The Socio-economic, Cultural and Demographic Factors of Gap between Urban and Rural Areas in terms of Early Childhood Development: An Empirical Evidence from Cameroon, Using Fairlie Decomposition Model

Henri BELLO FIKA[1]

Extended Abstract

Justification of the study

The economic development of a country cannot be made without a well-trained, physically healthy, psychologically balanced and socially well integrated working population. A better acquisition of these qualities by an individual at the adult age mainly depends on a certain number of factors related to the immediate environment that have impacts on the early childhood development process. According to UNICEF in a report published in 2015, the sustainable development begins with safe, healthy and well educated children. Despite the efforts that have been made, the African countries are lagging behind in terms of the early childhood development level (or quality). The spatial disparities of this development in those countries also constitutes a real concern. In fact, every child should have the opportunity to benefit from a good health, socio-emotional and educational care for his good multidimensional development, regardless of his place of residence. An **inclusive** early childhood development is an important condition of a country's economic growth in the long run.

In Cameroon, considering the data of 5th MICS[2], 68.0% of 36 to 59 months children living in urban area are in a good development process, whereas in rural area they are 56.5%. In other words, 36 to 59 months children living in urban area have 120.4% more chances to be in a good development process than those who live in rural area. Thus one may ask the following question: what are the explanatory factors of this observed gap between urban and rural area in terms of early childhood development? To answer this important question, we consider the socio-economic, cultural and demographic dimensions of the environment where the child grows. In this paper, this development process includes physical, cognitive and psychosocial aspects.

A brief literature review

According to Hart and Risley (1995), the qualities of parent-child verbal interaction are strongly associated with child vocabulary, language development, and IQ at age three. This finding conforms the results of studies which have been undertaken a few years ago by several other authors such as Rubenstein and Howes (1983), Carew (1980) and Golden et al. (1979). Besides the language speaking channel which depends upon the quality and quantity of interactions parent and child, there is the reading channel. Indeed, parents reading books and stories to their toddlers and preschoolers is related to their children's later reading ability and school success (Hiebert, 1988; Mason and Allen, 1986). Other authors like Bradley and Caldwell (1984) and Goldstein (2012) proved that the way the home environment is arranged is associated with the child's development – this result supports the idea stating that the child's development also depends upon the physical environment. In addition, the child's psychosocial (or socio-emotional) development quality is very influenced by the mental health of the persons he lives with (Leadbeater, Bishop and Raver, 1996). Furthermore, a large body of literature suggests

---

[1] The University of Dschang, Cameroon, e-mail:bellofikah@gmail.com.
[2] fifth Multiple Indicators Clusters Survey.

that low levels of parent education are strongly associated with several indicators of less than optimal child development (Fewell et al., 1996). It should also be noted that the nutritional aspect plays an important role in this development process. A study conducted in 2000 by the Erasmus Medical Center of Rotterdam in close collaboration with the Faculty of Social Sciences of the Erasmus University of Rotterdam, the Municipal Health Service of Rotterdam area, and the Stichting Trombosedienst & Artsenlaboratorium Rijnmond in Rotterdam also showed that the quality of the early childhood development process can be determined by the prenatal psychological, behavioral and physiological parameters of the mother.

Children are elements of what is called "social network". Thus, besides their intrinsic characteristics like age, the way they develop is mostly influenced by the "social support", which involves the quality and the density of the interactions between the young child and his both human and physical environment. Those interactions are strong transmission channels of socio-cultural values, socio-economical identities and emotional capabilities from adults to young children.

The theoretical and empirical literature concerning the factors determining the quality of the development of the young child is very rich. However, there is a lack of studies aiming at explaining the gap of probabilities of good early childhood development between two groups of young children. This paper contributes to solve this theoretical problem.

