

Objective versus Subjective Poverty:

Are Income Positional Concerns influencing Subjective Poverty Assessments?

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Abstract:

There are discrepancies in the identification of the poor between subjective and objective poverty assessments. According to survey used in this paper, among the objectively poor the proportion of people that are not subjectively poor varies between 42% and 67% depending on the subjective poverty indicator. Among the objectively non-poor, the proportion of people that are subjectively poor varies between 17% and 34%. In this paper, I argue that these discrepancies are explained by individuals' positional concerns in the income domain. I use indicators on self-reported income gaps with respect to a reference-group and a person's aspirations to explain the discrepancies between objective and subjective poverty using a household survey conducted in 2001 in Mexico. The results indicate that income positional gaps influence subjective poverty assessments, and it does so in a way that can lead to the poor being misrepresented by subjective poverty indicators.

Keywords: Subjective Poverty, Poverty, Social Comparison, Positional Concerns, Aspirations.

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1. Introduction

Sen (1976) viewed the problem of the measurement of poverty as involving two main aspects: (i) the identification of the poor and (ii) the aggregation of the characteristics of the poor into an overall indicator (Bourguignon and Chakravarty, 2003). There are two main schools of thought that differ on the way they identify the poor. The objective school measures poverty “as the percentage of people whose income is below a poverty line. This poverty line is defined as the critical threshold of income, consumption or, more generally, access to goods and services below which individuals cannot fulfill basic needs” (Hunt, (1989); Ravallion and Pradhan (2000); Sen (1976); Foster, Greer, Thorbecke (1984)) The subjective school asks people to report whether their income is sufficient, what level of income would be adequate to make ends meet or to identify themselves as poor or not-poor (Van Praag and Flik (1991); Kapten, Van de Greer and Van de Stadt (1985); Rojas (2008)). As a result of the different conceptions, there are discrepancies in the identification of the poor between subjective and objective poverty assessments. This issue raises two questions. The first relates to a fundamental and ongoing discussion regarding the definition of poverty, in particular it raises the question of whether relative concerns should be captured by poverty indicators. In this paper, I will not be addressing this issue. The second question refers to the possibility that because subjective poverty assessments are correlated with relative concerns, then the poor could be misrepresented. In this paper, I argue that these discrepancies are explained by individuals’ positional concerns. I use indicators of self-reported income differences with respect to reference-groups and a person’s aspirations to explain the discrepancies between objective and subjective poverty using a household survey conducted in 2001 in Mexico. The results indicate that relative income influences subjective poverty assessments, and it does so in a way that can lead to the poor being misrepresented by subjective poverty indicators.

This paper's main objective is to determine if the self-reported income relative position with respect to a reference-group and aspirations explain the differences between objective and subjective poverty assessments. In particular, I examine whether indicators of relative position in the income domain correlate with the probability that a person will consider herself poor given that, based on her level of income, she is poor. I use the national poverty line (approx. 3 dollars per day) as the thresholds to identify the objectively poor. The subjective poverty indicators considered are the answers to the following three questions: (1) "Taking into consideration your material conditions, do you consider yourself poor?"; (2) "Relative to the level of income you need to achieve a full-life, how would you rate your level of income?", where the answer is based on a scale from -3 to 3; and (3) "Taking into consideration your material needs, do you consider your income to be: (a) insufficient to satisfy your needs; or (b) sufficient to satisfy at least some of your needs. Through out this paper relative position is measured as the rating on a scale of -3 to 3 of the difference between the individual's current level of income and: (a) a reference group determined by who the individual coexists with; and (b) what the individual aspired to have achieved by the current stage of her life.

The main findings indicate that both, absolute income and income relative to the individual's reference group and income aspirations correlate with subjective poverty assessments, and these results are consistent across the three different indicators. Absolute income decreases the probability of being subjectively poor for both the objectively poor and the objectively non-poor. Income relative to a reference-group is relevant only for the objectively non-poor, and income relative to aspirations is relevant for both. I find evidence that experiencing a negative gap, i.e. when the individual's level of income does not exceed that of her reference-group will be more likely to consider themselves poor whether their level of income is above or below subsistence. Likewise, when a person's income does not exceed her income aspirations, she will be more likely to consider her income has not exceeded the level necessary to achieve a full-life. Furthermore, among

objectively non-poor will be more likely to consider their income is insufficient if their level of income does not exceed their peers, and less likely to consider it is insufficient if they have not exceeded their income aspirations.

The paper is organized as follows: in section 2 I discuss the relevant literature on positional concerns; in section 3 the dataset, the definition of the relevant variables and descriptive statistics are presented; in section 4 I specify an empirical model for the discrepancies between objective and subjective poverty assessments; in section 5 I discuss main findings, implications and results. Finally, conclusions are presented in Section 6.

2. Positional Concerns Matter

The growing economic literature in status and relative income and consumption, corroborates that people care about their relative position, not only in income but in other domains (see Solnick and Hemenway (2005); Frank (2005); Johansson-Stenman and Martinsson (2006); Falk and Knell (2004); Carlsson et al. (2007), and Aronsson and Johansson-Stenman (2008)). There are two main approaches in this literature: the questionnaire-experimental approach and the subjective approach. Evidence from the first approach suggests that relative income is as important as absolute income (Carlsson et al. (2007); Solnick and Hemenway (2005); Johansson-Stenman (2006); Alpizar et al. (2005)). Results from the second approach tend to give more importance to relative rather than absolute income (Easterlin (1995); Clark and Oswald (1996); Blanchflower and Oswald (2004); Clark et al. (2008)). Furthermore, there is some evidence that there are differences in the strength of positional concerns depending on the proximity of the reference-group (Festinger (1954); Gastorf & Suls (1978)). In this paper, I take the subjective approach to relate positional concerns to the differences between objective and subjective poverty assessments by asking people to rate their relative position with respect to a reference group in the income domain. The income gap indicator

used in this paper, allows the individual to choose her reference group, and therefore the proximity to that reference group, by rating her relative position with respect to people she coexists with.

