11 A Comparison of Poverty According to Primary Goods, Capabilities and Outcomes. Evidence from French School Leavers' Surveys

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11.1 Introduction

There has been a lively debate on the nature and the definition of poverty. Most experts have long understood that poverty is inclined to vary through time and space. Poverty has a somewhat different connotation today in France from what it has in the developing countries or from it had in the past. That having been said, poverty is a difficult notion and it may be defined in various ways which correspond to different philosophical approaches. The general idea is that poverty is a consequence of an inequality, between individuals, in the control of certain things, i.e., the result of an unequal distribution between those who have something and those who are more or less deprived by it. Poverty is then a situation in which certain individuals are deprived of this something. Thus, according to Sen, the central question to define and measure inequality, as well as poverty can be resumed as follows: "equality of what?" (Sen 1980, 1987b). Thus, in order to define and measure poverty one has to formulate a value judgement on what must be the objects of value. Discussions on normative economics have offered us a wide menu in answer to this question "equality of what?": for example, income, wealth, rights, freedom, etc. In this chapter, I shall concentrate on three particular types of responses that specify the objects of value for equality and poverty, which may be called the informational base.

  - Approaches using means of freedom (Rawls 1971)
  - Approaches shifting attention from means to what means do to human beings (Sen 1985)
  - Approaches selecting social outcomes (Fleurbaey 1995).

  I shall argue that the selection of normative principles on the definition of a poverty concept has a strong impact on the population of the individuals to be considered poor. The first part is dedicated to the presentation of three approaches of liberal egalitarianism. The central place of John Rawls

Theory of Justice (1971) is impossible to circumvent both because of its origi-
nality and because of the influence it had on subsequent work. The second
approach, proposed by Sen focuses on the informational basis of the notion
of capability (Sen 1985). The third approach, taken by Fleurbaey (1995)
stresses the informational basis of the concept of social outcomes. The sec-
ond part of the paper will look at the implications of the previous distinc-
tions for poverty measurement. All three points of view, stressing respec-
tively primary goods, social outcomes and capabilities, suggest resorting to
a multidimensional approach. Several suggestions have been made in the
past to take a multidimensional view of inequality and poverty and we have
decided to adopt what has been called the fuzzy approach to poverty meas-
urement (Cerioli and Zani 1990). The basic idea is to reject the notion of a
simple binary choice (being poor or not) and to admit, on the contrary, that in
many cases there are intermediate situations. The third part of the paper
will give an illustration of the choice of informational space and of its con-
sequences. The three competitive approaches, that have been mentioned
previously, will be tested on the basis of data (1999) collected by the
French Centre of Research in Education, Training and Employment
(CEREQ). We conclude that the results derived from the social outcomes
and capability approaches are often similar whereas a focus on primary
goods identifies a totally different population

11.2 Three concepts of poverty

In this section, we have two aims: first, we shall be concerned with clarify-
ing basic features of the primary good approach, (Rawls 1971), the capa-
bility approach (Sen 1985) and the social outcomes approach (Fleurbaey
1995); and second with explaining the connections between the three con-
cepts.

11.2.1 Clarifying basic features

In an exercise of evaluation, a central question will be distinguished: what
are the objects of value? The identification of the objects of value specifies
what may be called the informational base for the measurement of poverty.
Consequently answering the question about the objects of value provides
information about what the relevant informational base does include and
what it excludes in order to evaluate poverty. It's also necessary to clarify
basic features.

On social primary goods

First, we shall present the notion of social primary goods, a notion which is part of the conception of justice presented in Rawls book: *A theory of Justice* (Rawls 1971). Rawls himself says that social primary goods are "things that every rational man is presumed to want". Consequently, he uses social primary goods as the index of advantage. These primary goods may be characterised under five headings as follows: First, the basic liberties are given by a list, for example: freedom of thought and liberty of conscience; freedom of association; and the freedom defined by liberty and integrity of the person, as well as by the rule of law; and finally political liberties; Second, freedom of movement and choice of occupation against a background of diverse opportunities; Third, powers and prerogatives of offices and positions of responsibility, particularly those in the main political and economic institutions; Fourth, income and wealth; and finally, the social bases of self-respect. It's interesting at this point to understand that primary goods are to be used in making comparisons for questions of social justice. An index of primary goods defines a public basis of interpersonal comparisons for questions of social justice. We are required to examine citizen's level on primary goods and furthermore an individual index of social primary goods is to be used in order to evaluate poverty. What is crucial for the problem under poverty is the concentration on bundles of primary goods. Rawls justifies this in terms of a person's responsibility for his own ends.

