

## Determinants of Health Care Resorts: Evidence from Cameroon

Dr. Ngwen Ngangu é

Faculty of Economics & Management, University of Yaound éII-Soa, Cameroon

Po Box 1365 Yaound é, Cameroon Tel: +237-7737-9101 E-mail: ngwenn@yahoo.fr

**Abstract:** The aim of this work is to identify the determinant of health care resort in Cameroon in order to propose many improvement axes to the health system. These axes will allow a better fulfillment of the poor's needs. The data collected from the Cameroon's Third Household Investigation (ECAM 3) used in the Logit model, gave the following results: (i) the consultation's price has a negative impact on the demand of the health services no matter the type of resort and the location; (ii) when the individuals become richer, they are tempted to desert hawkers, native doctors and health centers to use clinics and more specialized hospitals with more skilled personnel; (iii) the fact to be educated increases the probability to go to clinics or private health facilities, and decreases the probability to attend to native doctors or to hawkers.

**JEL Classifications:** C25, D31, I11

**Keywords:** Determinants, Health care resorts, Health care demand, Logit model, Probability

### 1. Introduction

After their independence, African countries such as Cameroon inherited health operating systems made up of unwieldy hospital infrastructures. The 80's came with a profound reorganization of health systems in Africa that quickly met with the issue of its financing.

Otherwise known as the Bamako Initiative, the idea of financing treatment services with the costs of benefits rendered to the sick came up in the early 80's and was officially launched by WHO in Bamako, September 1987, at a time when overly indebted countries were no longer able to finance their health services.

The severity of the economic crisis mortgaged the possible success of such an initiative. The meager budget allocated to the Health Sector by the state, thus 3.10%, came along with reduced household average income (alongside increased disparities among them). The 90's were notorious with a deterioration of health indicators<sup>1</sup>. The second half of the 90's was marked by a tangible rectification of Cameroon's economy, thus introducing great efforts aimed at bettering public management and boosting the country's economy.

Despite conceded efforts, Cameroon's health care offer, organized around 180 health districts and 1785 health areas, remains below required needs. Data on health care and service offer in 2008

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<sup>1</sup> Child Mortality Rate went from 65 per 1000 in 1991 to 87 per 1000 in 2006. Maternity Mortality Rate in 2006 is 1000 per 100 000 live births against 430 per 100 000 in 1991.

attribute a health centre to 9779 inhabitants, one medical doctor to 13,468 inhabitants and medical personnel to 3,094 inhabitants (MINSANTE, 2009).

Household demands on health care resorts were deeply affected by the poor availability of public financial resources. Consequently, the transition from free health care to compulsory tax on health expenditure became a household challenge. The co-financing policy of health care services by the government and the people via the cost recovery system bettered some aspects of Cameroon's health offer, notably the availability and affordability of essential generic drugs. However, this policy was not followed by an increase in health care demand given the poor are often not financially able to resort to medical structures. Knowledge of features of health care resorts, and of demands expressed by households in terms of the kinds of services that are needed not only permits mastery of choices households make to resolve health situations in case of a morbid incident, but also favors mastery of factors that influence their decisions.

Within the reforms' context of the health sector, this study's importance lies in the fact that it could become an instrument in formulating health care financing strategies and in the conception of policies that promote a fairer and more efficient health system.

Within the scope of our study, we shall identify features of health care resorts in Cameroon, in order to suggest improvement guides for its health system, to better meet up with demand and the needs of the poor. In the following parts, we shall try very hard to make plain the basic decisive features of health care resorts, sought by households. It is in this light that the second part of our work makes a brief literature review. The third shows a health care demand model and justifies the econometric technique used for its estimation. The fourth gives the origins of data and defines the variables used in estimating the model. The fifth exposes the results deriving from the estimation. The sixth suggests recommendations for better health care resorts.

## 2. Literature Review

Following the two theoretical approaches elaborated by Grossman (1972) on one hand, and Acton (1975) and Christianson (1976) on the other, literature dedicated to health care demands as well as its deciding variables is rich and has experienced noticeable evolution across the world. In Africa, research results provoked mixed feelings and could not provide a unanimous conclusion on the impact the introduction or the increase of sanitary services on health care demand. Hence, Akin, et al.(1995) in Nigeria, Juillet (1999) in Mali and Perrin (2001) in Ivory Coast deduce a non-elastic health care/cost proportion.

