Capabilities vis-a-vis Happiness: Evidence from Pakistan

HASAN, HAMID

9 March 2013

Capabilities vis-à-vis Happiness: Evidence from Pakistan

Hamid Hasan*

"Valuing a life and measuring the happiness generated in that life are two different exercises".

-Amartya Sen (1985)

Abstract

While research on happiness and capabilities has been growing rapidly, they seldom treated together for useful policy insights. Using a unique self-reported questionnaire about mental well being in the Pakistan Socio-Economic Survey (PSES), we measure Sen's capabilities (freedom, functionings and efficiency) of "being achieved" and compare them with our happiness indicator of subjective well-being. It is shown that the PSES capability indicators of subjective well-being (SWB) provide distinctive information while together with the happiness indicator they capture additional insights about SWB. We show that capabilities are the most important and stable determinants of happiness. We rank policy units on the basis of capabilities and happiness, which turn out to be quite different from each other, and show that this provides useful policy insight.

Keywords: subjective well being; happiness; capabilities; freedom; functioning; conversion efficiency

1. Introduction and background

Induced by growing dissatisfaction with resources-based measures of well being, particularly Gross Domestic Product (GDP), the inclination of economics towards moral philosophy and development ethics is relatively recent. The dissatisfaction is not new but reflected long time ago, for example, in the early writings of Denis Goulet (1931-2006).[1] What is new is an increasing interest in complementing resources-based measures of well being with alternative indicators. There is nothing wrong with GDP per se as long as it is restricted to the purpose for which it was developed. Policy makers and governments started using it as a measure of human well being primarily because of its simplicity. To overcome problems

* Assistant Professor, International Institute of Islamic Economics Islamabad, Pakistan.

[1] He is considered to be the father of development ethics. See Denis Goulet (2006).

associated with GDP as a measure of human well being, Mahbub ul Haq constructed the Human Development Index (HDI) as an indicator of human well being.[2]

Although the HDI is a crude measure it is as simple and transparent as GDP. The purpose was two-fold: to provide a single numerical value to policy makers like GDP and to initiate a debate on human development issues (see, for example, Blanchfower and Oswald 2005). Since publication of the first human development report in 1990, there has been a major shift in thinking in the development paradigm; from *commodity-centred* development to *people-centred* development. This was recognized in the Stiglitz Commission Report (2009) which emphasized the shift from measuring economic production to measuring well being of people.[3] This approach is summed up in the following quote:

> "Human development, as an approach, is concerned with what I take to be the basic development idea: namely, advancing the richness of human life, rather than the richness of the economy in which human beings live, which is only a part of it." (Amartya Sen)

There have been two major approaches to measuring the well being of people in the literature – objective (impersonal/ external evaluation) approach using cardinal measures and subjective (personal/ self evaluation) approach using ordinal measures.[4] Human Development Indices capture most of the objective measures of well being while the happiness indicator has been an important measure of subjective well

[2] The idea of HDI was proposed and implemented by Mahbub ul Haq, the founder of UNDP Human Development Report, in 1990 based on Amartya Sen's capabilities approach.

[3] A commission on the measurement of economic performance and social progress was set up in France in 2008 comprising twenty-two renowned economists and social scientists headed by Professor Joseph Stiglitz, Amartya Sen, and Jean Paul Fitoussi, including Bina Argarwal, Francois Bourguignon, and Nicholas Stern. Their report is available on www.stiglitz-sen-fitoussi.fr. A similar position was taken by Sen long ago in 1984 (see, Sen, 1984).

[4] See Kristoffersen, I. (2010) for issues concerning cardinal and ordinal measures.

being.[5] Sen criticizes commodity-based approaches of welfare assessment on the following grounds (Sen, 1985). First, these approaches do not take into consideration human diversity but instead assume homogeneity which is a gross simplification. Second, they are not focusing on an individual's abilities or disabilities but on what an individual possess or reveals to prefer, and last, these approaches are subject to adaptability, i.e., individuals adjust to their circumstances and do not show their true well-being in terms of possessions and preferences.

Sen's theoretical work in the field of welfare economics is all-encompassing as it gives importance to objective as well as subjective measures and adds new dimensions-the capabilities dimension-of human well-being. Capabilities and happiness are too closely related to each other, they however are distinct from each other as indicated by Dasgupta (1993, p. 3):

> "Two aspects of personhood have alternated in dominating the thinking of social philosophers over the centuries, each true in itself, but each quite incomplete without the other[…]If one vision sees us *doing* things, the other sees us residing in states of *being*. Where the former leads one to the language of freedom and rights, the latter directs one to a concern with welfare and happiness."

The capabilities approach encompasses both *doing* (e.g., freedom) and *being* (e.g., happiness) and hence captures additional insights about SWB. There is however no summary statistics or index that rank policy units on the basis of capabilities or incorporate such information in the existing measures of subjective well being. This

[5] HDI covers three dimensions of well being- health, education, and living standards (see HDR, 2010, p. 13). Recently, Alkire and Santos (2010) proposed a multidimensional poverty index (MPI), which modifies the HDI to meet the requirements of Millennium Development Goals (MDGs). Kahneman, in 1960's and, later, Easterlin (1974) developed an alternative approach in the form of subjective well-being or happiness.

sort of ranking is important since the distribution of happiness does not necessarily imply the distribution of capabilities. Moreover functioning and capabilities have intrinsic as well as policy/instrumental value as it provides information on mental health and has implication for happiness (Sen 1985).[6] We show that capabilities are the most important and stable determinants of happiness.

The empirical literature to-date has been focusing more on individual dimensions of capabilities, functioning or freedom in particular. With the exception of few papers, such as Anand et al (2011), most of these studies use objective indicators to quantify capabilities. The BHPS (British Household Panel Survey) and the German Socio-Economic Panel Survey use a 12-questions General Health Questionnaire (GHQ) which has information on the freedom aspect of "being achieved".[7] Alkire (2005, p.10) makes similar observation:

> "With respect to the measurement of freedom as indicated above, I observe that the literature to date has focused upon the measurement of functionings, and left process freedoms – and indeed opportunity freedoms – largely unaddressed thus far".

The information, contained in the GHQ on the freedom aspect of "being achieved" has not been capitalized as yet perhaps because it lacks other complementary information. PSES is the first survey that collects information on all aspect of capabilities in a parsimonious and generalized manner and this paper therefore has the advantage of being the first, to our knowledge, to analyse happiness vis-à-vis all aspects of capabilities.

[6] Some recent literature estimates the impact of capabilities on happiness (life satisfaction), such as Anand et. al. (2011) and Burchardt (2005).
[7] Anand et. al. (2011) developed their own survey instrument to measure the freedom aspect of capabilities.