On capabilities

Sen (1992) criticizes Rawls' views and offers his own answer, which is that people should be equal in their *capabilities*. He considers that the primary goods approach takes little note of the diversity of human beings. People are not similar. They have different needs varying for example with health, longevity, climatic conditions, temperament, and even body size (affecting food and clothing needs). So judging advantage purely in terms of primary goods implies that individuals have the same needs and that they have full control over the conversion of primary goods in functionings. So Sen's view is that the quality of a person's life should be assessed in terms of the person's capabilities. A capability is the ability or potential to do or be something, more technically to achieve a certain functioning. Functionings represent parts of the state of a person, in particular the various things that he or she manages to do or be in leading a life. The capability of a person reflects the alternative combinations of functionings the person can achieve and from which he or she can choose one collection.

Sen's view is that people ought to be made equal in their capabilities or at least in their basic capabilities.

The corresponding approach to poverty takes the sets of individual capabilities as constituting an indispensable and central part of the relevant informational base of such an evaluation. It differs from other approaches using means of freedom focusing on the primary goods such as in a Rawlsian theory of justice. For example, the capability approach differs from the views of Rawls in making room for a variety of human acts and states as important in themselves. On the other hand, the approach does not attach direct importance to the means of freedom (primary goods, resources), like Rawls' approach does. For poverty evaluation it may be useful to identify a subset of crucially important capabilities dealing with what have come to be known as "basic needs". The term "basic capabilities" used in Sen (1980) was intended to separate out the liability to satisfy certain crucially important functionings up to certain minimally adequate levels. The identification of minimally acceptable levels of certain basic capabilities (below which people are considered as being scandalously deprived) provides an approach to poverty. Basic capabilities concerns for example: "The ability to move, to meet one's nutritional requirements, the wherewithal to be closed and sheltered, the power to participate in the social life of the community " (Sen 1987b). But one can consider others. According to Sen's point of view, capabilities vary between time and between communities at the same time. That's why Sen rejects the idea of giving a canonical list of basic capabilities. Another reason for such a position is provided by the necessity of a social debate. I will conclude this presentation with a pragmatic remark. That having been said, there are many formal problems involved in the evaluation of poverty based on capabilities, because of all of the combinations of functionings which are possible for an individual, i.e. capabilities can not be observed. It is in fact only possible to characterize functionings in a "refined" way to take into account the counterfactual opportunities. Corresponding to the functioning x, a "refined functioning" takes the form of "having functioning x through choosing it from the set S".

On social outcomes

On a paper headed "Equal Opportunity or Equal Social outcome", Fleurbaey (1995) has provided a critical assessment of Sen's writings on capability and of Rawls writings on primary goods, at the same time presenting his own answer to the question "equality of what?" Fleurbaey's main thesis is that Rawls neglects ability differentials, which are unjust inequalities amongst individuals. But with Rawls and against Sen, it argues that social

institutions should not take care of the fate of individuals in a comprehensive way. Only the distribution of social outcomes, which might also be named "primary functionings", matters from the standpoint of social justice and poverty measurement. An application of a social outcomes approach which would seem plausible to him for western societies would select only six individual outcomes: respect for the private sphere, health, education and information, wealth, collective decision making power, and social integration. But at the same time Fleurbaey explains that *"this is just an example, and of course many details have to be worked out concerning the measurement of these six variables."* That having been said, a series of specific objections will be given. But the main problem is that the philosophical basis of social outcomes neglects freedom to choose the relevant outcomes that people have reasons to promote.

To avoid confusion, it should be noted that the concept of social outcomes is used in a different sense from the concept of functionings. The main difference concerns subjective indicators, which are excluded from social outcomes whereas informational base of functionings has both subjective and objective features.

11.2.1 Describing connections between the three concepts

To continue this section focus will be on the links between the three concepts and on the approaches to poverty in their responsibility-based version. A graph is used to explain the links between primary goods, capabilities and social outcomes. There are two important links in the chain from primary goods to primary social outcomes. These links are summarized in Figure 11.1 inspired by Muellbaeuer's analysis (Muellbauer 1987).

First, primary goods are transformed into capabilities of a person to function, for example to be well nourished. These primary goods may translate in different ways. Apart from personal details, some other characteristics influence the capabilities of a person to function such as physical, social and political environment. Secondly capabilities of an individual as well as his psychic state for determining the levels of achievement in the different types of social outcomes.

Of course, each concept of poverty tells us about the way the society deals with its responsibility (Fleurbaey 1998) and with an individual's responsibility. When poverty is based on primary goods, society's responsibility is assigned over some means of freedom. To make up for it, the individual is left to his own means to define personal goals and ambitions and to transform primary goods into human beings. On the other hand, in calculating poverty on capabilities, Sen's principle sets the cut between