However, simultaneously achieved studies (Sauerborn, et al.(1994) Burkina Faso; Ellis, et al.(1994) Egypt; Barlow and Diop (1995) Niger; Bolduc, et al.(1996) Benin; Tembon (1996) Cameroon; Kipp, et al.(2001) Uganda) contrarily deduce an elastic positive cost / negative health care demand, particularly for the poor.

A new study line on the role service quality plays in health care demands will be carried out amid this state of contradictory results. This research attempts to show that the negative impact of cost recovery or financial input by beneficiaries can be compensated (at least partially) through a re-investment of recovered funds aiming at reforming the quality of benefits in services offered. We particularly refer to the works of Lavy and Quigley (1993) in Ghana; Litvack and Bodart (1993) in Cameroon; Mwabu, et al.(1993) in Kenya); and Mariko (2003) in Mali. Yet, other works [Haddad and Fournier (1995)] carried out in Zaire showed that the compensating role assigned to quality, while being able to neutralize the negative effect of increased health care resort tariffs, will not be

systematic but would depend on a variety of parameters such as the extent of costs' increase and quality components involved in these increases. Furthermore, Audibert, et al.(1998) deduce an increase in health care demand alongside service costs in a case study in Ivory Coast.

In addition, some works (Ette, et al. 1995; Ette, et al. 1998; Kaddar, 1997; Shaw, et al. 1995) on the benefit effects of health micro insurance on financial accessibility of population to treatments, showed that the development of health mutual benefit societies could increase the health care demand -with an appreciation of access to health care resort- and the supply financing of services -with an appreciation of equity in health care.

Health care demand in Cameroon had been a case study for Livack and Bodart in 1993 and Tembon in 1996. Livack and Bodart analyse the impacts price-listing and quality improvement have on health centers' attendance. They resort to data collected from five sanitary establishments in the Adamawa Region via the "witness case" method. They concluded that when quality is controlled, the negative impact of tariff increase is better managed. Besides, in comparison, a quartile of the lowest income is less sensitive to cost increase than others.

Tembon resorts to an econometric model to estimate features of health care demand and choice criteria among various types of care services patients can resort to. From an investigation carried out on households of the Ndop division in the North-West Region based on the Logit multinomial model, the author analyses features that lead to health care requests and chooses from various health care methods. The main deductions stemmed from this study reveal that demand's elasticity-cost is significant and negative and that any improvement in service quality increases attendance in public sanitary establishments.

### **3. Health Care Demand Model and Methodology**

The model presented here, is the same used in most studies in developing countries on health care demand (see Gertler and Van Der Gaag, 1990; Mwabu et al. 1993). However, our model is better and different given some important aspects.

It all starts from the fact that one can, from their own analysis, declare that they are sick or not. In case of a morbid incident, one can decide either to do nothing or to get treatment. In the latter case, people can resort to a modern medical establishment (public or private) or not (traditional practitioner or informal drug vendor). Throughout this long process, individuals are supposed to aim at maximizing their utility (satisfaction) which depends simultaneously on the characteristics of the kinds of resorts, household characteristics and household heads.

In this line of study, we used a multinomial logistic model given by the formula:

$$U_{ij} = \eta_j' W_i + \varepsilon_{ij} \quad (1)$$

where  $U_{ij}$  is the utility of a given  $i$  individual to resort to a given  $j$  choice;  $W_i$  being the vector of obvious characteristics (consultation site characteristics, household characteristics, characteristics of the household head etc).

The probability that a given  $i$  individual chooses a given  $j$  consultation site is the probability that the utility drawn from this type of resort is superior to the utility levels that could have been attained in other possible options. The probability of resorting to a  $j_0$  option is given by the formula:

$$P(L_i = j_0) = \exp(\eta'_{j_0} W_i) / \exp\left(\sum_{j=0}^4 \eta'_j W_i\right) \quad (2)$$

with  $L$  being the variable that indicates the type of consultation the patient resorted to, it can take the following values: 0 = Hospital (reference means); 1 = Health Center; 2 = Clinic/Medical Practice; 3 = Traditional Practitioner; 4 = Informal Modern Drug Vendor.

## 4. Data and Variables

### 4.1 Data Origin

Data originates from Cameroon's Third Household Investigation (ECAM 3) carried out in 2008. Data was collected from all ten Cameroonian regions. Concerning sample size, previous experiments amongst which those of Investigations on Household Expenditures (EDM) carried out on capitals of ECOWAS countries (1996-1999), as well as Douala and Yaoundé covered, each, 1,000 households worth of sample. Besides, previous ECAM proved that a sampling of 8,000-12,000 households at a national level is enough to establish key-indicators on poverty and household life standard within satisfactory precision at stratum level. However, given the non-substitution of households and experiments deriving from ECAM2 (2001), EESI (2005) and MICS (2006), a 5-10% margin was preset for non-reactions.