But positional concerns are not only relevant relative to others. The Theory of Aspirations states that the degree of satisfaction of a person is a function of the gap between what she has and what she aspires to have (Easterlin (2001); Stutzer (2004)). Therefore, people that manage to fulfill their aspirations tend to consider themselves better off (Rojas & Fuentes (2001)). Furthermore, not only the magnitude of the gap matters to well-being but also the response to changes in that gap. Easterlin (2003) finds that aspirations change as current circumstances change as well. He states that as we move along stages of the life cycle, people tend to acquire goods and achieve goals. Achievements change not only their current conditions, but most importantly they change people's aspirations; thus, more material aspirations arise as previous ones are satisfied. This becomes even more evident among the better educated as their aspirations increase more and more rapidly (Easterlin (2003)). Therefore, the magnitude of the gap, the change in the gap over time, and the achievement of goals (reduction of previously identified gaps) influence people's assessments of well-being. In this paper, in addition to the gap with respect to a reference group, a comparison referring to the income gap between what the person aspired to have achieved by the current stage of her life and her current status is considered.

3. The Survey and Descriptive Results

The Data

The dataset used in this paper corresponds to a Household Survey conducted between October and November of 2001 for 1,540 households in 5 states of central and southern Mexico (Oaxaca, Puebla, Veracruz, Tlaxcala and Estado de Mexico) and the Federal District (Mexico City). This stratified

random-sample was balanced by household income decile, gender and rural/urban area. Interviewed people fall into all income level categories, though presenting some underrepresentation at the lowest decile of income and overrepresentation on the top national deciles. The sample of 1,540 questionnaires had a response rate of 96% in the household-income question, though not presenting any systematic bias. The survey was conducted by Universidad de las Americas, Puebla using funds from CONACYT.

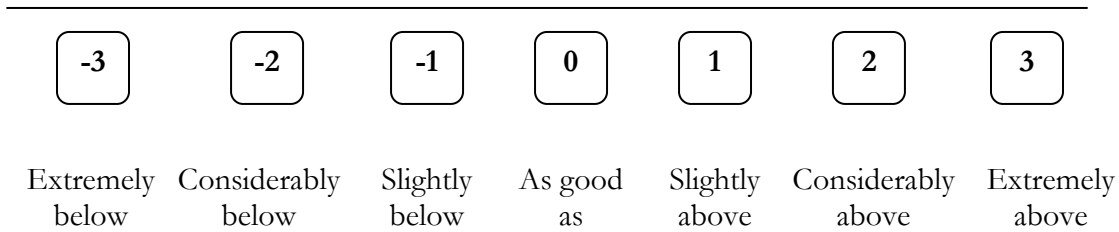
The Variables:

The survey contains general information on household characteristics, household income and of particular interest for this paper, variables that allow for different definitions of subjective poverty. Furthermore, it contains information on ratings regarding the relative position of the interviewee with respect to a reference group, their aspirations and what she considers to be minimum requirements to achieve a full-life. The definitions of the variables used in this paper are as follows:

Subjective Poverty: In this paper, I consider three different questions to identify the subjectively poor. The first question (Q1) asks “Taking into consideration your material conditions, do you consider yourself poor?” There are two possible answers, yes or no, therefore the person identifies herself as poor. The second question (Q2) asks “Relative to the level of income you need to achieve a full-life, how would you rate your level of income?” The seven-option answering scale is specified in Figure 1. In order to use this variable to construct an indicator of poverty, I classify the people that rated their level of income to be below the one you need to achieve a full-life (their rating was below 0) as poor. The third question (Q3) asks “Taking into account your material needs, do you consider that your level of income is”. There is a five-option answering scale: (a) Sufficient to satisfy all of your needs; (b) Sufficient to satisfy the majority of your needs; (c) Sufficient to satisfy most of your needs;

(d) Sufficient to satisfy some of your needs; (e) Insufficient to satisfy your needs. Based upon this scale, I construct a subjective poverty indicator that takes the value of 1 if the individual’s income is insufficient to satisfy her needs, and 0 otherwise.

Figure 1.



Objective Poverty: The individual is identified as poor if her income falls below a poverty line. I consider a national poverty line of 824.54 pesos per month, which is equivalent to roughly 3 dollars per day (i.e. the Capabilities Poverty Line computed by the Technical Committee for Poverty Measurement in Mexico).

Positional Variables: Two benchmarks of positional concerns are considered: (1) a reference group, and (2) what the person aspired to have accomplished by the current stage of her life. The question for the reference-group gap asks “How would you rate the your income relative to the people you coexist with?” The question for aspiration gaps asks “How would you rate your income relative to what you aspired for this stage of your life?” They were asked to rate their income using the seven-option rating scale specified in Figure 1 in both cases.

Socio-demographic Characteristics: gender, level of education, father’s level of education, lifetime health, marital status, house materials, number of dependents of the household-income and age.

Economic Variables: household per capita income and whether the individual has a paid job.

Descriptive Statistics

Subjective Poverty, Objective Poverty and Income per Capita

There are discrepancies in the headcount between objective and subjective poverty measures. In Table 1 I present the cross-frequencies for objective and subjective poverty for the 3 different subjective poverty indicators. Depending on the subjective poverty measure, the headcount between objective and subjective poverty differs for 29% to 36% of the observations. The discrepancies for Q1 and Q3 correspond almost perfectly, while when using Q2 the discrepancy is greater. It is clear, that each question refers to different concepts of poverty, Q2 and Q3 constrain the concept of poverty solely to income, whereas Q1 refers to material conditions. Furthermore, Q2 when referring to the level of income that would be sufficient to achieve a full-life, captures a long-term assessment of poverty. For this reason, there are differences in the identification of the poor between the subjective poverty indicators as well. The percentage of people that are subjectively poor varies from 21% if we consider Q3, to 29% if we consider Q1 to 39% if we consider Q2.

Table 1:

Discrepancies of Poverty Assessments for Objective and Subjective Poverty

	Subjective Poverty (Q1)		Y Full-Life Poverty (Q2)		Y Sufficient (Q3)	
	Freq.	Percent Freq.	Freq.	Percent Freq.	Freq.	Percent Freq.
<i>National Poverty Line</i>						
Poor - Poor	177	11.97	200	13.85	109	7.79
Subj Poor - Obj Not Poor	260	17.58	375	25.97	185	13.22
Subj Not Poor - Obj Poor	175	11.83	147	10.18	226	16.15
Non-Poor - Non-Poor	867	58.62	722	50.00	879	62.83
Total	1479		1444		1399	

Source: Author's estimates.