choices. Society's responsibility concerns a set of capabilities, i.e. a combination of functionings and in return individuals have ultimate control over them. Consequently, an individual is responsible for choosing one collection of functionings and for achieving them. Finally, adopting social outcomes as objects of value in the measurement of poverty suggests that society decides on a bundle of functionings it considers important and his responsibility consists in guaranteeing them for all the individuals. In exchange, the responsibility for achieving other functionings of minor importance is attributed to individuals.
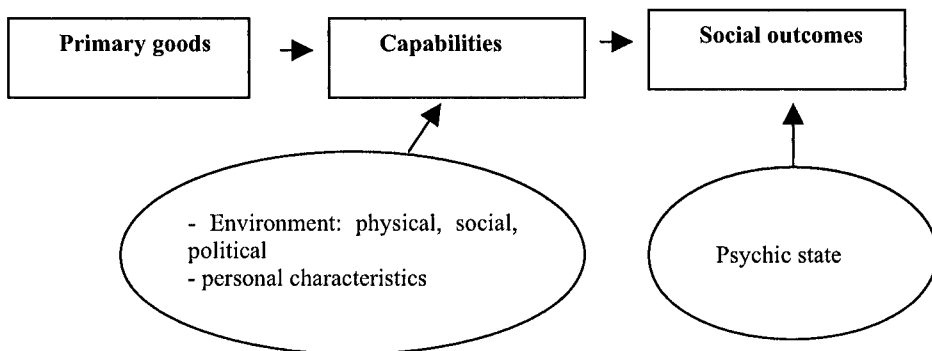

Fig. 11.1. Links between primary goods, capabilities and social outcomes

11.3 A multidimensional measure of poverty: the fuzzy logic

In this section we shall propose methodological tools to measure and compare the three conceptions of poverty. The problem is twofold. The first problem is to measure poverty in a multidimensional framework. In addition, the second problem is to go further than a binary vision of poverty restoring the individual situations in terms of poor and non-poor persons.

In order to take into account these two problems we shall propose a multidimensional new measure of poverty based on fuzzy logic (Vero and Werquin 1997; Vero 2002). Zadeh (1965), followed by Dubois and Prade (1980) introduce the fuzzy set theory, which is the starting point of view of our own study. Fuzzy sets are mathematical tools, which allow for the identification of objects, which do not have membership accurate criteria. A fuzzy system allows a gradual and continuous transition, say, from 0 to 1, rather than a crisp and abrupt change between binary values of 0 and 1.

To be concrete, consider first the ordinary sets principle, which is prevalent in measuring poverty. Let X be a set and x an element of X. Let A be a subset of X. The element x can take two different positions as regard to A:

$$\begin{cases} x \in A \Leftrightarrow \mu^*_A (x) = 1 \\ x \notin A \Leftrightarrow \mu^*_A (x) = 0 \end{cases} \tag{11.1}$$

Where μ^*_A is the membership function. One can view the traditional measure of poverty as deriving from an interpretation of the ordinary sets principle. That interpretation says that all individual i (i=1, ..., n) in the population N are classified in the poor subset P, of N, according to the following criterion:

$$\begin{cases} y_i < Z \Leftrightarrow i \in P; \quad \mu^*_P (i) = 1 \\ y_i \geq Z \Rightarrow i \notin P; \quad \mu^*_P (i) = 0 \end{cases} \tag{11.2}$$

Consider now the fuzzy sets principle. Let X be a set and x an element of X. A fuzzy subset A of X is defined as follows for all x belonging to X:

$$\{x, \mu_A(x)\} \tag{11.3}$$

where μ_A is a membership function which takes its values in the closed interval [0;1]. Each value $\mu_A(x)$ is the degree of membership of x to A. Consequently, the element x can take three different positions as regard to A:

$$\begin{cases} \mu_A(x) = 0 \\ 0 < \mu_A(x) < 1 \\ \mu_A(x) = 1 \end{cases} \tag{11.4}$$

Thus, if $\mu_A(x)=0$ then x certainly does not belong to A. If $\mu_A(x)=1$, then x completely belongs to A and if x is such as $0<\mu_A(x)<1$ then x partially belongs to A and its degree of membership is given by the value of $\mu_A(x)$.

To continue with the poverty application, note that in a fuzzy approach the membership function to the poor set of individual i is defined as follows: (i) the membership function is zero if the individual is certainly non poor; (ii) is between zero and one if the individual reveals only a partial membership to the fuzzy set of poor; (iii) is one if the individual completely belongs to the set.

Although we have just explained how the fuzzy logic consists in measuring poverty, the main issue of this approach is to specify a membership function. In practice, there are numerous fuzzy membership functions in the domain of poverty, which allow us to represent qualitative or continuous variables. Nevertheless, most of them are based on the work of Cerioli

and Zani (1990) from which fuzzy poverty measures have been success-fully developed (Cheli 1995; Cheli et al. 1994; Cheli and Lemmi 1995).

Clearly our poverty fuzzy measure refers to the work of Cerioli and Zani (1990), which initiated a statistical method for multidimensional analysis in which poverty is treated as a fuzzy concept, liable to assume a variety of shades and degrees, but we have developed a fuzzy method, which devi-ates from the initial proposition. In fact, we adopted their manner to define the membership function of the income, or qualitative indicator or con-tinuous variable. Nevertheless we don't agree with the manner of summing up and weighting all the indicators selected. In fact, the basic problem of this approach is how it sums up the many facets of individual poverty and emphasizes the different degrees to which each subject may be regarded as poor. Indeed, the weight assigned to each indicator of poverty variable X is determined independently of the possible correlation with another indica-tor of poverty Y. Consequently, a difficulty arises from their proposition because it avoids excessive importance being assigned to correlated indica-tors and redundant variables. To solve the problem, we need another weighting, based not only on the occurrence of an indicator but also on the occurrence of a vector of variables. We attempted to propose a precise way that can minimize the relative weight of redundant indicators and rebal-ance the weighting of correlated variables (Vero and Werquin 1997; Vero 2002).

