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Paying Informally in the Albanian Health Care Sector: A Two-Tiered Stochastic Frontier Bargaining Model

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Abstract

This paper looks at informal payments in the health care sector in Albania and the bargaining power of patients and medical staff. We develop a two-tiered stochastic frontier model to measure the effect of bargaining power of medical staff and patients on the extent of informal payments. We use data from the Albania Living Standards Measurement Survey 2005 and calculate patients' maximum willingness to pay and medical staff' expected payments for both outpatient and inpatient visits.

The results show that medical staff have consistently more bargaining power than patients, while patients and medical staff bargain more in outpatient than in inpatient care. Higher education, difficulty to pay for health care, and location of hospital increase the bargaining power of patients, while type of illness and location of hospital increase the bargaining power of medical staff.

Keywords: Informal payments, bargaining, stochastic model, out-of-pocket payments

JEL Codes: I11, I19, D82

I. Introduction

Paying informally for health care is a wide spread phenomenon in many Central, Eastern and Southern European countries (Delcheva et al. 2000; Shahriari et al. 2001; Szende and Culyer 2006; Gaala and McKee 2005; Vian and Burak 2006; Liaropoulos et al. 2008). Generally, health care seekers are asked or expected to pay various forms of under-the-table payments to health care practitioners, which are defined as informal payments (Lewis 2000; Gaala and McKee 2005).

From an economic perspective, informal payments for health care can be seen as a way to allocate scarce resources. It is a source, through which the market prevails over the rationing systems thought up by the government. Such payments allow patients to jump the queue, receive higher quality of service, receive more care, gain access to public hospitals, or simply receive any care at all (Lewis 2000; World Bank 2006; Liaropoulos et al. 2008). Informal payments are also considered to be a coping strategy adopted by medical staff and largely induced by under-funded or overstaffed health systems (Lewis 2000; Thompson and Xavier 2002).

Evidence from many countries suggests that the amount paid informally, is negotiated between patients and physicians either directly or indirectly (Belli et al. 2002; Vian and Burak 2006; Shahriari et al. 2001). The process is described as an 'unofficial health care market' (Szende and Culyer 2006) where physicians participate directly in the negotiation process or the negotiation is done by their 'brokers'[1] (Vian and Burak 2006). Despite the fact that the existence of informal payments is widely recognized little evidence is available on how the amount paid is actually bargained between physicians and patients. We use this perspective to view informal payments as an outcome of a process determined by the relative bargaining power of both parties.

We take data for Albania to estimate a two-tiered stochastic frontier bargaining model of informal payments. Albania is a country that has inherited a universal health care system from the communist regime with a widespread net of public health care services and limited private providers (Nuri and Tragakes 2002). Informal payments are widely prevalent with the largest incidence in the inpatient care services (World Bank 2000). Health reports from the country show that 60–87 per cent of Albanians paid informal payments to medical staff in hospitals (Vian and Burak 2006). These payments account for about 25 per cent of total out-of-pocket expenditure (Vian et al. 2006) in inpatient services and 7 per cent in outpatient services (Hotchkiss et al. 2005). We use data from the Albanian Living Standards Measurement Survey 2005[2] and look at informal payments for both outpatient and inpatient visits.

Specifically, the paper focuses on the demand and supply factors influencing the amount paid informally in Albania. We further calculate the difference between the actual amount paid informally and the amount that patients are willing to pay and medical staff are expecting to receive. Then we develop a two-tiered stochastic frontier model to measure the effect of bargaining power between physician and patients on the amount of informal payments (Polachek and Yoon 1987; Groot and Maassen van den Brink 2007).

[1] 'Brokers' are evidenced by Vian and Burak (2006) as people (not necessarily medical staff) who serve as intermediaries between patients and doctors. An example can be the nurse who tells how much a patient should give to the doctor (some time this is also done by guards, etc),

[2] www.worldbank.org/lsms

The estimates of the two one-sided errors terms in this model, are interpreted to identify the bargaining power of medical staff and patients, respectively.

The paper is divided in 6 sections. Section two reviews the international empirical evidence on informal payments. The section also gives an overview of the health care situation and informal payments in Albania and discusses the main aspects of informal payments in the country. Section three outlines the theoretical model, while section four and fifth discuss the data set and empirical results. Section six provides the concluding remarks.

II. Theoretical background

Studies find that both patients and medical staff can influence the amount paid informally. Ensor (2004) argues that one of the main types of informal payments is when medical staff misuse their power and market position to impose extra payments, (other reasons include payments for extra services due to insufficient funding). Carlton and Perloff (1989) emphasize that the availability of information may influence the price of a good by lowering it[3]. This implies that the actual amount of informal payment is determined by the knowledge or ignorance of consumers and providers about the actual "market" price. Medical staff do not have enough information on the patient's maximum willingness to pay, and patients on the other hand, do not have enough information on the minimum expected price at which medical staff would be willing to provide the services. Therefore, we argue that the actual informal payment (or the "market price") is determined by the bargaining power of patients and providers.

It is often reported in the literature that informal payments are charged or requested regardless of the social status of the consumers (Shahriari et al. 2001; Liaropoulos et al. 2008). However, evidence suggests that for the same treatment, different patients pay different prices [3, 5]. This may be an indicator of imperfect information on patient payments. This implies that patients and medical staff bargain over the price, and that some patients or medical staff have better bargaining power than others. We assume that determinants of patients' bargaining power are factors related to the demand for health care (e.g. including income or wealth, education, and age), while determinants of bargaining power of medical staff are characteristics of providers such as the quality of the physician's service, type of treatment, and the location of health care facility.

