Relative income and subjective wellbeing: evidences using a two-stage estimation strategy for spatial correlated data[1]

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Abstract

This paper analyzes the determinants of the self-reported income insufficiency in Brazil, highlighting the important role of regional relative income and educational attainment on subjective measures of wellbeing. Income insufficiency was defined as the self-reported lack of income, partial or total, in order to have a normal life. A two-stage estimation strategy is proposed in order to consider spatial relations in the data and to obtain more efficient estimators of the relation between regional characteristics and reported wellbeing. Results highlight that income insufficiency depends both on family absolute income and on relative regional income. In turn, educational attainment affects both individual perceptions of wellbeing and material aspirations for a normal life. Moreover, differences between rural and urban residents also suggest the effects of adaptive aspirations on subjective evaluations of wellbeing.

Key words: subjective indicators; relative income; spatial error model;

JEL: I31; D31; D12; C23

[1] Paper submitted to the 2012 Annual Meeting of the Population Association of America, San Francisco, May 3-5, 2012.

Introduction

Economic analyses of poverty, inequality or, in broader sense wellbeing, are usually based on objective concepts of living, such as absolute or relative income and consumption (GUSTAFSSON, 1995). In addition, there is a growing interest in subjective wellbeing measures (SWB), which provide effective information to understand how people feel about their material conditions or their social perceptions (GARNER and VOS, 1995). Although purchasing power is a fair proxy for people's welfare, there are concepts that go beyond the possession of income or goods. For instance, poor populations can present different levels of income sufficiency which, in addition to the family income, depend on the health status of their members, access to production for own consumption or different kinds of social benefits, such as school meals or basic food basket (HAGENAARS and VOS; 1988; HOFFMANN, 2008).

SWB can be accessed through diverse self-reported questions, for instance: asking family heads what they consider as minimal income level for their own family, or asking directly about the level of contentment with his/her life (GOEDHART *et al*., 1977; VEENHOVEN, 1993; DIENER, 1984). Since subjective evaluations depend largely on income and material living, there is a strict relation between subjective and objective indicators of wellbeing, such as health, comfort or wealth (EASTERLIN, 2001). Moreover, SWB include a global assessment of other aspects of a social life, such as feelings of joy, pleasure, contentment and life satisfaction (DIENER and SUH, 1997).

Since people are free to define wellbeing in his/her own terms, SWB can be strongly influenced by considerations of what each person believes to be a desirable standard of living. Since the prominent study of Easterlin (1974), researches have been looking for evidences that reported wellbeing depends on income relative to others and on past experiences of income or material aspirations. Overall, evidences depend mainly on the period of analysis – cross-section or time series -, on the groups of analysis – between or within nations -, as well as on the strategy of analysis (HAGERTY and VEENHOVEN, 2003)

This paper provides new evidences to understand the role of relative income on reported perception of wellbeing. Specifically, the paper examines the determinants of the self-reported perceptions of income insufficiency in Brazil, highlighting how differences due to the level of regional income and human development may affect individual's perception of wellbeing. Two main contributions of these analyses to literature can be stressed. First, it highlights that living in a more affluent area do matter in self-reported perceptions of wellbeing, holding constant other individual characteristics. Second, the paper proposes a two-stage estimation strategy in order to obtain more efficient estimators of the relation between spatial characteristics and reported wellbeing. In the first stage, logistic models estimate familiar determinants of the income insufficiency. The second stage estimates the regional determinants of income insufficiency by considering spatial relations in the unobservable errors.

1. Bakcground

One of the main advantages of self-reported measures of wellbeing is that they incorporate both objective and subjective perceptions of wellbeing, without explicitly needing of an objective diagnose of the family standard of living (VEENHOVEN, 1993). Moreover, SWB indicators may also be used as a proxy for quality of life, since they encompass not only objective domains of standard of living (such as health, comfort or wealth), but they are also related to how people feel about their own lives and, in a narrower sense, to subjective perception about their objective living conditions (DIENER and SUH, 1997).

