

# **Basic needs satisfaction and subjective poverty: Evidence from rural Guatemala**

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## **Abstract**

Literature about subjective well being has been recently raised in economic science and has been most recently applied in developing economies. Following this line, this paper deals with the perceived basic needs fulfilment in a rural area in Guatemala. First, we discuss about the relationship between this concept and subjective well being. By reviewing particular aspects of the literature, we find that the concepts of capabilities, subjective well being and perceived basic needs are empirically related, but not related to income based approaches. Ordinal regression indicate that some characteristics not often found in standard databases (like certain livelihoods), are related to perceived basic needs fulfilment. We compare income poverty with basic needs poverty, finding that both measures do not match perfectly. From this evidence, we conclude that in order to better understand the influences of happiness in developing economies, it is necessary to first take into consideration the endemic factors of the region were the studied people dwell.

*Keywords:* Subjective well being, basic needs, poverty, agriculture.

*JEL Codes:* I31, I32, O13, O18.

## ***1. Introduction***

The study of subjective well being of individuals is very new in economics, although the issue has been studied in psychology for years.<sup>1</sup> Some studies of subjective well being from an economic perspective include, for example, Clark and Oswald (1994), Di Tella et al. (2001), Easterlin (1974), Easterlin (2001) Oswald (1997) and Van Praag et. al (2003). A general survey on happiness research can be found in Kahneman et. al (1999), Frey and Stutzer (2002a) and Veenhoven (1993) and for a review of the important issues to integrate happiness to economics see Frey and Stutzer (2002b).

Unfortunately, there are not many efforts concerning the study of subjective well being in developing economies (Diener and Biswas-Diener, 2000; Graham, 2005). Some of

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<sup>1</sup> We use interchangeably the terms happiness, well being and life satisfaction.

the few works dealing with this matter are Graham and Pettinato (2001), Graham and Pettinato (2002), Gough and McGregor (2007), Kingdon and Knight (2006), Rojas (2008) and Pradhan and Ravallion (2000).

The study of well being in developing economies could be of no use if we consider the studies already performed in the developed world. As Easterlin (2001) points, the kind of things influencing happiness are for most people the same, probably because most people everywhere spend most of their lives doing the same types of things. However, when comes for rural areas in emerging economies, this could not hold true as there should be some differences of the types of things that make happy people from developed economies. This is because the commodities they possess, their capabilities, their livelihoods and the environment are completely different to the people leaving in urban areas of United States or Europe. If we come to study the case of perceived basic needs, some particular characteristics in developing economies could be found, therefore acquiring some importance its study for policy formulation.<sup>2</sup>

In order to complete this gap, in this paper we analyze the perceived fulfilment of basic need of the household in a rural area in Guatemala and its implications for poverty. Some works have estimated the contribution of the family background on the intrinsic well being of the individual (Winkelman, 2005). Here we reshape the definition of well being of the individual to the perceived satisfaction of the basic needs of the household, and check how social, economic and demographic aspects affect this perception. We estimate the perceived basic needs of the household thanks to a recent survey in Highland Guatemala that include a question of rating from 1 to 4 the degree of fulfilment of the basic needs of the household. We relate the influence in the perception of basic needs from a set of economic and social variables that are not used normally in subjective well being literature that are endemic of the region. From the models performed, we obtain high significativity for some of the non-usual variables in similar

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<sup>2</sup> Graham and Pettinato (2001) compared happiness in Latin America with happiness in Rusia and United States. Their conclusion is that the sociodemographics of happiness in Latin America are similiar to those two countries. However, those results are difficult to generalize in rural areas. Data comes from Latinobarómetro, which have a sharp urban bias for the years analysed (see footnote 9 in the quoted study).

studies and high explanatory power of the estimations relative to previous works on subjective well being.

