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MEASURES, TRENDS AND DETERMINANTS OF ECONOMIC WELL-BEING IN INDIA

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MEASURES, TRENDS AND DETERMINANTS OF ECONOMIC WELL-BEING IN INDIA

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This paper argues for three measures of economic well-being that includes other economic, health and subjective dimensions besides households' conventional wealth index and by using both pooled OLS and random-effects regression estimates, this paper examines the levels of three measures of economic well-being by time-invariant non-economic demographic, social and regional predictors. These composite measures of economic well-being have shown that there are needs of serious policy formulation must be aiming at particular groups who are being deprived of education, leisure, better health and better subjective well-being over the years.

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1. Introduction

As GDP has major limitations which restrict its use as a measure of well-being, economists and social scientists in recent times have become more interested in other measures of economic well-being. GDP says nothing about the distribution of income between groups at a point in time or about the distribution of income over time and it would be misleading to assess the progress of a country or group of countries by looking by looking at only GDP (Atkinson 1969). Interestingly, economists and statisticians have always acknowledged the fact that it is not a very good determinant of society's wellbeing (Allin 2014).

Instead of attempting to evaluate economic well-being on the basis of only objective indicators, subjective variables are often been considered in creating index of economic well-being. This is especially helpful when one aims to study well-being by different background variables like gender where utility based models of well-being are hard to apply. But if well-being is judged by functionings, the contrast between position of men and women, can be drawn and empirically studied (Sen 1999).

The widely used and but rather narrow measure of well-being is the United Nations Development Programme (UNDP)'s annual Human Development Index (HDI) computed on the basis of the levels of life expectancy, education and GDP and available for most of the countries in the world. Of course the creation of such composite index from fundamentally different indicators is a "bit like apple and oranges", but its advantage lies in its simplicity and its political power (Ray 2012). He further argued that there is a need to include indicators of differential educational attainment, anthropometric indicators for nourishment, or indicators of mortality or morbidity.

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Recent arguments on the topic are in support to use also subjective measures to enhance the concept of economic well-being. Some of the subjective indicators discussed in literature are happiness and its components, reduced unemployment rate, active civil society participation and better health, among others.

Stiglitz, Sen and Fitoussi (2009) argues for a multidimensional definition of wellbeing and states that among many, material living standards (as measured by income, consumption and wealth), health status, education; and personal activities including work should be considered simultaneously while examining well-being. As a result, this multi-dimensional approach can give us a broader, more comprehensive understanding of the complex subject of human living conditions (Cohen 2000, White 2010).

In fact, considering that well-being is multi-dimensional in nature, there is a scope to include both objective and a subjective dimensions (Hallerod and Selden 2013, Schimmack *et al* 2008). As a different approach for defining well-being, Hawkins (2014) argued that there is a scope to utilize people's feelings of wellbeing or satisfaction with their life directly in the measurement. Subjective dimension like individual's cognitive perception is equally relevant because such a perception is able to reveal the subjective evaluation of quality of life (Haq and Zia 2013) and clearly, the level of wellbeing of an individual or of a group may vary from one area of life to another - and within areas of life (Levy and Guttman 1975). Obviously estimation of the well-being remains a difficult task because of its multifaceted dimensions (Murias *et. al.* 2006).

. From the above perspectives, this paper aims to study economic well-being by examining the following objectives:

- 1) To examine economic well-being by constructing three different measures or indices and thereby to study these measures by different demographic, social and regional background and also overtime.
- 2) To explore the non-economic determinants of the three measures of economic well-being and thereby to compare the roles of the determinants across measures.

2. Data and Methods

2.1. Data

I use data from the Young Lives longitudinal survey in India which is a part of an international study of childhood poverty following the lives of 12,000 children in Ethiopia, India (in the states of Andhra Pradesh and Telangana), Peru and Vietnam over 15 years and coordinated out of the Department of the International Development at the University of Oxford. The panel survey follows two cohorts¹ of children in each country. The first round was conducted in 2002, followed by Round 2 in 2006, Round 3 in 2009 and Round 4 in 2013.

For this paper, I am using data relating to the Older Cohort households and children, which consists of approximately 1,008 children who were first surveyed when they were around the age of eight in Round 1. In Round 2 children were around 12 years old, in Round 3 the children were approximately 15 years old and in Round 4 children were around 19 years old. For the present study, data from three rounds of quantitative Young Lives survey have

¹ All Older Cohort children were born in 1994-95 and so at the time of Round 1 survey (2002) they were approximately 8 years old. On the other hand, Younger Cohort children who are not included in this paper were born in 2002-01 and were approximately 1 year old during Round 1 survey.

been utilized. The data collected in each round include both children and household information on various topics; like assets in the households, education history, health status, subjective wellbeing, time-use, occupation status, shocks etc. From all three rounds a total sample of 2,853 households² are examined.

For studying measure of economic well-being at household level, I focus on data related to households' assets, children's time-use information on paid and unpaid work³, education, health as measured by Body Mass Index (BMI)⁴ and subjective well-being⁵. The composite measures of economic well-being are examined by seven socio-demographic and regional characteristics variables or time-invariant predictors. They are gender of the household head, place of residence, caste⁶ of the household head, religion of the household head, educational level of the household head, base level household size⁷ and region⁸. The summary statistics for these predictors are given in the Appendix (see Table A1).

