Deprivations in the physical environment and financial poverty; is poverty a poor proxy for deprivation?

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Abstract:

The multidimensional nature of poverty has long been acknowledged; even persons with sufficient financial resources may be unable to achieve satisfactory levels of well-being in other dimensions. However, traditional financial poverty analyses still play a predominant role in the formulation of poverty reduction strategies. In this paper we analyze the consequences of using financial poverty as a proxy for deprivation in the physical environment of children in the Republic of Congo by studying the degree of overlap between these dimensions. Our results indicate that incidence rates of poverty and deprivation differ substantially in magnitude; that high risk poverty characteristics do not necessarily correspond to high risk deprivation characteristics; and that the relation between poverty and deprivation in the physical environment is positive but not very strong. We conclude that using financial poverty indicators seems to be a blunt tool to identify vulnerable groups in the physical environment dimensions.

Keywords: financial poverty, deprivation, water and sanitation, housing, integration, Republic of Congo

1. Introduction[1]

The multidimensional nature of poverty has long been acknowledged by scholars from various disciplines (Bourguignon, 2003); even persons with sufficient financial resources may be unable to achieve satisfactory levels of well-being in other dimensions. Taking a traditional economic perspective, this may arise because the markets for goods needed to satisfy such needs are non existent or functioning poorly, because governments are unable to correct for such market failures or because government distorts the functioning of markets in the first place. As a result, certain goods and services are not supplied, rationed or only available at a very high price. Examples of goods and services that are prone to market and/or government failure are housing, health and education, water and sanitation, infrastructure and telecommunication. Alternatively, the argument of human rights, basic needs and capability approaches is that well being is a multidimensional concept *per se* and that each dimension constitutes an intrinsically important component to overall human well being.

In practise, however, traditional financial poverty analysis still plays a predominant role in the formulation of poverty reduction strategies both in developed and developing countries. Poverty statistics typically provide information about the scope and depth of poverty, its trend over time as well as the characteristics of persons that have a higher/lower poverty risk (i.e. a poverty profile). As such they are an important component for the identification of a problem, the setting of priorities and the identification of potential target groups. Moreover, poverty statistics may also feature as results-based indicators that are used to formulate explicit (poverty reduction) targets and / or to evaluate the success of future policies. However, the emphasis on financial poverty statistics may not be as problematic as it seems if financial poverty considerably overlaps with deprivation in other dimensions of well being. When a person who is poor in a financial sense is also considerably more likely to be poor in another dimension, financial poverty statistics may in many cases correctly identify people suffering from non-monetary deprivations as well. It is important here to understand that in practise identifying vulnerable groups is not an easy task; it requires considerable resources and skills while asymmetric information problems between researchers / policy makers and potential target groups prevent perfect identification, even when resources are unlimited (Notten and Gassmann, 2008). Under such conditions, financial poverty statistics may actually be a relatively efficient and effective tool to identify ill being in a range of dimensions. The above argument distinguishes between the use of financial poverty statistics as a tool to identify vulnerable groups and the actual development of policy responses that address the problems that these groups are facing.

But to what degree does monetary poverty actually overlap with deprivation in other dimensions? In this paper we focus on the overlap between financial poverty and deprivation in the physical environment of children in the Republic of Congo. We divide the physical environment in three components or dimensions: housing, water and sanitation, and integration. This set of dimensions is interesting because well being in

these dimensions is likely to be influenced by monetary and non-monetary conditions. It is therefore a priori not clear to what extent deprivation in the physical environment overlaps with financial poverty. Further, even though most welfare indicators in these dimensions are measured at the household level, we focus on children for a number of reasons. Firstly, in most countries children are a high risk poverty group in the sense that children are more likely to live in financially poor households. Secondly, the strong linkages between the current well being of children and their future well being as (working, tax paying and voting) adults are of particular importance to policy makers. Thirdly, since the status of deprivation is beyond the control of the child, this may provide an additional rationale for public intervention.

