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Measuring the well being of children using a capability approach

An application to Indian data

M.L. Di Tommaso

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e-mail: de-child@unito.it
Web site: http://www.child-centre.it

Maria Laura Di Tommaso[1]

Department of Economics "Cognetti de Martiis"

and CHILD

University of Turin

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[1] Dept of Economics, Via Po 53, 10100 Torino, Italy. E-mail marialaura.ditommaso@unito.it

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The responsibility for the results reported in this paper, for their interpretation and indeed, for any of its deficiencies, is entirely my own.

Introduction

The aim of the paper is to conceptualise the well being of children in developing countries using a capability approach and to measure well being in a pilot study.
In the first part of the paper (sections 1), I define the concept of capabilities for children and, I use the procedure suggested by I. Robeyns (2002) to define the concept of capabilities for children. In her paper Robeyns provides an important methodology to endorse a list of capabilities in order to assess gender inequality in Western countries. In this paper I argue that also in the case of children well being, it is important to use that methodology in order to provide a general frame where the specific measures of children well being can be set against.

The second part of the paper (sections 2 and 3) deals with issues related to measurement of functionings. The existence of multiple, inter-related functionings to measure children's well being raises the question of how to combine them in empirical research. I use the richness of the capability approach and the information in all the indicators selected to develop a MIMIC (Multiple Indicators multiple causes) model. This model, which belongs to the broader class of Structural Equation Models (SEM), assumes that each of the indicators is a component of child well being. Child well being is an unobservable variable that is linked to the observable indicators through a factor analysis. Children well being is then assumed to be *caused* by other exogeneous variables like for instance gender or income of the family. In section 3, I describe the data set used and provide a pilot empirical application of the MIMIC model.

1. The definition of child well-being using the capability approach

Endorsing a specific list of capabilities in the case of children well being in developing countries and in particular in India is different than endorsing a list for adults. In what follows I explain why and in which way.
Nussbaum (2003) argues that the capabilities approach should not only include the capabilities of the people who are in need (typically children or elderly) but the capability approach should endorse a theory of social justice where the subjects are not anymore only "fully cooperating members of society over a complete life"[2] .

" So I believe we need to delve deeper, redesigning the political conception of the person, bringing the rational and the animal into a more intimate relation with one another, and acknowledging that there are many types of dignity in the world, including the dignity of mentally disabled children and adults, the dignity of the senile demented elderly, and the dignity of babies at the breast. …… We thus need to adopt a political conception of the person that is more an Aristotelian than Kantian, one that sees the person from the start as both capable and needy – " in need of a rich plurality of life-activities " to use a Marx's phrase, whose availability will be the measure of well-being." (Nussbaum 2003 pag 29-30.)

Following Nussbaum, in order to conceptualise children well-being I consider children as subjects. In the language of rights, children rights have been established for a

[2] Rawls 1980, pag 546, citation taken from Nussbaum 2003.

long time. In the case of capabilities there are only few conceptualisations. The paper of Phipps (2002) compares well being of children in USA, Canada and Norway, measuring 10 specific functionings (low birth-weighting, asthma, accidents, activity limitation, trouble concentrating, disobedience at school, bullying, anxiety, lying, hyperactivity). She adopts a descriptive approach and finds out that Norwegian children have better outcomes than US and Canada children. In her paper, nevertheless there is no attempt to find a synthetic measure of children well being. The paper of Saito (2003) explores the possible relation between capabilities and education; she reports Sen's interview on the application of the capability approach to children.

> " If a child does not want to be inoculated, and you nevertheless think it is a good idea for him/her to be inoculated, then the argument may be connected with the freedom that this person will have in the future by having the measles shot now. The child when it grows up must have more freedom. So when you are considering a child, you have to consider not only the child's freedom now, but also the child's freedom in the future"[3]

Different environmental factors may interact in affecting child's capabilities or their conversion in functionings. The paper of Addabbo Di Tommaso and Facchinetti (2005) explores the possibilities of using fuzzy inference system and structural equation modelling to measure capabilities of Italian children at a theoretical level. They also propose a list of capabilities with reference to children well being in Italy. It does not contain an empirical application of structural equation modelling and it contains only an example of a possible application of fuzzy set to Italian children.