Furthermore, some incongruity between objective and subjective wellbeing indicators may arise when people suffering relevant material deprivation do not necessarily report lower

satisfaction with their lives. Differences due to the subjectivity of self-reported wellbeing can be grouped into *adaptive aspirations* and *relative income* (DIENER, 1984).

Adaptive aspirations arise when a subjective evaluation of wellbeing is influenced by the expectations, goals and aspirations that each person judges to be reasonable. Because the reported satisfaction with specific domain of life undoubtedly depends on the culture and the way one's life is structured, individuals tend to make comparisons based on their personal consumption experiences (DIENER, 1984). Thus, people with similar material conditions may have different perceptions of wellbeing depending on their life cycle or aspirations compared to the standards they deem as ideal.

In turn, relative income perception means that the subjective evaluation of people about their income also depends on their relative position within a social group of reference. Usually people compare their income and consumption with other members of the same social group. The greater the extent and complexity of a social group needs, the greater the income and consumption to ensure a living condition considered normal for its members.

For a long time the relationship between relative income and SWB has attracted the attention of the literature. Easterlin (1974) provided evidences that within countries self-reported wellbeing and income are directly related, although this positive relation is uncertain in comparisons among countries at a given time or in a given country over time. According to this author, when people are judging wellbeing they tend to compare their actual situation with a reference standard or norm, which vary among social groups and, especially, between countries. As well, reported wellbeing advances over time with the individual's economic condition. Among others studies, Luttmer (2005) used micro data in order to control individual characteristics and showed how high earnings of neighbors are associated with low levels of self-reported wellbeing. McBride (2001) also used micro data to find evidence that relative income does matter in individual assessments of SWB, although there is indication that these effects may be smaller at lower income levels.

According to Stadt et al. (1985), an individual's welfare depends on his ranking in a specially weighted income distribution, which considers the relative importance of each person. In this sense, relative income has also a strict relation with regional inequality. Alesina et al. (2004), for instance, found evidences that individuals, specially Europeans, have a lower tendency to report positive wellbeing when inequality within their countries is high. Glaeser *et al*. (2008) presented similar findings analyzing differences between countries and suggest that, among other hypotheses, the existence of high levels of envy in more unequal regions may reduce stated wellbeing.

2. Material and methods

Data source

Results were based on information provided by POF 2002/2003 and 2008/2009 (IBGE, 2002; IBGE, 2008). The reference period is January 2003 and 2009 and monetary values were deflated to January 2009 using the National Consumer Price Index (INPC)[2].

Besides providing valuable family socioeconomic information, POF also asks family members about their self-perceived standards of living. For example, subjective questions investigate the degree of sufficiency of the family income. The question presented in POF that was used as indicator of subjective wellbeing in this study is the following:

Income insufficiency: *in your opinion, your total family income allows you to sustain your life until the end of the month with: great difficulty, difficulty, some difficulty, some ease, ease or great ease;*

[2] From January 2003 to January 2009, the cumulative inflation measured by INPC was 39.1% (values obtained from IPEADATA website. Available at: <http:www.ipeadata.com.br>. Access in: November 2010).

Model especification

Cumulative logistic functions were adjusted in order to find the main determinants of lack of income. The dependent variable was represented by the probability that a family head states any kind of income insufficiency. In other words, the dependent variable of the lack of income (Y) was defined as:

$$Y_i = \begin{cases} 1, & \text{if great difficulty, difficulty of some difficulty} \\ 0, & \text{otherwise} \end{cases} \quad (1)$$

In the first stage, the income insufficiency was adjusted as a function of the socioeconomic characteristics of the individuals and the households (X) as well as fixed effects controlling differences between the FUs. The logistic equation representing such relation is:

$$\ln\left(\frac{Y_i}{1-Y_i}\right) = \alpha + \sum_j \beta_j X_{ij} + \sum_p \theta_p UF_{ip} + e_i \quad (2)$$

The dependent variables in this model - $\ln(Y_i \ /1-Y_i\ )$ is the natural logarithm of the odds, i.e., the ratio between the probability of success ($Y=1$) and the probability of failure ($Y=0$). This ratio expresses how many times the chance of stating insufficiency is greater than the chance of not stating insufficiency.

