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***Multidimensional Poverty  
in the Republic of Congo:  
Being Poor Simultaneously in Many Ways***

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## **Abstract**

In this study we show that a multidimensional approach to poverty does not have to be used only for summarising poverty in a single index or for comparing deprivation rates between dimensions. We argue and illustrate that such an approach can additionally provide a contribution to a better understanding of the relationships between dimensions by studying the prevalence of multiple deprivations at an individual level. More precisely, this study investigates the degree of overlap in deprivations of individuals, and analyses to what extent persons suffering from multiple deprivations have different characteristics and problems from those suffering from only one deprivation, or none at all. In essence, our method consists of the application and extension of the tools that are typically used in a standard poverty analysis to a multidimensional poverty analysis. We illustrate this approach by taking the Republic of Congo as a case study.

**Keywords:** Multidimensional poverty, Deprivation, Simultaneous deprivations, Republic of Congo

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## 1 Introduction

Poverty is multidimensional; it may mean not having enough resources, very low consumption, inadequate nutrition, no access to quality health care or education, inadequate housing or limited access to safe water, sanitation and electricity and so on. An important strand of the multidimensional poverty literature is concerned about how the information from these multiple dimensions can best be summarised in a single poverty index that can be used to compare multidimensional poverty between countries or regions and to monitor progress over time. In addition, other multidimensional poverty research emphasises that the welfare indicators applied in each of the dimensions should be used to determine strategies and to monitor progress in specific policy sectors.

What seems to have received much less attention, however, is that an individual can be poor in multiple dimensions at the same time, in one dimension only, or not be poor at all. Such information can be useful in many ways. First, individuals that are simultaneously poor in a number of dimensions may constitute in itself a priority group for policymakers. Second, studying the overlaps in deprivations can enhance the understanding of the relations between the various dimensions and may also improve and stimulate multisector policymaking. In this poverty study we take the Republic of Congo as a case study to analyse the following research questions: What are prevalent patterns of simultaneous deprivation in Congo and how do these patterns differ between men, women and children? On the basis of this analysis, we subsequently select a specific population group and a specific combination of poverty dimensions for further study: our aim here is analyse to what extent multiple deprived individuals have different characteristics and perceptions of their situation, as compared to other individuals (single deprived and non-deprived)?

The Republic of Congo is a central African oil-exporting country with about 3.5 million inhabitants. During the armed conflicts in the 1990s all social and economic indicators showed very strong deterioration in living conditions in this period; the human development index, for instance, plunged from 0.54 in 1985 to 0.45 in 1999 (UNDP 2005). Since the peace agreements in 2002, the situation has been gradually improving but the economy and government revenues are heavily reliant on oil exports (34 percent of GDP) and Congo is a net importer of goods and services including basic foodstuffs (IMF 2007). The official unemployment rate is 19 percent and 51 percent of the Congolese population is living in monetary poverty (ECOM 2005). In March 2008, Congo sent the final draft of the poverty reduction strategy paper (PRSP) to the World Bank and the IMF and the country thereby also hopes to qualify for debt relief through the heavily indebted poor country initiative (HIPC) (Comité National de Lutte contre la Pauvreté March 2008). In addition to consolidating peace and promoting growth, the PRS also specifies objectives such as improving access to basic social services (health and

education) and improvement of the social environment (water and sanitation, housing, employment and social protection).

This paper is organised as follows: Section 2 explains our conceptual framework, the data we use as well as the operational definitions of the welfare indicators applied in each dimension of wellbeing. Section 3 presents the poverty rates in each dimension and compares the poverty profiles of those dimensions. In Section 4 we analyse the degree to which individuals suffer at the same time from multiple deprivations and in Section 5 we take a closer look at one of these overlap groups, children in the age group 6 to 17 years with respect to the dimension of monetary poverty and education. In the last section we answer the two research questions and we discuss the relevance and pitfalls of the approach we followed.

## **2 Concepts, definitions and data**

We follow a multidimensional approach to poverty in which poverty (or deprivation) is defined as the lack of access to the resources and services needed to satisfy basic needs. In some cases we make a distinction in the basic needs of adults and children.<sup>1</sup> We follow largely the deprivation approach as set out by Townsend (1979) and, for children, Gordon et al. (2003a; 2003b) and (Roelen and Gassmann 2008). Given our aim to study simultaneity in deprivations, it is important that we can match the information from the various dimensions on an individual level. Our source of information is the nationally representative Congolese household survey.<sup>2</sup> This survey was conducted in 2005 and collected information on household expenditures, living conditions and individual characteristics. It is the most recent source available in Congo and the only one that provides information about households' monetary situation.<sup>3</sup> Taking the availability of information into account, we selected eight dimensions of wellbeing (money, education, nutrition, health, work, water and sanitation, housing and integration) and in each of these dimensions we defined one, or a set of, welfare indicator(s) relevant in the Congolese society. In addition, we would have preferred to include the dimensions 'social protection' and 'social inclusion' in our analysis but no indicators were available that would have shed some light on the welfare outcomes in these dimensions. Our preference within each dimension has been to select outcome indicators; these are indicators on the actual level of wellbeing of a person but also are closely associated with (a lack of) access to basic resources and services within this

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<sup>1</sup> In this respect, the Convention of the Rights of the Child is another source of inspiration.

<sup>2</sup> Enquête Congolaise auprès des Ménages (ECOM).

<sup>3</sup> There exists also the 2005 demographic and health survey (Enquête Démographique et de Santé du Congo – EDS) but this survey does not provide information on the monetary situation of households (EDS July 2006).

dimension. However, due to data constraints we were forced to select household level indicators and/or process indicators in a number of dimensions. Next, we discuss the indicator(s) we use in each dimension, its limitations and the rationale behind the deprivation thresholds (our choices are summarised in Table 1).

In the *monetary* dimension we use adult equivalent expenditures as a welfare indicator. A household and all of its individual members are considered poor when the equivalent expenditures are below the Congolese national poverty line. The poverty line is based on the monetary value of a minimum calorie intake including an allowance for non-food expenditures. Its annual value is 306,400 CFA or approximately 467 Euro (1.28 Euro a day). The Congolese monetary poverty measure uses the equivalence scales of the ECOM (2005).

**Table 1. Poverty indicators for multidimensional poverty analysis**

Dimensions	Measurement		Threshold
	level	Welfare indicator	
Money	Household <sup>1</sup>	Per equivalent adult expenditures	Expenditures below the national (absolute) poverty line
Education	Individual	Child aged 6-17 yrs: enrolment and progress in school (grade versus age) Adult: highest grade achieved	Child: does not go to school or has a delay of more than two grades Adult: has not achieved CM1 (5 yrs of primary schooling)
Nutrition	Household	Did the household experience difficulties in satisfying its needs in terms of food?	Deprived when the answer is 'often' or 'always'
Health	Individual	Use of health services in case of illness	Deprived if health services were not consulted
Work	Individual	Child aged 10-14 year: child labour  Adults 18-55 yrs: employment status (not active, unemployed, underemployed, employed)	Child: when the child works outside the household for wages Adult: unemployed or underemployed (when someone has a job but has been searching for ways to increase income)
Water and sanitation	Household	Distance to nearest source of drinking water (more or less than 5 min. walking), type of water source, type of toilet, mode of disposal of waste water	Relative to a non-deprived reference household (cluster analysis)
Housing	Household	Material of walls and floor, electricity, main energy source for cooking, number of persons per room	Relative to a non-deprived reference household (cluster analysis)
Integration	Household	Access to public transport (more or less than 30 min.), ownership of radio, television, telephone, means of transport (bicycle, car, boat, motorcycle)	Relative to a non-deprived reference household (cluster analysis)

Notes: <sup>1</sup> Although many indicators have been measured at the household level, the individual is the unit of analysis for this multidimensional poverty study. Thus, all poverty rates are calculated according to individual count, not households.

In the *education* dimension we use different indicators for children and adults. For children, we only consider the age group from 6 up to 17 because children in Congo are supposed to be enrolled in primary education from the age of 6.<sup>4</sup> A child is considered deprived in access to education if he/she is not going to school, or alternatively, his/her progress in the educational system lags more than two years based on the child's age. The latter variable may thus capture late enrolment into the educational system as well as slow progress (repeating classes). For adults we measure deprivation in education by the highest class that the individual achieved. The threshold is set at the level CM1 (after 5 years of primary education) and roughly corresponds to the level of schooling needed to achieve basic literacy in Congo.

For *nutrition* we use a household-level variable that mirrors the response of the respondent to the household questionnaire to the specific question of whether the household has experienced problems in satisfying their food needs in the past year. If the answer was 'often' or 'always', the household is considered to be deprived in terms of nutrition. To measure deprivation in this dimension we would have preferred an individual-level indicator measuring the outcome of the lack of, or inadequate, nutrition but this information was not available in the survey. Nevertheless, the current welfare indicator provides an indication of serious difficulties in this dimension.

We consider someone to be deprived of access to *health care* when a person was ill in the last four weeks prior to the survey but had not consulted health care services (defined as visiting a health care centre, hospital, doctor, dentist or a pharmacy). Thirty-eight percent of the individuals in our sample mentioned that they had been ill during the period in question. Thus, we can only calculate the health deprivation rate for this (rather large) subgroup of the sample. It is also important to note that this indicator reflects only the curative aspect of health care services. Unfortunately, there was little other information available on the preventive and informative aspects of health care and, when available, the sample size was too small.

In the dimension *work* we look at two population groups: the adult working-aged population between 18-55 years (55 is the pensionable age in Congo) and children (aged 10-14). According to the International Labour Organisation (Convention 138, ILO, 1973), the age of 15 years is the earliest when a person should be allowed to work. In the survey, information on the remunerative activities of children is collected only from the age of 10 years. A member in the age group 10-14 years is considered to be

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<sup>4</sup> Although school enrolment in Congo is not obligatory for children aged 16 and 17 years, we include this age group because of the importance for a child's future of completing secondary education. In our more detailed analyses, we also decompose deprivation in education for the age groups 6-11, 12-14 and 15-17.

deprived when the child has remunerative activity outside the household.<sup>5</sup> We do not include children aged 15-17 years in the child and overall work deprivation rates because of the controversy in this group of getting an education and being active on the labour market. In Section 6 we look at this group more closely. For adults we take a broader definition of deprivation as compared to the standard definition of unemployment. Of course, adults are considered deprived of work if they are unemployed, implying that they had been actively searching for work in the four weeks prior to the survey. But we also include underemployment as a deprivation. Included in this category are the individuals who have worked less than 35 hours in the previous week but who were looking for ways to supplement their work income. If an adult had neither been working nor looking for a job, he/ she is not considered deprived.

