POVERTY, INEQUALITY AND REDISTRIBUTION:
A METHODOLOGY TO DEFINE THE RICH

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ABSTRACT

The paper proposes a simple methodology to estimate an affluence line that depends on the knowledge of the income distribution and the poverty line for a given population. The idea that poverty is morally unacceptable and can be eradicated through redistribution of wealth provides the grounds for the methodology. The line is defined as the value that delimitates the aggregated income required to eradicate poverty by the way of transfers from the rich to the poor. I estimate an affluence line using Brazilian 1999 National Household Survey data and briefly discuss the results.

Keywords: Poverty; Affluence; Rich; Social Inequality.

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1 INTRODUCTION

In extremely unequal and relatively rich countries, the reduction of inequality can be an important strategy for the eradication of poverty. If the policies implemented to accomplish this reduction take into consideration the fact that as an individual's volume of resources increases, the impact that each resource unit has on this person's well-being decreases, and the main group negatively affected by a strategy to alleviate poverty through the reduction of inequalities will be that of rich individuals.

Nonetheless, the implementation of poverty eradication policies is a complex task and requires knowledge about the people who are affected by them. There is a reasonable volume of studies about the poor and their characteristics, but little is known about the rich. The study of the rich requires, obviously, a stratification rule that defines who constitutes this group. In the studies about poverty, the definition of the population considered poor is done through poverty lines; thus, it seems reasonable to stratify the rich using the same approach, that is, affluence lines. The determination of poverty lines around the world has seen much advancement, but the same progress has not been made on lines that allow us to identify the rich population.

The objective of this paper is to propose a methodology for the construction of affluence lines that meet three requirements: 1) relates poverty and affluence; 2) starts from a relatively small and simple set of rules and principles that justify the choices made; 3) can be easily applied to surveys designed for purposes other than the construction of these types of lines.

The proposed affluence line is grounded in the possibility of, in socially unequal populations, eradicating poverty through transfers of resources from the richest to the poorest. The adopted notion of affluence depends totally on the intensity of poverty in a society. Under determined aspects, the proposed affluence line is an "antipoverty" line that finds justification in the ideas that poverty is unacceptable in any society, and that the individual well-being generated by additional amounts of resources decreases as the volume of such resources increases.

When a time frame of one or two decades is considered, a redistributionist approach to poverty elimination is certainly appealing and, in some cases, almost necessary. For instance, the empirical evidence indicates that, alone, pure economic growth may not be sufficient to eradicate poverty in Latin America in the next 20 years. According to UNDP's Human Development Report 2003 (UNDP, 2003), in the ten countries with the highest incidences of poverty, the proportion of the population living below a two dollar PPP (Purchase Power Parity) a day is above 30%, and at least half of the poor live bellow the line of one dollar PPP a day. This means that even with a 100% equally distributed growth - twice that observed in the region in the last two decades - those countries would still have at least 15% of their population in poverty.

However, there are obvious barriers to redistributionist policies, such as disincentive effects in the economic behavior of the rich. Also, income transfers to the poor are not a permanent solution to the problem of poverty. The simplistic redistributionist approach of the methodology presented is not intended to be seen as a policy proposal. A real policy has to take many other aspects of the dynamics of an economy into consideration. Rather, the affluence line methodology aims at defining a statistical tool to allow studies that can contribute to a more effective design of redistributionist measures.

The next sections will discuss the implicit rationale behind the definition of affluence, the main rules that determine it, and the procedures for estimating the affluence line using an example of a line estimated under an income perspective. Next, the procedures are applied to data from the 1999 National Sample Survey of Households from the Brazilian Institute of Geography and Statistics to estimate affluence lines for Brazil, and the results are briefly discussed.

2 THE LOGIC OF THE AFFLUENCE LINE

The first step in the construction of an affluence line is to define what a rich individual is. There is no consensus on the topic. There are records on the existence of affluence definitions from 1805, in Sweden, based on absolute levels of savings (Soltow, 1989) and, since then, different methods for the definition of affluence have been used. Part of the literature, such as studies from the last decades carried out by Miller (1971) and Williamson (1976), or more recent studies, such as those by Auerbach & Siegel (2000) and the Deutsche Bank (2000) considers those who have incomes above an absolute value rich. Usually this absolute value is determined on a very high level, thus avoiding strong divergences about the definition adopted.