In order to conceptualise children well being with a capability approach I follow the procedure suggested by I. Robeyns (2003). She provides an exhaustive list of criteria to be implemented in order to endorse a list of capabilities in the case of gender inequality. Robeyns' selection criteria are the following:

1. Explicit formulation: "the list should be explicit, discussed, and defended" (Robeyns 2003 pg 70)
2. Methodological justification: in drawing up a list we should justify the method used.
3. Sensitivity to context: the level of abstraction of the list should be appropriate for the aim of the research.
4. Different levels of generality: there are 2 levels: the first is the ideal list that fulfils the above criteria; the second is the empirically implementable list.
5. Exhaustion and non reduction: the list of capabilities should include all important elements.

In this paper we argue that also in the case of children's well being, it is important to use that methodology in order to provide a general frame where the specific measures of child well being can be set against.

[3] Sen's response in the interview with Saito in March 2001 reported in Saito (2003) pag 25.

1. The criterium of explicit formulation. What is the explicit list in the case of Indian Children? I propose the following list of capabilities which also takes into account gender issues related to Indian girls.
   a) Life; "Being able to have good health, not dying prematurely, or before one's life is so reduced as to be not worth living."[4]
      This is a very important characteristics for children; so for instance we would argue that the practice of gender selective birth prevents the capability of living for those children (girls) who were not able to be alive[5]. A recent study,(Prabhat J., Rajesh K., Priya V., Neeraj D., Deva T., Rahim M., 2006) found out that prenatal sex determination followed by selective abortion of female fetuses is the most plausible explanation for the low sex ratio at birth in India. Women most clearly at risk are those who already have one or two female children. Based on conservative assumptions, the practice accounts for about 0·5 million missing female births yearly, translating over the past 2 decades into the abortion of some 10 million female fetuses[6].

      Children born in developing countries have much higher mortality rates than children born in developed countries. In particular Indian children mortality rates are higher than the near China or Sri Lanka. Infant mortality in India is equal to 67 per 1,000 live births respects to 31 in China or 17 in Sri Lanka in 2002. Under-5 mortality in the same period was equal to 93 in India, 39 in China, and 19 in Sri Lanka per 1,000 live births (UNDP 2004).

   b) Bodily Health; "Being able to have good health, including reproductive health; to be adequately nourished; to have adequate shelter"[7].
      This capability is obviously a very important one for most children in this study; The % of children under 5 who are underweight[8] is equal 47 in India, 29 in Sri Lanka and 11 in China (average of the period 1999-2005). The % of children who are under height[9] is equal to 46 in India, to 14 in Sri Lanka and 16 in China over the same period (UNDP 2004). In the data section, I will show the percentage of children who suffer for malnutrition or stunting, or lack of proper shelter or of water in the house or of proper medical care

[4] Nussbaum 1999.

[5] I am not expressing here a negative value-judgement on abortion, I am only stating that the practice of gender **selective abortion** constitutes a violation of the capability of girls to be alive more than for boys. The causes of selective abortion are to be found in the gender bias culture and discrimination in Indian society and I will not deal with this issues in this paper.

[6] They analysed data obtained for the Special Fertility and Mortality Survey undertaken in 1998. Ever-married women living in 1.1 million households were asked questions about their fertility history and children born in 1997. They found that for the 133,738 births studied for 1997, the adjusted sex ratio for the second birth when the preceding child was a girl was 759 per 1000 males. The adjusted sex ratio for the third child was 719 if the previous two children were girls. By contrast, adjusted sex ratios for second or third births if the previous children were boys were about equal (1102 and 1176, respectively). Mothers with grade 10 or higher education had a significantly lower adjusted sex ratio (683) than did illiterate mothers (869). Stillbirths and neonatal deaths were more commonly male, and the numbers of stillbirths were fewer than the numbers of missing births, suggesting that female infanticide does not account for the difference.