Table 2 contains the frequencies of subjective poverty by quintile of monthly per capita income in dollars. It is worth noting that the objective poverty line is located in the second income quintile; therefore, the individuals whose income falls in the first income quintile are objectively poor and 11% of the individuals in the second quintile are poor as well, while the rest are not poor. In Table 2 it can be observed that the percentage of people reporting themselves as poor falls as the

level of income increases for all subjective poverty indicators. Though, even at the highest quintile there are people that consider themselves poor. This suggests that there is something other than the absolute level of income that individual's are incorporating into their subjective poverty assessments.

Table 2:
Subjective Poverty Headcount by Income Quintile

Quintile	Y pc (monthly)		Subjective Poverty (Q1)				Subjective Poverty (Q2)				Subjective Poverty (Q3)			
	Mean	Std.Dev.	Not Poor		Poor		Not Poor		Poor		Not Poor		Poor	
			Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
1	49.49	20.27	154	48.13	166	51.88	126	40.00	189	60.00	202	66.23	103	33.77
2	110.08	15.50	189	64.95	102	35.05	157	55.28	127	44.72	214	76.70	65	23.30
3	179.59	26.46	235	74.84	79	25.16	186	61.59	116	38.41	237	81.44	54	18.56
4	323.75	63.60	237	79.80	60	20.20	198	68.28	92	31.72	240	84.51	44	15.49
5	971.52	1432.00	227	88.33	30	11.67	202	79.84	51	20.16	212	88.33	28	11.67

Source: Author's Estimates.

Poverty and Self-Reported Gaps

Table 3 contains information on the average level of the income gap with respect to both, the individual's reference group and with respect to her aspirations. The table compares the average gap between the subjectively poor and non-poor for each subjective poverty indicator conditional on objective poverty.

Table 3:
Differences in Means between Subjectively Poor and Non-Poor Conditional on Objective Poverty

		Y Reference - Group Gaps						Y Aspiration Gaps					
		Not-Poor		Poor		t-statistic	Not-Poor		Poor		t-statistic		
		Obs	Mean a/	Obs	Mean a/		Obs	Mean a/	Obs	Mean a/			
Non-Poor	Subjective Poverty (Q1)	850	4.3 (0.03)	251	3.77 (0.07)	6.79 ***	846	4.39 (0.03)	256	3.70 (0.07)	8.22 ***		
	Subjective Poverty (Q2)	721	4.40 (0.03)	368	3.74 (0.04)	11.18 ***	719	4.66 (0.03)	373	3.39 (0.04)	20.72 ***		
	Subjective Poverty (Q3)	868	4.22 (0.03)	182	3.89 (0.07)	4.01 ***	870	4.29 (0.03)	180	3.92 (0.09)	3.68 ***		
Poor	Subjective Poverty (Q1)	171	3.84 (0.06)	174	3.51 (0.06)	3.50 ***	170	3.98 (0.08)	176	3.48 (0.07)	4.19 ***		
	Subjective Poverty (Q2)	145	4 (0.06)	197	3.43 (0.06)	6.10 ***	146	4.43 (0.08)	199	3.21 (0.05)	11.41 ***		
	Subjective Poverty (Q3)	223	3.74 (0.05)	107	3.53 (0.08)	2.00 **	224	3.83 (0.07)	106	3.5 (0.10)	2.56 **		

*** Significant at the 99% level.

** Significant at the 95% level.

a/ Standard errors in parentheses.

Source: Author's Estimates.

The test statistics indicate there are significant differences in the mean gap between the subjectively poor and non-poor for both reference-group and aspiration income gaps, and this is consistent across subjective poverty indicators. This descriptive result suggests that positional concerns might explain the inconsistencies.

4 An Empirical Model of the Discrepancies in Poverty Assessments

In the previous section, I showed that in Mexico there is between 26% and 37% dissonance across objective and subjective poverty headcounts depending on the indicators used, and most of this discrepancy is due to people reporting they are poor when their level of income does not fall below the poverty line. This implies that subjective poverty approaches could be misrepresenting the percentage of people that live in poverty. It is usually argued that the reason why objective and subjective poverty headcounts are different is because they are capturing different concepts and that the individual is the appropriate judge of her poverty status. However, if it is the case that individuals with relatively high levels of income are more likely to consider themselves poor if their level of income does not exceed that of their peers, or conversely, if individuals with low levels of income are less likely to consider themselves poor if their level of income exceeds their reference group's, subjective poverty assessments could potentially be misrepresenting the poor. In what follows, I present an empirical approach and results to show that these inconsistencies can be explained through indicators of positional concerns.

Let O be the indicator of whether a person is objectively poor, S be the indicator of whether a person is subjectively poor, G be the rating (based upon the scale specified in Figure 1) of the relative income of individual i relative to the people he coexist with and his income aspirations, y be

the monthly household per capita income and X be a set socio-demographic characteristics. Household per capita income determines whether a person is objectively poor and it also influences a person's assessment of her subjective poverty status. More formally, a person is identified as objectively poor if:

$$O_i = \begin{cases} 1 & y_i^{pc} < \bar{y}^{povline} \\ 0 & \text{if } otherwise \end{cases} \quad (1)$$

where $\bar{y}^{povline}$ is the poverty line and y_i^{pc} is household i per capita income. A person reports herself as poor (i.e. is subjectively poor) if:

$$S_i = \begin{cases} 1 & f(G_i, y_i, \varepsilon_i | \beta) < c_i \\ 0 & \text{if } f(G_i, y_i, \varepsilon_i | \beta) \geq c_i \end{cases} \quad (2)$$

where $f(G_i, y_i, \varepsilon_i | \beta)$ is a function of the absolute level of monthly household per capita income (y), individual's income gap with respect to her reference-group and her aspirations (G) and a random component that is unobservable to the researcher (ε_i) which is assumed to be normally distributed; f is a subjective threshold below which the person will self-report herself as poor. Let $c_i = \theta X_i$ such that the subjective threshold is a linear function of observable characteristics X , where θ is a vector of parameters, and let $f(G_i, y_i, \varepsilon_i | \beta) = \beta_0 + \beta_1 G_i + \beta_2 y_i + \varepsilon_i$. Then the probability of a person reporting herself as poor is:

$$\begin{aligned} P[S_i = 1] &= P[f(G_i, y_i, \varepsilon_i | \beta) < c_i] \\ &= P[\beta_0 + \beta_1 G_i + \beta_2 y_i + \varepsilon_i < \theta X_i] \\ &= P[\varepsilon_i < \theta X_i - \beta_0 - \beta_1 G_i - \beta_2 y_i] \end{aligned} \quad (3)$$