Let us first of all present previous studies on which our data processing is based. We turn next to our proposed membership function based on an alternative weighting.

11.3.1 Data processing: income, qualitative and continuous indicators

In this section, we shall present a data processing of income, and non-monetary variables as Cerioli and Zani (1990) first used in the context of poverty. We first consider the case where total income y_i of the ith indi-vidual is known. The membership function to the poor is then defined by fixing a value z' up to which an individual i is definitively poor and a value z" above which an individual i is definitively non-poor. Thus, we have:

$$\mu_j\left(x_{ij}\right) = \begin{cases} 1 & if \quad 0 < y_i < z' \\ \dfrac{z''-y_i}{z''-z'} & if \quad z' \geq y_i > z'' \\ 0 & if \quad y_i \geq z'' \end{cases} \tag{11.5}$$

Following Cerioli and Zani (1990), we secondly consider indicators complementary to income in a multidimensional framework. Suppose that k variables X_1, X_2, ..., X_k are observed on the n individuals of the population and let x_{ij} denote the level of a variable X_j (j=1,2, ..., k) observed for the *ith* individual (i=1,2, ..., n). As introduced in Chapter 3, Cerioli and Zani (1990) considered a transition zone $x_j^L < x_{ij} \leq x_{ij}^H$ for attribute j over which the membership function declines from 1 to 0 linearly:

$$\mu_j\left(x_{ij}\right) = \begin{cases} 1 & if \quad x_{ij} \leq x_j^{(L)} \\ \dfrac{x_j^{(H)} - x_{ij}}{x_j^{(H)} - x_j^{(L)}} & if \quad x_{ij} \in \left(x_j^{(L)}, x_j^{(H)}\right] \\ 0 & if \quad x_{ij} > x_j^{(H)} \end{cases} \tag{11.6}$$

Then, they identify the poor people as those who are excluded from the common standard of living. Individuals deprived of widespread commodities and who have a life style below the standard of the population. The aim is to build an index which goes beyond the income and which allows all the dimensions of the situations of poor people to be captured. We shall not go into detail about the construction of their membership function but we just want to stress the distinction between their approach and our proposed one.

Cerioli and Zani (1990), for each individual i, use the value of an indicator X_1, which represents for instance whether the commodity 1 is owned or not, as compared to the distribution of X_1 among the population. The more the commodity 1 is widespread among the population, the higher the deprivation for individual i and the higher the weight for indicator X_1 in the membership function. Consequently, each variable is included in the membership function according to its spread among the population but independently of the deprivations observed for individual i for other commodities. For other indicators X_2, X_3 ... the procedure is similar. The degree of membership thus derives from the extent in which each of the poverty criteria are missing but this is done separately for each indicator. The main interest in the study of Cerioli and Zani (1990) is to open the way to the multidimensional relative measurement of poverty in a fuzzy context. Since the concept of poverty makes sense only in a given social context, this study is of major interest. Nevertheless, such a measure raises the issue of multicollinearity between different non-monetary indicators and between most of those indicators and the income itself. The main drawback of the Cerioli and Zani (1990) measure is that it does not permit the removal of the collinearity between two or more variables taken as components of the poverty measure. But, if there is a correlation between those variables, this may lead to an overestimated degree of membership. Let us take, for instance, the

extreme situation where two variables are perfectly correlated. We then have redundancy using those two variables: they probably designate the same dimension of poverty. The weight of this dimension is thus twice what it should be. As a result, the Cerioli and Zani measure demands caution in choosing the variables belonging to the poverty membership function.

Two solutions may be envisaged to solve the correlation problem. The first one requires preliminary data analysis to avoid collinearity problems. The second way is to build a composite membership function in order to lower the weight of correlated variables. This allows keeping all the variables in the analysis and that is the new proposed method herein.

11.3.2 The proposed membership function

Let N be a set of n individual i (i=1, ..., n) and K a set of k monetary indicators j (j=1, ..., k). Each of the k indicators j takes their values in the interval [0,1].

The membership function is defined, for each individual i, according to the number of individuals having, at least, the same deprivations on each of the k indicators j. The higher the number of individuals with, at least, the same deprivations as individual i, the smaller the value of the membership function of individual i; that is to say the smaller the degree of poverty.

Let the proportion of individuals whose life style is less than or equal to the life style of individual i. The value of f_j is the number of individuals who are, at most, in the same position as individual i according to all the indicators. One must note that the proposed membership function of individual i relies only on this proportion f_j.