Analysis of subjective well being has his advantages for policy design and scientific understanding of what makes people happy beyond the raising of income. For policy implication, it gives more complete information to the decision maker in order to understand the motivations of happiness. For scientific reasons, it seems that the knowledge of rural areas is scarce, as far as the authors know. The estimation of the correlates of happiness in the scope of this paper can be useful for this additional reason: it gives information from characteristics of the households that are endemic to the region of study. The questionnaire was designed to capture for these variables, and it could be of more help than standard questionnaires, although more costly in terms of time and funding.

The perceived basic needs can also be used as a measure of perceived poverty line (Kingdom and Knight, 2006; Pradhan and Ravallion, 2000; Rojas, 2008). The second objective of this research is to check how suitable is it to use this kind of classification of the poor instead of other poverty lines related to income. We argue that subjective basic needs poverty should be used in lieu of income poverty

This paper is divided as follows: Section 2 deals about the theoretical issues in the study of perception of basic needs and how it is related to subjective well being and poverty literature. Section 3 describes the data and the region of analysis. Section 4 estimates the correlates that affect the perceived basic needs of the household. In section 5 we check for different ways for measuring poverty: income poverty vs. perceived basic needs poverty. Finally, in section 6 we conclude.

## ***2. Key ideas about subjective well being, basic needs and subjective poverty***

In this section we outline some issues related to subjective well being as well as the satisfaction of basic needs and poverty literature. It is not within the scope of this paper to make a literature review of those concepts, as this has been done in past studies.

Rather, the objective is to deal with the theoretical and empirical lessons that literature provide us and discuss about them. This discussion will provide some insights and justification for the estimations carried out in this study.

***a) Subjective well being and basic needs***

Normally, in subjective well being literature, it is assumed that some factors influence into the reported well being. Therefore, researchers could estimate the importance of each factor on the happiness on individuals. This literature normally takes into consideration the following specification:

$$W_i = \beta X_{ni} + \varepsilon_i ,$$

where  $W_i$  refers to the reported subjective well being of an individual and  $X_{ni}$  is a vector of  $n$  variables that are chosen by the researcher to explain the dependent variable. The nature of the variable normally responds to economic and social factors, and it is conditioned to the specification of the dataset. The error term  $\varepsilon_i$  contains the effect of the happiness that cannot be explained by those variables. The vector of chosen variables is normally conditioned to data availability, and it normally contains economic and non-economic variables (Frey and Stutzer, 2002b).

Datasets including subjective well being questions normally do not include other characteristics that are more difficult to observe like the self steam and the optimism of the respondent. Those variables often studied by psychologists are not normally considered in the economic analysis of welfare, therefore becoming unobserved characteristics of individuals. This translates into econometric estimations with a low  $R^2$ , as those are assumed to be key variables of reported happiness. Some works that include panel data use the estimation of the error in previous time or different steps in time in order to explain the unobservable part.<sup>3</sup>

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<sup>3</sup> For instance, Graham et. al (2004) use the residual of an initial regression in order to capture this psychological element of happiness and test about causality between happiness and other factors like income and health. Van Praag et al (2003) estimates the satisfaction of several aspects of life from a vector of explanatory variables. Then they use the residuals of this estimation and use them in a general satisfaction equation to control for these unobservables and avoid endogeneity bias.

A more complex theoretical approach, that conditions the estimation of happiness dataset, is the known as domains of life. This theory states that life consists as an aggregate construct of many specific domains which determines life satisfaction (Cummins, 1996, Rojas, 2008; van Praag et. al, 2003). The complexity of this framework can be overcome by studying the influence of factors on the satisfaction in each domain of life alone. Domain satisfaction covers individual satisfaction with different domains of life such as health, financial situation, job, leisure and house satisfaction.

Similarly, basic needs satisfaction can be referred as the perceived satisfaction of the individual in what he/she needs to have a fulfilment in what he/she needs to have a life. We assume that this fulfilment is achieved in all his/her domains of life. Therefore, if the individual fails in some domain of life like housing, it would be expected that it had an effect in general satisfaction with life<sup>4</sup>. By asking about basic needs satisfaction, as we do in this research, we might be reducing some of the psychological unobservable effects that are found in econometric regressions of equation (1), by giving to this question a more materialistic meaning. Therefore we argue that by asking for perceived basic needs it is not like the overall assessment of the life of individual what would be expected for a response, but instead an estimation of the achievements that this individual can pursue by means of its commodities and opportunities.

