



CORRUPTION AND HEALTH SERVICES MARKET IN CAMEROON:
WHO TAKES THE INITIATIVE?

YAMB, Benjamin¹ and BAYEMI, Oscar²

¹Advanced School of Economics and Commerce (ESSEC),
University of Douala, Cameroon.

² Faculty Of Economics and Applied Management,
University of Douala, Cameroon.

ABSTRACT

This paper highlights the initiative taken for the corrupt habits of health services suppliers and users of healthcare in Cameroon. An analysis through proportions reveals that generally in the regions, 83.33% of health workers take the initiative for the corruption, mainly justified by the prominence of some motives such as the deficit of nursing staff and drugs, the inadequate infrastructure and medical equipments, and the difficulties encountered in the implementation of the budget. An analysis through odds ratios for the entire country and by region revealed that in the health care market, the initiative for the corrupt act usually comes from the medical personnel in about 58% of cases, compared to the paramedical staff (33%). In 9% of cases, there is no conclusion between the first and the second. The use of a log-linear model through the Poisson regression enabled us to highlight the characteristics of patients in regions where the corrupt act is initiated by them. Indeed, the women, the younger and the workers are most prone to corrupt actions. However, the residential environment (urban or rural) does not influence the corrupt practices.

Keywords: Corruption, Healthcare, Markets, Poisson's Regression, Cameroon.

JEL Classifications: C25; D23, I10.

1. INTRODUCTION

Health is a fundamental right and an engine of personal and social development. It has a significant impact on adults' labor productivity on the one hand, and on the enrollment and performance of children at school on the other. Also, three of the eight goals of the Millennium Development Goals of the United Nations - which aim to reduce poverty by half by the year 2020 - are directly related to health: reducing child mortality, improving maternal health and fighting against HIV/AIDS, malaria and other diseases (Nausbaum, 2006).

Unfortunately, the 2006 global corruption report of Transparency International shows that the achievement of these goals within the deadline is severely compromised by the pervasiveness of corruption in the health sector. Certainly, corruption occurs in all countries of the world; however, the consequences of an ill health dramatically weigh on the populations of developing and transition economies, already under-resourced (Rose, 2006; Nussbaum, 2006). Gupta *et al* (2002) found that countries with a high rate of corruption

systematically experience a superior infant mortality than other countries. And it is always the less fortunate in society who suffer the most because they cannot afford neither to pay bribes nor private care (Transparency International, 2006).

To cope with this scourge, several researches on corruption in the health sector have been conducted over the past three decades by various institutions (World Bank, Transparency International, International Monetary Fund and Universities). These works can be divided into two groups namely: High corruption (Azfar (2005), Mauro (2002), World Bank (2005)) involving high-level policymakers and major financial amounts; and small corruption (Chaudury *et al.* (2006), Nussbaum (2006)) where authors examined corrupt practices carried out by civil servants at all levels of the health system and small amounts.

The importance of these researches is that they have contributed to the improvement of strategies to fight against corruption. In particular, they have allowed knowing that by institutionalizing officials' obligation to give account for actions taken in the health sector, they will be forced to improve their behavior. However, these studies are limited because of the lack of knowledge of factors behind this phenomenon, especially small corruption. If the theoretical literature offers a detailed reading key (Mocan, 2004; Lui, 1858; Kaufman and Wei, 1999) of specific situations, the empirical literature however, remains limited.

In Cameroon, the National Institute of Statistics (2011) used the household survey conducted in 2007 to determine from one region to another, people who pay non-regulatory fees to get access to health care on the one hand, and officials who collect these fees on the other. This study is important because it has allowed identifying that from the supply side, for example in the North, 44.9% of non-regulatory fees are collected by the medical staff and 55.1% by the paramedical staff. From the demand side, it shows for example that the rich are more exposed to corruption than the poor. But it does not inform us directly about those who take the initiative for these corrupt actions and why? The purpose of this research is to fill this gap by finding out who initiates the corrupt act and why? In economic literature, the debate on the question of who takes the initiative for corrupt acts often refers to the popular definition that corruption is the use of public mandate for private gain achievement (Bardhan, 1997). In this context, the initiative for the corrupt act comes from the mandatory agent. This is even more true that this agent is in a monopoly situation, and has a discretion power (Cartier Bresson, 1998; Klitgaard, 1989) which makes him/her unavoidable. In this case, it is called passive corruption (Dommel, 2003). On the contrary, considering that corruption is a settled contract between the State agent (the corrupt) and the user (the briber), other authors (Mocan, 2004; Seligson, 2006; Lavallée *et al.*, 2010)) argue that it is possible that the user could be at the origin of the corrupt act given his/her socio-demographic characteristics. In this case, we talk of active corruption (Dommel, 2003). However, empirically, the distinction between active and passive corruption is rarely made. This article is within the framework of this distinction and goes beyond by exploiting the data of the inquiry that the National Institute of Statistics has conducted among households in 2007 and which a part deals with corruption¹.

Indeed, if we find that the initiative comes from suppliers in some Cameroonian regions, we ask ourselves if it is from the medical staff or the paramedical staff. This

¹ The data used in this work are essentially those of the last two Cameroonian household surveys (ECAM2 of 2001 and ECAM3 of 2007), focused on the profile of poverty and living conditions of populations in Cameroon and PETS2 Health 2010 (Survey on the monitoring of public expenditure and the level of beneficiary satisfaction in the Education and health sectors), with sample sizes of about 12,000 households provided for ECAM3 and PETS2, and 4500 households for the specific section on corruption. Apart from the inquiry on households, ECAM3 and PETS2 also interviewed people on corrupt practices that have benefited from similar techniques. It's on individuals' sample that this study is carried out and not on households. Thus, compared to ECAM3, approximately 16,514 individuals were interviewed and almost 2,000 for PETS2.

question helps to test, within the meaning of theoretical models (Schleifer and Vishny, 1993; Rose Ackerman, 1978), if civil servants in a monopoly situation are more likely to collect bribes. This argument implies that the staffs embedded with more medical knowledge and therefore, having a monopoly power in the treatment of some diseases, should be more able to collect bribes (Phelps, 1995).