The second stage of estimation consists in adjusting the fixed effects associated to the differences between regions (θ) as a function of regional determinants of the stated perceptions (R). In other words:

$$\theta_p = \phi_0 + \sum_r \phi_r R_{pr} + u_p \quad (3)$$

Ordinary least square (OLS) can be applied to equation (3) by assuming that the errors u_j are normally distributed, non auto-correlated and homoscedastics. However, the existence of regional factors (local amenities and socio-cultural habits, for example) that affect not only the stated perceptions but also show spatial patterns of distribution would require considering the existence of spatial dependence between the errors of the equation (3).

Assuming the existence of spatial autocorrelation in the errors of the equation (3), more efficient estimators could be obtained by considering the specification of a Spatial Error Model - SEM (LeSAGE and PACE, 2009; ANSELIN, 1988). The SEM would be given as:

$$\begin{cases} \theta_p = \phi_0 + \sum_r \phi_r R_{pr} + u_p \\ u_p = \rho \sum_{q \neq p} w_{pq} u_q + \varepsilon_p \end{cases} \quad (4)$$

Where the error of a spatial unit (u_p) depends on a weighted average errors of its spatial neighborhood ($w_{pq}u_q$) plus a random component, homoscedastic and non-autocorrelated (ε_p). The parameterization used in this work for the spatial weights (w_{pq}) is:

$$w_{pq} = \begin{cases} 1/n_p, \text{if } p \text{ and } q \text{ are neighbors} \\ 0, \text{otherwise} \end{cases} \quad (5)$$

Where n_p is the number of neighbors of the spatial unit (FU) p.

Strategy of estimation

Many factors have been found to affect SWB, such as income; demographic variables (age, gender, race, employment status, religion, and marital status), personality, behavior or health (DIENER, 1984; PESSOA and SILVEIRA, 2009). This paper takes the advantage of two cross-sectional samples, one for year 2003 and other for 2009, in order to adjust reported SWB as a function of familiar and regional characteristics. For each year, a logistic regression was fitted for equation (2) considering the odds for income insufficiency as response variable. Analyses were done using the routine PROC LOGISTIC of the SAS software. Based on the availability of data, the following explanatory variables were considered in the first stage:

- ln (Income per cap): natural logarithmic of the annual familiar per capita income;
- Eight binary variables in order to identify nine sources of income: domestic work; agricultural work; non-agricultural work (reference); employer; self-employment; retirement; income transfers; other sources and no income;
- Woman: binary variable which assume 1 if the family head is a woman;
- Education: years of education of the family head;
- Age and age^2, decades of age of the family head and its quadratic term;
- White: binary variable which assume 1 if the family head is white or Asian;
- Four binary variables which identify five family types: single; couple with children (reference); couple with no children; mother with children; others;
- Piped water: binary variable which assume 1 if the family household has access to piped water;
- Sewage: binary variable which assume 1 if the family household has access to sewage;
- Pavement: binary variable which assume 1 if the family household has access to pavement;
- Rural: binary variable which assume 1 if household is in rural area;

Estimates of the fixed effects ($\hat{\theta}$) of the equation (2) were used as instruments for the dependent variables in equations (3) and (4). In this second stage, analyses were based on a pooling sample with 54 observations (27 FUs for each year). Because São Paulo was the reference of analysis in equation (2), the analysis considered $\hat{\theta} = 0$ for this FU. Equation (3) was fitted with routine PROC REG and equation (4) was fitted with PROC MIXED, which allowed considering a non-constant structure of error covariance (equation 5).

