling’ about ‘having’, ‘being’ and doing”. Hence, there are good reasons to assess human well-being objectively and subjectively; and as only few studies have been carried out for developing countries (Graham 2008: 92); a certain lack of empirical studies about happiness still has to be overcome.

## 2.2 The Multidimensional Poverty Index MPI as an Objective Indicator for Measuring Poverty

The Multidimensional Poverty Index (MPI) was developed by the Oxford Poverty & Human Development Initiative (OPHI) and first published in the 20th edition of the 2010 United Nation’s Human Development Report.<sup>2</sup> The MPI is based upon different micro-household-level information and has been initiated to measure poverty using three dimensions and ten indicators in a manner that allows for comparisons between 109 developing countries. The three dimensions covered by the MPI, education, health and standard of living, correspond with the dimensions of the Human Development Index (HDI) (Alkire and Robles 2015). Alkire and Santos mention that this limitation to only three dimensions of well-being has advantages with respect to parsimony, consensus about importance and interpretability, but that it is mainly data driven as comparable data for more dimensions are not available for a larger number of developing countries. Hence, the creators of the MPI themselves would prefer to include further poverty dimensions into the MPI if data would be available (see Alkire and Santos 2010: 12).

Table 1 illustrates the definitions of the three dimensions and ten indicators used to measure poverty. As every dimension is given an equal weight of 1/3 and all indicators are equally weighted within the dimensions, the relative weight of the education and health indicators is 16.7 %. The relative weight of each of the six standard of living indicators is 5.6 %. Based on the MPI, a person is considered poor if the sum of the weights of the indicators in which he or she is deprived reaches 30 percent or more (see Alkire and Santos 2010: 17).

<sup>2</sup> For a detailed MPI description see Alkire and Santos (2010: 6–28) and Alkire and Santos (2011) for minor modifications; updates are highlighted in Alkire and Robles (2015).

**Table 1** Dimensions and Indicators of the Multidimensional Poverty Index. *Source* according to Alkire and Santos (2010: 17)

Dimension	Indicator	Deprived if...	Related to...	Relative weight (%)
Education	Years of schooling	No household member has completed 5 year of schooling	MDG2	16.7
	Child Enrolment	Any school-aged child is not attending school in years 1–8	MDG2	16.7
Health	Mortality	Any child has died in the family	MDG4	16.7
	Nutrition	Any adult or child for whom there is nutritional information is malnourished*	MDG1	16.7
Standard of living	Electricity	The household has no electricity		5.6
	Sanitation	The household's sanitation facility is not improved (according to the MDG guidelines), or it is improved but shared with other households	MDG7	5.6
	Water	The household does not have access to clean drinking water (according to the MDG guidelines) or clean water is more than 30 min walking from home	MDG7 MDG7	5.6
	Floor	The household has dirt, sand or dung floor		5.6
	Cooking fuel	The household cooks with dung, wood or charcoal	MDG7	5.6
	Assets	The household does not own more than one of radio, TV, telephone, bike, or motorbike, and do not own a car or tractor	MDG7	5.6

*MDG1* eradicate extreme poverty and hunger, *MDG2* achieve universal primary education, *MDG4* reduce child mortality, *MDG7* ensure environmental sustainability

\* Adults are considered malnourished if their BMI is below 18.5. Children are considered malnourished if their z-score of weight-for-age is below minus two standard deviation from the median of the median of the reference population

### 2.3 Happiness as a Subjective Indicator of Well-being

Happiness has been the subject of empirical research in various disciplines in recent years, for an overview of studies from different fields see Blanchflower and Oswald (2011: 1f.). The term happiness as it is used for this paper implies a (positive) subjective assessment of the current general quality of life from an individual's perspective (see Helliwell and Barrington-Leigh 2010: 749f.).

A standard approach to measure happiness in an empirical survey is to ask people using an ordinal scale of four to ten points (see e.g. Graham 2011: 107). Typically, the questions are introduced by sentences like "If you think about your life in general" or "If you take all things together" to clarify that the goal is to measure a more general subjective well-being, and not short-run, specific emotions. In our empirical survey, happiness has been measured on a 5-digit-scale ranging from "extremely happy", "fairly happy" and "happy" to "not very happy" and "not at all happy".

An increasing number of empirical studies in recent years have started to analyse what makes people more or less happy. There are extensive studies for wealthy countries, but also some studies for developing countries. The vast majority of studies analysing the determinants of happiness based upon micro data sets start by modelling happiness as a

function of a variety of different variables. Typical standard variables to explain happiness comprise of personal characteristics like age, gender, education, marital status or income, household characteristics, and regional or country characteristics depending on the data used (see e.g. Blanchflower and Oswald 2011: 2).

Blanchflower and Oswald (2011: 25) summarise that many of the existing international studies come to the conclusion that happy people are “disproportionally *the young and old (not middle-aged), rich, educated, married, in work, healthy, exercise-takers, with high fruit-and-vegetables diets, and slim.* [...] Happy countries are disproportionately *rich, educated, democratic, trusting, and [show] low-unemployment.*” Even though there are fewer happiness studies for developing countries, global assessments are available, e.g. by Deaton (2008) or by Frey and Stutzer (2002). Other authors focus more on the developing world, e.g. Graham (2008, 2005) or Inglehart et al. (2008) whose World Values Survey estimations are based on a framework of human development and happiness. Other studies explicitly address the phenomenon of adaptation, which Graham (2011) assesses on a global level.

Focusing on selected studies for India, Banerjee and Duflo (2007) report impacts of health and food on happiness in rural Rajasthan (Banerjee et al. 2004). Rai et al. (2010) assess how the quality of life in six domains changes for HIV infected patients across the stages of their disease. Further work in an Indian setting has explored the effects of emotional intelligence on happiness<sup>3</sup> as well as relations of temperament and happiness for Indian children (Holder et al. 2012). Studies of subjective well-being in South India, the region where our paper focuses on, include Neff’s (2012) qualitative study on adaptation, Reddy’s and Olson’s (2012) qualitative study of rural migrant worker’s subjective well-being, and Daraei and Mohajery’s (2013) work on the subjective well-being of female domestic workers in Mysore, Karnataka.

### 3 Data and Characterisation of the Initial Situation

#### 3.1 Data Base

The micro data for the following empirical analyses have been conducted in summer of 2011 as part of the scientific evaluation of the “Model Village Project” which Bayer CropScience undertakes in four villages<sup>4</sup> in rural Karnataka in South India. The goal of the project is to foster rural development of small holder farmers thereby creating a win-win situation for the villagers and the company (see Volkert et al. 2014 for details of the project). The villages are all located in the same district of Karnataka, are all characterized by a very high-level of poverty and are all very similar with respect to important socio-economic conditions (caste-structure, poverty indicators, age structure etc.). Also weather conditions (and thus harvest) were very similar during the survey period. As part of the evaluation a household questionnaire was designed to interview the heads of the households. Moreover, additional household members aged 16 years or older were interviewed in each household using an individual questionnaire as a reduced version of the household questionnaire. The survey comprised detailed socio-economic and socio-demographic information about the household members, but also a wide variety of different aspects of the people’s standards of living and well-being. In total, interviews were realised in a

<sup>3</sup> For relations of five personality traits, emotional intelligence and happiness see Hafen et al. (2011); for effects of emotional intelligence on subjective well-being refer to Koydemir et al. (2013).

