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The Hard Core of Poverty in Senegal

Oumar Diop DIAGNE
Ousmane FAYE
Salimata FAYE

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Oumar Diop DIAGNE (Ministère de l'Économie et des Finances, Dakar)
naar6@yahoo.fr
Ousmane FAYE (Université de Liège)
ousmane@operamail.com
Salimata FAYE (CREA, Dakar)
salifaye@yahoo.fr

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Résumé

Partant des limites des instruments classiques dans la mesure de la pauvreté, l’étude introduit le concept de noyau dur pour contourner le problème d’inclusion-exclusion factice, en vue d’un meilleur ciblage des pauvres au Sénégal. Elle s’appuie sur une combinaison d’indicateurs de pauvreté monétaire avec ceux de patrimoine et de privation relative. L’analyse du noyau dur fait ressortir que deux ménages sur 11 manquent de moyens pour faire face à leurs besoins immédiats et éprouvent des difficultés à accéder à des conditions de vie adéquates. Pire, ces ménages n’ont aucune perspective de sortir de la précarité en raison de la faiblesse de leur capital tant humain que physique. Par ailleurs, contrairement aux travaux antérieurs, l’étude montre une pauvreté relativement plus importante chez les ménages dirigés par des femmes (notamment les divorcées et veuves) ou par des personnes faible qualification professionnelle.

Codes JEL: I31, I32, O55.


Abstract

Departing from the limits of classical methods of measuring poverty, this paper introduces the profile of the core poverty in Senegal in order to circumvent E-F errors that infect poverty targeting. For this purpose, three poverty indicators based on expenditures, assets and relative deprivation are combined. The study highlights the multiple dimensions of poverty and shows that the phenomenon is widespread in Senegal: roughly two out of every eleven people lack monetary resources to satisfy basic needs and have difficulty achieving an adequate standard of living. Contrary to previous studies, the core poverty approach is very useful in diagnosing poverty in Senegal, as it provides evidence of the vulnerability of women – in particular widows and divorcees – and the unskilled.

JEL Classification: I31, I32, O55.

Keywords: Poverty, Monetary Indicator, Comparative Poverty, Patrimony, Hard Core, Senegal.
1. Introduction

When policymakers decide to embark on the fight against poverty, they are often confronted by the need to determine who is poor and, subsequently, what type of poverty is being experienced. Answers to these questions determine the implementation and efficiency of the actions policymakers undertake.

In order to identify poor people, several approaches have been devised that sometimes bear implications that differ relatively in terms of policies in the fight against poverty. The most used approach is the utility approach, which attempts to measure poverty from the perspective of the level of wellbeing experienced by an individual or a household thanks to their consumption or income. This approach draws from the theory relating to the behaviour of the consumer who chooses his/her optimal consumer’s basket of goods and services, taking into account the resources constraints he/she is subjected to; which implies a correspondence between the actual level of consumption and that of the underlying wellbeing. A given individual or household is thus regarded as poor if the income-related constraints are such that the level of wellbeing (e.g. effective consumption) is lower than the minimum “acceptable” level.

The utility approach has often been criticized for being simplistic. In fact, the level of income of an individual is not relevant enough to account for dimensions that are fundamental for wellbeing, such as health, life expectancy, training, and other aspects. New approaches have consequently been proposed that may help better capture these aspects of wellbeing. The said approaches suggest other perceptions of the notion of poverty. As such, poverty is defined as: i) the difficulty to meet one’s basic needs (Hicks and Streeten, 1979); ii) the deprivation of “basic commodities” (Rawls, 1971); iii) the deprivation of possibilities to develop human capabilities “to be and to act” (Sen, 1985).

For policymakers, these various approaches to the same poverty phenomenon make it difficult to identify poor people and, subsequently, to devise an appropriate strategy to help in the fight against poverty. For instance, an individual or a household whose head has lost his/her job or retired may be considered as poor when taking into account the level of the latter’s available income. He/She may equally be considered as non poor when taking into account the capital or level of access to basic needs thanks to his/her accumulated wealth. On the contrary, an individual or a household head who finds a job after a long period of unemployment may be considered as non poor based on his/her available income, or regarded as poor in terms of capital due to his/her incapacity to accumulate wealth during the previous years. Policymakers are therefore faced with a problem: how to identify poor people.
In order to answer this question, two approaches are conceivable. The first one consists in categorizing the various measures of poverty and choosing one as the most relevant to help understand this phenomenon. This approach can be justified for technical reasons, particularly when statistical data are inadequate. However, it has two major limitations. The first one has to do with the criteria behind a classification of this nature: who decides? On what grounds? These questions are determining factors when it comes to defining the poverty profile. The second limitation has to do with the highly restrictive nature of the approach. Giving priority to one measure does not allow us to take into account the other aspects of poverty, resulting in a loss of information.

The cumulative approach is an alternative approach that combines several poverty measures that enable the capturing of the phenomenon in its widest dimensions. The idea behind this approach is that it is most likely for a household or an individual to be truly poor when all of the poverty indicators, as opposed to just one, confirm this status. In combining the various indicators, we achieve a synthetic and more refined indicator that makes it possible to identify the most destitute people, in other words, the hard core of poor people (Delhausse and al. 1999; Bradshaw and Finch, 2001). This hard core of poverty corresponds to all of the individuals or households who experience all of the various facets of poverty. It consists in a synthesis of the various poverty indicators and constitutes a poverty indicator that is robust and relevant because its capacity to provide information allows policymakers to identify people who are truly poor with much greater accuracy.

However, it should be noted that in terms of methodology and content, the hard core of poverty is very different from the human poverty index (HPI) and the human development index (HDI), which were both introduced by the United Nations Development Programme (UNDP). The HPI is a weighted average of poverty measures and does not include income among its components. The HDI is more a population wellbeing indicator than a poverty measure, and as such, it violates a basic characteristic of poverty indicators, notably the focus axiom or pertinence-related axiom. The latter holds that a poverty measure accounts for the conditions experienced by poor people and not for those experienced by the entire population (Subramanian, 2004). The HDI cannot therefore be used as a basis for the identification of poor people in a society.