We focus on capabilities of a single functioning, "being achieved", for reasons discussed in the methodology section, and measure Sen's capabilities in three dimensions, namely functioning, freedom, and conversion efficiency as in Sen (1985) through subjective indicators in a unique questionnaire about mental well being in the Pakistan Socio-Economic Survey (PSES).[8] These indicators are: sense-of-achievement (SA), sense-of-freedom-to- achieve (SFTA), and sense-of-ability-to-achieve (SATA) which measures Sen's functioning, freedom and conversion efficiency respectively. These indicators are based on individuals' perception of "being achieved".

Using statistical techniques, we show that the capability indicators contain information distinct from each other and from our happiness indicator[9]. We use these indicators to rank districts in Pakistan and construct a composite index of these three indicators, called Subjective Capability Index (SCI). Our capability rankings, individual and that of SCI, turn out to be quite different from the happiness ranking which provide further support to the idea of having capability based rankings. We also show how these differences could be used to identify policy-focus appropriate for each district.

The rest of the paper is organized as follows. Section 2 provides details on methodology of the paper. This section provides details on the selection of functioning, the nature of our capability measurement, and the statistical method employed in assessing its relevance and importance. Section 3 gives details of the data and questions used to measure different dimensions of capabilities and happiness.

[8] Kuklys (2005, p.34) notes: "There is no requirement that indicators have to be objective when evaluating welfare according to the capability approach."

[9] Happiness in this paper is considered to be one of the measures of SWB. Some, particularly those in economics, treat happiness and SWB as synonymous, while literature in psychology treats happiness as a narrower concept than SWB (see, for example, Bruni and Porta (eds.), 2007)

Section 4 report results of the exercise and, finally, Section 5 concludes the paper and identifies some relevant policy implication.

2. Methodology

This section discusses our selection of functioning and the advantages of subjective measure of capabilities over objective measures. It also describes the methods employed to demonstrate that the new indicators embody information not contained in the happiness indicator.

2.1. *Selection of functioning*

We consider *being-achieved* as an overall functioning, primarily because the capability approach is ultimately concerned with the ability to achieve combinations of valued functioning, as stated by Sen:

> 'Even though it is often convenient to talk about individual capabilities ([…]), it is important to bear in mind that the capability approach is ultimately concerned with the ability to achieve *combinations* of valued functionings'. Sen (2009, p. 233)

Some of the several reasons for taking a single overall functioning as a proxy for combinations of valued functionings are:

1) Since the extent or nature of freedom (opportunity and process) is different for different functionings, taking more than one functionings at a time would be problematic since it would be very difficult to isolate freedoms associated with each functioning. That's why Alkire (2005, p.15) argues:

> 'Thus I argue that autonomy or process freedoms must be evaluated with respect to *each* basic functioning. The reason for this is that the autonomies required for a woman to decide to seek paid employment, to be nourished, to plan her family, to vote, to attend literacy courses may

be present in varying degrees and it is precisely these variations that may identify the 'freedom' associated with a particular functioning or a particular deprivation'.

2) Because of the complexity associated with measuring capabilities, it is easier to analyze one functioning at a time in all its important capability dimensions (functionings, freedom and conversion efficiency). There is an apparent trade-off: taking multiple functionings only in one dimension or taking a single functioning in all its dimensions. By taking a single specific functioning we can avoid the problem of aggregating multiple functionings, it however may create a problem of omitted functioning bias. Kuklys (2005) highlighted i) the selection of relevant functionings, ii) measurement of functionings at the individual level, iii) aggregation of functionings into a composite measure of individual welfare, and iv) aggregation of a functioning across individuals, as methodological problems in measuring functionings. These problems however can be avoided, or greatly minimized at least, when we consider an overall functioning-"being achieved"-which gives a sense of achievement in life.

2.2. *Measurement of capability*

There are at least two distinct ways to measure capability dimensions in the empirical literature on capabilities (Anand et al. 2011): direct measurement of capability dimensions by self-reported questionnaire consistent with theory (e.g. Anand and Martin 2006, Anand et al. 2011, Ramos and Silber 2005), and indirect measurement of capability dimensions by constructing latent variables for capability dimensions (e.g. Kuklys, 2005, Krishnakumar 2007 and 2008, and Krishnakumar and

Ballon 2008).[10] We resort to a method that lies somewhere in-between the two: capabilities' are measured directly from self-reported questionnaire by categorizing questions on the basis of the literature on capabilities rather than measuring them *a*theoretically using latent variable modeling techniques.[11]

In this paper capability is measured subjectively,[12] primarily because of the fact that the PSES questionnaire that we are using is subjective in nature. It is also worthwhile to alert readers to the following problems associated with objective measurement:[13]

1) Objective measurements depend on revealed preferences and not on actual choices; it is therefore not obvious whether a preference is voluntary or involuntary. This is because both are observationally equivalent (for example, voluntary and involuntary unemployment, which requires different policy responses).[14] Moreover, the subjective measures of freedom, functioning, efficiency and happiness, have intrinsic value and may have instrumental value as in the case of capabilities, while objective measures such as income and education have instrumental or derivative significance.[15]

2) Sen himself argued in favor of self-reflective and deliberate judgment of people about the valuation of their lives. What is valuable for an individual cannot be

[10] The method used to measure SWB dimensions by self-reports is commonly referred to as Experience Sampling Method as opposed to Kahneman's Day Reconstruction Method. See Kahneman and Krueger (2006) for discussion.

[11] "Moving from ideal theory to non-ideal theory and empirical applications makes the selection of relevant capabilities even more complicated […], ranging from substantive proposals with elaborate theoretical underpinnings,[…], to the *a*theoretical practice that an investigator should simply conduct a survey in order to collect rich data (or use an existing survey) and let a statistical technique, such as factor analysis, "decide". (Robeyns, 2011)

[12] On the reliability of SWB measures, Krueger and Schkade (2007) found that both overall life satisfaction measures and affective experiences measures derived from the Day-Reconstruction Method showed test-retest correlations in the range of 0.5-0.7 which, they concluded, are sufficiently high to support much of the research on SWB.

[13] Anand et al. (2005) also measured capability subjectively for UK but by using a different set of questions. They however do not explicitly distinguish between functioning, freedom, and efficiency.

[14] Sen (1973) discussed at length problems with the revealed preference approach. See Sen (1971), among others, for discussion on the difference between observed and unobserved choices, and weaknesses of rationality axioms.

[15] See Sen (1991) on these issues.

judged without taking his/her views about it.[16] It is, therefore, the mental state that determines the behavior of an individual. A person committing suicide in the presence of all luxuries of life simply shows that he viewed his life worthless. Sen (1991, p. 20) commenting on the connection between welfare, preference, and freedom writes:

> "If individual preference is what counts, then role of 'the good of the individual' has to be derivative, unless, of course, the good of the individual is simply *defined* as the fulfillment of what the individual prefers (no matter what his or her motives may be). (Italics in original)

3) Objective well-being is a mean to attain subjective well-being as an end. A measure is more useful if measured by output (subjective well-being) rather than by inputs (objective-well being measures) alone, since preferences are state-dependent and a state is largely dependant on mental state.[17]

4) Subjective measurement encompasses a number of factors which are difficult to measure objectively. Commenting on the direct welfare effects of an act of choice, Sen (1997, p. 748) writes:

> "The person's well-being may be affected directly by the process of choice (…), and this requires that the reflective utility function (and the person's conception of her self-interest) be defined not just over culmination outcomes (such as final commodity vectors, as in standard consumer theory), but inter alia also over choice processes and their effects."