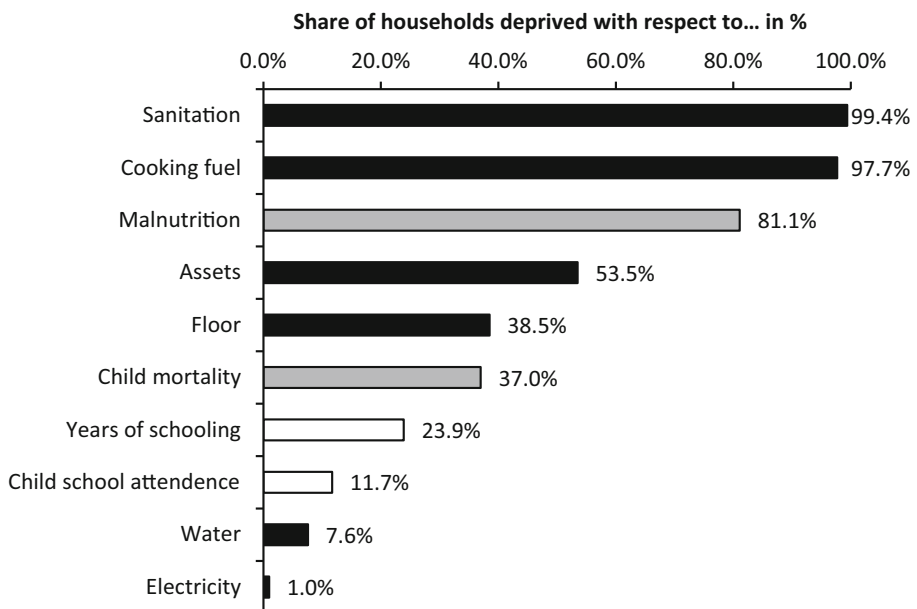
<sup>4</sup> The villages are Chikanal, Chimalaggi, Kadivala and Mangalagudda, located in Bagalkot district.

sample of 995 households covering almost 75 % of the total population of households in the four villages. When drawing the sample, it has been assured that the different castes living in the villages are covered by the sample in a representative manner. With an average household size of almost six persons per household about 5830 persons are living in the 995 households. 54 % of the persons in the sample were female, about 20 % of the villagers are from scheduled castes or scheduled tribes, the median equivalence monthly household income is about 1200 INR (definition see below). About 34 % of the population is younger than 16 years old, only 9.5 % is older than 60 years. The four villages are very similar in these respects. The following empirical analyses in this paper can be based upon 2301 individual interviews, 995 with heads of the households and about 1306 with additional household members.

### 3.2 Situation with Respect to Multidimensional Poverty

The data analysis shows that 76.4 % of the 995 households in the four villages are considered multidimensionally poor according to the definition of the MPI. The village-level MPI values confirm the similarity of the four villages with corresponding shares of deprived households ranging only between 74.7 and 78.2 %. Figure 1 gives an overview of poverty according to the ten indicators of the MPI and ranks the indicators according to the prevalence of deprivation.

In general it can be stated that four out of the five indicators with the highest share of poverty, but also the two indicators with the lowest share of poverty stem from the *standard of living* dimension (black colour in Fig. 1). The analyses shows that availability of electricity is not a severe problem in the villages, as only 1 % of the households in our sample



**Fig. 1** Poverty in the villages in South India according to the ten MPI indicators (*black* MPI dimension “standard of living”, *grey* MPI dimension “health”, *white* MPI dimension “education”) *Source* Model Village Data Base, own calculations and illustration, N = 995 households



have no electricity at all (rural Karnataka 2008-9: 5.9 %, India Human Development Report 2011: 390). Similarly, access to official drinking water<sup>5</sup> is reported to be available for the majority of people by bore well, as only 7.6 % of the households have no access to official drinking water within a 30 min walking distance from their home (Karnataka 2008/09: 8,8 %). In contrast, almost none of the households have access to improved sanitation (Karnataka: 51.5 %) and almost all the households cook with wood, dung or charcoal. 99.4 and 97.7 % of all households are considered poor in these two respects. With respect to flooring, 38.5 % of the households have only dirt, sand or dung floors and are considered to be poor. Regarding assets, 53.5 % of the households do not own more than one of the followings assets: radio, TV, telephone, bike, motorbike, car or truck.

The *health situation* is measured by information on child mortality and on malnutrition. The corresponding indicators are ranked 3rd and 6th with respect to the shares of poor households (grey colour in Fig. 1). Malnutrition is measured according to the BMI for adults (BMI < 18.5) and for small children younger than 5 years according to their weight for age according to the WHO standards. During the survey, the weight and height of the people interviewed, as well as of additional available household members have therefore been measured. The data for our sample show that more than 81 % of the households have at least one malnourished adult or child in their household. In 37 % of the households, at least one child of the living household members has died.<sup>6</sup>

*Education* is also covered by two indicators, one measuring years of schooling and another one tracking children's school attendance. These indicators are ranked 7th and 8th with respect to the poverty shares (white colour in Fig. 1). In almost one out of four households (23.9 %), no family member has completed at least five years of schooling. In addition, about one out of nine households (11.7 %) have school-aged children who are not attending school in standards 1–8.

### 3.3 Situation with Respect to Happiness in the Villages

Within the empirical survey, we also asked the villagers how happy they were with their lives in general. Figure 2 presents the distribution of the answers in response to the general happiness question.

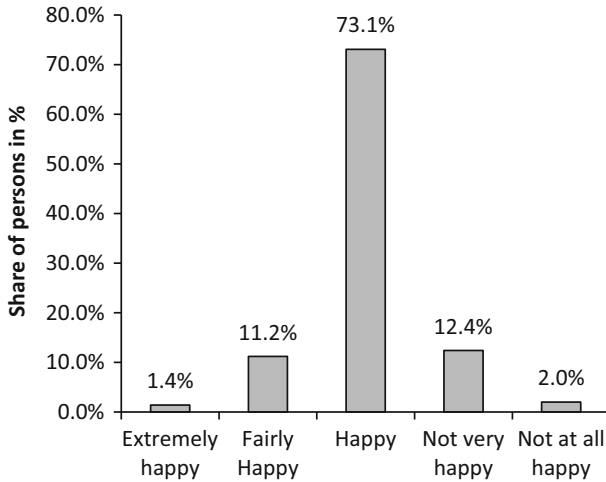
Almost three out of four persons answer that they are happy with the life they are living, and one out of eight people even say they are fairly or extremely happy (12.6 %). About 14.4 % of the persons asked admit that they are not very or even not at all happy. For the most part though, our descriptive results confirm that even very poor people say they are generally happy with their lives.

With respect to some standard socio-economic characteristics women in the villages show substantially higher shares of being extremely or fairly happy (15.9 %) than men (8.7 %). Younger villagers between 16 and 25 years are more often extremely or fairly happy (18.1 %) than older people aged 60 years or more (10.1 %). And villagers from lowest castes (scheduled castes, scheduled tribes) are less often extremely or fairly happy (7.7 %) than the rest of the villagers (14 %).

<sup>5</sup> Access to drinking water was identified when people said they got their water from treated or untreated sources, public village taps, or covered wells.

<sup>6</sup> Note that this indicator differs from standard mortality statistics considering e.g. the number of deaths of children 0–5 years per 1,000 children. Here, the household is the unit of analysis and all household members are considered to be deprived if at least one child in the household has died (see Alkire and Santos 2010: 13).