In the dimension *water and sanitation* we use the following variables to determine whether or not a household and its individuals are deprived: (i) distance to the nearest source of drinking water (more or less than 5-minutes walking), (ii) type of water source, (iii) type of toilet and the mode of waste water disposal. We use multiple correspondence analysis (MCA) and cluster analysis to determine the status of deprivation (Box 1 explains our choice of these techniques). Together these methods yield a grouping of Congolese individuals who share similar characteristics in a particular dimension. For water and sanitation, this analysis yielded eight clusters of individuals (summarised in Table 2). To determine whether or not a particular cluster is deprived, we first define the characteristics of a non-deprived individual. In water and sanitation a non-deprived Congolese benchmark individual has the following characteristics:

- water is obtained from the national water company (SNDE);
- this source of water is available in the house or within a 5-minute walking distance;<sup>6</sup>
- the household has a modern toilet or a covered latrine;
- waste water is disposed via a sewage or collected in sewage pits.

In comparison to this benchmark, we consider the individuals in groups 1, 3, 5, 6 and 7 to be deprived (constituting 75 percent of the individuals in the sample).<sup>7</sup>

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<sup>5</sup> Although the survey has data on whether children worked in the household, a family business or on the families' land, we have no information on the type of work and the amount of hours worked. We therefore decided to use this somewhat more stringent definition of child labour.

<sup>6</sup> This roughly corresponds to the SPHERE indicator that specifies that the maximum distance to reach a source of drinking water should be 500 meters ([www.sphere.org](http://www.sphere.org)). The SPHERE indicators define acceptable benchmarks for providing emergency relief.

<sup>7</sup> Not using population weights.

### **Box 1. Techniques used to determine deprivation in the dimensions water and sanitation, housing and inclusion**

In each of the dimensions *water and sanitation*, *housing* and *inclusion* we use a set of indicators and a sequence of multivariate analysis techniques to determine the status of deprivation of a household and its members. For each dimension we select a range of categorical indicators for wellbeing, applying these variables in a so-called multiple correspondence analysis (MCA).<sup>8</sup> This technique looks for associations (correlation) between the possible categories of variables and summarises these into a (smaller) number of explanatory factors (i.e., factor loadings). Take, for instance, housing and its two indicators: the material used to construct walls and floor. We can assume that the walls can be made of (i) brick, (ii) concrete, (iii) wood or (iv) less durable materials and that the floor can be made of (i) concrete or (ii) dirt. In total there are eight possible combinations between the various types of wall and floor materials. The MCA technique searches for factors that jointly explain particular combinations of the types of wall and floor material and in doing this, reduces the number of explanatory factors needed in the analysis. Note that this example has only eight combinations, but the number of possible combinations rapidly increases with additional variables. For each explanatory factor, the individual is given a score. We subsequently use these scores in a cluster analysis (using the 10 largest explanatory factors in terms of explained variance) to search for groups of individual sharing similar characteristics in each dimension. The number of clusters may vary per dimension, and we subsequently compare each cluster to the benchmark individual who, in the Congolese context, is not deprived. If the difference with the benchmark person is large, we consider the cluster to be deprived in comparison to the benchmark.

We chose for this sequence of multivariate techniques because we wanted to make better use of the information in the data and because we wanted to make the decision of who to consider deprived or not transparent and relevant for the Congolese context. The techniques provide a mapping of the groups, each group consisting of individuals experiencing a specific degree of deprivation. Comparing the characteristics of these groups provides insights into inequalities above and below the poverty line and, at the same time, makes it easier to assess the sensitivity of changes in the poverty line. The alternative to this method would be that the researcher a priori would have decided the combinations of characteristics that would have implied the individual as being considered deprived. This also implies that the researcher implicitly decides about how much each category contributes to the status of deprivation or not. The advantage of our method is that it allows individuals to be regrouped into a number of groups, each sharing a prevalent combination of characteristics typical to Congo (with the characteristics ordered in declining importance in terms of explained variance). The resulting mapping of individuals makes the decision of considering a specific group deprived more transparent and it allows to get a better idea of the types of deprivation in that society. This information can be used in the design of policies (i.e., relevant characteristics for targeting purposes). It should be noted, however, that the use of these multivariate techniques is less appropriate for evaluation purposes (i.e., whether specific policy targets are met/or how much impact policies have) because each year/data round will result in a different mapping of clusters (and the characteristics may not necessarily correspond to the clusters in the previous data).

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<sup>8</sup> Principal components analysis (PCA) is the counterpart of MCA for numerical variables.



**Table 2. Water and sanitation – Selection of deprived and non-deprived groups**

Group/cluster (% of individuals, no population weights used)	Indicator	Characteristics (in decreasing order of importance	% of Individuals in this group with same characteristic	Status of deprivation
Group 1 (23.5 %)	Source of water	SNDE/outside	100.0	Deprived
	Disposal of waste water	In courtyard	59.5	
	Type of toilet	Uncovered latrine	50.0	
	Distance to source of drinking water	Less than 5 min.	75.2	
	Type of toilet	Covered latrine	50.0	
Group 2 (18.9 %)	Source of water	SNDE/in the house	99.9	Not deprived
	Distance to source of drinking water	Less than 5 min.	97.4	
	Type of toilet	Covered latrine	64.4	
	Disposal of waste water	Sewer/sewage pit	15.4	
Group 3 (16.1 %)	Source of water	Pit	100.0	Deprived
	Type of toilet	Uncovered latrines	51.4	
	Disposal of waste water	Into nature	52.9	
	Disposal of waste water	In the courtyard	45.7	
	Distance to source of drinking water	More than 5 min.	34.2	
Group 4 (7.0 %)	Disposal of waste water	Hole	100.0	Deprived
	Type of toilet	Covered latrines	62.3	
	Source of water	SNDE/in the house	37.7	
	Source of water	SNDE/outside	37.8	
	Distance to source of drinking water	Less than 5 min.	73.8	
Group 5 (5.6 %)	Source of water	Fountain/village pump	100.0	Deprived
	Distance to source of drinking water	More than 5 min.	48.6	
	Disposal of waste water	Into nature	55.1	
	Type of toilet	Covered latrines	53.9	
	Type of toilet	Uncovered latrines	42.4	
Group 6 (15.8 %)	Source of water	River/tank/rainwater	98.6	Deprived
	Distance to source of drinking water	More than 5 min.	72.5	
	Disposal of waste water	Into nature	68.1	
	Type of toilet	Covered latrines	57.1	
	Type of toilet	Uncovered latrines	42.9	
Group 7 (6.2 %)	Type of toilet	No toilet	100.0	Deprived
	Source of water	River/tank/rainwater	44.5	
	Distance to source of drinking water	More than 5 min.	54.8	
	Source of water	Pit	35.3	
	Disposal of waste water	Into nature	53.6	
Group 8 (5.9 %)	Disposal of waste water	In the courtyard	43.3	Not deprived
	Type of toilet	WC toilet	100.0	
	Source of water	SNDE/in the house	85.4	
	Distance to source of drinking water	Less than 5 min.	90.3	

Notes: Variables included in the MCA: sources of: drinking water (5 types); disposal of waste water (4 types); distance to source of drinking water (2 types); types of toilet (4 types)

Result of MCA: 11 factor axes of which the 10 largest explain 96 percent of the inertia.

Result of cluster analysis: classification into 8 groups using a hierarchical ordering method.

Source: Estimates based on ECOM (2005).

**Table 3. Housing – Selection of deprived and non-deprived groups**

Group/cluster (% of individuals, no population weights used)	Indicator	Characteristics (in decreasing order of importance)	% of Individuals in this group with same characteristic	Status of deprivation
Group 1 (37.1 %)	Wall material	Baked mud bricks	58.2	Deprived
	Wall material	Wood/corrugated iron	41.8	
	Electricity	None	80.9	
	Combustible cooking fuel	Wood	67.7	
	Floor material	Dirt/wood	42.1	
	Persons per room	More than 3	15.9	
Group 2 (26.6 %)	Wall material	Baked mud bricks	52.4	Deprived
	Floor material	Dirt/wood	85.7	
	Wall material	Mud bricks	43.3	
	Combustible cooking fuel	Wood	92.0	
	Electricity	None	94.5	
	Persons per room	Less than 3	59.6	
Group 3 (36.6 %)	Wall material	Bricks	94.4	Not deprived
	Floor material	Cement/baked bricks	90.7	
	Electricity	Yes	57.6	
	Combustible cooking fuel	Charcoal/petrol	55.8	
	Combustible cooking fuel	Gas/electricity	17.3	
	Floor material	Stone	7.2	
	Persons per room	Three	29.9	

Notes: Variables included in the MCA: sources of: wall material (5 types); floor material (3 types); persons per room (3 categories); combustible cooking fuel (3 types); electricity (2 categories)

Result of MCA: 11 factor axes of which the 10 largest explain 97 percent of the inertia.

Result of cluster analysis: classification into 3 groups using a hierarchical ordering method.

Source: Estimates based on ECOM (2005).

We follow a similar methodology for *housing*, and include variables such as the material of the walls and floor of the house, whether there is electricity, which combustible fuel is used for cooking and the number of persons per room (see Table 3 for a summary of the results). The housing of a non-deprived individual is characterised as having (i) brick or cement walls; (ii) cement or stone floor; (iii) electricity; (iv) gas, electricity or charcoal; and (v) not more than three persons per room.<sup>9</sup> The cluster analysis yields three clusters of which group 1 (37 percent of the individuals) and group 2 (27 percent) can be considered deprived in comparison to this benchmark.

In the dimension *integration* we want to capture the ability of an individual to be in contact with others and to gather information. We would have preferred to use the related dimension of social inclusion, i.e., the degree to which a person participates in

<sup>9</sup> This definition also corresponds to that of a 'modern dwelling' of the Congolese Ministry of Housing.

society but unfortunately the ECOM does not have indicators for this dimension. As inclusion indicators, we apply a range of assets that can be used as for transportation or for communication. We also include the walking distance to public transport. The reference individual is a person living in a household that is no less than a 30-minute walking from public transport or that owns at least one means of communication or transport.

**Table 4. Inclusion – Selection of deprived and non-deprived groups**

Group/cluster (% of individuals, no population weights used)	Indicator	Characteristics (in decreasing order of importance	% of Individuals in this group with same characteristic	Status of deprivation
Group 1 (33.9 %)	Ownership of: radio	Radio	100.0	Not deprived
	television	No television	100.0	
	phone	No phone	100.0	
	motorcycle	No motorcycle	100.0	
	car	No car	99.6	
	Distance – transport	More than 30 min. walk	9.0	
Group 2 (32.6 %)	Ownership of: radio	No radio	100.0	Deprived
	television	No television	100.0	
	phone	No phone	100.0	
	motorcycle	No motorcycle	100.0	
	car	No car	99.6	
	Distance – transport	More than 30 min. walk	9.0	
Group 3 (19.9 %)	Ownership of: television	Television	100.0	Not deprived
	phone	No phone	100.0	
	radio	Radio	74.3	
	car	Car	5.6	
	motorcycle	No motorcycle	100.0	
	Distance – transport	Less than 30 min. walk	96.4	
Group 4 (11.1 %)	Ownership of: pirogue	No boat	98.1	Not deprived
	Ownership of: phone	Phone	100.0	
	television	Television	41.7	
	radio	Radio	74.9	
	motorcycle	No motorcycle	100.0	
	bike	Bike	10.8	
Group 5 (2.4 %)	Ownership of: car	Car	3.9	Not deprived
	motorcycle	Motorcycle	100.0	
	television	Television	58.5	
	radio	Radio	87.5	
	bike	Bike	26.9	
	car	Car	9.9	
phone	Phone	26.4		
	pirogue	Boat	8.4	

Notes: Variables included in the MCA: 2 categories for all types of asset ownership.  
 Result of MCA: 8 factor axes that explain 91 percent of the inertia.  
 Result of cluster analysis: classification into 5 groups using a hierarchical ordering method.  
 Source: Estimates based on ECOM (2005).

