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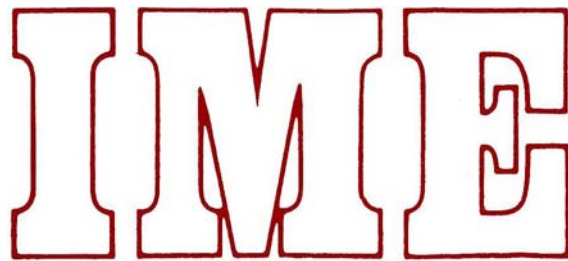
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**INFORMATION ASYMMETRIES AND SUPPLIER
INDUCED DEMAND
AN ECONOMETRIC STUDY FOR THE FRENCH MARKET**

Sophie BEJEAN

This paper, presented at the Second World Congress on Health Economics (Zurich - September 1990), is based on a research made under the co-direction of Professors P. BALESTRA and M. GADREAU within the framework of the DEA "Analyse et Politique Economiques" at the University of Burgundy.

RESUME

L'hypothèse d'une demande de soins induite par l'offre repose sur le constat de l'existence d'une asymétrie d'information entre le médecin et son patient. Cette asymétrie confère au médecin un pouvoir discrétionnaire qu'il utilise dans son propre intérêt.

Cet effet d'induction est identifié et distingué des autres effets pervers -risque moral et sélection adverse- qui sont également conséquences de l'existence d'asymétries d'information dans le système de santé.

L'hypothèse d'induction est à l'origine d'un débat très controversé en raison de la remise en cause de l'hypothèse, chère aux néoclassiques, d'indépendance entre l'offre et la demande. Les enjeux des études empiriques sont donc, dans ce contexte, très importants.

Un test empirique de la théorie de la demande induite a été réalisé d'après des données françaises de la médecine générale. Les résultats de cette étude sont statistiquement robustes et ils corroborent l'hypothèse d'induction.

MOTS-CLES

Induction de la demande par l'offre - Sélection adverse - Risque moral - Marché d'assurance maladie. Marché des services médicaux - Test économétrique.

ABSTRACT

The supplier induced demand hypothesis relies on the existence of information asymmetry between the physician and his patient. This asymmetry confers a discretionary power on practitioners who are using it in order to satisfy their own interest.

The inducement effect is identified and distinguished from the other consequences of information asymmetries in the health care system, i.e. moral hazard and adverse selection.

A controversy is generated by the induced demand hypothesis which constitutes a challenge to the assumption of the independence of supply and demand and, therefore, contradicts standard neoclassical predictions. The role of empirical studies is important in this respect.

An empirical test of the inducement hypothesis is set out based on French general practitioners data. The results of this study are statistically robust and corroborate the induced demand hypothesis.

KEYWORDS

Supplier induced demand - Adverse selection - Moral hazard - Medical insurance market - Medical services market - Econometric test.

O. INTRODUCTION

The recent conflicts between the French government, health insurers and medical trade unions are due to the government choices concerning the health policy : medical staff and health care expenditure increases are forcing the French government to adopt "supply" regulations for those expenditures.

On the one hand, the number of surgery is restricted in cities where medical density is already high (Besson's law, July 1989).

On the other hand, new practitioners can no more choose the second medical convention which implies that fees are freely fixed by the physician (December 1989)¹.

Those choices concerning the health care policy may be legitimated if the supplier induced demand hypothesis is corroborated by empirical findings. The informational asymmetry which exists between physicians and their patients confers a discretionary power on practitioners. Through price increases or quantity inducement, they can avoid the expected decline in workload and income brought about by increasing competition².

If the French government restricts competition in big cities in order to keep an average workload, it will not provide incentives to quantity inducement. In the same way, if the number of free pricing practitioners is restricted, inducement by price hikes is limited.

Supplier induced demand is relative to one kind of informational

¹Since 1980, there are two kinds of professional agreements in France between "social security" and private physicians : in both cases, practitioners are paid on a fee-for-service basis. In "sector 1", fees are fixed on the agreement basis and are paid by the patient. In "sector 2", physicians can choose free pricing, in counterpart, they pay a higher social insurance contribution, but the patient is refunded on the basis of "sector 1" fixed fees. Consequently, he has to pay the co-insurance part himself (as a patient of a "sector 1" physician) and the difference between free and fixed prices, i.e. overpricing. Since December 1989, the second agreement has been forbidden to be chosen by the new practitioners.