The basic needs influence in determining global well being takes an important role not only in the realms of economics but also from a psychological point of view. As Veenhoven (1991) states:

*To a great extent happiness depends on the gratification of innate bio-psychological needs which do not adjust to circumstances: needs mark in fact the limits of human adaptability. The better these needs are gratified the better we feel and the more satisfied we are with life.*

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<sup>4</sup> Estimations by Rojas (2008) find that the bivariate correlations between satisfactions in the domains of life are positive, which shows that in the aggregate these satisfactions tend to move in the same direction.

Therefore, in a theoretical framework, perceived basic needs should be related to subjective well being satisfaction, as it could be a component of individual happiness, according to the domains of life approach.

***b) Basic needs as a measure of poverty***

Individual well being has recently been used as a methodology to measure poverty (Pradhan and Ravallion, 2000). According to Rojas (2006b), an individual is experiencing poverty from a subjective well being approach if he/she has low life satisfaction. This is in front of the usual concept of poverty from the income or consumption point of view, which considers that an individual experiences poverty if his/her income or consumption is below some defined poverty line.

Amartya Sen's capability approach provides a more complete approach for the measurement of poverty, putting the notion of freedom of the individual at the centre of discussion. In his approach he consider capabilities as the choices that an individual can make according to the characteristics of the commodities he/she has. Therefore, poverty is an absolute notion related to the lack of capabilities, but it can take a relative form with respect to the space of commodities or characteristics (Sen, 1983, 1985, 1987, 1999). Recently, some papers have applied empirically the capabilities approach in developing countries (Di Tommaso, 2007; Krishnakumar, 2007; Krishnakumar and Ballon, 2008).

The measurement of poverty by the subjective well being approach in developing countries encounters several advantages in front of monetary poverty lines, which is the common way of dealing with this problem by researchers and institutions. The most remarkable one is that it centres the individual itself at the core of the problem of which he/she is experienced, in lieu of an expert or policymaker, that will acquire a secondary role<sup>5</sup>.

The conception of the basic needs of an individual should depend on the desires that he/she has. Relating this approach with those explained above, it could be assumed that the satisfaction of those desires should depend on his/her commodities, his/her

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<sup>5</sup> For more reasons defending the subjective well being approach for measuring poverty see Rojas (2007).

capabilities as defined by Amartya Sen and the perceptions of the level of satisfaction. Effectively, some recent empirical evidence has stated that the capability approach overlaps with the concept of well-being as understood in this research (Clark, 2005).

In summary, after reviewing key aspects of literature, it seems that concepts of well being in a broad sense, human capability, domains of life satisfaction and perceived basic needs, although conceptually and methodologically different, are empirically correlated in their measurement and in identifying the poor. The same cannot be said about income approaches in order to quantify happiness or measuring poverty. The discrepancies in the distinct methods of measuring poverty will be deal in section 5.

### ***3. Data and variables***

#### ***a) The dataset***

This paper uses data from an original field work implemented in the departments of San Marcos and Quetzaltenango in the Guatemalan Highlands during June and July 2005. In both departments, the classification made by World Food Programme and the Ministry of Agriculture of Guatemala (PMA-MAGA, 2002) characterized the majority of the rural households with high poverty rates. Nevertheless, this fact contrasts with some successful experiences in adopting, producing and the commercialisation of non traditional crops (Goldín, 2003)<sup>6</sup>. The rural households in San Marcos are characterized by higher poverty rates while Quetzaltenango households are featured by the successful adoption and commercialization of non traditional exports. Quetzaltenango have got a better access by road than San Marcos but, on the other hand, also run a greater risk of weather disasters (PMA-MAGA, 2002; World Bank, 2004).

Data include 378 observations from 8 different villages located in four different municipalities. The selection of the households was made by simple random sampling. Villages with more than 75% urban households were previously rejected. Based on the maps of the selected village, groups of 6 households were identified and numbered.