Hausman and McPherson (2009) argue that preference-satisfaction-basis of well-

[16] In the case of prisoners' dilemma, for example, what is individually desirable may not be optimal.
[17] Sen (1991) criticizes exclusive reliance on mental states for measuring welfare. See Robeyns (2011) on the issue of capabilities and utilitarianism.

being is questionable. They argue that:

> "Yet it is obvious that people's preferences are not always self-interested and that false beliefs may lead people to prefer what is worse for them even when people are self-interested. So welfare is not preference satisfaction, and hence it appears that cost-benefit analysis and welfare economics in general rely on a mistaken theory of wellbeing." (p. 1)

Instability and inconsistency in preferences are discussed in Sugden (2010) and Bykvist (2010) as weaknesses in preference satisfaction as a criterion of well-being.

5) Objective measurement is more vulnerable to the problem of endogeneity/simultaneity then subjective assessments. Objective achievements can have a feedback effect and may be different from actual achievement as actual achievement varies from person to person (because each person has a different goal in life).

2.3 Comparing dimensions of well being

We compare the distributions of capabilities and happiness with each other using the tools of exploratory data analysis (EDA)[18]: boxplots and histograms, and the formal statistical tests for equality of distributions. We regress happiness on different dimensions of capabilities, under different controls, to see how important capabilities are in determining happiness.[19]

[18] "Unless exploratory data analysis uncovers indications, usually quantitative ones, there is likely to be nothing for confirmatory data analysis to consider." (Tukey, 1977, p.3)

[19] We use the Kruskal-Wallis equality-of-populations rank test to test the relevance of each question in a dimension, since the response to each question is measured on discrete (ordinal) scale, while the distribution of each dimension is compared with each other using the Kolmogorov-Smirnov two-sample test since each dimension is measured on continuous scale.

This is followed by a ranking exercise, where we rank each district by capabilities and happiness. These rankings are obtained using the following procedure:

1- The self-reported score for each question (j) is added up to get a score of a dimension (D) for each individual (i) in the survey. Since there are J questions in each dimension, these are summed up to get scores for that dimension. i.e.,

$$D_i = \sum_j^J Q_{ji} \qquad (1)$$

All these dimensions are rescaled between zero and one to measure deprivation using the following formula:[20]

$$RSD_i = \frac{[D_i - \min D]}{[\max D - \min D]} \qquad (2)$$

where RSD is a rescaled D.

2- The score for each dimension in a district is obtained by taking a simple average of the RSD scores over all individuals in a district. Outliers are identified through boxplots for each district and dropped before computing the district average.

The average district scores are used to rank districts in all capability dimensions and their averages are used to construct composite index, Subjective Capability Index (SCI) which is a simple average of SA, SAFA and SATA.

The capability rankings are compared with our happiness ranking, which is further used to identify district-based policy focus.

[20] This formula has been extensively used in Human Development Reports.

3. The data

We use the Pakistan Socio-Economic Survey (PSES) 2002 dataset (at individual-level)[21]. This is a unique dataset which has information on capability dimensions. PSES surveys all urban and rural areas of the four provinces of Pakistan (Punjab, Sind, Baluchistan, and NWFP[22]) defined as such by the 1981 population census excluding FATA (Federally Administered Tribal Areas), military restricted areas, districts of Kohistan, Chitral, Malakand, and protected areas of NWFP. The population of the excluded areas constitutes about 4 percent of the total population**.**

A two stage stratified sample design was adopted for the 1998-99 PSES. Enumeration blocks in urban areas and Mouzas/Dehs/villages in rural areas were taken as primary sampling units (PSUs). Households within the sampled PSUs were taken as secondary sampling units (SSUs). Within a PSU, a sample of 8 households from urban areas and 12 households from rural areas was selected. Households covered during round I of the PSES were revisited during round II in 2000-01. After some adjustment due to attrition, the total sample for round II of the PSES turned out to be 4021 households (2577 rural and 1444 urban).

The dataset comprises of 6749 individuals who directly responded to the subjective questionnaire (21 questions), after list-wise (subject-wise) deletion of the missing values. Since the number of missing values is very low (around 2%) and their pattern is random (i.e., missing at random), deleting them in this way will not cause any statistical problem like bias.

The PSES uses twelve questions about mental well-being used by the British Household Panel Survey (BHPS) and adds nine more valuable questions. These

[21] The PSES (2002) is based on round II of the PSES. The sample design for round II is based on the sample design of round I conducted in 1998. Details of the sample design are given in Arif et al. (2001) and Siddiqui and Hamid (2003).
[22] NWFP is now known as Khyber-Pakhtoonkhwa.

additional nine questions with some questions from the BHPS are very important for subjectively measuring achievement (functioning), freedom to achieve, and ability to achieve (conversion efficiency). In fact the BHPS questions help to measure sense of freedom only. The additional nine questions in the PSES help to measure the ability to achieve and achievement subjectively, which are important dimensions of capabilities ignored by other surveys.

In the following we describe the questions used by PSES to quantify different dimensions of capabilities and happiness. At the outset, it is important to appreciate the fact that the questions posed under each indicator adequately serve the purpose of "being-achieved' in a generalized sense. The paper introduces three terms-sense of freedom-to-achieve (SFTA), sense of ability-to-achieve (SATA), and sense of achievement (SA), to capture freedom, conversion efficiency, and functioning of "being achieved" subjectively.

a). Sense-of-freedom-to-achieve (SFTA) consists of three senses of freedoms:

freedom of action, freedom of decision-making, and freedom of problem solving.

The following survey questions approximately define these senses:

Indicator: Sense of freedom to achieve

Question Statement	**Categories**
Q.1 Have you recently felt that you are playing a useful part in things?[23]	1. More so than usual 2, 3…
Q.2 Have you recently felt capable of making decisions about things?	4. Much less usual
Q.3 Have you been able to face your problems?	

The sense of freedom to act and participate captures whether or not people are allowed to engage in useful activities they value. The question about playing a useful

23 'The process aspect, being concerned with the freedom of the person's decisions, must take note of both (iia) the scope for autonomy in individual choices, and (iib) immunity from interference by others.' (Sen, 2002).

part in things shows one's freedom to do useful activities that matter one's interest (the agency aspect). The agency aspect concerns about seeking goals, performing religious duties, or fulfilling social responsibilities.

The question about being capable to make decisions reflects freedom in decision making. The reasons for the importance of perceived freedom are given below:

First, this is a very important question as far as democratic election process is concerned. An election process can be shown transparent amidst imposed implicit decision on majority of voters by, for example, feudal lords particularly in rural areas. Although it affects their sense of freedom in decision making yet it is not reflected in any objective criterion.