²It should be noticed that supplier-induced demand is different from revealed demand which exists whenever there is excess demand on the market. In this case, increasing competition implies a rise in consumed quantities and this is identified as revealed demand. Whenever there is no excess demand, an increase in consumed quantities is identified as supplier induced demand.

asymmetry : the physician has medical knowledge as opposed to the patient who is ignorant, not only of the health care market characteristics but also of his own needs.

In the relationship between three protagonists -patient, physician and insurance- other types of information asymmetries can be distinguished : the patient's health state cannot be observed by insurance ; adverse selection is a consequence of this asymmetry between insurance and the insured patient. Another kind of asymmetry between those same actors comes from the insured patient's health care use that cannot be observed by insurance. This asymmetry implies a moral hazard effect.

In the first section, this paper offers an analysis of these information asymmetry effects and an identification of the supply inducement among those effects.

In the second section, a test of induced demand on the French market is set out. A controversy is generated by the induced demand hypothesis, first developed by R.G. Evans (1974), which contradicts standard neoclassical predictions and the assumption of the independence of supply and demand. Empirical studies play a prominent part : if a lot of these studies are published in the Anglo-Saxon literature, only a few are relative to the French health care system.

1. INFORMATION ASYMMETRIES AND HEALTH CARE SYSTEM

Different kinds of information asymmetries can be distinguished within the health care system. These asymmetries have to be differentiated by actors (patient/physician as well as insured/insurance) but, also by the nature of information.

When information is relative to the characteristics of goods, services or health state, the consequence of asymmetry and of liberal market mechanism is adverse selection. When the actors' behaviour cannot be observed, moral hazard effect is the consequence of asymmetry.

When specific knowledge brings about an asymmetry between the consumer and the provider of services, a principal-agent relationship can be defined. Between the patient and the physician, information asymmetry may cause an induced demand effect.

1.1 Adverse selection

* The adverse selection concept, mainly applied to the health insurance market was first analysed for the secondhand car market. This well-known example, developed by G.A. Akerlof (1971), shows that the competitive market mechanism is not efficient when the goods characteristics, especially quality, cannot be observed by consumers. In this case, good cars and bad cars (which are known as "lemons" in the United States) must still be sold at the same price. This price is lower than the true value of a good car which may not be traded at all. The owner of a good automobile knows but cannot prove its relative quality advantage. "The good cars may be driven out of the market by the lemons" (G.A. Akerlof, 1971, p. 492). As a result, there is a reduction in the average quality of traded cars in spite of the welfare of both parties.

* Analysing the market for physicians services (not yet the market for health care insurance) shows that the existence of doctors licensing counteracts the effect of quality uncertainty. It ensures the patient of some normal expected quality and adverse selection may not be observed in this market.

* The adverse selection principle fits especially well the market for medical insurance. The insured medical condition is the hidden information. The insurer cannot observe the probability of the event of illness.

Whenever insurance policies may be freely chosen by the individual, the insurer applies an average price level because of the informational asymmetry between himself and the insured, so that people who insure themselves will be those who are certain that they will need the insurance. The result is a reduction in the average medical condition of insured people. In this case, insurance companies cannot balance their budget and the liberal market mechanism is inefficient.

Insurance companies have two solutions : either they make a selection of "good" risks by excluding "bad" ones, or they build up selective contracts in order that insured people reveal their characteristics themselves. The two options differ from the social welfare point of view ; the second one might even eliminate the expected effect of

insurance, i.e. risk sharing. Selective contracts imply that insurance premiums might rise close to real health care costs.

Adverse selection disappears whenever insurance becomes compulsory for all :on one side, each individual is insured whatever his risk level ; on the other side, premiums are fixed independently from individual probabilities to need insurance services. This adds one major argument in favour of the French "social security" system which is a guarantee of social welfare.

Table 1 - Adverse selection

Assumption	The information holder cannot prove the real quality of his goods or services.	
Definition	Selection made by the liberal market mechanism which, in spite of the social welfare, prevents the trade of good quality goods.	
Application	Medical insurance market	Health care services market
The information is relative to...	the insured medical condition	the medical services quality
Actors of the asymmetry	Insured - insurer	Physician - patient
Effects	Selection of "good" risks by excluding "bad" ones	Reduction in the average quality of medical services.
Adverse selection is counteracted by	The principle of social insurance	The existence of doctors' licensing

1.2 Moral hazard

In the hospital sector, managers and practitioners behaviour cannot be observed by Public Authorities. This brings the former to behave strategically : this strategical behaviour can be analysed with the concept of moral hazard as well as the insured patients' behaviour in the medical insurance market.