Another method that also avoids some of the divergences is based on the participation of individuals in a social group regarded as rich by a large portion of the society, observed in studies by Blitz & Siegfried (1992), Pinçon & Pinçon-Charlot (1996), Buris (2000), Broom & Shay (2000) and Goolsbee (1998, 2000). This social group can be composed by a professional group (such as executives of major companies or famous artists and athletes), member of family dynasties, or other inclusion criteria that carry a certain degree of recognition by society.

To a certain extent, it is possible to incorporate the divergences about the concept by means of a method based on subjective definitions of affluence. In this case, the definition of affluence would start with questions about the limits of affluence and would use different rules to combine the obtained answers. This way, the affluence line can be determined using a simple rule – such as the average or median of the answers – or more complex rules, based on well-being functions similar to those used for the estimation of poverty through the methods of subjective poverty lines (Goedhar et al., 1977, Praag, Spit & Stadt, 1982; Colasanto, Kapteyn & Gaag, 1984; Kapteyn, Kooreman & Willemse, 1988).

Some studies define affluence based on the position of the individuals in the personal or household income distribution, such as, for example, Lichter & Eggebeen (1993), Carroll (1998, 2000), Wolff (2000), Dynan, Skinner & Zeldes (2000) and Feenberg & Poterba (2000). This method consists of determining, usually arbitrarily, a higher quantile of income distribution, which can be 1%, 2% or even 20%, identifying the population found above its threshold and treating it as rich, regardless of the absolute values of their incomes.

Alternatives also based on the position in the income distribution can use the deviation from the average income as a parameter, defining the rich as those whose incomes are beyond a determined amount of standard-deviations in relation to the average, or even follow the method by Inhaber & Carroll (1992), who propose an interesting definition of affluence, based on changes in the shape of the personal wealth distribution curve, in which the rich are those found on the part of the curve whose shape is similar to a Pareto distribution.

However, since their objectives were others, the aforementioned methods do not satisfy the first requirement of the proposal here presented, which is to directly relate the affluence line to the poverty line. The method used by Rank (1999), Danziger, Gottschalk & Smolensky (1989) and Hischl, Altobelli & Rank (2001) establishes this relation, defining the affluence line from a multiple – usually 8, 10 or 12 – of the poverty line. This multiple is determined, according to the authors, in a totally arbitrary way. The absence of a justification for choosing the multiple, however, gives room for questioning the grounds of the adopted concept (why is the affluence line defined as 8 or 12 and not 7 or 13 times the poverty line?), which demonstrates the importance of some sort of argument that justifies the adopted concepts for the definition of the affluence line.

As well as in the construction of poverty lines, where the identification of the situation in which an individual can be considered poor is based on criteria that are almost never fully consensual (Hagenaars & de Vos, 1988, Saunders, 1998), the delimitation of a borderline from which individuals can be considered rich, due to the vast possibility of controversies about the value judgments involved in such a definition, is also something difficult to be done (Pinçon & Pinçon-Charlot, 2000).

The already consolidated debate about poverty can provide excellent assistance in the construction of an affluence line. The poverty situation, for example, can be understood as that situation where one or more individuals live below the minimum considered conditions (Spicker, 1999). This individual minimum is a value judgment which, in its formulation, usually takes the life conditions of the other individuals into consideration. By analogy, affluence can be understood as a situation in which individuals live above a determined threshold. Similar to the definition of poverty, the definition of this threshold depends on a value judgment.

If reaching a consensus about some life conditions that can be considered minimum (identifying poverty) is a difficult task, it is even more difficult to define the threshold that separates a rich person from the other individuals. When trying to find a basis for the judgments necessary to define who can be considered rich, it is tempting to think that, as poverty can be understood as some kind of deprivation, affluence could also be understood in absolute terms, as a kind of excess, as does Drewnowski (1978). His proposal implies in the construction of an affluence line that determines the level above which consumption is superfluous. The method consists of ranking a set of needs and estimating the cost of fully satisfying all of them. One of Drewnowski's main concerns is to emphasize the importance of the affluence line for the formulation of public policies and, maybe because of this, his article does not precisely specify what the relevant needs are, how to define "full satisfaction", or how to deal with the public provision of goods and services.