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<sup>6</sup> Non traditional crops are agricultural products that are adopted as a way of accumulating capital by means of selling it in international markets. In Guatemala, and in other Latin American countries, experienced a rapid growth of those products since the since the end of the 1970s. More about those kind of crops in Latin America can be found in Barham et al. (1992) and Carter et al. (1996). For Guatemala, see Carletto et al. (1999), Goldín (2003), Hamilton and Fisher (2003) and von Braun et al. (1989).

These groups were finally used to randomly select the final sample. The sample size is acceptable for inference in rural Quetzaltenango and San Marcos. More about the field work specification can be found in Guardiola (2006) and García et al. (2008).

***b) The variables***

In order to design the questionnaire, key respondents were asked about the factors or issues that, according to them, could be significant for the satisfaction of basic needs of the area studied. This takes a distance from the usual happiness datasets, in which a standard questionnaire is used for all countries being queried. The fact of using an ad hoc questionnaire capturing the main characteristics of the population being interviewed has immediate advantages, but it also has its limitations. The main advantage is for policy making: It addresses the influence of each variable in the individual perceived basic needs and gives the importance by means of its significativity. It would be of great help for policy formulation, as they could form a conceptual framework in which the policymaker could choose to foster the directly related variables and discourage the inversely related variables by policy formulation. Limitations are the higher cost of time and funding in order to design the questionnaire.

The question formulated to the respondent to define the dependent variable is as follows: To what extend do you think that your household is able to satisfy all basic needs that all its members have?<sup>7</sup> The respondent had to evaluate the degree of fulfilment of these capabilities from a scale of one to four, considering the following statements:

- He/she answers one if the respondent thought that the household in which he/she belong is far from achieving their basic needs.
- Two is chosen if he/she thinks that the household do not achieve all their basic needs, but only a few of them are not reached.
- Three in case that the respondent satisfies just the basic needs that the household requires.
- Finally, four indicates that the household achieves well or very well his basic needs.

The datasets include several groups of independent variables.

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<sup>7</sup> In this research we use the concepts of households and family interchangeably.

- Economic variables:
  - Logarithm of the annual household income.  
The annual household income is calculated as the sum of the annual wages of all members of the family, the annual agriculture profits and the annual remittances (quetzals/year).<sup>8</sup>
  - Relative household income.  
This measure is calculated as the difference between the logarithm of annual household income and the logarithm of the mean of annual household incomes by community<sup>9</sup>.
  - Respondent's contribution to household income.  
To measure the contribution of the respondent to the family income, we calculate the division between wage of the respondent (quetzals/day) and the sum of the family wages (quetzals/day).
  - Dummy indicating if the family receives remittances.
  - Dummy indicating if the family has own car.
  - Quality of the house.  
During the survey, the respondent was asked about the quality of the roof, walls and floor of the family house. They can choose between one point and four points, increasing the quality as the value increases. The index of house quality was calculated as the mean of these 3 questions.
- Livelihood variables: Although quite related to the economic variables, a special attention is made in this research to the labour market and crop market opportunities of the household that are endemic to the region of study. Most of the households that live in rural areas in Northern Guatemala cultivate their own field and sell some surplus to the market. This guarantees in some cases its food security (von Braun et. al, 1989). Many of the members of the household that grow those crops (and others than do not) devote many of its time to cultivate its own field. We include these variables
  - Respondent time in his own field (hours/day).
  - Family time in own their own field (hours/day).
  - Dummy about if the family cultivate non traditional products (NTP).
  - Quantity of land they possess measured in cuerdas.

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<sup>8</sup> The quetzal is the national currency in Guatemala. In 2005, 1 dollar was around 7.5 quetzales.

<sup>9</sup> Dynan and Ravina (2007).

- Dummy about if family contract workers to family field.
- Number of external jobs of the members of family.
- Social variables:
  - Respondent age.
  - Dummy for male (Respondent).
  - Place in family tree.
 