2.2. Analytical strategy

2.2.1. Measures of economic well-being

First I use three different measures to study the magnitude of economic well-being at the household level.

(1) The first measure I consider is wealth index which is a composite index that reflects the welfare of household members in terms of the quality of the dwelling (for example, the materials of the walls, roof etc.), use of durable goods (whether the household owns a radio, TV, bicycle etc.), and access to basic services (whether the household has drinking water, electricity, etc.). This index is already available in each round, so I use it as original as given in the datasets and denoted by *ew1*.

(2) Then I build the second measure which is a composite index of previously used wealth index (*ew1*) and newly added educational enrolment, labour force participation status (separately for paid and unpaid work) and denoted by *ew2*.

(3) The third measure of economic well-being is constructed by adding two more variable to *ew2*. These two variables cover health status (BMI) and subjective well-being scores and denoted by *ew3*.

² In Round 4 (2013), 951 households or children are surveyed and the responses are recorded. For a balanced panel, I consider only those households or children that were present in all three rounds and thus gives a panel of 2,853 (951*3) households or children.

³ Hours spent in domestic chores in a typical day is considered as the unpaid work. In Indian scenario, members of the households, especially women are usually engaged in unpaid domestic chores. In a pro-poor setting, this engagement is a proxy for poor economic prosperity as this limits children and adolescents' opportunities for better educational and occupational achievements later.

⁴ Body Mass Index (BMI) is defined as 'the weight in kilograms divided by the square of the height in metres (kg/m²)' that is commonly used to classify underweight, overweight and obesity in adults (WHO 2016). Children whose BMI range from 18.50 to 24.99 are considered to have normal BMI.

⁵ Subjective well-being is calculated from the 'ladder' question that is asked in each round. This ladder is a scale that ranges from 1 to 9 where 1 represents the worst possible life and 9 is the best possible life.

⁶ There are four official caste groups in India as recognised by Constitution of India: Scheduled Caste (SC), Scheduled Tribes (ST), Backward Class (BC) and Other Castes (OC).

⁷ Household size in the Round 2 (2006) are considered as the base-level household size and treated as one time invariant variable.

⁸ Young Lives survey identified three regions in Undivided Andhra Pradesh: Coastal Andhra, Rayalaseema and Telangana. In July, 2014, Undivided Andhra Pradesh has been divided into two states: Andhra Pradesh and Telangana.

Mathematically three measures of economic well-being are:

- (1) $ew1_{it} = \text{wealth index}_{it}$
- (2) $ew2_{it} = ew1_{it} + \text{education}_{it} + \text{not doing paid work}_{it} + \text{not doing unpaid paid work}_{it}$
- (3) $ew3_{it} = ew2_{it} + \text{BMI}_{it} + \text{subjective well-being}_{it}$

Where each measure are constructed for household i at round t .

As mentioned before, $ew1$ is already available in the datasets. It is important to note here that the variables selected for creating $ew2$ and $ew3$ are the mix variables of continuous and categorical in nature. For example, wealth index, BMI scores and subjective well-being scores are originally given in continuous form⁹, whereas enrolment status, whether not engaged in paid and unpaid work are the categorical variables. Hence Principal Component Analysis (PCA) would not be an appropriate data reduction technique and I obtain $ew2$ and $ew3$ through Multiple Correspondence Analysis (MCA) technique.

MCA which is usually seen as a generalization of principal component analysis and it is able to analyse the pattern of relationships of several categorical dependent variables instead of continuous (Abdi and Velentin 2007). As in PCA, it organizes the variables onto dimensions on the basis of variance explained. The distance between variables is a function of the strength of their relationships. MCA is carried out on an indicator (or design) matrix with cases as rows and categories of variables as columns in which each row and each column is depicted as a point. The results are interpreted on the basis of the relative positions of the points and their distribution along the dimensions; as categories become more similar in distribution, the closer (distance between points) they are represented in space (Costa et.al 2013). Similar to *eigen* values in PCA, *inertia* in MCA is the percent of variance explained by each dimension and thus reflect the relative importance of each dimension, with the first always being the most important, the next second most important and so on. In this paper, first dimension is used to create the index. Thus $ew2$ and $ew3$ are the row-scores for each household from the first dimension and have a mean of 0 and a standard deviation of 1.

2.2.2. Determinants of economic well-being

To find out the significant non-economic time-invariant determinants of economic well-being, I used both pooled ordinary least square (OLS) and random-effects OLS regression models on three measures of economic well-being and thereby finally compare the relative significance of the non-economic predictors on these three measures.