Likewise, the probability that a person does not consider herself poor can be written as: $P[S_i = 0] = P[\varepsilon_i \geq \theta X_i - \beta_0 - \beta_1 G_i - \beta_2 y_i]$. If we allow the random component ε_i to be normally distributed, then (3) can be estimated using a *Probit* model.

$$P[S_i = 1] = P\left[\frac{\varepsilon_i}{\sigma} < \frac{\theta}{\sigma} X_i - \frac{\beta_0}{\sigma} - \frac{\beta_1}{\sigma} G_i - \frac{\beta_2}{\sigma} y_i\right] \quad (4)$$

Now, from (1) and (2) we know that both subjective and objective poverty are a function of household per capita income. Taking this into account, the probability of an individual reporting herself as poor is indirectly a function of objective poverty. Note that the objective poverty lines are calculated with a lag, i.e. they are calculated *ex-post*, so there is no reason to believe that the individual knows that he is objectively poor at the time of the survey, so the classification is exogenous to his subjective poverty assessment. If we consider the probability of being subjectively poor being a function of objective poverty, then the probability that a person will report herself as poor can be decomposed:

$$P[S_i = 1|G, y, X] = P[S_i = 1|O = 0, G, y, X]P[O = 0|G, y, X] + P[S_i = 1|O = 1, G, y, X]P[O = 1|G, y, X] \quad (5)$$

where all the probabilities depend on household per capita income and the probability that a person will report herself as poor is conditioned on her objective poverty status. The conditional probabilities on the right hand side of (5) provide insights on the discrepancies between objective and subjective poverty. If objective and subjective poverty assessments coincide, then $P[S = 1|O = 0, G, y, X] = 0$, $P[S = 1|O = 1, G, y, X] = 1$ and $P[S_i = 1|G, y, X] = P[O_i = 1|G, y, X]$. However, if there are discrepancies, this is not the case.

In this paper, I estimate the conditional probabilities on the right-hand side of (5) separately to determine if positional concerns explain the discrepancies by splitting up the sample between the objectively poor and non-poor. Therefore, the empirical model in (4) is decomposed into:

$$P[S_i | O=0] = P\left[\frac{\varepsilon_i}{\sigma} < \frac{\theta}{\sigma} X_i - \frac{\beta_0}{\sigma} - \frac{\beta_1}{\sigma} G_i - \frac{\beta_2}{\sigma} y_i | O=0\right] \quad (6)$$

$$P[S_i | O=1] = P\left[\frac{\varepsilon_i}{\sigma} < \frac{\theta}{\sigma} X_i - \frac{\beta_0}{\sigma} - \frac{\beta_1}{\sigma} G_i - \frac{\beta_2}{\sigma} y_i | O=1\right] \quad (7)$$

5 Econometric Results

Empirical Approach

I use a *Probit* model to estimate the conditional probabilities (6) and (7), in order to test the hypothesis that the discrepancies across objective and subjective poverty indicators can be explained by positional concerns. The conditional probabilities are a function of per capita income, income gaps and controls including the emotion and state of mind of the individual at the time of the survey.

$$P[S_i^h = 1 | O=0] = P[\varepsilon_i < \alpha_0 + \alpha_1 G_i + \alpha_2 y_i + \theta X_i + \delta E_i] \quad (8)$$

$$P[S_i^h = 1 | O=1] = P[\varepsilon_i < \lambda_0 + \lambda_1 G_i + \lambda_2 y_i + \theta X_i + \delta E_i] \quad (9)$$

where: S_i^h is an indicator variable equal to 1 if individual i is subjectively poor and 0 otherwise, where h indicates subjectively poor answering Qh . Using three different indicators of subjective poverty allows checking for robustness to framing. G_i is a $(1 \times k)$ vector containing the positional variables of income, where k is equal to 2 referring to the income gap with respect to reference-group or aspirations. The vector X_i contains control variables on the socio-demographic characteristics specified in section 3.2. The vector E_i consists of two variables controlling for the emotional state of mind of the individual at the time of the survey. They are principal components

constructed using dummy variables capturing the individual's state of mind and mood at the time of the survey.

Finally, Prospect Theory suggests that there are differences in well-being depending on whether the person's well-being falls below or above a reference point. For the purpose of this paper, the reference point would correspond to the category "as good as", with respect to either the individual's reference group or her aspirations, and an indicator of lack of well-being would be their subjective poverty assessment. In particular, I test the following hypotheses: (1) If individuals that do not exceed either their reference-group's income or their income aspirations are more likely to report they are poor when their income is above subsistence, and if as they become increasingly worse-off they are more likely to report they are poor; (2) If individuals that are objectively poor are less likely to report they are poor when they exceed either their reference-group's level of income or their income aspirations. The case when hypothesis (1) holds implies that by using subjective poverty indicators we would be overestimating the poor when their income is above subsistence. Conversely, if hypothesis (2) holds we would be underestimating the poor when their level of income is below subsistence. In general terms, the equation to be estimated can be specified as follows:

$$P[S_i^h | O] = P[\varepsilon < \varsigma_0 + \varsigma_1 Neg_i + \varsigma_2 G_i * Neg_i + \varsigma_3 G_i + \varsigma_4 Y_i + \theta X_i + \delta E_i], \quad (10)$$

where Neg is a vector of k indicator variables that are equal to 1 if the gap rating is less than 0 (according to the scale in Figure 1), and 0 otherwise. The total marginal effect in the case of a negative gap and the marginal effect of a change in the gap (change in slope) are:

$$\frac{\partial P[S_i^h | O]}{\partial G} = [\varsigma_2 Neg + \varsigma_3] \Phi[\varsigma_0 + \varsigma_1 Neg_i + \varsigma_2 G_i * Neg_i + \varsigma_3 G_i + \varsigma_4 Y_i + \theta X_i + \delta E_i], \quad (11)$$

$$\frac{\partial P[S_i^h | O]}{\partial Neg} = [\zeta_1 + \zeta_2 G_i] \Phi[\zeta_0 + \zeta_1 Neg_i + \zeta_2 G_i * Neg_i + \zeta_3 G_i + \zeta_4 Y_i + \theta X_i + \delta E_i], \quad (12)$$