In order to build the membership function, we use a two-step procedure. First of all, use a first level membership measure for the poor set $m_P(i)$:

$$m_P(i) = \frac{\ln\left(\dfrac{1}{f_i}\right)}{\sum\limits_{1}^{n}\ln\left(\dfrac{1}{f_i}\right)} \quad if \ 0 < f_i \leq 1 \qquad (11.7)$$

The way f_j is built, the value of f_s is never equal to 0 since there is always, at least, one individual who has exactly the same deprivation as individual i: this is individual i him/herself. The second step leads to the proposed membership function:

$$\mu_P(i) = \frac{m_P(i) - Min[m_P(i)]}{Max[m_P(i)] - Min[m_P(i)]} \qquad (11.8)$$

The degree of poverty is equal to 0 for all individuals who are in such a position that none of the other individuals has a better lifestyle. The poverty hazard increases with the value of the membership function. The poorest individual of the population has a value equal to 1 for the membership function. We consider that the degree of poverty is equal to one (fully poor), when individual i is in the least favourable position according to all the criteria taken simultaneously. This measure allows dealing with the collinearity issue since all the indicators are used jointly.

11.3.3 Example: calculation of a composite membership function

Let us assume 6 individuals and 3 dichotomous indicators. The latter are whether or not an individual has a bathroom, a car or goes to the cinema (this particular one is taken as a cultural indicator). $X_1=1$ if bathroom is present and $X_1=0$ otherwise. $X_2=1$ if a car is owned and $X_2=0$ otherwise. $X_3=1$ if an individual never goes to the cinema and $X_3=0$ otherwise. It is also assumed that the six individuals of this population are such as reported in Table 11.1.

Table 11.1 Calculation of a composite membership function

	X_1	X_2	X_3	f_i	$\mu_P(i)$
Individual 1	0	1	1	4/6	0.2
individual 2	1	1	1	1/6	1
individual 3	0	1	1	4/6	0.2
individual 4	0	0	0	6/6	0
individual 5	0	1	1	4/6	0.2
individual 6	1	0	0	2/6	0.6

By building, the degree of membership moves between the values 0 and 1. On one hand, the individual who has the highest deprivation (1,1,1) is allowed a degree of membership equal to 1. The extreme value of the scale concerns the individual who is in the best situation (0,0,0), because he holds the best life style. Between the two extreme values, one meets all the individuals who have only partial deprivation. One may observe, through this example, that going or not to the cinema (X_3) is correlated to the possession of a car (X_2). Moreover, going to the cinema or being the owner of a car doesn't constitute the standard of life because 2/3 of indi-

viduals are deprived of these two variables. Consequently, people who are only deprived of these 2 variables are not really to be considered as poor and then their degree of membership is rather low (0.2). On the other hand, the individual 6 who has only one deprivation (no bathroom) has higher degree of membership (0.6) because of the bigger spreading of the bathroom among the population, even if he has only has 1 deprivation.

The range of the degrees of membership is by construction from 0 to 1. An individual, who has the least favourable position, has a degree of membership equal to 1. At the other extreme of the scale, one finds the individual who has the best life style since he/she profits from all the pleasures selected here ($\mu_P(i)=0$). Between these two extremes we find the group of those revealing only partial lacks. One observes, through this example that the cinema admissions (X_3) are correlated with the possession of a car (X_2), and that in addition, being the owner of a car, just like going to the cinema does not form part of the dominating way of life, since two thirds of the individuals are deprived. Thus, the individuals, without these two pleasures, are exposed little to poverty; their degree of membership in the group of the poor is thus relatively low ($\mu_P(i)=0.2$). On the other hand, individual 6 for whom one observes only one deprivation (bathroom) is associated with a stronger degree of poverty ($\mu_P(i)=0.6$), because the equipment in the bathroom forms part of the dominating way of life.

11.4 Empirical comparison on French Youth Panel Survey from 1996 to 1999

In this section we shall present an empirical comparison of the three concepts of poverty based on the fuzzy method proposed in Sect. 11.3 and we shall see whether the choice in favour of certain normative principles has consequences on the population identified more or less as being poor. After presenting some preliminaries, this section considers the way in which the concepts must be interpreted for young people undergoing transition from school to work. Finally, we compare the results based on primary goods with those obtained using other concepts for measuring poverty.

11.4.1 Preliminaries

In order to analyse poverty, three considerations are imperative. Firstly, such an application was conducted by the third panel of the French Centre of Research in Education, Training and Employment (CEREQ). People who left school in 1994 with at the most the "baccalaureate" degree are

surveyed respectively from October 1993 (beginning of their last academic year) to February 2000. This cohort may exist from regular secondary education, Specialised Instruction Section (SES) and apprenticeship. Five annual series of interrogation were carried out between 1996 and 2000. The database we used consists of 2297 individuals for 1996 to 1999 (see Appendix 1).