This study intends to use the hard core approach in analyzing poverty in Senegal based on the data from the second Senegalese Household Survey (Enquête Sénégalaise Auprès des Ménages - ESAM II). The objective here is to better identify people who are truly poor in Senegal in order to be able to match policies and actions meant to improve their living conditions. Three types of poverty measures will be used. They include the monetary poverty indicator, the Townsend relative deprivation indicator (1979) and the composite wealth-based
indicator. The choice of these three indicators is motivated by the ability of the latter to provide information on poverty as well as the availability of household-related databases in Senegal.

The study comprises four sections. The first is a review of research works already conducted in Senegal in a bid to measure and analyze poverty. The second focuses on the methodology and data sources used. The third presents the findings of the study. Concluding remarks and the policy recommendations of the study are provided in the last section.

2. Review of the Research Works Carried out on Poverty in Senegal

The development of the system of information relating to the living conditions of households in Senegal has made it possible to carry out several research works aimed at analyzing and grasping the magnitude of poverty. In Senegal such works include, namely those of the World Bank (WB, 1995), the Ministry of the Economy and Finance (MEF, 1997, 2000, 2001a, 2001b), Ndiaye (1999), Cissé (1997, 2003a, 2003b), Badji and Daffé (2003), Ki and al. (2004), Azam and Dia (2004), and both MEF and WB (2004). These works have helped make considerable progress in understanding poverty in Senegal, and they all reveal that this phenomenon is widely rampant in the country, particularly in the rural areas and provincial towns.

It should, however, be noted that the conclusions of these various studies differ significantly in terms of the level of poverty incidence and regional distribution. Similarly, many of these studies tend to conclude that poverty is less severe within groups that are usually acknowledged to be vulnerable. As such, households predominantly led by women – divorced or widows – appear to be experiencing the poverty phenomenon to a lesser extent, despite the unveiling of social situations such as the anthropic factor of poverty (MEF, 2001b). To a wider extent, the findings suggest that gender issues are not raised in Senegal, and this happens to be paradoxical or at least counterintuitive, given the numerous forms of discrimination that women in the Senegalese society are confronted with (Badji and Daffé, 2003).

The divergences and inadequacies observed in the diagnosis of poverty in Senegal may be attributed to the quality of the data used. However, this does not by any means challenge the method adopted. Most of the research used the monetary analysis approach in attempting to grasp the poverty phenomenon. As Deaton (2000) and Sahn and Stifel (2001) rightly put it, this approach presents some inadequacies that have an incidence on the robustness of the findings. In fact, the poverty profiles obtained on the basis of this method are very sensitive to variations occurring at the levels of the equivalence scales or the poverty thresholds (Ravallion, 1996; Lachaud, 2000; Eltetoö and Havasi, 2002).

In order to overcome the limitations of the monetary approach, other methods have been used to carry out an analysis of poverty in Senegal. It should, however, be underscored that these methods also happen to have methodological limitations. For example, the study conducted by the Ministry of the Economy and Finance (MEF, 2000) provides and uses a multidimensional index at the grassroots community level to measure poverty. Yet such an approach obscures the disparities observed at the level of individuals in terms of the manner in which people experience poverty. In order to overcome this limitation, Ki and al. (2004) propose to combine access to infrastructure and household assets. However, their approach presents some shortcomings. In order to meet the criterion of ordinal consistence purported by Asselin (2002), they exclude fundamental variables such as agropastoral assets from their multiple correspondence analysis.

The subjective approach has also been used to carry out an analysis of poverty in Senegal. The study carried out by MEF (2001a) reveals that 67% of Senegalese households consider themselves as poor. Yet it should be noted that the subjective analysis of poverty raises many criticisms, the first that poor people often find it difficult to assess themselves and thus make choices that do not match their own interests (Deaton, 1999).

From the foregoing, it can be noted that considerable efforts have been made in a bid to better understand and grasp the poverty dimension in Senegal. However, the answer to the question aimed at determining who is poor is recurrent and somewhat incomplete and vague. The groups that have been identified as poor are not always similar from one study to another. Yet, in order to carry out an effective and efficient fight against poverty, an important prerequisite consists in a proper identification of poor people. Otherwise, the resources that have been mobilized may be diverted to the benefit of less disadvantaged populations. There lies the interest of a proper identification of those who are truly poor.

### 3. The Hard Core of Poverty

The above reflections show that a single indicator cannot account for poverty in all its dimensions. The use of only one indicator exposes poverty measurement to artificial inclusion or exclusion of individuals who are not thus incorrectly ranked. Since poverty measures happen to be different, their basis of identification of the people who are affected by the poverty phenomenon cannot therefore be the same. As a result, poverty profiles are completely different. In fact, it is very likely that many individuals and households experience
several types of poverty, if not all types. These individuals or households may therefore be captured by the various measures of poverty. As such, they constitute the intersection of the different poverty categories, which, as far as they are concerned, is translated by a state of destitution in all its forms. The elements of this intersection thus constitute the hard core of poor people. This concept has been popularized in industrialized countries through the research of Delhausse and al. (1999), Bradshaw (2001) and Bradshaw and Finch (2001), who are the pioneers. Razafindrakoto and Roubaud (2005) also used this concept to analyze poverty in the Malagasy capital city, in less developed country.

The identification process of a poverty hard core is conducted as follows: Given \( \{I_1, I_2, \ldots, I_N\} \) representing a set of \( N \) poverty indicators relating to the same sample of individuals or households. Assume that these indicators are non redundant two by two and that their respective sets represented by \( G(I_i) \) are not separate. The hard core of poor people is identified by the intersection of \( N \) sets of poverty represented as \( G(I_1), G(I_2), \ldots, G(I_N) \) and coupled with indicators \( I_1, I_2, \ldots, I_N \). Considering that the poverty hard core represented by \( ND \) reads as follows:

\[
ND = \bigcap_{k=1}^{N} G(I_k)
\]

On the graph, the poverty hard core corresponds to the overlapping area between the various indicators of poverty measures. It is constituted in Figure 1 by the central hatched surface which represents the intersection of the three poverty indicators.

The poverty hard core consequently constitutes the most robust and relevant indicator since it integrates a considerable amount of information that enables the understanding of the poverty phenomenon in its complexity. This is an advantage since it can be used for intertemporal and regional comparisons.