1.2.1. Moral hazard and medical insurance market

On the medical insurance market, implications of the adverse selection principle become complicated when one takes into account that the insured can behave strategically about the information he knows to be asymmetric.

The insured can either modify his preventive behaviour, or consume more health care with insurance than without.

R.J. Arrow's (1968) point of view is that moral hazard is a result of information asymmetry and of individuals' "moral perfidy". According to M. V. Pauly (1968), moral hazard is only a result of rational economic behaviour : demanding more health care at a zero price (with insurance) rather than at expenses (without insurance) is not a moral or ethical problem whenever it is assumed that the price elasticity of demand for health care is (in absolute value) above zero.

Potential moral hazard, in opposition to adverse selection, arises when contracting an insurance policy becomes obligatory.

1.2.2. Moral hazard and hospital management

The economic theory of bureaucracy applied to the hospital sector³ shows the existence of a discretionary budget. Each actor -Public Authorities, managers and practitioners- will seek to take over a part of it.

Goods under State supervision, such as hospitals, do not have any properties -transferability and exclusivity of property rights- which can be observed for an individual firm. This implies an opposition between the interests of each actors group.

* Hospital managers' utility depends on income but also on other arguments such as power and prestige, linked to the importance of the budget they bear.

* The arguments for practitioners utility are similar. Their prestige is especially linked to the range of medical services supplied by the hospital and to the technical equipment they use.

* Public Authorities represent the holders of property rights (politicians exert those rights for public goods) but their targets differ from the ones of an individual firm manager : for instance, profit search

³See X. Greffe (1981), W.A. Niskanen (1971), R.J. Launois (1981).

is excluded because "it is inevitably grievous to think that one might speculate on human suffering"⁴.

Profit search is turned into balance budget search and potential profits are turned into new expenditures. The amount defined by these expenditures, which are not absolutely necessary, constitutes the discretionary budget in the hospital.

All actors in the hospital sector will seek to take over a part of this budget : the information about the assessment of hospital activities is held by practitioners and managers. Their behaviour cannot be observed by Public Authorities.

Analysing information asymmetries and using the moral hazard concept shows that the major part of discretionary budget will be taken over by the information holders. Managers get more important allocations from Public Authorities whenever they manipulate the information ; practitioners modify the information about technical equipment needs ; they also induce quantities of medical services and of days spent in the hospital by patients⁵ in order to increase budget allocations.

The analysis of moral hazard shows that information holders behave strategically according to the information they hold ; their behaviour cannot be observed by Public Authorities and this entails an increase in expenditure.

1.3. Supplier-induced demand

Within the context of the neoclassical theory, analysing relationships between patient and physician brings one to consider the patient as a consumer, the physician as an individual manager and the medical operation as a service.

In all specialized operations, an information asymmetry exists between the consumer and the provider of services. However, the patient's

⁴"Il y a fatalement malaise à l'idée que l'on puisse spéculer sur la souffrance humaine", R.J. Launois (1981, p. 7).

⁵The "per diem price" system was criticized because it brought practitioners to increase the length of stay, as hospitals were financed according to the number of days spent in the hospital by patients. Not-for-profit hospitals are now (since 1984) financed by the "global budget" and such quantity inducement is no more expected in public hospitals.

ignorance is greater than that of a simple consumer of services : it is relative to the characteristics of medical goods and services and, just as well, to the patient's needs.

It has been shown by S. Darbon and A. Letourmy (1983) that the patient's ignorance is also greater than the ignorance of a principal facing his agent (or of a layman facing an expert) : a specialized operation is usually constituted by an evaluation of the initial state (diagnosis in case of health care services), some technical acts and, as a result, a change in the initial state.

The patient, as any consumer of specialized services, does not know anything about the two first components. On the contrary, the result of most specialized services can be objectively appreciated by a layman. It is not the case for a medical operation : the improvement of health condition expected as a result might not be objectively appreciated by a layman because of inherent difficulties in health measurement. When psychical and social dimensions are taken into account, health measurement becomes not only complex but also subjective : the individuals' behaviour related to unhealthy symptoms constitutes the psychical dimension of the health state. The individual's feelings about it change according to his place on the social scale and this implies a social dimension within the health state⁶.