Secondly, how can we measure young people's poverty that would be based on primary goods, basic capabilities and primary outcomes? In order to remain faithful to Rawls and Fleurbaey the ideal solution would probably be to conduct an empirical study on the lists proposed in Sect. 11.1. Quite apart from the inherent limitations of the process (a constitutional state assures the same rights and liberty for everyone, the social bases of self-respect is rather difficult to measure...), the significance of such an application is clearly questionable because of the specificity of the population studied. Consequently, we suggest, as Sen does, to take time to reflect on what is relevant for young people in their general attitude to each of the three concepts. Let us emphasize that principles are very theoretical and poverty is impossible to measure strictly with respect to the definitions. There are of course many difficulties with theoretical concepts. In particular the problem of applying primary goods is a serious one. This is the occasion to go into operational arbitration in the concepts. In consequence, we have tried to translate empirically the theoretical concepts in the specific context of French school leavers undergoing a period of transition from school to work. But the empirical analysis is very tentative and is certainly explanatory. Indeed, apart from this work, we don't know of any empirical analysis based on the concepts used and applied in this field.

Thirdly, as mentioned in Sect. 11.1, it is impossible from the point of view of the application to take support from capabilities, because the data generally provides information on the actions and the states reached rather than on the whole of the actions and the states to the range of the individuals. To approach the concept of capability, we thus followed Sen (1992), who proposes considering refined functionings.

11.4.2 The informational basis of primary goods

In the database of the panel of CEREQ, we identified a certain number of indicators of resources and classified them in three categories, housing conditions, education, and wealth. A short illustration of the characteristics of each indicator follows; all of the variables which we considered are rather heterogeneous, in order to cover several aspects of the means of achievement of functionings (see Table 11.2).

Education is considered here as a means of achieving various functionings. It is thus supposed to have its own function in determining capabilities and functionings. It is true that the source used presents extremely complete information on the received initial formation. It could thus be completely convenient to work on the basis of a much finer variable, in particular to study the relation between the formation, under consideration as means of insertion, and the position on the labour market, intended as functioning of professional insertion. But such an analysis exceeds the framework of this study and we choose to concentrate on three elementary indicators. In the subset of variables we integrated education, the initial training level, information relating to the achievement of diplomas and the characteristic associated with the possession of a driving licence. This sum of money element is collected in the subset of the focal variables of formation, because in our view, it constitutes a human capital which influences with whole share capabilities and functionings. Three training levels are distinguished.

Table 11.2. Deprivations on "primary goods"

	Women	Men	Total
Education			
• Level IV	29.9	21.7	26.8
• Level V	45.9	52.0	49.7
• Level Vb and VI	32.4	18.1	23.5
No diploma at the end of schooling	33.6	39.8	37.4
Without any driving licence	19.6	8.8	12.9
Housing equipment			
Neither shower nor bath	0.4	0.5	0.4
No water closed	1.1	1.1	1.1
No warm water	0.2	0.3	0.2
No heating	0.3	0.2	0.3
No furnace	3.2	3.0	3.1
No form of refrigeration	0.3	1.2	0.8
Monetary resources			
No saving of money	72.1	78.7	74.6
No family help	66.3	67.9	66.9
Income from activity			
• < 2160 F	23.6	10.7	15.6
• ∈ [2160 F, 3480 F]	17.4	9.0	12.2
• > 3480 F	58.9	80.3	72.1

CEREQ panel data survey - Wave 4
Reading: 19.6% of the young women and 8.8% of the young men do not have a driving licence

The individual income of activity is not a very widespread concept. It concerns any form of resource related to a present activity, such as wages,

training allowance, or even to a former activity, such as unemployment allowance. More precisely, information used together with the gross monthly income of activity at the date of investigation. It amounts on average to 4786 F, as one can read in Table 11.3. This value is naturally below the level of gross monthly wages.

The income from activity appears among the class of the variables of the continuous type. The limit of the two borders is fixed at 40% and 60% of the median income of activity, that is to say 2160 F and 3480 F, respectively.

Table 11.3. Individual income from activity (in Francs)

	Women	Men	Total
Average of activity income Median of activity Income	3854 4000	5362 5800	4786 5400

CEREQ panel data survey - Wave 4

11.4.3 The informational basis of primary social outcomes

In the panel of CEREQ, some indicators of outcomes have been identified as various things that one accomplished during his life. Objects of value are classified in four distinct categories: residential independence, leisure activities, debt and finally situation on the labour market. Firstly, information on residential independence was mobilised, because in our view, the achievement of this functioning has constituted a significant stage in the current context of France for young people who have completed their school course for five years and entered adulthood. Secondly, three kinds of deprivation were listed according to leisure: holidays, outings and time devoted to domestic tasks. When the time spent on these types of activities exceeds ten hours a week, a deprivation is noted on the level of this characteristic. Thirdly, information on the debt is included. It reflects the facility with which an individual succeeds in ensuring the management of his budget; this variable was built on the basis of a particular question of the survey. Thus, individuals who stated that they had been involved in debt are regarded as having a deprivation. Fourthly, outcomes relate to the position occupied on the labour market at the date of investigation. The situations are distinguished according to three categories: employment, unemployment and other situations (training or taking up studies again, or of national service or finally of inactivity. Here, there are categorical variables presenting more than two alternatives.