**Figure 1: The Hard Core of People Living in Poverty**

The robustness of the measure increases with the number of indicators. This
increase, however, leaves room for more and more rigorous selection criteria while reducing the chances for households to be part of the poverty hard core. The combination of a large number of indicators reduces the hard core to a measure of abject poverty. To some extent, it may coincide with an empty set. Consequently, it should be recalled that a critical threshold exists for the number of indicators to be combined, beyond which the concept of the poverty hard core becomes less interesting. Of course, there is no rule that enables the determining of this threshold. Yet it is obvious that a limited number of indicators should be sufficient to do so. Delhausse and al. (1999) and Bradshaw (2001) selected three indicators while Bradshaw and Finch (2001) singled out up to four. Razafindrakoto and Roubaud (2005) have chosen to identify the poverty hard core on the basis of seven indicators.

4. Methodology

The strategy adopted for the purposes of identification of the poverty hard core will consist in a combination of three poverty profiles. The indicators selected to this effect include a monetary indicator based on consumption expenditures, a relative deprivation indicator as devised by Townsend, and a composite asset-based indicator. This choice is motivated by a dual constraint, notably the availability of data and the necessity to restrict the number of indicators like Delhausse and al. (1999), Bradshaw (2001) and Bradshaw and Finch (2001) did. A very high number of indicators may result in a hard core with a value that is nil, as a result of an extremely high severity of the criterion (Razafindrakoto and Roubaud, 2005). Once the various poverty profiles associated with the three indicators have been set aside, the poverty hard core will then be identified as the sub-set representing their intersection. This poverty hard core will then be subjected to a study implying an examination of both the regional distribution and the economic, social and demographic characteristics of its constituent households.

4.1 The Monetary Poverty Indicator

The monetary measurement approach selected for this research will focus on the consumption expenditures incurred by the households. Such expenditures include food consumption as well as non-food expenditures. The choice of consumption expenditures instead of incomes is motivated by the desire to limit biases of errors inherent to the measurement of the variable.

The method adopted here is the same one used in the Ministry of the Economy and Finance (MEF) and the World Bank (WB) joint report (2004), and which draws from the Food Energy Intake (Ravallion, 1994) to determine the poverty threshold. This process consists in assessing the level of consumption likely to allow the satisfaction of energy-related needs. The average of the non-food expenditures of households, whose level of food consumption stands around more or less 5% minimum energy consumption, is added to the corresponding
value obtained. The consumption variable used by the MEF and WB (2004) thus corresponds to the overall expenditures of the household. This variable comprises food consumption, clothing, expenditures relating to education, health, transport, accommodation and others. The variable is then accounted for in the household’s adult equivalents. The conversion of the size of the household into adult equivalents is made by attributing a weight worth one unit to all the individuals aged 15 years or above, and half a unit to individuals whose age is lower than the above.

**Table 1: Monetary Poverty Line (in CFA francs)**

<table>
<thead>
<tr>
<th></th>
<th>Food Poverty Lines</th>
<th>Overall Poverty Lines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dakar</td>
<td>Other Urban</td>
</tr>
<tr>
<td>ESAM II (2002)</td>
<td>342.4</td>
<td>317.8</td>
</tr>
</tbody>
</table>


The poverty line is determined upon due consideration of local consumption habits. Both the World Bank (WB) and the Ministry of the Economy and Finance (MEF, 2004) have determined a consumer’s basket capable of providing 2400 calories/day to an individual. The quantities of these food items are given a value chipped on the prices prevailing in the various areas of supply (Dakar, other cities and the rural areas). A value equal to the average of expenditures other than the food expenditures of households with a modest income is added to the monetary value of this basket. The poverty thresholds computed by the MEF (2004) are provided in Table 1, and do show the levels of daily expenditures per adult equivalent as required to guarantee subsistence in the various social and economic environments of the country.

### 4.2 Asset-based Indicator

Capital refers to the notion of assets. Four major constituent items of the capital of either an individual or a household may be distinguished, including physical assets, financial assets, human capital and social capital. These basic elements provide explanations as regards the real capability of individuals or households to acquire a given amount of income and, consequently, have access to wellbeing. They also allow them to cope with a number of shocks that may affect their living conditions.

Considering that heritage is important, Sahn and Stifel (2001) have proposed a wealth index constructed on the basis of the assets owned by the household to set poverty measurement free from some limitations imposed by monetary indicators. This approach consists in: i) selecting a number of assets associated with wellbeing, ii) aggregating the said assets so as to obtain an overall index, and iii) categorizing the households on the basis of that indicator.

Ten developing countries were examined in the study conducted by Sahn and Stifel.
A comparison of the resulting categorizations with those obtained on the basis of the monetary indicators have led these authors to conclude that the measurement of poverty based on assets is as worthy as that based on expenditures. The impact of the measurement of capital is so great that it provides information relating to the capabilities of either an individual or a household and, as a result, to its long-term wellbeing. Moreover, this impact reveals the distribution of capital within the community that is source to the economic inequality observed; another problem that policies devoted to the fight against poverty need to overcome.

The analysis of poverty and its associated disparities in developing countries has seldom focused on the distribution of the assets, except in the education sector. The new tool that has been developed provides clarifications that can contribute in compensating for these shortcomings of economic research work. Sahn and Stifel (2001) have restricted themselves to the comparison of the indicators of both capital and expenditures without conducting a thorough analysis of the profile of poor people revealed by the new method of identification. In addition, for the sake of comparison at international level, a limited variety of restricted assets have been chosen which are associated with wellbeing, with most of these not actually being source to the latter. The list of assets of such poor people comprises elements to ensure comfort of both housing and equipment, access to safe drinking water and human capital measured by the educational level of the household head.

Under this approach, it is envisaged that we will improve the capital index by taking into account the economic assets. The assessment of potentials which makes it possible for a household to avoid, or to exit poverty, ought to first of all give priority to the wealth dimension. In the present analysis, physical real assets, material equipment, transport equipment, as well as agricultural assets are taken into account. We also take into account household human capital, which is measured by the educational level of the household head.