First considering the pooled nature of the data, I prefer to carry out two pooled OLS regression models on each of the dependent variables. In the first model, the role of gender, place of residence, caste, religion, educational level and region of the household head have been examined. In the Model-2, round or year has been added as a stepwise fashion to examine its association with the dependent variables after controlling for the predictors used in the Model-1. I have used the following specifications:

⁹ For carrying out MCA, wealth index is categorized into three terciles, i.e., bottom, middle and top. BMI is categorized into normal (BMI scores 18.50 to 24.99) and not normal. The median value is used to categorize subjective well-being into poor and good.

$$ew1 / ew2 / ew3 = b_0 + b_1*gender + b_2*place\ of\ residence + b_3*caste + b_4*religion + b_6*educational\ level + b_7*household\ size + b_8*region \quad (Model\ 1)$$

$$+ b_9*round + e \quad (Model\ 2)$$

But as the estimates from pooled OLS ignore the hierarchical structure of the panel data, in the next stage, I further estimate the importance of the predictors using random-effects regression model to 1) get a valid estimates for the predictors considering the panel nature of the data and 2) check the consistency of the OLS models by comparing OLS estimates with results obtained from random-effects regression models.

As the main focus of the paper is to estimate coefficients for selected time-invariant variables, the random-effects model appears to be the most appropriate. Fixed-effect model, the alternative regression model for panel data bears a shortcoming when one is particularly interested in estimating the strength of time-invariant variables like gender or caste on the dependent variable. As fixed-effects model is designed to examine the causes of changes within a person (or entity), this model cannot be used for time-invariant variables as a time-invariant characteristic remains constant for each person or entity over the years (Torres-Reyna 2007).

On the other hand, random-effects model with the appropriate specification can estimate both time-variant and time-invariant effects (Bell and Jones 2014) where differences across entities are believed to have some influence on the dependent variable as it assumes that “the entity’s error term is not correlated with the predictors which allows for time-invariant variables to play a role as explanatory variables” (Torres-Reyna 2007).

Considering the time-invariant variables as predictors of the economic well-being of the household i at time j , I estimate the following specifications:

$$ew1_{ij} / ew2_{ij} / ew3_{ij} = \mu + Gender_{ij} + \beta_1 Residence_{ij} + \beta_2 Caste_{ij} + \beta_3 Religion_{ij} + \beta_4 Educational\ level_{ij} + \beta_5 Household\ size_{ij} + \beta_6 Region_{ij} + u_i + e_{ij} \quad (Model\ 1)$$

$$+ \beta_7 Round_{ij} + u_i + e_{ij} \quad (Model\ 2)$$

where μ is the average economic well-being scores for the entire sample, u_i is the random heterogeneity specific to the i -th household and is constant through time and e_{ij} is the error term.

After obtaining estimates from random-effects model, Lagrange multiplier (LM) test is carried out to examine the validity of random-effects model over pooled OLS regression. The null hypothesis in the LM test is that there is no variance across entities or no panel effect whereas the alternative hypothesis is there is variance across entities indicating the panel effect. Additionally, pairwise comparisons of marginal means across the levels of predictor variables from Model-2 have also been carried out for each dependent variables. This has been done as a post-estimation method after random-effects models.

.3. Results

3.1. Levels of economic well-being

Table 1 presents the levels of each variable used in constructing three measures of economic well-being by rounds or survey years. It shows that the mean *ew1* has increased from 0.47 in 2006 to 0.61 in 2013. As stated before, *ew2* comprises enrolment in school or institution, percentage of children not engaged in unpaid and paid work. It is interesting to note here that the levels of these three variables have been decreased considerably from 2006 to 2013. The enrolment rate has fallen from 89 percentage in 2006 to 49 percentage in 2013 whereas children who were not engaged in unpaid and paid work have reduced from 42 and 95 percent in 2006 to 18 and 76 percent in 2013 respectively indicating a considerable percentage of households experienced children's drop-out and their engagement in both unpaid and paid activities in seven years period. On the other hand, two other variables that used for constructing *ew3* have shown improvement over the years. Children's BMI status and mean subjective well-being scores have increased from around 9 percent and 3.66 points in 2006 to 52 percent and 4.97 points in 2013 respectively.

Table 1: Variables used in MCA for constructing three economic well-being measures

Round	<i>ew3</i>				
	<i>ew2</i>				% of children having normal BMI
	<i>ew1</i> Wealth Index	enrolment in school / institution	% of children not engaged in unpaid work	% of children not engaged in paid work	
2 (2006)	0.47	89.05	42.06	95.06	8.70
3 (2009)	0.52	77.56	28.71	86.54	26.13
4 (2013)	0.61	49.15	18.19	76.03	52.23