**Fig. 2** Happiness as subjective well-being in the villages in Karnataka (Chikanal, Chimalaggi, Kadivala, Mangalagudda) *Source* Model Village Data Base, own calculations, N = 2301 individuals

## 4 Empirical Analyses

### 4.1 Empirical Model and Explanatory Variables

To analyse a possible impact of objective well-being captured by the MPI on subjective well-being measured as happiness, we will estimate ordered probit models (see e.g. Greene 2011: chapter 17 or Long and Freese 2014: 309ff.). Thereby, based upon the upper frequency distribution for happiness in the villages, we have decided to aggregate the information to the three outcomes 3 “extremely or fairly happy”, 2 “happy” and 1 “not very happy or not at all happy”.

Ordered probit models are built around a latent regression in which an unobserved underlying score variable  $Y_i^*$  ranging from  $-\infty$  to  $\infty$  is estimated as a linear function of a vector of independent explanatory variables:

$$Y_i^* = \beta' x_i + \varepsilon$$

where  $i$  is the individual observation,  $\varepsilon_i$  is the corresponding random error. This continuous latent variable can be interpreted as an individual’s propensity to be more or less happy with his/her life. It is tied to the observed response categories by a measurement model that divides  $Y^*$  into 3 categories, i.e. when the latent variable crosses a cutpoint  $s_1$  or  $s_2$ , the observed category changes

$$Y_i = \begin{cases} 1 & \text{if } -\infty \leq Y_i^* = \beta' x_i + \varepsilon_i < s_1 \\ 2 & \text{if } s_1 \leq Y_i^* = \beta' x_i + \varepsilon_i < s_2 \\ 3 & \text{if } s_2 \leq Y_i^* = \beta' x_i + \varepsilon_i < \infty \end{cases}$$

The cutpoints  $s_1$  and  $s_2$  have to be estimated together with the coefficients of the latent variable model. In an ordinal probit model the random error  $\varepsilon$  is assumed to be normally distributed with  $\text{Var}(\varepsilon) = 1$  which implies a corresponding normal distribution of the latent variable. Thus, for given values of the explanatory variables the probability of an observed

outcome corresponds to the probability that the latent variable falls between the corresponding cutpoints:

$$\begin{aligned}
 P(Y_i = 1|x_i) &= P(-\infty \leq Y_i^* = \beta'x_i + \varepsilon_i < s_1) \\
 P(Y_i = 2|x_i) &= P(s_1 \leq Y_i^* = \beta'x_i + \varepsilon_i < s_2) \\
 P(Y_i = 3|x_i) &= P(s_2 \leq Y_i^* = \beta'x_i + \varepsilon_i < \infty)
 \end{aligned}$$

Table 2 gives an overview of the explanatory variables included in our model. It includes information about household deprivation according to the ten MPI indicators,, further household characteristics, personal characteristics about deprivation in the MPI dimensions and further individual characteristics as control variables, and dummies for the villages to control for possible regional differences.

$$\begin{aligned}
 Y_i^* = \beta_0 + & \underbrace{\sum_{k=1}^{10} \beta_k \cdot x_{kh}}_{\text{Household-level MPI poverty indicators}} + \underbrace{\sum_{l=1}^L \beta_l \cdot x_{lh}}_{\text{Further household-level information}} \\
 + & \underbrace{\sum_{j=1}^J \beta_j \cdot x_{ji}}_{\text{Personal characteristics of individual } i} + \underbrace{\sum_{r=1}^4 \beta_r \cdot x_{ri}}_{\text{Dummy variables for villages}} + \varepsilon_i
 \end{aligned}$$

The set of MPI indicators at the household-level which build the explanatory variables in a baseline regression model, have already been illustrated in Sect. 2. The following set of explanatory variables will additionally be considered in extended regression models to account for further possible household-level and individual-level dimensions of individual well-being.

Due to data problems and problems of (international) comparability, the MPI refrains from using income indicators at the household-level to proxy the standard of living. Moreover, income is not an end, but only a means of human development. However, it has been repeatedly shown that in poor countries an increase in income usually corresponds with an increase in happiness, particularly when moving from a situation of subsistence level poverty to economic security (Inglehart et al. 2008: 268–270).<sup>7</sup> This suggests that although income is only a means, it can be necessary to analyse means like income or other financial variables to take account of the significance of these means to a variety of important ends and to capture aspects of capability deprivation for which adequate indicators are not available (Anand and Sen 2000).Therefore, in some extended regression models we are going to include additional indicators characterising the *financial resources of the household*: Household equivalent p.c. income is used as an income indicator on the household level. As it has been found that high debts can have a stronger impact on subjective well-being than low income (Howell and Howell 2008) a household’s level of indebtedness is considered in the subsequent analysis as well. Dummy variables inform whether the household sometimes or frequently had issues paying back their debts in the recent year.

Asset poverty can also be negatively related to happiness (Huang 2013; Royo and Velazco 2006). In our study, *asset ownership* is already considered as part of the MPI

<sup>7</sup> It has also been discussed that higher income may increase happiness only up to a certain level of income. For instance, Richard Easterlin (1974) has shown that in spite of GDP growth and increasing per capita income, happiness has not been rising in the U.S.

**Table 2** Determinants of happiness and their empirical operationalisation. *Source* Model Village Data Base, own definitions

Determinant	Operationalisation
Deprivation according to MPI indicators	
Years of schooling	0 = No deprivation, 1 = deprivation
Child enrolment	0 = No deprivation, 1 = deprivation
Mortality	0 = No deprivation, 1 = deprivation
Nutrition	0 = No deprivation, 1 = deprivation
Electricity	0 = No deprivation, 1 = deprivation
Sanitation	0 = No deprivation, 1 = deprivation
Water	0 = No deprivation, 1 = deprivation
Floor	0 = No deprivation, 1 = deprivation
Cooking fuel	0 = No deprivation, 1 = deprivation
Assets	0 = No deprivation, 1 = deprivation
Indicators for household-level financial means	
Financial situation of household	
Household equivalence income <sup>a</sup>	In Indian Rupees, modified OECD equivalence scale
Problems with paying back debts?	1 = Never, 2 = Sometimes, 3 = Often
Asset ownership of household	
Ownership of livestock?	0 = Yes, 1 = No
Ownership of land?	0 = Yes, 1 = No
Indicators for possible “missing dimensions”	
Unemployment/Underemployment	
Looking for (more) work?	0 = No, 1 = Yes
Ability to go about without shame	
Feeling of being treated with respect	0 = Almost always or often 1 = Occasionally, rarely or never
Physical safety	
Victim of crime in recent year	0 = No, 1 = Yes
Agency freedom	
Ability to change things in your village community	0 = Yes, 1 = No
Political participation	
Member of household in panchayat	0 = Yes, 1 = No
Indicators for deprivation in MPI dimensions at the individual level	
Individual level of education	
Individual school attendance	0 = Attended school for 5 years or more 1 = Attended school for less than 5 years
Individual health status	
Individual malnourishment (BMI < 18.5)	0 = No, 1 = Yes
Individual health problems	0 = Did not have health problems often in last year 1 = At least one health problem out of 17 listed problems occurred often in the last year.
Individual financial situation	
Personal ability to spend $\geq$ 420 Rupees per month?	0 = Yes, 1 = No
Further personal characteristics	
Head of the household	0 = No, 1 = Yes
Sex	0 = Female, 1 = Male

**Table 2** continued

Determinant	Operationalisation
Age	Age in years
Marital status	0 = Never married, 1 = married, 2 = widowed/separated
Caste	1 = all castes, but SC/ST, 2 = SC/ST, 3 = Other religion, no castes
Local characteristics	
Local differences	Dummies for the four villages

<sup>a</sup> To calculate household equivalence income, the modified OECD equivalence scale was applied. This scale was first suggested by Haagenars et al. (1994) and gives a value of 1 to the household head, 0.5 to each additional adult member and 0.3 to each child

indicators. However, as livestock and land are further very important types of assets in rural India, we will include two additional binary dummy variables in our extended models to consider whether a household does or does not own land/livestock.