Patients' motives to pay informally are implicitly linked to patients' willingness to pay for better quality and access to services. When looking at the attitudes of patients towards publicly provided care in Bulgaria, Pavlova et al. (2002) find that individuals are willing to pay if they are offered good quality and quick access.

Wealth is usually considered an important determinant of health care demand. Evidence shows that usually those who cannot afford to pay for health care find alternative means (i.e. using savings, or borrowing money) to pay for such services (Shahriari et al. 2001). As a result, wealth and income are believed to be less important in

[3] Carlton and Perloff (1989), show that improving information can lower the prices. When information is more available customers may better estimate the real price

determining the amount paid than informal payments. Although it is usually stated that in post-communist countries the rich pay more for health care than the poor (Novak et al. 1996; Ensor and Savelyeva 1998; Balabanova 1999), when it comes to the amount paid informally no significant differences are documented between these groups (Shahriari et al. 2001; Thompson and Xavier 2002).

Age and education are two determinants of health care demand that are also believed to influence the amount of informal payments. Evidence suggests that elderly patients pay lower amounts for health care services (Shahriari et al. 2001) and higher educated people higher amounts (Liaropoulos et al. 2008). However, the evidence remains mixed and also depends on the type of services (Vian et al. 2006).

Shahriari et al. (2001) find that residence of health seekers influences the amounts paid informally. Rural residents in Poland appear to be easier to exploit by doctors in the city. Rural residents in Albania are also likely to pay more informal payments than urban residents in hospitals located in big cities to avoid queuing (Vian and Burak 2006).

On the supply side, informal payments are believed to be triggered by restrictive circumstances like the low wages of medical staff in the public sector (Healy and McKee 1997; Shahriari et al. 2001; Ensor and Savelyeva 1998). Doctors use the monopoly position of publicly provided care and the information advantage they posses to impose informal payments on their patients. Shahriari et al (2001) argue that with the increase of the number of doctors the equilibrium price that they charge should go down. In public health care services of most post-communist countries the prices for services are fixed and what is observed in practice is a large variety of services that would match patients' increased expectations. They further argue that as the state does not allow for prices to vary among services, informal payments should be higher when the differences between the prices charged officially and the "market" prices are higher.

Expected quality of treatment affects the amount that patients pay informally. Evidence suggests that medical staff use their favourable position of having more diagnostic and treatment information and being the ones to decide upon the use of resources (i.e. providing differentiated levels of treatment to paying or non-paying patients) to bargain for informal payments. Thompson and Xavier (2002) find that the time of processing when patients first arrive and the length of stay in the hospital differ significantly between patients paying different amounts informally. The type of treatment or type of facility also matter when it comes to amounts paid informally. Generally, the highest informal payments are observed in hospitals and the lowest payments are made to general practitioners (Shahriari et al 2001). Given the specifics of some treatments (e.g. giving births) medical staff may be also approached for an informal payment before the services are provided to secure their availability. In these cases, negotiations over the price may also be done in advance (Belli 2002).

Studies looking at the process of price determination related to informal payments (in Albania or elsewhere) are still limited. However, there is evidence showing that the way patients are asked for such payments vary. Based on a qualitative study conducted in Albania, Vian et al (2006), report that patients mainly get information on the amounts to be paid by: (1) asking directly the nurse or the doctor, (2) getting information from relatives or friends who have had similar procedures. They also mention that the process often is not hidden at all, and in cases of inpatient treatment (i.e., surgeries), the amount

is often agreed beforehand while the payment is done after the treatment or operation. The amount paid is not always fixed and is determined by certain characteristics of both parties. Attributes of patients (e.g. economic status, place of residence, political or intellectual status) and features of providers (e.g. qualification of medical staff, speciality, location of facility, etc) influence the amount of informal payments (Vian, T., Burak 2006).

III. Methodology and model

In Albania, both inpatient and outpatient services appear to have monopolistic features, with the state as the main provider of care. The state monopoly is much stronger for inpatient care (with no alternative services available), and less strong for some of the outpatient services (with private alternatives).

In a monopolistic market for health care, aggregate supply is inelastic (Ensor 2004) and medical staff have the power of information. Within such system, patients are faced with a suboptimal level of services supplied and with little information, which translates into paying informally. Payments may ensure additional or higher quality services, but also in many cases the mere provision of the service itself.

With imperfect information, medical staff do not know for sure what patients are able and willing to pay, and patients do not know what medical staff demand for the services they have on offer. The differences between the actual amount paid informally and medical staff' minimum reservation amount on the one hand, and patients' maximum willingness to pay on the other, represent the bargaining power exercised by medical staff and patients, respectively.

We assume that informal payments are a linear function of characteristics of both patients and medical staff, respectively *x* and *y*. The vector *x* represents patient's characteristics, which in our model include: demographic variables (R), insurance status (I), the ln of household income (Y), difficulty to pay (P), level of education (E), level of satisfaction (S). The vector *y* represents medical staff' characteristics, which in our model include the vector at illnesses or diseases (D) and the location of inpatient care (H). The logarithm of the amount expected to be paid informally (IP*) is determined by:

$$\ln IP^* = \beta_0 + \beta_1 R_i + \beta_2 I_i + \beta_3 \ln Y_i + \beta_4 P_i + \beta_5 E_i + \beta_6 S_i + \beta_7 D_i + \beta_8 H_i \qquad (1)$$

where β are coefficients that measure the impact of patients and medical staff characteristics on paying informally. In our empirical analysis we have used the natural logarithm of the amount paid informally as this has yielded better fitted models.