Thus, our aim is to investigate to what extent financial poverty can be used as proxy for deprivation in the three dimensions regarding the physical environment of children in the Republic of Congo. We hereby investigate two types of overlap. We firstly look at the degree to which high poverty risk characteristics correspond to high risk characteristics of deprivation in the physical environment. Secondly, we analyze to what extent financially poor children are simultaneously deprived in the physical environment dimensions. This paper is structured as follows; section 2 sets out our conceptual framework, the selection and definition of the used welfare indicators and the poverty and deprivation thresholds. Section 3 presents the poverty and deprivation rates as well as the one-dimensional poverty and deprivation profiles. The degree of overlap is studied in section 4 and section 5 concludes.

2. Concepts, definitions and data

Studying simultaneity in deprivations requires 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 that was collected in 2005 (ECOM); it is the most recent dataset available in the Republic of Congo and the only one that simultaneously provides information about households' monetary situation and its living conditions. Taking note of this data constraint, we now set out our conceptual framework and explain how we measure financial poverty and deprivation in the selected dimensions representing the physical environment of children.

We follow the traditional approach to measuring financial poverty in developing countries; the availability of financial resources to the household is approximated by using household consumption as a welfare indicator. Household consumption is measured on the basis of household's actual expenditures, the value of home produced consumption (valued at local market prices) and the imputed value of housing. In order to compensate for differences in household size and nutritional requirements of household members, household's expenditures are subsequently expressed in adult equivalent expenditures using the equivalence scales of the Food and Agriculture Organization (FAO). A household, and all of its individual members, is 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).

Our concept of deprivation in the physical environment dimensions is based on having insufficient access to adequate resources and services that are needed to achieve a basic level of well being in each respective dimension. We hereby largely follow the deprivation approach as set out by Townsend (1979) and, for children, Gordon *et al* (2003a; 2003b). A household, and all its members, are considered deprived in a particular dimension when at least one of their attributes in that dimension substantially deviates from what is considered to be adequate in the Republic of Congo. The standards of adequacy have been set on the basis of discussions with local researchers, the UNICEF Brazzaville country office and have been validated in participatory discussions with representatives from the government and non governmental organizations (Notten *et al*, 2007).Our approach to defining deprivation is in line with Townsend's deprivation approach in the sense that indicators of deprivation should conform to broadly shared standards of inadequacy in a given society. It deviates however somewhat from the approach followed by Gordon *et* al in their comparative study on child poverty in developing countries; in this study, the selection of deprivation indicators is more stringent because the authors used severe deprivation standards which would even be broadly shared within the poorest countries in the study (2003a; 2003b). We now discuss which deprivation indicators we use in each dimension. Table A1 in the appendix provides the summary statistics for all attributes of the categorical welfare indicators.

In the dimension water and sanitation we use the following variables to determine whether a household and its individuals are deprived or not: distance to nearest source of drinking water, type of water source, type of toilet and the mode of evacuation of waste water. We first established the characteristics of a non-deprived individual; in water and sanitation a non deprived Congolese benchmark household obtains water from the national water company (SNDE) or from a hydrant/pump, this source of water is available in the house or within a 5 minute walk, has a modern toilet or a covered latrine, and waste water is evacuated to a sewage system or collected in sewage pits or a hole. A household is deprived when one or more of the following characteristics apply: its principal source of drinking water comes from a well, rain tank or river, the distance to this source requires more than a 5 minute walk, there is no toilet or the toilet is an uncovered latrine, and used water is evacuated directly in the courtyard / outside the premises.[2] [3]

In the dimension housing we included the material of the walls and floors of the house, which combustible was used for cooking and the number of persons per room as welfare indicators. A non deprived individual has the following housing characteristics:[4] brick (baked or mud) / cement walls, cement/brick/stone floor, cooks on gas / electricity / petroleum / charcoal, and has less than 3 persons per room. A housing deprived household has at least one of the following characteristics: walls made from dirt / wood / other material, floor made of mud / wood / other material, wood as cooking combustible, and more than 3 persons per room.[5] [6]

As for the dimension integration; we originally intended use the concept of social inclusion i.e. the degree to which a person is participating in society but unfortunately the ECOM does not have indicators for this dimension. Instead we defined the conceptual dimension of integration in which we want to capture a persons' ability to be in contact with others and to gather information. As indicators for inclusion we included a range of assets that can be used as a means of transport or a means of communication. We also included the walking distance to public transport as an indicator. The reference household owns at least one means of communication and one means of transport / or is no less than 30 minutes walking from public transport. If this is not the case, a household is considered deprived. [7]