Four explanatory factors were tested as regional determinants of the income insufficiency[3]:

- HDI Income: Human Development Index for per capita income;
- HDI Education: Human Development Index for education;
- HDI Life Expect.: Human Development Index for life expectancy;
- Gini: Gini index for per capita income inequality;

Minimum income

A main concern in welfare analysis comprises the determination of the minimum income necessary to achieve a reasonable standard of living (GOEDHART et al., 1997). This paper proposes a new approach to estimate a subjective indicator of minimum income in each region, based on the share of persons with stated insufficiency for each level of per capita income.

[3] Data provided by United Nation Development Program. Available at http://hdr.undp.org/en/. Access on june 2011.

First, according to the Equation (2), the probability of income insufficiency for a person living in the *p-th* UF is:

$$P(Y=1) = 1/[1+e^{-(\alpha+\delta I_p+\sum_j \beta_j X_{pj}+\theta_p FU_p)}] \quad (6)$$

Where I_p is the per capita income in the FU p and X_p the other regional socioeconomic characteristics. Holding constant socioeconomic characteristics in FU p, the relation between the proportion of person with income insufficiency (p^q) and the level or per capita income (I^q) is expressed by Figure 1. In other words, different levels of per capita income imply different proportions of persons with income insufficiency in each region.

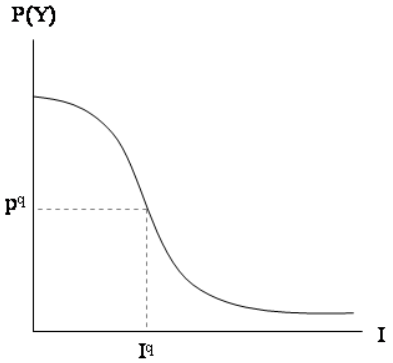


Figure 1 – Probability of insufficiency for specifics levels of per capita income

3. Results

3.1. Descriptive analysis

The levels of income insufficiency in Brazil are extreme, even considering the substantial reduction in the 2000s. In 2009, about 147 million people (78%) had at least some income difficulty and 37 million (20%) reported extreme difficulty to live with their family income (Table 1).

Table 1 – Distribution of persons (%) according to levels of income and food insufficiency – Brazil 2003 and 2009

Indicator	2003				2009			
	Urban		Rural		Urban		Rural	
	N (1,000)	%	N (1,000)	%	N (1,000)	%	N (1,000)	%
Income allow you to live with:								
Strong difficulty	40,491	28	11,271	38	29,065	19	8,037	25
Difficulty	34,682	24	7,676	26	33,972	22	8,435	26
Some difficulty	49,447	34	8,258	28	56,776	37	10,577	33
Some facility	12,015	8	1,625	5	20,778	13	3,297	10
Facility	5,946	4	786	3	13,508	9	1,667	5
Strong facility	864	1	146	0	1,323	1	186	1
The quantity of food:								
Usually is not enough	21,720	15	5,881	20	15,306	10	4,474	14
Sometimes is not enough	48,406	34	12,544	42	43,230	28	11,663	36
Ever is enough	73,156	51	11,340	38	96,858	62	16,052	50

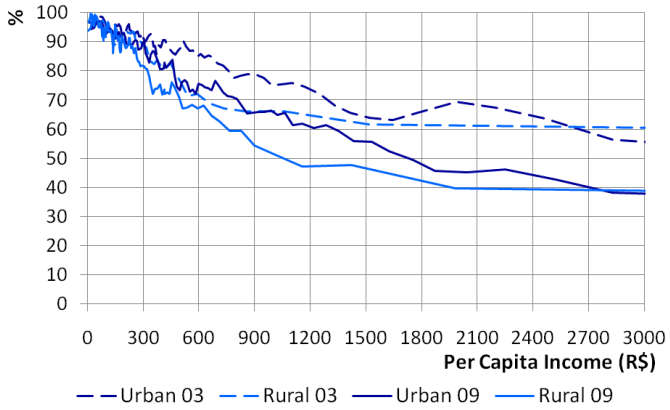
Elaborated by the author using data from POF/IBGE.