Alkire (2007: 347) emphasises that the lack of sufficient empirical data causes a critical “bottleneck for studies of human development and multidimensional poverty”. “*Missing dimensions*” are specific dimensions beyond the MPI dimensions which are valued by poor people and have policy relevance, no matter whether these are adequately operationalized by objective or subjective indicators. She argues that data on employment of the poor, ability to go about without shame, physical safety, agency and empowerment, as well as psychological and subjective well-being might enrich standard surveys in a promising way (Alkire 2007: 353). To analyse whether these enlargements improve the informational value of our analysis, we will also take into account indicators for these “missing dimensions”:

With respect to the missing dimension of “employment/underemployment,” the World Bank (2012: 82-86) emphasises that unemployed people are usually less happy and are more affected by stress, depression and low self-esteem (see also e.g. Graham 2008: 85–86 or Frey and Stutzer 2002: 96–98). In order to take into account potential unemployment impacts on happiness, a dummy variable is included as an additional explanatory variable that informs whether a person does or does not search for more work.

The *social climate and social relations*<sup>8</sup> may also affect a person’s well-being. In our extended models, social relations are proxied by a dummy variable that shows whether and how much a person feels he or she is treated with respect within the village community. This covers the missing dimension “*ability to go about without shame*”.<sup>9</sup> In light of findings by Graham (2011) and for the missing dimension of “*physical safety*”, we additionally consider a variable measuring whether a person has been the victim of crime or violence in the recent year according to his/her own perception of physical safety.

Sen (1985: 206) emphasises the potentials of *agency freedom* for well-being. Agency captures “what a person is free to do and achieve in pursuit of whatever goals or values he or she regards as important.” To account for this and also cover issues of *empowerment* in the sense of expanded agency, we proceed as Ibrahim and Alkire (2007) suggest, based on

<sup>8</sup> Graham (2011: 113–116) finds that good social relations and friends can improve subjective well-being as a coping mechanism in the absence of public safety nets and because people value the support they get from and give to others. The significance of relational goods and interpersonal relationships for happiness has e.g. been addressed by Bruni (2008: 117).

<sup>9</sup> Alkire (2007: 356) emphasizes that the “ability to go about without shame” includes the tendency to experience emotions of shame when specific negative events occur, which requires subjective assessments as experiences and emotions are inherently subjective.

Alsop et al. (2006): an additional dummy variable is used in order to take into account whether a person *feels*<sup>10</sup> that he/she has the ability to change things in his/her life in the village community or not.

*Political freedom and participation* have been reported to impact happiness levels, although the relevant channels of these factors have still not been fully clarified.<sup>11</sup> We measure the role of political participation by a dummy variable at the household level by giving a value of 1 if no household member is a member of the ‘panchayat’, the local political decision body in the villages.

While the MPI measures education and health only at the household-level, our micro-level data also allow controlling for the corresponding *individual educational status and health status*. This can give insights into the role of the household situation and of the individual situation for subjective well-being. For the MPI education dimension “Years of schooling” and for the health dimension “Nutrition” it is possible to directly create corresponding deprivation indicators at the individual level: to account for the individual level of education, a binary dummy variable is therefore given as 1 if the person has attended less than five years of school. To measure the individual health status, a dummy variable takes the value 1 if the person is malnourished, i.e. has a BMI smaller than 18.5. Moreover, we draw upon the people’s responses with respect to a battery of 17 different symptoms of illness (e.g. fever, cough, fatigue, shivering, blood tinged sputum, weight loss,...). A binary dummy variable measures whether a person said that he/she showed any of the 17 symptoms often in the last year, or not. Moreover, to account for possible inequalities within the households and to measure the standard of living of individuals, a binary dummy variable has the value 1 if a person is not able to personally spend more than 420 Rs. per month.<sup>12</sup>

To account for *further personal heterogeneities*, all regressions will also control for sex, age and marital status. Moreover, a dummy variable is included to show if the person interviewed is head of his/her household. Regarding castes, we distinguish people from scheduled castes (formerly called “Untouchables”) and scheduled tribes, members of other castes and people with religious affiliations other than Hindu. Possible spatial *heterogeneities between the four villages* are considered by a set of regional dummy variables.

## 4.2 Empirical Results

To structure the empirical analysis and its interpretation according to the goals of our paper, we will present results for four types of models and interpret them step-by-step.

*Model 1* in Table 3 first presents the results of a baseline multivariate ordered probit regressions in which individual happiness is explained by deprivation in the MPI dimensions, a set of standard individual control variables (e.g. sex, age, caste) and dummy variables for the villages. As independence of observations is not given for people from the same household, our estimations of standard errors account for possible intra-household correlation of standard errors.

<sup>10</sup> As agency and empowerment reflect the extent to which “people feel themselves to be coerced and/or acting on their own initiative...” or to which “individuals feel empowered to bring about change” (Alkire 2007: 354) these feelings are inherently subjective and require subjective assessments.

<sup>11</sup> Inglehart et al. (2008) find the degree of democratisation and social tolerance to be major determinants of a growing sense of free choice and happiness. For political participation also refer to Graham (2011: 115–117).

<sup>12</sup> This amount corresponds to the rural poverty rate for Karnataka in 2005.

**Table 3** Results from ordered probit estimations, estimated coefficients, *p* values in parentheses. *Source* Model Village Data Base, own estimations

Variables	Model 1	Model 2	Model 3	Model 4
<b>MPI indicators (1 = deprived)</b>				
Years of schooling	-0.179** (0.023)	-0.141* (0.081)	-0.120 (0.141)	
Child enrolment	-0.095 (0.317)	-0.110 (0.256)	-0.125 (0.191)	-0.100 (0.306)
Mortality	-0.078 (0.215)	-0.066 (0.299)	-0.068 (0.290)	-0.083 (0.212)
Nutrition	0.044 (0.584)	0.046 (0.557)	0.030 (0.703)	
Electricity	0.270 (0.266)	0.182 (0.454)	0.110 (0.608)	0.059 (0.811)
Water	0.059 (0.558)	0.052 (0.596)	-0.012 (0.900)	-0.012 (0.905)
Sanitation	-0.221 (0.332)	-0.270 (0.308)	-0.337 (0.102)	-0.255 (0.337)
Floor	-0.188*** (0.004)	-0.189*** (0.004)	-0.144** (0.032)	-0.103 (0.137)
Cooking fuel	-0.258 (0.221)	-0.160 (0.433)	-0.168 (0.401)	-0.063 (0.780)
Assets	-0.234*** (0.000)	-0.177*** (0.007)	-0.187*** (0.005)	-0.209*** (0.002)
<b>Individual control variables</b>				
Head of household (1 = yes)	-0.194** (0.012)	-0.169** (0.034)	-0.147* (0.077)	-0.185** (0.033)
Men (1 = yes)	-0.098 (0.183)	-0.124 (0.101)	-0.155** (0.048)	-0.271*** (0.001)
Age (years)	-0.005** (0.022)	-0.006*** (0.006)	-0.007*** (0.001)	-0.005** (0.018)
Married (1 = yes) (Ref: never married)	0.035 (0.734)	0.036 (0.733)	0.013 (0.900)	0.008 (0.944)
Widowed/Separated (1 = yes) (Ref: never married)	0.093 (0.548)	0.127 (0.423)	0.095 (0.562)	0.047 (0.784)
Castes: SC/ST (1 = yes) (Ref: all other castes)	-0.190** (0.011)	-0.122 (0.130)	-0.110 (0.169)	-0.088 (0.277)
Castes—other religion (1 = yes) (Ref: all other castes)	0.369* (0.066)	0.428** (0.033)	0.403* (0.054)	0.550*** (0.008)
<b>Indicators for household-level financial means and asset ownership</b>				
Household equivalence income		0.00005* (0.055)	0.00005* (0.071)	0.00005* (0.062)
Sometimes debt problems (1 = yes) (Ref: no debt problems)		-0.208*** (0.001)	-0.170** (0.011)	-0.150** (0.024)