In contrast, if we find that in some Cameroonian regions, the initiative for the corrupt act comes from those asking for medical care (patients), we will seek to determine the characteristics of those who, from the demand side, pay non regulatory fees. In seeking those characteristics, we will test, as suggested by the theoretical models (Kaufman and Wei, 1999; Lui, 1985), if health workers target their victims based on their ability to pay. Such argument implies that the richest people, those having a job or those with the highest tolerance vis-à-vis corruption should be those that are asked bribes the most.

The significance of this study is twofold: firstly, it provides a basis for developing effective measures against corruption in the health sector. Secondly, it will allow us, relatively in the health sector, to propose a corruption mapping in line with the Cameroonian regions. We therefore classified regions according to the prevalence of the initiative taken for corrupt acts, and raise a healthy competition between regions in relation to the fight against this phenomenon. Section II theoretically describes the mechanisms and factors causing corruption, especially in the health sector. Section III presents and describes the motives and practices of the taking of initiative for corrupt actions in the Cameroonian health System. Section IV presents the conceptual model as well as the implemented methodology. The presentation of statistical estimates obtained and results analysis in terms of supply and demand is the foundation of section V. The last section discusses the proposed economic policies measures to fight against corruption in the Cameroonian health system and concludes the study.

2. LITERATURE REVIEW

Corruption contract of can be established between the briber (the patient) and the corrupt (Medical doctor or nurse). Following the tradition initiated by Becker (1968), the agent and the briber engage in a corrupt relationship when the value of illegality dominates that of honesty. For the agent, the value of honesty depends on the salary received from the employer, his aversion to illegality, the bribe he will receive, but also the probability to be temporarily suspended or sanctioned. For the briber, the decision to establish a corrupt relationship depends on the gain he expects, the amount of the bribe and the cost of initiating the relationship. The latter contains the moral costs incurred by the briber, but also, all the real and monetary costs engaged to allow this encounter; Becker's analysis (1968) shows that the initiative for the corrupt act depends on the economic rationality of the agent that can be the supplier or the user. But it is limited insofar as it appears to put different agents at the same level. On the contrary, for other authors (Klitgaard, 1989), corruption is mainly initiated by the State' agent. According to Klitgaard (1989), opportunities for corruption are greater in situations where the State agent has a monopoly power over users, a great discretion power and less responsibility in actions taken and results obtained.

Monopoly creates opportunities for corruption by limiting the ability of citizens to choose other suppliers of services. If the government is the only provider of health services for example, patients may be forced to pay bribes to get there. In Bolivia, researchers (Gray Molina and al., 2001) found that the existence of alternative suppliers to government services was associated with lower informal payments.

Discretion refers to the autonomy of power that the State official has in decisions making, like the fact to decide on the type of drugs someone needs, and the quantity the patient should procure. A discretion power without adequate control can provide

opportunities for corruption. For example, the Director of the hospital may decide to get a new drug at a high price and in large quantities in exchange of bribes.

Responsibility is the obligation that the government has to prove its effective capacity to produce goods and services that users need (Segal and Summers, 2002). The lack of responsibility creates opportunities for corruption (Vian, 2007). Klitgaard's equation (1989) as presented above reveals the importance of the predominant role played by the supplier in this initiative taken. But it is limited since it somehow obscures the responsibility of the briber. However, writers such as Mocan (2004), Seligson (2006) and Lavallée *et al.* (2010) point out that the characteristics of users may be at the root of corruption. As a matter of fact, socio-demographic factors like age, sex, income, place of residence can sometimes determine the magnitude of corruption. Lui (1985), Kaufman and Wei (1999) argue that the State official is able to discriminate users based on their income level. In this case, users with high incomes are more exposed to corruption. According to Mocan (2004) and Lavallée *et al.* (2010), countries where women occupy many important positions in the management of national institutions are less corrupt than those where women have little responsibility. Women are less likely to pay bribes than men (Seligson, 2006). Authors who argue that socio-demographic factors are the roots of corruption help to guide control measures against corruption towards individuals who are most exposed to this phenomenon. This approach can make the fight against corruption more effective.

3. MOTIVES AND PRACTICES OF INITIATIVE TAKING

This section describes corrupt practices observed in the Cameroonian health care market in general, the magnitude of such practices as well as actors who initiate them on the one hand, and reasons or motives that could justify the behavior of these actors on the other.

3.1 *Corrupt Practices Observed And Actors' Behavior*

This is to describe the corrupt practices of suppliers and demanders in the Cameroonian health care market, in other words, to highlight an explanatory route of their behavior. If the initiative taken for the corrupt act comes from the suppliers, it is important to know from whom it actually emanates: the medical staff or the paramedical staff?