Results, Implications and Discussion

Given that absolute objective poverty is assessed based upon the absolute level of income, ideally it would be expected that subjective poverty would not be influenced by relative income concerns. The evidence presented in Section 2 suggests that individual's utility is a function of absolute and relative income. Consistent with this literature, my results indicate that both, the absolute level of income and the individual's relative income position, influence subjective poverty assessments. Furthermore, taking into account that subjective poverty assessments are correlated to absolute, as well as relative income, I proceed to examine if relative income influences these assessments in a way that makes subjective poverty indicators misrepresent the poor. For this purpose, I estimate equations (8) and (9) for three different subjective poverty indicators as a function of household income per capita, the self-reported income position of the individual relative to the level of income of her reference group and her aspired level of income, and some controls.

In Table 4 I present results for the three subjective poverty indicators. Household income per capita is significant for both the poor and the non-poor, though presenting stronger significance for the poor as well as a much higher economic impact. Consistent with absolute poverty, as income per capita increases, the likelihood of reporting oneself as poor decreases as well, and this is consistent across subjective poverty indicators.

Positional income concerns also influence the likelihood of self-reported poverty mainly among the non-poor. Based upon the indicators on subjective poverty indicated by Q1 and Q2, the non-poor are less likely to report themselves as poor as their relative position improves, i.e. as the income gap ratings increase. This is the case for both, for reference-group and aspiration gaps. If

subjective poverty is indicated by income being insufficient to satisfy the individual's needs (Q3), only positional concerns with respect to a reference-group are relevant among the non-poor; as the individual's position improves relative to the people she coexists with, she will be less likely to consider her income is insufficient. Conversely, for the poor, relative income is not relevant unless the subjective poverty conception refers to the level of income necessary to achieve a full-life. In this case, the poor will be less likely to be subjectively poor as they overcome their income aspirations. This result is troubling because if the poor are less likely to report their income does not exceed the level necessary to achieve a full-life as their position improves relative to their aspirations, the poor will be likely to be misrepresented by subjective poverty measured in this fashion. Actually, it would be underestimating the number of people that live in poverty.

Table 4:
Results for Probability of being Subjectively Poor Conditional on Objective Poverty (Marginal Effects)

	Subjective Poverty					
	(Q1)		(Q2)		(Q3)	
	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor
Y per Capita (monthly, in thousands of 2001 dollars)	-0.087*	-4.902***	-0.175***	-1.955	-0.087*	-3.366***
	(0.046)	(1.496)	(0.061)	(1.525)	(0.048)	(1.287)
Y Reference-Group Gap (categorical, scale = {-3,-2,-1,0,1,2,3,})	-0.043***	-0.060	-0.068***	-0.034	-0.029**	-0.032
	(0.016)	(0.039)	(0.020)	(0.043)	(0.014)	(0.034)
Y Aspirations Gap (categorical, scale = {-3,-2,-1,0,1,2,3,})	-0.039***	-0.013	-0.220***	-0.267***	-0.011	-0.011
	(0.013)	(0.033)	(0.018)	(0.043)	(0.012)	(0.030)
N	1,043	322	1,038	328	985	314
Pseudo-R ²	0.176	0.173	0.284	0.298	0.066	0.111

*** Significant at the 99% level.

** Significant at the 95% level.

* Significant at the 90% level.

Source: Author's Estimates.

This results suggest that even though these three questions address different aspects of poverty, results are relatively consistent. The question on subjective poverty (Q1), captures the individual's self-assessment being herself as poor taking all material conditions into account. Subjective poverty measured using Q2 and Q3 restricts the scope only to the level of income. However, these last two elicit information on different concepts of income: that which is insufficient

to currently satisfy the individual's needs versus that level of income that would allow the individual to achieve her subjective concept of a full-life. Therefore, Q2 will reveal information about the individual's aspirations and expectations on what would constitute a full-life.

In addition to being able to determine the importance of changes in the relative position on the likelihood of a person being subjectively poor, I want to examine if income positional concerns influence these assessments in a way that makes subjective poverty misrepresent the poor. In particular, I want to examine if people who are not objectively poor are more likely to report themselves as poor if their income does not exceed either that of their reference group or their income aspirations. Likewise, I want to test if among the objectively poor, people whose relative position is above the reference point are less likely to report themselves as poor. If these hypotheses hold true, subjective poverty indicators would be misrepresenting the population living in poverty. In order to test these hypotheses I estimate equation (10) conditional on objective poverty. Results are presented in Table 5. The results indicate there are significant differences on the impact of income positional concerns once we differentiate between positive and negative gaps across subjective poverty indicators.

When the subjective poverty assessment is based upon Q1, there is a significant overall difference in the likelihood of self-reporting oneself as poor depending on whether the individual's income is above or below her reference-group, though not with respect to her aspired income. Among the objectively non-poor, if the individual's income does not exceed her reference-group's she will be less likely to consider herself poor, whereas among the objectively poor, the likelihood of considering oneself poor under negative gaps is higher.

Conditional on not being objectively poor, the effect of reporting that the individual's income is below that of his reference-group is not statistically different from zero, though the effect

of the change in the gap given that the individual does not exceed his reference group is. Therefore, as the individual's relative position improves, i.e. the difference between the individual's income and the income of his reference group decreases, she will be less likely to consider herself poor. If the gap is positive, then there is no significant effect on the likelihood of being subjectively poor. This result implies that as the individual's relative position improves from being extremely worse-off than her reference-group, to being slightly worse-off, the probability that she will report herself as poor decreases, but once she exceeds the level of income of her reference group the likelihood of being subjectively poor is unaffected.