[7] Nussbaum 1999

[8] The percentage of children under 5 with weight for age less than -2 standard deviation of the sex-specific data relative to age.

[9] The percentage of children under 5 with height for age less than -2 standard deviation of the sex-specific data relative to age.

in the sample used in this paper (for additional data see for instance Swaminathan M.S. 2001, Smith L.C., Haddad L., 2000).

c) Bodily Integrity. "Being able to move freely from place to place; to be secure against violent assault, including sexual assault and domestic violence; having opportunities for sexual satisfaction and for choice in matters of reproduction."[10] The capability of moving freely in the territory is often denied to Indian children under two respects: a) girls are not able to move freely on the territory often because of religious based gender discrimination; b) both boys and girls do find difficult to move freely in the village to go to school because of the division of the territory on a religious ground and the location of the school (see Borooah V and Iyer S 2005). Security for children in terms of domestic violence and sexual assault are also important issues in the case of Indian children. If we define as children, boys and girls up to the age of 16 then the issues of sexual satisfaction and choice in matters of reproduction are also relevant to this capability, especially with regard to the system of arranged marriages and dowries. (Rao 1993, Bloch and Rao 2000, Botticini and Siow 2000).

d) Senses Imagination and Thought. "Being able to use the senses, to imagine, think, and reason and do these things in a "truly human" way informed and cultivated by an adequate education, including by no means limited to, literacy and basic material skills."[11]
Rates of enrolment to school and attedance to school vary in India for different castes, different religious group and with gender. In 1994, Hindus have school enrolment rate of 84 for boys and 68 for girls, Muslims have 68 for boys and 57 for girls, Dalit (short name for scheduled tribe and scheduled caste[12]) 70 % for boys and 55 % for girls (data reported by Borooah and Iyer 2005, pg 1377).The combined enrolment ratio for primary secondary and tertiary school for the year 2000-2001 (UNDP 2004) is equal to 48 for girls and 62 for boys.

e) Leisure activities, play. If play is important for adults it is essential for children. Nevertheless, the opportunity cost for playing is very high for families with low income. If children are regarded as an economic resource for the family, then the opportunity cost of play is very high . The capability of playing for children is therefore threatened by child labour. In the Indian case, a study of rural Karnataka found that children spent four hours per days on household and directly productive work; furthermore there was a gender division in the household with greater household work being performed by girls, and directly productive work done by boys (Kanbargi and Kulkarni 1986).

f) Emotions. "Being able to have attachment to things and people outside ourselves; to love, to grieve, to experience longing, gratitude, and justified anger. Not having one's emotional development blighted for fear and anxiety." This is a capability that can be extended to children and actually

[10] Nussbaum 1999
[11] Nussbaum 1999
[12] Articles 341 and 342 of the Indian Constitution list tribes and castes (broadly speaking "untouchable" castes) who receive positive discrimination policies.

constitute the necessary condition for the development of human beings. Issues of religion, caste and gender create the basis for lack of self-respect and of humiliation.

g) Social interaction, being able to be part of a group, interact with other children. This capability is essential for children development and the related functionings depend on other capability, like the capability of playing, the capability to have emotions, the capability of thought.

2. The criterium of methodological justification. I have confronted the list of capabilities provided by Nussbaum (1999) with the one provided by Robeyns (2003) for gender inequality in Western countries, and the one by Phipps (2002) for Canadian children. On the basis of economic literature on Indian children, I have then selected the relevant capabilities. I have then tested a draft of the list by engaging with academicians specialised in the field of the capability approach and in the field of development in the context of India economy.

3. The criterium of sensitivity to context. The list I propose is appropriate for the purpose of this paper. There are two main objectives of this paper.When a particular measure to promote children well being is introduced (for instance increase in mothers' education), it is relevant to understand both the effect of that measure on a single functioning (for instance malnutrition) and on the compounded measure of child well being. Another possible use of this approach to child well-being is to explore through an exploratory factor analysis the correlation among the various functionings related to well being and eventually to build compounded measures of child well being in order to make comparison through times and countries.