The reduction in the reported perceptions of income insufficiency was more intense among the most severe levels of insufficiency, which would reflect a faster income growth of the poorest families due to the expansion of the cash transfer programs in Brazil (MEDEIROS *et al*., 2007). The number of people with extreme difficulty to live with their family incomes reduced by 40% between 2003 and 2009.

The income insufficiency is expressive (above 40%) even for people with relatively high incomes (Figure 1). Relative income perception may influence such result: the greater the extent and complexity of a group's needs, the higher the amount of income and expenditures required to ensure a regular perception of wellbeing. Thus, there would be a limit for an objective evaluation of wellbeing, from which people would be more guided by relative perceptions.

In the tails of the income distribution, there are no substantive differences of the stated income sufficiency among rural and urban residents. In the lower tail, the insufficiency is close to 100% of the population, which reflects the hardships imposed by the budget constraints of these families. In the middle range, between about R$ 250 and R$ 2500, state insufficiency tends to be higher in urban areas, Differences in expectations formed from different standards of living contribute to explain such results, for example, due to the higher needs of a middle class member in the urban areas.

Figure 1 – Percent of people with income insufficiency according to *per capita* income – Brazil 2003 and 2009



Source: Elaborated by the author using data from POF/IBGE.
Values in reais (R$) of January 2009 (INPC)

Besides differences between urban and rural areas, the spatial distribution of population among FUs also plays an important role determining the standards of living. Figure 2 presents preliminary results to analyze such behavior, mapping the distribution of percentages (color gradation) and absolute number of people (proportional circles) with food and income insufficiency in the Brazilian FUs.

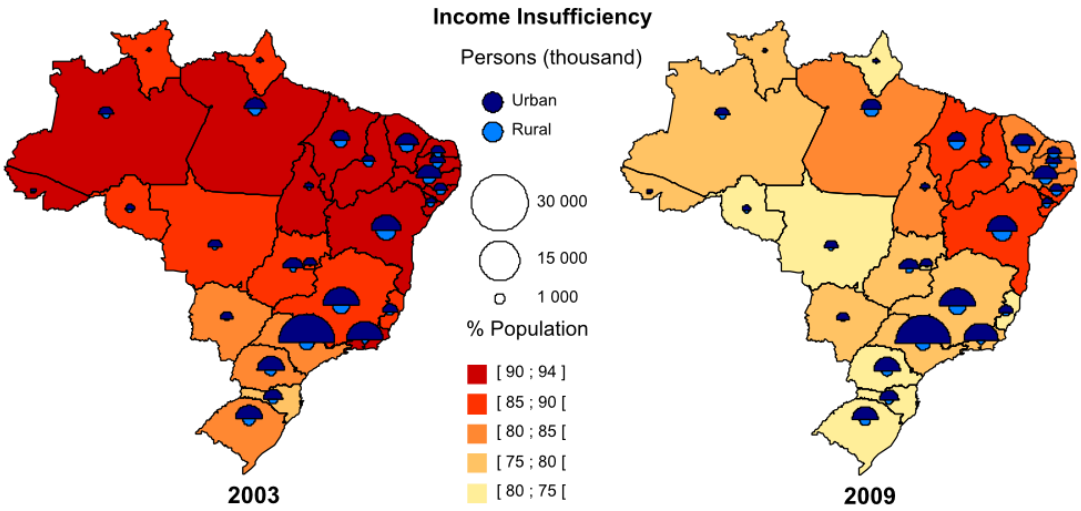


Figure 2 – Spatial distribution of the percent (colors) and number of persons (circles) with income insufficiency – Brazil 2003 and 2009
Elaborated by the author using data from POF/IBGE. Cartographic source: Articque.

There are evident patterns of spatial distribution of income, i.e., the geographical proximity of FUs with similar levels of stated perceptions of wellbeing. The higher percentages of insufficiency occur in the poorest FUs, in the North and Northeast regions. On the other hand, the number of persons with insufficiency is higher in the most populated states of the Southeast region.