The problem of building an affluence line based on the notion of excess is defining *excess* in a way that is reasonably consensual, since this idea is not as well accepted as the idea of a minimum. Even if the construction of an absolute threshold above which people can be considered rich is possible, or even desirable, only very high thresholds would probably be able to keep out of deep controversies.

An alternative is to try to establish a borderline between the rich and the non-rich based on rules that do not rely on the definition of affluence in absolute terms. These rules must be based on principles which already have a reasonable level of accordance, such as in the case of poverty, where there is a reasonable consensus, not much in terms of what can be considered as "minimum",

but especially based on the idea that it is undesirable for any person to live in conditions below the minimum. Therefore, using the idea of poverty to define affluence seems to be pertinent.

This can be done in cases where poverty is not understood as a set of unsatisfied needs, but as an insufficiency of means to satisfy these needs. In the case of an indirect means of income, for example, a rich individual can be easily understood as a person who is found at the opposite extreme of the region where the poor are found. It is important to note that the "spaces" or "dimensions" of affluence are not necessarily the same as those of poverty. The rules established here to define affluence based on poverty, are both addressed in the income space; however, it is perfectly possible to use similar rules to define affluence in other spaces.

It seems clear that real affluence is not related only to levels of income. Actually, the methodology proposed here could be adapted to consider affluence in other ways. For instance, incomes are flows, but it is perfectly possible to define poverty in terms of the insufficiency of stocks (such as assets, for example). In this case, there might also be an affluence line based on stocks which would also meet the first principle of the methodology, that is, it would relate poverty and affluence. However, due to a lack of data other than on income, the methodology may encounter obstacles to being applied. This is likely to occur in the poorest countries, where redistribution is more necessary, but data availability is limited. Therefore, the main reason to use income information is to allow the methodology to be easily applied in surveys with limited data.

The arguments around the definition of affluence proposed here are grounded in the idea that *poverty in a society is unacceptable*. The poverty line determines a minimum, and once there is accordance on this principle, the existence of individuals living below this level is unacceptable, and it would be reasonable to expect the necessary efforts from society for everyone to live above this minimum.[1] It is important to note that this point does not mean that poverty can be effectively eliminated, but, simply, that there should be a complete aversion to it.

Poverty is a function of the level and shape of the distribution of the total resources of a society among its population. Therefore, poverty can be reduced through some kinds of: reductions in the population size, increases in the aggregated amount of resources, and changes in its distribution. The affluence line proposed here is a borderline based on distributive criteria and is defined as the *line that delimits the accumulated resources necessary for the eradication of poverty only through the reduction of income inequality*. This way, affluence cannot be identified only from characteristics of an isolated individual, but depends on the level and the distribution of income in a society.

This kind of line requires the construction of a redistribution rule.[2] To do this, first, one has to presume that, for all individuals, the well-being resulted from the addition of an extra amount of any resource decreases as the owned amount of this resource increases. Since it is usual to relate poverty to income insufficiency, a way to understand this idea is to think that for a poor individual, the transfer of an additional income unit is able to provide a higher well-being than it would for a rich individual.[3]

As a result of this, it is determined that the transfers for the elimination of poverty should occur from the richest individual to the poorest one. When the poorest individual reaches the level of resources of the second poorest individual, both start receiving the same amount of resources, until they reach the third poorest individual, and so on. Analogously, when the level of resources of the richest individual reaches the level of the second richest individual, both

start transferring equal amounts of resources to the poorest, the same occurs to the following individuals as their level of resources are reached.

The idea of using the elimination of poverty through direct transfers of income from the non-poor to the poor in a measure is not new and has been used before by Anand (1997[1975]:254) in a poverty index. Consisting basically of an equalization mechanism that takes from the richest to give to the poorest, the distribution rule used in the construction of this affluence line is based on the egalitarian application, to all individuals, of a reparation principle that regards the affluence line as a kind of "antipoverty line" obtained through equity.