Conditional on being objectively poor, both the effect of not exceeding the level of income of the individual's reference group as well as the effect of changes in the income gap, are statistically significant. The individual's that experience a level of income lower than the people they coexist with are more likely to consider themselves poor. Furthermore, the likelihood of considering oneself poor increases as the individual's relative position improves when she is worse-off than her peers. This result is mainly driven by observations whose income reference-group gap is in the "slightly below" category. In this group, the average level of per capita income is 495 pesos per month and it varies within a range of 800 pesos per month. Among the objectively poor, the reference-group in the income domain is relatively homogeneous, therefore if a person sees she is below her reference-group it probably implies her income is quite low and that makes her more likely to consider herself poor. This result implies, that if the individual has a level of income below subsistence and she considers her income is below that of her reference-group her subjective poverty assessment will be more likely to coincide with the objective assessment. A second implication of these results is that, if those whose income does not exceed their reference-group's are more likely to consider themselves poor, that means that those whose income is as good as or better than their peers will be less likely to report they are poor. The issue with this result is that computing the poverty headcount based

upon subjective poverty assessments would misrepresent the poor; people whose income is below subsistence would be reporting they are not poor because they are relatively better off than their reference-group.

When the subjective poverty assessment is based upon Q2, then positional concerns relative to the individual's reference group are not relevant for both the objectively poor and the non-poor. However, the conception of subjective poverty based upon this question appears to reveal information on individual's income aspirations. For both the objectively poor and non-poor, if individuals' level of income does not exceed their aspirations they are more likely to report their level of income has not exceeded the level required to achieve a full-life.

Conditional on not being objectively poor, the individual will be significantly more likely to report that her level of income does not exceed what she considers sufficient to achieve a full-life if her income does not exceed aspirations. Furthermore, as the gap decreases (i.e. the income gap variable increases from -3 to -1) the individual will be more likely to be subjectively poor. The implication of this result is prejudicial for subjective poverty assessments because as people are closer to the threshold, then they are more likely to report their level of income is not enough and this could lead to a "rat race" in which the individual never thinks her income is enough. Conversely, those whose income exceeds their income aspirations are significantly less likely to report their income is below the level sufficient to achieve a full-life as their relative position improves. In this case, the subjective poverty assessment of individuals whose income exceeds their income aspirations will be more likely to coincide with objective assessments when their level of income is above subsistence. Therefore, overall, there is the possibility of misrepresentation of the poor when using this indicator of subjective poverty because individuals whose income does not exceed their aspirations are more likely to report they are poor.

Conditional on objective poverty, the same patterns are observed among the poor, with the exception that there are no differences in the slope between those experiencing negative versus positive gaps. Therefore, those experiencing negative income aspiration gaps are more likely to report their income has not exceeded that sufficient to achieve a full-life, but as their relative position improves, they are less likely to be subjectively poor. This result implies that even when a person has a level of income below subsistence, she will be less likely to consider herself poor as her absolute income increases but also as her income relative to her aspirations improves.

Table 5:
Results for Probability of being Subjectively Poor Conditional on Objective Poverty differentiating for Positive and Negative Gaps (Marginal Effects)

	Subjective Poverty					
	(Q1)		(Q2)		(Q3)	
	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor
Y per Capita (in thousands of 2001 dollars)	-0.118** (0.050)	-4.800*** (1.518)	-0.179*** (0.057)	-1.846 (1.560)	-0.093* (0.048)	-3.721*** (1.308)
Negative Y Reference-Group Gap (dummy, 1= Y Gap= {-3,-2,-1})	-0.069 (0.077)	0.405*** (0.130)	0.185* (0.112)	0.133 (0.142)	0.215*** (0.094)	-0.069 (0.127)
Y Reference-Group Gap * Negative	-0.238*** (0.080)	0.299** (0.140)	0.058 (0.085)	-0.083 (0.142)	0.092 (0.059)	-0.177 (0.117)
Y Reference-Group Gap	0.039* (0.022)	-0.053 (0.084)	-0.029 (0.027)	0.083 (0.094)	-0.007 (0.021)	0.053 (0.066)
Overall Effect of Negative Reference Group Gaps a/	-1.164* (0.609)	1.817*** (0.658)	0.682 (0.520)	0.134 (0.663)	1.134** (0.505)	-0.717 (0.648)
Negative Y Aspirations Gap (dummy, 1= Y Gap= {-3,-2,-1})	0.109 (0.090)	0.023 (0.146)	0.452*** (0.092)	0.380** (0.150)	-0.109* (0.053)	-0.157 (0.128)
Y Aspirations Gap * Negative Y Aspirations	-0.021 (0.068)	-0.062 (0.126)	0.155** (0.077)	0.174 (0.151)	-0.123*** (0.052)	-0.141 (0.111)
Y Aspirations Gap	0.011 (0.022)	0.034 (0.064)	-0.134*** (0.029)	-0.197*** (0.072)	0.002 (0.020)	-0.001 (0.055)
Overall Effect of Negative Aspiration Gaps a/	0.301 (0.527)	-0.096 (0.621)	1.711*** (0.467)	1.491* (0.775)	-1.019** (0.455)	-0.868 (0.634)
N	1,043	322	1,038	328	985	314
Pseudo-R ²	0.208	0.193	0.312	0.323	0.078	0.123

*** Significant at the 99% level.

** Significant at the 95% level.

* Significant at the 90% level.

a/ Null Hypothesis: Neg+Neg*Ygap= 0

Source: Author's Estimates.

In the subjective poverty assessment based upon Q3 the threshold refers to the individual's income being insufficient to satisfy her needs. In this case, the non-poor will be more likely to report their income is insufficient if their income does not exceed that of their reference group. There are no significant differences in the slope for positive and negative gaps. The lack of significance of income reference-group gaps and the change in the sign from the previous specification to the one allowing differentiation between positive and negative gaps arises because in equation (6) I was fitting the line without allowing for different intercepts. The results from the specification in equation (10), allowing for negative gaps, imply that the level of gap and how the gap changes is not relevant; all that matters is whether the difference is positive or negative. In this case, this particular result is being driven by people whose income is slightly below the level of income of their reference group, which happens to be the group with the most dispersion in their level of income among those with negative gaps. This result provides evidence to suggest that poverty assessments based on questions regarding subjective evaluations on income being insufficient are not good indicators of poverty because people whose level of income is above subsistence are more likely to report that their income is insufficient because they are worse-off than their reference-group.