3. Incidence of deprivation and deprivation profiles

A first insight into the degree of (cross-sectional) overlap between financial poverty and deprivation in the physical environment in Congo can be obtained from Figure 1, which displays the poverty and deprivation rates for the entire population and for children and adults separately. Clearly, the 2005 deprivation levels are high across all dimensions: about half of the Congolese is financially poor, 71% is deprived in terms of water and sanitation, 58% is deprived in terms of housing while 33% of the Congolese are deprived in terms of their access to means of transport and communication (integration). Nevertheless, the magnitude of deprivation still differs considerably in magnitude; even in comparison to financial poverty the situation in the water and sanitation dimensions is particularly dire in the Republic of Congo. The data further show that children are more at risk in the sense that they are more likely to live in poor or deprived households. Even though children comprise about 45% of the total population (and thus have a large influence on the average) child deprivation rates are about two to three percentage points above average deprivation rates in each dimension. As a proxy for the magnitude of deprivation, the financial poverty rate would considerably overestimate the degree of deprivation in terms of integration while it would considerably underestimates the magnitude of deprivation in water and sanitation. Deprivation rates in housing are somewhat higher than financial poverty rates.

[Insert Figure 1 here]

In addition to overall incidence rates which provide information about the magnitude of poverty or deprivation, so-called poverty profiles are also a popular descriptive tool in poverty analyses. A poverty profile consists of the calculation of incidence rates for different socio-demographic decompositions of the total population. The incidence rates for adults and children as displayed in Figure 1 represent such decomposition. When a particular characteristic has a considerably higher poverty rate, it can be said that people with this characteristic have a high(er) poverty risk. Table 1 compares the child poverty and deprivation profiles for characteristics such as settlement area, household size, household composition as well as the gender and age of the head of the household. Comparison of these profiles represents another test for the appropriateness of using

financial poverty statistics as a proxy for deprivation in other dimensions; ideally the high poverty risk characteristics should be similar across dimensions.

The first two decompositions indicate to what extent there is dispersion in poverty incidence across rural and urban settlement areas and regions. It can be seen that the geographical disparities in poverty and deprivation rates are very high across all dimensions; deprivation rates in rural areas are 30 to more than 50 % higher than those in urban areas. Note however that the poverty risk between the two major urban areas (Brazzaville and Pointe Noire) also differs: children in Brazzaville tend to have a higher monetary poverty risk and a higher integration deprivation risk as children in Pointe Noire. However, the reverse is true for the housing and water and sanitation dimensions. As for the other geographic regions, the poverty and deprivation risk increases when moving from other urban communities to semi-urban to rural communities. These differences between incidence rates are not only significant from a statistical perspective (see Table 1) but they are also sufficiently large to matter from a political perspective.

[Insert Table 1 here]

Further comparison of the profiles shows that decompositions according to household size and type do not yield statistically significant differences in incidence rates in the water and sanitation dimension. This also is the case for household size and deprivation in housing. Interestingly, for the money and integration dimensions differences in household size and type are associated with differences in poverty risk. But while the monetary poverty risk rises with the size of the household, the integration deprivation risk decreases for larger households. In terms of household types (we exclude the 'other types' category as it only comprises 0.7% of all households with children), single caretakers have an increased risk of deprivation in housing and water and sanitation while triple generation households are clearly the highest risk group in terms of financial poverty.

As for the characteristics of the head of the household, children living in female headed households are more likely to be deprived in financial terms and in terms of integration. The differences in incidence for housing and water and sanitation are not significant or only are a 10% level. Children living in households with young heads of households are more likely to be deprived in all physical environment dimensions. In terms of monetary poverty while those living with heads above pensionable age are more likely to live in monetary poverty.

One concern that arises from analyzing these poverty profiles is that the large differences observed between geographical decompositions also drive the differences found in other decompositions. In that case, geography would be a key factor in the identification of vulnerable groups across all physical environment dimensions in the Republic of Congo. We therefore checked to what extent these high risk characteristics remain significant in a multivariate analysis. The results show that in most cases the other high poverty risk characteristics remain statistically significant after controlling for geographical dispersion but in some cases the relation is weaker or changes in sign (the results are reported in table A2).