On the basis of the literature review, we may have the following conceptual diagram:
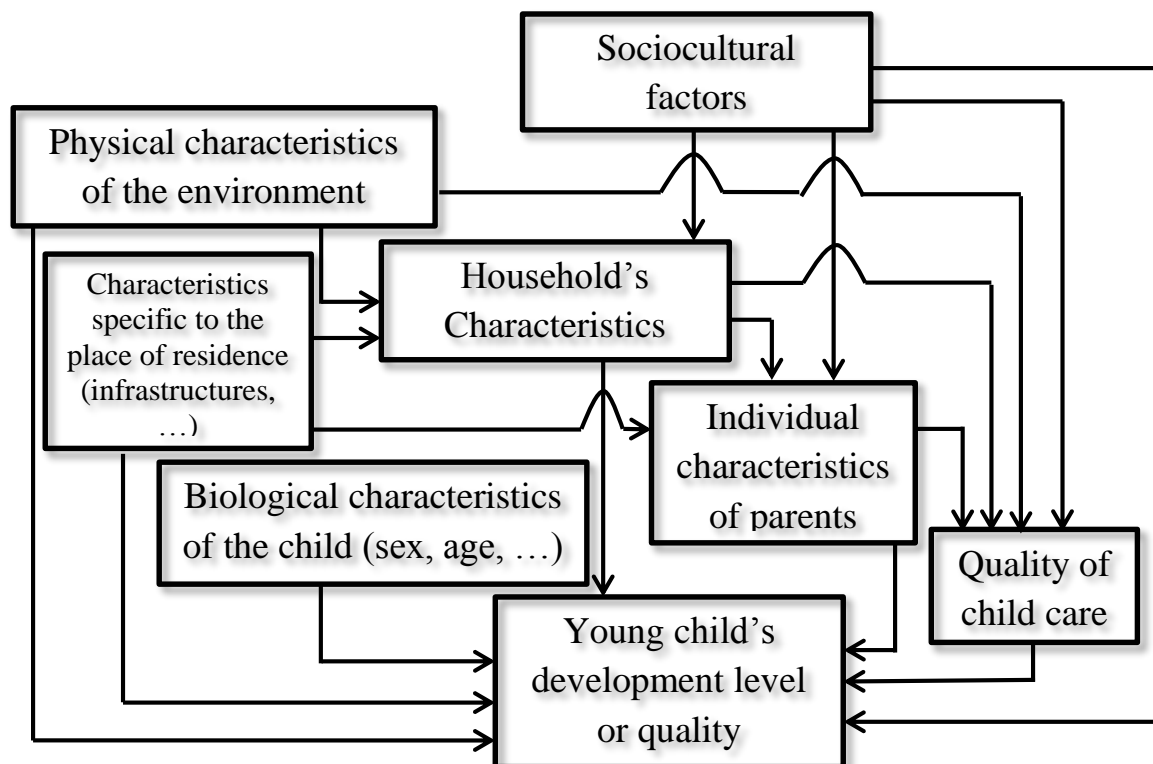
Source: Author

Methodology

- ### *The Data*

Since the aim of our study is to determine the factors likely to influence the gap between urban and rural areas in terms of early childhood development, our dependent variable is the differential of probability between urban and rural areas in terms of being in good development. It is consequently about a continuous quantitative variable obtained from a dichotomic variable which takes the value:

$$Y = \begin{cases} 1 \text{ if the child is in good development process} \\ 0 \text{ if not} \end{cases}$$

The proportion of young children who are in good development process is called "young child's development index (*YCDI*). This index is computed by considering ten elements which permit to measure the quality of the young child's development process in the following four fields:

- Reading and calculus;
- Physical health;
- Socio-emotional area;
- Aptitude to learn.

The first and the fourth fields constitute the cognitive dimension and the socio-emotional field is also what we call "psycho-social dimension.

If the young child is in good development process in at least 3 of these 4 field, he is considered to be globally in good development process. This computational method is also one which has been used in the case of 5th MICS report.

The independent variables are: the region of residence, the religion of the head of the household, the mother's educational level, the sex of the child, the household's living standard, the age group of the child, the diet of the child, the quality of social relationships between the child and his surroundings (a composite variable to be generated from other variables of the database, using the ascending hierarchical classification (AHC)) method, taking of vitamins supplements (yes or no), the existence of an educational program and the number of children aged between 5 and 14 years old.

The data used are those of the 5th MICS realized by the National Institute of Statistics (NIS) of Cameroon in 2014. The sample is made up of 10 213 households for 2 441 children aged between 36 and 59 months (1 222 males and 1 219 females).