With this variable we differentiate if the respondent is the head of the household, the spouse or a descendant (children or grandchildren).
  - Dummy indicating if the respondent is educated.
 

During the survey, the respondent was asked about her/his education level and the education level of all members of the family. The education level in these Guatemala departments is very low. The 78.5 per cent of the respondents don't have any education. For this reason, we create a dummy to show if the respondent has any type of education, even though primary level.
  - Dummy indicating if the family is educated.
 

With this dummy we show the family with more than 50% of its members educated (even though primary level).
  - Number of members of the household.
  - Dummy about if the family is one-parental.

In table 1 is presented descriptive statistics of these variables.

**Table 1. Descriptive statistics**

	Mean	Standard deviation	Minimum	Maximum
Satisfy all basic needs?	2.03	0.87	1	4
Log(household income)	8.51	3.12	0	12.54
Relative household income	-1.30	3.02	-9.86	2.05
Respondent's contribution to household income	0.24	0.38	0	1
Remmitances (Dummy)	0.21	0.41	0	1
Family has car (Dummy)	0.02	0.15	0	1
Quality of the house	2.22	0.39	1.33	3.67
Respondent's time in his own field	3.94	3.06	0	10
Family's time in their own field	13.24	12.20	0	119
Dummy NTP	0.36	0.48	0	1
Quantity of land they possess	7.86	8.45	0	70
Family contract workers (Dummy)	0.15	0.36	0	1

Number of external jobs	1.16	1.15	0	6
Age	40.45	15.16	12	87
Male (Dummy)	0.47	0.25	0	1
Respondent is educated (Dummy)	0.21	0.41	0	1
Family is educated (Dummy)	0.32	0.47	0	1
Number of members in household	5.87	2.52	1	16
One-parental family (Dummy)	0.12	0.32	0	1
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Place in family tree	Percentages			
Head of the household	50%			
Spouse	38.4%			
Descendant	11.6%			

#### ***4. Estimation on the perception of the satisfaction of basic needs***

In this section we estimate how the selected characteristics of the household influence on the perception of the satisfaction of the basic needs. The variables related in last section are used to explain this influence as it is defined in equation (1). An Ordinal regression model was estimated<sup>10</sup>. In this estimation, the equations have a non-linear form; while interpretation of the coefficients in this model is difficult due to the nature of the link function, the signs of the coefficients for covariates and relative values of the coefficients for factor levels can give important insights into the effects of the predictors in the model. The results are presented in Table 2, which dependent variable is the proxy for perceived basic needs<sup>11</sup>.

**Table 2. Ordered Logit Regression**

<b>Economic Variables</b>	
Log(household income)	0.306 (0.089)
Relative household income	-0.283 (0.116)
Respondent's contribution to household income	0.456 (0.043)
Remmitances	0.071 (0.686)
Family has car	1.493 (0.002)

<sup>10</sup> As link function we use negative log-log function because the lower categories in the dependent variables are more probable.

<sup>11</sup> Dummy variables for the department and the communities were tested and found nonsignificant. We do not report their values.

Quality of the house	0.677 (0.001)
<b>Livelihood variables</b>	
Respondent's time in own field	0.079 (0.015)
Family's time in own field	-0.020 (0.046)
Dummy NTP	-0.223 (0.344)
Family's time in own field* Dummy NTP	0.026 (0.041)
Quantity of land they possess	0.038 (0.000)
Family contract workers	-0.270 (0.216)
Number of external jobs	-0.027 (0.721)
<b>Social variables</b>	
Respondent age	0.008 (0.177)
Respondent is male	-0.066 (0.831)
Place in family tree	
Head of the household	-0.848 (0.006)
Spouse	-0.722 (0.021)
Descendant	Ref.
Respondent is educated	0.405 (0.024)
Family is educated	0.145 (0.327)
Number of members in household	-0.060 (0.089)
One-parental family	0.309 (0.302)
Pseudos R <sup>2</sup> (Nagelkerke)	0.230
Sample size	368

Significance (p values) in parentheses.