Between 2003 and 2009, there was an expressive reduction in the percentage of income insufficiency in all the Brazilian FUs. In addition, there was also a 10 percent reduction in patterns of spatial association of the income insufficiency, as suggested by the Moran coefficient estimates (Table 2). Nevertheless, high levels of inequality among FUs still remains, as well as the levels of spatial patterns of distribution of the income insufficiency.

Table 2 – Moran autocorrelation coefficient for the percentage of persons with income insufficiency – Brazil 2003 and 2009

Area	Income Insufficiency	
	2003	2009
Urban	0.55	0.51
Rural	0.51	0.49
Total	0.60	0.53

Elaborated by the author using data from POF/IBGE.

3.2. Personal determinants of the income insufficiency

Table 3 presents results for the first stage of estimation, which associates family socioeconomic characteristics to their propensity to income insufficiency. Overall, goodness of fit measures suggest reasonable adjustments, with likelihood ratios significant at 0.01% and adjusted R^2 higher than 0.21 for both years.

First of all, results highlight that absolute income play an important role reducing propensity to insufficiency. As might be expected, current income is strictly related to the financial stress of the families. Moreover, binary variables associated to the sources of income, which were used as proxies to social patterns, determined significant differences in the levels of subjective wellbeing. First of all, results suggest that families headed by employers present a lower propensity to income insufficiency. On the other hand, families

related to vulnerable sources of income, such as domestic workers and income transfers beneficiaries, are more likely to declare income insufficiency.

Table 3 – Maximum likelihood estimates of the logistic regression for the probability to declare income and food insufficiency – Brazil 2003 and 2009

Variable	Income Insufficiency							
	2003				2009			
	Avg Value[1]	$\hat{\beta}$	CL (β, 95%)		Avg Value[1]	$\hat{\beta}$	CL (β, 95%)	
Intercep	-	6.715	6.361	7.068		7.846	7.551	8.141
ln (Income pc)	706.7	-0.917	-0.954	-0.879	831.0	-1.064	-1.096	-1.033
Source of income								
Employed	0.367	-	-	-	0.367	-	-	-
Domestic work	0.026	0.314	0.030	0.597	0.034	0.145	-0.014	0.305
Agricultural work	0.026	-0.329	-0.575	-0.083	0.017	0.498	0.181	0.815
Employer	0.032	-0.349	-0.471	-0.227	0.026	-0.234	-0.350	-0.119
Self-employment	0.232	0.105	0.021	0.189	0.205	0.066	0.002	0.130
Retirement	0.200	0.106	-0.007	0.219	0.221	-0.066	-0.146	0.013
Income transfers	0.005	2.065	0.083	4.047	0.027	0.168	-0.065	0.401
Other sources	0.111	-0.008	-0.112	0.095	0.103	0.094	0.013	0.176
Woman	0.260	0.300	0.203	0.398	0.305	0.076	0.010	0.141
Education	6.863	-0.003	-0.006	-0.001	6.848	-0.004	-0.006	-0.001
Age	4.578	0.707	0.591	0.824	4.717	0.474	0.386	0.561
Age^2	-	-0.067	-0.079	-0.055	-	-0.038	-0.047	-0.030
White	0.442	-0.271	-0.340	-0.201	0.414	-0.146	-0.196	-0.096
Family status								
Single	0.090	0.038	-0.121	0.198	0.113	0.114	0.000	0.228
Couple + children	0.468	-	-	-	0.456	-	-	-
Couple no children	0.105	-0.180	-0.285	-0.075	0.138	-0.024	-0.099	0.051
Mother + children	0.091	0.108	-0.051	0.267	0.104	0.204	0.102	0.306
Other	0.246	-0.010	-0.087	0.066	0.190	-0.066	-0.127	-0.004
Piped water	0.825	-0.267	-0.422	-0.112	0.898	-0.477	-0.610	-0.344
Sewage	0.520	-0.103	-0.192	-0.015	0.586	-0.113	-0.176	-0.051
Pavement	0.534	-0.105	-0.187	-0.024	0.604	-0.027	-0.092	0.038
Rural	0.219	-0.411	-0.522	-0.300	0.232	-0.422	-0.503	-0.342

Elaborated by the author using data from POF/IBGE.

