

Subjective well being and basic needs: Evidence from rural Guatemala

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Abstract

This paper deals with the basic needs fulfilment interpreted in a subjective way. We first consider the theoretical implications that basic needs have, from the perception of the individuals, within the literature of subjective well being. Secondly, we estimate the influence of some characteristics into the reported basic needs from a sample in rural Guatemala. An ordinal regression indicates that some indicators such as education and certain livelihoods are related to perceived basic needs fulfilment in a positive way. However, others like income and relative income have no influence on it. We compare income poverty with a measure of perceived basic needs poverty, finding that both measures do not match perfectly. From this evidence, we conclude that in order to better understand the composition of basic needs in developing economies from a subjective perspective it is necessary to take into consideration the endemic factors of the region where people dwell as well as to complete the income based approaches with other variables.

Keywords: Subjective well being, basic needs, poverty.

JEL Codes: I31, I32, O13, O18.

1. Introduction

The study of subjective well being of individuals is very new in economics.¹ 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, 2002b) and Veenhoven (1993). There is a starting effort in this decade to perform empirical studies related to subjective well being in developing economies. Some of the works dealing with this matter are Graham and Pettinato (2001, 2002), Gough and McGregor (2007), Kingdon and Knight (2006), Rojas (2008) and Pradhan and Ravallion (2000). The study of subjective well being from an economic point of view aims to create general patterns in the way that some variables affect it. In order to understand well being in developing economies, those results can be useful, but a special attention should be done in those circumstances. Dealing with rural areas in emerging economies, there should be some differences of the determinants of the subjective well being of people from developed economies. The well being of each individual should be considered within the context in which he/she lives, and the rural area of a developing country is a quite different context that the urbanized areas of developed economies, in terms of the commodities they possess, their needs, their livelihoods and the environment.²

¹ In order to simplify concepts, we use interchangeably the terms happiness, subjective well being and life satisfaction.

² Graham and Pettinato (2001) compared happiness in Latin America with happiness in Russia and United States. Their conclusion is that the sociodemographics of happiness in Latin America are similar to those two countries. However, those results are difficult to generalize in rural areas. Data comes from

During the 1970s the basic needs strategies aimed to increase and redistribute production with the objective of eradicating deprivation that arises from lack of basic goods and services (Streeten and Javed Burki, 1978), and was considered a useful tool for understanding development. In the 1980s the basic needs approaches suffered some criticism because of some unsolved questions that made the approach to fail (Casper, 2007; Stern, 1989 and Streeten, 1984). Problems found in this conception were such as the nature of the definitions of the needs that are basic and its level to consider them as basic, questioning the role of the decisor in order to decide about this needs and the level in which those are basic (Streeten, 1984). Recently, however, the Millennium Development Goals agenda recovered the idea of basic needs by identifying targets and constructing indicator to follow up the achievements of needs in the areas of health, education and employment.

Subjective well being literature opened the conception of asking the individual about their assessment of his/her well being into his/her life. In this paper we import this subjectiveness into the basic needs framework, with the objective to put the individual in the central role of deciding if his/her basic needs are met and in which degree. By means of econometric techniques, we estimate the set of goods and opportunities that determines this subjective level of satisfaction. Within the emerging literature of subjective well being and the “return back” of the basic needs framework into the political agenda, the question of to what extent basic needs fulfillment could be related to subjective well being arise. We attempt to put some light into this issue, considering that basic needs can directly influence in subjective well being and reshaping the definition of basic needs by giving it a subjective aspect. We hope that by adding a subjective approach to this problem will permit to overcome some of the objective conceptual problems involved in identifying the reasons to meet the basic needs.

Using data from a rural Guatemala, that asks directly to the households about the basic needs fulfilment, we estimate the perceived basic needs of the household thanks to a recent survey in rural Highland Guatemala that include a question of rating from 1 to 4 the subjective degree of fulfilment of these needs. We let the individuals to decide and assess to which degree they have satisfied those needs. As researchers in this investigation, we use econometric methods to find a general pattern of the motivations that encourage or discourages the subjective satisfaction of those needs. Those motivations consist in a set of economic, social and livelihood related aspects of their life, some of them endemic of the region and not used normally in standard subjective well being databases.