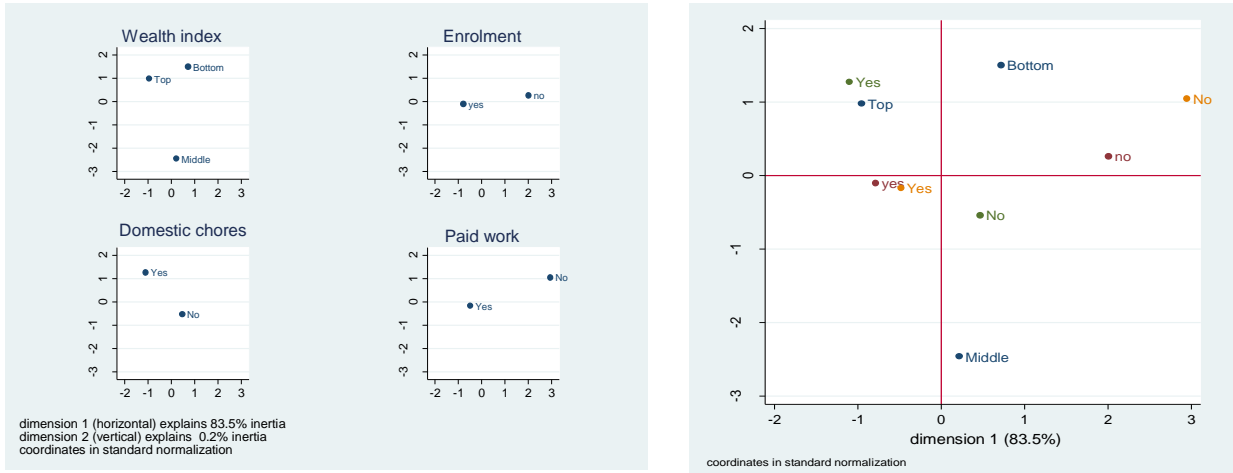
Note: author's calculation

Source: Young Lives survey (2006, 2009 and 2013)

Figure 1 and 2 present the MCA coordinate plots for *ew2* and *ew3* respectively. As stated in the methodology section, being analogous to principal component analysis, MCA is a dimension reducing method for categorical variables and is able to identify associations between levels of those variables. MCA coordinate plot gives the relative positions of the categories in response to the two dimensions obtained for both *ew2* and *ew3*. The first dimension (equivalent to factor or axis) is able to explain most of the variation in the data and it reveals that around 84 and 71 percent of the variation in the variables for *ew2* and *ew3* respectively are explained by the dimension 1 itself. So I have used the row-scores of the first dimension as the measure or index for *ew2* and *ew3*. This is also important to note here that as the positive categories of the variables are found to be placed in the negative axis in both the plots, the *ew2* and *ew3* have both negative and positive scores where negative scores indicate better economic well-being at the household level which is a bit inconvenient for interpretation.

To overcome this, both *ew2* and *ew3* scores are sign-transformed¹⁰ and used in all the analysis throughout this paper.

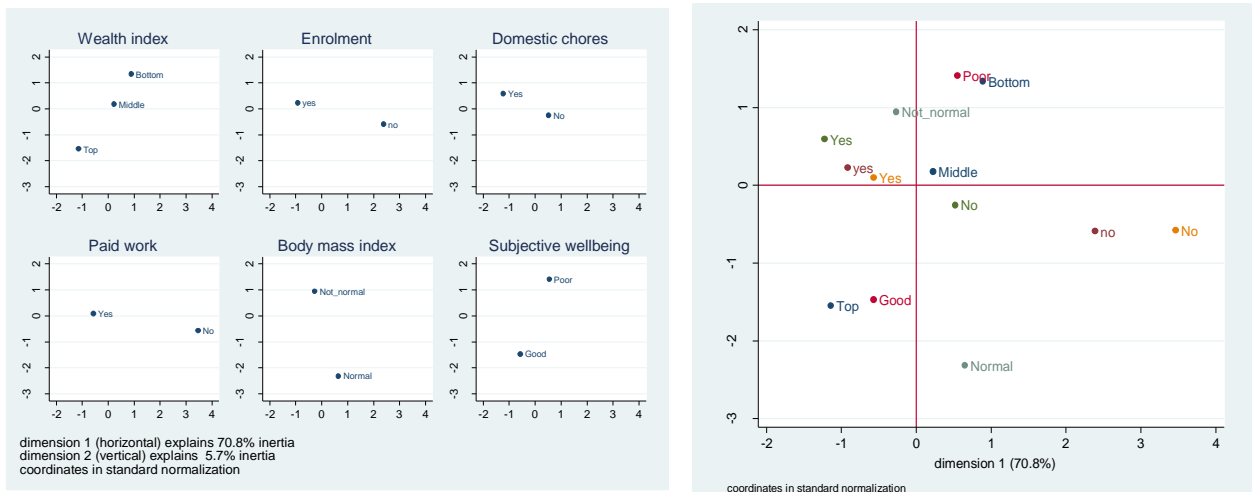
Figure 1: MCA coordinate plot for *ew2*



Note: X-axis and Y-axis represent row scores for dimension 1 and dimension 2 respectively.

Source: Young Lives survey (2006, 2009 and 2013)

Figure 2: MCA coordinate plot for *ew3*



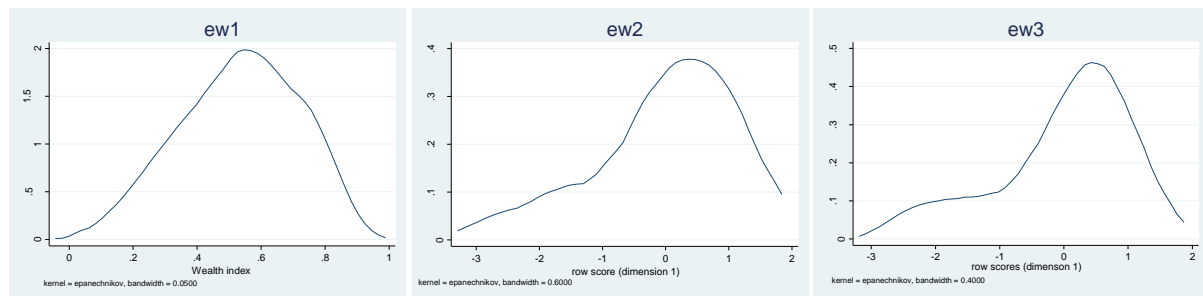
Note: X-axis and Y-axis represent row scores for dimension 1 and dimension 2 respectively.