The R squared of the model is quite high, comparing to similar models in the subjective well being literature: 0.23.<sup>12</sup> This could be explained for two reasons: First, introduced

<sup>12</sup> In ordered probit estimation in developing countries with cross section data the pseudo-R squared are very low compared to our results, not greater than 0.09 (Graham and Pettinato, 2001; Graham and Pettinato, 2002; Graham et al., 2004; Kingdom and Knight, 2006).

explanatory variables that normally are not used in this literature but we expected a significant result *ex ante* could have contributed to raise this value. Secondly, using as dependent variable the satisfaction of basic needs instead of satisfaction of life could increase the correlation of explanatory variables more economic-related, like income and labour, reducing the influence of unobservable variables. Although both are undoubtedly influenced by the psychology of the respondents, the way of formulating the question related to happiness could be a more subjective definition than the question of basic needs. This is because the former refers to a wide range of concepts rather than the latter, which is more referred to material needs.

The interpretation of the results of the estimation and some specifications of the variables are related in the following lines:

*a) Economic variables*

According to literature about happiness, subjective well being increases with absolute income, all remaining constant, but at a diminishing rate (Frey and Stutzer, 2002b). As it was argued by Argyle (1999), the influence of the income in the happiness holds only in the lower part of the income range. Our sample in Guatemala is therefore particularly interesting in terms of income, as it is referred to certain households that most of them have a low income, if we consider it in a country level.

We use logarithm of income rather than absolute income in order to take into account the supposed attenuation at higher income levels of the happiness-income relationship (Easterlin, 2001). Learning from this literature, we could expect the same effect of income in perceived basic needs. This is because rising income means that people can have more assets and they want more as they progress through the life cycle (Easterlin, 2001). If they want more, the perceived income that richer people need for living could be greater than those with lower income.

In happiness literature, influence of relative income on subjective well being has been tested (See for example Clark and Oswald, 1994; Dynan and Ravina, 2007; Luttmer, 2005; McBride, 2001). Some of this works suggests that happiness functions should be dependent not only on absolute income but also on relative income. We have included a measure of relative income in our analysis to check if a similar effect can be produced

on perceived basic income, which compares the income of each household with those that live in the same community. In our result, relative income is non significant. This result is consistent with McBride (2001) results: Relative income effects may be smaller at low income levels; and the levels of income of the sample analyzed is quite low, in a national scale.

The income of the household is calculated by summing up, among other things, all income that its members earn. It seems to be plausible to study the influence of the income that the respondent earns with respect to the total household income. The influence of the amount of money that the respondent earns relative to the household income is positive.

Remittances, which should be positively related to income, do not affect the perceived basic needs. The money sent by the member of the household living abroad can help the pursuing of basic needs. However, can also have the cost of pursuing activities that can influence positively the basic needs fulfilment.

The quality of the house and the possession of a car hold a positive and highly significant relationship with perceived basic needs satisfaction as we expected.

#### ***b) Livelihood variables***

Hours devoted to the household (and the respondent) to cultivate their own field are positively related to perceived basic needs. For those households that cultivate his own field, this activity guarantees the access of food necessary for nurture, therefore maintaining his food security. Cultivating his own field reduce the risk of lack of food, as doing this they are not exposed to market variation of food prices. The access to food is by no means a basic need of the household.

To assess the relation among household agriculture labour and the household income, we regress the logarithm of annual household income with several family characteristics.

As we check from the coefficient in table 3, household agricultural labour does not contribute to generate income. In fact, it induces to reduce it. That makes sense for the agriculture of subsistence of some households of the sample: Producing their own food

(normally maize and beans) do not guarantee any money, unless they sell some surplus on the market. Doing this is more likely for those that produce non traditional crops and do it as a livelihood.