3 THE ESTIMATION OF THE LINE USING INCOME DATA

Figure 1 presents, as an example of the distributive logic underlying the construction of the affluence line, a hypothetical income distribution in a population with three characteristics: 1) high level of aggregated income; 2) high level of inequality and; 3) high incidence and intensity of poverty. Incomes are represented on the Y axis, and the population, in ascending order of income, is represented on the X axis. The thin curve in black represents the original income distribution (before the transfers) of this population and the dotted lower line is this population's poverty line. The affluence line, dotted at the top area of the graphic, is defined by a value by which, once all the original income differential of the richest individuals relating to this value is accumulated, and the result of this accumulation is transferred to the poorest individuals, it is possible to generate a corrected income distribution, represented in the graphic by a thick continuous gray line, determining the inexistence of poor individuals in the population. Please note that the gray curve (corrected distribution) superposes part of the thin curve (original distribution) because changes in the income distribution are restricted to transfers from the rich to the poor.

FIGURE 1

Level and distribution of income in a hypothetical population and the distributive logic of the affluence line
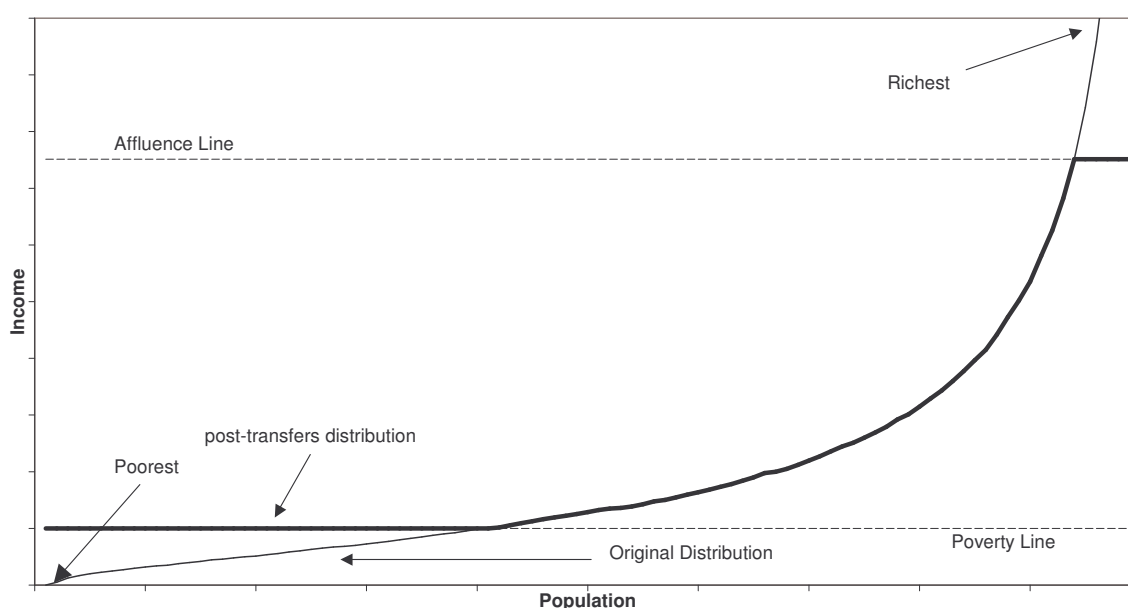
Note: Hypothetical values.

One way to understand how the distribution process occurs is to imagine that, in Graph 1, income is initially transferred from the last richest individual to the first poorest one, until his or her income becomes equal to the income of the second poorest individual. From that point on, equal amounts of income start being transferred to both of the poorest individuals until their incomes match that of the third poorest individual, and so on. As these transfers occur, the income of the last richest individual is reduced until it reaches that of the penultimate richest individual. From that point on, both start providing equal amounts of income for transference until their incomes match that of the third last richest individual, and then the three of them start to provide equal amounts of income for transference, and so on. Meanwhile, the distance between the income of the poorest and the poverty line decreases until it becomes zero (eradication of poverty). When this happens, a point equal or near the value of the original income of the last richest individual included in the transfer process will be the value of the affluence line, above which, with the same income, all the originally richest individuals will be found. At this point, the area below the income curve and above the affluence line will be equal to the area above the income curve and below the affluence line.