The observed (ln) amount of informal payment *IP* is assumed to be stochastic and can be above or below the expected payment IP^* depending on the characteristics of both patients and medical staff that we mentioned above. The size of the deviation from expected payment represents the bargaining power of patients and medical staff, respectively. Let *w* (medical staff bargaining power) and *v* (patient bargaining power) represent respectively the positive and negative deviations of ln*IP* and η represents the

normal error term. The observed level of informal payments is then related to the expected level by:

$$\ln IP_i = \log IP_i^* + v_i + w_i + \eta_i \qquad (2)$$

If we combine equations (2) and (1) we obtain:

$$\ln IP_i = \beta_0 + \beta_1 R_i + \beta_2 I_i + \beta_3 \ln Y_i + \beta_4 P_i + \beta_5 E_i + \beta_6 S_i + \beta_7 D_i + \beta_8 H_i + \eta_i + v_i + w_i \quad (3)$$

We assume that *v* and *w* are one-sided error terms with expectations $E(v_i) = -\mu_v < 0$ and $E(w_i) = \mu_w > 0$. The term μ_v is the negative deviation of informal payment from the expected payment, and can be interpreted as the bargaining power of patient. Likewise, μ_w is the positive or upward bias in paying informally and can be seen as representing the strength of medical staff bargaining power.

Equation (4) constitutes a two-tiered stochastic frontier bargaining model. This model is similar to the two-tiered frontier model developed by Polachek and Yoon (1987). In order to derive the likelihood function, the following assumptions regarding the error components are made: η has a normal distribution with zero mean and variance σ_u^2; -*v* and *w* follow an exponential distribution with μ_v and μ_w respectively; and η, *v*, and *w* are independent. Polacheck and Yoon (1987) derived the likelihood function for this stochastic frontier model as:

$$LogL = n\log\left(\frac{\theta_u\theta_v\theta_w}{\theta_v+\theta_w}\right) + \left[\theta_u\theta_v\sum_i^n \varepsilon_i + \frac{n}{2}\theta_v^2\right] +$$

$$\sum_i^n \log\left\{1-\Phi(\theta_u\varepsilon_i+\theta_v) + [1-\Phi(-\theta_u\varepsilon_i+\theta_w)] * \exp\left[-\frac{1}{2}(2\theta_u\varepsilon_i+\theta_v-\theta_w)(\theta_v+\theta_w)\right]\right\}$$

Where:

where:

$$\theta_u = \frac{1}{\sigma_u}$$

$$\theta_v = \frac{\sigma_u}{\mu_v}$$

$$\theta_w = \frac{\sigma_u}{\mu_w}$$

$$\varepsilon_i = \eta_i + v_i + w_i = \ln IP_i - (\beta_0 + \beta_1 R_i + \beta_2 I_i + \beta_3 \ln Y_i + \beta_4 P_i + \beta_5 E_i + \beta_6 S_i + \beta_7 D_i + \beta_8 H_i) \quad (4)$$

$\Phi(.)$ is the distribution function of the standard normal distribution and *n* is the number of observations. θ_v and θ_w measure relative patient and medical staff market information, while μ_v and μ_w are the patient and medical staff market ignorance.

To avoid the disadvantage of the above model that the positive and negative stochastic deviation in bargaining power between patients and medical staff as measured by μ_v and μ_w are the same for everyone, we have parameterized them (Groot and Maassen van den Brink 2007). In this way, we have allowed these parameters to vary with observable characteristics:

$$\theta_{vi} = \alpha_{v0} + \alpha_{v1} E_i + \alpha_{v2} P_i + \alpha_{v3} R_{age_i} + \alpha_{v4} H_{T_i} \quad (5)$$

$$\theta_{wi} = \alpha_{w0} + \alpha_{w1} D_{1i} + \alpha_{w2} D_{2i} + \alpha_{w3} D_{6i} + \alpha_{w3} D_{7i} + \alpha_{w5} D_{9i} + \alpha_{w6} H_{T_i} \quad (6)$$

where parameters in equation (5) represent the demographic characteristics of patients, while parameters in equation (6) characteristics of medical staff' services.

In equation (5) R_{age} represents the age of patients, and H_{T_i} represent the hospital located in Tirana (the capital city of Albania). Characteristics like higher education and age are often reported as important factors in determining the bargaining power of patients (Shahriari et al. 2001; Liaropoulos et al. 2008). Difficulty to pay is used as a better estimator of ability to pay as compared to wealth or income (which are often reported as not significant in determining the amount paid informally[4]), and location of hospital in Tirana is used to capture the higher quality of the services offered in the capital[5].

IV. Data

The data for estimating the two-tiered stochastic frontier bargaining model are taken from the Albania Living Standard Measurement Survey (LSMS) 2005[6]. This panel dataset includes a set of questions on health care visits and treatments concentrated on two main categories: outpatient services (public ambulatory, nurse or paramedic and trained midwife) and inpatient services, (visited hospital in last 12 months for chronic

[4] See also Shahriari et. al., 2001; Szende and Culyer, 2006; and Vian and Burak, 2006.

[5] Patients are reported often as more willing to pay for better quality, (see also Thompson and Xavier, 2002).