The improvement of health condition is a subjective issue and it implies difficulties in consensus between patient and physician about the result of the medical operation.

In the medical sector, the costs of information research become prohibitive especially in emergency cases. On the contrary, in case of chronic diseases, the information asymmetry between patient and physician disappears : a chronically ill person, a diabetic for instance, learns to recognize the symptoms of his disease and to use the appropriate treatment.

* As we have seen previously, this information asymmetry confers a discretionary power on practitioners. The physicians' target is assumed to be utility maximisation, the arguments of their utility function being

⁶See M. Gadreau (1978).

income, leisure, power and prestige... This discretionary power would let them create demand either to adjust their real income to their desired one or to cancel the effects of the expected decline of both their workload and their income in the event of increasing competition.

* In practice, they modify the perception that patients have of their own needs in order to induce quantities or to increase fees (when fees are freely fixed).

* This last possibility presupposes that price elasticity of demand is less than one in absolute value : without this assumption, a rise in fees would be replaced by a decline in consumed quantities and it would not allow physicians to increase their income. The more price elasticity is close to zero, the more physicians would be able to adjust their real income to their desired one.

1.4. Compatibility, cumulation and interaction of moral hazard and inducement effects

1.4.1. On ambulatory care

The assumption about price elasticity makes one wonder about compatibility of moral hazard and inducement effects : the moral hazard concept assumes that price elasticity of demand for health care is above zero in absolute value. On the contrary, inducement assumes that price elasticity is closer to zero.

The problem of compatibility has to be discussed according to the procedure of supplier inducement. On the one hand, the physician using his discretionary power modifies the perception that the patient has of his own health care needs in terms of quantity, therefore the patient considers that the induced acts are necessary for the improvement of his health condition whatever his price sensitivity. In that case the assumption of a low price elasticity of demand is not necessary as a preliminary to quantities inducement. On the other hand, inducement can be expressed by a rise in fees. Then assumptions about price sensitivity of the patient have to be developed.

* The physician can either modify the patient's price sensitivity, by using his discretionary power. Then a great price elasticity can be observed before inducement, and afterwards price

elasticity declines close to zero.

* Or the physician cannot modify the patient's price sensitivity. Therefore price elasticity of demand has to be assumed less than one and closer to zero in absolute value as a preliminary to inducement by fee rising.

The problem of compatibility exists only in this last case of inducement by fee rising.

When fees are administratively fixed, as for "sector 1" in France, practitioners can only induce quantities. Thence, inducement and moral hazard can be observed simultaneously.

When fees are freely fixed, as in the U.S.A. or in France for "sector 2", the compatibility of moral hazard and inducement is at issue.

1.4.2. In the hospital sector

It has been shown (see section 1.2.2) that the hospital actors' behaviour can be analysed through the moral hazard concept. However moral hazard and inducement have to be distinguished because they can be observed simultaneously and because they interact. The moral hazard effect is characterized by strategical behaviour adopted by physicians and managers which cannot be controlled by Public Authorities for lack of information. One among those behaviours is a quantity inducement which is a result of incentives :

* In the private hospital sector, the "per day price" and fee-for-service system provide incentives to induce the length of stay and the services quantities. This is only possible if practitioners use their discretionary power in order to induce demand⁷.

* In the public hospital sector, the "global budget" replaces the "per diem price" system and it allows Public Authorities to control better the practitioners' behaviour, as there are no more incentives to induce quantities⁸.

⁷*This presupposes that there is no excess-demand for services provided by the hospital.*

⁸*As we have already noticed, French not-for-profit hospitals are no longer financed according to the number of days spent in the hospital by the patient and this has been replaced by imposed budget constraints through the establishment of the "global budget".*