The estimation of a population's affluence line (z_r) consists of, first, calculating the poverty gap related to a given poverty line (z_p) and, next, determining the point where the income of the richest should be reduced in order to make enough transfers possible to cover this gap and eliminate poverty. In other words, it is about creating an affluence line through which the sum between the affluence gap G_r and the poverty gap G_p equals zero (1):

$$G_r + G_p = 0 \qquad\qquad (1)$$

The poverty and affluence gaps are determined, respectively, as the sum of the differences between the poverty or affluence line and the income of the poorest or richest individuals. In a population with n individuals, whose unequally distributed incomes are represented by y and are sorted from lowest to highest, there are two groups, one of the rich individuals k to n, whose incomes are above the affluence line, $y_i>z_r$, and the other of the poor individuals from 1 to l, whose incomes are below the poverty line, $y_j<z_p$. Therefore equation (1) can be redefined as it follows:

$$\sum_{k}^{n}(z_r - y_i) + \sum_{1}^{l}(z_p - y_j) = 0$$, so that, from 1 to l, $y_i<z_p$ and, from k to n, $y_j>z_r$. (2)

In a real population, once the existing poverty gap G_p related to a given poverty line z_p is known, it is possible to determine the affluence line z_r through a change in equation (2). Since the affluence line is a constant in the sum, it can be represented in the following equation (3):

$$z_r = \frac{G_p}{(n-k)\sum_{k}^{n} y_i}$$

(3)

Since the concept of affluence used by the line is a relative concept (to the poverty line), in a population where the amount of available resources are not enough to eliminate poverty through distributions, a situation occurs where the value of the affluence line is inferior to that of the poverty line. In this case, there might be among the poor some that are, paradoxically, considered rich.

According to the logic used in the construction of the affluence line, in the occurrence of inequalities in this society, it is possible to alleviate poverty by making transfers from the least poor individuals to the poorest ones. Here we are faced with a choice that depends on the objectives for which the calculation of the affluence line is made. When considered inappropriate to regard as "rich" people found below the poverty line, the affluence line should be determined in a way that only the non-poor individuals are placed above it. Therefore, it is necessary to include the condition that, whenever the affluence gap is bigger than the poverty gap,[4] the affluence line will be equal to the poverty line (4):

If $G_r > G_p$, then $z_r = z_p$. (4)

Nonetheless, since the affluence line can be used as an indicator of the relation between poverty and inequality in a society, the presence of people that are simultaneously rich and poor, can be used to indicate a generalized insufficiency of resources, which hinders the eradication of poverty through distribution only. In this case, and in others where the distinction of two groups, poor and rich, without intersection, is not absolutely necessary, condition (4) can be disregarded.

Underlying the construction of the affluence line is the notion that resources transferred from the richest are fully absorbed by the poorest. It is perfectly possible to include some kind of "loss" in the transfer process (calculating, for instance, the different costs involved in the transfers), or even circumstances that reduce poverty without changes in the distribution of resources (such as growth, for example). In those cases, equation (1) just needs to be adjusted to include this type of modification in the total volume of the necessary resources to eliminate poverty, which can be represented by a multiplier ε, resulting in equation (5):

$\varepsilon G_r + G_p = 0$ (5)

Nonetheless, it is hard to find a reason that justifies the inclusion of multiplier ε when estimating the line, since the distribution mechanism used in the construction of the affluence line is more of a theoretical resource than an actual proposal for a distributive policy. The pursuit of simplicity in the definition of the affluence line results in a distributive rule that is based on a very elementary social justice philosophy, unlikely to be used as the only targeting principle in real policies. The introduction of some level of complexity in the calculation of the line through parameter ε generates, to a certain point, incoherence with the simplicity pursued by the proposed methodology; therefore, it is convenient to keep its value as 1.