4. The criterium of different levels of generality. Ideally which kind of data set I would need? For each of the capabilities listed above, a series of possible different measures of functionings is suggested here. a) Life: sex ratio, missing women indicator, infant mortality, under 5 mortality. b) Bodily Health: low birth weight, anthropometric indicators, iron deficiency anemia, presence of water and electricity in the house, quality of housing. c) Bodily Integrity: percentage of arranged marriages by age, age of marriages, genital mutilation practices, measures of violence against children within the household and outside the household, sexual abuse of children. d) Senses, Imagination and Thought: school enrolment and attendance, literacy rates among young adults. e) Leisure Activities and Play: child labour, attendance to recreational centers, sport activities, musical activities etc. f) Emotions: data on children development like grades at school, trouble concentrating, anxious/frightened, cruel/bullies, restless, lies. g) Social Interactions: family composition, attendance to school, freedom to play outside with other children.
   Measuring children capabilities would require to observe children development during their childhood. The ideal data set would therefore follow children from their birth until they become adults (panel data).In fact measuring children's well being is age dependent. Many functionings can only be measured at a

late stage of the child development . We would also need detailed information for each child, family background, household income, and a detailed questionnaire for each of the above–specified functionings.

The data used for the empirical application of this paper are specified in Section 3.1.

5. The criterium of exhaustion and non-reduction. The list of capabilities provided above includes all important elements for measuring capabilities of Indian children and cannot be reduced. The empirical part of this paper constitute only a pilot study, where I measure few of the above capabilities, namely the capability b) Bodily health, d) Senses Imagination and Tought, and e) Leisure activities and play. In addition I only select few of the relevant functionings for these capabilities.

2. Measuring Children's Well Being: the MIMIC Approach

The existence of multiple, inter-related functionings to measure Children's Well being raises the question of how to combine them in empirical research. The MIMIC approach developed in this paper is one approach to this problem. In addition in order to design economic policies, we would like to determine the impact of *causes* of child well being.

One basic strategy is to choose a single indicator we believe is the closest (stunting, for example) to the unobserved construct (child well being), and ignore both measurement error and information on the remaining indicators.

Alternately we could use the information in all indicators by creating a synthetic variable, such as a simple mean indicator. Based upon a set of casual factors, the resulting Ordinary Least Squares model represents perhaps the most restrictive model given the neglect of measurement error and the reduction of many indicators to a single one.

Instead in my approach, I assume that each of the functionings is a component of child well being; and child well being is an unobserved variable that is linked to the observable functionings. The principal advantage of this approach is that it does not rely on exact measurement of child well being. Each indicator represents a noisy signal of child well being in a specific age interval. This modelling strategy has been extensively used in psychometrics and more recently in econometrics (see for example Di Tommaso, M.L, Raiser, M., and Weeks M. 2000), and is founded upon the specification of a system of equations which specify the relationship between an unobservable latent variable (children well being), a set of observable endogenous indicators (the selected functionings) and a set of observable exogenous variables (what are believed to be the causes of children well being).

This approach builds upon the early work of Joreskog and Goldeberger (1975) and Zellner (1970) and has been formalised in the LISREL (Linear Structural Relationships) model of a set of linear structural equations. Excellent review of the literature is to be found in Bentler and Weeks (1980) and Aignes, Hsiao, Kapteyn, and Wansbeek (1984). The Multiple Indicators and Multiple Causes (MIMIC) approach allows us to think of this model as comprising two parts: a structural equation for children well being (which relates the latent variable children well being to the causes) and a measurement equation that takes into account that there is no

single variable called well-being. Therefore I utilise many functionings to built a latent variable called Children well being. For each of the functionings chosen to represent the latent construct children well being, a weight (a factor loading) will be estimated. This weight represents how much that specific functioning counts in explaining well being respect to other functionings.