**Table 3** continued

Variables	Model 1	Model 2	Model 3	Model 4
Often debt problems (1 = yes) (Ref: no debt problems)		-0.494*** (0.003)	-0.444*** (0.007)	-0.501*** (0.004)
Ownership of livestock (1 = no)		-0.105 (0.156)	-0.101 (0.176)	-0.090 (0.230)
Ownership of land (1 = no)		-0.166** (0.025)	-0.148* (0.053)	-0.151* (0.057)
Deprivation with respect to “missing MPI dimensions” as further possible determinants of happiness				
Employment/Underemployment				
Search for more work? (1 = yes)			-0.186*** (0.005)	-0.158** (0.022)
Ability to go about without shame				
Feel treated with respect? (1 = occasionally, rarely or never)			-0.263*** (0.001)	-0.202** (0.015)
Physical safety				
Victim of crime? (1 = yes)			-0.145 (0.451)	-0.226 (0.297)
Agency and empowerment				
Ability to change things (1 = no) Ability to change things? (1 = no)			-0.585*** (0.000)	-0.543*** (0.000)
Political participation				
Household member in panchayat? (1 = no)			0.194** (0.017)	0.169** (0.049)
Individual deprivation in MPI dimension education, health and standard of living				
Less than 5 years of school (1 = yes)				-0.129* (0.063)
Often ill in last year (1 = yes)				-0.255*** (0.001)
Malnourished (1 = yes)				-0.038 (0.501)
Ability to personally spend more than 420 INR.? (1 = no)				-0.400*** (0.000)
Dummies for villages				
Kadival (Ref. Mangalagudda)	-0.040 (0.660)	-0.008 (0.932)	-0.083 (0.395)	0.032 (0.758)
Chimmalagi (Ref. Mangalagudda)	0.329*** (0.000)	0.300*** (0.000)	0.243*** (0.004)	0.224** (0.011)
Chikanal (Ref. Mangalagudda)	0.184** (0.031)	0.217** (0.010)	0.165** (0.048)	0.161* (0.061)
Constant 1	-1.989*** (0.000)	-2.097*** (0.000)	-2.365*** (0.000)	-2.548*** (0.000)
Constant 2	0.351 (0.275)	0.282 (0.431)	0.098 (0.751)	-0.001 (0.997)



**Table 3** continued

Variables	Model 1	Model 2	Model 3	Model 4
Observations	2287	2267	2232	2097
Wald-Test	139.5	166.7	260.9	318.3
P-Wert	(0.000)	(0.000)	(0.000)	(0.000)
Pseudo R-squared	0.0493	0.0634	0.0933	0.114

\*\*\*/\*\*/\* Significant at the 1 %/5 %/10 %-level of significance

The estimation results show that deprivation with respect to three out of ten MPI indicators correlates significantly with a lower level of happiness, while seven out of ten indicators cannot be shown to significantly impact subjective well-being.

Going more into detail, both of the education indicators show the tendency that objective deprivation leads to lower happiness, but the effect is only significant for one indicator; persons living in a household in which no member has completed at least 5 years of schooling show a lower probability of being happy than persons in households which are not deprived in this respect. The estimated marginal effect is 3.8 % points, i.e. the probability of being not very or not at all happy is 3.8 % points higher for persons from households who are deprived in this respect.<sup>13</sup> Lack of school enrolment of any school-aged child in years 1–8, however, does not significantly coincide with lower happiness at standard levels of significance.

While for education a certain correlation between the objective well-being indicators and happiness can be found, this is not the case for the two MPI health indicators. Happiness of villagers does not significantly change whether a household experienced child mortality or not. The same result is observed for malnutrition. Happiness for villagers from households with and without problems with malnourishment does not significantly differ. As Sen (2009: 285–286) puts it: “The internal view of the patient may be seriously limited by his or her knowledge and social experience. A person reared in a community with great many diseases and little medical facilities may be inclined to take certain symptoms as “normal” when they are clinically preventable.”<sup>14</sup>

With respect to the six MPI indicators for the standard of living, the estimation results are mixed. For two MPI indicators, there is a significant impact of deprivation on subjective well-being: deprivation with respect to ownership of assets and deprivation with respect to flooring lead to a significantly lower level of happiness (marginal effects are 5 and 4 % points). In contrast, lack of electricity, sanitation, access to clean water and cooking fuel do not significantly influence the probability of being more or less happy. We will interpret these results in detail in the conclusion in Sect. 5. Already at this point, it might be interesting to notice that MPI indicators for which the vast majority of households is deprived (e.g. lack of sanitation or cooking fuel) or for which the vast majority of households is not deprived (e.g. lack of electricity or access to clean water) do not significantly correlate with subjective well-being. This can be interpreted as an argument for the hypothesis that people adapt to problems if almost all those around them suffer from the same issues thus making the households similar in this respect. The other way of seeing this is that being non-deprived does not necessarily

<sup>13</sup> Estimated marginal effects for all models are available upon request.

<sup>14</sup> Banerjee and Duflo (2007: 150) in contrast report that food shortages do negatively affect happiness. However, the difference may be due to the fact that fears and psychological stress in times of acute food shortages decrease happiness in the short-run but that people adapt to the long-run consequences of malnutrition.

increase subjective well-being if almost all households are non-deprived. As such, a higher level of opportunities might also imply a higher level of aspirations thereby not positively influencing subjective well-being (Bruni 2008: 121). In contrast, for the three MPI indicators which influence the probability of being happy the households in the villages are much less similar: e.g. 53 % of the households are deprived with respect to ownership of assets, 47 % are not. 38 % of the household are deprived with respect to flooring, but 62 % are not. Our estimation results thus indicate that “relativity” and “status goods” may be particularly important for subjective well-being: goods are valued if not everybody is able to possess them and problems are considered to be less important if others suffer from the same problems (Brown et al. 2011; Bookwalter and Dalenberg 2010) (Table 3).

Our results for the socio-demographic control variables show that all things equal, men tend to be less happy than women in the villages in rural Karnataka (even if significance is not given in model 1), and heads of the households consider themselves less happy when compared to other people in the households. At least the latter observation might be interpreted by the fact that greater responsibility for the household implies additional pressure on the heads of the households and makes them feel less happy. Greater awareness of problems could be another possible explanation for this phenomenon. The older the villagers are, the lower is the subjective level of well-being.<sup>15</sup> Contrary to other findings (e.g. Graham 2008: 85), marital status does not significantly impact the level of subjective well-being, but caste structure does: all else equal, members of scheduled castes and scheduled tribes have a significantly lower probability of being very or extremely happy. Moreover, members of religions other than Hindu—although there are rather few in total—*ceteris paribus* show a significantly higher subjective well-being.