Given a model consists of three actors namely patients, the medical doctor and the nurse. The medical doctor (the boss) is assisted by the nurse (the agent) in providing health care. After buying the medical booklet that officially gives right to a consultation, each patient is first received by the nurse to take parameters: identity, weight, temperature, etc. Then, being in the waiting room, the patient waits for the nurse to allow him/her to enter the doctor's office. Due to the asymmetry of information and the difference of interests existing between the doctor and the nurse, the initiative for corruption can come either from the nurse or the doctor, or both. In the first case, unbeknownst to the boss, the nurse requires that the patient offers him/her bribes for a privileged access (market corruption). But if the patient belongs to the nurse's family, he/she can offer him/her privileged access without receiving a bribe (social exchange corruption; Medard, 1998). In the second case, the nurse allows the patient to see the doctor after taking parameters. The doctor receives the patient but requires that the bribe be paid after. It can also be an agreement between the doctor and his assistant: in this case, he collects bribes from the patient and gives them to the boss for share. In all these cases, the problem that arises is who of the two takes most the initiative to the corrupt act.

The initiative for the corrupt act may also come from patients to insofar as they are generally many in front of the doctor's office because the supply of services is almost always much lower than the demand. They must therefore be aligned to be received, each

patient waiting for his turn. Therefore, to avoid long waiting lines and thus benefit from the attention of caregivers, some patients do not hesitate to propose them bribes; This is most often done discreetly by introducing the amount of bribe into the medical book. Medical books which are submitted to the doctor's secretary according to the arrival order will be carefully searched by the nursing staff who will in priority consult patients who have introduced money in their medical books, thus upsetting the order of arrivals of patients.

3.2 Motives For Initiative Taking: Shortage In Service Supply

In Cameroon, health services are provided to populations by the public sub-sector, the private sub-sector and the traditional sub-sector. The first referred to this work is the most important because not only it is the greatest provider of health care, but in addition, it regulates all activities related to health. To satisfy populations, public health facilities consist essentially of - in a decreasing order of importance - District Hospitals (DH), District Medical Centers (DMC) and Integrated Health Centers (IHC), need equipped basic infrastructures, human resources and drugs, and finally budgetary resources.

Basic infrastructures are composed among others, of medical laboratories, surgery rooms, consultation rooms, the pro-pharmacy and a mortuary. The inquiry from public health facilities (INS, 2010) reveals that on average, 08 health centers out of 10 have medical laboratories for analyses, two out of five have surgery rooms, 13% have a mortuary, 95% have a pro-pharmacy and 46.8% have tap water. It therefore appears that many health centers do not have, among other things, tap water, surgery rooms and a mortuary. The imbalance also appears when we go from one region to another. In Douala for example, 87.5% of health centers have tap water while in the East, it is only 7.1%. In general, urban structures are more equipped than rural ones. However, it is not enough to have basic infrastructures; they still need to be equipped. The shortage of basic infrastructures creates a waiting line insofar as each patient want to be first served. Those waiting line are therefore a major motive for initiative of corrupt acts. The ``FIFO`` principle is no more respected that is, first arrived, first served.

According to the same survey (INS, 2010), in public hospitals in general, medical equipments, among others, are made of a delivery box, a vaccination Team, an operation table, a surgical box, a delivery table, a functional microscope and hospital beds. The same inquiry revealed that about 75.5% of health centers have delivery boxes, 88.4% have vaccination teams, 88.4% have delivery tables and 95.1% have hospital beds. Large deficits in equipments are recorded in the surgery field. Indeed, 63% of health centers do not have operation tables and 55.8% operate without a surgical box. Some equipments are unequally distributed when we go from one region to another. For example in South-West, 64.3% of health centers have a surgical box, while only 21.4% in the Littoral and East regions have it. As in the case of basic infrastructures, we notice that in general, health centers located in town are more equipped than those in rural areas, except in the case of vaccination teams where 87.5% of rural health centers are equipped against 89.2% in urban zone.

In Cameroon, the National Center for the Supply of Essential Drugs' (CENAME) role is to ensure regular supply of quality drugs at lower costs in supply intermediate structures and in public health centers' drugstores and pro-pharmacies. The CENAME has developed a plan that allows each drugstore and pro-pharmacy to procure essential drugs. However, despite this plan of drugs supply established by the CENAME, one deplores the stock shortage of all drugs in health centers. The duration of this shortage varies between 3 and 19 days. As far as the medical and paramedical personnel of these health facilities are concerned, there is a chronic shortage of staff. According to the Demographic Health Survey (DHS, 2011), the ratios are 1 medical doctor for 10,000 inhabitants against 1 nurse per 5,000 inhabitants. The consequence of the lack of medical doctors is that six out of ten patients

have not met a doctor during a consultation. The majority of them exchange with a nurse. It is in private health facilities that patients are consulted by doctors. Moreover, the majority of health workers lack motivation because of the lack of visibility into their status, their career profile and their decent wages. In particular, as most Cameroonian civil servants in the early 1990s, health care workers have experienced a drastic decrease of over 50% of their salaries. Since then, most caregivers have turned to collect bribes to regain some of their lost wages.

The survey on the monitoring of public expenditure conducted by the INS (2010) reveals that 47.5% of health facilities managers in cities have not removed themselves their expenses authorization. In rural areas, this percentage rises to 37.4%. This practice reflects the non-compliance with rules governing finance control services that provide to the only spending authority, the right to withdraw the spending authorizations of the structure for which he is responsible. Thus, the delay in the withdrawal of expenses authorizations reduced the time set for the implementation of the budget. The same survey confirms that in some regions like Adamawa or East, it takes 2.5 months after the launching of the budgetary year to access these authorizations. Also, before receiving them, managers of health facilities are sometimes pushed to ask patients to cover the costs of services that public authorities could have bore. The same survey reveals that some health facility managers pay bribes to some stakeholders (the public treasury management, the Ministry of Finance, etc.) in the expenditure channel to access spending authorizations. As concerns expenditures on medicines, office supplies and computer equipment, 32%, 37.8% and 40.4% of managers respectively have testified. In general, it therefore appears that public agents create delays or administrative harassments solely to receive bribes (Myrdal, 1968; Bardhan, 1997) from managers of health facilities. Thus, in view of the above, it could be that the deficit of nurses and medicines, the lack of infrastructure and medical equipment, and the difficulties encountered in implementing the budget instigate the medical personnel to ask patients financial contributions (non-regulatory payments) that could be interpreted wrongly or rightly as motives for corrupt actions.