- ***The model: The Fairlie Decomposition Model***

The Fairlie Decomposition Method is an extension of the Blinder-Oaxaca (1973) Decomposition Method to nonlinear models such as logit, probit and tobit models. It is used for analyzing differentials between two groups of individuals in terms of the occurrence of an event. In the case of our study, these two groups are urban and rural living children. This method permits to decompose the differential of probabilities of occurrence of the phenomenon between two groups into two effects:

➢ The effect due to the differences in the distribution of intrinsic characteristics (endowment effect) between the two groups. This is the explained component ;
➢ The effect due to the differentials of coefficients between the two groups (in our case, it is about characteristics which are specific to the type of area of residence). This is the "unexplained" component.

Let's consider the differential or gap given by

$$\delta = Y_U - Y_R \qquad (1)$$

Y_k represents the average probability of occurrence of the event (in our case, it is about being in good development process) in the k group ; $k = (U, R)$.
U = Urban and R = Rural.

$$\text{avec } Y_U = \sum_{j=1}^{N_U} \frac{F(X'_{Uj}\beta_U)}{N_U} \quad (2) \qquad et \qquad Y_R = \sum_{j=1}^{N_R} \frac{F(X'_{Rj}\beta_R)}{N_R} \quad (3)$$

$$\text{where } F(X'_j\beta) = \frac{e^{\sum_{i=1}^{k} x_{ij}\beta_i}}{1 + e^{\sum_{i=1}^{k} x_{ij}\beta_i}} \qquad (4)$$

F is thus the cumulative distribution logistic function and N_k is the number of individuals of the k sample. X is the vector of the characteristics (variables or dichotomized modalities) and *ß* is the vector of the coefficients related to the characteristics.

Replacing Y_U and Y_R by their respective expressions **(2)** and **(3)** in the equation **(1)**, we obtain the following equation:

$$\delta = \left[\sum_{j=1}^{N_U} \frac{F(X'_{Uj}\beta_U)}{N_U} - \sum_{j=1}^{N_R} \frac{F(X'_{Rj}\beta_R)}{N_R} \right] \qquad (5)$$

The equation **(5)** can also be written as follows:

$$\delta = \underbrace{\left[\sum_{j=1}^{N_U} \frac{F(X'_{Uj}\beta_U)}{N_U} - \sum_{j=1}^{N_R} \frac{F(X'_{Rj}\beta_U)}{N_R} \right]}_{\textbf{(a)}} + \underbrace{\left[\sum_{j=1}^{N_R} \frac{F(X'_{Rj}\beta_U)}{N_R} - \sum_{j=1}^{N_R} \frac{F(X'_{Rj}\beta_R)}{N_R} \right]}_{\textbf{(b)}} \qquad (6)$$

The **(a)** term represents the characteristics effect or explained component.
The **(b)** term represents the discrimination effect or unexplained component. This is the gap that persists when the characteristics are identically distributed between the two groups.

Expected findings
- ✓ The urban-rural gap of probabilities in terms of good early childhood development is more due to the difference in the distribution of intrinsic (individual and/or family) characteristics than the differentials of coefficients (infrastructural, climatic and/or geophysical characteristics which are specific to the type of area of residence).
- ✓ The urban-rural gap of YCDI is smaller among children aged between 48 and 59 months than among those aged between 36 and 47 months;
- ✓ The urban-rural gap of YCDI is smaller among children who live in Centre/South/East zone than those who live in the northern zone;
- ✓ The urban-rural gap of YCDI is smaller among young children whose head of household is Christian or animist than among those whose head of household is muslim;
- ✓ The urban-rural gap of YCDI is smaller among young children who have a balanced diet than among those who do not benefit from it;
- ✓ The urban-rural gap of YCDI is smaller among young children born from a highly educated mother than among those whose mother just have a primary education;
- ✓ The ethnic group of the head the household has a significant impact on the urban-rural gap of YCDI;
- ✓ The urban-rural gap of YCDI is smaller among young children who live in higher or medium living standard households than among those who live in low living standard households;
- ✓ The urban-rural gap of YCDI is smaller among young children who undergo an educational program than among those who do not benefit from it;
- ✓ The urban-rural gap of YCDI is smaller among young children who have been given vitamin supplements in the 6 months preceding the survey than among those who did not benefit from those drugs;
- ✓ The urban-rural gap of YCDI is smaller among young children who benefit from good affective relationship with their surroundings than among those who do not benefit from it.