Table 11.4. Deprivation on outcomes (%)

	Women	Men	Total
Labour market position			
• Employment	67.1	79.3	74.7
• Unemployment	24.1	15.8	18.9
• Other situation	8.2	4.9	6.4
Leisure			
Never goes on holiday	38.6	36.3	37.2
Never goes to the cinema, the theatre, concert, etc.	19.1	9.7	13.3
Spent more than 10 hours per week on domestic tasks (kitchen, household)	42.9	14.9	25.6
Independence	34.0	59.9	50.0
Live with his/her parents			
Debt	6.4	6.0	6.1
Spent more than he/she earns and is involved in debt			

CEREQ panel data survey - Wave 4.
Reading: 14.9% of the men devote more than 10 hours per week to domestic tasks

11.4.4 The informational basis of refined functionings

In agreement with what has been explained in Sect. 11.1, we shall try to work on refined functionings instead of capabilities. It is in fact only possible to characterize functionings in a "refined" way in order to take note of the counterfactual opportunities. Corresponding to the functioning x, a "refined functioning" takes the form of "having functioning x through choosing it from the set S". It was possible to turn only two functionings into refined functioning: firstly, residential independence; and secondly position on the labour market.

Firstly, as far as housing independence is concerned we had recourse to one second question present in the survey. It aims at including understanding the reasons for which the young people questioned remain at home with their parents. This question does not tell us anything about real opportunities of choice of young people no longer living under the same roof as their parents. In this context, we thus decided to distinguish two situations respectively classifying opportunities: "to live in their parents' house from need" and "to live in their parents' house from choice". We considered young people living in their parents' house from need, if they claimed economic reasons for doing so or if they claimed to be waiting for employment on a permanent contract. In all the other situations we thus admitted that they lived with their parents by choice. It will thus be considered that there is a deprivation from the point of view of refined operations, since the decision to remain with his/her parents is not deliberated.

Secondly, as far as the labour market position is concerned, we can make use of additional questions about possible alternatives. Finally, one is in the presence of multiple situations differentiated according to opportunities from choice, which we classified as most favourable to most constraining in the following way:

Employment or training or taking up studies or inactivity from choice
Unemployment with employment proposals
Employment from need
Unemployment with no employment proposals or inactive with resignation or national service.

One was thus brought to establish a categorical variable collecting four distinct modalities for which a degree of membership was built in reference to the method presented.

Table 11.5. Deprivation on refined functioning (%)

	Women	Men	Total
Labour market position			
• Employment or training or taking up studies again or inactivity from choice	67.5	78.1	74.1
• Unemployment but had refused some employment proposals	2.6	1.8	2.1
• Employment from necessity	2.9	3.2	3.1
• Unemployment and never had any employment proposal	27.0	17.0	20.8
Leisure			
Never goes on holiday	38.6	36.3	37.2
Never goes to the cinema, the theatre, concert, etc.	19.1	9.7	13.3
Spent more than 10 hours per week on domestic tasks (kitchen, household)	42.9	14.9	25.6
Independence			
Live with his/her parents	25.9	48.4	39.8
Debt			
Spent more than he/she earns and is involved in debt	6.4	6.0	6.1

CEREQ panel data survey - Wave 4

11.4.5 Analyse recovery of the three populations

It is extremely interesting to compare the results based on primary goods with the ones obtained using other concepts to measure poverty. As mentioned before, three membership functions are drawn up to rank individuals based on the primary goods, outcomes and refined functionings criteria. As would be expected, the ranking of the three subgroups differs slightly depending on which concept was chosen. When the same percentage of