As explained in Sect. 4, MPI measurement of standard of living avoids the use of income as a measure of well-being. To assess whether the neglect of financial means information might be a problem for the MPI measurement of well-being, we have integrated additional indicators for household-level financial means as a proxy for the standard of living into our *model 2*. Our estimation results clearly confirm for our villages with high degree of poverty that—even when controlled for MPI deprivation dimensions—a lower level of per capita equivalence household income significantly coincides with a substantially lower level of happiness: Villagers with a lower per capita income show a significantly lower happiness.

Also with respect to the degree of indebtedness of households our estimation results confirm that “financial means” matter for subjective well-being: compared to households that do not have debt problems, households which sometimes or often have debt problems show significantly lower levels of subjective well-being (Graham 2008: 85; Howell and Howell 2008). Thereby, the estimated marginal effects are particularly high for the financial variables and thus confirm the important role of financial deprivation for subjective well-being assessments: villagers who often suffer from debt problems have a more than 10 % points higher probability of being not very or not at all happy. Lack of land ownership also correlates in a significant manner with lower happiness and underlines the role of assets for subjective well-being. Owning no livestock, however, cannot be shown to influence happiness in a significant manner. An interesting fact to note is that the dummy variable for scheduled castes and scheduled tribes becomes insignificant when including information about financial deprivation. This is, however, plausible, as part of the deprivation effect is then measured by the additional financial variables

<sup>15</sup> Contrary to many existing studies that find non-linearities in the relationship between age and happiness (e.g. Easterlin 2008), this cannot be confirmed for our villages. Corresponding estimations are not presented here.

Our findings for model 2 thus demonstrate that deprivation with respect to a household's financial means has a significant negative impact on happiness. At least for low-income countries it may therefore be a problem that the MPI measurement of standard of living does not explicitly consider the financial means of a household.

As described in Sect. 4 there are also other possible dimensions of capability deprivation which are so far—mainly due to data reasons—not included in the MPI. In *model 3* we therefore include additional variables about “missing dimensions” of capability deprivation to analyse their possible role on subjective well-being. Our estimation results reveal that—also when controlling for income differences—villagers who seek more work are less happy (marginal effect is 3.7 % points) than villagers who are satisfied with the amount of work they currently have. This indicates a variety of non-financial burdens that unemployment and underemployment bring about which may go well beyond the impact of lower income, implying a lack of self-respect or fulfilment and provide a substantial contribution to social exclusion. As such, employment and underemployment which Alkire (2007) calls a “missing dimension of poverty research” must be included when impacts on happiness are analysed.

Our estimation result also confirm that Alkire's (2007) “missing dimension of the ability to go about without shame” is crucial for individual happiness: villagers who feel that they are only occasionally, rarely or even never treated with respect, show a significantly lower probability (marginal effect 5.3 % points) of being happy than villagers who say that this is often or almost always the case.

Another “missing dimension of poverty research” is “physical safety”. Victims of a crime, however, do not show significantly lower subjective well-being, although the estimated coefficients are consistently negative, but never substantial at a 10 % level of significance.

The last of Alkire's “missing dimensions” (besides subjective well-being) is agency and empowerment. We find that villagers who say they do not have the opportunity to change things in their village community are significantly less happy than villagers who feel they do. The marginal effect is almost 12 % points and thus particularly large. However, other things equal, villagers from households which are not represented in panchayat show a significantly higher level of subjective well-being than villagers from households that are represented in the panchayat. This somehow might fit to the findings derived above that heads of the households are less happy on average. On the one hand, there is the positive effect of the agency freedom on happiness; on the other hand commitments and responsibilities may coincide with a higher burden or with a higher awareness of problems and deficits. For instance, being directly involved in political bodies like panchayat may expose the members to influences that are known to decrease happiness such as corruption, lack of free choice or of genuinely democratic procedures (see Inglehart et al. 2008 or Graham 2011).

To allow for data-based international comparison of many countries, the MPI measures multidimensional poverty and deprivation only at the household-level. In order to analyse a possible impact of individual deprivation on subjective well-being, *model 4* takes into account additional individual information about deprivation in the MPI dimensions education, health and standard of living.. As the two individual indicators for the MPI education dimension “Years of schooling” and the health dimension “Nutrition” are directly correlated with the corresponding household-level MPI deprivation indicators, model 4 does not include the two corresponding household-level indicators. Villagers who have attended less than 5 years of schooling are less happy compared to villagers who have attended school for 5 years or more. The marginal effect is 2.5 % points and significant at least at a 10 %-level of significance. The individual data thus confirm the result of models

1 and 2 that deprivation with respect to education coincides with a lower degree of happiness. As for the corresponding household-level MPI indicator, our estimations do also not find a significant impact of individual malnourishment on happiness. However, if we measure health based upon individual assessment we find a strong impact of individual health on happiness: persons who admit that they were often ill during the last year are significantly less happy (marginal effect is almost 5 % points) than villagers who did not suffer often from illnesses. This may indicate that health impacts the well-being of individuals rather than that of households. Individuals may refrain from addressing their symptoms from diseases although they are suffering and much more impacted personally.

Not only at the household-level, but also at the individual level, a particularly strong impact of income poverty on happiness can be found: villagers who say that they are personally not able to spend more than 420 Rs. per year have a significantly lower probability of being happy than villagers who are above this poverty threshold. And people who cannot individually spend more than 420 Rs. per day show a 7.7 % points higher probability of being unhappy.

To summarise, our estimation results of model 4 demonstrate that all three dimensions of the MPI (education, health and standard of living) play a role for subjective well-being at the individual level, and that the relation to happiness seems to be closer on the individual-level than at the household-level.

## 5 Conclusions and Outlook

The basic focus of our paper is on the question how and to which degree poverty as measured by the United Nation's Multidimensional Poverty Index (MPI) as an assessment of objective well-being coincides with happiness as a measure of subjective well-being. The relationship between measures of objective and subjective well-being and their opportunities and limits are controversially discussed in the literature. Our findings suggest that the two concepts—in our case MPI measurement and happiness—provide complementary insights, and that their combined application in empirical studies allows for promising and valuable insights.

First, we find a positive correlation between objective well-being and subjective well-being: in multivariate ordered probit estimations for three out of ten MPI indicators (one indicator for education and two for standard of living), an impact of MPI deprivation on happiness can be shown. However, at the same time, for seven out of ten MPI household-level indicators, there is no significant impact of MPI deprivation on individual subjective well-being as the correlation is weak. Based on the human development and capability approach, the MPI aims at analysing real freedoms. As such, our findings that only a minority of MPI indicators is significantly correlated with happiness emphasises on the one hand side the need to take into account real freedoms irrespective of their impacts on happiness.<sup>16</sup> On the other hand side our findings demonstrate that there is still need and potential for improving MPI well-being measurement.

---

<sup>16</sup> For example: almost all people in the four villages attach a very high value to the freedom to live a long and healthy life (Moczdadlo et al. 2015: 555). However, as is shown here, even the death of household members does not necessarily reduce the peoples' happiness. Therefore, to take into account their right to live and their freedom to live a long and healthy life which they highly value, mortality and health have to be assessed, irrespective of their impacts on happiness.