Second, freedom in decision making is also a major concern in gender and ethnic issues. In some societies females are not encouraged to make decisions about their careers. This adversely affects the freedom of women to achieve. In some regions, minority ethnic groups do not have the freedom to proceed in their preferred career. On the contrary, some systems favour a minority elite class. This severely affects the sense of freedom in the majority though legally everyone has equal freedom. This fact cannot be captured by an objective criterion since written documents and laws do not discriminate between elite (the minority) and non-elite (the majority) classes.

The last question regarding the ability to face up to problems reflects decision making ability in an adverse situation.

b) Sense of ability to achieve (SATA) is based on the following survey questions:

Indicator: Sense of Ability to achieve

Question Statement	Categories
Q.1 Do you normally accomplish what you want to?	1. Most of the time
Q.2 Do you feel you can manage situations even when they do not turn out as expected?	2..
Q.3 Do you feel confident that in case of a crisis you will be able to cope with it?	3. Hardly ever

These questions address the sense of ability at three levels of difficulty- from a normal situation to a situation of crisis. The SATA is a proxy for physical and psychological ability of an individual to convert his/her material and non-material resources into achievement. Accomplishment is one of the five components of well-being proposed in well-being theory by Seligman in the field of positive psychology.[24]

c) Sense of achievement is based on the following survey questions:

Indicator: Sense of achievement

Question Statement	Categories
Q.1 Do you think you have achieved the standard of living and the social status that you had expected?[25]	1. Very much
Q.2 How do you feel about the extent to which you have achieved success and are getting ahead?[26]	2…
Q.3 Do you feel life is interesting?	3. Not so much

[24] The other four are: positive emotion, engagement, relationships, and meaning and purpose.
[25] 'Functionings [achievements] are, in a sense, more directly related to living conditions, since they are different aspects of living conditions'. (Sen, 1987)
[26] '[…..]opportunity-freedom cannot be sensibly judged merely in terms of possession of commodities, but must take note of the opportunity of doing things and achieving results one has reason to value.' (Sen, 2002).

The first question covers one of the dimensions of HDI- access to decent standard of living- but in a subjective way. It complements HDI by adding information about level of satisfaction with standard of living. This level of satisfaction also takes into account aspirations and feeling of relative standard of living. The last two questions support these feelings.

The first question regarding standard of living may be subject to same criticism as a happiness indicator, e.g., adaptation problem. Including expectation somewhat minimizes the effect of adaptation as it asks about their living standard relative to their expectations, unless there is reason to believe that expectations by themselves suffer from adaptation.

d) Happiness is based on the following survey questions:

Indicator: Happiness

Question Statement	**Categories**
Q.1 Have you been feeling reasonably happy, recently considering all difficulties?	1. More so than usual 2, 3… 4. Much less usual
Q.2 Compared with the past, do you feel your life is:	1. Very happy
Q.3 On the whole, how happy are you with the kind of things you have been doing in recent years?	2… 3. Not so happy

These three questions ask about happiness- in general, in the past, and in the present. This will give us a reliable overall picture of happiness. In some studies, happiness indicator is constructed by the twelve questions in general health questionnaire (GHQ).[27] Moreover, some questions in GHQ are not directly relevant to happiness but about some other dimensions of SWB.

[27] GHQ is a part of the British Household Panel Survey (BHPS). However, happiness is measured by a single question in the Human Development Report (HDR, 2010).

The following section shows how each indicator is different from the other indicator. This is done by comparing their distributions graphically and statistically.

4. Results

A comparison of the boxplots in Graph 1 reveals that the three dimensions of capabilities have different distributions.[28] The middle 50% of the data for SATA (efficiency) is located very tightly around 0.4 whereas middle 50% of the data for SA (functioning) is well spread out between 0.2 and 0.4. The middle 50% of the data for SFTA (freedom) is clustered around 0.6. There is no overlap of the middle 50% of the SFTA and the first two dimensions (SATA and SA). This clearly indicates that SFTA contain information not shared by the last two.

Similarly, the middle 50% of the data on happiness (HAPP) is located firmly between 0.4 and 0.6 and share a small proportion with the first three capability indicators. Similar conclusions can be drawn from a comparison of the histogram in Graph 2. All histograms show distinct pattern.

Repeating the same exercise at district level averages of the data shows that distinction in SFTA, SATA, SA, and HAPP are more pronounced at district averages (See Graph 3 and Graph 4). There is no overlap of the middle 50% data across the four subjective well being dimensions in boxplots.

Formally testing the equality of distribution hypothesis using Kolmogorov-Smirnov two-sample test, provides further support to our conclusions from the comparison of boxplots and histograms. The null hypothesis of equality of distributions is rejected in each case at less than 1% significance level. It means that each distribution provide useful information about well-being not contained in the other distribution.

[28] The Kruskal-Wallis equality-of-populations rank test is applied to each indicator of a dimension. The null hypothesis of equality of distributions is rejected in each case at 1% significance level. This means that no distribution is redundant.

Table 2 reports results of OLS regressions, regressing happiness on the different dimensions of capabilities, under different controls. Similar to the capabilities scores, objective variables (income and education) are rescaled in-between 0 and 1 as in equation (2). All variables, except dummies, are standardized[29]. Doing so does not affect standard our errors but makes interpretation more convenient.[30] Coefficients on capabilities and objective variables are directly comparable. These results strongly support the hypothesis that functioning, capabilities, and efficiency are the most important and stable determinants of happiness. Including other controls do not alter our conclusions.[31] The same conclusions hold when we instead resort to a simultaneous equation model, where happiness is determined by functioning and functioning by efficiency, freedom and other controls (see Table 3). Using ordered logit estimation (Table 4[32]) or beta regression (not reported) also does not change our main conclusions[33].

Income and education has consistent positive level effect on happiness. OLS estimates reveals that this is true only for males. This however does not mean that education and income are not important as the underlying questions largely represent

[29] Hartwig and Dearing (1979, p.57-58) write: "Thus, symmetrizing distributions of variables by means of re-expression prior to the analysis of relationships between variables not only contributes to the analysis of non-linear relationships but also provides a solid basis for measures of explained variance and statistical significance.[...].For example, a set of values can be reexpressed in terms of standard deviations from the mean, i.e., "standardized," by subtracting the mean from each value and dividing by the standard deviation."

[30] Coefficient in this case would imply responses of the dependent variables in standard deviation to a one standard deviation increase in independent variable.

[31] Diagnostic tests indicate that residuals do not significantly depart from normality, regressors do not suffer from the problem of high multicollinearity, and models are not misspecified. The heteroscedasticity-consistent standard errors were used as in some models residuals were not homoscedastic. Our results do not change when we use robust regressions recommended by Zaman, Rousseeuw and Orhan (2001) and Atkinson (2009) which implies the absence of outlier effects.