The four-column table below which we used as a working basis for our estimates identifies the region of the study in the first column; the second specifies the category of health personnel (doctors and paramedical staff) who perceives non-regulatory fees in the region concerned, the third column which is split into two specifies the source of the payment initiative (the patient or health personnel) and the fourth which shows the magnitude (in percentage) of the payments of bribes by patients on the health care market in different cameroonian regions, shows that the center is the region where the bribes are most paid, followed by the North and Littoral. On the contrary, the West and Adamawa are the least solicited regions.

4. MATERIALS AND METHOD

To tackle the taking of initiatives for the corrupt actions on healthcare markets, we conceptualized the corrupt behaviors of the suppliers and users of healthcare, in other words, to propose an explanatory diagram of their behavior. This initiative taken for the corrupt act from the supply view point will be tackled through odds ratios but also, through the relative risk and differences in proportions. For each region was drawn the contingency shown in table 2.

Table 1: Initiative taking by the patient or health personnel for each region and the magnitude of irregular payments

Region (R)	Authority who has perceived Non- regulatory Fees (P)	Payment Initiative du (I)		Has paid non-regulatory fees
		From the patient	From the Authority	% Yes
Douala	Medical Doctor	822	1934	3
	Paramedical Staff	2503	19308	
Yaounde	Medical Doctor	0	517	2
	Paramedical Staff	4025	10973	
Adamaoua	Medical Doctor	0	238	0,9
	Paramedical Staff	325	762	
Center	Medical Doctor	0	0	6,3
	Paramedical Staff	2200	4647	
East	Medical Doctor	0	789	1,6
	Paramedical Staff	0	757	
Far North	Medical Doctor	0	582	1,7
	Paramedical Staff	1434	1655	
Littoral	Medical Doctor	0	1549	2,6
	Paramedical Staff	623	1484	
North	Medical Doctor	572	2559	3,3
	Paramedical Staff	1745	2103	
North-West	Medical Doctor	359	0	1,9
	Paramedical Staff	0	3443	
West	Medical Doctor	0	0	0,8
	Paramedical Staff	2265	877	
South	Medical Doctor	0	57	2,3
	Paramedical Staff	596	1418	
South-West	Medical Doctor	1237	0	2,6
	Paramedical Staff	849	2022	

Sources: Table constructed and calculations done on the basis of 2007 ECAM data

Table 2 : Joint and Conditional Distributions

Official who perceived bribes (P)	Paiement Initiative (I)	
	No	Yes
Medical staff	π_{11} (π_{11})	π_{12} (π_{21})
Paramedical staff	π_{21} (π_{12})	π_{22} (π_{22})

Sources: Authors' conception

In table 2, the connotations of the symbol π_{ij} represents the number of officials (medical staff) who received bribes and who take the initiative or not and $\pi_{i/j}$ the number of officials who received bribes given the payment initiative, π_{ij} and $\pi_{i/j}$ representing respectively the joint and conditional distributions used to calculate the following odds ratios:

$$\theta = \frac{\pi_{11}/\pi_{12}}{\pi_{21}/\pi_{22}} = \frac{\pi_{11} \pi_{22}}{\pi_{12} \pi_{21}} \tag{1}$$

The numerator and denominator of the first term of this equation respectively represent the relative risks compared with responses of the payment initiative namely 'no' or 'yes'. Thus, when $1 < \theta < \infty$, we will say that the medical staff would not tend to take more initiative for the corrupt act (or take less initiative) than the paramedical staff. In this case, at the level of the numerator of the relative risk, we will have $\pi_{11} > \pi_{12}$ which will be rather interpreted in terms of probability that the proportion of medical staff not taking the payment initiative would be x times higher than that of the paramedical staff. On the contrary, if $0 < \theta < 1$, we will have the opposite effect at the level of interpretations with $\pi_{11} < \pi_{12}$. It is worth turning now on the demand side to highlight the characteristics of patients who initiate corrupt actions.

We tackled the initiative taking for the corrupt act by patients through a Poisson distribution, given that the behavior of the latter is materialized by long waiting lines in front of the doctor's office as formerly described in the previous section. In fact, the applicant i who waits for his turn completely ignores the behavior of the applicant j who was already received by the medical doctor. In view of the above, we can consider the initiatives for the corrupt act taken by users as being random and independent from each other in time and space, the different occurrences of events apparition in a contingency table being often identified as independent random variables that follow a Poisson distribution. The taking of initiative for the corrupt act being the choice of the patient, it may be captured through the various components of a generalized linear model (GLM)², this thanks to a Poisson distribution of the following form:

$$f(n_i, m_i) = \frac{e^{-m_i} m_i^{n_i}}{n_i} \tag{2}$$

Where n_i represent the frequency of the occurrence of the event 'initiative taking for the corrupt act by users', considered as independent random variables constituting the contingency table cells, and $m = E(n_i)$ being the corresponding expected frequencies. This distribution can also be rewritten as:

$$f(n_i, m_i) = \exp[n_i \log(m_i) - m_i - \log(n!)] \tag{3}$$

$$= \exp[n_i \theta_i - \exp(\theta_i) - \log(n!)] \tag{4}$$

$$f(n_i; m_i) = \exp(-m_i) \left(\frac{1}{n_i!}\right) \exp[n_i \log(m)] \tag{5}$$