poorest individuals (approximately 10%) is isolated at the bottom of three membership degrees of poverty, three populations are found with only partial coverage. Whereas more than 20% of the population bears at least one of the marks of poverty, only 1,7% bear the three at the same time. Figure 11.2 illustrates the various situations.
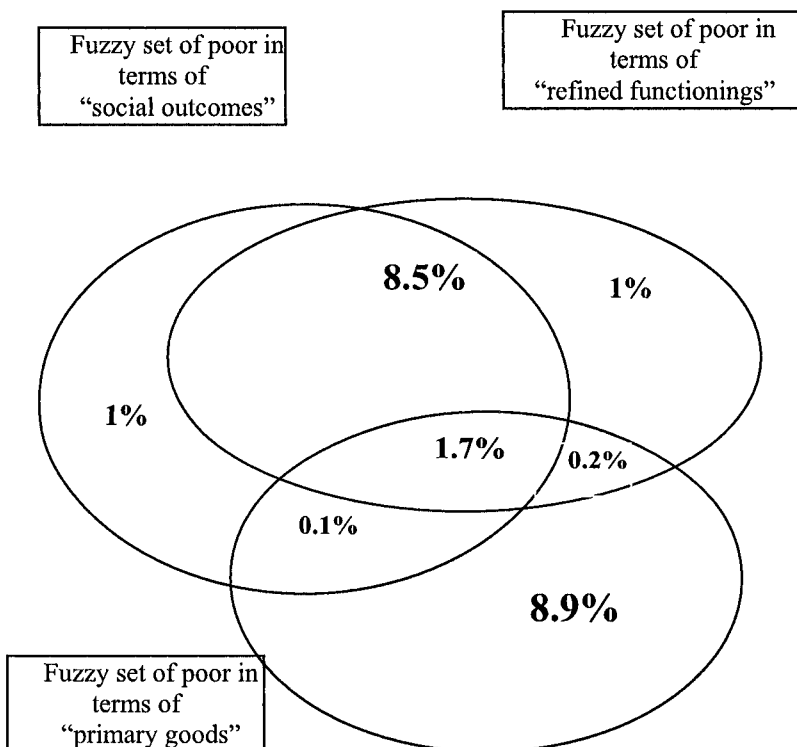

Fig. 11.2. Recovery of the three images of poverty

The results present in Figure 11.2 are now analysed in more detail. The ranking provided by outcomes analysis is surely closer to the ranking provided by the refined functionings approach. Indeed, 90% of individuals whose intensity of poverty is the highest according to outcomes also have the highest level of poverty according to refined functioning and vice versa.

Finally when poverty of individuals is estimated using outcomes or refined functionings, more or less the same image of poverty is obtained. Poverty according to outcomes thus tends to be combined with poverty according to refined functionings, without mistaking one for the other. This is probably due to the way functionings are refined. Only two functionings

have been refined. But as already mentioned, there was not enough information for selecting a different set of functionings other than outcomes in each case.

As a matter of fact the ranking provided by the primary goods concept is completely different from the other rankings. The poorest according to primary goods are for a very large proportion, not the same people as the ones obtained using other concepts to measure poverty. Indeed, 75% of individuals whose intensity of poverty is the highest according to outcomes, don't have the highest level of poverty regarding primary goods. According to refined functioning, the difference in the ranking of poorest people is very important when primary goods evaluate poverty. The differences are statistically significant.

11.5 Conclusion

In this conclusion we propose to return to the essential features of our work. Our initial motivation proceeded an examination of the question of the recovery between three forms of poverty. The concept of poverty was considered under three different ethical styles privileging first of all primary goods, secondly social outcomes and lastly basic capabilities. The most important finding to emerge from our research is that the use of a specific concept of poverty would alter the ranking of people in a poverty scale: It has been particularly confirmed when one compares primary goods with social outcomes or functionings. Therefore one must first choose the objects of value in accordance with the value judgments involved (Vero 2004). It means that one is forced to ask over which kind of variable individuals must have control and for what sort of variable society is responsible. So the first relevant question for measuring poverty is, as Sen mentioned: "Equality of what?" This question is likely to return to very pressing problems about such things as real interests. But of course this is an open question.

Appendix 1 - The CEREQ Panel Data Surveys

The French Centre for Research on Education, Training and Employment (CEREQ) in collaboration with the Department of research and statistical survey (Dares) of the ministry of Employment and Solidarity carried out a third panel of "youth measures" among a sample of 3500 young people who had left school in 1994 with initial education lower than or equivalent to the baccalaureate. The main purpose of this survey was to provide data

on the use of youth programs to ease the school to work transition. The sampling frame was based on lists of former pupils gathered from secondary schools (*lycées* and *colleges*) and on apprenticeship contracts supplied by the Ministry of Employment and Solidarity. The panel survey comprised five annual waves and was performed using the Computer Assisted Interview Procedure (CATI). The themes broached during the interviews concerned initial education, occupational pathways (month-by-month progress report after leaving the educational system in order to avoid memory bias), family background, income and living conditions.

Table 11. 6. Attrition rate

Frequency	No. of respondents	Attrition rate (%)
Wave 1	3469	
Wave 2	2957	15
Wave 3	2627	11
Wave 4	2297	13

Appendix 2 – French Educational Level

Level IV: Leaving last class secondary education: general "baccalaureate", technological "baccalaureate", vocational "baccalaureate", and Technician's certificate.

Level V: Leaving upper secondary education before last class ("terminale"), or last year of first level vocational preparation: third year of three year CAP, second year of two year BEP, second year of two year CAP, supplementary certificate to CAP or BEP.

Level Vbis: Leaving lower secondary education or first level vocational preparation before the last year: first year of three year CAP, second year of three year CAP, first year of BEP, first year of two year CAP.

Level VI: Early leaving (from 6th, 5th or 4th) or pre-vocational preparation: primary studies certificate (CEP), Pre-vocational Class (CPPN), Preparation for Apprenticeship (CPA).

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