[32] Results reported in Table 4 assume parallel-line regressions. We used the Brant test and found that the parallel-line assumption is violated. We applied the Ordinal Generalized Linear Model, OGLM, (which is appropriate when the parallel-line assumption is violated) and found no difference in our qualitative results and significance (apart from education in regression 3 which become insignificant). OGLM regression give slightly smaller coefficient relative to our ordered logit estimations.

[33] Beta regression assumes beta-distribution which is appropriate for variables bounded between 0 and 1.

happiness and capabilities at given resources. This is because the questions posed do not explicitly ask for such comparisons[34]. The fact that we mostly get significant coefficients points to the fact that people do value objective differences even when they are not explicitly asked to make such comparison.

The rural-urban results show that education has a consistently positive level effect on happiness in rural areas, whereas income has consistently positive level effect in urban areas. This again points towards social comparisons. Resorting to a simultaneous equation model, as in Table 3, however reveals that education and income are equally important in rural areas and education slightly more important in urban areas.

The fact that each dimension of capability contains information distinct from each other and from that contained in the happiness indicators, logically lead us to expect different district rankings. This ranking is given in Table 1. The average absolute difference in rankings between SCI, efficiency, functioning and freedom from happiness ranking is 9, 11.9, 8.3 and 10.5 respectively. Given that there are a total of 56 districts, these differences in rankings are significantly different from zero. Capability dimensions therefore do matter.

The last three columns of the table derive policy scores which signify policy emphasis on each dimension of capability for each district. 0 means lowest policy emphasis and 10 means highest. Notice that districts are organized in descending order, from least happy to the most happy. The least happy are generally the least capable in all dimensions and vice versa. Most of those in the middle are relatively good in some dimensions and lacking in others which results in different policy scores.

[34] Q3 on happiness for example is not the same as when you add to it "relative to those in the middle class" or "those living in Islamabad (a relatively modern developed area)".

5. Conclusions and discussion

Happiness is an important subjective measure of subjective well-being. It is however is a derived notion which among other things depends on Sen's capabilities. The distribution of happiness does not automatically imply the distribution of capabilities. It is therefore useful to rank policy units on the basis of capabilities to correctly identify unit-specific policy focus. This paper does so and demonstrates that capabilities are the most important and stable determinants of happiness and provides distinct information not contained in the happiness indicators.

Whereas its implication for happiness is an important aspect, capabilities have a standalone value as well as highlighted in epigram on the first page. Moreover, apart from its relevance to policy-makers, the distinction between happiness and capabilities is critical to explain phenomena like reverse migration, altruistic, and philanthropic behaviour. This also resonates well with the Authentic Happiness (AH) and Well-Being (WB) theories in positive psychology which distinguish happiness from other subjective well being dimensions (Seligman, 2011). The AH theory considers happiness uni-dimensional whereas the WB theory regards it as a multi-dimensional concept with accomplishment (or achievement) as one of its dimensions.

For policy purpose, it is important that we study feelings of individuals who are the ultimate target of policies. Layard (2006, p. C29) aptly comments about the importance of knowing the feelings of people for policy makers:

> "At present our policies are based far too much on policy-makers' judgements about how they would feel in a given situation, rather than detailed studies of how people actually feel".

Since an individual's achievements depend on personal goals, which vary from person to person. Individual achievements therefore can not be measured objectively as they are individual-specific. The only way this could be measured is to ask a person about his/her sense of achievement. PSES is the only survey that collects such information on all aspects of capabilities (functioning, freedom and efficiency). This data contain distinctive information not present in the happiness indicator and could be used to rank policy units and identify unit-based policy focus.

We do not insist that the questions used in PSES are the one that should be used in future research/surveys. These questions can be improved in a number of ways to capture additional aspects of capabilities. These questions for example, more or less, ask about an individuals' assessment of his/her happiness and capabilities at a given level of resources without any reference to a reference group/state. Asking for example a question like "How happy do you think you are….." is not the same as "how happy do you think you are relative to those living in Islamabad (relatively high income developed city)". The purpose of this paper was to demonstrate that capability dimensions provide information distinct from those contained in the happiness indicator and there are good reasons to have capability-based rankings of policy units.

The important questions as to how capability dimensions interact with each other and how to enhance them are beyond the scope of this paper and will be dealt with in subsequent research.

References

Alkire S., 2005. Measuring the Freedom Aspects of Capabilities, paper given to the American Economic Association Conference, (mimeo Harvard University).

Alkire, S. and Santos, M. E., 2010. Acute Multidimensional Poverty: A new index for developing countries. OPHI Working Paper 38, UNDP HDRO Background Paper 2010/11.

Anand, P. and Hees, M., 2006. Capabilities and Achievement: An Empirical Study. The Journal of Socio-Economics 35, 268-285.

Anand, P., Hunter, G., Carter, I., Dowding, K., Guala, F., and Hees, M., 2005.The Measurement of Human Capabilities. (URL: www.oecd.org/dataoecd/63/37/38363699.pdf)

Anand, P., Krishnakumar, J., Tran, N. B., 2011. Measuring welfare: Latent variable models for happiness and capabilities in the presence of unobservable heterogeneity. Journal of Public Economics 95, 205-215.

Arif, G.M., Ali, M. S., Nasir, Z.M., Arshad, N**.,** 2001. An Introduction to the 1998-99 Pakistan Socio-Economic Survey (PSES). MIMAP Technical paper series no. 4. Pakistan Institute of Development Economics, Islamabad, Pakistan.

Atkinson, A. C.,2009. Econometric applications of the forward search in regression: robustness, diagnostics, and graphics. Econometric reviews, 28 (1). 21-39.

Blanchflower, D. G. and Oswald, A. J., 2005. Policy Forum: Some Policy Implications of Behavioural Economics, Happiness and the Human Development Index: The Paradox of Australia. The Australian Economic Review 38(3), 307–18.

Burchardt, T., 2005. Are One Man's Rags Another Man's Riches? Identifying Adaptive Expectations Using Panel Data. Social Indicators Research, 74, 57-102.

Bykvist, K., 2010. Can unstable preferences provide a stable standard of well-being? Economics and Philosophy 26, 1-26. Cambridge University Press.

Easterlin, R., 1974. Does Economic Growth Improve the Human Lot? in Paul A. David and Melvin W. Reder, eds., Nations and Households in Economic Growth: Essays in Honor of Moses Abramovitz, New York: Academic Press, Inc.

Porta*, P.* L. *and* Bruni*,* L (eds).*,2*007. Handbook on the Economics of Happiness. Edward Elgar Publishing Limited, U.K.

Dasgupta, P., 1993. An Inquiry into Well-Being and Destitution. Clarendon Press. Oxford.

Goulet, D., 2006. Development Ethics at Work. Explorations, 1960-2002. Routledge, London.

Hartwig, F. and Dearing, B. E., 1979. Exploratory Data Analysis. SAGE.

Hausman, D. M. and McPherson, M. S**.**, 2009. Preference Satisfaction and Welfare Economics. Economics and Philosophy 25, 1-25.