Sahn and Stifel (2001) suggest that some steps be taken beyond the key components analysis used by Filmer and Pritchett (2001). These authors use the factor analysis method to obtain more robust findings. However, this method has a limitation that is shared with the key components analysis. The method is applied to continued variables and, as such, is not appropriate for qualitative variables. The multiple components analysis (MCA) appears to be the most appropriate. The MCA method has been adopted in this study in order to construct the composite asset-based index. In fact, the asset-related data available are mostly qualitative variables with several modalities. For numerical variables, a new class-based encoding value is carried out.

Denoting $I_m$, the value of the asset-based index of $m^{th}$ household, the mathematical formula is the following one:
\[ I_m = \frac{\sum_{k=1}^{K} \sum_{j=1}^{J} w_j^k V_j^k}{K} \]

with:

K representing the number of capital categories that constitute the capital of household \( m \);

\( k \) representing of a capital category that varies from 1 to K;

\( J \) representing the number of J components in the K capital category;

\( w_j^k \) representing the weight of \( j \)th components in the \( k \)th capital category;

\( V_j^k \) representing the binary variable with 1 as a value, where the household is in possession of the \( j \)th component of \( k \)th category. Under other circumstances, the value variable is equal to 0.

It is thus possible to construct a composite poverty Index (CPI) that will allow us to correctly measure asset-based poverty.

### 4.3 The Relative Deprivation Index

The relative deprivation index was originally constructed by Townsend (1979). The basis of this index is the observation of series of consumption experiences acknowledged to be necessary in a given community or society. The list of such experiences varies from one community to another, and may comprise various elements such as the comfort of housing, the consumption of some goods and services, etc. This index serves as a reference for the measurement of the relative abject poverty of households or individuals.

In order to construct an indicator of this nature, Desai and Shah (1998), as well as Delhausse, attempted to make a distinction, based on each consumption experience, between what depends on the subjective preferences of households or individuals, and what results from some objective difficulty of access. These authors used the econometric method to measure the objective opportunities for each household to experience different forms of consumption. The explanatory factors selected for this model are social and economic variables such as the characteristics of households, income, etc. For every experience and each household, the authors computed the differential between the estimated probabilities and those corresponding to the entire sample. Lastly, these differentials are weighted and aggregated in order to obtain a relative deprivation index with a value that ranges between 0 and 1. This weighting system is assumed to be a reflection of the importance given to the various items by the society. This system varies from the matrix of the modal values of the
items under consideration (Desai and Shah, 1988) to the matrix of the average of the estimated probability of those items (Delhausse and al, 1999).

Results responsiveness to choice of weighting matrix and particularities of industrialized societies make irrelevant use of Desai and Shah’s method (1988) in developing countries such as Senegal. In the last cases, spatial disparities –such as the high concentration in some areas where some basic goods and services are supplied– are such that the use of the weighting techniques advocated by Desai and Shah, (1988) and Delhausse et al. (1999) may not allow correct understanding of the real importance of each of the experiences. Moreover, the logistic method does not enable a good distinction of within disparities of the probabilities of the consumption experiences in the rural areas. The relative homogeneity of the characteristics used as explanatory factors –purchasing power (low in general), size of households (which are large in most cases), employment (mainly concentrated in the agricultural sector), households headed in large scale by male (nearly 90% households), etc.– make application of probabilistic techniques providing nearly equal values to all the households. Such a result has little resemblance with reality. The variability in the access to basic infrastructure in the rural areas, for instance, should not be neglected. The building of such services is attributed to a political choice that household-level variables cannot measure.

A relative deprivation index has been constructed following a multiple correspondence analysis (MCA) in order to get rid of weakness of both of Desai and Shah, and Delhausse and al. methods, as pointed out earlier. Two reasons account for this initiative. Firstly, the method is quite appropriate with the relative deprivation analysis as contemplated by Townsend (1979). Secondly, it consolidates the overall coherence of the analysis, since the same method is used to carry out an analysis of asset-based poverty index.

A number of typical elements relating to housing conditions, household equipment, access to public infrastructure, social fulfilment and access to credit, have been considered in the process of constructing the Townsend indicator. The major items considered are the following:

- Comfort of housing: type and quality of the roof, type of toilets, source of lighting, source of safe drinking water, type of fuel for cooking, settlement index measured on the basis of the number of people sharing the same bedroom;
- Household equipment; access to a cooling system;
- Access to information and other communication means: ownership of a radio set, a TV set, access to newspapers and other types of print press, and to telephone facilities;

- Social fulfilment: access to leisure infrastructure and services, nutritional problems;

- Access to infrastructure: modern health services, primary schools, secondary schools, difficulties encountered in accessing water, food, commodities, markets and public transport.

The analytical model is the same as the one presented in the previous sub-section. Its application on the above described variables reveals, as in the case of capital analysis, the need to make a distinction between social and economic environments, when conducting a capital analysis (see Appendix on methodology). Attempts have consequently been made to construct MCAs using household samples in Dakar, as well as in the other towns and in the rural areas. The first step has consisted in implementing the MCA on the raw data of all the variables. Based on the findings obtained, all the variables deemed non relevant for the analysis of social wellbeing in the environment under consideration are discarded. On the contrary, all variables likely to be critical in the characterisation of wellbeing, but whose modalities affect the quality of the findings due to some low regularity or poor classification of the latter in the MCA, have left room for a grouping of such modalities. Where such a grouping is impossible, the variables under consideration are simply discarded. Modalities corresponding to cases where answers could not be provided for the questions asked to the households, and which, as a result, could not be allocated to a given group because they affect the quality of the MCA, are simply considered as modalities to serve the purpose of illustration based on the method advocated by Escofier (1990).

5. Data Derived from Analysis

5.1 Data Sources

Data used in this study are drawn from the second Senegalese Household Survey (ESAM-II) conducted by the Direction de la Prévision et de la Statistique (DPS – the bureau of statistics) of the Republic of Senegal. This survey was conducted from May 2001 to March 2002. Approximately 6600 households from all of the regions and departments in Senegal, representing a national sample and selected on the basis of the double stratification method, were surveyed. The ESAM-II Survey follows ESAM-I, which was conducted from March 1994 to April 1995, with a sample of 3300 households selected on the basis of this same method.

The questionnaire of the ESAM-II Survey consists of four different “survey books” distributed to the participating households. The first two books served the purpose of
collecting information relating to individuals and household infrequently incurred expenditures. The third book was used to record expenditures incurred on a daily basis, while the fourth was used to collect information relating to the household food situation.