4 These components include: the linear component, the random component and the link describing the functional relationship between the above two components. The systematic or linear component, as in traditional linear models (the traditional linear model of the form $y_i = x_i \beta + \varepsilon_i$ and the mathematical expectation of the form y_i noted $E(y_i)$ is $\mu_i = x_i \beta$) specifies a linear function as predictor of the independent variables namely $\eta_i = x_i \beta$. The canonical link is a Log link of the form $\eta_i = \log(m_i)$ (Agresti. A. 1990, PP 80-82)

This last expression is but the general expression of the probability distributions belonging to the family of exponential distributions. Using the various transformations and existing functional links between the GLM³ components, the last expression above leads directly to the log-linear model used below in our estimates through contingency tables:

$$\log m = X \beta \tag{6}$$

X is the matrix of the model containing the values of the independent variables for N observations and β the vector the model's parameters. The response variable (the frequency of the occurrence of the event taking initiative by users) here follows a Poisson's distribution and the function of the chosen link being the log, the average parameter m of the Poisson distribution will be therefore linked to the linear predictor through the following relationship:

$$\log(m_i) = \sum_j \beta_j x_{ij} \quad i = 1, \dots, N \dots \dots \dots (7)$$

4.1 Independent Variables Used And Signs Expected

The independent variables used in this study are mostly from the classic literature on the determinants of corruption in developing countries. These are the variables on region, place of residence, gender, standard of living; age and employment status. Thus, for each observation i , we will have the following relationship:

$$\begin{aligned} & \log(m_i) \\ & = \beta_0 \\ & + \sum_j region_i(j) \beta_j + \sum_j milieu_i(j) \beta_j + \sum_j gender_i(j) \beta_j + \sum_j level_i(j) \beta_j + \sum_j age_i(j) \beta_j + \sum_j activity_i(j) \beta_j \dots (8) \end{aligned}$$

Each of the above mentioned variables being associated with the j^{th} level of independent variables for the *observation* i namely:

$$x_i(j) = \begin{cases} 1 & \text{If } x = j \\ 0 & \text{If } x \neq j \end{cases}$$

Gender appears to be causing the behavior towards corruption. Numerous studies carried out at the individual level emphasize that women are less tolerant than men with regard to corruption (Dollar, Fisman and Gatti, 2001; Swamy and Alii, 2001). Also, at the macroeconomic level, Dollar, Fisman and Gatti (2001) showed that countries where women's representation in politics is high are also those having the lowest levels of corruption.

Age also appears to be a factor in reducing exposure to corruption (Hunt and Lazlo, 2005; Seligson, 2006). According to Seligson (2006), young people are more often victims of corruption as they have to settle in life and thus, be more in touch with the administration. Hunt (2004) believes that older people are less victims of corruption as they have had time to create a "trust network". Gradually as life progresses, reciprocal exchanges (social capital) would replace corruption. Residential environment equally appears to be a factor that exposes people to corruption. For Seligson (2006), corruption is an urban phenomenon. Urban people are more likely to seek services from State officials than rural people who have little contact with them.

³ Agresti, Alan :Categorical Data Analysis, 1990, John Wiley & Sons, Chapter 13, PP 445-55

The functionalist sees corruption as a way to lubricate a system confronting a pervasive bureaucracy and regulation stifling private initiative (Bhagwati, 1982). In such an environment, those in a waiting line having higher incomes and giving more value to a fast service, tend to take the initiative to pay bribes for a privileged access. Corruption is an auction mechanism for a user to own something he values most (Cartier Bresson, 1998).

5. RESULTS AND DISCUSSIONS

The results of the empirical analysis of the taking of initiative are presented in two steps: the supply side and the demand side. The corrupt act usually takes place between the corrupt and the briber without anyone knowing who takes the initiative. We will initially establish the relationship between the health staff who collects non-regulatory fees, the origin of the payment initiative of such fees, and the region in which the corrupt act takes place (initiative taken by the suppliers). Secondly, we will focus on the demand side (initiative taken by the patients) to highlight the characteristics of patients who take the initiative for corrupt acts. The table below shows the numbers and proportions from which the various odds ratios were estimated. It establishes the relationship between the health personnel who collects non-regulatory fees, the payment initiative that can come either from the patient or health personnel (medical or paramedical personnel), and the region in which the corrupt act takes place. We have two independent variables namely the region and the type of official who collects non-regulatory fees. The dependent variable here is the source of the payment initiative; thus, we can analyze the various corrupt behaviors between the different actors in relation to each region, the latter variable being seen as a control variable. The table also presents the proportions⁴ of those who take the payment initiative, and the extent of the difference in proportion of the initiative taken between patients and health personnel. Our first results show that health workers take the initiative to bribery in 83.33% of the regions while in 16.66% of cases, the initiative is taken by the patients.

5.1 Initiative taken by Providers

In the first case, we distinguish the following ten regions: Douala, Yaounde, Adamawa, Center, East, Far North, Littoral, North, North-West and South. In these regions, corruption is passive (Dommel, 2003). This result confirms the idea that (Tanzi, 1998; World Bank, 1997) corruption is "the abuse of public property for personal gain." In other words, it is the State agent and not the user who abuses public property entrusted to him/her to satisfy his/her private interests. Thus, we'll examine the side of health care providers to determine the category of officials who take initiative for the corrupt act; This will allow us to make a typology of different categories of officials who are the most corrupt by region because the frequency with which the initiative is taken varies as shown through the data in Table 3. In the Littoral for instance, estimates of the table show that among health workers, the payment initiative is about 29.25% (from 99.97 to 70.42%) higher among medical doctors than among paramedical staff, this with a relative risk of about 1.41 (99.77 / 70.42). In other words, the proportion of officials subject to corrupt actions is about 1.41 times higher (or 41% higher) for medical doctors than for other officials. The same trends appear in the Adamawa, Yaounde, North, Far North, West and South regions. On the contrary, some regions present a greater initiative taken among the paramedical staff than among the medical staff. It is the case of Douala (a payment initiative higher by about 18.5% for the paramedical staff for a relative risk of about 1.26), Center, North-West and South-West. Finally, we observe for the

⁴ These are figures in parentheses

Eastern Region that the magnitude of the taking of initiative for the corrupt act is almost the same for both categories of officials.