**Table 3. OLS Regression<sup>13</sup>**

Family's time in own field	-0.038 (0.003)
Dummy NTP	1.546 (0.000)
Quantity of land they possess	0.021 (0.211)
Family contract workers	0.430 (0.321)
Number of external jobs	1.223 (0.000)
Family is educated	-0.137 (0.649)
Number of members in household	0.144 (0.029)
R <sup>2</sup>	0.315
Sample size	368

Significance (p values) in parentheses

In non traditional crops literature there has been a debate about the convenience of non traditional crops for small farmers in Latin America. The fact that they are labour intensive, which is one asset that families with many members have, and the possibility to maintain the control of his land, is some of the advantages. Those contrast with the rigid quality standards and the market imperfections (Carletto et al., 1999; Carter et al., 1996; Collins, 1995; Hamilton and Fisher, 2003; von Braun et al., 1989). The estimations of von Braun et al. (1989) indicated that in Guatemala adoption of those products has a positive influence in nutrition, which can be explained by the diversification of the diet and the positive income effect. In our estimation in table 2, surprisingly, the variable that indicates an important amount of non-traditional products is non-significant, therefore having no influence on perceived basic needs satisfaction. However, it is highly significant for explanation the income of the household as expected (Table 3). This puzzling result motivates us to introduce an interaction

<sup>13</sup> The dependent variable is logarithm of annual household income

between the hours of the household devoted to cultivate its own field and the production of non traditional products. Those kinds of products are labour intensive (Carletto, 1999; von Braun, 1989), which justifies the creation of this interaction. The interaction is positive and significant. Therefore, it seems that non-traditional products contribute to the satisfaction of perceived basic needs only if the household devote a high amount of time to cultivate them.

The quantity of land they possess is also positively related with the perceived basic needs (Table 2). However, this variable is non significant explaining income (Table 3). It seems that land could be a basic income per se, but it is not an income generating asset alone. Factors such as the time devoted to land, its quality and the availability of technology like irrigation are what determine that the household could sell a surplus from it (García et. al, 2008; Guardiola, 2006).

We could be tempted to expect high significativity from the variable that indicates number of members in the household that have external jobs (which means that they do not work in his/her own field). Testing for this variable in the model report no significant results on subjective basic needs (Table 2). This could be because the conceptual difference between perceived basic needs and well being. However, a more reasonable argument about this is that in the area where data is gathered practically all members of the household cultivate his own land, which in fact can be considered as self-employment. Some conclusion we could draw from this result is that people that work outside its own field in the informal job market do not perceive a more fulfilment of their basic needs than the rest. However, the relation between the number of external jobs and the household income is positive and significant (Table 3). This results could seem to contradict the literature of subjective well being, that says that unemployment reduces happiness independently of the effect on income (Clark and Oswald, 1994; Frey and Stutzer, 2002b), but it does not. Household members could either work in their own field or externally. Our results indicate that households fulfil much better their basic needs working their own land that pursuing external opportunities.

### *c) Social variables*

The age and the gender of the respondent are not significant to explain the his/her perception of the basic needs satisfaction of the household. However, the place in

his/her family tree is important. In comparison to be a descendant, the perceptions of the head of family and the spouse are worse.

The education of the respondent plays a positive role in his/her perception of the basic needs satisfaction of the household. However, the education of the household is non-significant.

The number of the family members is inversely related with the basic needs satisfaction (Table 2), but is positively related with the household income (Table 3).

### ***5. Income poverty vs. subjective well being poverty***

In the literature, very few attempts have been made in order to measure poverty in terms of perceived utility of perceived welfare. Some studies have demonstrated that in developing countries subjective well being poverty and income poverty are not quite related, which still gives more importance to this kind of studies.<sup>14</sup>

We defined subjective well being poverty in terms of the perception of the satisfaction level that the respondent has about the household. Therefore, we determine as reported poor as those households that answered to the question of perceived satisfaction of basic needs. The possible responses were:

- Far from achieving the basic needs (Extreme poor)
- Almost achieving the basic needs (poor).
- Just or well the basic needs that the household requires.

According to this classification (Table 4), there are 269 (=117+152) reported poor household (71.2%), 117 considered as extreme poor and 152 poor. We consider income poor as those households whose members have available less than 2 dollar per day, distinguishing between extreme income poor (less than 1 dollar) and extreme poor (between 1 and 2 dollars). The income poor households are 312 (82.5%), 201 extreme poor and 111 as poor.