Based on a quantity of 12 households per DZ in Douala/Yaoundé and 18 everywhere else except in DZs that had previously been vaguely investigated between November-December 2006, period within which sizes were rather estimated at 18 in Douala and Yaoundé and 24 elsewhere, the ECAM3 sample distribution shows that 12,609 households had been investigated, thus 7,080; 1,410; 4,119 respectively in urban areas, semi-urban and rural areas.

12,609 households were interviewed with the aim of obtaining information on demographic, economic and socio-cultural characteristics as well as the resorts sought in cases of morbid incident.

### 4.2 Definition of Variables

It is hinged on dependent and explicative variables.

#### 4.2.1 The dependent variable

The dependent variable of this econometric estimate is the type of establishment the patient has been taken to for consultation or for treatment. It is a polychotomous variable that includes five modalities: hospital, health center, clinic/medical practice, traditional practitioner and the informal drug vendor. It is important to note that 45% choose to consult in hospitals, 37% resort to health centers, 12% go to clinics and medical practices, 5% to traditional practitioners and 26% refer to the informal drug vendor.

#### 4.2.2 Independent variables

Independent variables are those that would surely have oriented the decision to resort to a specific consultation type. To this effect, we have retained three types of variables: variables related to financial access, life standard and socio-demographic characteristics.

#### 4.2.3 Financial access

- Consultation costs: These are ex-ante costs that should be applicable, and are usually paid in advance by patients. However, these costs are unknown because ex-post costs alone, which are

actually endured, can be declared on household investigations. So, we used these ex-post costs to weigh consultation cost. This variable has a negative effect on health care resort.

#### 4.2.4 Socio-demographic characteristics

These variables have an ambiguous impact (positive or negative) on health care resorts.

- **Education Level:** It supposedly discriminates for individuals' choice of modern treatment against traditional practitioners and informal drug vendors. Besides, education can raise awareness on the necessity of having proper treatment, be it in the elaboration of a primary diagnosis or in the change of views and ideas an individual could have on a disease and its cause (Audibert and Mathonnat, 1998). It is assessed by a variable that has seven modalities that match the scholar level of the investigated: illiterate, primary level, 1st general cycle of education, 2nd general cycle of education, 1st technical cycle, 2nd technical cycle and tertiary education. For an econometric estimate, we generated another variable "level of education" of the family head that has four modalities: illiterate, primary education, 1st cycle secondary education, 2nd cycle secondary education and more as main reference.
- **The family head's sex:** Given it is the family head that often makes the decisions, it is important to verify if there is not a preference as per his sex. He is introduced as the mute variable that takes the value 1 when the family head is a male and 0 if it is not the case.
- **Patient's age:** An economic hypothesis deriving from the human capital theory allows an establishment of hypothesis concerning relations between age and health service consumption. According to this hypothesis, families rather invest in the health of members for whom output is increased. Young children and the old would hence be discriminated against when it comes down to the quantity and quality of chosen health care. Gertler and Van Der Gaag (1990) have shown that aging reduced the probability of using modern health care techniques. An inverse hypothesis can, on the other hand, imply resorting to quality health care techniques for children given their fragile state. The age of the investigated is introduced in terms of years.

#### 4.2.5 The household's life standard

- **Expenses per equivalent adult at the level of national compatibility,** has been used to evaluate income. It is meant to direct the patients' therapeutic choices in the sense that it exercises restraint on the more expensive choices of health care. This variable has a positive impact on health care resorts.

## 5. Econometric Results

It should be noted that while interpreting, we privileged the variables' odd ratios (OR). They capture the impact of a given  $q$  variable on the probability to resort to a given  $j$  type of consultation. In a formal manner, if we call  $L$  the variable corresponding to a type of resort, we have:

$$OR(q, j) = P(L = j | q = 1) / P(L = j | q = 0)$$

Given  $q$  a dichotomous variable  $OR(q, j) = P(L = j | q = 1) / P(L = j | q = 0)$

Given  $q$  a continuous variable,  $OR(q, j) = P(L = j | q = n + 1) / P(L = j | q = n)$

Moreover, we separately conceived the model in both urban and rural milieus with the hypothesis that explanatory variables do not always have the same degree of importance depending on whichever one of both milieus we are found in. Chow's test on coefficient equality in both equations confirms this idea at a 1% level. Indeed, the  $\chi^2(94)$  is 184. It is superior to the theoretical  $\chi^2$  which is 129; thus we reject the invalid hypothesis on equal coefficients of both equations.