Contrary to the first survey, the ESAM-II Survey does not provide information about the income and other resources of the households. However, it contains important information regarding access to basic social infrastructure. Moreover, the drafting of the questionnaire and the execution of field activities prioritized the precision in the interviews conducted that focused on expenditures. This constituted a considerable advantage as compared to the previous survey.

5.2 Descriptive Statistics

A descriptive analysis shows that the situation and the characteristics of households differ according to both social and economic environments. In the rural areas, agriculture is easily the dominant activity, with over 55% of households involved in this production sector. The other informal activities are carried out by 17% of the household heads. Approximately 6% of the household heads have paid jobs. Agriculture, which is the dominant activity, largely determines the structure of household capital. This household capital consists of 70% of small ruminants, 65% of large ruminants and 55% of the two categories of livestock. Some 81% of the households are privileged to have access to land property. The surface area of such property varies between one and 800 hectares (with an average of 55 hectares and a standard deviation of 65 hectares). Furthermore, the educational level remains low among adults in the rural areas where decision-making is also largely dominated by men (87% of the household heads).

The urban areas are characterized by the existence of relatively dynamic non-agricultural sectors in which around 20% of household heads are involved (10% of labourers, 7% of senior staff and 2% of intermediary professions). The economic activities in the urban areas are also characterized by intense activities in the informal sector, which is the main source for self-employment. In fact, 31% of household heads are involved in this sector. Unemployment is a seemingly exclusive phenomenon in the urban areas. It should also be noted that modernity is the major characteristic of economic activities in Dakar where the majority of modern infrastructures and industrial fabrics are found. This difference is demonstrated by the comparative structure of employment opportunities of household heads in the capital city, on the one hand, and in the provincial towns on the other hand. The latter are home to 35% of self-employed people as against 29% in Dakar. Household heads working as farmers are also found more often in this first area (8.5% as against 1% in the capital city). Furthermore, the employment rate in the modern sector is higher in Dakar. The capital structure calls for the classification of the provincial towns in a semi-rural category,
where 38% of the households are owners of livestock, while 19% of them own arable lands. In the case of Dakar, these rates stand at 18% and 4%, respectively.

Higher literacy rate (over 50% among household heads), as well as greater women empowerment who head close to 30% of the households denotes social modernity in the cities, especially in Dakar.

6. Findings

The rationale behind a cumulative analysis of poverty is that it allows verifying whether poor people present the same characteristics whatever the chosen wealth indicator. Poverty types that somehow tally but partially confirm the idea that the analysis of multidimensional and multifaceted poverty calls for policies that differ from one another. On the other hand, a serious cross-checking of the various types of poverty reveals the existence of a hard core likely to be the major concern of government policies. The analysis of the profile of this hard core enables us to better understand the links between abject poverty and the social and economic characteristics of the households.

This section will start by analyzing the three poverty profiles revealed by each of the indicators earlier described. We will then analyze the profile of the sub-category which combines the three types of poverty, and constitutes the hard core of poverty. The following plan has been adopted in order to help interpret the findings of this research. Firstly, the geographical distribution of poverty will be analyzed by distinguishing three strata, namely Dakar, the other urban centres and the rural areas. Secondly, the characteristics of the household will be examined based on the type of poverty.

6.1 Unidimensional Poverty Profiles

When considered in terms of levels, the incidence subjected to comparison of the various types of poverty reveals a number of sensitive differences which, globally speaking, are all indicative of a high prevalence of poverty in the country. The monetary indicator shows that 53% of the households are poor, while 63.3% as per the asset-based indicator and 44% as per the relative deprivation indicator live below the poverty threshold.

Geographical Distribution

In terms of geographical distribution, it is clear that the various types of poverty are not evenly distributed between the three strata. The findings in this research show that monetary poverty is more severe in the rural areas (62.5%) than in small towns (49.2%) and in Dakar (36.5%). On the other hand, the above distribution is opposite to the one of asset poverty which is less rampant in the rural areas (60.4%) than in small towns (68%) or Dakar (65.5%). Meanwhile, relative deprivation affects 36.6% of the households in Dakar and 44.9% and 48%, respectively, in the other cities and in the rural areas.
The first obvious observation as concerns this distribution of the three types of poverty within the three geographical strata is that monetary poverty is more severe in the rural areas than the other types of poverty. However, the lack of capital appears to constitute the major difficulty in the urban areas. This difference demonstrates the “fend for yourself” phenomenon observed in the urban areas, where populations have more opportunities to earn an income. In fact, this is what often encourages rural exoduses.

A more detailed analysis makes it possible to better understand the geographical distribution of the different types of poverty. Graph 1 shows the poverty incidence in each administrative area, based on urban and rural strata. An initial observation reveals that monetary poverty in urban areas is characterized by an unequal distribution between the administrative areas. The southern regions (Ziguinchor and Kolda) appear to be the hardest hit. The second observation reveals that the above areas are followed by Kaolack, Fatick, Diourbel and Thiès, which are all located in the central areas of the country. Dakar, Louga, Saint-Louis and Tambacounda experience the lowest poverty incidence rates. Furthermore, the two last administrative districts face monetary poverty level that is lower than the one experienced in the capital city, Dakar.

The regional distribution of monetary poverty in rural areas shows that Kaolack is the poorest locality followed by the southern areas (Kolda and Ziguinchor) and Tambacounda. Besides these, the localities of Diourbel, Thiès and Fatick are hard hit. Monetary poverty in the rural areas appears, like in the case of cities, to be less severe in the northern part of the country, when compared to the localities in the south.

The relative deprivation profile in urban areas reveals a distribution that is quite close to that of the monetary indicator. The analysis shows that Dakar and Saint-Louis are better off as compared to the central, and particularly, the southern and south-eastern areas (Tambacounda). The main difference between monetary-based ranking and the relative deprivation one, is the higher rate experienced in Louga in the last case. On the other hand, and as far as the rural areas are concerned, Thiès and Diourbel are affected to a lesser extent, by relative deprivation. These localities are respectively followed by Ziguinchor, Fatick and Saint-Louis. The other areas experience poverty prevalence rates above 50%, with the highest rate (67%) recorded in Tambacounda.