Ultimately, as shown in Table 4 below, the medical staff is the one who at the forefront, initiates at 58.3% corrupt actions in most cameroonian regions. Paramedical staffs are second because they initiate corrupt acts in 33% of regions. Our results do not allow us to conclude in favor of the first or the second in 9% of regions. Theoretically, the rank of the medical staff can be understood by the fact that they have a more important discretion power than that of the paramedical staff (Phelps, 1995). They have more knowledge than the paramedical staff. However, as Phelps (1995) stated: "he who has knowledge has power." Medical doctors have the monopoly power of consultation, prescription and treatment of patients. The paramedical staff only assists in these tasks. This monopoly allows them to take more initiative for corrupt acts. But the lack of medical doctors that characterizes the cameroonian health system gives in some regions more power to the paramedical staff than it is supposed to be. In the absence of medical staff, the paramedical consults, prescribes and treats. That is why in some Cameroonian regions as Douala and the Center, the paramedical appears as the one who takes more initiative for corrupt acts.

Table 5 shows the estimated odds ratios ($\hat{\theta}_{PI/R}$) reflecting the relationship between the three variables. These odds ratios are obtained from the data in Table 1, and allow us to better understand the magnitude of the corrupt act by highlighting previous analyzes; an odds ratio $\hat{\theta}_{PI/R} < 1$ will simply imply that for a given region and at the level of health personnel, the chances of the taking of initiative for the corrupt act will be higher for medical doctors than for the paramedical staff; let's note that the more $\hat{\theta}_{PI/R}$ will be closer to zero, the higher the magnitude of the taking of initiative by medical doctors, as compared to others; and an odds ratio $\hat{\theta}_{PI/R} > 1$ will have the opposite effect. We notice through these odds ratios that the Littoral is the region where the chances for the initiative taken for the corrupt act by medical doctors are the highest (1250 times higher) as compared to the paramedical personnel, while in the North-West, the chances are higher for paramedical personnel (4951753 times higher) than for medical doctors. A ranking of the taking of initiative for the corrupt act by health personnel in general and by region reveals that it's in the North-West region that the rating of the initiative taken is the highest.

Some useful basic statistics for a comprehensive analysis of the initiative taken by suppliers are shown in Table 6 below; the Mantel-Haenszel statistic presents the marginal odds ratio which in its estimate ignores the control variable region. It provides a general estimate of the odds ratio of all observations. This ratio stipulates that in general, the corrupt act in the Cameroonian health system is more initiated by health personnel (medical doctors or paramedical staff) than by the patients (which corroborates with the analysis of the conditional odds ratios); However, and as some conditional odds ratios have revealed, the initiative for the corrupt act is sensibly higher (about 14%) among medical doctors than among the paramedical staff. As far as the Cochran-Mantel-Haenszel's Statistics is concerned, it allows testing the hypothesis that the taking of initiative for the corrupt act and health official who received non-regulatory fees are conditionally independent given the region. Through the probability column (p-value <.0001), we reject the hypothesis of independence to conclude that whatever the region, these two variables are related. Finally, the Breslow-Day's statistics that tests the hypothesis of homogeneity of the different conditional odds ratios has a probability (p-value) <.0001; therefore, odds ratios are different from one region to another.

5.2 Initiative taken by Patients⁵

Table n° 7 below gives us estimates of the taking of initiative for the corrupt act on the side of the demand, obtained by using equation 8. The table gives us information on the reliability of the model, the importance of the main effects through likelihood maximum ratios statistics of type 3, and the coefficients of the model. The analysis of type 3 shows that with the exception of the variable milieu, all other main effects are highly significant in the taking of initiative for the corrupt act.

Socio-demographic characteristics influence the taking of initiative for the corrupt act. Thus, our estimates show that in South-West and West, the youth, that is, persons aged 39 years and under, are 7.69 times more likely to take the initiative for corruption than the old. In the same vein, workers are 3.03 times more likely to take the initiative for the corrupt act than the jobless. These results confirm the theoretical analyses. In the first case, young people are more vulnerable to corruption because they have not yet formed a “trust network” ". In the second case, workers can take initiatives for corruption because not only they have high incomes to do so, but in addition, in an environment where corruption is endemic, holders of important resources who give more value to time, have an interest in taking the initiative to pay bribes. In contrast, our estimates do not allow us to conclude, as predicted by the theory, namely that the phenomenon of corruption is essentially urban. Indeed, our estimates show an odds ratio sensibly equal to $1(e^{-0.08} = 0,92 \approx 1)$. Theoretically speaking, corruption is primarily an urban phenomenon. Our estimates show that the non-poor are less likely to take the initiative than the poor. This result is contrary to the theoretical analysis. But it can be explained by the fact that faced to the non-poor, health workers take more initiative. Another result contrary to the theoretical analysis indicates that men tend to take less initiative than women. The widespread idea that women are less prone to corruption than men seem rejected. But this result is explained by the fact that in the South-West and West regions, when health workers are in front of men, they take more initiative for the corrupt act than when they are in front of women. In addition, women in the field of health express more need than men and therefore are more vulnerable to corruption (PNUD, 2011). Finally in regions, our estimates show that patients in the West region tend to take more initiative for corrupt actions than those in the South-West (their rating is about 1.8 times higher).