The MIMIC Approach

In examining the relative merits of our modelling strategy we first introduce notation.

We let

$Y^O = \left(Y_1^O, Y_2^O, Y_3^O, ...Y_m^O\right)'$
and $Y^C = \left(Y_1^C, Y_2^C, Y_3^C, ...Y_m^C\right)'$

denote, respectevily $m \times 1$ vectors of ordinal and continuous indicators; $Y_i^O \in \{1,.....,v\} i = 1,.....m,$ where v represents the number of ordered categories and Y^C represents the latent counterparts to $Y^O = \tau\left(Y^C\right)$where $\tau(.)$ denotes the one to one mapping between the vector of latent variables and the ordinal indicators. We will use Y^* to denote an unobserved latent construct.
Our argument for choosing the MIMIC specification rests upon the belief that the parameters which are delivered by this approach represent the fundamental objects of interest. In *single* indicator models, each observed measure, here elements of the vector Y^O , is considered a single indicator of a matching unobserved construct, elements of Y^C, such that the moments of interest can be written as $E\left(Y^O = \tau\left(Y^C \mid x\right)\right.$.

In contrast multiple indicator models (Muthen 1979) link multiple observed measures to a reduced dimension of underlying latent variables. In this instance a single indicator model is not appropriate since the moments we wish to estimate are of the form $E\left(Y^* \mid Y^O = \tau\left(Y^C, x\right)\right.$. rather than $E\left(Y^O = \tau\left(Y^C \mid x\right)\right.$.
By focussing upon the distinction between these two sets of moments, we can show the principal differences between a MIMIC specification and more standard regression-based approaches.
First we note that both MIMIC specification and more standard regression-based appoaches (for example, multivariate probit analogues of SUR models[13]) utilise information in all the m indicators. However, the MIMIC model proposed here [14] presupposes the existence of two measurement equations: an inner equation where each qualitative indicator, say Y_j^O is linked to its corresponding continuos counterpart Y_j^C; and an outer equation, the standard factor model, providing a mapping from the multiple indicators collected in $Y^O$to a single unobserved latent construct, Y^*. In

[13] Multivariate extensions of the binary probit models date from the seminal bivariate probit model first introduced by Ashford and Sowden(1970). For recent examples see Bock and Gibbons (1996), and Golob and Regan (1998).
[14] Given the ordinal nature of our observed measures, the form of the MIMIC model proposed here is nonlinear and hs been referred to by Wansbeek and Meijer (2000) as the LISCOMP model.

contrast discrete versions of SUR, although admitting dependence across observed indicators, are single indicator models,and as a result, do not entertain the existence of, for example, an underlying common factor such as well being.
In this respect the parameters estimated from the set of moments $E\left(Y^O = \tau\left(Y^C \mid x\right)\right.$ are not the fundamental parameters of interest[15]. In our application we are not interested in the impact of individual characteristics on each of the dimensions of Well Being.
We have few priors on which to base hypothesis testing with respect to individual dimensions (for instance there is no reason to expect that mother literacy will affect weight for age or children enrolment at school).
We construct a system of equations which specify the relationship between a set of unobservable latent variables Y^*, a set of observable endogeneous ordinal indicators Y^O, and a set of observable exogenoeus variables X.

Model Specification

The structure of the model is as follows:

$$Y = \Lambda^Y y^* + \varepsilon, j = 1,....., m$$

where

$$Y = \left(Y_1 , Y_2 , Y_3 , ...Y_m \right)' \qquad (1)$$

is a $m \times 1$ vector with each element representing an independent indicator of children well being, denoted Y^*. $\Lambda^Y = \left\{\Lambda^Y{}_1, \Lambda^Y{}_2, \Lambda^Y{}_3 .....\Lambda^Y{}_j\right\}'$ denotes a $m \times 1$ parameter vector of factor loadings, with each element representing the expected change in the respective indicators following a one unit change in the latent variable. ε is a $m \times 1$ vector of measurement errors, with Θ_ε denote the covariance matrix.