A closer look at the results reveals that “relativity” towards other villagers seems to be of utmost importance for subjective well-being and thus for the above mentioned results: For all three MPI indicators that affect subjective well-being (notably for deprivation with respect to schooling, assets and flooring) the situation in the villages is rather heterogeneous: This implies that similar shares of the population are and are not deprived at the same time. In contrast, for many MPI indicators that do not influence happiness, the situation is much more homogenous: if almost all households are deprived (as e.g. with respect to lack of sanitation or with respect to the use of unhealthy cooking fuel) or if almost all households are not deprived (as e.g. with respect to access to clean water or electricity), there is no positive or negative impact on well-being. Due to framing effects and adaptation processes, challenges are considered to be less relevant if many others face the same problems. Furthermore, opportunities or positive aspects are not valued if everybody profits from them. From an MPI perspective of objective well-being measurement, the findings indicate that it is meaningful to assess objective well-being by considering deprivation of single households or persons, as well as to take into account relativity and distributional effects.

The concept of the MPI measures standard of living without referring to income. Our estimation results, however, make it evident that financial means both at the household and at the individual level are major determinants of the capability to be happy. Furthermore, over-indebtedness of households is a severe problem in the villages for a substantial share of households thereby negatively affecting subjective well-being. At least for analyses of poor regions, we conclude that when seriously considering all factors that make people suffer there can be a problem if an objective well-being measure like the MPI neglects income or debts. By including income and debts, we can take into account the fact that the poor often feel they are exposed to a lot of financial and psychological stress no matter whether self-reported happiness levels are low or not (Banerjee and Duflo 2007: 150).

Another important finding of our empirical analyses is the necessity to integrate further dimensions of capability deprivation into the MPI to mitigate a potential “missing dimensions” problem. Among the four “missing dimensions” (besides subjective well-being) highlighted by Alkire (2007), notably ‘employment and underemployment’, ‘agency and empowerment’ and the ‘ability to go about without shame’, have been shown to significantly influence villagers’ happiness. Regarding the fourth dimension of ‘physical safety’, impacts on happiness have not been found to be significant, but this may be because we need to focus more on this missing dimension, e.g. by focusing specifically on domestic violence. The prior discussion illustrates that also from a MPI perspective of objective well-being measurement it is worth it to look at the drivers and determinants of happiness.

Being able to measure objective well-being and multidimensional poverty at the household, but also at the individual level, we find a closer relationship between individual deprivation in the MPI dimensions (education, health and standard of living) and individual happiness than between MPI household-level deprivation and happiness. Thus, it makes sense to measure multidimensional poverty not only at the household-level, but also at the individual-level.

In general, our estimation results can also shed some light on opportunities and limits of subjective well-being measurement. For instance, we find that the use of dung, wood or charcoal for cooking does not have a significant impact on subjective well-being.<sup>17</sup>

<sup>17</sup> The fact mentioned above that those who are more frequently ill are less happy does not contradict with the insignificance of unhealthy cooking, as many other health risks and diseases may make people unhappy.

However, many health studies have noted (e.g. Wagstaff et al. 2006) that this type of cooking can be very dangerous to people's health. So should the use of unhealthy cooking fuel be accepted as it does not lower happiness even though medical studies show that it is dangerous? Information asymmetries could explain why the people do not worry about it. Thus, it might be an appropriate and adequate response to raise awareness instead of not taking action.

We therefore conclude that an adequate combination of subjective and objective well-being measurement is highly policy-relevant. A people-centred objective approach, like the Human Development and Capability Approach, (see e.g. Binder 2014: 1198) cannot ignore human suffering no matter if it is "only subjective" or also corresponding with deficits in objective well-being. Moreover, human suffering without "objective reasons" may indicate that the informational base used for the objective assessments may be too narrow and ignore important missing dimensions that drive the comprehensive overall subjective evaluation. When objective deprivation coincides with low happiness, this indicates that people are not only deprived, but actually suffering. From a people-centred perspective, this indicates deficits in domains that are of high value and important to the people. This implies a need for action of a policy which aims at corresponding to beings and doings that people really value.

It has also been shown that deficits in objective well-being or even extreme dangers to people's health and life (e.g. lack of access to safe drinking water or sanitation) result in no significant reduction of happiness. However, these cases are highly policy relevant. They indicate that awareness-raising and information may be indispensable before people can be ready to actively engage in remedies to overcome persistent deficits and dangers. Moreover, in democracies adaptation may hinder people to express their objective problems which may in turn reduce the political responsiveness and legitimacy of political institutions (Graham 2011).

Our empirical analysis and the previous illustrations thus demonstrate that both, the concept of objective well-being measurement (here based upon the MPI) and the concept of subjective well-being measurement (here based upon happiness), have their own merits and can serve as complementary assessments providing specific insights with a different focus (Noll 2013; Graham 2008: 82). This underlines, that combining both, objective and subjective approaches, as we did in this paper, allows for additional insights into strengths and weaknesses of both kinds of assessments and might help to develop more adequate policy strategies, but also more adequate well-being measures.

**Acknowledgments** The paper uses micro-level household and individual data generated within an independent scientific evaluation of the "BayerCrop Science Model Village Project (MVP)". Survey costs are funded by Bayer CropScience. The authors are independent in their research and have no conflict of interest. We thank two anonymous referees for their valuable comments. All remaining errors are our own.

## References

- Alkire, S. (2007). The missing dimensions of poverty data: Introduction to the special issue. *Oxford Development Studies*, 35(4), 347–359.
- Alkire, S., & Robles, G. (2015). *Multidimensional Poverty Index—2015: Brief methodological note and results*. Oxford: Oxford Poverty and Human Development Institute.
- Alkire, S., & Santos, M. E. (2010). Acute multidimensional poverty: A new index for developing countries. *Human Development Research Paper*, 2010/11.