Analysis of subjective well being has his advantages for policy design and scientific understanding of what affects people’s happiness beyond the raising of income. The estimation of the satisfiers of basic needs, as it is perceived by the individual can be useful for policy implication, as it gives information from the life aspects of the households that are endemic to the region of study, and can complete the knowledge of policymakers in order to understand what the individuals need. The knowledge of perceived basic needs is new in the literature, as far as the authors know.

Latinobarómetro, which have a sharp urban bias for the years analysed (see footnote 9 in the quoted study).

Subjective well being approaches has been used as a measure of perceived poverty line, by completing or replacing income based approaches (Kingdom and Knight, 2006; Pradhan and Ravallion, 2000; Rojas, 2008). In this paper we also propose a simple method of measuring poverty by using the basic needs approach as it is perceived by the household. Therefore we capture also the psychological, demographic and social aspects that are considered in subjective well being approaches by placing an individual or household as poor (extreme or non extreme), or non poor. We apply this to the dataset and argue that due to the completeness of the concept, the perceived basic needs approach is more accurate than poverty lines related to income.

This paper is divided as follows: Section 2 deals about the conceptualization of basic needs and well being and intends to link those two concepts. 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 calculate a simple measure for poverty based on the perceived basic needs approach and we compare it with an income poverty line. Finally, in section 6 we conclude.

2. Subjective well being and basic needs

In this section we outline some issues related to subjective well being as well as the satisfaction of basic needs. The objective is to deal with the theoretical and empirical lessons that the literature provides us as an attempt to close the gap between both concepts.

Subjective well being is the scientific term in the psychology discipline that refers to the individual's evaluation of her experienced positive and negative affect, satisfaction with life or happiness. An individual evaluates his/her level of subjective well being with regard to his/her circumstances, but also by comparing with other people, past experience and future expectations (Frey and Stutzer, 2002b). The study of subjective well being from an economic point of view aims to create general patterns in the way that some variables affect it. Subjective well being in developing countries is a wider concept, that connects the debate about the definitions of poverty: income or consumption poverty, defined as human development or social exclusion (Gough and McGregor, 2007: 3). In order to understand well being in developing economies, results could be imported from data in developed economies, but a special attention should be taken in those circumstances. In rural areas of emerging economies, there should be some differences of the conditions that influence happiness with respect to developed economies. Commonly in both kinds of economies, recent literature about subjective well being uses data obtained by directly ask people about their own subjective well being with questions like: "On the whole, are you satisfied with the life you lead?", or "Taken all together, would you say that you are very happy, pretty happy or not to happy". A scale of satisfaction of life would be obtained in the first question and another for happiness in the second one. Both concepts, happiness and satisfaction with life, are different in definition, but it is sometimes used interchangeably for simplicity in many studies of subjective well being related to economics. Generally, in economics of happiness, researchers normally estimate the importance of several variables on the reported subjective well being. This literature normally takes into consideration the following specification:

$$W_i = \beta X_{ni} + \varepsilon_i, \quad (1)$$

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. This vector of chosen variables is normally conditioned to data availability, and it contains economic variables, but also non-economic variables (Frey and Stutzer, 2002b). The error term ε_i contains the effect of the happiness that cannot be explained by those variables.

Datasets including subjective well being questions normally do not include other variables or regressors that are more difficult to observe such as the self esteem of the respondent, his/her optimism, his/her values and his/her intellectual and emotional aspects. Those variables often studied by psychologists are not normally considered in the economic analysis of welfare, therefore becoming unobserved characteristics of individuals. The omission of those translates into econometric estimations with a low R squared.³ A more complex theoretical approach that aims to capture all aspects of well being, 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, 2006b, 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. If we consider the domains of life theory, the vector of variables transforms into the several domains of life that affect the subjective well being of each individual in equation above.

In the last years, the basic needs approach as a tool for capturing human development has been used in many investigations (Streeten and Javed Burki, 1978; Isenman, 1980; Javed Burki and Ul Haq, 1981; Hichs, 1982 and Ram, 1982). In the World Bank programme of reducing absolute poverty the efforts of meeting basic needs were central at the end of 1970s (Javed Burki and Ul Haq, 1981). The basic needs strategy was aimed to increase and redistribute production with the objective of erradicating deprivation that arises from lack of basic goods and services (Streeten and Javed Burki, 1978). However, some criticisms on this conceptualisation raised. Those criticisms consisted in a series of questions that still remain unsolved, such as the determination of the definitions of the needs that are basic and at which level those can considered as basic. Thus doubting about the role of the decisor (such as the researcher or the policy maker) in order to decide about this needs and the level in which those are basic. (Casper, 2007; Stern, 1999 and Streeten, 1984). Those questions still remain unsolved, as they have a high level of subjectiveness. Recently, within the Millennium Declaration in September 2000, the Millennium Development Goals agenda recovered the idea of basic needs by pursuing targets and constructing indicator to follow up the achievements of needs, for example the improvement of child and women health, decrease the proportion of poverty and hungry people, achieving universal primary education and achieve full and decent employment.