In addition we posit that children's Well Being is linearly determined by a vector of observable exogeneous variables $x = \left(x_1, x_2, ...x_s,\right)'$ and a stochastic error ς giving,

$$Y^* = x'\gamma + \varsigma \qquad (2)$$

where γ is a $s \times 1$ vector of parameters.

Examining (1) and (2) we may think of our model as comprised of two parts: (2) is the structural (or state) equation and (1) is the measurement equation reflecting that the

[15] A welcome by-product of the MIMIC approach is that instead of estimating m regression equations for the set of indicators, we estimate the parameters of a single structural equation. Ignoring covariance terms, and assuming that **x** represents a (s x 1)vector of causes, we have a total of m + s estimable parameters. This compares with a total of m x s parameters and estimate a system of equations over the m indicators

observed measurements are imperfect indicators. The structural equation specifies the casual relationship between the observed exogeneous causes and children well being. Since Y^* is unobserved, it is not possible to recover direct estimates of the structural parameters γ. Combining (1) and (2) the reduced form representation is written as

$$y = \pi x + v$$

where $\pi = \Lambda^Y \gamma'$ is the $m \times s$ reduced form coefficient matrix and $v = \Lambda^Y \varsigma + \varepsilon$ is the reduced form disturbance.

Section 3: Description of the data and empirical estimates

The econometric estimates are based on unit record data from a survey of 33,000 *rural* households - encompassing 195,000 individuals - which were spread over 1,765 villages, in 195 districts, in 16 states of India. This survey - commissioned by the Indian Planning Commission and funded by a consortium of United Nations agencies - was carried out by the National Council of Applied Economic Research (NCAER) over January-June 1994 and most of the data from the survey pertains to the year prior to the survey, that is to 1993-94. Details of the survey - hereafter referred to as the NCAER Survey - are to be found in Shariff (1999).
The data provide anthropometric measures for each of the children and relates this information to *inter alia*: the household circumstances of the children, including the quality of the living conditions of the household and the birth orders of the children; the state of health of the mothers, with particular reference to anaemia; the quality of the relevant infra-structure available to the households in which the children lived, with particular reference to the quality of the water supply and the availability of hospitals and mother-and-child centres (known in India as *anganwadis*); and the degree of 'food security' that the children's households enjoyed.
An important feature of this data set is that it provides the social group (caste) the individual belong to. Lying *outside* the caste system are those regarded by ‘caste Hindus’ (that is, by Hindus *within* the caste system) as ‘outcasts’ in the sense of being ‘untouchable’: that is, persons with whom physical contact - most usually taken to be acceptance of food or water - is polluting or unclean. Approximately, 17% of India’s 1 billion people fall into the category of being ‘untouchable’.

In what follow, I provide a pilot study for applying the methodology outlined above to the list of capabilities for children. I have selected 3000 children whose age is between 6 and 12 from the Central States of India.
I choose only few of the above capabilities, namely the capability b) Bodily health, d) Senses Imagination and Tought, and e) Leisure activities and play. In addition I only select few of the relevant functionings for these capabilities. So for the Bodily Health capability I select two functioning (height for age and weight for age), for the Senses Imagination and Thought I select the enrolment to school functioning and for the capability of Leisure, activities and play, I choose a work status indicator.
In this modelling strategy, I also identify some possible causes of children well being: some variables related to the economic situation of the household (productive and unproductive assets owned by the household, property of the land, income decile),

the literacy of the parents, the gender of the children, the size of the household, the caste and the birth order.
The following tables provides the definition of the variables used and their descriptive statistics. In the selected sample, 47,5% of the children are girls. The average household includes 8 persons. Children suffering form severe stunting are 36% of the sample. While children suffering from severe malnutrition are 0.02 % of the sample. The averages of the Index for Productive asset and of the Index for Unproductive assets are very low (equal respectively to 2.7 and 1.7). 25.7 % of the children belong to family who do not own the land they work of the sample. 40% of them have never been enrolled into school, while only 2,3 % work. 47% of their fathers are illiterate and 83.5 % of their mothers are illiterate.
15% of the children belong to Scheduled Tribe and 23% belong to Scheduled Caste.

