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ABSTRACT

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We studied whether relative income has an impact on subjective well-being among extremely poor people. Contrary to the findings in developed countries, where relative income has shown a significant and negative impact on subjective well-being, we cannot reject the hypothesis that relative income has no impact on subjective well-being in rural areas of northern Ethiopia.

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1. Introduction

The observation that people are not only concerned with their own income but also with their own income relative to others has been discussed by scholars from Adam Smith to Karl Marx. Recent evidence from the subjective well-being literature, which utilizes subjective well-being (also referred to as "satisfaction with life" or "happiness") as a proxy for utility, does show that the income of others affects our own subjective well-being (see, e.g., a summary of the literature in Clark et al. 2008). Another branch of the literature on "relative positions" has applied stated preference studies to explicitly test both for relative concerns on income as well as on other domains in life, such as days of vacation and value of a car, with the overall finding that people do have relative concerns (e.g., Alpizar et al., 2005; Johansson-Stenman et al., 2002; Solnick and Hemenway, 1998). The implications of relative concerns are lowered utility from a unit of income as well as engagement in activities for the reason to increase one's relative position, i.e. conspicuous consumption.

One of the main catalysts for the research on relative income is the Easterlin paradox (Easterlin, 1974, 1995). Richard Easterlin noted that despite sharp rises in income per capita in many of the Western countries after World War II, the average subjective well-being remained fairly constant over the same period of time. However, cross-sectional data showed a positive correlation between income and subjective well-being. Clark et al. (2008) discussed the relationship between different cross-section data sets and argued that the lower the absolute level of income in a cross-

sectional data set, the higher the positive correlation between subjective well-being and own absolute income. In other words, relative income is more important for subjective well-being among people in richer countries than in poorer countries. The empirical evidence supporting this observation on this issue stems from research in wealthier countries, where the empirical results show that relative income has a negative and significant impact on subjective well-being. However, there is a lack of empirical evidence from poorer countries with exception of the application by Knight et al. (2007) to rural China, where they found that the self-reported relation between own household income and village average had a positive and significant impact on subjective well-being. In a similar vein as Clark et al. (2008), Frey and Stutzer (2002) argued that when absolute income is above some subsistence level, then other factors, such as relative income, start to influence subjective well-being.

The objective of this paper is to test whether relative income matters for very poor people by using a novel data set collected in rural areas of northern Ethiopia in 2004–2005. Ethiopia was ranked in the top five poorest countries in the world, based on adjusted gross national purchasing power parity income per capita and almost 40 percent of households are living under poverty line (World Bank, 2004).[1] The overall results of our paper, based on different definitions of reference groups, suggest that the relative income does not affect subjective well-being among the very poor people in northern Ethiopia.

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[1] Using international US$, where one dollar has the same purchasing power as US$ 1 in the United States, Ethiopia's gross per capita income is only 1.7% of the gross per capital income in the United States (World Bank, 2004).

2. Modeling Relative Income in Northern Ethiopia

To test if relative income has an impact on subjective well-being requires that the group of people to whom one compares oneself is defined. Different reference groups have been assumed in the empirical literature: McBride (2001) used age as the reference group and geographical area was used, for example, by Blanchflower and Oswald (2004) and Luttmer (2005). In an ambitious paper, Ferrer-i-Carbonell (2005) tested different combinations of gender, age, and education as reference groups.

We used data from the third round of an extensive household survey ("Sustainable Land Use in the Ethiopian Highlands"), which was conducted in 2004-2005. The survey covered 1,753 randomly chosen households within clusters of 2 zones, 6 districts, 14 sub-districts, and 196 local communities.[2] The data are comprehensive in terms of socio-demographic and economic variables, such as age, marital and health status, educational attainments, and agricultural practice. Income was the key variable in our analyses of its impact on subjective well-being. We used household income per capita, which was calculated as the sum of sale of crops, off-farm income, sale of livestock products, oxen rental, tree sales, honey sales, gifts, and farm wages divided by the number of household members.

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[2] Ethiopia consists of 11 regional states, which are divided into sub-regions called zones; the zones are divided into districts (*woreda*); the districts are divided into sub-districts (*kebele*); which are in turn constructed of local communities, called *got* (singular = got; plural = gotoch).

In this paper, we followed the Ferrer-i-Carbonell (2005) approach by testing several possible combinations of reference groups, both on their own as well as in combinations. We defined the reference groups as related to age, size of land holdings, and geographical area. Age of the individuals was classified into 10 groups, starting from age 25 to 85, as $\{20 + 5z \leq age_i < 40 + 5z\}$; $\forall z = 0,...9$ (average age was 50.29, with standard deviation 15.24). Land size of the households was measured in hectares and classified into seven groups: $\{land_i = 0; 0.1z < land_i \leq 0.1(z+1), z = 0,1,2; 0.3 < land_i \leq 0.5; 0.5 < land_i \leq 0.7; land_i > 0.7\}$ (the average size of land was 0.22 hectares with standard deviation 0.25). We used two different geographical areas as reference groups: (1) sub-district and (2) local community.

Subjective well-being is measured on a discrete scale by asking, "in general, how satisfied are you with the way you live?" with five possible response categories ranging from very unhappy to very happy. (The number of individuals that self-reported to be happy or very happy was low and therefore these two categories were merged.) Due to non-responses and missing values, we used 1,463 individuals in our analyses. The distribution of happiness was very unhappy (11.3 percent), unhappy (56.4 percent), neither happy nor unhappy (24.9 percent), and happy or very happy (7.4 percent).