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<sup>14</sup> Kingdom and Knight (2006) demonstrated it with data from South Africa, Rojas (2008) with data from México and Pradham and Ravallion (2000) with data from Jamaica and Nepal.

Table 4. Reported poor vs. Income poor

		Daily income			Total
		Less 1\$ (Extreme)	1\$-2\$	More 2\$	
Reported satisfaction	Far (Extreme)	65	34	18	117
	Almost	82	46	24	152
	Just or well	54	31	24	109
Total		201	111	66	378

We compare reported measurement of poverty with the standard poverty measure of income to check for divergences of both measures. There are 52 (=34+18) households that are considered extreme reported poor (44.4% of them (=52/117)) but not extreme income poor, and 85 (=54+31) households considered income poor (78% (=85/109)) but not reported poor. This percentages guides us to conclude that both measures classify differently. The Kappa indicator measures “agreement” among two classifications. Kappa equal one means perfect agreement and Kappa is equal zero if the classification is not better than a classification done randomly. In this case, the value of the Kappa indicator is 0.036 and it is not statistically significantly different from zero (p-value=0.294).

We repeat the study without distinguish extreme levels, only for reported poor and income poor household. In table 5 we show the classification table between the two categories. If the household is far from achieving the basic needs or almost achieving them, we say that the household is reported poor. We consider income poor as those households whose members have available less than 2 dollar per day.

Table 5. Reported poor vs. Income poor

		Income poor		Total
		0	1	
Reported poor	0	24	85	109
	1	42	227	269
Total		66	312	378

There are 42 households that are considered reported poor (15.6% of them (=42/269)) but not income poor, and 85 households considered income poor (27.2% (=85/312)) but not reported poor. This percentages, although not extremely high, guides us to conclude

that both measures classify differently. The value of the Kappa indicator is 0.073 and it is not statistically significantly different from zero (p-value=0.137).

From tables 4 and 5 we could conclude that income measures overestimate the number of poor households. More sharply, the measure of income tends to overestimate extreme poor, comparing to the subjective indicator. This makes sense as this measure does not take into account the assets that the household has, like the ability to cultivate its own land and the land it has, which provide him with nurture.

## ***6. Conclusions***

In this paper we have deal with perceived basic needs satisfaction in a rural area in Guatemala. The concept of subjective basic needs is related to subjective well being, but not to income approaches. Estimating the covariates of basic needs, we have obtained higher explanation power than usual estimations of subjective well being. This could be because of the better understanding of the question by the respondent, who could find the question more related to material needs that those referred to happiness. Inclusion of ad hoc variables that we knew a priori that could have an effect on the region can be another reason to explain it. We argue that the inclusion of variables endemic to the region of analysis explain better that traditional standard questionnaires. Some of these variables are found to be significant in our estimations. This, however, has also its disadvantages. The cost of implementing the questionnaires is higher and extrapolation of results seems to be more difficult. However, benefits from scientific reasons and policy design are considerable high.

About the non typical variables, livelihoods different to cultivate the households own land seem to contribute little to perceived basic needs, although they generate income. The variables related to the own cultivation of their own land seem to increase the basic needs fulfilment perception. Similar to the livelihoods different to the cultivation of the own land, the quantity of land do not contribute to generate income alone, but it can be considered as a basic need. On the contrary, assets like remittances do contribute to generate income but they are not perceived as a basic need. Non traditional crops influence positively the basic needs satisfaction if family labour is devoted to grow them.

Our measure of income poverty seems to magnify the poor households, particularly the extreme ones. Therefore, the basic need poverty measure and the income poverty measure do not classify equally. This divergences between both measures and the differences on the results of estimating income and basic needs perception induces us to conclude that both concepts are very far to be equivalent, although income influences basic needs achievements. Subjective well being approaches seem to work better than income approaches, because of many reasons previously found in other studies and those found in this paper. Discussion therefore should be centred in subjective well being approaches rather than in income ones.

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