(table 1 and 2 approximately here)

I have applied the MIMIC model outlined in section 2 above to the pilot sample.
The main regression results are presented in Table 3. The top of the table presents regression coefficients for different specification of the structural equation.

(Table 3 approximately here)

The second panel presents estimates of the "loadings" for each of the components of children Well being in the measurement equation. The bottom panel presents R-square statistics for each sub-components separately.
We report 3 specifications: The second differs from the first because the variable "birth order" has been excluded in order to check the possibility of increasing the significance of "size of the household"; but the estimates did not change at all. In the third specification we have included an income variable i.e. income deciles.

Specification 3 is the preferred one because of the inclusion of income deciles; as a consequence of the introduction of this variable, land ownership becomes less significant[16].
The variables that have a strong correlation with the latent construct child well being turned out to be the following. Literacy of the parents is a very important variable in explaining children's well being. Being a girl is a disadvantage in terms of well being.
The index of productive asset is not significant. Nevertheless 2000 observation in our sample record a zero for this index. This could have contributed to the low significance of this variable. The index of unproductive assets on the contrary is significant (only 873 observation in our sample have a zero value). Not being the owner of the land cultivated by the family has a negative impact on children's well being. As well belonging to the "untouchable" has a negative impact on well being.

Table 3b reports the estimated weights for each of the components of children's well being in the measurement equation[17]. It shows that Enrolment to school and Work status have relatively high weights in the latent measure of child well being compared

[16] This could be due to multicollinearity among these variables.

[17] The vector Λ^{Y} in appendix A.

to Height for age and weight for age. For example, the expected change in enrolment to school given one unit change in children well being is equal to –1.06. The sign is due to the particular definition we have followed for this variable that is equal 1 if enrolled or equal 2 if never enrolled.[18] The relatively high weight of enrolment to school and work status relative to the other two indicators of well being could be due to the choice of a very restrictive measure for height for age and weight for age and to the selection of children above 6 years old (see definition of the variables in table 1). As far as the Squared Multiple correlation for Y variables is concerned, it indicates to what extent, the common factor account for the variance of each indicator or how closely the model fits each indicator. In these estimates, the indicator whose variance is most explained by the common factor is enrolment into school.

Conclusion

In this paper, I conceptualise well being of children using a capability approach; providing a list of capabilities for Indian children. I apply a MIMIC model to a sample of Indian children, building an aggregate measure of well being. This aggregate measure includes, at the present, only 4 functionings: height for age, weight for age, enrolment into school and work status of the child. Most important in this preliminary pilot study are enrolment in school and work status. The paper also estimates how a number of variables influence well being (defined by the four indicator variables). Literacy of the parents and being a boy have the biggest positive impact on children well being. Other *causes* having a positive impact are: not belonging to scheduled castes, the income decile of the household and the ownership of unproductive assets like radio, Tv, bicycle.
This study can be improved in many directions. More work should be done in the direction of measuring capabilities instead of functionings for children. Future applications should extend the well being measure to include more functionings to better fullfill the criteria outlined in the paper. The whole sample of NCAER should be used.

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[18] The same reasoning about the sign applies to work status of the children.

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Table 1: Definition of the variables

Size of the household: number of adults and children living in the household.

Gender: dummy variable =1 if male; =2 if female.

Birth order: Order of birth of the child.

Height for Age: Height minus Median Height for that age divided by the age and sex specific standard deviation. The dummy variable used here is equal zero if this index is less than -3 (i.e. severe stunting); =1 otherwise.

Weight for Age: Weight minus Median Weight for that age divided by the age and sex specific standard deviation. The dummy variable used here is equal zero if this index is less than -3 (i.e. severe malnutrition); =1 otherwise.

Productive Asset Index: Sewing Machine 2, Tubewell 10, Generator set 5, Thresher 3, Winnower 3, Bullock cart 4, Cycle rickshaw 3, Tractor 10.