[6] LSMS is a national representative survey that collects information on different indicators of health, education, economic activities, housing and utilities for households all around Albania. The 2005 Albania Living Standard Measurement Survey (LSMS) provides individual level and household level socioeconomic data from 3,800 households drawn from urban and rural areas in Albania. The sample was designed to be representative of Albania as a whole, Tirana, other urban/rural locations, and the three main agro-ecological areas (Coastal, Central, and Mountain). The survey was carried out by the Albanian Institute of Statistics (INSTAT) with the technical and financial assistance of the World Bank and the Department for International Development (DfiD),. (LSMS, 2005)

illness/diseases)[7]. Information is collected on individual demographic, social and economic characteristics. The data we use come from two modules of the Albania LSMS 2005: the individual module, and the household module. We have merged the information of these two modules. The individual module includes information on 710 individuals who visited inpatient service (namely hospitals) and 1801 individuals who visited outpatient service. From the individuals who visited outpatient service, 1591 visited public ambulatory clinics and 210 nurses and trained midwifes services.

In order to increase the precision of our estimates we have reduced the number of variables on illness and diseases by running a factor analysis on the 27 illness and disease variables. We have extracted nine factors from these 27 disease variables and we have used them to define nine illness and disease categories. The criterion for inclusion in a factor was a factor loading of 0.2 or more. In total, there are 3940 individuals who provided information on both chronic and acute illnesses that they had (although as we mentioned before only 710 have visited inpatient services in the past 12 month and 1801 outpatient services). From these individuals approximately two thirds had chronic illness, one third had acute ones, and there were a number of individuals that reported on both conditions (367 individuals). To estimate the factor loadings we have added one additional category for each variable, 'no chronic disease' (for those reporting only on chronic illness) and 'no acute illness' (respectively for those reporting only on sudden illnesses).

Most of the factors combine diseases which are either related (categories 1 and 9), or can be symptoms of common causes (categories 4 and 7), or can have common consequences (categories 2, 3, 5, 6, 7, 8), or have in common that they provide serious discomfort or pain (categories 6, 7, 8).

Table 1. Diseases and Illness grouped according to the Factor Analysis Model

Category 1	
no chronic diseases; acute illness cold / flu; no acute illness	Category 1 includes very mild conditions or no conditions at all. Conditions grouped here are: acute cold / flu, having no chronic diseases, or having no acute illness.
Category 2	
chronic diseases of blood and blood producing; chronic other disability; acute illness heart	Category 2 is more related with blood and cardiovascular diseases and includes: chronic diseases of blood and blood producing organs, other chronic disabilities and acute heart conditions. All these conditions have similar consequences and affect the patients' abilities (they contribute to disability, and lower the quality of life).
Category 3	
chronic congenital abnormalities; acute illness headache	Category 3 groups together diseases which are more related with chronic anomalies and acute disorders and includes: chronic congenital abnormalities and acute headache. They all share common consequences, (i.e. constant or abrupt pain).
Category 4	
chronic diseases of respiratory organs; acute illness lung	Category 4 groups diseases which are related with respiratory organs like; chronic respiratory organs diseases, and acute lung illnesses. All these conditions have similar causes and consequences, share the same

[7] We have excluded from our analysis the private doctors and popular doctors (in outpatient visits) because of irrelevance of the topic. We have also excluded visits to hospital in the past four weeks due to the low number of observations.

	symptoms and they also may lead to irreversible conditions.
Category 5	
chronic bones and connective tissue disease	Category 5 groups together chronic conditions like chronic diseases of bones and connective tissue. They all have the same duration, lead to chronic disabilities, movement restrictions, and also pain and similar consequences.
Category 6	
chronic nervous system and sense organ diseases; acute illness kidney; acute illness other trauma	Category 6 groups together conditions of the nervous system, kidney and other traumas. Conditions included here are: chronic nervous system and sense organ diseases, acute kidney illnesses and other acute traumas. They all bring psychological problems as they are associated with pain and sensitivity losses.
Category 7	
chronic infectious diseases; chronic diseases of digestive organs; acute illness stomach; acute other illness	Category 7 groups together diseases of digestive organs and those caused by infections and include: chronic infectious diseases, chronic diseases of digestive organs, acute stomach illnesses and other acute illnesses. All these conditions have similar causes (infectious diseases, immunologic causes, or dietetic issues), and share similar symptoms (nausea, diarrhoea, and similar pain).
Category 8	
chronic diseases of urinary-genital system; acute illness liver; acute illness broken bone	Category 8 includes chronic diseases of urinary-genital system, acute liver illnesses, and acute broken bone illnesses. These conditions share similar consequences (broken bones are related with issues of other internal organs resulting from traumas, such as liver rupture, and urinary problems).
Category 9	
chronic endocrine diseases; acute illness diarrhoea; acute illness ear/nose/throat	Category 9 includes chronic endocrine diseases, acute diarrhoea illnesses, and acute ear/nose/throat illnesses. Most of these conditions can be seen as related to one another (i.e. diabetes causes diarrhoea, disorders of thyroids are related to difficulties in swallowing, etc).

For our analysis we only included those respondents who have stated that they paid informally for inpatient services (360 individuals) or outpatient services (298 individuals). The control variables included in the models represent characteristics of the patient (demand side), and characteristics of the health care received (supply side), information on difficulties to pay and characteristics of delivered health care include location of hospital/polyclinic and type of illness/disease (see previous section and Appendix 1) .