[1] Average values correspond to reais (R$) of per capita income for variable ln (Income pc), years of schooling for Education, years for age and proportion for the other variables

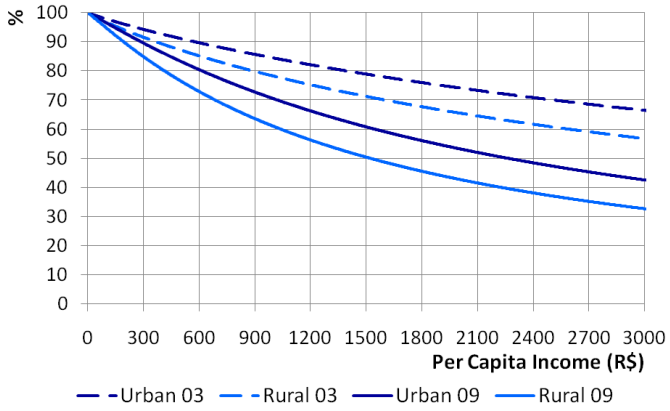
Other social characteristics play also important roles determining the propensity to income insufficiency. For example, families headed by women and nonwhite people tend to be more vulnerable to income insufficiency. The higher the educational attainment of the family head, the lower the propensity to income insufficiency. Families headed by older people have also lower propensity to insufficiency, as indicated by the coefficients of the quadratic relationship. On the other hand, single families and couples with children are more likely to declare income insufficiency.

Household characteristics, such as access to basic items of infrastructure, also contribute significantly to reduce the income insufficiency, especially access to piped water.

Moreover, as noted in the previous analysis, rural residents are less likely to declare income insufficiency than urban residents, holding constant other socioeconomic characteristics. Thus, the higher percentage of people with income insufficiency in rural areas is especially due to the worst socioeconomic conditions that these residents are submitted to (income, education, infrastructure, among others). People with similar socioeconomic characteristics are more likely to be satisfied with their income in the rural than in the urban areas.

Figure 3 exhibits the relation between minimum per capita income and the share of the population with income insufficiency, after controlling regional socioeconomic characteristics (Equation 6). The socioeconomic characteristics used as reference in this analysis are the average values observed in 2009 (Table 3). Similarly, the regional distribution of the population among the FUs was used to control the fixed effects on equation (6).

Figure 3 – Probability of a family head declaring income insufficiency according to *per capita* income – Brazil 2003 and 2009



Source: Elaborated by the author using data from POF/IBGE.
Values in reais (R$) of January 2009 (INPC)

As noted in previous analysis, there was a substantial reduction of the income insufficiency between 2003 and 2009, independent of changes on socioeconomic characteristics. For example, the minimum income necessary to limit in 25% the share of urban residents with income insufficiency fell from R$ 1904 to R$ 806. In the rural areas, this minimum income fell from R$ 1216 to R$ 542.

The minimum income increases substantially for marginal reductions in the percentage of persons with income insufficiency, which can be due to the effect of the relative income perception. For example, in 2009, in order to reduce the share of urban residents with income insufficiency from 90% to 80%, the minimum income had to increase R$ 328 (from R$ 287 to R$ 615). In turn, in order to reduce income insufficiency from 60% to 50%, the minimum income had to increase R$ 717 (from R$ 1546 to R$ 2263).

3.3. Regional determinants of the income insufficiency

Estimates associated to the differences between FUs (equation 2) were used as response variables and related to regional explanatory factors (equations 3 and 4). OLS and SEM estimates exhibited in Table 4 are no biased and present similar values. In turn, the relative efficiency of the SEM estimators implies that their standard errors are lower than the OLS ones. Overall, there are no substantial differences between OLS and SEM estimates, reflecting the low level of spatial autocorrelation in the residuals after controlling family socioeconomic characteristics.