We tested for the impact of relative income on subjective well-being by using the following ordered probit model approach:[3]

$$SWB_i^* = \beta_{absolute} \log(y_i) + \beta_{relative} \log(y_{j,-i}^r) + \gamma' x_i + \alpha_k + \varepsilon_i \,,$$

where SWB_i is the self-reported subjective well-being of individual i reported on an ordinal scale; y_i is absolute income of individual i; $y_{j,-i}^r$ is the average income of the reference group j, defined as $y_{j,-i}^r = (1/(N_j - 1)) \sum_{s=1}^{N_j - 1} y_s$ (where N_j is the number of individuals who are in jth reference group); $\beta_{absolute}$ and $\beta_{relative}$ are the estimated parameters for the absolute and relative income; x_i is a vector of socio-demographic characteristics, such as age, sex, marital and health status, main occupation, and literacy; γ is a vector of estimated parameters of the socio-demographic variables; α_k is the sub-district level fixed-effects to capture unobservable regional differences;[4] and ε_i is the error terms which are assumed as normally distributed with zero mean and unit variance due to identification. We expected that absolute income would have a positive impact on subjective well-being ($\beta_{absolute} > 0$) and that relative income would have a negative impact ($\beta_{relative} < 0$) if it affected subjective well-being. It is the sign, magnitude, and statistical significance level of the relative income parameter which is of main interest in this paper.

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[3] Alternatively, the distance between own income and the income of the reference group, i.e., $\log(y_i) - \log(y_j^r)$, could be used. This implies, then, that $h_i^* = (\beta_{absolute} + \beta_{relative}) \log(y_i) - \beta_{relative} \log(y_j^r) + x_i' \gamma + \varepsilon_i$. In this specification, the sign of the relative income is expected to be positive. The larger the distance, the richer the individual relative to the reference group, the happier is the individual. (See for instance, Clark et al., 2008; Blanchflower and Oswald, 2004.)

[4] Sub-district (*kebele*)-level fixed effects are not controlled for in the models using sub-district level as reference groups.

3. Results

Table 1 presents how absolute and relative income affect subjective well-being in eight different cases based on reference groups defined by using different combinations of age, size of land holdings, and geographical area (sub-district and local community).[5] As a comparison case, we also ran a model without relative income (presented in the second column), with the expected positive and significant effect of absolute income on subjective well-being, which is in line with the literature. The next two columns report the results for the geographical reference groups and the estimations show a positive and significant impact of absolute income and an insignificant effect of relative income on subjective well-being. The next two columns use age-peers and land size separately. Again, only the absolute income has significant impact on subjective well-being. The second part of the table presents the results when combining the reference group sub-district and local community levels with the age-peers and land size, respectively. The unanimous conclusion is that relative income is not a significant determinant of subjective well-being.[6]

4. Discussion

This paper investigated whether relative income matters for the very poor. We tested this hypothesis for individuals living in rural areas of northern Ethiopia, which is one of the poorest

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[5] Full estimation results are not reported here, but are available upon request.

[6] We also estimated the models with different groupings of age and land size, and the results were robust to grouping.

regions in the world. We found that the impact of relative income on subjective well-being is small in magnitude and also insignificant. This is in line with the predictions by Clark et al. (2008), who hypothesized that the impact of relative income on subjective well-being within a country will decrease as one moves from richer to poorer countries. This result leads to many important implications in the development research, especially in reducing poverty and income inequality, and designing redistributive policies as discussed by Luttmer (2005) and Fafchamps and Shilpi (2008). The policy implication is to focus on reduction of absolute poverty. However, in less poor countries, the policy should also consider income inequality, but identification of the threshold level where relative income will begin to affect subjective well-being is an important area for future research.

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Table 1. Estimation Results from Different Reference Groups

	Benchmark model	Geographical area reference groups		Socio-demographic and economic reference groups			Composed reference groups			
		Sub-district level	*Local community level*	*Age*	*Land size*	*Sub-district and age*	*Sub-district and land size*	*Local community and age*	*Local community and land size*
Without socio-demographic and economic variables									
Absolute income	0.184*	0.168*	0.211*	0.184*	0.183*	0.167*	0.168*	0.232*	0.216*
	(0.043)	(0.041)	(0.050)	(0.037)	(0.044)	(0.039)	(0.036)	(0.054)	(0.051)
Relative income	-	0.001	0.030	0.054	0.006	-0.004	0.003	-0.041	-0.010
		(0.092)	(0.083)	(0.152)	(0.070)	(0.055)	(0.029)	(0.046)	(0.040)
With socio-demographic and economic variables									
Absolute income	0.195*	0.171*	0.220*	0.194*	0.195*	0.173*	0.169*	0.250*	0.229*
	(0.049)	(0.046)	(0.058)	(0.049)	(0.050)	(0.044)	(0.042)	(0.064)	(0.059)
Relative income	-	-0.029	-0.001	-0.087	-0.026	-0.030	-0.015	-0.058	-0.035
		(0.100)	(0.090)	(0.155)	(0.076)	(0.057)	(0.032)	(0.048)	(0.043)
N	1483	1483	1061	1483	1483	1483	1483	1061	1061

Notes: We control for many socio-demographic and economic variables: age, age-squared, female household head, marital status, health status, literacy, occupation, number of relatives inside and outside the local community; type of house, characteristics of the house, household size.(*) The variable is significant at the 1% level. Robust standard errors are in parentheses. Models which do not include kebele reference groups include kebele level fixed-effects. The average number of households in our survey from a sub-district was 123 (the minimum and maximum are 106 and 187, respectively). The "neighborhood" concept is narrowed to local community level and the average income in these micro regions is used as the income of reference group. Local communities are not official administrative units, but are the micro living units in which individuals have daily interaction. A local community with less than 20 surveyed households was excluded. As a result, 68 local communities were included in the analysis (the minimum and maximum are 20 and 40 households, respectively) with 1061 households.