Conditional on not being objectively poor, the overall effect of having a level of income that does not exceed income aspirations is significant, implying that if the income aspirations gap is negative the individual is more likely to report her income is insufficient. Individuals whose income is below their aspirations are less likely to consider their income is insufficient, though this result is weakly significant. Likewise, as the relative position with respect to aspirations improves, the likelihood of a person reporting that her income is insufficient decreases if she is below her aspirations and this result is statistically significant. This result is evidence of adaptive aspirations among individuals whose income is above subsistence; as the individual's income moves from being extremely below his income aspirations to being slightly worse-off, the likelihood that she considers

her income is insufficient decreases but once she equals or exceeds the threshold, she will be more likely to consider herself poor (there is a discrete jump) and that probability remains constant as she becomes better-off. Even though, the likelihood of considering oneself poor decreases at a decreasing rate as the negative income aspirations gaps becomes less negative, the evidence of adaptive aspirations among the non-poor implies that using indicators of subjective poverty based upon self-assessments of whether income is sufficient would evolve in a never ending race against poverty because once the individual gets closer to the sufficiency level, she will be more likely to report her income is insufficient.

6 Conclusions

In this paper I showed that there are discrepancies in the identification of the poor between objective and subjective poverty assessments. I consider three different indicators to subjectively identify the poor, and depending on the subjective poverty measure, the headcount between objective and subjective poverty differs for 29% to 36% of the observations. I argued that these discrepancies can be explained by income positional concerns and take the subjective approach to relate positional concerns to the differences between objective and subjective poverty assessments by asking people to rate their relative position with respect to a reference group in the income domain. Furthermore, in line with the puzzle of adaptive theory, in addition to the gap with respect to a reference group, I consider an indicator of the income gap between what the person aspired to have achieved by the current stage of her life and her current status is considered.

Besides the main hypothesis that refers to the discrepancies being explained by positional concerns, I test two specific hypotheses. The first, whether individuals who do not exceed either

their reference-group's income or their income aspirations are more likely to report they are poor when their income is above subsistence. The second, whether individuals whose income is below subsistence are less likely to consider themselves poor when it exceeds their reference-group's level of income or their income aspirations.

The main findings indicate that both, absolute income and income relative to the individual's reference group and income aspirations correlate with subjective poverty assessments, and these results are consistent across the three different indicators. Income relative to a reference-group is relevant only for the objectively non-poor, and income relative to aspirations is relevant for both. Furthermore, I find evidence that experiencing a negative gap, i.e. when the individual's level of income does not exceed that of her reference-group, makes it more likely to consider oneself poor whether their level of income is above or below subsistence. Likewise, when a person's income does not exceed her income aspirations, she will be more likely to consider her income has not exceeded the level necessary to achieve a full-life. This evidence suggests that subjective poverty assessments might be misrepresenting the poor.

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APPENDIX AI

Results for Probability of being Subjectively Poor Conditional on Objective Poverty (Marginal Effects)

	Subjective Poverty					
	(Q1)		(Q2)		(Q3)	
	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor
Y per Capita (monthly, in thousands of 2001 dollars)	-0.087*	-4.902***	-0.175***	-1.955	-0.087*	-3.366***
	(0.046)	(1.496)	(0.061)	(1.525)	(0.048)	(1.287)
Y Reference-Group Gap (categorical, scale = {-3,-2,-1,0,1,2,3,})	-0.043***	-0.060	-0.068***	-0.034	-0.029**	-0.032
	(0.016)	(0.039)	(0.020)	(0.043)	(0.014)	(0.034)
Y Aspirations Gap (categorical, scale = {-3,-2,-1,0,1,2,3,})	-0.039***	-0.013	-0.220***	-0.267***	-0.011	-0.011
	(0.013)	(0.033)	(0.018)	(0.043)	(0.012)	(0.030)
Lifetime Health (categorical, 1 - 7)	0.028*	-0.025	-0.007	0.002	-0.015	-0.022
	(0.016)	(0.039)	(0.020)	(0.038)	(0.015)	(0.039)
House Material (dummy, 1=non-brick)	0.500**	-	0.053	-0.121	0.168	0.502**
	(0.190)		(0.197)	(0.195)	(0.162)	(0.184)
Elementary Education (dummy)	0.028	-0.231*	0.041	-0.032	0.172	0.025
	(0.093)	(0.130)	(0.122)	(0.137)	(0.157)	(0.113)
Secondary Education (dummy)	-0.125	-0.404***	0.040	-0.024	0.098	-0.092
	(0.063)	(0.119)	(0.122)	(0.156)	(0.138)	(0.118)
High School Education (dummy)	-0.162**	-0.342**	-0.016	-0.155	0.121	0.104
	(0.061)	(0.128)	(0.118)	(0.175)	(0.142)	(0.158)
Technical Education (dummy)	-0.155**	-0.439***	-0.065	0.005	0.177	-0.046
	(0.053)	(0.089)	(0.112)	(0.191)	(0.160)	(0.148)
College Education (dummy)	-0.171**	-0.489***	-0.002	-0.165	0.150	-0.021
	(0.069)	(0.079)	(0.119)	(0.199)	(0.138)	(0.156)
Graduate Education (dummy)	-0.168*	-	0.179	-	-	-
	(0.042)		(0.193)			
Father Education Level (categorical, 1 - 7)	-0.023**	0.002	0.001	0.013	-0.010	0.002
	(0.009)	(0.027)	(0.010)	(0.034)	(0.008)	(0.028)
Paid Job (dummy, 1= has a remunerated job)	0.027	0.103	0.028	0.015	-0.038	-0.059
	(0.031)	(0.078)	(0.039)	(0.080)	(0.032)	(0.073)
Number of Dependents	-0.010	-0.001	-0.033***	-0.029	-0.005	0.022
	(0.010)	(0.020)	(0.012)	(0.024)	(0.008)	(0.018)
Marital Status (dummy, 1= Single)	0.021	-0.110	-0.033	-0.121	0.030	-0.077
	(0.032)	(0.089)	(0.040)	(0.097)	(0.031)	(0.077)
Age	-0.001	-0.000	-0.001	-0.000	0.002***	0.001
	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)	(0.002)
Gender (dummy, 1= Male)	0.091***	-0.050	0.082**	0.047	0.009	0.003
	(0.027)	(0.071)	(0.035)	(0.071)	(0.025)	(0.063)
Mood Principal Component	-0.001***	-0.001	-0.002***	-0.003***	-0.001***	-0.000
	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
Emotions Principal Component	-0.000	-0.003**	-0.000	-0.000	0.000	-0.002**
	(0.000)	(0.001)	(0.000)	(0.001)	(0.000)	(0.001)
N	1,043	322	1,038	328	985	314
Pseudo-R ²	0.176	0.173	0.284	0.298	0.066	0.111

*** Significant at the 99% level.

** Significant at the 95% level.

* Significant at the 90% level.