Source: Young Lives survey (2006, 2009 and 2013)

Figure 3 presents kernel density plots to examine the distribution patterns of *ew1*, *ew2* and *ew3*. The *ew1* which is the raw scores for wealth index has a mean value of 0.53 and a standard deviation of 0.19. On the other hands, being the row-scores from dimension 1, the mean and standard deviation for both *ew2* and *ew3* are 0 and 1 respectively. The minimum scores for *ew2* and *ew3* are -2.70 and -2.79 respectively where maximum scores are 1.24 and 1.47 respectively.

¹⁰ The negative row-scores of the dimension 1 in this paper represent better economic well-being and vice-versa. For an easy interpretation, these scores have been transformed by multiplying with (-1). This is a sign transformation and does not affect the levels or coefficients from bivariate or multivariate analysis.

Figure 3: Kernel density plot for three measures of economic well-being



Note: X-axis represents wealth index for ew1 and row-scores of dimension 1 for ew2 and ew3 as obtained from Multiple Correspondence Analysis.

Source: Young Lives survey (2006, 2009 and 2013)

Table 2 presents the levels of *ew1*, *ew2* and *ew3* by non-economic predictors. Findings reveal that gender is significantly associated with the three measures of economic well-being. Female as the household head are found to have less economic well-being compared to households that led by a male member. This association is found stronger especially with *ew2* and *ew3*. Strong association is also observed between place of residence and measures of economic well-being where households in rural areas have significantly lower economic well-being than urban households. For example, the average scores of *ew1*, *ew2* and *ew3* for rural households are 0.47, -0.13 and 0.13 respectively but for urban households the average economic well-being scores are 0.70, 0.37 and 0.37 respectively.

Table 2: Levels of economic well-being by time-invariant non-economic predictors

Predictors ^a	<i>ew1</i>	<i>ew2</i>	<i>ew3</i>
Gender			
Male	0.534*	0.041***	0.041***
Female	0.517	-0.280	-0.312
Place of residence			
Urban	0.701***	0.369***	0.368***
Rural	0.472	-0.129	-0.134
Caste			
Scheduled Caste	0.455	-0.234	-0.260
Scheduled Tribe	0.429	-0.106	-0.129
Backward Class	0.544	-0.033	-0.033
Other Caste	0.637***	0.357***	0.374***
Religion			
Hindu	0.527	-0.005	-0.013
Non-Hindu	0.568***	0.026	0.044
Educational level			
Below primary	0.464	-0.270	-0.284
Above primary	0.607***	0.306***	0.309***
Household size			
Up to 5 members	0.539***	0.021	0.011
More than 5 members	0.517	-0.049	-0.041

Region			
Coastal Andhra	0.549***	0.171***	0.158***
Ryalaseema	0.530	-0.071	-0.096
Telangana	0.515	-0.087	-0.066

Note: author's calculation

Source: Young Lives survey (2006, 2009 and 2013)

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

^ One-way ANOVA has been carried out for caste and region to test the significant association with dependent variables. For other predictors, t-test has been carried out.

Households that belong to Other Caste groups have significantly better economic well-being scores (0.64, 0.36 and 0.37) compared to other three castes. The worst *ew1* is observed amongst Scheduled Tribe households (0.43) and the worst *ew2* and *ew3* are observed amongst Scheduled Caste households (-0.23 and -0.26). Religion does not show any significant associations with *ew2* and *ew3* but with *ew1*. Households from Non-Hindu background have significantly higher *ew1* scores (0.57) in comparison to households with a Hindu background (0.53). Educational level of the household heads are found strongly and significantly related to three measures of economic well-being. Household head with above primary level education have scores of 0.61, 0.31 and 0.31 in *ew1*, *ew2* and *ew3* respectively than household heads with below primary level education (0.46, -0.27 and -0.28). The size of the households in 2006 (base year) are found significantly related to *ew1* only where households with up to 5 members shows better score (0.54) than household with more than 5 members (0.52). Regarding all three measures, region has emerged as significant variable. Coastal Andhra has the highest economic well-being (0.55, 0.17 and 0.16) compared to other two regions, Telangana being the worst (0.52, -0.09 and -0.07).

3.2. Non-economic determinants

In this section, I have examined the non-economic determinants of economic well-being by carrying out both pooled OLS and random-effects regressions on *ew1*, *ew2* and *ew3* respectively. For each measure, both pooled OLS and random-effects regression have been carried out in a step-wise fashion in which round or survey years is added in a second model while controlling for the other non-economic time-invariant predictors used in the first model.

Table 3 presents the estimates from pooled OLS regressions. Findings reveal that female household head are significantly negatively related to all three measures of economic well-being compared to boys except in the model 1 for *ew1*. The negative association is particularly stronger in case of model 1 for both *ew2* and *ew3*. Rural households have also shown strong significant negative association with *ew1*, *ew2* and *ew3* than urban households. While comparing correlations between the caste groups and the measures of economic well-being, Scheduled Tribes are found to show the lowest economic wellbeing than Scheduled Caste in *ew1* but for *ew2* and *ew3*, Scheduled Castes households themselves are found to be in most disadvantaged position and compared to these households, households belong to Other Caste groups have shown to have the significantly higher economic well-being. No significant effect has been observed between other two caste groups and *ew2* and *ew3*.