Kahneman, D. and Alan B. K., 2006. Developments in the Measurement of Subjective Well-Being. Journal of Economic Perspective 20(1), 3-24.

Krishnakumar, J. and Ballon, P., 2008. Estimating Basic Capabilities: A Structural Equation Model Approach Applied to Bolivian Data. World Development 36(6), 992-1010.

Krishnakumar, J.,2007. Going beyond Functionings to Capabilities: an Econometric Model to Explain and Estimate Capabilities. Journal of Human Development 8(1), 39-63.

Krishnakumar, J. and Ballon, P., 2008. Estimating Basic Capabilities: A Structural Equation Model Approach Applied to Bolivian Data. World Development 36(6), 992-1010.

Kristoffersen, I., 2010. The Metrics of Subjective Wellbeing: Cardinality, Neutrality and Additivity. Economic Record 86(272), 98-123.

Krueger, Alan B., and Schkade, David A., 2007. The Reliability of Subjective Well-Being Measures. CEPS Working Paper No: 138.

Kuklys, W., 2005. Amartya Sen's Capability Approach-Theoretical Insights and Empirical Applications. Springer, Berlin et al.

Layard, R., 2006. Happiness and Public Policy: A Challenge to the Profession. The Economic Journal 116 (March). C24-C33.

Ramos, X. and Silber, J., 2005. On the Application of Efficiency Analysis to the Study of the Dimensions of Human Development. Review of Income and Wealth, 51(2), 285-310.

Siddiqui, R., and Hamid, S., 2003. Correlates of Poverty: Gender Dimensions. Final report, Pakistan Institute of Development Economics, Islamabad, Pakistan.

Sugden, R., 2010. Opportunity as mutual advantage, Economics and Philosophy 26(1), 47-68.

Robeyns, I., 2011. The Capability Approach. The Stanford Encyclopaedia of Philosophy (Summer Edition), Edward N. Zalta (ed.), (URL: http://plato.stanford.edu/archives/sum2011/entries/capability-approach)

Seligman, M. E.P., 2011. Flourish: A Visionary New Understanding of Happiness and Well-Being. Free Press. New York. NY 10020.

Sen, A. K., 1971. Choice Functions and Revealed Preference. The Review of Economic Studies 38(3), 307-317.

Sen, A. K., 1973. Behaviour and the Concept of Preference. Economica 40(159), 241-259.
Sen, A. K., 1984. Resources, Values and Development. Oxford: Basil Blackwell.

Sen, A. K., 1985. Commodities and Capabilities. North-Holland.

Sen, A. K., 1987. Standard of Living. Cambridge University Press. U.K.

Sen, A. K., 1991. Welfare, preference and freedom. Journal of Econometrics, 50, 15-29.

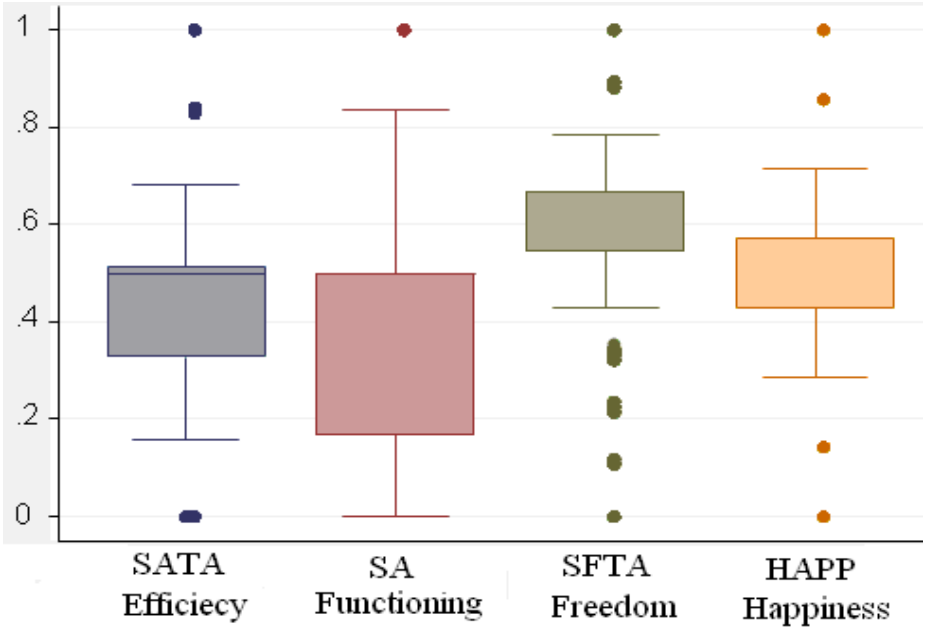
Sen, A. K., 1997. Maximization and the Act of Choice. Econometrica, 65(4), 745-779.

Sen, A. K., 2002. Rationality and Freedom, Cambridge, MA: Belknap.

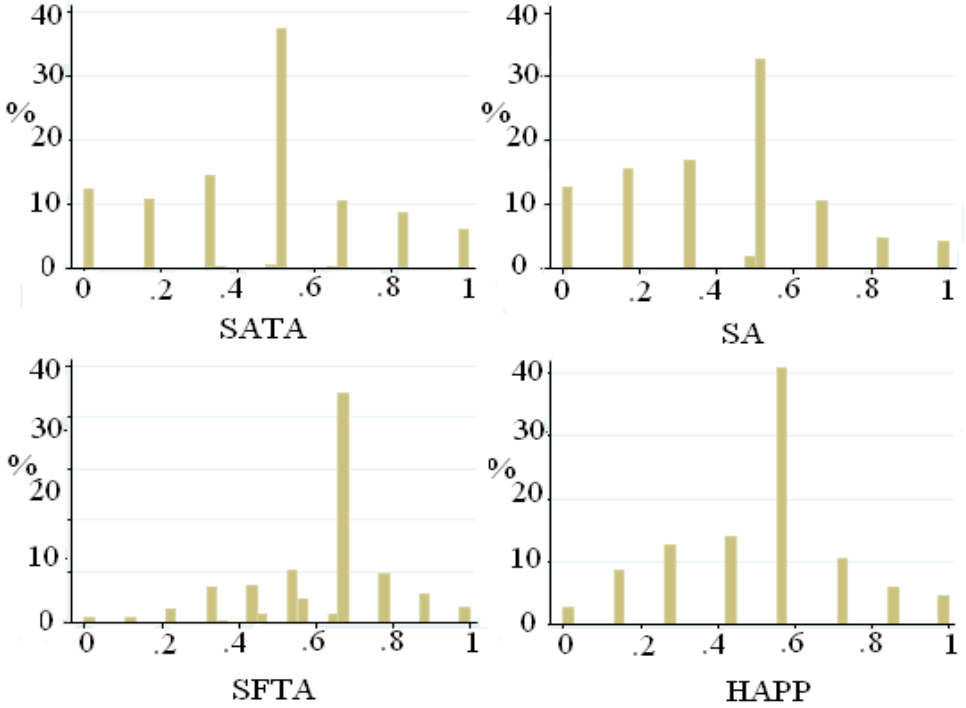
Sen, A. K., (2009). The Idea of Justice. ALLAN LANE, Penguin Group.