- Alkire, S. & Santos, M. E. (2011). Acute multidimensional poverty: A new index for developing countries. In: *Proceedings of the German development economics conference*, No. 3, Verein für Socialpolitik.
- Alsop, R., Bertelsen, M. F., & Holland, J. (2006). *Empowerment in practice from analysis to implementation*. Washington, D.C.: The World Bank.
- Anand, S., & Sen, A. (2000). Human development and economic sustainability. *World Development*, 28(12), 2029–2049.
- Banerjee, A., Deaton, A., & Duflo, E. (2004). Wealth, Health, and health services in rural Rajasthan. *The American Economic Review*, 94(2), 326–330.
- Banerjee, A. V., & Duflo, E. (2007). The economic lives of the poor. *Journal of Economic Perspectives*, 21(1), 146–167.
- Binder, M. (2014). Subjective well-being capabilities: Bridging the gap between the capability approach and subjective well-being research. *Journal of Happiness Studies*, 15, 1197–1217.
- Blanchflower, D. G. & Oswald, A. J. (2011). *International Happiness*. Cambridge, Mass: National Bureau of Economic Research, Working Paper 16668.
- Bookwiler, J. T., & Dalenberg, D. R. (2010). Relative to what or whom? The importance of norms and relative standing to well-being in South Africa. *World Development*, 38(3), 345–355.
- Brown, P. H., Bulte, E., & Zhang, X. (2011). Positional spending and status seeking in rural China. *Journal of Development Economics*, 96(1), 139–149.
- Bruni, L. (2008). Back to aristotle? Happiness, eudaimonia, and relational goods. In B. Luigino, F. Comim, & M. Pugno (Eds.), *Capabilities and happiness* (pp. 114–139). Oxford: Oxford University Press.
- Crespo, R. F., & Mesurado, B. (2015). Happiness economics, eudaimonia and positive psychology: From happiness economics to flourishing economics. *Journal of Happiness Studies*, 16, 931–946.
- Daraei, M., & Mohajery, A. (2013). The impact of socioeconomic status on life satisfaction. *Social Indicators Research*, 112(1), 69–81.
- Deaton, A. (2008). Income, health and well-being around the world: Evidence from the Gallup world poll. *Journal of Economic Perspectives*, 22(2), 53–72.
- Diener, E., Lucas, R., Schimmack, U., & Helliwell, J. F. (2009). *Well-being for public policy*. New York: Oxford University Press.
- Easterlin, R. A. (1974). Does Economic growth improve the human lot? In P. A. David & M. W. Reder (Eds.), *Nations and households in economic growth: Essays in honor of Moses Abramovitz* (pp. 89–125). New York: Academic Press Inc.
- Easterlin, R. A. (2008). Life cycle happiness and its sources: Why psychology and economics need each other. In B. Luigino, F. Comim, & M. Pugno (Eds.), *Capabilities and happiness* (pp. 28–59). Oxford: Oxford University Press.
- Frey, B. S., & Stutzer, A. (2002). *Happiness and economics: How the economy and institutions affect well-being*. Princeton: Princeton University Press.
- Gasper, D. (2005). Subjective and objective well-being in relation to economic inputs: Puzzles and responses. *Review of Social Economy*, 63(2), 177–206.
- Graham, C. (2005). Insights on development from the economics of happiness. *The World Bank Research Observer*, 20(2), 201–231.
- Graham, C. (2008). Some insights on development from the economics of happiness. In B. Luigino, F. Comim, & M. Pugno (Eds.), *Capabilities and happiness* (pp. 81–113). Oxford: Oxford University Press.
- Graham, C. (2011). Adaptation amidst prosperity and adversity: Insights from happiness studies from around the world. *The World Bank Research Observer*, 26(1), 105–137.
- Greene, W. (2011). *Econometric analysis* (7th ed.). New Jersey: Prentice Hall.
- Haagenars, A., de Vos, K., & Zaidi, M. A. (1994). *Poverty statistics in the late 1980s: Research based on micro-data*. Luxembourg: Office for Official Publications of the European Communities.
- Hafen, C. A., Singh, K., & Laursen, B. (2011). The happy personality in India: The role of emotional intelligence. *Journal of Happiness Studies*, 12(5), 807–817.
- Helliwell, J. F., & Barrington-Leigh, C. P. (2010). Viewpoint: Measuring and understanding subjective well-being. *Canadian Journal of Economics*, 43(3), 729–753.
- Holder, M. D., Coleman, B., & Singh, K. (2012). Temperament and Happiness in Children in India. *Journal of Happiness Studies*, 13(2), 261–274.
- Howell, R. T., & Howell, C. J. (2008). The relation of economic status to subjective well-being in developing countries: A meta-analysis. *Psychological Bulletin*, 134(4), 536–560.
- Huang, J. (2013). Asset poverty and happiness in Urban China. *China Journal of Social Work*, 6(2), 163–176.
- Ibrahim, S., & Alkire, S. (2007). Agency and empowerment: A proposal for internationally comparable indicators. *Oxford Development Studies*, 35(4), 379–403.



- India Human Development Report. (2011). *Towards social inclusion*. New Delhi: Oxford University Press, Institute of Applied Manpower Research.
- Inglehart, R., Foa, R., Peterson, C., & Welzel, C. (2008). Development, freedom and rising happiness: A global perspective (1981–2007). *Perspectives on Psychological Science*, 3(4), 264–285.
- Kahneman, D., Diener, E., & Schwarz, N. (1999). *Well-being: The foundations of hedonic psychology*. New York: Russell Sage.
- Koydemir, S., Simsek, Ö. F., Schütz, A., & Tipandian, A. (2013). Differences in how trait emotional intelligence predicts life satisfaction: The role of affect balance versus social support in India and Germany. *Journal of Happiness Studies*, 14(1), 51–66.
- Long, J. S., & Freese, J. (2014). *Regression models for categorical dependent variables using stata* (3rd ed.). College Station, TX: Stata Press.
- Moczdalo, R., Strotmann, H., & Volkert, J. (2015). Corporate contributions to developing health capabilities. *Journal of Human Development and Capabilities*, 16(4), 549–566.
- Neff, D. (2012). Adaptation, poverty and subjective well-being: Evidence from South India. In D. A. Clark (Ed.), *Adaptation, poverty and development. The dynamics of subjective well-being* (pp. 137–157). Houndmills: Palgrave Macmillan.
- Noll, H.-H. (2013). Subjective social indicators: Benefits and limitations for policy making. *Social Indicators Research*, 114(1), 1–10.
- Pressman, S., & Summerfield, G. (2002). Sen and capabilities. *Review of Political Economy*, 14(4), 89–113.
- Rai, Y., Dutta, T., & Gulati, A. K. (2010). Quality of Life of HIV-infected people across different stages of infection. *Journal of Happiness Studies*, 11(1), 61–69.
- Reddy, B., & Olsen, W. (2012). Adaptation of the rural working class in India: A case study of migrant workers. In D. A. Clark (Ed.), *Adaptation, poverty and development. The dynamics of subjective well-being* (pp. 181–214). Houndmills: Palgrave Macmillan.
- Robeyns, I. (2005). The capability approach: A theoretical survey. *Journal of Human Development*, 6(1), 93–114.
- Royo, M. G., & Velazco, J. (2006). *Exploring the relationship between happiness, objective and subjective well-being: Evidence from rural Thailand*, ESRC research group on well-being in developing countries, WeD working paper 16, University of Bath, Bath UK.
- Schimmel, J. (2009). Development as happiness: The subjective perception of happiness and UNDP's analysis of poverty, wealth and development. *Journal of Happiness Studies*, 10(1), 93–111.
- Sen, A. (1985). Well-being, agency and freedom: the Dewey Lectures 1984. *The Journal of Philosophy*, 82(4), 169–221.
- Sen, A. (1992). *Inequality reexamined*. New York: Oxford University Press.
- Sen, A. (1999). *Development as freedom*. Oxford: Oxford University Press.
- Sen, A. (2009). *The idea of justice*. London: Penguin.
- UNDP. (2010). *Human development report 2010*. New York: The Real Wealth of Nations: Pathways to Human Development.
- Veenhoven, R. (1984). *Conditions of happiness*. Boston, Lancaster: Reidel, Dordrecht.
- Veenhoven, R. (2003). Arts-of-Living. *Journal of Happiness Studies*, 4(4), 373–384.
- Veenhoven, R. (2015). Informed pursuit of happiness: What we should know, do know and can get to know. *Journal of Happiness Studies*, 16(4), 1035–1071.
- Volkert, J., Strotmann, H., & Moczdalo, R. (2014). Sustainable human development, corporate potentials and challenges. The case of Bayer CropScience's cotton seed production in rural Karnataka (India), UFZ-Centre for Environmental Research, UFZ discussion paper 5/2014—GeNECA 11, Leipzig.
- Wagstaff, A., Claeson, M., Hecht, R. M., Gottret, P., & Fang, Q. (2006). Millennium development goals for health: What will it take to accelerate progress? Disease control priorities in developing Countries. In D. T. Jamison (Ed.), *Disease control, priorities in developing Countries* (pp. 181–194). Washington, D.C.: Oxford University and the World Bank.
- World Bank. (2012). *Jobs, world bank report 2013*. Washington, D.C.: World Bank.

Reproduced with permission of copyright owner.  
Further reproduction prohibited without permission.