V. Results and discussion

Table 2 presents the estimation results of both the ordinary least square (OLS) and stochastic frontier models. We use the OLS models as a benchmark for the results of the two-tiered stochastic frontier estimates. We present separate estimates for inpatient and outpatient health services. The stochastic frontier model represent the estimates in which the one-sided error terms are allowed to vary[8] by demand side variables (education, difficulty to pay and age) and supply side variables (type of illnesses and district of hospitals for inpatient care). The estimation results of the OLS model and the stochastic frontier estimations show that the statistically significant parameter estimates are overall

[8] The stochastic frontier models with constant terms for one-sided error terms did not converge and therefore are not used in this paper.

similar. This shows that the main coefficients have a similar influence on the amount paid both when the bargaining effect is allowed for and not allowed for.

Table 2. Parameter estimates OLS and Two-tiered bargaining stochastic frontier model (standard errors in brackets)

	Inpatient Service				**Outpatient Service**			
	OLS Model		Stochastic Frontier Model		OLS Model		Stochastic Frontier Model	
Coefficients of the deterministic part of the equation (β)								
Constant term	9,590***	(1,245)	9,450***	(1,518)	6,437***	(0,736)	6,269***	(1,667)
Family size	-0,084**	(0,036)	-0,107***	(0,034)	-0,022	(0,021)	-0,047**	(0,026)
Urban – Rural	-0,097	(0,175)	-0,163	(0,168)	0,042	(0,092)	-0,024	(0,120)
Gender	-0,031	(0,161)	-0,085	(0,148)	0,038	(0,091)	-0,008	(0,117)
Age 0-15 years old	-0,704	(0,527)	-0,972	(0,607)	-0,294	(0,289)	-0,452	(0,695)
Age 30-50 years old	-0,645***	(0,228)	-0,989***	(0,250)	-0,282	(0,190)	-0,562**	(0,266)
Age 51-65 years old	-0,845***	(0,255)	-1,093***	(0,263)	-0,506**	(0,198)	-0,760***	(0,278)
Age 65 plus years old	-0,364	(0,312)	-0,643**	(0,313)	-0,303	(0,200)	-0,480*	(0,280)
Married	0,249	(0,221)	0,180	(0,222)	0.,67	(0,130)	0,101	(0,177)
Living together	-1,661	(1,384)	-2,622	(2,318)	-	-	-	-
ln income/capita	-0,056	(0,078)	-0,085	(0,079)	0,092*	(0,050)	0,073	(0,068)
Insurance normal	-0,055	(0,368)	-0,349	(0,284)	0,088	(0,248)	-0,104	(0,306)
Category 1	0,422	(0,445)	0,350	(0,650)	0,353*	(0,202)	0,324	(1,003)
Category 2	-0,690	(0,548)	-0,826	(0,525)	0,159	(0,514)	0,106	(0,990)
Category 3	-0,404	(0,555)	-1,616***	(0,623)	-0,074	(0,256)	-0,263	(0,410)
Category 4	-0,336	(0,361)	-0,573	(0,347)	-0,019	(0,188)	-0,051	(0,256)
Category 5	0,300	(0,547)	0,229	(0,436)	-0,193	(0,511)	-0,200	(0,586)
Category 6	0,081	(0,371)	-0,056	(0,494)	0,070	(0,186)	0,055	(0,862)
Category 7	-0,233	(0,409)	-0,404	(0,444)	0,020	(0,177)	0,011	(0,879)
Category 8	0,902**	(0,405)	0,656	(0,442)	0,137	(0,215)	0,122	(0,327)
Category 9	-0,502	(0,385)	-0,570	(0,533)	0,120	(0,150)	0,116	(0,554)
Not satisfied with health service	0,664***	(0,185)	0,642***	(0,169)	0,470***	(0,128)	0,467**	(0,188)
Education primary	-0,124	(0,200)	-0,133	(0,216)	0,049	(0,117)	0,048	(0,161)
Education university	1,028***	(0,378)	1,000	(0,946)	-0,141	(0,311)	-0,150	(1,161)
Difficulty to pay	0,370**	(0,157)	0,363	(0,322)	-0266***	(0,090)	-0,266	(0,858)
Hospital in Tirana district	0,295*	(0,168)	0,290	(0,420)				
Random error term (θ_u)			0,808*	(0,467)			0,801	(0,841)
Coefficient of the negative one-sided error term (θ_v)								
Constant term			1,015*	(0,582)			0,996	(1,011)
Education university			1,187*	(0,652)			0,759	(0,748)
Difficulty to pay			0,216	(0,179)			0,637	(0,563)
Age 0-15 years old			0,380	(0,258)			0,409	(0,416)
Hospital in Tirana district			0,181	(0,189)				
Coefficient of the negative one-sided error term (θ_w)								
Constant term			0,893***	(0,289)			0,840**	(0,402)
Category 1			-0,316	(0,199)			-0,448	(0,310)
Category 2			-0,207*	(0,107)			-0,300**	(0,150)
Category 6			-0,247**	(0,111)			-0,309*	(0,167)
Category 7			-0,174	(0,164)			-0,279	(0,195)
Category 9			-0,324***	(0,107)			-0,245	(0,153)
Hospital in Tirana district			-0,247**	(0,118)				

Log likelihood	-594,684	-119,839	-302,887	-132,808

Note: *significant at 10% level; **significant at 5% level; ***significant at 1% level

Family size appears to be negatively related to the amount of informal payments and is a statistically significant determinant (particularly in inpatient care). This can be because larger families are more exposed to the risk of being sick, have less to spend per capita, and can also exhaust the informal care from the other family members[9]. Moreover, larger families are more likely to live in rural areas (73% of the families with more than 5 members of our sample live in rural areas), more likely to have young children and elderly, and therefore, more likely to make use of health services. Income per capita is also more likely to be lower in large families, which reduces their ability to pay[10]. An additional argument is also the lack of a universal child benefit in Albania which makes large families more economically vulnerable.