All the calculations for the affluence line were done using nominal values. Due to regional differences in prices or other factors that separate nominal from real values, some adjustment could be necessary in the methodology to take such differences into account. This can be done by converting each person's income into standard units of purchase power, using regional price indexes for national adjustments, or other approaches, such as the well-known PPP units (Purchase Power Parity) for international comparisons (this last approach could be used if one wishes to calculate global affluence lines). However, for the sake of simplicity, no adjustment was done in the calculations presented here.

4 AN AFFLUENCE LINE FOR BRAZIL

In order to show how poverty lines affect the estimates of the affluence line in a real situation, this section will present the results of calculations made on data from the 1999 National

Sample Survey of Households (PNAD) carried out by the Brazilian Institute of Geography and Statistics (IBGE). The PNAD is one of the most useful surveys for the calculation of affluence lines in Brazil because it covers the majority of the Brazilian population, is carried out on a regular basis, and can be considered of high quality. However, it is possible that there might be an underestimation of the data relating to the income of the richest layers of society. If this is true, the real affluence line should be higher than the estimated one.

Given any poverty line, the methodology produces an affluence line. As an example, the calculations here are done using a simple relative poverty line that considers as poor those whose monthly *per capita* household income[5] is lower than R$ 80.97 Brazilian Reais (around US$ 42.60, in values of September 1999), the value of the 33th percentile of the population in ascending order of *per capita* household income in the 1999 PNAD.

In practice, once the value of the poverty line is known, the algorithm of the affluence line estimate obtained from unit record data (microdata) of a sampling survey such as the PNAD can be described as a four-step process: 1) calculate the poverty gap G_p; 2) find, for each individual of the population, sorted according the their income, the value of the affluence gap G_r calculated for an affluence line equal to the income of the immediately less rich individual (affluence differential); 3) add this value to the poverty gap G_p to define, at the point where the sum is lower than or equal to zero, the number of rich individuals in the population; and 4) accurately calculate the value of the affluence line z_r and, according to the case, verify if condition (4) is met.

4.1 POVERTY GAP

The value of the poverty line z_p is required for the calculation of the poverty gap G_p. The gap is obtained by adding, only among the poor (individuals from 1 to *l* whose income is lower than that of the poverty line), the differences between the line value and the income observed for each individual properly pondered by the weight *w* of the sample expansion.

$$G_p = \sum_1^l w_j (z_p - y_j)$$

(6)

In Brazil, the value of the poverty gap for the R$ 80.97 *per capita/*month lines is R$ 1.86 billion/month (less than US$ 1 billion), presented in Table 1.

TABLE 1
Estimating the Affluence Line – Brazil – 1999

Variable	Value
Poverty Line[1]	R$ 80.97
Total Population[2]	156 million [100%]
Total Poor[2]	51 million [33%]
Poverty Gap	R$ 1.86 billion
Total Rich[2]	1.4 million [0.9%]
Affluence Line[1]	R$2,170.00

Source: IBGE – PNAD 1999, microdata.

[1] Family per capita monthly income, in Brazilian Reais of September 1999.

[2] Values in brackets indicate proportion in the total population.

4.2 THE ESTIMATION OF THE NUMBER OF RICH INDIVIDUALS

The transference process is based on the transfer of income from the last richest individual (or group) until it reaches the income level of the penultimate richest individual, next, both provide equal amounts of income for transfer until their incomes match that of the third richest individual, and so on. The difference between the income of the rich individual or group and the income of the immediately less rich individual is called *affluence differential* and can be understood as the contribution of that individual or group to the affluence gap if the value of the affluence line has not yet been reached. The accumulated value of the affluence gap is added to the poverty gap. The number of rich individuals in the population will correspond to the least amount of people needed for the addition to be equal or lower than zero.

Table 1 shows that, for the given poverty line, the number of rich individuals is around 1.4 million, which correspond to 0.9% of the observed population[6] (156 million inhabitants).