Overall, these findings suggest that financial poverty statistics may differ substantially from deprivation rates in the physical environment dimensions. And even though we find that for some characteristics the high poverty risk characteristics correspond across all dimensions (notably the geographical variables) this is certainly not the case for all profile characteristics; while some groups are more at risk of poverty or deprivation in one dimension they may well have a low risk in another dimension. A high monetary poverty risk does thus not necessarily mean a higher risk of deprivation in the physical environment dimensions.

4. Simultaneity in deprivation

Thus far we concentrated on the comparison of some statistics frequently used in financial poverty analyses. We now take the analysis one step further and analyze to what extent financial poverty coincides with other types of deprivation *at an individual level*. Let us start with simply counting the number of deprivations that Congolese children suffer from (Figure 2). Given the high deprivation rates in each dimension, it is not a surprise that many children are simultaneously deprived in one or more dimensions. The numbers are nevertheless shocking; more than 90% of the children are at least deprived in one of the four dimension of well being while more than 70% of the children suffer from two or more deprivations at the same time. 17% of the children are deprived in all four dimensions. Clearly, child deprivation levels in the Republic of Congo extend beyond the already large magnitude of financial poverty

[Insert Figure 2 here]

Taking a bi-dimensional perspective we can see considerably high percentages of children living in financially poor households and simultaneously suffering from deprivation in their physical environment; from 42% for water and sanitation to over one third for housing and a quarter for integration (Table 2). Notwithstanding, for a considerable number of children financial poverty does not overlap with deprivation in their physical environment; nearly 31% of the non poor children are deprived in terms of water and sanitation while 12% of the monetary poor children in not deprived in terms of water and sanitation.

[Insert Table 2 here]

However, this definition of overlap may not be appropriate to answer our research question. Given the high rates of deprivation across dimensions, we would always expect some overlap between poverty and deprivation; even if monetary poverty and deprivation in the physical environment would not be related in any way. Since we are interested in non-random overlap (to what degree financial poverty can be used as a proxy for deprivation in other dimensions) we need a more specific assessment of overlap. Table 2 below uses odds ratios to indicate to what extent the overlap between the statuses of well being in two dimensions is larger / smaller than the overlap that could be expected if poverty and deprivation would be completely unrelated. An odds ratio above 1 indicates

that a particular combination of deprivations is disproportionately more likely to occur while the reverse holds for an odds ratio below 1. A value of 2, for instance, would mean that this combination of statuses is two times more likely to occur than one would expect on the basis of a random distribution. The patterns of odds ratios across dimensions show that (not) being deprived in one dimension is positively associated with (not) being deprived in another dimension; between any pair of dimensions the diagonal odds ratios are higher than 1. In contrast, the off-diagonal points (being deprived in one dimension but not in another) generally show odds ratios below 1 (except for financial poverty and non-deprivation in housing). Thus, the odds ratios suggest that a positive relationship exists between the risks of deprivation across all dimensions. The magnitudes of the odds ratios indicate though that this relation may not be that strong.

[Insert Table 3 here]

This is confirmed in Table 4 which lists the correlation of deprivation statuses between two dimensions. The correlations are positive and statistically significant but they are not very high (ranging from 0.11 for money and water and sanitation to 0.26 for money and integration). This poses further doubts on the use of financial poverty as a proxy (or predictor) of deprivation in other dimensions of well being.

[Insert Table 4 here]

Figure 3 finally sums up all possible combinations of deprivation and their prevalence. It thereby also shows to what degree financial poverty would correctly identify children that are (also) deprived in other dimensions. In that respect, financial poverty 'correctly' identifies 58% of the child population; 49% of the children living in financially poor households are also deprived in at least one physical environment dimension and 9% of the non-monetary poor children are also not deprived in terms of their physical environment. However, 34% of the children who are deprived in at least one physical environment dimension are not financially poor while 5% of the financially poor children are not deprived in any other dimension. In other words, despite a positive relation between financial poverty and deprivation in the physical environment dimensions, the error of exclusion is quite large suggesting that financial poverty is a rather crude indicator for deprivation in the physical environment.