³ 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. 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.

The concept of needs and basic needs are still escaping. There is little consensus about the concept of “need” in the economic discipline, and there are other different interpretations in other disciplines like psychology, philosophy and sociology⁴. There is also an inherent aspect of subjectivity aspect in the notion of basic needs in all their aspects of life, like nutrition, housing and clothing (Pradham and Ravallion, 2000). In order to conceptualize within the framework of this study, we consider basic needs satisfaction in a subjective way, as the personal valuation of the individual into the achievement of what he/she considered as his/her needs. Subjective or perceived 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 good life. We assume that this fulfilment is achieved in all his/her domains of life as defined in subjective well being literature. 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 life⁵. We define as *satisfiers* of basic needs to the hypothesized basket of commodities, characteristics and functionalities that the individual uses to achieve those needs. The scope of basic needs satisfaction is very ample, as it can cover needs like primary education, health care, nutrition, water access and shelter. Those terms are similar to 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 (Sen, 1983, 1985, 1987, 1999). It could be argued that the satisfaction of the needs of an individual should depend on his/her commodities, his/her 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 and needs as understood in this research; finding not much robustness in the distinction of commodities, characteristics and capabilities (Clark, 2005). Therefore, in this study the degree of fulfilment of the basic needs of an individual depends on those satisfiers as well as his/her mental state and his/her social and demographic environment.

Some of the referred problems of basic needs come from the subjectiveness of defining the needs that are basic and the level of achievement of those needs. There are no objective criteria to define the content of the satisfiers and the basic needs fulfilment, as those vary between geographical regions, anthropological and cultural aspects, as well as social and psychological matters. The approach of subjective or perceived basic needs as we define in this investigation takes a wider approach than commodities based approaches and aims to reduce the problems found in objective basic needs for the following reasons: First, the conception of the basic needs of an individual should depend on the objectives and desires that he/she has, taking into consideration his/her surrounding circumstances. Therefore, subjective basic needs, conditioned by the circumstances that the individual have, centers in the person himself/herself, placing him/her at the core of the study. This is similar to Rojas (2007, 2008) conception of considering the well being of each person rather than the consideration of her/his well

⁴ A complete set of definitions of needs in developing countries and their relationship with other human development concepts can be found in Casper (2007).

⁵ 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.

being defined by an external agent. Therefore the researcher takes a secondary role, leaving the interviewed the authority to determine the level of well being that she/he considers. Doing this, we give freedom to the individual to define his/her basic needs, as Streeten (1984) pointed, the freedom to define one's need should be a basic need. Secondly, the focus into basic needs, similarly to subjective well being analysis, contemplates all essential aspects of life of the individual and also takes into consideration the complexity and completeness of the domains of life into the analysis. Thirdly, it helps to solve the problems surrounding the consideration of objective basic needs from the researcher and the policymaker. The determination of the satisfiers that induces people to fulfill their needs is enriched by what the people think that they need, taking into consideration their own circumstances and mental states. Therefore, the satisfiers acquire an instrumental consideration.

Summarizing, people have some commodities, characteristics and opportunities (for example, education, a car, an amount of arable land and labour market opportunities) that permit them to satisfy some functionings or needs (for example, purchasing food or clothing in the market). This satisfaction or fulfilment should depend in the context that people dwell like their cultural aspects, their capacity to use the set of satisfiers and the psychological factors. The psychological factors motivate them to perceive in a more optimistic or pessimistic way, and condition the perception of these basic needs. This perception determines his/her subjective well being. Perhaps, by asking about basic needs satisfaction, as we do in this research, we *might be reducing*, but not deleting, the psychological unobservable effects that are found in econometric regressions of equation (1), by giving to this question a more materialistic meaning. This is because, by asking for perceived basic needs it is not like the overall assessment of the life of individual that 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 in his own context.