Tukey, J. W., 1977. Exploratory Data Analysis. Addison-Wesley Publishing Company.

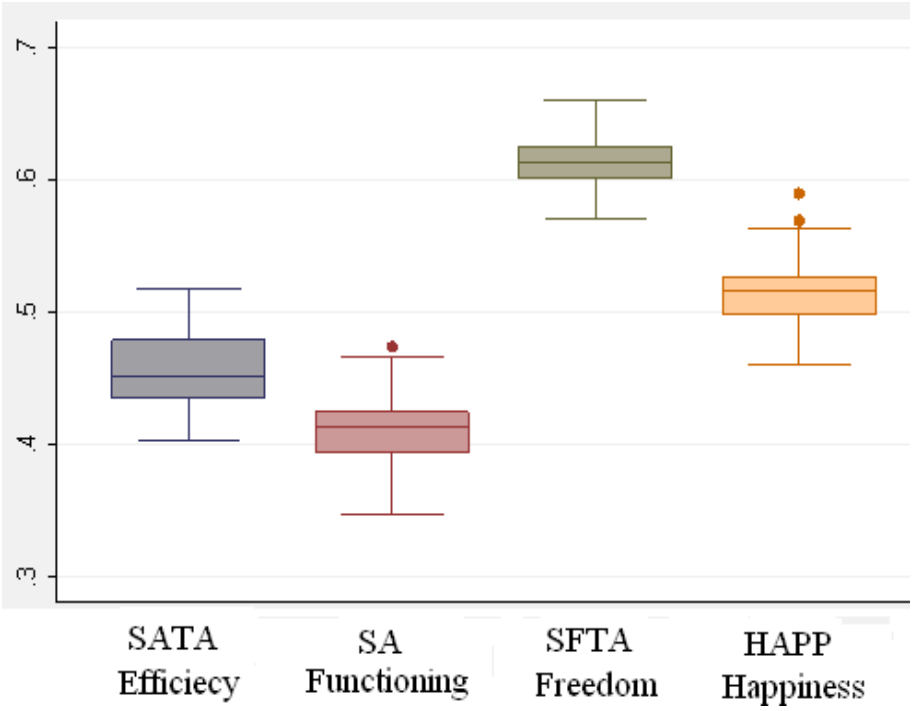
Zaman, A., Rousseeuw, P., J., and Orhan, M., 2001. Econometric applications of high-breakdown robust regression techniques. Economics Letters 71, 1-8.



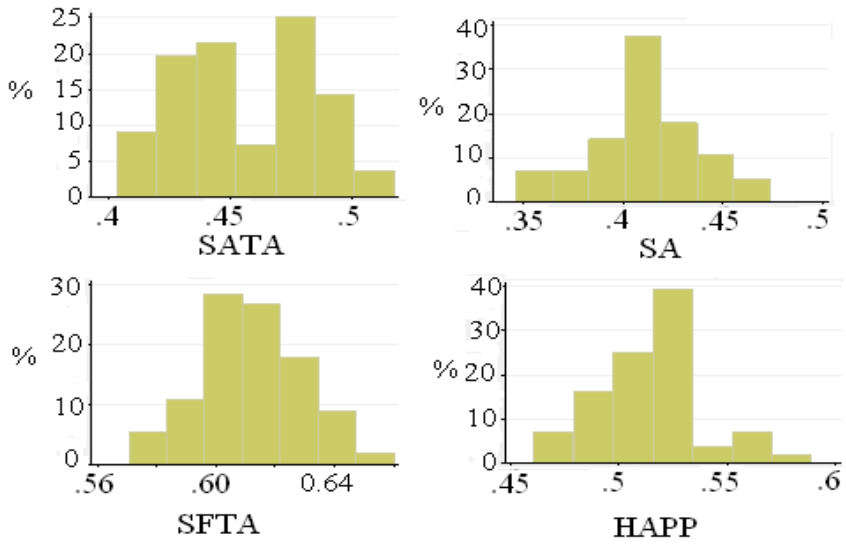
Graph 1: Boxplots for sense of ability to achieve (SATA), sense of achievement (SA), sense of freedom to achieve (SFTA), and happiness (HAPP) based on individual data.



Graph 2: Histograms for sense of ability to achieve (SATA), sense of achievement (SA), sense of freedom to achieve (SFTA), and happiness (HAPP).



Graph 3: Boxplots for sense of ability to achieve (SATA), sense of achievement (SA), sense of freedom to achieve (SFTA), and happiness (HAPP) based on district level data.



Graph 4: Histograms for sense of ability to achieve (SATA), sense of achievement (SA), sense of freedom to achieve (SFTA), and happiness (HAPP) based on district level data.

Table 1: District ranking and policy scores

District	Happ	SCI	Eff	Func	Frdm	Policy-Scores[a]		
						Eff	Func	Frdm
BADIN	56	52	54	40	56	10	7	10
THARPARKAR	55	53	48	54	54	9	10	10
MEKRAN	54	56	56	53	53	10	10	10
SAWAT	53	54	55	52	49	10	10	9
JHELUM	52	47	40	48	39	7	9	7
JACOBABAD	51	55	53	56	32	10	10	6
RAWALPINDI	50	51	51	49	50	10	9	9
LORALAI	49	8	1	12	29	0	2	5
SHIKARPUR	48	50	44	55	20	8	10	3
KALAT	47	27	31	30	31	6	5	6
KARAK	46	38	6	51	52	1	10	10
SIBI	45	49	46	47	35	9	9	6
JHANG	44	48	43	44	44	8	8	8
MANSEHRA	43	9	8	34	2	1	6	0
HYDERABAD	42	46	47	35	38	9	6	7
KARACHI	41	44	36	37	47	7	7	9
THATTA	40	31	42	23	25	8	4	4
DADU	39	37	35	43	18	6	8	3
SARGODHA	38	41	34	38	43	6	7	8
LARKANA	37	25	24	27	46	4	5	9
R.Y.KHAN	36	26	27	19	36	5	3	7
FAISAL ABAD	35	42	38	36	41	7	7	8
MUZAFFARGARH	34	40	20	50	37	3	9	7
BANNU	33	20	21	21	26	4	4	5
SAHIWAL	32	45	49	29	40	9	5	7
LEIAH	31	30	23	45	34	4	8	6
NAWAB SHAH	30	12	7	26	9	1	5	1
SANGHAR	29	21	39	11	14	7	2	2
D.G.KHAN	28	16	12	39	12	2	7	2
GUJRAT	27	13	3	22	21	0	4	4
SHEIKHUPURA	26	28	19	41	42	3	8	8
QUETTA	25	17	17	20	23	3	3	4
KHUSHAB	24	34	28	46	22	5	9	4
GUJRANWALA	23	24	29	18	24	5	3	4
BAHAWALPUR	22	10	16	7	19	3	1	3
MULTAN	21	18	13	32	30	2	6	5
MIRPUR KHAS	20	36	41	33	28	8	6	5
KASUR	19	23	26	10	48	5	1	9
SUKKUR	18	35	52	24	16	10	4	3
OKARA	17	29	32	25	33	6	4	6
KOHAT	16	43	45	42	17	8	8	3
T.T. SINGH	15	7	9	9	6	1	1	1
BAHAWALNAGAR	14	15	22	31	7	4	6	1
KHAIR PUR	13	39	50	14	45	9	2	8
BHAKKAR	12	14	18	16	10	3	3	1
PESHAWAR	11	6	14	8	4	2	1	0
DIR	10	32	33	13	55	6	2	10
SIALKOT	9	33	30	15	51	5	2	10
LAHORE	8	11	11	17	8	2	3	1
MIANWALI	7	22	25	28	15	4	5	2
RAJANPUR	6	19	37	4	27	7	0	5