[Insert Figure 3 here]

5. Conclusion

Financial poverty analyses have become part of the standard toolbox in developing countries; they constitute an important evidence base for determining poverty reduction strategies (so-called poverty reduction strategy papers (PRSP)) and thereby also play an important role in the formulation of national development strategies and the resulting allocation of national and development funds from international organizations such as the IMF and the World Bank. Even though it has been a while since the multidimensional nature of poverty has been recognized by researchers and policy makers; non monetary

aspects of well being typically enter a financial poverty analysis as correlates. Poverty analyses are used as a tool to identify vulnerable groups; when a person who is poor in a financial sense is also considerably more likely to be poor in another dimension, financial poverty statistics may in many cases correctly identify people suffering from non-monetary deprivations as well (while subsequent analysis could then establish how the needs of these groups could best be addressed).

In this paper we analyzed to what extend this is the case for financial poverty and deprivation in the physical environment of children in the Republic of Congo. Our results indicate that incidence rates of poverty and deprivation differ substantially in terms of magnitude; that high risk poverty characteristics do not necessarily correspond to high risk deprivation characteristics; and that the relation between financial poverty and deprivation in the physical environment is positive but not very strong. As a result, using financial poverty indicators as a proxy for deprivation in the physical environment of children seems to be a blunt tool, one that yields rather large errors of exclusion.

Take for instance the water and sanitation dimension, the analysis has shown that the situation in this dimension is particularly dire; nearly 73% of Congolese children are deprived in this dimension but 'only' 42% are simultaneously financially poor and deprived. A financial poverty indicator would thus substantially underestimate the severity of this problem. While the consequences associated with a lack of access to acceptable water and sanitation services are multiple and severe and may range from illness, stunted growth, reduced cognitive skills to death (for an overview see Bartlett, 2005), having sufficient financial resources does not guarantee adequate access. This is because the public good characteristics of many water and sanitation facilities (large investment costs, external/social benefits) require some kind of government intervention in the provision of these facilities. It thus makes sense to analyze deprivation in this dimension in itself, even for the purposes of identifying vulnerable groups.

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[2] Loosening the deprivation criterion for distance to drinking water to 15 minutes would decrease unweighted household deprivation rates from 72% to 68%.

[3] Including a hole as deprivation characteristic would increase unweighted household deprivation rates from 72% to 82%.

[4] This definition broadly corresponds to that of a 'modern dwelling' of the Congolese Ministry of Housing; the exception here is that we did not include access to electricity in our definition.

[5] Including access to electricity as a welfare indicator would result in considerably higher deprivation rates as only 28% of Congolese households have access to electricity; unweighted household deprivation rates would rise from 57% to 79%.

[6] Including charcoal and petrol as deprivation characteristics would increase unweighted household deprivation rates from 57% to 69%.

[7] Lowering the deprivation criterion for distance to public transport to 15 minutes would increase unweighted household deprivation rates from 37% to 44%.