Age is represented by dummy variables and tested against the reference category (young adults 16-30 years old). All other age cohorts appear to pay less in informal payments than the reference category. People of middle and older age (older than 30) pay significantly lower informal payments for both inpatient and outpatient services. According to Grossman's theory of demand (1972a, 1972b) an increase in age simultaneously reduces health. In fact, there exist a positive correlation between age and number of times public ambulatory is visited and days stayed in hospital[11] and a negative correlation between visits to public ambulatory or days stayed in hospital and the amount paid informally. The overall resulting effect may explain why elderly pay less informally than others.

Residence (urban/rural), gender, and civil status[12] do not appear to be significant both in outpatient and inpatient care suggesting homogeneity of these transfers among different groups of the population. Previous evidence (Vian and Burak 2006) suggests that rural residents may pay less when getting services within their village or community but they are likely to pay more when visiting facilities in big cities. We do not capture such information in our data, but later, we account for the location of facilities (only for inpatient care).

Income appears to have a negative effect on the amount paid in inpatient care, though this is not statistically significant. This is comparable to what other studies have found for health care in Albania (Thompson and Xavier 2002). In outpatient care this turns out to be significant and positive, implying that people with a higher income pay higher amounts informally. Generally, payments in the outpatient sector are lower than for inpatient care (in our sample the mean of amount paid in outpatient per visit is four times lower than for one day stay in hospital (see Table A1 in Appendix 1). Our hypothesis is that, given the smaller amounts, informal payments in outpatient care differ much more between low and higher income earners than in inpatient care.

[9] Informal care is frequently seen as a 'family obligation'. This care usually substitutes for services offered by the supporting staff (i.e. cleaning the room, or changing the sheets) and provided by family members.

[10] A World Bank Report (Albania – Urban Growth, Migration and Poverty Reduction, World Bank 2007) mentions that in 2005 on average a rural resident had about 14 per cent less per capita consumption if compared to an urban resident.

[11] For elderly (individuals more than 65 years old) the correlation between age and number of times public ambulatory is visited and days stayed in hospital is less strong than for other age categories.

[12] The variable 'living together' is drop on the outpatient care because the low number of observation.

We observe that insurance type does not have a significant effect on the amount that patients pay informally. This is consistent with the limited role of health insurance in Albania.

Based on the results of the OLS model, we can say that for inpatient care, higher educated people are more likely to pay a higher amount informally. This can relate to the higher opportunity costs that they face when ill. This may increase their willingness to pay for health care. There are no significant differences in utilization rates of outpatient and inpatient services. However, while higher educated people invest more in their health, they also have more ability to generate income and therefore can afford to pay more for better services (or fast recovery). For outpatient services, the picture is different. None of education categories appears to be statistically significant and a higher education negatively influences the amount paid informally. This may be explained by the individual knowledge of the system (higher educated are more aware of their insurance rights and health insurance coverage is much better for outpatient care in Albania), Vian et al. (2006).

The effect of difficulty to pay differs between inpatient and outpatient services (statistically significant only for OLS models). Individuals, who report more difficulties to pay, pay higher amounts of informal payments. People who have difficulties to pay, would be expected to bargain more in order to pay less, but on the other side they might have less power to bargain over the amount paid. This situation is different for outpatient care (the coefficients are negative suggesting lower payments of people with difficulties to pay) supporting the arguments for changes in the nature and importance of these two services.

Patients pay higher amounts informally in Tirana's hospitals (statistically significant only in OLS models). This is related to the nature of services and quality of care where more highly specialized treatments and best medical staff are concentrated in hospitals in Tirana[13]. This has created large inequalities between regions in the access to higher quality services (Vian et al. 2006). An additional argument is also the absence of social relations between patient and medical staff in a big city as Tirana.

Generally, illness and disease categories appear to be not very significant in inpatient and outpatient health care suggesting a homogenous distribution of the payments across these categories. In inpatient health care, only category 8 (chronic diseases of urinary-genital system; liver illnesses; broken bone) in OLS model and category 3 (chronic congenital abnormalities; headache illnesses) in the stochastic frontier model are statistically significant. In outpatient health care only category 1 (cold/flu, no chronic diseases, and no acute illnesses) in the OLS model appears statistically significant. The positive coefficient for category 8 in inpatient care indicates higher payments for these diseases which relates to level of pain and severity of such illnesses as compared to paying less for chronic illness of category 3. The similar relation for category 1 in outpatient care indicates that patients with mild conditions may be more willing to pay as they frequent less health services and moreover, they may value more their health status.[14]

[13] After the fall of the communism most of hospitals and health posts in remote districts and villages suffered from lack of investments and human resources.

[14] Vian, Grybosk, Sinoimeri and Halld (2006) mention that health in Albania is seen as a "priceless

Bargaining power calculation

Table 3 presents the expected values of characteristics of the one-side error terms for both the demand and supply side. We interpret these terms as the average level of bargaining power of patient and medical staff based on their respective characteristics[15]. These expected values of the one-side error terms represent the averages for total sample and sub-sample. For each individual in our sample, the observed value of paying informally is above (if the medical staff has more bargaining power) or below (if the patient has more bargaining power) the expected value of paying informally (Groot and Maassen van den Brink 2007).