This rather stringent definition of deprivation results in classifying only one out of five groups as deprived (group 2: 33 percent of the individuals). Table 4 shows that a less stringent threshold would also have included group 1 as deprived (34 percent of the individuals). Clearly, deprivation rates in this dimension are very sensitive to small changes in the threshold.

### 3 Incidence of poverty in every dimension and poverty profiles

We use the indicators and thresholds discussed in the previous section to estimate the incidence of poverty in each of the dimensions. Table 5 reflects these results for the population as well as individually for children, adult women and adult men. The first point that can be noticed is that the level of deprivation is high in every dimension. By far, the highest deprivation rates are in the dimensions *housing* and *water and sanitation*, with 67 percent and 59 percent, respectively, of the Congolese population being deprived. About half of the population is deprived in *monetary terms*, 44 percent in terms of access to *health* and 43 percent in terms of satisfying their *nutritional needs*. Although lower, deprivation in the remaining dimensions still indicates that 38 percent of the population are deprived in the *education* dimension, 32 percent in terms of *integration* and 21 percent in terms of *work*.

To understand the relations between these dimensions better, we analyse the extent to which the high poverty-risk characteristics of poor individuals in one dimension correspond to those in other dimensions. If a particular characteristic recurs as high risk in various dimensions, there may be a common underlying factor explaining deprivation, or alternatively, deprivation in one dimension may lead to a high risk of deprivation in another dimension. From a policy perspective, such a characteristic may represent the means for identifying priority groups. On the other hand, large differences between

**Table 5. Poverty incidence (in percent of individuals)**

	Population	Children	Adult women	Adult men
Money	50.1	53.7	47.8	46.2
Education	37.9	52.5 <sup>1</sup>	36.7	21.9
Nutrition	42.9	43.7	43.6	40.8
Health	44.5 <sup>2</sup>	44.0	46.0	44.0
Work	21.0	5.6 <sup>3</sup>	28.3	24.5
Water and sanitation	67.5	69.9	66.1	64.9
Housing	58.7	61.6	57.4	54.8
Integration	32.1	33.8	34.6	26.4
Population share (percent)	100.0	46.2	28.6	25.2

Notes: <sup>1</sup> Includes only children aged 6-17; Incidence among boys 53.7 percent and girls 51.2 percent.

<sup>2</sup> Includes only 38 percent of the individuals in the sample (only those reported having been ill in the four weeks prior to the survey). i

<sup>3</sup> Includes only children aged 10 to 14. Incidence among boys 4.9 percent and girls 6.3 percent.

Source: Estimates based on ECOM (2005).

poverty profiles across dimensions point to the danger of using one poverty dimension as a proxy for poverty risk in other dimensions. In most PRSPs, including Congo's, the main focus is on monetary poverty and its corresponding poverty profile.<sup>10</sup> Thus, there is the risk that a pro-poor strategy unintentionally by-passes certain groups or does not address certain problems.

Table 1 and Figure 1 also report the incidence of poverty between children, women and men. When discussing differences in poverty for these groups, it is important to keep in mind that with the exception of education, health and work, the variables are measured at the household level, even though we estimate the poverty rates based on individuals instead of households. For welfare indicators measured at the household level, this implies that a higher incidence of child poverty rates reflects the fact that children, for instance, are more likely to live in poor households in comparison to other population groups. Thus, the difference between child, male and female poverty rates reflects differences only in the demographic composition of poor and non-poor households. The drawback of using information measured at the household level is that we have to assume that everyone in the household has equal access (according to individual needs) to the household's joint resources and services and its environment. This may not necessarily be the case. This may be a reasonable assumption for the dimensions money, water and sanitation, housing, integration, but for nutrition we would have preferred an individual-level indicator, which was not available. The results for nutrition show that children and women (44 percent) are somewhat more likely to be deprived than men (41 percent).<sup>11</sup> This difference reflects only the fact that women and children are more likely to live in nutrition-deprived households, but does not tell us anything about the intra-household position of the family members, nor of the consequences on their nutritional status. Nevertheless, Figure 1 and Table 5 show that, except for the dimensions of work and health, children are more likely to be poor in every other dimension compared to their parents and, in particular, to men. In terms of health, which is measured on an individual level, there seem to be no large differences between the

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<sup>10</sup> Typically, such an analysis also includes an investigation of the 'determinants' of poverty with standard regression techniques, which do not, however, detect the direction of causality. Furthermore, they estimate the relation between the monetary welfare indicator and a set of 'explanatory' factors. This, in essence, implies that these factors are viewed solely from the perspective of the money dimension while the true relationship between all these factors is likely to be much richer and complicated.

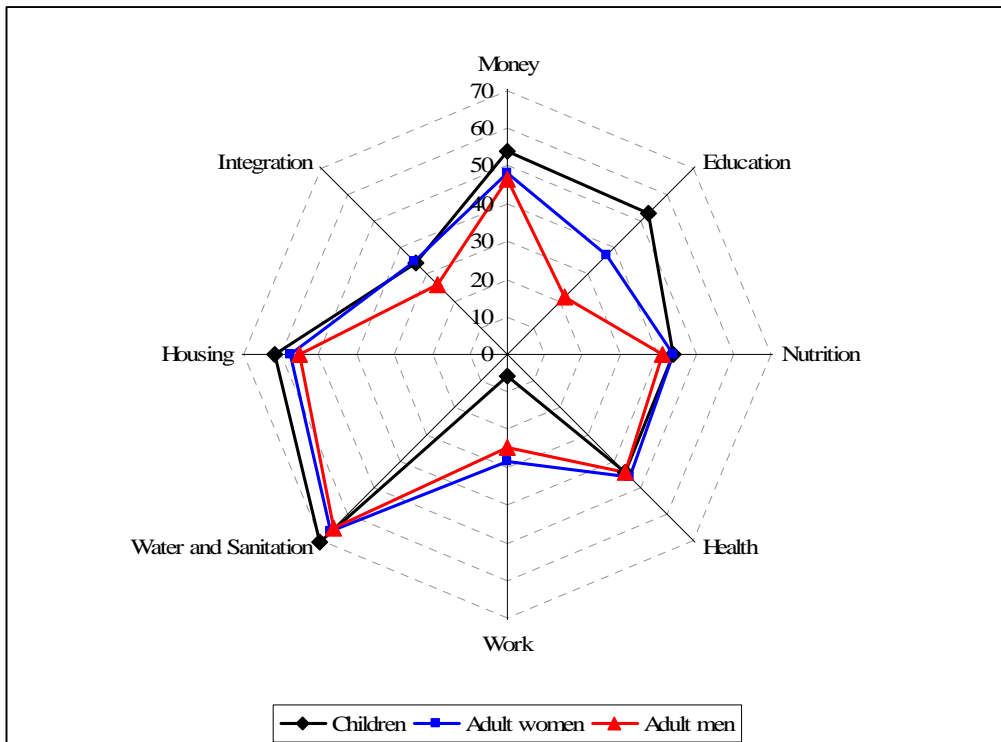
<sup>11</sup> As a rule of thumb, we consider a group to be high risk when its deprivation rates are at least 2 percentage points higher than the average deprivation rate (for groups with low population shares) or the deprivation rates of other groups (for groups with high population shares such as children, for example). Although smaller differences may be significant in a statistical sense, they may be too small to be of political significance.

various population groups. For work and education, large differences between the various population groups can be observed.

Figures 2 to 7 compare the poverty rates for individuals for a number of characteristics (Table A1 in the Appendix presents the poverty rates). We start by looking at the characteristics associated with an increased poverty risk in a range of dimensions. Figure 2 clearly shows that rural individuals have an increased poverty risk in all dimensions except work. However, the lower rural deprivation rate for work may possibly also reflect the discouraged worker effect, i.e., individuals are simply discouraged from actively seeking employment because job opportunities are so scarce. A similar effect is noted in Figure 3 but it also shows that the rural/urban decomposition hides large differences in deprivation rates within urban areas. Cities such as Brazzaville and especially coastal Pointe Noir typically have lower deprivation rates than other urban and semi-urban communities.

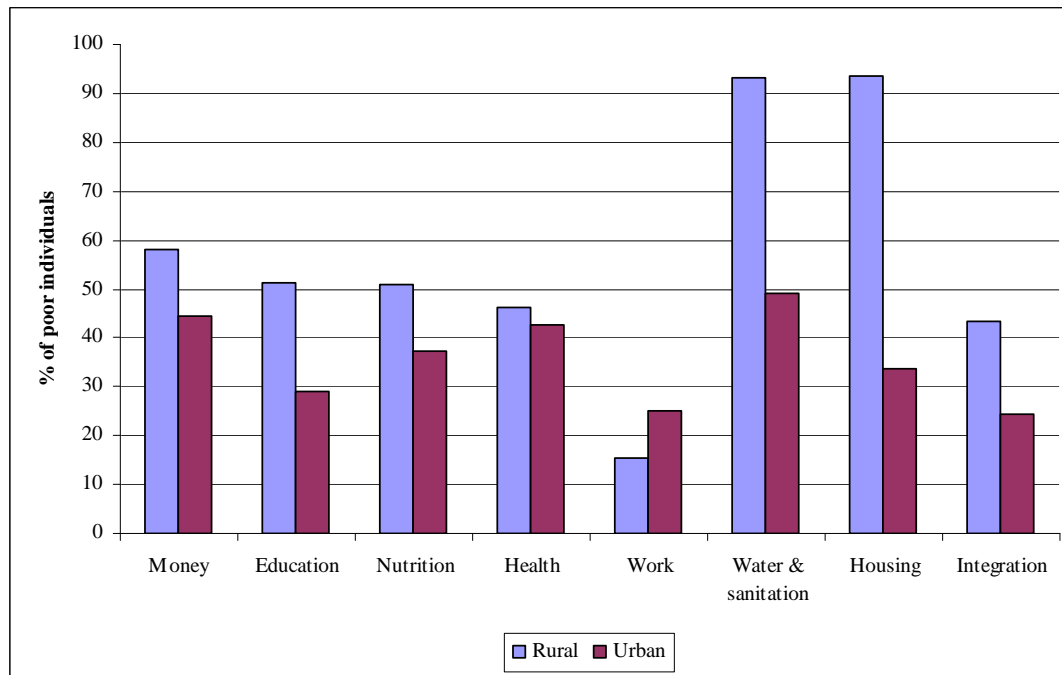
Other characteristics associated with a higher poverty risk across the eight dimensions are (i) single parent/caretaker households (6 out of 8); (ii) triple generation households (4 out of 8 dimensions); (iii) female headed households (4 out of 8 dimensions), and (iv) households with an elderly head (5 out of 8 dimensions). On the other hand, households with a male head or a head in the age category 46 to 55 are clearly less likely to be poor in any of the dimensions.