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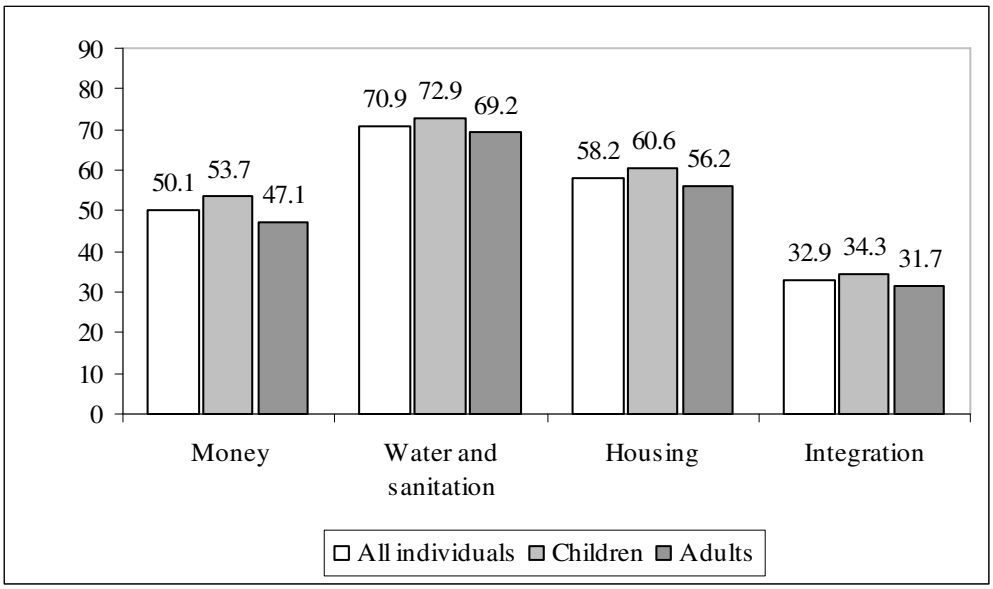
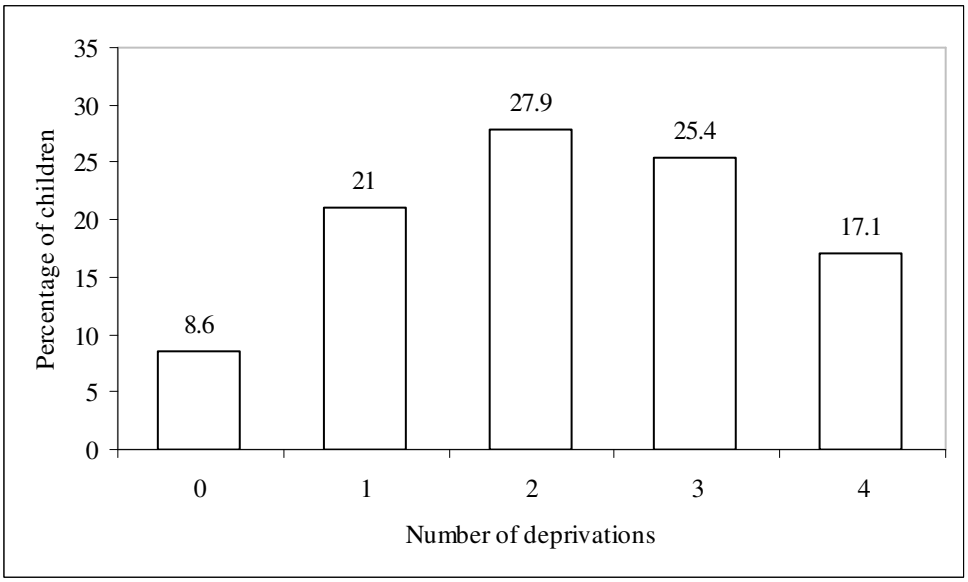
Figures in text

Figure 1: Incidence of poverty and deprivation (in percentages)



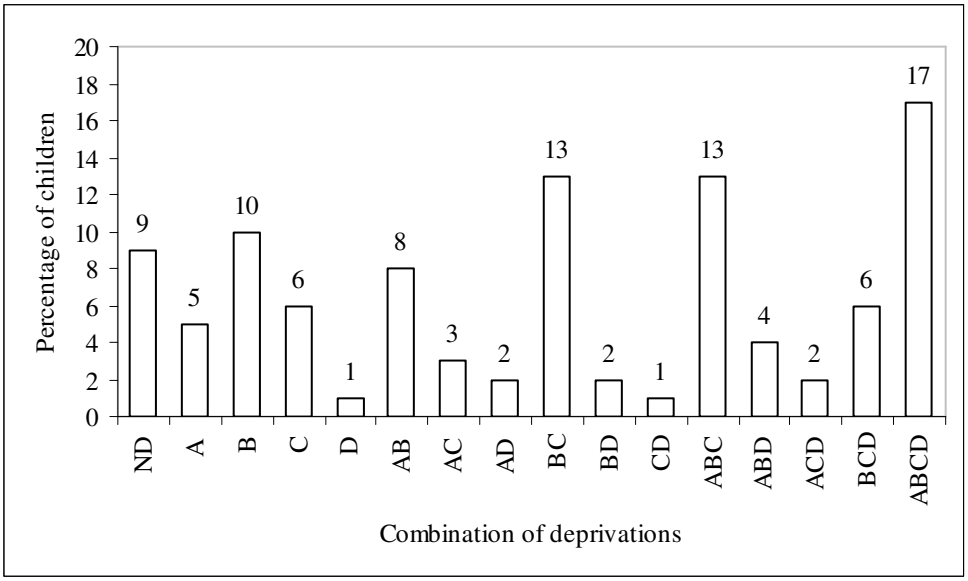
Source: Estimates based on ECOM 2005

Figure 2: Counting the number of deprivations (% of children)