Controlling for the other factors, religion has shown a different pattern. Contrary to bivariate analysis, non-Hindu households are found negatively related with all three economic

well-being measures than Hindu households and the effects are substantially large in case of *ew2* and *ew3*. Like religion, educational level completed by the household head are significantly correlated with economic well-being. Household head with above primary level education have significantly higher chance of attaining *ew1*, *ew2* and *ew3* than household heads with below primary level education. Household sizes does not emerge as a significant predictor of economic well-being. Region has emerged as a significant predictor where both Ryalseema and Telangana have significantly lesser chance of attaining better *ew1*, *ew2* and *ew3* compared to the region New Andhra where Ryalseema emerged as the worst amongst three regions.

In Model 2, the impact of rounds or survey years are also examined. Results show that in general, years has significant correlation with all measures of economic well-being but it has two distinct patterns. While with *ew1*, the chance of attaining better well-being has increased over the years, it has become reverse in case of *ew2* and *ew3*. The possible explanation lies in the fact that both *ew2* and *ew3* are the measures which also account for enrolment in education, not engagement in paid and unpaid work which significantly decrease in later years, while the household wealth may increase over time.

Table 3: Determinants of economic well-being, estimates from pooled OLS regression models

Predictors	<i>ew1</i>		<i>ew2</i>		<i>ew3</i>	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Gender						
Female	-0.007 (0.008)	-0.021*** (0.008)	-0.260*** (0.060)	-0.168*** (0.057)	-0.284*** (0.064)	-0.194*** (0.057)
Place of residence						
Rural	-0.188*** (0.006)	-0.181*** (0.006)	-0.330*** (0.042)	-0.376*** (0.039)	-0.315*** (0.042)	-0.360*** (0.038)
Caste						
Scheduled Tribe	-0.0257 ** (0.013)	-0.026** (0.012)	0.0366 (0.071)	0.040 (0.067)	0.040 (0.070)	0.043 (0.067)
Backward Class	0.052*** (0.007)	0.052*** (0.006)	0.012 (0.050)	0.014 (0.046)	0.040 (0.050)	0.042 (0.046)
Other Caste	0.092*** (0.009)	0.094*** (0.008)	0.284*** (0.057)	0.276*** (0.053)	0.328*** (0.057)	0.321*** (0.053)
Religion						
Non-Hindu	-0.025*** (0.009)	-0.023*** (0.009)	-0.176*** (0.058)	-0.187*** (0.053)	-0.157*** (0.058)	-0.169*** (0.054)
Educational level						
Above primary	0.067*** (0.006)	0.068*** (0.006)	0.425*** (0.039)	0.420*** (0.036)	0.437*** (0.039)	0.433*** (0.036)
Household size						
More than 5 members	-0.005 (0.007)	-0.005 (0.005)	-0.010 (0.038)	-0.005 (0.036)	0.006 (0.038)	0.011 (0.036)
Region						
Ryalseema	-0.022*** (0.007)	-0.022*** (0.007)	-0.281*** (0.045)	-0.283*** (0.042)	-0.300*** (0.045)	-0.301*** (0.042)
Telangana	-0.036*** (0.007)	-0.036*** (0.007)	-0.221*** (0.043)	-0.218*** (0.040)	-0.189*** (0.043)	-0.186*** (0.040)
Round						
3 (2009)		0.055*** (0.006)		-0.301*** (0.036)		-0.244*** (0.036)
4 (2013)		0.130*** (0.006)		-0.802*** (0.040)		-0.765*** (0.040)

Constant	0.623 (0.010)	0.557 (0.010)	0.206 (0.068)	0.595 (0.064)	0.152 (0.068)	0.510 (0.064)
R ²	0.392	0.475	0.139	0.249	0.147	0.249
F-statistic	266.90	286.77	52.01	84.94	54.87	84.13

Note: author's calculation

Source: Young Lives survey (2006, 2009 and 2013)

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard error in parentheses.

Reference category: male (gender), urban (place of residence), Scheduled Caste (caste), Hindu (religion), below primary (educational level), up to 5 members (household size), Coastal Andhra (region) and Round 2, 2006 (round).

Table 4 presents the estimates from random-effects regression models. Like pooled OLS regressions, estimates are obtained from two models for each measure of economic well-being. Random-effects model utilizes the hierarchical structure of the panel data and is able to provide estimates for time-invariant variables which are of particular interest in this paper. Interestingly the directions and the significance of the associations between predictors and the three dependent variables as established by the random-effects regression models are found almost similar to the previous pooled OLS regression estimates which strengthen the importance of non-economic variables on economic well-being of the households.