The geographical illustration of asset poverty differs widely from the previous illustration on the basis of the indicators. In the rural areas, the localities of Saint-Louis and the loop (Thiès, Fatick, Kaolack and Diourbel) are the hardest hit by the lack of capital. The areas in the south (Ziguinchor and Kolda) and in the southeast (Tambacounda) are less affected by the same lack of capital. Dakar, with its capital structure that cannot be compared to that of the other areas, has a poverty prevalence rate of 65%, representing a level that is
somewhat close to the percentage recorded in the urban areas of Louga (65.06%). However, interpreting differences between areas administrative areas, one must take into account some limitations in the database. The ESAM-II Survey does not record some assets that are very important in terms of wealth, and related to activities such as trade, handicrafts and other activities of the tertiary sector that are highly advanced in localities such as Diourbel and Louga. In the rural areas, excluding the Dakar district, Ziguinchor and Diourbel experience the highest capital poverty levels.

**Graph 1: Regional Distribution of Poverty Rates**

Source: Authors calculations based on the ESAM-II (2002) data.

**Characteristics of the Household Head**

**Gender:** Poverty analysis based on the characteristics of the household head shows that there is no significant difference between men and women in Dakar as far as monetary poverty or relative deprivation are concerned. On the contrary, in the other urban centres, as well as in the rural areas, households headed by men have the highest proportions of poor people for both types of indicators. This finding confirms the gender profiles already revealed
Furthermore, the asset indicator reveals a few differences that are not favourable to households headed by women. In Dakar, the poverty ratio of such households is five percentage points higher than that of households headed by men. This differential is also more important in the other urban centres and in the rural areas. It is worth recalling that the asset indicator takes into account the human capital which is gender biased and, as such, not favourable to women. It has in fact been proven that women have fewer opportunities in accessing education (MEF, 2001b). Moreover, the manner in which physical assets are inherited is more favourable to men in the case of direct inheritances within Muslim communities. This inheritance scheme prevails throughout the majority of the population in Senegal. It is, however, important to note that gender differences in terms of inheritance tend to decrease with modernity, when looking at the variations observed in the various environments.

**Age:** Monetary poverty increases with the age of the household head. The incidence of capital poverty generally decreases with the age of the household head, which is rather logical when considering that the first years of activity generally correspond to a low level of wealth accumulation. A similar trend prevails as far as relative deprivation is concerned.

**Marital Status:** Generally speaking, monetary poverty particularly affects households whose heads are either polygamist, monogamist or widowers/widows. On the other hand, households whose heads are single and those whose heads are divorced are better off. The relative deprivation indicator shows that, on the contrary, the first two groups are not the poorest.

**Educational Level:** Education definitely has an impact on monetary poverty. In fact, its incidence rate decreases with the educational level of the household head. This incidence rate turns out to be the lowest for those household heads that have not completed their primary education. The same applies in the case of relative deprivation.

In terms of capital accumulation, with the exception of the situation in rural areas, there is an observed decrease in the poverty prevalence profile with increased levels of education. The rural area findings can be explained by the types of capital assets, particularly those derived from agricultural, pastoral and informal activities in which people with a higher educational level show little interest.

**Occupation:** All walks of life are affected by poverty. Yet in Dakar, poverty is mostly experienced by the following households: farmers, unemployed, independent workers not involved in the agricultural sector and, to a lesser extent, households with individuals with no

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1 In spite of all the efforts made by the Government for some decades now, there still exists a gap of 10 marks between girls and boys as far as primary education attendance rates are concerned.
specific occupation and labourers. This same situation is observed in the other cities of the country where poverty prevalence rates are much higher, especially among farmers. Farmers and unemployed individuals are most affected by monetary poverty and relative deprivation in the rural areas. On the contrary, in terms of capital, labourers and craftsmen represent the poorest groups. Similarly, intermediate professions have the highest poverty rates in the rural areas as opposed to the rates recorded in the urban areas.

Table 2: Poverty and the Characteristics of the Household Head (- %)

<table>
<thead>
<tr>
<th>Characteristics of the HH</th>
<th>Monetary Poverty</th>
<th>Asset Poverty</th>
<th>Relative Deprivation</th>
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<tr>
<td>Dakar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
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<td></td>
<td></td>
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<tr>
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<td>64.13</td>
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<td>69.71</td>
<td>35.1</td>
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<td></td>
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<tr>
<td>Less than 35</td>
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<td>35-59</td>
<td>31.78</td>
<td>63.69</td>
<td>41.45</td>
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<tr>
<td>60 or +</td>
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<td>Marital Status</td>
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<td>35.6</td>
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<tr>
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<td>56.96</td>
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<td>Age Bracket (N° of yrs)</td>
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<tr>
<td>60 or +</td>
<td>67.7</td>
<td>59.76</td>
<td>45.09</td>
</tr>
<tr>
<td>Marital Status</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Married (monogamist)</td>
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<td>63.6</td>
<td>50.39</td>
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<td>Married (polygamist)</td>
<td>68.9</td>
<td>50.06</td>
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<tr>
<td>Single</td>
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<td>76.12</td>
<td>53.3</td>
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<tr>
<td>Widower/Widow</td>
<td>53.5</td>
<td>81.95</td>
<td>37.98</td>
</tr>
<tr>
<td>Divorced</td>
<td>59.6</td>
<td>72.74</td>
<td>44.75</td>
</tr>
</tbody>
</table>

Source: Authors calculations based on the ESAM-II (2002) data.
Household Size: The description of poverty based on the household size varies from one indicator to another. The monetary indicator reveals that the poverty profile increases with the size of the household, irrespective of the living environment under consideration, whereas it decreases when based on the capital indicator. There is also a decreasing trend in relative deprivation depending on household size, its distribution function revealing a slight curve at the level of social classes [5-9] (Graph 4). In other words, the incidence of this type
of poverty has a maximum value for households consisting of five (5) to nine (9) members.