Table 3. Bargaining power of patients and medical staff for various groups

	Inpatient care	95% Conf. Interval	Outpatient Care	95% Conf. Interval
Patients' bargaining power				
Total sample average	1,26	[1,227; 1,290]	1,34	[1,298; 1,382]
Education university	1,07	[1,042; 1,093]	1,01	[0,999; 1,024]
Difficulty to pay	1,08	[1,068; 1,089]	1,21	[1,180; 1,250]
Hospital in Tirana district	1,07	[1,060; 1,078]	-	-
Medical staff' bargaining power				
Total sample average	0,61	[0,585; 0,638]	0,30	[0,266; 0,329]
Category 1	0,73	[0,716; 0,749]	0,45	[0,433; 0,468]
Hospital in Tirana district	0,82	[0,808; 0,832]	-	-

Patient bargaining power: $E(e^{v}) = 1/(1-\mu_{v})$; Medical staff bargaining power: $E(e^{w}) = 1/(1+\mu_{w})$

We calculate the means of the bargaining values of *v* and *w* for the sample as a whole and for some specific groups[16]. One of the consistent findings is that medical staff have in most cases more bargaining power than patients both in inpatient and outpatient care. For the total sample average the figures suggest that the expected value of informal payment is 26% less than the maximum value that patients are willing to pay in inpatient service, while this is 34% in the outpatient service (as the error term is normalized to 1, the deviance is calculated as 1.26-1 = 0.26 for the negative error term for patient in inpatient service, and as 1.34-1 = 0.34 for patient in outpatient service). The expected level of informal payment is 39% (for the positive error term, the deviance is calculated 1-0.61 = 39%) more than the minimum value that medical staff are expecting in inpatient care and in outpatient is 70% more than the expected value.

commodity", which therefore indicates that it is valued much more from healthy individuals.

[15] The patients' characteristics are represented by education university, difficulty to pay and the Tirana location of hospitals for inpatient services. The medical staff' characteristics are represented by Tirana location of hospitals for inpatient services and by selected categories of illness and diseases.

[16] Bargaining values for patients and medical staff are calculated based on equations (5) and (6). Values are calculated for each observations and the table displays means for the whole sample. Different categories in the table represent the means for that sub-sample (i.e. bargaining value for education university is calculated taking into account only those with higher university education).

If we compare results for outpatient and inpatient services, both patients and medical staff appear to have more bargaining power in outpatient care (except the cases when patients have a university education) than in inpatient care, while in both services medical staff have higher bargaining power than patients. In inpatient care the service offered is more intensive, expensive, and most of the times critical for one's life. Moreover, this service is 'supposedly' free of charge and therefore medical staff have fewer possibilities to bargain because they are supposed to deliver the service (most of the bargaining power in inpatient services is done over additional services, queue jumping, and better treatment (see also Vian and Burak 2006)).

University education, difficulty to pay and location of hospital in Tirana influence patients' bargaining power in both inpatient and outpatient care. However, they account for only part of the total bargaining power of patients. We measure the effect of each of them by measuring separately the effect that they have on the differences between the maximum amounts that patients are willing to pay and the observed amount paid. Patients with a university education pay on average 7% less than the maximum they are willing to pay (compared to 26% for the total sample) in inpatient services, and 1% (compared to 34% for the total sample) in outpatient services. Higher educated patients alone have a lower bargaining power than the total sample suggesting for the importance of other factors. Patients with difficulty to pay on average pay 8% less than the maximum they are willing to pay in inpatient services, and 21% less in outpatient services. A qualitative study on Albania (Vian, T., Burak 2006) confirms that education and social/political status of patient influence the amount paid. The same authors also present evidence that medical staff negotiate less with people with difficulties to pay, which can also explain the difference between the maximum willingness to pay and the observed amount for this category (especially in outpatient services).

Hospital in Tirana is the only category included both in modelling the demand and supply of bargaining power for informal payments. For patients, the difference between the maximum amount willing to pay and the observed payment is 7%, while for medical staff the difference between the minimum expected value and the observed payment is 18%. Since hospitals in Tirana offer highly specialized treatment and their services are generally regarded as of much better quality, medical staff have more bargaining power.

We check the effect that the category 1 (no chronic diseases; acute illness cold / flu; no acute illness) of illnesses or diseases (table 1), has on the bargaining power of medical staff in inpatient and outpatient services. For medical staff treating patients with illnesses or diseases in this category, the actual amount received informally is 27% higher in inpatient and 55% in outpatient care than the minimum expected from patients. This can be explained as the conditions included in this category are usually milder and treated in outpatient.

Both these results are in line with previous findings from Vian and Burak (2006), where location of hospitals and speciality of physicians were identified as two key determinants of the amount paid informally.

Table 4. Maximum willingness to pay and minimum expected values for various groups (100 Lek = 0.84 Euro)

	Inpatient care			Outpatient care		
	Willingness to pay / Expected value	The mean of actual amount paid	Number of observations	Willingness to pay / Expected value	The mean of actual amount paid	Number of observations
Patient's maximum willingness to pay (Lek)						
Total sample average	1750,43	1295,32	360	508,38	335,53	298
Education university	3863,73	3604,86	16	408,72	404,63	9
Difficulty to pay	1694,71	1559,13	109	311,17	245,83	109
Hospital in Tirana district	1854,75	1726,77	120	-	-	-
Minimum expected payment of Medical staff (Lek)						
Total sample average	804,55	1295,32	360	258,10	335,53	298
Category 1	686,57	1187,76	188	224,52	325,56	277
Hospital in Tirana district	948,77	1726,77	120	-	-	-

In table 4 the maximum amounts that patients are willing to pay, and the minimum amounts that medical staff are expecting to get are presented, as well as the mean of the observed amounts paid for both inpatient and outpatient services. The values calculated in the table are based on the coefficients of the bargaining power values in Table 3[17]. As can be seen from the table, the differences between these amounts for the total sample are larger for inpatient care than for outpatient (in inpatient the ratio between the maximum willingness to pay and minimum expected value is 2.1 while in outpatient it is 1.9). This can also be explained by the more extensive bargaining going on in inpatient care, but also by better information of patients on the amount to be paid as informal payments. The higher amounts paid informally are done by the higher educated patients in inpatient care. They pay 2.7 times more than the total sample average. The survey does not collect information on the reasons behind informal payments, nor does it for the specific type of treatments and therefore we can not give an explanation on the reasons behind the differences on amounts paid among groups.