For *ew1*, gender is not significantly associated in Model 1 and has shown a poor negative association in Model 2. But gender has shown strong significant associations with both *ew2* and *ew3*. The chances of attaining better *ew2* and *ew3* are significantly lower amongst female head of the households compared to male household heads and this relationship is relatively stronger in Model 1 than Model 2 where survey years are not controlled for. Like gender, rural households have shown significant negative correlation with all three measures of economic well-being but unlike the gender, the relationship in this case is stronger in Model 2 for *ew2* and *ew3*. Both Backward Class and Other Caste households have significantly more chance in attaining better *ew1* than Scheduled Caste households but the effect size is not substantial to hold this relationship valid. On the other hand, regarding *ew2* and *ew3*, Other Caste households have significantly better chance in attaining better economic well-being than Scheduled Caste households. In nutshell, households belong to Other Caste are significantly emerged as the most advantaged households.

Table 4: Determinants of economic well-being from random-effects regression models^a

Predictors	<i>ew1</i>		<i>ew2</i>		<i>ew3</i>	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Gender						
Female	0.009 (0.009)	-0.014* (0.008)	-0.265*** (0.068)	-0.109* (0.062)	-0.291*** (0.067)	-0.135** (0.061)
Place of residence						
Rural	-0.185*** (0.009)	-0.159*** (0.010)	-0.256*** (0.051)	-0.331*** (0.050)	-0.239*** (0.052)	-0.319*** (0.051)
Caste						
Scheduled Tribe	-0.026 (0.013)	-0.029 (0.018)	0.031 (0.092)	0.038 (0.092)	0.035 (0.091)	0.043 (0.091)
Backward Class	0.053*** (0.009)	0.053*** (0.009)	0.016 (0.061)	0.020 (0.061)	0.044 (0.062)	0.047 (0.062)
Other Caste	0.093*** (0.009)	0.097*** (0.012)	0.295*** (0.070)	0.283*** (0.069)	0.339*** (0.071)	0.325*** (0.071)
Religion						

Non-Hindu	-0.025** (0.013)	-0.019 (0.013)	-0.160** (0.070)	-0.179** (0.071)	-0.139** (0.071)	-0.159** (0.072)
Educational level						
Above primary	0.069*** (0.009)	0.073*** (0.009)	0.440*** (0.048)	0.434*** (0.048)	0.452*** (0.049)	0.446*** (0.049)
Household size						
More than 5 members	-0.004 (0.008)	-0.005 (0.008)	-0.010 (0.048)	-0.001 (0.048)	0.005 (0.049)	0.014 (0.048)
Region						
Ryalaseema	-0.024** (0.009)	-0.026*** (0.009)	-0.282*** (0.055)	-0.279*** (0.054)	-0.298*** (0.055)	-0.294*** (0.055)
Telangana	-0.034*** (0.009)	-0.036*** (0.009)	-0.223*** (0.054)	-0.214*** (0.054)	-0.193*** (0.054)	-0.183*** (0.054)
Round						
3 (2009)		0.055*** (0.004)		-0.303*** (0.026)		-0.246*** (0.026)
4 (2013)		0.130*** (0.005)		-0.806*** (0.034)		-0.770*** (0.034)
Constant	0.616 (0.013)	0.537 (0.014)	0.139 (0.081)	0.539 (0.080)	0.083 (0.083)	0.456 (0.081)
R ² - Within	0.057	0.371	0.001	0.262	0.003	0.255
R ² - Between	0.502	0.508	0.238	0.239	0.242	0.244
R ² - Overall	0.392	0.473	0.139	0.248	0.146	0.248

Note: author's calculation

Source: Young Lives survey (2006, 2009 and 2013)

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard error in parentheses.

Reference category: male (gender), urban (place of residence), Scheduled Caste (caste), Hindu (religion), below primary (educational level), up to 5 members (household size), Coastal Andhra (region) and Round 2, 2006 (round).

^Lagrange multiplier (LM) test is carried out for each model to examine the validity of random-effects model over pooled OLS regression and the significance level from each test validates the random-effects regression estimates in this table.

In all three measures of economic well-being, non-Hindu households have significantly shown better economic conditions as compared to their counterparts. Also household heads with above primary level education significantly progress better in *ew1*, *ew2* and *ew3* than household heads having below primary education. The educational level of the household head has shown the strongest effect on *ew2* and *ew3*, indicating the role of education in attaining well-being. Like pooled OLS estimates, the household size is not emerged as a significant predictor of any measure of economic well-being. Region Ryalaseema is found to be significantly worst performer in all measures of economic well-being followed by Telangana. Like previous estimates, round or year dummies give a very interesting results. While there is a significant constant improvement in *ew1* over the years, both *ew2* and *ew3* have shown significant decrease in year 2009 and 2013 compared to the reference year 2006 where stronger negative decreases are observed in 2013 in both *ew2* and *ew3*.

Though the estimates from the regression results identify the probable time-invariant non-economic determinants of economic well-being, I further examine the estimates by carrying out a pairwise comparison of marginal linear predictions for Model 2 after obtaining the random effects regression estimates. Table 5 summarizes the results by comparing the marginal means of the dependent variables. This is especially useful while there is more than categories in a predictor as in case of caste, region and survey years. For a binary predictor, the interpretation is already given before but the significant contrast in marginal means between two categories is shown here.