ATTOCK	5	5	10	3	11	1	0	2
VEHARI	4	2	2	5	3	0	0	0
ISLAMABAD	3	1	4	6	1	0	1	0
ABBOTTABAD	2	3	15	1	5	2	0	0
MARDAN	1	4	5	2	13	0	0	2

[a]0 means lowest policy emphasis 10 means highest policy emphasis where 0= ranking 1-5, 1=ranking 6-10, 2=ranking 11-15, and so on.
Happ=Happiness, Eff=efficiency=SATA, Func=functioning=SA, and Frdm=freedom=SFTA

Table 2: OLS estimates: Dependent variable = Happiness

	(1)	(2)	(3)	(4)	(5)	Male	Female	Rural	Urban
Constant	-	-	**0.01**	**0.01**	0.08	.07*	.06*	0.04**	0.10
Efficiency	0.08	0.08	0.08	0.08	0.09	0.09	0.09	0.07	0.11
Functioning	0.51	0.50	0.50	0.50	0.50	0.47	0.52	0.50	0.50
Freedom	0.35	0.34	0.34	0.34	0.34	0.34	0.33	0.35	0.32
Income		0.02	0.02*	0.02*	0.01**	0.02**	**0.01**	**0.001**	0.02**
Education		0.02**	0.02*	0.02*	0.02*	0.03 *	**0.01**	0.02**	**0.02**
D(gender)			-0.03**	-0.03**	-0.03**			**-0.02**	-0.05**
D(urban)				**0.01**	**-0.01**	**-0.03**	**0.004**		
D(balochistan)					**0.02**	**-0.02**	0.07*	0.06**	**-0.01**
D(nwfp)_					**0.01**	0.08*	-0.06**	**0.04**	**-0.03**
D(Punjab)					-0.11	-0.12	-0.10	-0.07	-0.15
R^2	0.65	0.65	0.65	0.65	0.65	0.6	0.7	0.65	0.67

Happiness, capabilities and objective variables standardized. Coefficient highlighted in bold are insignificant, those marked with a *(**) significant at 5(10) %, and all other significant at 1%. D(.) are dummy variables.

Table 3: 3SLS estimates

	(1)	(2)	(3)	(4)	(5)	Male	Female	Rural	Urban
Equation 1 (dependent variable: Happiness)									
Functioning	1.058	1.054	1.043	1.043	1.039	1.069	1.023	1.030	1.051
R2	0.45	0.46	0.46	0.46	0.47	0.35	0.55	0.45	0.48
Equation 2 (dependent Variable: Functioning)									
Constant	-	-	0.09	0.09	0.13	0.05*	**0.04**	0.74	0.17
Efficiency	0.33	0.31	0.32	0.33	0.33	0.26	0.38	0.33	0.32
Freedom	0.44	0.44	0.43	0.43	0.42	0.43	0.42	0.43	0.43
Income		0.059	0.055	0.055	0.052	0.067	0.043	0.042	0.059
Education		0.034	0.056	0.056	0.058	0.067	0.046	0.042	0.065
D(gender)			-0.17	-0.17	-0.17			-0.17	-0.18
D(urban)				**-0.001**	**-0.01**	**-0.01**	**-0.01**		
D(balochistan)					**0.004**	-0.08**	0.10	**0.06**	**-0.06**
D(nwfp)_					-0.06*	**-0.04**	-0.10	**-0.02**	-0.11
D(Punjab)					-.055	-0.07*	-0.06*	**0.01**	-0.13
R^2	0.42	0.43	0.44	0.44	0.44	0.37	0.51	0.43	0.45

All variables standardized, except dummies. Coefficient highlighted in bold are insignificant, those marked with a *(**) significant at 5(10)%, and all other significant at 1%. D(.) are dummy variables.

Table 4: Ordered Logit regressions (dependent variable= Happiness)

	(1)	(2)	(3)	(4)	(5)	Male	Female	Urban	Rural
Efficiency	1.00	0.96	0.99	0.99	1.10	1.01	1.27	1.28	0.96
Functioning	6.36	6.32	6.29	6.29	6.34	5.90	6.76	6.07	6.50
Freedom	6.31	6.28	6.27	6.27	6.17	5.54	7.02	5.88	6.40
Income		1.63	1.57	1.54	1.21*	1.67**	**1.06**	1.47**	**0.52**
Education		**0.12**	0.17**	0.16**	0.19*	0.24*	**0.08**	**0.19**	**0.16**
D(Gender)			-0.10*	-0.10*	-0.12*	-		-0.14**	**-0.09**
D(urban)				**0.02**	**-0.04**	**-0.07**	**-0.01**	**-**	**-**
D(balochistan)					**0.12**	**-0.07**	0.37	**0.02**	0.20**
D(nwfp)_					**0.02**	0.2*	-0.23**	**-0.08**	**0.11**
D(Punjab)					-0.33	-0.33	-0.32	-0.44	-0.23
Cut1	0.73	0.76	0.71	0.72	0.49	**0.23**	0.94	0.45*	0.58
Cut2	3.06	3.08	3.03	3.04	2.83	2.48	3.42	2.69	2.97
Cut3	4.75	4.78	4.72	4.73	4.53	4.23	5.06	4.39	4.68
Cut4	6.09	6.12	6.06	6.07	5.88	5.57	6.43	5.75	6.02
Cut5	9.37	9.40	9.35	9.35	9.18	8.49	10.20	8.80	9.47
Cut6	10.76	10.79	10.74	10.75	10.57	9.88	11.61	10.15	10.90
Cut7	12.22	12.26	12.21228	12.22	12.05	11.20	13.25	11.56	12.46
Obs	6749					3371	3378	2464	4285
LR statistic	7028	7040	7044	7044	7100	3104	4014	2685	4370
Pseudo R^2	0.3	0.3	0.3	0.3	0.3	0.26	0.34	0.3	0.3

Coefficient highlighted in bold are insignificant, those marked with a *(**) significant at 5(10) %, and all other significant at 1%. D(.) are dummy variables.