Source: Estimates based on ECOM 2005

Figure 3: Combinations of deprivations between the 4 dimensions



Notes: 'A' indicates financially poor, 'B' deprived in water and sanitation, 'C' deprived in housing and 'D' deprived in terms of integration.
Source: Estimates based on ECOM 2005

Tables in text

Table 1: By dimension: Poverty and deprivation profile (in % of children)

	Population share (column percentages)	Incidence of poverty (line percentages)			
		Money	Water and sanitation	Housing	Integration
Total	100	53.7	72.9	60.6	34.3
Settlement area		***[1]	***	***	***
Rural	44.8	62.2	94.3	87.1	49.7
Urban	55.2	46.8	55.5	39.2	21.9
Regions		***	***	***	***
Brazzaville	26.4	56.2	48.1	18.1	24.0
Pointe Noire	22.6	34.0	57.8	62.7	16.6
Other urban communities	6.3	53.5	78.3	43.1	32.0
Semi urban	7.7	59.7	91.6	72.8	50.6
Rural	37.1	62.8	94.6	90.1	49.5
Household size		***	ns	ns	***
1-3 persons	6.6	29.2	73.5	62.3	50.3
4-6 persons	41.3	46.9	71.7	62.0	38.1
7-9 persons	35.7	59.3	75.5	59.6	10.7
> 9 persons	16.4	68.7	70.0	58.5	26.3
Household type		***	ns	**	***
Single caretaker	7.1	50.9	74.8	69.4	70.7
Children and 2 adults	37.2	46.3	73.2	62.9	34.0
Children and >2 adults	29.2	54.8	72.1	57.1	24.0
Triple generations	25.9	63.9	72.2	58.3	34.6
Other types	0.7	59.4	91.2	83.3	65.4
Gender head of household		**	*	ns	***
Male	79.6	52.3	73.8	60.4	28.9
Female	20.4	59.4	69.1	61.4	55.5
Age head of household		***	***	***	***
< 35 years	19.0	50.4	75.6	69.8	43.9
35-45 years	35.3	49.6	72.2	60.7	31.0
46-54 years	22.9	52.1	72.3	55.3	27.9
55 and above	22.8	64.6	72.9	58.3	38.1

Note: [1] Results from a Wald test testing the equivalence of mean deprivation rates between categories of a profile variable. *** indicates a significance level smaller than 1%, ** indicates a significance level smaller than 5%, * indicates a significance level smaller than 10% and ns indicates not significant. The test takes differences in sampling probabilities due to strata, clusters and sampling weights into account.
Source: Estimates based on ECOM 2005

Table 2: Patterns of deprivation between two dimensions (% of children)

		Money		Water and sanitation		Housing	
		ND	D	ND	D	ND	D
Water and sanitation	ND	15.6	11.5				
	D	30.6	42.2				
Housing	ND	21.0	25.2	16.1	23.3		
	D	18.3	35.4	11.1	49.6		
Integration	ND	37.0	28.6	21.8	43.8	30.7	35.0
	D	9.2	25.1	5.3	29.0	8.7	25.7

Notes: 'ND' means not deprived while 'D' means deprived.
Source: Estimates based on ECOM 2005

Table 3: Deviation from expected patterns of deprivation (expressed in odds ratio)

		Money		Water and sanitation		Housing	
		ND	D	ND	D	ND	D
Water and sanitation	ND	1.25	0.79				
	D	0.91	1.08				
Housing	ND	1.15	1.19	1.51	0.81		
	D	0.65	1.09	0.67	1.12		
Integration	ND	1.22	0.81	1.23	0.92	1.19	0.88
	D	0.58	1.36	0.57	1.16	0.64	1.23