VI. Conclusion

In this paper, we have shown that using a two tiered stochastic frontier model can help in explaining the bargaining power of patients and medical staff. Both these measures can be important to obtain more insight to shape policies of patient payments and medical staff reward systems.

[17] Patient's maximum willingness to pay is calculated as the realistic value paid (the average of informal payments for that particular service) over the difference between hundred percent and bargaining rate of patients. For instance for patients with university education maximum willingness to pay for inpatient care will be: max willingness = realistic/average value of informal payment/(1–bargaining coefficient for university education patients) = 3604,862/(1-0.07)=3863,73
In the same way, medical staff'minimum expected value is calculated as the realistic value paid (the average of informal payments for that particular service) over the sum of hundred percent and bargaining rate of medical staff. For instance for category one of illnesses this will be: minimum expected value = realistic/average value of informal payment/(1+ medical staff' bargaining coefficient for illness category 1) = 1187,76/(1+0,073)=686,57

Based on our findings, we can conclude that the average amount of informal payments is influenced by the bargaining power of both patients and medical staff. Our findings support our initial statement that the actual amount paid informally for health care is determined by the interaction of both patients and medical staff. The observed amount paid, differs significantly from the maximum amount patients are willing to pay and the minimum amount that medical staff expect to be paid. This is highly influenced by the education of patients, difficulty to pay, type of illness and disease, and location of hospital. It appears that patients and medical staff bargain more about outpatient than about inpatient care, while medical staff have consistently more bargaining power over their patients in both services.

Generally, we can say that a significant reduction in informal payments would not be possible without comprehensive reforms of the health sector (introducing strong incentives for patients and providers), but their negative effects can be minimized if the influence of characteristics of payers and receivers are understood correctly, and consequently accounted for. The high amounts that patients are willing to pay indicate that people are willing to contribute money for their health. A revision of the current system towards a more inclusive coverage and ensuring the quality of health services offered throughout the country would probably make health insurance more appealing for most of the people.

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Appendix 1

Table A1. Descriptive statistics (100 Lek = 0.84 Euro)

	Inpatient care		Outpatient care	
Variables	Mean	Standard Deviation	Mean	Standard Deviation
Amount paid informally (in Lek) *	1295,32	2480,65	335,53	337,15
Family size	5,247	2,058	4,651	2,031
Urban-rural	1,586	0,493	1,443	0,498
Gender	1,600	0,491	1,628	0,484
Age 0-15 years old	0,192	0,394	0,268	0,444
Age 16-30 years old	0,206	0,405	0,081	0,273
Age 31-50 years old	0,242	0,429	0,235	0,425
Age 51-65 years old	0,211	0,409	0,205	0,404
Age 65 plus years old	0,150	0,358	0,211	0,409
Married	0,664	0,473	0,523	0,500
Divorced	0,008	0,091	0,010	0,100
Living together	0,003	0,053	0,000	0,000
Widow	0,072	0,259	0,134	0,341
Single	0,083	0,277	0,094	0,292
ln income/capita	10,778	1,092	10,975	0,924
Insurance normal	0,358	0,480	0,523	0,500
Insurance 01 years old	0,008	0,091	0,010	0,100
Insurance other	0,003	0,053	0,000	0,000
Insurance invalid people	0,033	0,180	0,020	0,141
Category 1	0,511	0,501	0,869	0,338
Category 2	0,169	0,376	0,221	0,416
Category 3	0,019	0,138	0,030	0,171
Category 4	0,069	0,255	0,087	0,283
Category 5	0,150	0,358	0,215	0,411
Category 6	0,050	0,218	0,067	0,251
Category 7	0,039	0,194	0,081	0,273
Category 8	0,044	0,206	0,047	0,212
Category 9	0,047	0,212	0,104	0,306
Very satisfied with health care	0,100	0,300	0,107	0,310
Satisfied with health care	0,708	0,455	0,752	0,433
Not satisfied with health care	0,192	0,394	0,141	0,349
Without education	0,006	0,074	0,023	0,152
Education 8-years	0,586	0,493	0,534	0,500
Education secondary	0,186	0,390	0,181	0,386
Education university	0,044	0,206	0,020	0,141
Very difficulty to pay	0,408	0,492	0,312	0,464
Difficulty to pay	0,294	0,456	0,342	0,475
No difficulty to pay	0,297	0,458	0,346	0,476
No need for health care	0,000	0,000	0,000	0,000
Hospitals in Tirana	0,300	0,459	-	-
Hospital in the same district	0,603	0,490	-	-
Hospital in different district	0,094	0,293	-	-
Hospital in foreign country	0,003	0,053	-	-
Nr of Observations	360		298	

Note: *) In inpatient care the amount paid informally is the average per day in hospital.
In outpatient care the amount paid informally is the average per visit.

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