Source: Author's Estimates.

APPENDIX A2

Results for Probability of being Subjectively Poor Conditional on Objective Poverty differentiating for Positive and Negative Gaps (Marginal Effects)

	Subjective Poverty					
	(Q1)		(Q2)		(Q3)	
	Non-Poor	Poor	Non-Poor	Poor	Non-Poor	Poor
Y per Capita (in thousands of 2001 dollars)	-0.118** (0.050)	-4.800*** (1.518)	-0.179*** (0.057)	-1.846 (1.560)	-0.093* (0.048)	-3.721*** (1.308)
Negative Y Reference-Group Gap (dummy, 1= Y Gap= {-3,-2,-1})	-0.069 (0.077)	0.405*** (0.130)	0.185* (0.112)	0.133 (0.142)	0.215*** (0.094)	-0.069 (0.127)
Y Reference-Group Gap * Negative	-0.238*** (0.080)	0.299** (0.140)	0.058 (0.085)	-0.083 (0.142)	0.092 (0.059)	-0.177 (0.117)
Y Reference-Group Gap	0.039* (0.022)	-0.053 (0.084)	-0.029 (0.027)	0.083 (0.094)	-0.007 (0.021)	0.053 (0.066)
Negative Y Aspirations Gap (dummy, 1= Y Gap= {-3,-2,-1})	0.109 (0.090)	0.023 (0.146)	0.452*** (0.092)	0.380** (0.150)	-0.109* (0.053)	-0.157 (0.128)
Y Aspirations Gap * Negative Y Aspirations	-0.021 (0.068)	-0.062 (0.126)	0.155** (0.077)	0.174 (0.151)	-0.123*** (0.052)	-0.141 (0.111)
Y Aspirations Gap	0.011 (0.022)	0.034 (0.064)	-0.134*** (0.029)	-0.197*** (0.072)	0.002 (0.020)	-0.001 (0.055)
Life time Health (categorical, 1 - 7)	0.031* (0.016)	-0.023 (0.041)	-0.013 (0.020)	0.013 (0.039)	-0.016 (0.014)	-0.024 (0.039)
House Material (dummy, 1=n on-brick)	0.481*** (0.182)		0.021 (0.171)	-0.116 (0.184)	0.121 (0.160)	0.510** (0.184)
Elementary Education (dummy)	0.100 (0.108)	-0.241* (0.137)	0.095 (0.130)	-0.046 (0.122)	0.179 (0.163)	0.031 (0.114)
Secondary Education (dummy)	-0.074 (0.076)	-0.426*** (0.120)	0.103 (0.131)	-0.032 (0.144)	0.105 (0.144)	-0.082 (0.121)
High School Education (dummy)	-0.109 (0.073)	-0.374** (0.125)	0.047 (0.128)	-0.170 (0.161)	0.128 (0.148)	0.119 (0.162)
Technical Education (dummy)	-0.115 (0.065)	-0.471*** (0.077)	0.003 (0.126)	-0.065 (0.184)	0.174 (0.164)	-0.066 (0.146)
College Education (dummy)	-0.122 (0.077)	-0.493*** (0.080)	0.077 (0.127)	-0.138 (0.195)	0.150 (0.142)	-0.020 (0.158)
Graduate Education (dummy)	-0.147 (0.058)		0.264 (0.189)			
Father Education Level (categorical, 1 - 7)	-0.022** (0.009)	0.006 (0.027)	0.001 (0.010)	0.020 (0.031)	-0.010 (0.007)	-0.001 (0.027)
Paid Job (dummy, 1= has a remunerated job)	0.032 (0.031)	0.097 (0.080)	0.011 (0.041)	0.002 (0.081)	-0.034 (0.032)	-0.040 (0.073)
Number of Dependents	-0.007 (0.010)	-0.001 (0.021)	-0.033*** (0.013)	-0.026 (0.025)	-0.004 (0.008)	0.018 (0.019)
Marital Status (dummy, 1= Single)	0.024 (0.033)	-0.114 (0.091)	-0.019 (0.041)	-0.125 (0.103)	0.032 (0.030)	-0.091 (0.078)
Age	-0.001 (0.001)	-0.000 (0.002)	-0.000 (0.001)	-0.000 (0.002)	0.002*** (0.001)	0.001 (0.002)
Gender (dummy, 1= Male)	0.087*** (0.027)	-0.052 (0.074)	0.076** (0.036)	0.058 (0.071)	0.010 (0.025)	0.014 (0.064)
Mood Principal Component	-0.001*** (0.000)	-0.001 (0.001)	-0.002*** (0.000)	-0.003*** (0.001)	-0.001*** (0.000)	-0.000 (0.001)
Emotions Principal Component	-0.000 (0.000)	-0.002 (0.001)	-0.000 (0.000)	-0.000 (0.001)	0.000 (0.000)	-0.002** (0.001)
Test for Overall Differences for Negative Reference Group Gaps a/	3.65*	7.61***	1.72	0.04	5.03**	1.22
Test for Overall Differences for Negative Aspiration Gaps a/	0.33	0.02	13.42***	3.70*	5.00**	1.87
N	1,043	322	1,038	328	985	314
Pseudo-R ²	0.208	0.193	0.312	0.323	0.078	0.123

*** Significant at the 99% level.

** Significant at the 95% level.

* Significant at the 90% level.

a/ Null Hypothesis: Neg+Neg*Ygap= 0

Source: Author's Estimates.