Graph 4: Demography and the Incidence of Poverty

6.3. Poor by all Measurements: The Poverty Hard Core

The poverty hard core represents 18% of all households in Senegal, which represents approximately 17.5% of the country’s entire population. It is more represented in the urban areas (24% in the provincial towns and 17% in Dakar, as against 16.5% in the rural areas). These findings differ from those of Razafindrakoto and Roubaud (2005) in that they reveal that although Senegal is affected by multidimensional poverty, a rather sizeable poverty hard core still exists, with different deprivation facets that may be confused under a situation of absolute poverty. Such abject poverty is translated by the poverty hard core which affects some areas and certain household categories, in particular.

Geographical Distribution

Regions may be grouped into three categories based on the prevalence rate. The first category comprises administrative regions where abject poverty incidence rates are as high as 30%. These include the following: Kolda, Fatick, Ziguinchor and Kaolack. Geographically speaking, this first category corresponds to the southern and central parts of Senegal. The northern boundary of this area (Thiès and Diourbel) reveals an intermediate situation with abject poverty prevalence rates of 24%. Finally, a third group that is less homogenous has prevalence rates of 20% (Louga), 17% (Dakar), 13% (Tambacounda) and 11% (Saint-

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2 The poverty hard core in Tambacounda corresponds exactly to both monetary poverty and capital
Louis). Except for the eastern region of Tambacounda, the third category corresponds to the northern part of Senegal. Graph 5 shows considerable differentials in the hard core incidence in the urban areas.

**Graph 5: Poverty Hard Core and the Regional Distribution**

![Graph 5: Poverty Hard Core and the Regional Distribution](image)

Source: Authors calculations based on ESAM-II (2002) data.

In terms of the rural areas, it is important to note that Kolda and Ziguinchor are harder hit by extreme poverty (one household out of five). These areas are followed by Kaolack (20%) and Tambacounda (18%). Saint-Louis (16.41%), Diourbel (16.64%) and Fatick (15.01%) are in an intermediate category. In opposite to the situation prevailing in the urban areas, the rural area of Saint-Louis is exposed to greater extreme poverty. This peculiar situation seriously contrasts with the considerable developmental efforts made in the area. Saint-Louis receives upwards of 40% of investments in the agricultural field; investments made notably through large–scale programmes to ensure the development of irrigated agriculture. This leaves room to question the real impact of these programmes on the wellbeing of the poorest populations.

The regional classifications made for both the urban and rural areas reveal a general trend that is indicative of the fact that households in the northern part of Senegal are relatively less affected by the combination of the various types of poverty. On the other hand, in the southern regions, despite the considerable potential in both the agricultural (an annual rainfall... poverty taken as a whole.

Statistical data drawn from the work of Cissé (2003a).
of between 700 and 1000 millimetres)\(^4\) and mining sectors, the proportion of poverty hard core households is higher. A number of factors can explain this geographical disparity observed in the representation of the poverty hard core. The first explanation has to do with the large infrastructural development inherited by the regions in the North, mostly thanks to the development model of the groundnut-based economy introduced by the colonial masters (MEF, 2000). The second explanation is the instability observed in the Casamance region since the early 1980s. The final explanation is perhaps due to the differences noted in the contribution of subsistence transfers. Computations made by Cissé (2003a) reveal that the regions that are least hit by the combination of all types of poverty are also the ones in which the proportion of transfers in the incomes of households are highest.

**Characteristics of the Household Head**

**Gender:** The poverty hard core indicator shows that households headed by women combine all types of poverty in a proportion that is higher than that of households headed by men, though the gap between the two groups is not very significant. This finding differs with the findings of MEF (2001b), MEF and WB (2004), Cissé (2003a) and Badji and Daffé (2003), which reveal that poverty is more rampant among households headed by men. It can therefore be concluded that the absence of gender inequality ascertained by the classical indicators used in the abovementioned studies is not valid as far as extreme poverty is concerned, where women happen to be more vulnerable.

**Age:** The age profile of the poverty hard core is contrasted according to the areas under consideration. In Dakar, for example, the incidence of the poverty hard core increases with age of the household head. Households headed by young people are less poor than those headed by adults or by elderly individuals. These last two categories of households have rates that are fairly similar. In the other towns, households headed by people that are either very young or very old are hardest hit by extreme poverty (25% for each of these two categories, as against 18% for adults between 35-39 years of age). On the other hand, the age of the household head is not a discriminating factor in the rural areas.

**Marital Status:** A comparison of the various groups based on their marital status reveals that households whose heads are single are less affected by the extreme poverty that prevails in urban areas. On the contrary, these households appear to be more vulnerable in the rural areas. Furthermore, households headed by individuals who are widows/widowers or divorced, are also very exposed to a combination of the three types of poverty earlier mentioned. This last finding is rather logical given the fact that the groups of households headed by either widows or divorced individuals mainly consist of women\(^5\). As earlier

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\(^4\) Half of the territory of the northern part of the country receives hardly 500 mm of rainfall per year.

\(^5\) Women represent 93% of the household heads in the urban areas who have lost their partners and
revealed, households headed by women are more exposed to abject poverty, especially in the urban areas, in opposite to rural areas where the gaps are insignificant. This poverty characteristic, which is more notable within households headed by widows, and widowers of divorced individuals, contrasts sharply with the findings of MEF (2004) and Ki and al. (2004).

**Educational Level:** In the event where the poverty hard core is restricted to households headed by uneducated people or people with a relatively low educational level (Graph 12), it is evident that no household whose head has received vocational training or university level education combines the various types of poverty. In addition, the positive impact of primary education which is clearly highlighted by data relating to the urban areas does not clearly appear in the data relating to the rural areas.

**Table 3: Poverty Hard Core and the Characteristics of the Household Head (in %)**

<table>
<thead>
<tr>
<th>Characteristics of the HH</th>
<th>Prevalence Rates (in %)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dakar</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>16.32</td>
</tr>
<tr>
<td>Female</td>
<td>18.17</td>
</tr>
<tr>
<td>Age Bracket (N° of yrs)</td>
<td></td>
</tr>
<tr>
<td>Less than 35</td>
<td>11.81</td>
</tr>
<tr>
<td>35-59</td>
<td>17.14</td>
</tr>
<tr>
<td>60 or +</td>
<td>18.23</td>
</tr>
<tr>
<td>Marital Status</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>6.27</td>
</tr>
<tr>
<td>Married (monogamist)</td>
<td>17.72</td>
</tr>
<tr>
<td>Married (polygamist)</td>
<td>16.59</td>
</tr>
<tr>
<td>Widow/ Widower/</td>
<td>18.9</td>
</tr>
<tr>
<td>Divorced</td>
<td>18.22</td>
</tr>
</tbody>
</table>

Source: Authors calculations based on ESAM-II (2002) data.