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⁵ The table used to estimate the initiative taken from the demand side is in appendix 1 in which we have only considered regions where the initiative taken by patients was the highest, namely the West and South-West.

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6. CONCLUSION AND RECOMMENDATIONS

The main purpose of this study was to determine the actors who take the initiative for corrupt acts in the Cameroonian health care market. In general, our results show that health workers take more initiative for corrupt acts than patients on the one hand, and that corrupt actions are more initiated by the medical personnel and less by the paramedical personnel on the other. In one region, the results obtained do not allow us to conclude in favor of the first or the second. In the case where the initiative comes from health personnel, our estimates show that in seven regions, it is initiated by the medical personnel and the paramedical personnel in four regions.

In case the initiative for corrupt actions comes from the patients, it appears that socio-demographic characteristics play an important role. Young people are 7.69 times more likely to take the initiative for corruption than the oldest. In the same perspective, workers are 3.03 times more likely to take the initiative for corrupt acts than the jobless. These two results confirm the theoretical analyzes that support in the first case that young people are more vulnerable to corruption because they have not yet formed a "trust network", and in the second case, the holders of high incomes that give more value to time, have to take the initiative for the corrupt act in an environment where the regulation stifles economic activities and, most importantly, hinders the private initiative. Therefore, faced to all these corrupt practices, measures for the fight against this phenomenon may be proposed from the supply and demand view point.

In the first case, the increase of wages could reduce the attraction towards bribes without deleting them. A high salary can simply allow a civil servant to require a bigger bribe able to compensate the risk of losing what is now a quite interesting job (Tanzi, 1998, Rose Ackerman, 1998). The study of Di Tella and Shargrotsky (2003), drawn from an experience of the fight against corruption in Buenos Aires' hospitals, shows that the impact of wages on corruption considerably depends on its detection probability. They showed that in the absence of control, an increase of wages does not affect corruption behavior; but it can be effective if it is followed by an increase in control of civil servants.

In the second case, measures should be established to favor patients to have access to health care without them being incited to take the initiative to bribe. Since our estimates revealed that those with high incomes are among those who take the initiative for corrupt act, especially when they value time, the solution may be to ensure that places in a waiting line are for instance allocated on the basis of payments reflecting the value given to a fast service (Lui, 1985). The effectiveness of such procedure depends on the extent to which the agent providing the service "has an interest" on payments made, in such a way that he is incited to speed up the service. A hospital can for example set up a double line system: a fast line, expensive, for those who value speed and a slower line for others. In this system, a part of payments "related to speed" could be used to reward civil servants for their good results (Paul, 1995). When such systems are implemented, it is important to make sure to hinder the bureaucrats to have the monopoly power they could use to extract rents from an increased

amount. If the system is not carefully managed, the possibility of obtaining either bribes or performance related bonuses will simply provide the civil servants a push to impose new restrictive conditions which they then agree to steal in exchange for payment (Rose Ackerman, 1998).

Table 3: Relationship between (P) and (I) given (R)⁶

Region (R)	Official who has perceived bribes (P)	Paiement Initiative (I)		Magnitude ⁷ difference (in %)
		From the patient	From the official	
Douala	Medical doctor	822.5 (29.8)	1934.5 (70.1)	73
	Paramedical Staff	2503.5 (11.4)	19308 (88.6)	
	Total	3326 (13.5)	21242 (86.5)	
Yaounde	Medical doctor	0.5 (0.10)	517.5 (99.90)	48.2
	Paramedical Staff	4025.5 (26.9)	10973 (73.1)	
	Total	4026 (25.9)	11490 (74.1)	
Adamaoua	Medical doctor	0.5 (0.21)	238.5 (99.79)	49.8
	Paramedical Staff	325 (29.92)	762 (70.08)	
	Total	326 (25.6)	1001 (75.4)	
Center	Medical doctor	0.5 (50)	0.5 (50)	35.8
	Paramedical Staff	2200.5 (32.2)	4647.5 (67.8)	
	Total	2201 (32.1)	4648 (67.9)	
East	Medical doctor	0.5 (0.06)	789.5 (99.94)	99.86
	Paramedical Staff	0.5 (0.07)	757.5 (99.93)	
	Total	1 (0.07)	1547 (99.93)	
Far North	Medical doctor	0.5 (0.09)	582.5 (99.91)	22
	Paramedical Staff	1434.5 (46.4)	1655.5 (53.6)	
	Total	1435 (39)	2238 (61)	
Littoral	Medical doctor	0.5 (0.03)	1549.5 (99.97)	66
	Paramedical Staff	623.5 (29.58)	1484.5 (70.42)	
	Total	624 (17)	3034 (83)	
North	Medical doctor	572.5 (18.3)	2559.5 (81.7)	44
	Paramedical Staff	1745.5 (45.35)	2103.5 (54.7)	
	Total	2318 (33)	4663 (77)	
North-West	Medical doctor	359.5 (99.86)	0.5 (0.14)	81
	Paramedical Staff	0.5 (0.01)	3443.5 (99.99)	
	Total	360 (9.46)	3444 (90.54)	
West	Medical doctor	0.5 (50.0)	0.5 (50.00)	(44.2)*
	Paramedical Staff	2265.5 (72.08)	877.5 (27.92)	
	Total	2266 (72.1)	878 (27.9)	
South	Medical doctor	0.5 (0.86)	57.5 (99.14)	42.4
	Paramedical Staff	596.5 (29.6)	1418.5 (70.4)	
	Total	597 (28.8)	1476 (71.2)	
South-West	Medical doctor	1237.5 (99.96)	0.5 (0.04)	(1.6)*
	Paramedical Staff	849.5 (29.58)	2022.5 (70.42)	
	Total	2087 (50.8)	2023 (49.2)	

Source: Our estimates based on data in Table 1

⁶ A value of 0.5 was added to the figure in each cell of the table prior to the odds ratios' estimate.