**Figure 1. Incidence of poverty (in percent of individuals)**



Source: Estimates based on ECOM (2005).

**Figure 2. Comparison poverty profile rural - urban**

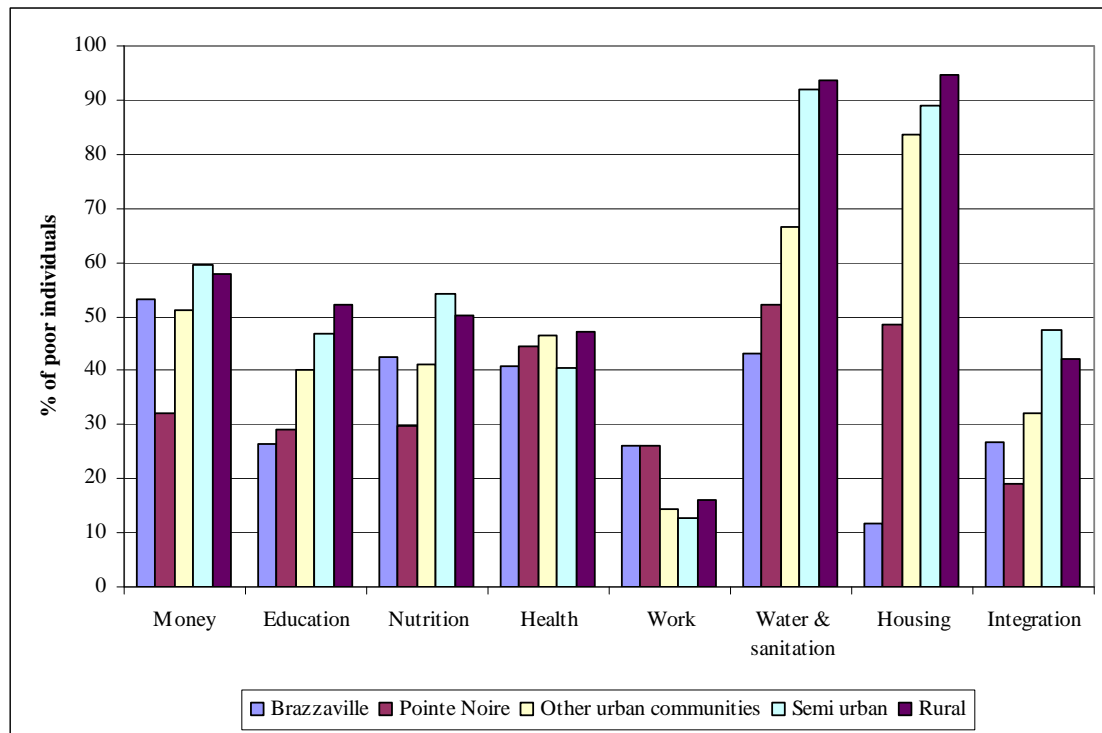


Source: Estimates based on ECOM (2005).

However, when looking at Figures 2 to 7, there are also characteristics that are associated with an increased risk of poverty in one dimension and a lower risk in another. Take, for example, single parent/caretaker households and households with an elderly household head. Indeed these characteristics are associated with an increased poverty risk in 5 or 6 dimensions but the dimension in which they have a higher risk is not the same. Individuals living in single parent households are more likely to be poor in the dimensions of health, water and sanitation while those living with an elderly household head are more likely to be deprived in terms of money and work. This shows that a specific group can have specific problems in certain dimensions.

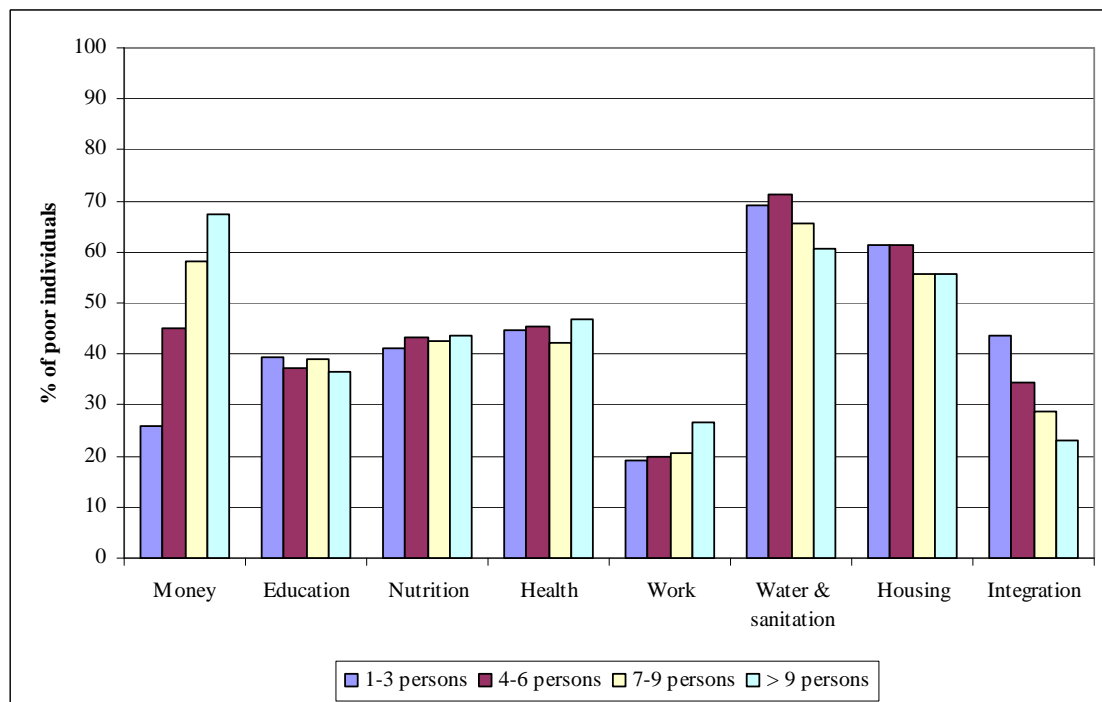
If viewed from a slightly different perspective, it can be noted that as the household size increases (Figure 4), the risk of poverty in education, health, nutrition and habitation also increases. However, the pattern is reversed for water and sanitation and integration; deprivation rates decrease as the number of household members increases. The high risk of monetary poverty in large households can be explained by the higher dependency ratio while on the other hand, large households are more likely to possess certain resources, especially assets, which allow them to communicate and to be mobile.

**Figure 3. Comparison poverty profile by stratum**



Source: Estimates based on ECOM (2005).

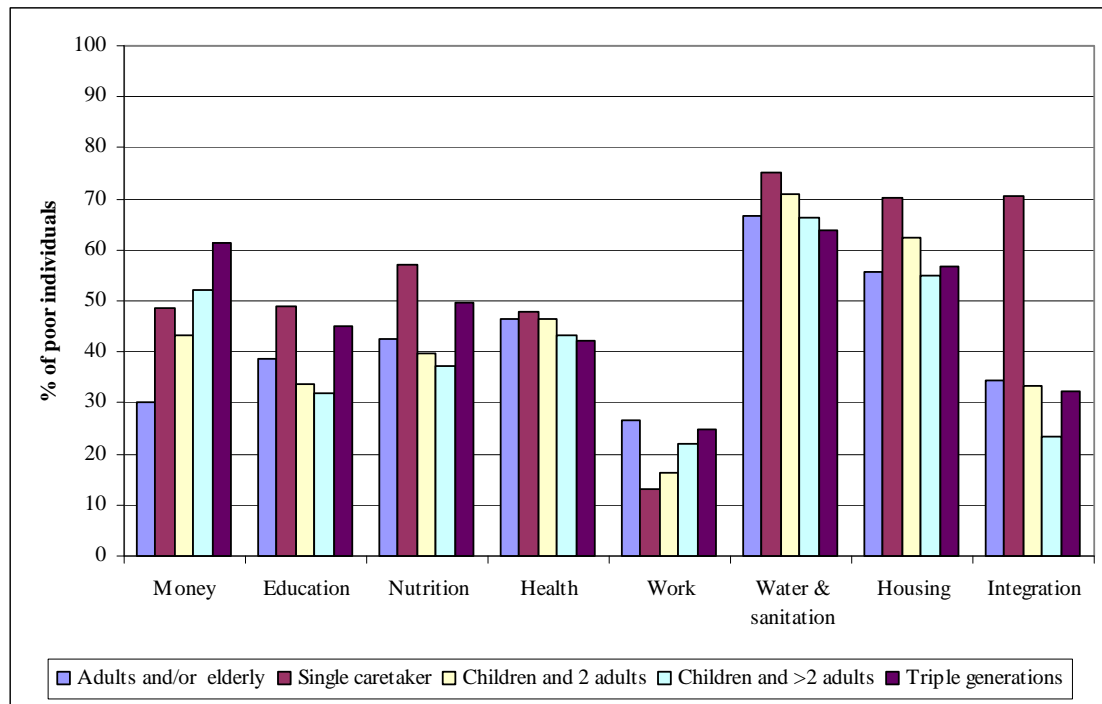
**Figure 4. Comparison poverty profile by household size**



Source: Estimates based on ECOM (2005).