3. Data and variables

a) The dataset

This paper uses data from an original field work implemented by Food and Agriculture Organisation (FAO) and the Ministry of Agriculture, Livestock and Food in Guatemala (MAGA), 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)⁶. 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).

⁶ 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 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).

The informal sector in Guatemala occupies more than 65 per cent of the workforce, and those are higher within the poor. This informal sector is most prevalent in the self employment and the self employment related to agriculture (Vakis, 2003). 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.

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. 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).

In order to analyze the perceived basic needs, we take as the unit of analysis the household, as it is defined in the database. Therefore, we consider the household as a unit of welfare maximizers rather than the individual. Policy design is household-centered in rural areas of Guatemala, therefore information obtained by considering household instead of individuals should be more useful for development projects in the area.

b) The variables

In order to design the questionnaire, key respondents were asked about the factors or variables 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 to create a conceptual framework in which it could be chosen to foster the directly related variables and discourage the inversely related variables in basic needs participation. 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, considering basic needs as all you need for having a satisfactory life?”⁷ The respondent had to evaluate the degree of fulfilment what he/she considered to be a satisfactory life. Therefore, this question is open for the interpretation of the household, and the interviewer makes no initial assumption about the consideration of a satisfactory life for his/her family, and leave the household the power of consider the level of achievement of his/her family life. He/she scored the fulfilment from a scale of one to four, considering the following statements: (1) the household in

⁷ In this research we use the concepts of households and family interchangeably.

which he/she belong is far from achieving their basic needs; (2) the household do not achieve all their basic needs, but only a few of them are not reached; (3) just the basic needs that the household requires are satisfied; (4) the household achieves well or very well its basic needs.

Several sets of variables have been introduced in order to identify the determinants of the basic needs fulfilment.

Economic variables

First, we focus on characteristic of household income:

- *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).⁸
- *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 (Dyran and Ravina, 2007).
- *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*.

Additionally, we add two variables which reflect economic characteristics of household:

- 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, crop market opportunities of the household that are endemic to the region of study as well as some direct related assets like time devoted to agriculture work.

- *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 cuerdas⁹.
- Dummy about if *family contract workers to family field*.
- *Number of external jobs of the family members* (Not related to agriculture).

Social variables

The survey contains some social questions:

- *Respondent age*.
- Dummy indicating if the *respondent is male*.
- *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

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

⁹ The cuerda is a unit of measure of land area in Guatemala. One cuerda equals to 400 squared meters.

members of the family. The education level in these Guatemala departments is very low. The 78.5 per cent of the respondents do not have any education. For this reason, we create a dummy to show if the respondent has any type of education, even though primary level.

- *Number of household members.*
- Dummy about if the *family is one-parental.*

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

In this section we estimate how the selected satisfiers of the household influence on the perception of the satisfaction of the basic needs. The variables enumerated in last section are used to explain this influence. Its importance can vary between households, but we would like to look for a general pattern. To do so, an Ordinal regression model was estimated¹⁰. The results are presented in Table 1, which dependent variable is the proxy for perceived basic needs¹¹.

The interpretation of the results of the estimation and some specifications of the variables are presented in the following lines.

a) Economic variables

According to literature about happiness, subjective well being increases with absolute income but at a diminishing rate, all remaining constant, (Frey and Stutzer, 2002b). 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. The results indicate that income plays not a significant role in explaining the subjective basic needs¹². 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. This must be explained by a psychological aspect of the individual and his/her contribution to the household.

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. The early literature about basic needs literature equally highlights the importance of the relative component of poverty to determine the composition of the basket of satisfiers, and as a possible problem in defining the package of satisfiers (Streeten and Javed Burki, 1978). We check if relative income has any relationship with perceived basic needs. Individuals can compare his/her income with others and think that his/her income is not enough to satisfy all they need. We have included a measure of relative income in our analysis to

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

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

¹² Rojas (2008) points that income should not play an important role in subjective related approaches, as they are composed into several domains of life. Furthermore, Rojas (2006b) found no correlation between SWB and income.