First, results highlight the positive relationship between self-reported income insufficiency and regional per capita income. In other words, the richer the FU, the higher the propensity to report income insufficiency. Relative income perception help explaining such

result: people living in richer regions are less satisfied with their objective per capita income because they tend to compare their income with richer ones of the same region.

On the other hand, the regional education index affects negatively the propensity to income insufficiency. This means that people living in regions with higher levels of educational attainment are less likely to declare income insufficiency. Educational attainment affects both socioeconomic development and socio-cultural habits, impacting on material needs, aspirations and, thus, on different expectations of the life that people deem as ideal.

Moreover, there was a substantial reduction of the stated income insufficiency between 2003 and 2009. This reduction would be related both to changes on unobserved socioeconomic characteristics, such as access to credit or economic stability, or changes on general perception of wellbeing.

Table 4 – OLS and SEM estimates for the determinants of the regional income insufficiency – Brazil 2003 and 2009

Variable	OLS			SER		
	$\hat{\phi}$	$S_{\hat{\phi}}$	p	$\hat{\phi}$	$S_{\hat{\phi}}$	p
Intercep	-0.094	1.467	0.949	-0.094	1.383	0.946
HDI Income	3.826	1.479	0.013	3.826	1.395	0.009
HDI Education	-3.940	1.369	0.006	-3.940	1.290	0.004
HDI Life Expec.	0.294	1.795	0.870	0.294	1.692	0.863
Gini	0.203	1.327	0.879	0.203	1.251	0.872
Year 2003	0.292	0.078	***	0.292	0.073	***

Elaborated by the author using data from POF/IBGE.
*** Significant at 0.01%

Conclusions

Subjective indicators of wellbeing provide additional and important information to analyze poverty and inequality. In Brazil, the distribution of self-reported measures of income insufficiency highlights the huge degree of exclusion and inequality of its population. There are also evident patterns of spatial distribution of the insufficiency, which can be related to different processes of socioeconomic development in the territory.

One of the main advantages of the subjective indicators is that they allow assessing both objective and subjective concepts of how people feel about their living conditions. The income insufficiency, for example, depends not only on objective concepts of current income, but also on the access to a range of social benefits, such as basic food basket, or even differences on lifestyles, such as production for own consumption. Similarly, concepts of wellbeing become more complex as essential needs are fulfilled, considering factors such as violence, transportation and social inequality.

The self-reported insufficiency showed a strong relation with the main family socioeconomic characteristics. Some relations highlight objective perception of wellbeing, such as current income or household infrastructure. Other relations may be more associated to differences due to adaptive aspiration or relative income perceptions, such as different standards of rural or urban living.

Holding constant family socioeconomic characteristics, regional income affects positively self-reported perceptions of income insufficiency. In other words, family members with equivalent incomes are more likely to report income insufficiency in higher income regions. First, income insufficiency depends on both absolute and on relative income. Thus, if absolute income does not change, either low income or high income groups tend to be in worst relative position in richer regions and, consequently, they will report higher dissatisfaction with the income they have. Second, income and aspirations in space tend to go together. Concepts of wellbeing are more complex in more developed regions, considering

both higher living levels, which imply higher personal consumption expenditures, and additional social problems that may arise in more developed regions, such as violence, traffic jams, drug traffic and residence in slums.

Differences between urban and rural populations provide additional information to analyze the effects of adaptive aspirations and expectation on reported SWB. Although the share of people with insufficiency is substantially higher in the rural areas, people with similar incomes tend to be more satisfied in rural areas. Among the poorest people, for example, the needs of urban residents go beyond the food consumption, involving concerns such as transportation, violence and drug traffic. Adaptive aspirations, formed about the different standards of living that these groups are submitted to, play also important roles determining higher insufficiency in the urban areas.

In turn, the level of educational attainment within regions affects negatively the stated income insufficiency. Educational attainment improves socioeconomic conditions, cultural behavior and, thus, may affect individual´s material aspirations. Since education is individually related to life satisfaction, in a regional sense it is supposed to be related to factors such as feelings of joy, pleasure, contentment and stated wellbeing.

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