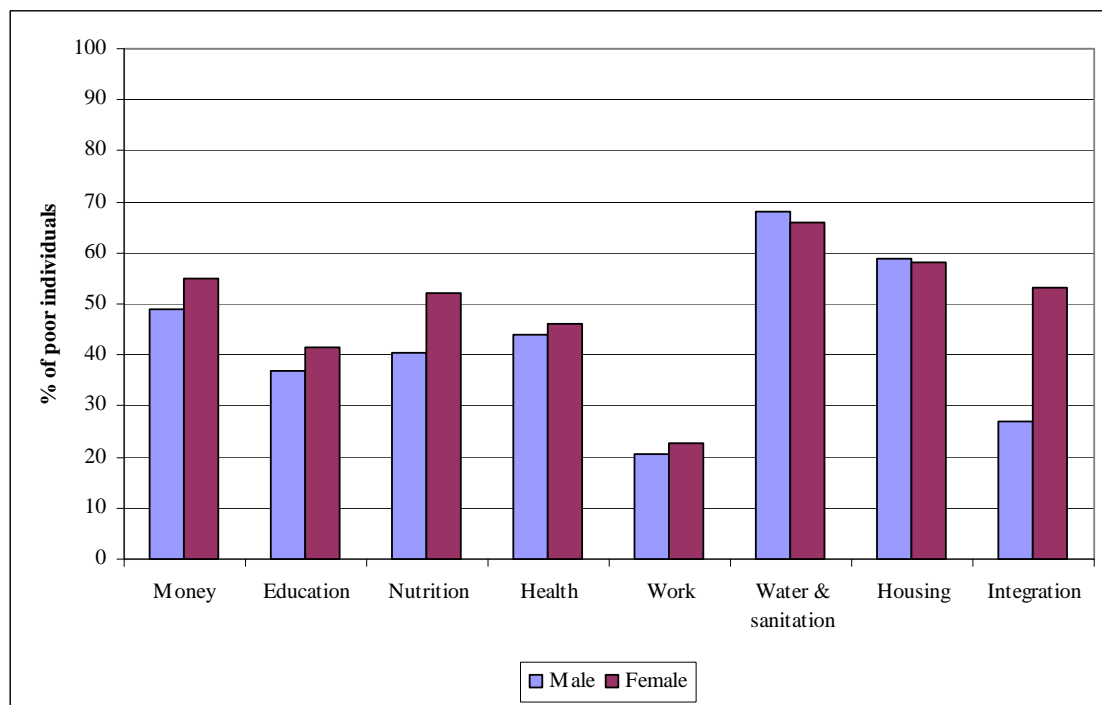


**Figure 5. Comparison poverty profile by household type**



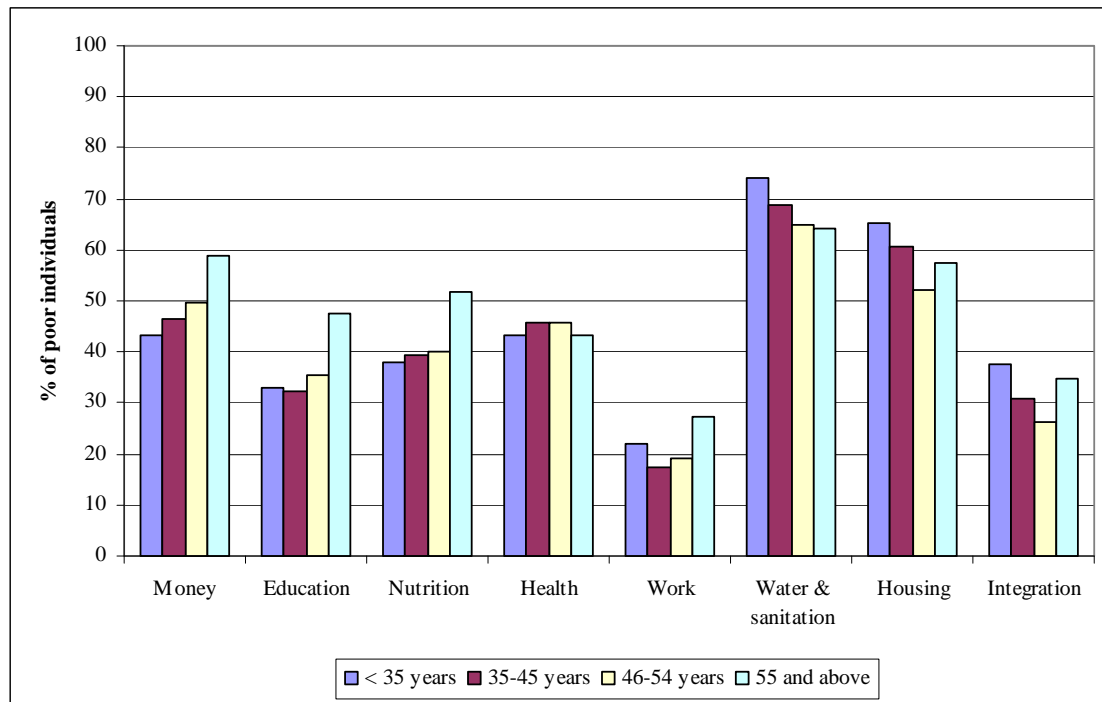
Source: Estimates based on ECOM (2005).

**Figure 6. Comparison poverty profile by gender of household head**



Source: Estimates based on ECOM (2005).

**Figure 7. Comparison poverty profile by age of household head**



Source: Estimates based on ECOM (2005).

From this analysis we can conclude that:

- Certain characteristics (rural and semi-urban areas, single parent households and elderly household heads) are associated with a higher poverty risk in general;
- There is, however, a strong heterogeneity in poverty-risk characteristics across dimensions: high risks in one dimensions may not necessarily represent high risks in another;
- As a consequence, monetary poverty is not necessarily a proxy for explaining or identifying poverty in other dimensions.

#### 4 Overlapping deprivations

Up to now, we have analysed only deprivations, dimension by dimension. Clearly, with such high deprivation rates in each dimension, there must be individuals who suffer from various deprivations at the same time. Such information is interesting for policymakers, as individuals with multiple deprivations may constitute a priority group in itself. Moreover, studying the overlap in deprivations across dimensions potentially enhances our understanding of the relationship between these dimensions and the role they play in the wellbeing of individuals and their welfare-generating processes. In this section we study the overlaps in deprivations, taking a bi-dimensional and a multidimensional

perspective. Then, we select a specific group suffering from a particular combination of deprivations which we investigate more closely in Section 5. Our aim here is to illustrate what can be learned from such an approach, not to provide a full analysis of overlapping deprivations: with eight dimensions, a complete analysis would require making 40,320 comparisons (the number of permutations of 8).<sup>12</sup>

We start with the bi-dimensional perspective which is summarised for the total population in Panel A of Table 6 and for children in Panel B, indicating the percent of individuals suffering simultaneously from a given combination of two deprivations. Panel A shows that 51 percent of the Congolese population are deprived simultaneously in housing and water and sanitation. Furthermore, nearly all combinations between money, water and sanitation and housing show that more than 30 percent of the individuals are

**Table 6. Percent of individuals who are simultaneously deprived in two dimensions**

	Money	Education	Nutrition	Health	Work	Water & sanitation	Housing
Panel A: Individuals <sup>1</sup>							
Money	-						
Education	22	-					
Nutrition	25	19	-				
Health	24	21	25	-			
Work	10	5	7	11	-		
Water & sanitation	38	29	32	33	13	-	
Housing	33	27	29	30	11	51	-
Integration	21	15	18	17	6	26	24
Panel B: Children <sup>2</sup>							
Money	-						
Education	32	-					
Nutrition	27	25	-				
Health	26	28	26	-			
Work	4	5	2	3	-		
Water & sanitation	42	40	33	34	5	-	
Housing	37	37	31	31	5	54	-
Integration	24	20	19	18	2	28	26

Notes: <sup>1</sup> Total weighted population except for the dimensions of education (includes only individuals aged 6 yrs and over) and work (includes only children in the age group 10-14 yrs and adults aged 18-54 yrs).

<sup>2</sup> All children (weighted) except for the dimensions of education (includes only children aged 6-17 yrs) and work (includes only children aged 10-14 yrs).

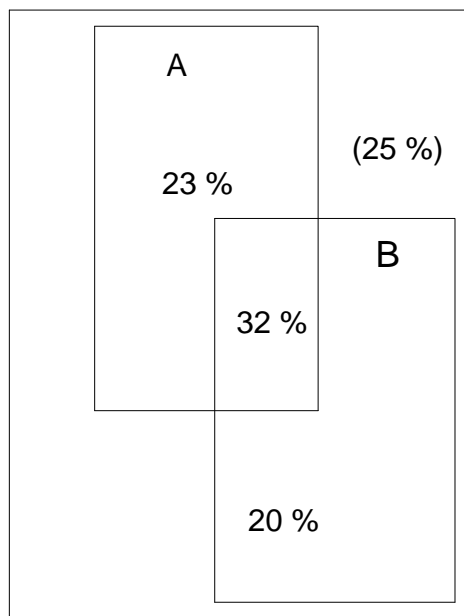
Source: Estimates based on ECOM (2005).

<sup>12</sup> A more elaborate analysis is provided in Notten, Makosso and Mpoue (2007).

simultaneously suffering from a bi-combination of deprivations. In a similar fashion we can look separate population groups such as children. The one-dimensional analysis in the previous section already showed that children generally have a higher risk of deprivation in most dimensions. Panel B enriches this perspective by showing that children, in comparison to others, are more likely to be deprived in multiple dimensions at the same time.

One observation that stands out in this respect is that 32 percent of the Congolese children are deprived simultaneously in the education and money dimensions while the figures for adult women and men are 19 and 11 percent, respectively (Tables A2 and A3 in the Appendix) show the overlap in deprivations for adult men and women).<sup>13</sup> Another important observation here is that the percentage of double-deprived children in the monetary and education dimensions is disproportionately large. If deprivation in money

**Figure 8. Children (aged 6 to 17), overlap between dimensions of money and education**

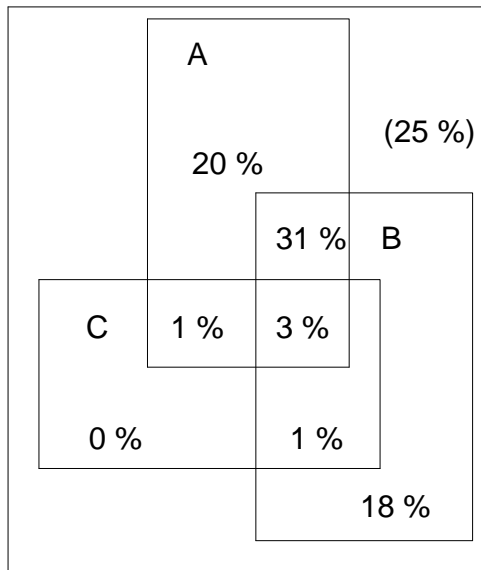


Notes:  
A=deprived in money;  
B=deprived in education.

Source: Estimates based on ECOM (2005).

<sup>13</sup> In Notten, Makosso and Mpoue (2007), we also included pairwise correlations. These figures largely confirm the information provided in the tables in this paper: in most cases there is a positive and significant correlation between two dimensions. The highest correlations amount to 0.4 (housing and water and sanitation) but are generally between 0.05 and 0.2. Moreover, for women the correlation between work and most other dimensions (excluding nutrition and health) is negative.

**Figure 9. Children (aged 10 to 14)**



Notes:

A=deprived in money;

B=deprived in education;

C=deprived in work (child labour).

Source: Estimates based on ECOM (2005).

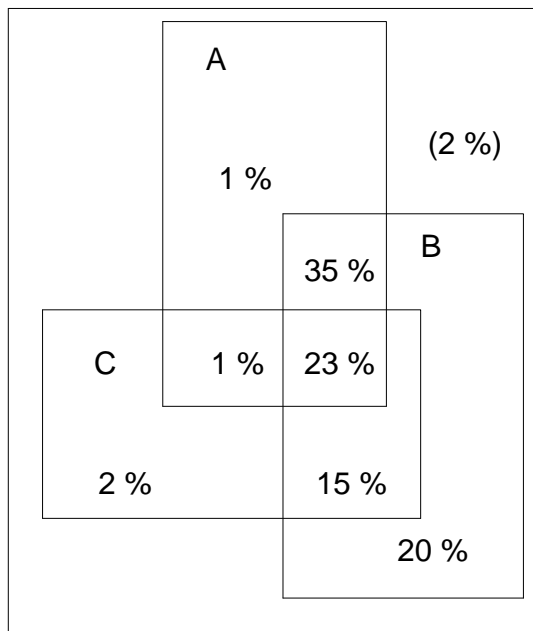
would be fully orthogonal to deprivation in education, one would expect on the basis of the single deprivation rates in Table 1 that 'only' about 28 percent of the children would be double-deprived ( $\Pr(\text{monetary poverty}) \times \Pr(\text{deprivation in education})$ ). Figure 8 further divides children into four groups: those who are not deprived in money and education (25 percent), those who are simultaneously deprived (32 percent) and those who are only deprived in one of the two dimensions (money=23 percent and education=20 percent). Note that children who are deprived in neither of these two dimensions also form a disproportionately larger share (25 percent as opposed to an expected 22 percent). This observation raises the question regarding the extent to which these groups of children differ from each other. Is monetary poverty an explanation why some children are also deprived in education? Why, then, is it that 23 percent of the monetary deprived children are not deprived in education? Moreover, if monetary poverty is not an impediment, why are still 20 percent of the Congolese children deprived in education? The advantage of studying overlapping deprivations is that it promotes examining causality in multiple directions as well as cross-cutting sector solutions.