Table 1. Ordered Logit Regression

	Economic, livelihood and social	Economic and livelihood	Livelihood
Log(household income)	0.363 (0.170)	0.073 (0.772)	-0.231 (0.316)
Relative household income	-0.316 (0.236)	-0.050 (0.844)	0.237 (0.320)
Respondent's contribution	0.647 (0.063)	0.552* (0.044)	0.543* (0.042)
Remmitances	0.070 (0.793)	0.170 (0.506)	0.257 (0.292)
Family has car	1.637* (0.034)	1.933** (0.010)	2.571*** (0.000)
Quality of house	1.140*** (0.000)	1.232*** (0.000)	1.185*** (0.000)
Respondent's time field	0.139** (0.005)	0.108* (0.011)	
Family's time in field	-0.025 (0.075)	-0.024 (0.069)	
NTP	-0.080 (0.815)	0.014 (0.966)	
Family's time in field * PNT	0.022 (0.226)	0.016 (0.367)	
Quantity of land they possess	0.053*** (0.000)	0.056*** (0.000)	
Family contract workers	-0.490 (0.143)	-0.377 (0.256)	
Number of external jobs	-0.048 (0.671)	-0.042 (0.688)	
Respondent age	0.015 (0.088)		
Respondent is male	-0.088 (0.848)		
Head of the household	-1.161* (0.012)		
Spouse	-0.904 (0.052)		
One-parental family	-0.461 (0.311)		
Respondent is educated	0.656* (0.017)		
People in household	-0.093 (0.063)		
Log-Likelihood	-409.795	-419.597	-430.824
N	369	369	369

* p<0.05, ** p<0.01, *** p<0.001; p-value in parenthesis

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 in the subjective well being at low income levels; and the levels of income of the sample analyzed is quite low if we take the country as a whole.

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, it 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

Respondent's hours devoted to cultivate their own field are positively related to perceived basic needs. For those households that cultivate their own field, this activity guarantees the access of food necessary for nurture, therefore maintaining their food security. Cultivating the 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 satisfier 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 and goods. As we check from the coefficient in table 2, 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, and this is not in many cases. Doing this is more likely for those that produce non traditional crops and do it as a livelihood.

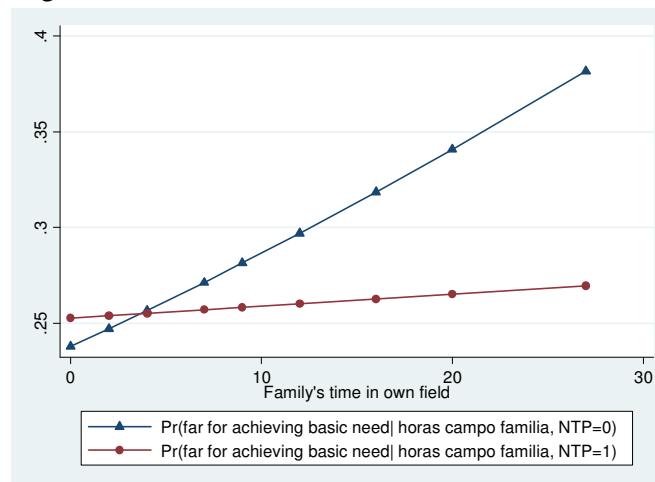
Table 2. OLS Regression

Dependent= ln(household income)	B
Constant	6.527*** (0.000)
Family's time in own field	-0.028** (0.020)
NTP	1.571*** (0.000)
Quantity of land they possess	0.019 (0.268)
Family contract workers	0.305 (0.482)
Number of external jobs	1.312*** (0.000)
Household owns a car	0.756 (0.411)
Sample size	378
R squared	0.307

* p<0.05, ** p<0.01, *** p<0.001;
p-value in parenthesis

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 1, 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 2). This puzzling result motivates us to introduce an interaction between the hours of the household devoted to cultivate its own field and the production of non traditional products. Those kind of products are labour intensive (Carletto et al., 1999; von Braun, 1989), which justifies the creation of this interaction. Figure 1 jointly plots the probability of the household is far from achieving their basic needs over family's time in own field, distinguishing between if the family cultivate non traditional product or not.

Figure 1



We can see as when the quantity of time devoted to their own field increases, the probability of do not achieve their basis needs raises as well, but this increase is more marked if they do not cultivate non traditional products.