Unproductive Asset Index: Bicycle 1, Bio-gas plant 3, Motor-cycle 3, Car 10, Radio 1, Television 4, VCR/VCP 5, Air cooler 3 Fan 1.

Land owner: =1 if the household owns the land; =2 otherwise.

Enrolment: =1 if the child has ever been enrolled at school; =2 never enrolled.

Scheduled Castes ('Untouchables' 'Dalits'):= 1 if belongs to this category; 0 otherwise.

Scheduled Tribes ('Untouchables' 'Dalits'):= 1 if belongs to this category; 0 otherwise.

Work status =1 if child worked outside the household or inside the household; =0, otherwise.

Father literacy=1 if literate; =0 otherwise.

Mother literacy=1 if literate; =0 otherwise.

Table 2: Descriptive Statistics of the Pilot Study
(number of obs=3000)

Selection rules: a random sample of 3000 children from the Central States of India (Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh) whose age is above 6.

Variable	Mean	St. Dev.	Min.	Max.
Size of the Household	7.926	3.55	2	29
Gender	1.450	.50	1	2
Birth Order	4.618	12.20	1	12
Height for Age	0.640		0	1
Weight for Age	0.986		0	1
Income decile	5.81		1	10
Productive Asset Index	2.701	5.45	0	40
Unproductive Asset Index	1.705	2.48	0	30
Land Ownership	1.25	.43	1	2
Enrolment into school	1.403	.49	1	2
Work Status	0.023	.15	0	1
Scheduled Tribe	.146	.35	0	1
Scheduled Cast	.227	.42	0	1
Father literacy	.527	.49	0	1
Mother literacy	.165	.37	0	1

Table 3: MIMIC MODEL OF CHIDREN'S WELL BEING

Regression Coefficients of the structural equation: γ

	Specification 1	**Specification 2**	**Specification 3**
Size of the household	0.018	0.018	0.0108
	(0.017)	0.017)	(0.0170)
Land ownership	-0.039*	-0.039*	-0.0306
	(0.020)	(0.020)	(0.0192)
Father Literacy	0.140*	0.140*	0.1378*
	(0.048)	(0.048)	(0.0471)
Mother Literacy	0.138*	0.138*	0.1388*
	(0.047)*	(0.047)*	(0.0474)
Gender	-0.144	-0.144*	-0.1475*
	(0.049)	(0.049)	(0.0495)
Birth Order	0.002		
	(0.016)		
Productive Asset	0.026	0.026	0.0209
	(0.018)	(0.018)	(0.0182
Unproductive Asset	0.071*	0.071*	0.0662*
	(0.028)	(0.028)	(0.0270)
Scheduled Tribe	-0.071*	-0.071*	-0.0722*
	(0.029)	(0.029)	(0.0298)
Scheduled Cast	-0.083*	-0.083*	-0.0837*
	(0.032)	(0.032)	(0.0327)
Household Income (deciles)			0.0477*
			(0.0230)

Standard errors in parenthesis.
* Significant at 5% confidence interval.

Table 3b: MIMIC MODEL OF CHIDREN'S WELL BEING

Estimates of the "loadings" for each of the components of Children Well Being in the measurement equation Λ^Y

	Specification 1	Specification 2	Specification 3
Height for Age	0.1032	0.1029	0.1050
Weight for Age	0.1308*	0.1307*	0.1374*
	(0.0523)	(0.0524)	(0.0541)
Enrolment into school	-1.0580*	-1.0583*	-1.0269*
	(0.3419)	(0.3427)	(0.3294)
Work status	-0.5188*	-0.5187*	-0.5344*
	(0.1660)	(0.1664	(0.1704)

Squared Multiple correlation for Y variables

Height for Age	0.0053	0.0053	0.0055
Weight for Age	0.0086	0.0085	0.0094
Enrolment into school	0.5597	0.5600	0.5273
Work status	0.1346	0.1345	0.1428

Standard errors in parenthesis.
* Significant at 5% confidence interval.