Notes: The odds ratio is calculated by dividing the actual probability in a cell its expected probability; a value below 1 indicates fewer children have a particular combination of welfare status across two dimensions while the reverse holds for a value above 1.
Source: Estimates based on ECOM 2005

Table 4: Correlation of deprivation status between 2 dimensions

	Money	Water and sanitation	Housing
Money	1		
Water & san.	0.1124*	1	
Housing	0.1191*	0.1575*	1
Integration	0.2636*	0.1567*	0.2153*

Notes: * indicates that the estimated correlation significantly differs from zero at a 5% level.
Source: Estimates based on ECOM 2005

Appendix

Table A1: Welfare/deprivation variables - descriptive statistics (households, not weighted)

Welfare/deprivation indicators	**Categories (%)**				
Water and Sanitation					
- Source of drinking water:	SNDE in house	SNDE outside	Hydrant / pump	Well	River, source, rainwater
	26.2	27.3	6.6	18.8	21.1
- Distance to water source:	≤ 5 minutes	Between 6-15 minutes	> 15 minutes	Missing value	
	66.4	20.8	10.0	2.8	
- Type of toilet:	WC	Covered / improved latrine	Uncovered latrine	In nature	
	5.5	48.6	38.9	6.9	
- Evacuation of waste water:	Closed sewer	Open sewer	Sewer pit	Hole	In courtyard or nature
	5.6	10.3	6.4	23.8	53.9
Housing					
- Material walls:	Cement blocks / stabilized bricks	Baked bricks	Mud bricks	Dirt walls	Wood / other material
	34.3	21.9	13.2	15.1	15.5
- Material floor:	Cement	Bricks or stone	Dirt	Wood / other material	
	57.1	3.3	40.0	0.7	
- Cooking combustible:	Gas or electricity	Charcoal or petrol	Wood		
	77.4	16.7	6.0		
- Number of persons per room:	< 2 persons	2 persons	3 persons	4 persons	> 4 persons
	34.6	37.0	18.9	5.6	4.9
Integration					
Owns means of communication:	Television	Radio	Telephone		
	22.8	56.4	32.9		
Owns means of transport:	Car	Boat	Bicycle	Motorbike	
	1.7	2.9	6.6	2.0	
Access to public transport:	≤ 15 minutes	Between 16-30 minutes	> 30 minutes		
	78.5	13.5	8.0		

Source: Estimates based on ECOM 2005

Table A2: Summary descriptive logistic regression (children)

	Incidence of poverty			
	Money	**Water and sanitation**	**Housing**	**Integration**
Total				
Strata				
Brazzaville	benchmark	benchmark	benchmark	benchmark
Pointe Noire	0.34	1.45	8.54	.74
Other urban communities	0.82	3.86	3.66	1.72
Semi urban	0.84	8.40	11.40	3.21
Rural	1.65	18.94	38.05	4.07
Household size				
1-3 persons	benchmark	benchmark	benchmark	benchmark
4-6 persons	2.54	0.80	ns	1.20
7-9 persons	4.36	ns	ns	ns
> 9 persons	7.66	ns	ns	ns
Household type				
Single caretaker	1.28	ns	ns	1.80
Children and 2 adults	benchmark	benchmark	benchmark	benchmark
Children and >2 adults	1.13	1.14	ns	0.77
Triple generations	ns	ns	ns	ns
Other types	ns	ns	2.22	ns
Gender head of household				
Male	benchmark	benchmark	benchmark	benchmark
Female	1.57	ns	1.80	3.1
Age head of household				
< 35 years	benchmark	benchmark	benchmark	benchmark
35-45 years	0.82	ns	0.71	0.75
46-54 years	0.76	ns	0.65	0.80
55 and above	1.33	ns	0.61	ns

Note: Estimated using a logistic regression model, each characteristic variable is split up in dummies (n-1 dummies for per n categories), results expressed in odds ratios and only reported when significant at a 5% level or less ('ns' indicates not significant at a 5% significance level). The reported significance levels control for heteroskedasticity across variables between observations.
Source: Estimates based on ECOM 2005