The quantity of land they possess is also positively related with the perceived basic needs (Table 1). However, this variable is non significant explaining income (Table 2). From the results, we induce that land could be a basic need satisfier, 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 determinants for the household to 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 reports no significant impact on subjective basic needs (Table 1). A 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 their 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 2). These 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 Guatemalan rural households fulfil much better their basic needs working their own land than pursuing external opportunities.

c) Social variables

The age and the gender of the respondent are not significant to explain 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 than the descendant, which means that a more pessimistic attitude in basic needs fulfilment can be attributed to those at the top of the family tree. The number of the family members is inversely related with the basic needs satisfaction.

Education can serve as a tool to access to job positions with better quality and higher income. Additionally, as pointed by Sen (1997), education can be beneficial for an individual by increasing their capabilities: reading, communicating, being able to choose in a more informed way and so on. We include education of the respondent in the model and found that it plays a positive role in his/her perception of the basic needs satisfaction of the household.

5. Income poverty and perceived basic needs poverty

In the literature, very few attempts have been made in order to measure poverty in terms of perceived utility or 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 studies¹³. Some of these studies have shown the mismatch of those measures and showed their criticism to the income based approaches. A reasonable explanation for this is that income does not take the whole aspects of the individual, depending not only in his/her consumption satisfaction but also in other domains of life, and therefore propose alternative focuses.

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. Here we reshape the concept within the subjective basic needs framework, defined subjective poverty in terms of the perception of the level of satisfaction of the basic needs that the respondent has about the household. Therefore,

¹³ 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.

we determine as reported poor as those households that answered to the question of perceived satisfaction of basic needs below the achieve of those. The possible responses were a) far from achieving the basic needs (extreme poor); b) almost achieving the basic needs (poor) and c) just or well the basic needs that the household requires.

According to this classification (Table 3), there are 269 (=117+152) reported poor household (71.2%), 117 considered as reported extreme poor and 152 reported poor. We determine as income poor as those households whose members have available less that 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. There are much more extreme income poor families than reported extreme poor (201 vs. 117). The same happens with non-extreme poor comparisons, but those differences are not so great (111 income poor vs. 152 reported poor). Additionally, there exist 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 induces us to conclude that both measures classify differently. In order to measures “agreement” between the two classifications, we use the Kappa indicator. The kappa equals one means perfect agreement and it equals zero if the classification is not better that 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).

Table 3. 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 repeat the study without distinguish extreme levels, only for reporter poor and income poor household. In table 4 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. 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 again to conclude that both measures classify differently. The value of the Kappa indicator is 0.073 and it is neither statistically significantly different from zero (p-value=0.137).

Table 4. Reported poor vs. Income poor

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

6. Conclusions

In this paper we have deal with perceived basic needs satisfaction. From basic needs and subjective well being literature, we close the gap between those two concepts. Some of the referred problems of basic needs come from the subjectiveness of defining the needs that are basic and the level of achievement of those needs. There are no objective criteria to define the content of the satisfiers and the basic needs fulfilment, as those vary between geographical regions, anthropological and cultural aspects, as well as social and psychological matters. We aim to solve those problems by asking the individual about his/her perceived basic needs, therefore giving the subjectivity issue into the estimation of basic needs.

We compare this subjective measure with objective characteristics or commodities of the households in order to determine how they affect this perception. Some satisfiers like livelihoods that are different to the cultivation of household's own land seem to contribute little to perceived basic needs, although they generate income. Contrary, the variables related to the cultivation of the own land seem to increase the basic needs fulfilment perception. Additionally, the quantity of land does 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. Additionally, income related variables (absolute and relative) are variables that have a low significativity in the probability of increasing perceived basic needs. In fact, relative income was found non significant.

We also compare a created perceived basic needs poverty measure with an income poverty measure. Some tests indicate that the basic need poverty measure and the income poverty measure do not classify equally. From our comparison of subjective poor and income poor, 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. This divergence 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. Subjective basic needs poverty seems to be a better measure than income poverty, as the former captures all domains of life that the individual considers, and takes into consideration other factors like culture, geographical aspects and psychological aspects. Therefore, 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 more centred in subjective approaches rather than in income ones.

We consider that those results from a subjective point of view can contribute to the objective interpretation of development within the basic needs approaches, such as the Millennium Development Goals of the United Nations agenda. The research and monitoring of the achievement of those goals can be completed by the feeling of the people about if they did achieve all that they need for their life. Some questions that remain open are: To what extent there is a gap between perceived basic needs and basic needs satisfaction as considered by alternative conceptual models and policymakers; To what extent the concepts of subjective well being and basic needs are empirically related. Those are left for further research.

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