Our next step is to add the work dimension to the picture. Even though the overlap between the education and work dimensions is small (5 percent of Congolese children) and similarly small between money and work (4 percent of Congolese children), it is an interesting group to study once you realise that 6 percent of the children are deprived in

work (i.e., child labour).<sup>14</sup> In other words, combining the information from Table 1 and 6: Panel B, suggests that child labour is highly associated with deprivation in money and education. The Venn diagram in Figure 9 confirms this observation by showing the overlaps for children aged 10-14 in the three dimensions<sup>15</sup> – every child who is deprived in work is also deprived at least in one of the other two dimensions. Thus, even though child labour does not have a very high prevalence in Congo, it is strongly associated with deprivations in the education and money dimensions. As such, this group merits further analysis as a special case of the 'double' deprivation group.

The above information encourages a closer look at the age-group 15-17 years. In the overall labour deprivation figures, we exclude children aged 15-17 years because even though there is no legal impediment for this group to work, having a job may easily conflict with the legal obligation of going school (until the age of 16) or with the right of children to education, as expressed in the Convention of Child Rights. Figure 10 shows

**Figure 10. Children (aged 15-17 and active in the labour market)**



Notes:

A=deprived in money;

B=deprived in education;

C=deprived in work (un- or underemployed)

Source: Estimates based on ECOM (2005).

<sup>14</sup> Given the structure and limitations of our dataset, we define child labour as any remunerated labour performed outside the household, thus excluding working in a family business or on the family's plot of land and other household work.

<sup>15</sup> Due to limitations in the data we have no information on remunerated labour for children under the age of 10.

the Venn diagram for all children active in the labour market (representing about 27 percent of all in 15-17 year age group). According to our definition, children in this group are deprived in labour if they are unemployed or underemployed. An interesting observation here is that, by far, most of the children active on the labour market (whether or not deprived in terms of work) are also deprived at least in one of the two other dimensions (money and education). Only 2 percent of labour deprived children and 2 percent of the non-labour deprived children are not deprived in these other dimensions. Again, this group merits further analysis as a special case of the 'double' deprivation group.

On the basis of the above information, we investigate further the relations in deprivations for children in the age group 6-17 in the dimensions of money, education and work. In sum, this is based on the following considerations:

- the relative differences in poverty risk between population groups (children have a higher poverty risk than women or men);
- the measurement and construction of the welfare indicators in this study (education indicators are different for adults and children, thus it makes sense to analyse them separately);
- theoretical and empirical evidence of the relations between these dimensions (lack of financial resources may be an impediment to accessing education);
- the disproportional share of double-deprivation in these dimensions observed in the results for children (empirical evidence suggesting that the relation mentioned under the previous point also may hold for the Republic of Congo).

In the next section we study these groups and their characteristics in more detail.

Note, however, that there would be many other interesting groups that could be selected for further study. We merely use the twice-deprived children in the age group 6-17 to illustrate how one could proceed in a more detailed analysis.

## **5 Deprivation in education and money: children (aged 6-17)**

In this section we analyse whether the children who are simultaneously deprived in education and money have different characteristics or problems than other members of their age group. This information is relevant for policymakers because it is not clear *a priori* whether this double-deprived group needs special attention or whether more general policy interventions in these areas are equally adequate for the group. In addition, we perform a similar analysis for youngsters who are also deprived in labour (aged 10-14) and for those who are already active on the labour market (aged 15-17).

**Table 7. Deprivation in money (A) and education (B) children 6-17: profile**

	Incidence of deprivation (row percentages)					
	Children, aged 6-17 (%)	AB	A	B	PAB	Total
Children aged 6-17 (%)	100.0	32.3	22.7	20.0	24.8	100
Settlement area						
Rural	43.2	43.7	20.4	20.6	15.4	100
Urban	56.8	23.6	24.5	19.9	32.0	100
	100.0					
Strata						
Brazzaville	27.0	25.1	32.8	14.6	27.4	100
Pointe Noire	23.7	19.3	16.1	25.4	39.2	100
Other urban communities	6.2	33.9	20.5	21.6	24.0	100
Semi urban	7.8	40.5	21.5	18.2	19.7	100
Rural	35.4	44.4	20.1	21.2	14.4	100
	100.0					
Gender						
Boys	50.3	33.7	22.2	20.0	24.1	100
Girls	49.7	30.9	23.2	20.4	25.5	100
	100.0					
Age						
6-11 years	50.7	22.1	32.6	13.4	31.9	100
12-14 years	25.8	39.3	16.6	22.5	21.6	100
15-17 years	23.5	46.6	8.1	32.3	13.1	100
	100.0					
Household size						
1-3 persons	5.3	24.3	12.6	30.6	32.5	100
4-6 persons	39.5	27.5	21.5	22.3	28.7	100
7-9 persons	37.7	35.4	22.8	18.8	23.0	100
> 9 persons	17.5	38.7	28.4	15.4	17.5	100
	100.0					
Household type						
Adults and/or elderly	-	-	-	-	-	-
Single caretaker	7.5	32.8	20.8	24.0	22.4	100
Children and 2 adults	33.0	27.4	20.4	22.5	29.7	100
Children and >2 adults	30.1	31.0	23.5	18.4	27.0	100
Triple generations	28.4	39.0	25.1	18.6	17.3	100
Other types	1.0	37.7	20.2	16.9	25.1	100
	100.0					
Gender of household head						
Male	78.8	31.8	21.8	20.9	25.4	100
Female	21.2	33.9	26.1	17.5	22.5	100
	100.0					
Age of household head						
< 35 years	13.4	34.3	20.7	22.4	22.6	100
35-45 years	35.4	28.9	22.4	19.3	29.4	100
46-54 years	25.3	29.4	21.4	21.3	27.8	100
55 and above	25.8	38.8	25.5	19.1	16.6	100
	100.0					

Note: AB=deprived in money and education; A=deprived in money only; B=deprived in education only; PAB=not deprived (neither money nor education). Includes only children in the age group 6-17 yrs: AB + A + B + PAB = 100%.

Source: Estimates based on ECOM (2005).



The poverty profile in Table 7 is more complex than a traditional poverty profile because now four groups need to be compared as opposed to two groups (poor and nonpoor). This includes children (i) who are simultaneously deprived (AB), (ii) who are deprived only in monetary terms (A), (iii) only in education (B) and (iv) non-deprived (PAB). The second column shows the population shares of each subgroup (these sum up vertically to 100 percent) and columns 3 to 6 show the percentage of children in each subgroup (totalling horizontally to 100 percent).

Table 7 shows that especially children living in rural and semi-urban households are more likely to be deprived simultaneously in education and money (respectively 44 percent and 41 percent of children as compared to the average of 32 percent). Youngsters aged 15-17 years seem to be most at risk of double-deprivation (47 percent). Other high risk characteristics for children include living (i) in large households (39 percent in households with more than nine members) and (ii) in households with an elderly head (also 39 percent). Children living in female-headed households are somewhat more at risk (34 percent in comparison to 32 percent for male-headed households).

Children deprived only in terms of money are more likely to live in Brazzaville, live in large households and/or female-headed households and be in the age group 6-11 years. Conversely, children deprived in education only are more likely to be characterised by: residency in Point Noire, living in small households and being in the 15-17 year age group.

**Table 8. Types of deprivation in children's education**

	No. of obs	incidence (row percentages)				
		Average (AB+B)	AB		B	
Type of deprivation in education						
Does not go to school	565	12.8	13.9		10.9	
Slow progress	3,612	87.2	86.1		89.1	
Total	4,177	100.0	100.0		100.0	
By age and gender						
Does not go to school						
6-11	33	4.9	6.1	3.6	4.3	5.5
12-14	62	7.8	7.9	8.8	7.1	6.9
15-17	168	24.6	26.9	29.6	16.8	21.6
Slow progress						
6-11	661	95.1	93.9	96.4	95.7	94.5
12-14	586	92.2	92.1	91.2	92.9	93.1
15-17	587	75.4	73.1	70.4	83.2	78.4

Note: AB=deprived in money and education; A= deprived in money only; B= deprived in education only. Includes only children in the age group 6-17 yrs deprived in education: AB + B = 100%.

Source: Estimates based on ECOM (2005).

As we use two complementary thresholds for defining deprivation in education (not going to school, school progress too slow) it is important to examine closer the type of deprivations children suffer. At the same time, we want to find out whether there are differences in deprivation between gender and age groups. The results are summarised in Table 8. The first observation is that deprivation in education is particularly associated with slow progress in the educational system, given the child's age. Given our definition of slow progress (lagging more than 2 years behind, given the normal level for children of this age), this type of deprivation can be explained by the need to repeat several grades or late enrolment in primary education. Unfortunately, we cannot distinguish between the two difficulties. The table further shows that there are differences in deprivation across age groups and gender: non-attendance seems more prevalent with girls in the age group 15-17 while slow progress is more associated with age groups 6-11 and 12-14. It also appears that boys aged 6-11 are more at risk of slow progress than girls.

**Table 9. Problem analysis**

	No. of obs	Incidence (column percentages)			
		AB	A	B	PAB
Payment of non-regulatory school fees					
Yes	8,001	14.7	16.7	12.7	13.0
Insufficiencies of school (more than one affirmative answer possible)					
Satisfied	6,869	21.6	26.9	24.8	36.0
Lack of books	6,869	50.2	47.4	48.2	42.4
Mediocre teachers	6,869	15.2	12.9	12.2	11.0
Lack of teachers	6,869	38.9	30.5	27.2	20.4
Building in bad shape	6,869	26.5	21.5	15.8	13.2
Teachers are often absent	6,869	17.0	16.0	17.4	13.8
Classes too large	6,869	24.0	26.1	29.3	22.6
Reason for not going to school (more than one affirmative answer possible)					
Too young	748	26.8	-	30.9	-
Too old/has finished school	582	9.3	-	12.7	-
Too far	573	1.5	-	3.2	-
Lack of means/too expensive	785	63.9	-	52.5	-
Works	569	4.3	-	2.8	-
Useless/no interest	668	38.9	-	35.4	-
Illness/pregnancy	615	19.7	-	20.8	-
Failed exam	570	9.0	-	11.3	-
Is married	568	0.3	-	1.1	-
Other reason	609	19.5	-	24.6	-
Walking distance to primary school					
More than 30 minutes	8,008	11.7	7.4	5.7	4.8
Distance to secondary school					
More than 30 minutes	8,008	43.1	32.3	27.3	19.3

Note: AB=deprived in money and education; A=deprived only in money; B=deprived in education only; PAB=deprived (neither money nor education). Only includes children in the age group 6-17 yrs:  
 $AB + A + B + PAB = 100\%$ .