**Table 1.** Estimate of choice of consultation site model: urban area

Variables	References	Health Center	Clinic /Practice	Traditional practitioner	Informal Vendor
Financial Access	Consultation cost	0.94***	0.79***	0.77***	0.44***
Reason for consultation <i>Ref.: family decision/beliefs</i>	Affordable cost	1.37*	0.69*	0.16***	5.30***
	Proximity	1.80***	0.76	0.03***	0.80
	Relations	0.74	0.81	0.09***	0.03***
	Service Quality	0.60***	0.44***	0.11***	0.06***
Sex of FH	Male	1.08	0.98	0.82	1.15
FH's Religion <i>Ref.: Animist and others</i>	Christian	0.99	1.11	0.58	0.90
	Muslim	0.75	0.45***	0.35**	0.74
FH's age <i>Ref.: 50 years and more</i>	Below 30	1.62***	1.45**	1.08	1.54*
	30-39 years	1.25	1.38	1.18	0.99
	40-49 years	1.27	1.12	1.11	0.99
FH 's level of literacy <i>Ref.: Sec 2<sup>nd</sup> cycle and more</i>	Illiterate	1.14	0.62**	0.86	1.19
	Primary School	1.01	1.04	1.51	1.18
	1st cycle Secondary School	1.11	0.85	1.06	1.04
Matrimonial Status	Married	1.25**	1.37**	1.36	1.18
FH's Socio-economic group <i>Ref.: Worker of the formal sector</i>	Informal worker	1.45***	1.05	1.99**	1.76***
	Dependent on Agriculture	1.27	0.89	1.98*	2.19***
	Jobless/Retired/Inactive	1.23	0.90	1.32	0.77
Patient's age	Below 5	0.92	0.71*	0.42***	0.34***
Patient's sex	Male	0.97	1.14	1.34	1.33*
Household's Life Standard	Expense per Equivalent Adult Log	0.68***	1.25**	0.35***	0.49***
Distance between home and nearest health center	Within a 5km range	2.25*	2.61*	7.38*	11.21**
<b>Number of observations = 3614, Prob (&gt; <math>\chi^2</math>) = 0.00; Adj. <math>R^2</math> = 0.2607</b>					

**Notes:** (1) Data source: ECAM3 (2007), Phase1. Author's calculations;

(2) \*,\*\* and \*\*\* indicate significance at the level of 10%, 5% , and 1%, respectively.

**Table 2.** Estimate of choice of consultation site model: rural area

<b>Variables</b>	<b>References</b>	<b>Health Center</b>	<b>Clinic / Practice</b>	<b>Traditional practitioner</b>	<b>Informal Vendor</b>
Financial Access	Consultation Cost	0.90***	0.70***	0.74***	0.42***
Reason for consultation <i>Ref.: Family Decision/Belief</i>	Affordable Cost	1.39	0.77	0.24***	4.18***
	Proximity	2.74***	0.42**	0.03***	0.59
	Relations	1.39	1.29	0.18***	0.17***
	Service Quality	0.76	0.45**	0.09***	0.03***
FH's Sex	Male	1.02	0.71	1.06	1.01
FH's Religion <i>Ref.: Animist and Others</i>	Christian	0.52**	0.56	0.53	0.48**
	Muslim	0.62*	0.53	0.55	0.73
FH's Age <i>Ref.: 50 years and more</i>	Below 30	1.60*	1.40	1.29	2.75***
	30-39 years	1.30	1.04	1.32	1.31
	40-49 years	1.07	1.46	1.52	1.39
FH's Academic level <i>Ref.: 2<sup>nd</sup> cycle Secondary S and more</i>	Illiterate	1.93***	2.00*	2.75**	3.16***
	Primary School	2.05***	1.97**	2.11*	3.62***
	1st Cycle Secondary School	1.37	1.46	1.19	1.42
Matrimonial Status	Married	1.19	1.20	1.13	0.82
FH's Socio-economic Group <i>Ref.: Worker in the formal sector</i>	Informal Worker	1.53**	1.15	5.19***	1.49
	Dependent on Agriculture	2.07***	1.07	5.68***	1.70
	Jobless/Retired/Inactive	1.11	0.56	1.87	0.69
Patient's age	Below 5	1.12	0.83	0.60*	0.72
Patient's Sex	Male	0.89	0.92	1.04	0.80
Household's Life Standard	Expense per Equivalent Adult Log	0.70***	1.15	0.62**	0.76
Distance between home and nearest health center	Within 5 km range	1.11	0.67*	0.38***	0.24***
<b>Number observations = 3057, Prob(&gt; <math>\chi^2</math>)=0.00, Adj. R<sup>2</sup> = 0.3655</b>					