**Occupation:** The dissemination of the impact of education on wellbeing seems to be dependent on the labour market (Graph 13). In Dakar, a large proportion of households led by unemployed and inactive people, farmers, labourers, as well as by self-employed individuals, is part of the poverty hard core. The number of such households is even greater when taking into consideration the situation prevailing in the provincial towns. The trend changes somewhat in the context of the rural areas where, though the proportion of farmers belonging to the hard core is above the average level, agricultural workers and the like, as well as unemployed individuals, constitute the highest rates. These findings clearly illustrate the relationship between extreme poverty on the one hand, and both unemployment and the lack of job security in the labour market on the other hand.

75% of the like in the rural areas. They account for 80% of divorced household heads in Dakar, 76.5% in the other towns and 38% in the countryside.
Size of the Household: The description of the poverty hard core based on the size of the household highlights a notably influence of demography on wellbeing. Poverty incidence rates in the urban areas increases with the size of households with as many as fifteen (15) members. Beyond this number, there is a change in growth. In the rural areas, the poverty incidence is at its peak in households comprising five (5) to nine (9) members. On the whole, it should be noted that the proportion of households in the poverty hard core is higher among households of between five (5) and fourteen (14) members.
The analysis of the poverty hard core essentially reveals that a significant number of households and, notably, those in urban areas, experience all types of poverty. Paradoxically, the poverty phenomenon is more rampant in areas with the greatest natural potential, such as the areas in the South. In addition, vulnerable groups (women, agriculturers, senior citizens or individuals with no qualifications, etc.) are the ones primarily affected by this phenomenon. The analysis of the poverty hard core has also made it possible to highlight important aspects relating to poverty that could not be detected by the classical poverty indicators. As a result, the following factors have been clearly identified as factors conducive to severe poverty:

- poor educational level;
- difficulties relating to integration in the labour market;
- economic environment which is dependent on the level of infrastructural development;
- gender inequality;
- social vulnerability associated with some forms of marital status, notably divorce and widowhood.

In addition to statistics, the hard core approach thus enables a greatly improved poverty diagnosis. Economic and social factors generally regarded as determinants of exposure to poverty have inadequately been singled out by the previous empirical works.
The poverty hard core indicator reveals much more clearly the impacts of the economic and social factors on poverty. Moreover, the cross-analysis of the multiple facets of poverty reveals the existence of a close link between both monetary poverty and capital poverty. Statistical data, however, show that monetary poverty does not necessarily result from a lack of capital. Difficulties faced in fully marketing the latter at a correct value, notably as a result of inadequate public infrastructure, as is the case in Kolda and Fatick, or in the rural area of Kaolack, may bring about considerable monetary poverty.

**Conclusion and Recommendations**

Due to the inadequacy of classical tools in measuring poverty based on the findings relating to the quantification and the understanding of the poverty phenomenon, this study has attempted to introduce the concept of the poverty hard core in the context of Senegal, so as to avoid the issue of alleged inclusion-exclusion arising from traditional indicators. In this respect, the study relied on the combination of three poverty indicators, including two that are new in the case of Senegal. This has revealed other facets of poverty in Senegal.

The construction of these indicators focused on the need to make a distinction between rural poverty and poverty in both the capital city of Dakar and the other urban areas. This first important finding in the study confirms the approach recently adopted by Senegal in analyzing monetary poverty by the Ministry of the Economy and Finance (MEF, 2004). The analysis of the poverty hard core shows that close to two households or individuals out of 11 experience all types of poverty. In other words, these households:

- lack the means to enable them to meet their immediate needs;
- face difficulties accessing modernity, and, worse still;
- have bleak futures due to the lack of skills and assets likely to help them exit abject poverty.

The analysis also shows that extreme poverty is not only a lack of monetary resources, but that it is primarily a lack of capabilities and market opportunities to earn decent revenue. Extreme poverty is also more prevalent in the provincial towns than in the capital city and in rural areas. This situation mainly affects vulnerable groups, notably households headed by women, and particularly those who are divorced or widows, as well as those who are unemployed, uneducated or poorly qualified.

The findings thus establish a link between the lack of qualifications and, consequently, the absence of stable and socially rewarding jobs. Furthermore, contrary to traditional indicators, the use of the hard core technique has made it possible, by means of statistical data, to confirm the link between social vulnerability and poverty. In this regard, the
findings of this study constitute a breakthrough in the diagnosis of poverty and highlight the relevance of the new indicator.

In terms of geographical distribution, extreme poverty is more rampant in the southern and central areas which, socially speaking, are therefore the most disadvantaged, although they happen to be endowed with the greatest potential in terms of natural resources. This paradox likely results from the inadequate facilities likely to allow the development of the potential of these areas. However, if public investment is a requirement for the eradication of absolute poverty, it does not appear to be sufficient. The alarming level of the poverty hard core witnessed in the rural areas of Saint-Louis shows that a voluntary policy does not automatically help achieve the abovementioned goal. The findings of the study thus teach lessons that are useful for economic policies, namely with regard to the implementation of the Poverty Reduction Strategy (PRS).

The extreme vulnerability of the disadvantaged groups (women, especially widows and those who are divorced, the unemployed, farmers and elderly people) calls for targeted strategies under the Poverty Reduction Strategy (PRS). For the sake of efficiency, this strategy ought to plan for activities aimed at building the capacities of the populations and provide for conditions that are conducive to the development of their potential and, as a result, to gain revenue, through the provision of better facilities. In this regard, it would also be necessary to make a distinction between the northern and southern parts of the country. The latter, which is harder hit by poverty, ought to enjoy preferential treatment under social development initiatives.

Aside from agricultural development, there is need for other special measures. These additional measures should notably aim at ensuring a greater integration in the labour market, the availability of better trained and skilled labour, the social and economic empowerment of women, as well as the provision of social safety nets that improve the care and management of elderly people.
Bibliography