4.3 THE CALCULATION OF THE AFFLUENCE LINE

Once the number of rich people in the population is known, the affluence line value can be obtained through equation [3], if the condition that the affluence line value should be equal or greater than that of the poverty line [4] is satisfied whenever desirable. After calculating the affluence line, certain measures commonly used in studies about poverty can be applied to the rich population with a few adaptations. It is possible, for example, in an analogy with Foster, Greer & Thorbecke's P(α) class of indicators (1984), to calculate a family R(α) for the rich to indicate the incidence (R0), the intensity (R1), and the average quadratic gap (R2) of affluence. The ratio between the number of rich individuals and the total population, for instance, would correspond to an R(0) measure of this class of indicators.

For the 1999 PNAD data, an affluence line of a monthly household income of R$ 2,170.00 *per capita* (around US$ 1,142, values of September 1999) corresponds to the poverty line of R$ 80.97, as shown in Table 1. Hypothetically, if the richest individuals had their incomes limited to these ceilings, and the excess of their affluence were fully distributed to the poorest individuals, without any kind of losses in the transfer, these would be the values for which, when reducing inequality in Brazil, there would be no poor individuals.

4.4 COMPARING TO OTHER METHODS

Table 2 compares the affluence line above to the ones calculated by other methods. It also shows opinions of the population about the values obtained by each method. Data for lines comes from PNAD, while Brazilian Life Standards Measurement Survey 1996-7 (Brazilian PPV 96-7) provides the data about opinions. The question used was: "Considering the situation of your family, what monthly income would you consider i) Good; ii) Sufficient; iii) Bad?". Results have been converted to *per capita* values, for easier comparison. The survey does not cover the entire country but is considered a good proxy of the general opinions in Brazil. All values are expressed in Brazilian Reais (R$) of September 1999, when exchange rates where 1 US$ = 1.9 R$.

TABLE 2

Affluence Lines calculated by different methods (Brazil, 1999) and opinions about their values (Northeastern and Southeastern Brazil, 1996-7)

Method	*Per capita* value (R$, monthly)	Rich (%)	People (%) consider amount		
			Good	Sufficient	Bad
a. Absolute Value					
Arbitrary amount, high	15,000.00	0.003	99.9	100.0	-
b. Shape of Income Distribution					
Segment of Pareto Distribution	3,250.00	0.4	97.6	99.3	0.1
c. Distributive rule					
Eradication of Poverty (R$ 80.97)	*2,170.00*	*0.9*	*94.7*	*98.1*	*0.1*
d. Position in Income Distribution					
1% richer	2,066.67	1.0	94.5	98.1	0.2
e. Relation with average income					
Four standard deviations above average	2,035.60	1.0	94.4	98.0	0.2
f. Multiple of poverty line					
12 times the poverty line (R$ 80.97)	971.64	4.4	81.5	91.6	0.7

Sources: Opinions – IBGE – PPV 96-97, microdata; Lines- estimates from IBGE-PNAD 1999, microdata, adapting the methods described in a) Auerbach & Siegel (2000) and Deutsche Bank (2000); b) Inhaber & Carroll (1992); c) Medeiros (2001); d) Lichter & Eggebeen (1993), Carroll (1998, 2000), Wolff (2000), Dynan, Skinner & Zeldes (2000) and Feenberg & Poterba (2000); e) Sadeck Filho (2001); f) Rank (1999), Danziger, Gottschalk & Smolensky (1989), and Hirschl, Altobelli & Rank (2001).

Notes: Values expressed in household monthly per capita income, in Brazilian Reais (R$) of September 1999. US$ 1= R$ 1.9. Brazilian National Consumer Price Index (INPC) used for deflation. Brazilian Life Standards Measurement Survey (PPV 96-97) provides the data on opinions. The questions 5, 6 and 8 of Section 15 of the survey have been used, answered values converted into *per capita* income. The survey covers the Northeastern and Southeastern regions of Brazil.

Three of the methods result in similar affluence lines, although there is little in common among them. The difference between the method based on the idea of poverty eradication through income redistribution, and the ones based on the 1% richest quantile or the deviation from the average is lower than 7%.