⁷ A star represents the taking of initiative by patients.

Table 4: Typology of regions with respect to the initiative taken

Regions where the initiative taken by the medical staff is the highest as compared to that of the paramedical staff			Regions where the initiative taken by the paramedical staff is the highest.		
Region	Initiative taken for the corrupt act		Region	Initiative taken for the corrupt act	
	Relative Risk	Magnitude (in %)		Relative Risk	Magnitude (in %)
Yaounde	1.36	26.8	Douala	1.26	18.5
Adamawa	1.42	29.71	Center	1.35	17.8
Far North	1.86	46.31	North-West	714	99.85
Littoral	1.41	29.5	South-West	1760.5	70.38
North	1.5	17			
West	22	1.79			
South	28.74	1.4			

Source: Our estimates based on data in table n°1

Table 5 : Typology of corrupt Regions and Relationship between (P) and (I) given (R) : An estimate by the conditional odds ratios ($\hat{\theta}_{PI/R}$)

Odds ratio ($\hat{\theta}_{PI/R}$) and IC	
Odds ratio ($\hat{\theta}_{PI/R}$)	95% confidence interval of the odds ratio ($\hat{\theta}_{PI/R}$)
$\hat{\theta}_{PI/Douala}$ =3.2790	$\hat{\theta}_{PI/Douala}$ (2.9920, 3.593)
$\hat{\theta}_{PI/Yaounde}$ =0.0026	$\hat{\theta}_{PI/Yaounde}$ (0.0002, 0.0422)
$\hat{\theta}_{PI/Adamaoua}$ =0.0049	$\hat{\theta}_{PI/Adamaoua}$ (0.0003, 0.079)
$\hat{\theta}_{PI/Center}$ =2.1120	$\hat{\theta}_{PI/Center}$ (0.0419, 106.474)
$\hat{\theta}_{PI/East}$ =0.9595	$\hat{\theta}_{PI/East}$ (0.0190, 48.41540)
$\hat{\theta}_{PI/Far\ North}$ =0.0010	$\hat{\theta}_{PI/Far\ North}$ (0.0001, 0.016)
$\hat{\theta}_{PI/Littoral}$ =0.0008	$\hat{\theta}_{PI/Littoral}$ (0.0000, 0.0123)
$\hat{\theta}_{PI/North}$ =0.2696	$\hat{\theta}_{PI/North}$ (0.2413, 0.3011)
$\hat{\theta}_{North-West}$ =4951753	$\hat{\theta}_{North-West}$ (98107.5161, 249928433)
$\hat{\theta}_{PI/West}$ =0.3873	$\hat{\theta}_{PI/West}$ (0.0077, 19.5354)
$\hat{\theta}_{PI/South}$ =0.0207	$\hat{\theta}_{PI/South}$ (0.0013, 0.3351)
$\hat{\theta}_{PI/South-West}$ =5892.51	$\hat{\theta}_{PI/South-West}$ (367.94, 94368.5)

Source: Based on estimates in table n°1

Table 6: Some basic statistics

Statistics	Value	Probability
Cochran-Mantel-Haenszel	CMH = 36.0177	<.0001
Mantel-Haenszel	$\hat{\theta}_{PI} = 1.1407$	$\hat{\theta}_{PI} (1.0873, 1.1967)$
Breslow-Day	Chisquare = 7666.9077	<.0001

Source: Our estimates based on data in table 1

Table 6B : Equation 8 Estimates

The GENMOD Procedure : Poisson regression (Response Variable : initiative taken)			
<u>Model Information</u>			
<u>Criteria For Assessing Goodness Of Fit</u>			
Criterion	DF	Value	Value/DF
Deviance	12	3400.4482	283.3707
Scaled Deviance	12	3400.4482	283.3707
Pearson Chi-Square	12	2810.5259	234.2105
Scaled Pearson X2	12	2810.5259	234.2105
Log Likelihood		-5749.2241	

<u>LR Statistics For Type 3 Analysis</u>			
Source	DF	Chi-Square	Pr > ChiSq
region	1	165.86	<.0001
milieu	1	0.03	0.8691
sex	1	363.23	<.0001
level	1	519.30	<.0001
age	1	882.64	<.0001
activity	1	343.69	<.0001

<u>Analysis Of Parameter Estimates</u>							
Parameter	DF	Estimate	Standard Error	Wald	95% Confidence Limits	Chi-Square	Pr > ChiSq
Intercept	1	-1.8608	0.1070	-2.0705	-1.6510	302.24	<.0001
region West	1	0.5883	0.0469	0.6802	0.4964	157.45	<.0001
milieu rural	1	-0.0079	0.0482	-0.1024	0.0865	0.03	0.8691
sex male	1	-0.8726	0.0464	-0.9636	-0.7817	353.61	<.0001
level non poor	1	-1.0811	0.0479	-1.1749	-0.9872	509.59	<.0001
age less than 39 years	1	2.0473	0.0883	1.8742	2.2205	537.00	<.0001
activity active	1	1.1103	0.0649	0.9831	1.2374	292.97	<.0001

N=6013

Source: Our estimates based on empirical data

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