Source: Estimates based on ECOM (2005).

Next, we analyse in more detail the perceptions of parents, motivation and distance to school facilities, based on the available ECOM data (Table 10). The first observation is that the general perception of parents regarding their children's school is bad. For instance, 42 percent of the parents of non-deprived children (PAB) confirm that the lack of books is a problem. This percentage is even higher for the other three groups. The lack of teachers and class sizes too large are also mentioned often. The decomposition also shows that deprived groups in either or both dimensions have more complaints and are less likely to be satisfied. Complaints are most common among those parents whose children are deprived simultaneously in money and education. In general, the parents' perceptions suggest that there are considerable problems in the supply of quality education.

Children not attending school (among the groups AB & B) were asked the reason for non-enrolment, and the most common answer is that school was too expensive/or that there were no (financial) means available (AB=64 percent and B=53 percent). This suggests that the cost of education is one of the problems playing a role on the demand side for education. Note also that groups AB and A are somewhat more likely to report that they paid non-regulatory school fees. However, other factors point more to social or cultural reasons for non-enrolment (i.e., being too young or too old). Finally, the

**Table 10. Children and work (aged 10-17) – type of deprivations**

Type of deprivation:	Aged 10-14			Aged 15-17 & active in labour market		
	No. of obs	Incidence (column percentages)		No. of obs	Incidence (column percentages)	
		3,410	C		PC	502
<b>Work deprived</b>						
Not deprived	3,273	0	100.0	299	0	100.0
Child labour	137	100.0	0	-	-	-
Unemployed	-	-	-	180	81.6	0
Underemployed	-	-	-	24	18.4	0
		100.0	100.0		100.0	100.0
<b>Education deprived</b>						
Not deprived	1,584	18.7	47.9	41	8.1	6.0
Does not go to school	160	10.6	3.7	237	52.8	36.8
Slow progress	1,666	70.7	48.4	225	39.1	57.2
					100.0	100.0
<b>Deprived in money</b>						
Not deprived	1,572	29.7	45.6	198	40.7	38.5
Deprived	1,838	70.3	54.4	305	59.3	61.5
		100.0	100.0		100.0	100.0

Notes: C=deprived in work; PC=not deprived in work (C + PC = 100%). A child aged 10-14 yrs is deprived when he/she works outside the household in a remunerated job. A child aged 15-17 is deprived when he/she wants to work (more) but cannot (i.e., is either unemployed or underemployed). 27.2 % of all children in the age group 15 to 17 are active in the labour market.

Source: Estimates based on ECOM (2005).

response indicating the uselessness of schooling or lack of interest (AB=39 percent and B=35 percent) point to problems on both demand and supply sides of education (be it the skills needed for the labour market, the difficulty of finding a job at all or simply low value that is attributed to schooling). The distance to primary or secondary school is seldom given as an explanation of non-attendance, despite the fact that deprived groups are more likely to live further away from school than the non-deprived group. Thus, it seems that the problem is more of inadequately staffed and equipped schools than the case of too few schools (in rural areas).

### **5.1 Children (age group 10-14) and deprivation in money, education and work**

The poverty profile (not shown here) for children deprived in work, i.e., child labour, indicates that deprivation in this dimension is essentially a rural phenomenon: 12 percent of rural versus 0.7 percent of urban children (Notten, Makosso and Mpoue 2007). Girls (6 percent) are somewhat more likely to be involved in child labour than boys (5 percent). Interestingly, children living in female-headed households (3 percent) are less likely to be deprived in labour than those in male-headed households (6 percent). Table 10 further confirms that children deprived in labour are at much greater risk of also being deprived in education (81 percent) and in monetary terms (70 percent). Moreover, the problem analysis for deprived children in Table 11 shows that parents' perceptions about their children's schools are not only much more negative in comparison to the non-deprived but also more serious than those mentioned by parents of children in group AB (Table 8). As most of these children live in rural areas, these scores are also indicative of considerable inequalities between the quality of rural and urban schools.

### **5.2 Children (age group 15-17 and active on the labour market) and deprivation in money, education and work**

Children in this age group are legally allowed to work, therefore deprivation in work for this group means that the child is unemployed or underemployed. The profile of children in this group (not shown here) suggests that work deprivation is more of a problem in the urban than rural areas. This is in line with the poverty profile of the adult working population (Table A1 in the Appendix). Furthermore, girls have a higher risk of being deprived in terms of work. The last two columns of Table 10 show that 82 percent of the children in this group are deprived because they are unemployed (versus only 18 percent of underemployed). The education deprivation rates of the work deprived (C=92 percent) and non-work deprived (P=94 percent) of children who are active in the labour market are much higher than those reported for all youngsters aged 15-17 years (79 percent). A similar comment can be made for monetary deprivation (60 percent for group C and 61 percent for group P). This analysis suggests that members of this age group who are active in the labour market may not be in violation with the rights of children in a narrow sense (Labour Convention of the ILO) but that it is strongly associated with deprivation in other dimensions, including education.

**Table 11. Children and work (aged 10-17), problem analysis**

	Age 10-14		Age 15-17 & active in labour market			Age 15-17
	No. of obs	Incidence (column %)	No. of obs	Incidence (column %)	Incidence (column %)	
	3,410	C P	502	C P	All	
Payment of non-regulatory school fees						
Yes	3,406	14.6 18.0	502	12.1 14.7	14.5	
Insufficiencies of school (more than one affirmative answer possible)						
Satisfied	3,114	18.2 28.0	190	17.3 8.6	23.4	
Lack of books	3,114	71.8 45.9	190	44.6 66.5	49.6	
Mediocre teachers	3,114	14.2 13.0	190	15.1 27.7	12.4	
Lack of teachers	3,114	57.5 28.7	190	22.7 43.9	28.4	
Buildings in bad condition	3,114	29.2 19.5	190	17.1 22.5	18.3	
Teachers often absent	3,114	26.1 14.8	190	14.8 22.2	18.1	
Classes too large	3,114	22.4 25.0	190	28.5 23.3	28.2	
Reason for non-attendance (more than one affirmative answer possible)						
Too young	162	0.0 2.8	237	0 0	0	
Too old/has finished school	169	9.3 9.7	243	11.3 17.4	11.0	
Too far	160	6.5 1.2	238	2.4 1.5	1.2	
Lack of means/too expensive	220	89.6 67.3	277	50.5 44.5	44.8	
Works	162	7.6 0.2	237	1.1 14.2	5.1	
Useless/no interest	203	47.2 41.8	270	38.2 34.1	36.0	
Illness pregnancy	185	11.9 25.6	239	11.4 7.1	14.6	
Failed exam	161	5.0 5.1	240	14.9 7.7	12.1	
Is married	160	0 0	238	0.2 1.5	0.8	
Other reason	174	17.9 9.5	242	7.5 33.0	19.7	
Walking distance to primary school						
More than 30 minutes	3,410	12.9 7.6	503	5.4 13.8	6.9	
Distance to secondary school						
More than 30 minutes	3,410	68.7 29.3	503	27.2 50.0	28.9	

Notes: C=deprived in work; PC= not deprived in work (C + PC = 100%). A child aged 10-14 is deprived when he/she works outside the household in a remunerated job. A child aged 15-17 is deprived when he/she wants to work (more) but cannot (i.e., is either unemployed or underemployed). 27.2 % of all children in the age group 15 to 17 are active in the labour market.

Source: Estimates based on ECOM (2005).

In conclusion, the above analysis shows that one-third of all Congolese children aged 6-17 years are deprived simultaneously in money and education. Clearly, this is more than a negligible group. Furthermore, the principal deprivation – education – arises because children progress too slowly through the system. This, in combination with the analysis of parents' perceptions about the inadequacy of their children's school, suggests that serious problems exist in the provision of quality education, effectively limiting access to this basic service. This finding is in line with other studies on the

education sector in Congo (RESEN 2007). At the same time, school dropout may be indirectly related to these supply side problems, as poor quality increases the opportunity costs of education. Nevertheless, we find that school dropout is also associated with the actual costs of schooling or the lack of resources at the household level. This indicates that monetary factors are one reason for reduced demand. Finally, there are some clues that demand may also be lower for more social or cultural reasons. These findings suggest that a successful implementation of the PRSP would also necessitate intervention on the demand side for education, in addition to the supply side actions currently planned for the Republic of Congo's agenda.

Further, the three-dimensional analysis has identified two groups with specific problems that may be better addressed through more carefully targeted policy initiatives. The analysis suggests that child labour is still a moderately relevant issue in rural areas while adolescent labour market participation is associated with school dropouts and/or financial strain.

## **6 Conclusion**

In this study we show that a multidimensional approach to poverty does not have to be used only for summarising poverty in a single index or for comparing deprivation rates between dimensions. We argue and illustrate that such an approach – by studying the prevalence of multiple deprivations at an individual level – can additionally contribute to a better understanding of the potential linkages between dimensions. In essence, our method consists of the application and extension of the descriptive tools typically used in a standard poverty analysis to a multidimensional poverty analysis. We have illustrated this approach by taking the Republic of Congo as a case study. More precisely, this study investigated what the prevalent patterns of simultaneous deprivation are in Congo and how these patterns differ between men, women and children. We selected a specific population group and a specific combination of poverty dimensions for further study in order to determine how the characteristics and perceptions of multiple deprived individuals differ from those of the single deprived or non-deprived.

To examine these questions, we first analysed deprivation by dimension and for specific population groups (men, women and children). We noted that although deprivation rates are high across all dimensions in Congo, women and children are more likely to be deprived than men in most dimensions. In line with the high deprivation rates across dimensions, we discovered that many Congolese suffer concurrently from double deprivations but that women and children are more likely to be double deprived than men. We further compared the risk profiles across dimensions and found that a high deprivation or poverty risk in one dimension does not necessarily imply a high deprivation risk in another. These findings indicate that various population groups have different probabilities of suffering from multiple deprivations and that other high risk characteristics may also vary across dimensions and population groups. On the basis of

our bi-dimensional analysis, we subsequently selected for further analysis one group of Congolese appearing to suffer from a non-random combination of deprivations. We studied the profile of children (aged between 6-17 years) for monetary and education dimensions because children are more than proportionally represented in the double and non-deprived categories versus single deprived categories, suggesting that deprivation in education is not fully orthogonal to monetary poverty. For this group of children we expanded the scope of multiple deprivation analysis to a third dimension: work. Here we observed that children who are involved in remunerated labour or are seeking work are generally also more likely to be deprived in monetary and/or education terms (again, deprivation in work, education and money are not orthogonal). More generally, the analysis highlights that it is not the overlap *per se* that is relevant in the study of overlapping deprivations, but rather any seemingly non-random deviations in the distribution of multiple deprivations.