**Notes:** (1) Data source: ECAM3 (2007), Phase1. Author's calculations;

(2) \*,\*\* and \*\*\* indicate significance at the level of 10%, 5% , and 1%, respectively.

### **5.1 Financial Access**

Consultation cost: Consultation cost has a negative impact on health care resort, it does not matter the type of care nor the milieu. This result corroborates that of Gertler, et al.(1987, 1990), Sauerborn, et al.(1994) in Burkina Faso, Ellis, et al.(1994) in Egypt, Barlow and Diop (1995) and contrasts with the one Audibert and Mathonnat (1998) obtain in Ivory Coast.

## **5.2 The household's Living Standard**

Expense per Equivalent Adult Log: When people become rich, they tend to abandon informal drug vendors, traditional practitioners and health centers and go for better equipped clinics and hospitals that have a better qualified personnel. These results are in accord with those of Heller (1982), Akin, et al. (1986), Chernichovsky and Meesook (1986), Mwabu, et al. (1993), or Ellis et al. (1994) in Egypt, Tembon (1996) in Cameroun, Audibert and Mathonnat (1998) in Côte d'Ivoire and Mariko (1999) in Mali.

## **5.3 Socio-demographic Characteristics**

Level of literacy: Being literate increases the probability of visiting clinics/practices and reduces the probability of visiting traditional practitioners or informal drug vendors in contrast to hospitals. This result follows the ones obtained by Mwabu, et al.(1993) in Kenya, Akin, et al. (1995) in Nigeria and Bolduc, et al. (1996) in Bénin. By contrast, these results differ from those of Sauerborn, et al. (1994) in Burkina Faso, Mariko (1999) in Mali, Audibert and Mathonnat (1998) and Perrin (2001) in Ivory Coast.

The family head's sex has no impact whatsoever on the patient's choice on whichever kind of resort, whatever the milieu. Ellis, et al.(1994), Sauerborn, et al.(1994), Mariko (2003) all got the same results respectively in Cairo (Egypt), in Burkina Faso, in Ghana and in Bamako (Mali). However, these results differ from those of Mwabu, et al.(1993) in Kenya, Barlow and Diop (1995) in Niger, Akin, et al.(1995) in Nigeria.

The patient's age: For children below five, parents tend to consult in hospitals thus turning their backs on traditional practitioners and informal drug vendors. This result meets that of Charasse (1999) in South Africa where sick children are easily taken to public hospitals and to private practitioners who are not auto-proclaimed medics.

## **6. Conclusion**

After an overall view on the poor amount of public funds allocated to the Health sector (an average 3.10% of the national budget between 1980 and 2008) and the population's poverty (with a national poverty rate estimated at 39.9%), we have suggested the promotion of mutual insurance companies to better health care resorts in Cameroon in this that they:

### **6.1 Improve financial access to health care**

There is no doubt that the mutual health risk system improves financial access to health care. Not only do members utilize the services more than non members, but also, patients come to health professionals for early consultation, way before the situation worsens.

### **6.2 Favor fairness in the health care financing**

State subsidies can play an important role in terms of global effects on the equality of mutual insurance companies. As such, the State can grant allowances to health care beneficiaries in agreements with insurance companies, hence granting targeted allowances to mutual insurance companies in order to enable them recruit the less fortunate.

### **6.3 Can be an answer to financing needs**

By offering a means to create a risks pool, health insurance companies make it possible to reach out to inaccessible populations that are beyond the formal employment sector.

#### **6.4 Encourage massive collaboration in the health sector**

Mutual insurance companies' adherents have the possibility of cooperating in the periodic management of the former through general sittings, group meetings and the distribution of responsibilities through elections, holding open talks on contributions, financial management, and control committees made up of adherents.

#### **6.5 Improve the quality of health care**

Additional revenue generated by Health insurance companies can be used to buy indispensable drugs, to pay for additional personnel or in re-enforcing stock which could help in improving health care quality.

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