The groups stratified by these lines are a small fraction of the Brazilian population. For instance, the line of R$ 15,000 (US$ 7,895) *per capita* defines a group that is less than 0.003% of the total population. Lines above R$ 2,000 (US$ 1,053) would form groups of less than 1% of the population. Only lines lower than R$ 1,000 (US$ 526) result in larger groups, but even in this case, the "rich" would be less than 5% of the population. Defining rich is always subject to controversies, but what the data shows is that, even if one refuses the affluence line method as a way to identify the rich, the group defined is an elite in the top of a social pyramid that has a very large base formed by millions of poor people.

The opinion survey indicates that only a small fraction of the population considers the values of the affluence line above R$ 2,000 not sufficient for their families, and that the proportion of families that considers the amount "bad" is irrelevant. In the specific case of the affluence line calculated using the method of poverty eradication through redistribution, the share of the population that does not consider the line's income level not good for their own families is around 5%, and only 2% of the population believes that such income is less than sufficient. Of course, there is a difference between judging a level of income good and recognizing an affluence line. What really matters is that the explicit rejection of the value

of the proposed line (R$ 2,170), partially observed in the choices "sufficient" and "bad", is low. Despite the limitations of this kind of information, the low rejection indicates that the value of the line makes some sense from the public opinion point of view. It must be noted that, given the profile of the income distribution in Brazil, the survey reflects the opinion of a population whose income is several times lower than the one of the affluence line.

5 CONSIDERATIONS

Some characteristics of the proposed methodology for the construction of an affluence line can be emphasized. The definition of affluence does not depend on an absolute limit but on the level and distribution of income in a specific society. Since the idea behind the affluence line is that poverty can be eliminated through the redistribution of income, the concept of affluence is relational, depending on the definition given to poverty. At the same time, the moral appeal of the notion that poverty is unacceptable, used to justify the method for the construction of the affluence line, seems to be stronger than appeals that associate affluence to any kind of absolute excess.

The logic behind the affluence line is based on relatively simple rules. First, total aversion to poverty needs to be assumed. If society is totally opposed to poverty, it should be willing to make the efforts within its reach to eliminate it. These efforts include the possibility of eradicating poverty simply through the redistribution of income (or any other kind of resources). The affluence line is defined as the borderline that delimits the accumulated affluence necessary for the elimination of poverty just by means of the reduction of income inequality, presuming, for all individuals, that the amount of well-being resulted from the addition of an extra amount of a given resource decreases as the amount of this resource increases and, therefore, transfers should take place from the rich to the poor.

The example of the estimate of two affluence lines for Brazil shows that, given the poverty line value, the efforts for the calculation of the proposed affluence line are reduced. The estimates results indicate that due to the high inequality in income distribution in Brazil, in order to fully eliminate poverty in fractions of the population as large as 33%, distributive measures that affect a small portion of the richest individuals in the country are necessary. It would not be realistic, however, to believe that this portion corresponds to the one estimated in the example, not only due to transfer costs and targeting errors, but also due to other justice principles that would certainly be applied in a real distributive policy.

Although the income value of the affluence line, apparently, is not very high, the amount of rich individuals in the population is reduced. This elite corresponds to less than 1% of the population and holds monthly household revenues that exceed R$ 8,680 (US$ 4,568) in a four-member family. Considering the PNAD's possibility of underestimating some incomes and the known insufficiencies in this kind of sampling survey, it is possible that this portion of the population is even smaller and that the affluence line values are even greater.

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NOTES

1. Obviously, there are some kinds of efforts for poverty eradication that are also unacceptable.

2. The presented rules do not exhaust the set of presumptions needed to support the construction of this kind of line, such as the separability of individuals, the independence of their preference functions, the possibility of transferring resources from one part to another, the divisibility of distributed resources, or even the existence of an observable actual distribution of resources between individuals. These assumptions are usually adopted in studies about the subject and their discussion is outside the scope of this article.

3. And, therefore, the loss of a resource unit reduces the well-being of the poor more than it does of the rich.

4. In order to stay consistent with studies that calculate the poverty gap with a positive value, the calculation of the affluence gap was defined in a way so as to result in negative values.

5. *Per capita* household income is the total income of a household divided by the number of persons living in that household. No equivalence scale was used.

6. The population considered for the affluence line is slightly lower than the total Brazilian population reported by the 1999 PNAD since it excludes individuals whose households provided incomplete information about their income