For a better understanding of the potential relationships driving deprivation in these dimensions in Congo, we studied the profile for these groups (household and individual characteristics) and analysed the supplementary information available in education data (notably, perceptions of parents and reasons reported for not attending school). The results indicated that some characteristics are associated with a high risk of double deprivation while certain other characteristics are more common with single or non-deprived children. The analysis further suggested that deprivation in education is associated with both the lack of demand for education (financial considerations being an important factor here) and the overall low quality of education services. Reported incidences of problems related to school quality are high for all groups, including non-deprived children, but its prevalence is higher for single deprived and the highest for double deprived children. Finally, the profiles of young children (aged 10-14) involved in child labour and adolescents (15-17) active in the labour market indicate that more targeted policy initiatives may be required for certain groups in order to reduce deprivation in education and money. A comparison of the differences in characteristics and perceptions between the various deprived groups – multiple deprived, single and non-deprived – thus gives insights into factors that possibly contribute to deprivation in a particular dimension but also provides clues about potential policy responses and target groups.

The focus on simultaneity creates both advantages and disadvantages. A disadvantage is that the data for measuring wellbeing in these dimensions should be derived from the same data source, which may restrict the indicators to be selected and the dimensions to be analysed. We selected a household budget survey (ECOM 2005) that collects information also on non-monetary living conditions of households and their members. This allowed us to compare the traditional monetary dimension to other wellbeing dimensions, but at the cost of not being able to utilise the richer statistics on health and nutrition in Congo available in the Demographic and Health Survey (EDS 2005).

Nevertheless, household budget surveys in developing countries increasingly include living standard components and our approach illustrates how to make better use of the available information. The key advantage of our approach is that it enables us to evaluate the degree to which individuals suffer from multiple deprivations at the same time, monetary poverty included. These figures are very relevant and powerful from an advocacy and a policy perspective, simply because double or triple deprivations highlights its urgency, particularly when a considerably large population group is involved. In addition, in a country where deprivation is high in nearly every dimension, simultaneity in deprivation may be a way to identify and target the most vulnerable groups.

Furthermore, the comparison of the characteristics of multiple deprived groups with those of the single or non-deprived groups stimulates debate on the linkages between dimensions of wellbeing and policymaking within the corresponding policy sectors. To illustrate, our analysis of deprivation in education and money for 6-17-year old children identifies problems relating to both the demand and the supply side of schooling. Thus, it makes sense that an improvement in children's education needs interventions in both. Obviously, the supply-side problem will be addressed mainly through policy interventions, but demand-side issues could be resolved in a variety of ways that are not necessarily restricted to education sector interventions. For instance, financial constraints on the demand side could be tackled by reducing the private costs of education (abolishment of tuition fees; provision of sufficient school books, i.e., an education policy) but alternatively, a child cash-transfer programme could be developed to support families with school-aged children (a social protection policy). If economic and cultural factors impede the demand for education, a conditional cash transfer may be an interesting option.<sup>16</sup> This is not to say that all of these options would be equally effective or, alternatively, that a number of demand-side interventions could not be combined (see Notten and Buligescu 2008 for a simulation of the costs and benefits of child benefits vis-à-vis a free education package). What is important here is that this approach to studying multi-dimensional poverty stimulates thinking beyond the specific sector policy borders in cases where deprivation in one dimension is related to deprivation in another. At the same time, it also promotes taking into account the potential benefits of a policy in one dimension at the risk of deprivation in another; the child benefit programme may have a relatively small impact on reducing child deprivation in education, but at the same time its effect on reducing monetary child poverty may be substantial. Finally, the profile-and-problem analysis allows the identification of groups possibly in need of more targeted policy attention.

Further research is required to determine whether the descriptive tools typically utilised in traditional monetary poverty analysis remain effective when applied to the study of

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<sup>16</sup> Although Congo's supply-side problem would not make this option encouraging.



simultaneous deprivations. For instance, poverty profiles are popular because they are relatively easy to understand (making them an important tool for the politics of policymaking). However, when studying two dimensions at the same time, a poverty profile requires analysing four benchmark groups (double/single/none) as opposed to two (poor/nonpoor). Studying simultaneity in deprivations across dimensions, also for policy purposes such as identification and prioritisation, requires the use of more sophisticated multivariate techniques and tools.

## Bibliography

CNSEE (2006). 'Enquête Congolaise auprès des ménages pour l'évaluation de la pauvreté' ('Congolese household survey for the evaluation of poverty'), Profile de la pauvreté au Congo en 2005 (Poverty profile in Congo in 2005). Brazzaville: Ministère du Plan, de l'Aménagement du Territoire et de l'Intégration Economique, Centre National de la Statistique et des Etudes Economiques. April.

Comité National de Lutte contre la Pauvreté (March 2008). 'Document final de strategie de reduction de la pauvrete' ('Final poverty reduction strategy Paper'.) Brazzaville: Secretariat Technique Permanent. March.

ECOM (2005). 'Enquête Congolaise auprès des ménages' ('Congolese household survey'). Brazzaville: Centre National de la Statistique et des Études Économique.CD-rom.

EDS (2006). 'Enquête démographique et de sante (EDSC-I) 2005' ('Demographic and Health Survey'). Brazzaville: Centre National de la Statistique et des Etudes Economiques. July.

Gordon, D., Nandy, S., Pantazis, C., Pemberton, S. and Townsend, P. (2003a). 'The distribution of child poverty in the developing world'. Bristol: Centre for International Poverty Research, University of Bristol.

Gordon, D., Nandy, S., Pantazis, C., Pemberton, S. and Townsend, P. (2003b). 'Child poverty in the developing world'. Studies in Poverty, Inequality and Social Exclusion. Bristol: Policy Press.

IMF (2007). 'Republic of Congo: Statistical Appendix'. IMF Country Report No. 07/207, Washington, DC: International Monetary Fund.

Notten, G. and Buligescu, B. (2008). 'Policy options to reduce child poverty and improve access to education and health care in the Republic of Congo: cost and impact simulations'. Brazzaville: UNICEF.

Notten, G., Makosso, B. and Mpoue, A. (2007). 'La pauvreté multidimensionnelle des enfants et des femmes en République du Congo' ('Multidimensional poverty of children and women in the Republic of Congo'). Brazzaville: UNICEF.

RESEN (2007). 'Le système éducatif Congolais' ('The Congolese education system'). Report by the Coopération Française and the World Bank. Brazzaville. January.

Roelen, K. and Gassmann, F. (2008). 'Measuring child poverty and well-being: a literature review'. MGSOG Working Paper, WP001. Maastricht: Maastricht Graduate School of Governance.

Townsend, P. (1979). *Poverty in the United Kingdom: A Survey of Household Resources and Standards of Living*. London: Penguin Books.

UNDP (2005). 'Rapport national sur les objectifs du millenaire pour le développement' ('National report on the millennium development objectives'). Brazzaville: UNDP.

## Appendix

**Table A1. Poverty profile for each dimension**

	Population share 100 (column %)	Incidence of poverty (line %)							
		Money	Education	Nutrition	Health	Work	Water and sanitation	Housing	Integration
Total		50.1	37.9	42.9	44.5 <sup>1</sup>	21.0	67.5	58.7	32.1
Settlement area									
Rural	41.6	58.0	51.2	50.9	46.3	15.5	93.3	93.7	43.2
Urban	58.4	44.6	28.9	37.2	42.8	25.0	49.2	33.7	24.3
Strata									
Brazzaville	29.0	53.3	26.5	42.6	40.7	26.1	43.2	11.6	26.8
Pointe Noire	23.5	32.1	29.1	29.6	44.6	26.2	52.2	48.5	19.2
Other urban communities	5.9	51.2	40.1	41.0	46.5	14.3	66.7	83.5	32.1
Semi-urban	7.0	59.5	46.9	54.3	40.5	12.7	92.1	89.0	47.5
Rural	34.6	57.7	52.1	50.2	47.3	16.0	93.5	94.7	42.3
Household size									
1-3 persons	13.4	25.8	39.2	41.1	44.7	19.1	69.1	61.2	43.6
4-6 persons	39.5	45.2	37.1	43.4	45.4	19.9	71.3	61.5	34.4
7-9 persons	31.4	58.2	39.0	42.7	42.2	20.7	65.7	55.6	28.9
> 9 persons	15.7	67.3	36.6	43.7	46.8	26.5	60.6	55.7	23.2
Household type									
Adults and/or elderly	9.0	30.3	38.5	42.6	46.3	26.6	66.6	55.8	34.3
Single caretaker	4.7	48.6	49.1	57.0	47.9	13.1	75.2	70.2	70.4
Children and 2 adults	29.3	43.4	33.6	39.7	46.3	16.3	70.8	62.5	33.3
Children and >2 adults	28.1	52.3	31.8	37.4	43.2	22.0	66.4	55.1	23.3
Triple generations	28.1	61.4	44.9	49.5	42.1	24.7	63.9	56.6	32.4
Other types	0.7	61.0	69.5	43.6	55.4	17.4	83.4	90.5	48.3
Gender head of household									
Male	80.0	48.9	37.0	40.6	44.1	20.6	68.0	58.8	26.9
Female	20.0	55.0	41.4	52.1	46.0	22.8	65.8	58.3	53.2
Age head of household									
< 35 years	18.3	43.1	32.9	38.0	43.4	22.0	74.0	65.2	37.6
35-45 years	30.8	46.4	32.4	39.4	45.7	17.4	68.8	60.5	30.7
46-54 years	22.0	49.6	35.4	40.2	45.7	19.1	64.9	52.3	26.3
55 and above	29.0	59.0	47.6	51.7	43.2	27.4	64.1	57.4	34.6

Note: <sup>1</sup> Includes only 38 percent of the individuals in the sample (those who have been ill in the four weeks prior to the survey).

Source: Estimates based on ECOM (2005).

**Appendix Table A2. Percent of adults simultaneously deprived in two dimensions**

	Money	Education	Nutrition	Health	Work	Water & sanitation	Housing
Panel A: Women <sup>1</sup>							
Money	-						
Education	19	-					
Nutrition	25	19	-				
Health	24	21	24	-			
Work	13	5	13	13	-		
Water and sanitation	35	28	32	32	17	-	
Housing	31	27	29	29	13	49	-
Integration	21	17	19	18	9	28	25
Panel B: Men <sup>2</sup>							
Money	-						
Education	11	-					
Nutrition	22	11	-				
Health	23	13	24	-			
Work	12	4	11	13	-		
Water and sanitation	33	16	29	32	15	-	
Housing	28	14	25	29	12	46	-
Integration	16	8	14	16	7	21	20

Notes: <sup>1</sup> All adult women (weighted) except for the dimension work (includes only women aged 18-54 yrs);

<sup>2</sup> All adult men (weighted) except for the dimension work (includes only aged 18-54 yrs).

Source: Estimates based on ECOM (2005).



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