Findings show that Backward Class households are better in *ew1* than both Scheduled Caste and Scheduled Tribes households while Other Castes households are significantly better in *ew1* than other three caste groups. Regarding *ew2* and *ew3*, only Other Castes are found to have significantly better scores than others. Both Rayalaseema and Telangana have significantly lesser economic well-being compared to the region New Andhra. The scores for *ew1* was better in 2009 than 2006, 2013 than both 2006 and 2009. But as expected from the previous results, this relationship is found reverse in case of *ew2* and *ew3* where the scores are found significantly lowest in 2013 than any previous survey years.

Table 5: Pairwise comparisons of marginal linear predictions[#]

Predictors	<i>ew1</i>		<i>ew2</i>		<i>ew3</i>	
	Contrast	Std. Error	Contrast	Std. Error	Contrast	Std. Error
Gender						
Female vs Male	-0.014*	0.008	-0.109*	0.062	-0.135*	0.061
Place of residence						
Rural vs Urban	-0.159***	0.010	-0.331***	0.050	-0.319***	0.051
Caste[^]						
ST vs SC	-0.029	0.018	0.038	0.092	0.043	0.091
BC vs SC	0.053***	0.009	0.020	0.061	0.047	0.062
OC vs SC	0.097***	0.012	0.283***	0.069	0.325***	0.071
BC vs ST	0.082***	0.018	-0.018	0.082	0.004	0.081
OC vs ST	0.126***	0.020	0.244***	0.089	0.283***	0.089
OC vs BC	0.044***	0.010	0.263***	0.055	0.278***	0.056
Religion						
Non-Hindu vs Hindu	-0.019	0.013	-0.179**	0.071	-0.159**	0.072
Educational level						
Primary and above vs Below primary	0.073***	0.009	0.434***	0.048	0.446***	0.049
Household size						
More than 5 members vs Up to 5 members	-0.005	0.008	-0.001	0.048	0.014	0.048
Region						
Rayalaseema vs Coastal Andhra	-0.026***	0.009	-0.279***	0.054	-0.294***	0.055
Telangana vs Coastal Andhra	-0.036***	0.009	-0.214***	0.054	-0.183***	0.054
Telangana vs Rayalaseema	-0.010	0.008	0.065	0.052	0.110	0.053
Round						
3 (2009) vs 2 (2006)	0.055***	0.004	-0.303***	0.026	-0.246***	0.026
4 (2013) vs 2 (2006)	0.130***	0.005	-0.806***	0.034	-0.770***	0.034
4 (2013) vs 3 (2009)	0.075***	0.004	-0.504***	0.033	-0.524***	0.033

Note: author's calculation

Source: Young Lives survey (2006, 2009 and 2013)

Significance level: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$.

[^] SC = Scheduled Caste, ST = Scheduled Tribe, BC = Backward Class and OC = Other Castes.

[#] This table is generated as a post-estimation method after obtaining random-effects regression estimates.

4. Conclusion

Drawing on the experience of Young Lives, a longitudinal study of childhood poverty, this paper makes an attempt to contribute to the study of economic well-being by analysing three different measures. Along with the conventional wealth index; this paper also added other economic and subjective variables in constructing the measures which are also dynamic and sensitive to culture and time. As a result, the two constructed measures give a very different picture of well-being from that of wealth index for some predictors.

First this paper argues for including non-conventional indicators of well-being in the composite index building process that can represent overall economic conditions or well-being at household level. This paper also shows the use of Multiple Correspondence Analysis to construct the index while the indicator variables are categorical. This is particularly helpful as many sample surveys collect categorical responses for some variables which may be relevant in the context of economic well-being. For example, current enrolment status of a child at a household gives hint on household's economic situation, especially when collected from a same household over the years. Illustratively, if no drop-out has been observed from a household over the years, it would not be very unwise to consider that the household's economic status is relatively stable, at least regarding this particular child, given other factors remain constant.

Using this logic, considering wealth index is the first measure of economic well-being, this paper considers variables like enrolment status, and not engagement in unpaid and paid activities along with wealth index to build a second measure that depicts a broader notion of economic well-being. Further, health status and subjective well-being are added to the previous measure to make the concept of economic well-being more realistic and holistic. Secondly these measures are examined by time-invariant non-economic predictors which is very relevant in case of India. The results thus obtained are very practical and hence proved useful.

Findings in general reveal that there are significant changes of economic well-being over time and by predictors. Educational level (above primary), caste (Other Castes), religious background (Hindu), place of residence (urban) and gender (male) of the household head are found to be in significantly better position than their counterparts in terms of all three measures of well-being but this association is especially stronger for other two composite measures when other economic, health and subjective dimensions are taken into consideration. But when considering with wealth alone the relationship is not that noticeable. These measures highlight that economic development have a socio-demographic dimension in India which is still persisting. Also the regional differentiations in economic well-being are clearly marked where New Andhra is found to be in better position than other regions.

Considering the subjective and other economic dimensions in two measures of economic well-being shows that over the years overall economic well-being have actually decreased while the first measure, i.e., wealth index has shown significant increase over the years. If we consider wealth alone for economic well-being, then it may appear that there is a steady economic progress but a composite measures of economic well-being have shown that there are needs of serious policy formulation must aimed at particular groups who are being deprived of education, leisure, better health and sound subjective well-being over the years.

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