Table 2 - Moral hazard and inducement

	MORAL HAZARD		INDUCEMENT
Definition	Amount of expenses over what would be expended if there were no strategical behaviour according to the information asymmetry.		Amount of consumed health care over what would be consumed if the patient could hold as much information as the physician
Application	Medical insurance market	Hospital sector	Medical services market
The information is relative to...	The actors' behaviour	The actors' behaviour	The health care needs and the characteristics of market
Actors of the asymmetry	Insured patient - insurer	Practitioners, managers - Pub. Author.	Physician - patient
Information holder	Insured patient	Practitioners, managers	Physician
Assumption about price elasticity of demand	< 0	-	≈ 0
Other assumptions	Dependence of demand for insurance and demand for medical services	The information holders utility is a function of the budget they bear	Dependence of supply and demand
Effects	Over consumption and decline in sickness prevention	Increasing expenditures	Fee rising and quantity inducement

2. TESTING SUPPLY INDUCEMENT ON THE FRENCH MARKET FOR MEDICAL SERVICES

Even if there is a consensus about the existence of discretionary power, there is a controversy about its use and limits. The positive correlation between the increase of medical staff and the fee rise is identified here by an inducement effect and differently interpreted by authors.

Some of them, J.P. Newhouse (1970) and R.A. Kessel (1958), interpret the market for medical services as a market based on monopolistic competition, explaining the fee rise as being a consequence of new physicians coming into the market.

The increasing monopoly theory developed by M.V. Pauly and M.A. Satterthwaite (1981), constitutes another explanation of this correlation (the increasing search costs, which are a consequence of rising medical staff, would confer a monopoly power to physicians).

Comparing those different theories⁹, empirical studies of the correlation between the physician population ratio and the per capita utilization of medical services are relevant to choose between the theory of supplier induced demand and the other ones.

Numerous empirical studies are published in the Anglo-Saxon literature¹⁰ but only a few are relative to the French market for medical services. This second part sets out an empirical test of inducement on the French market for general practitioners services. First of all, it would be proper to consider the implications of empirical studies.

2.1. Stakes in empirical studies

The implications of empirical studies on the physicians induced demand theory have important stakes (U.E. Reinhardt, 1985) which explain vigor in debate.

From a theoretical point of view, challenging the assumption of the independence of supply and demand is assaulting "one of the crucial

⁹See S. Béjean (1989) and L. Rochaix (1986 a).

¹⁰For a synthesis of the results and the methodological problems of these empirical studies, see S. Béjean (1989), E. Lévy (1989) and L. Rochaix (1986 b).

pillars of the neoclassical framework" (U.E. Reinhardt, 1985, p. 188). With no surprise, the guardians of that framework are reacting with vigor.

The choices concerning the health policy rely on the previous issue : the state control over the medical staff and more generally government imposed limitations on the supply of medical manpower may be legitimated whenever the induced demand hypothesis is corroborated by empirical findings.

As to the political ideology, the individual economists' point of view about the state intervention conditions "their more or less important reluctance towards econometric studies"¹¹.

The debate among these different theories reflects their philosophical underpinning : the increasing monopoly theory emphasizes the responsibility of the patient-consumer while the induced demand hypothesis sets out the responsibility of physicians for the increasing medical expenditures.

2.2. Test

2.2.1. *Agregate data, the choice of a geographical area and the choice of a medical sector*

Choosing the sector of General Practitioners (GPs) to test the induced demand hypothesis is justified by the fact that services provided are more homogeneous for GPs than for specialists. In the same search for homogeneity, the medical population is constituted only by active liberal GPs excluding GPs following a specific type of practice¹².

In the health care sector one cannot work with individual data : the medical secret prevents the connection between data concerning the physician and data concerning his patients. Therefore empirical studies are set out according to data aggregated by geographical areas. The choice of departments (main administrative divisions in France) as geographical areas is justified in the case of GPs : it allows to eliminate bordercrossing linked with the physicians reputation.

¹¹"Leur plus ou moins grande sévérité à l'égard des travaux économétriques"; E. Lévy, 1989, p. 472.

¹²It means GPs who are practicing in an alternative way such as acupuncturists, homeopaths...

It is assumed that the average quality per department of GPs' services is constant : a study developed by F.A. Sloan and F.H. Lorant (1977) shows that the quality elasticity of demand for medical services is very low (quality is assessed by the patient's waiting time and the physician's visit duration).

The Anglo-Saxon empirical studies are usually specified on a demand-supply model. In our study, only the demand function is tested. Demand is a function of health care use variables and of variables which are revealing supply levels. The influence of the latter on utilization rates is tested.

2.2.2. *The choice of variables*

* Demand is assessed by per capita utilization of health care¹³, i.e. the average number of per capita GPs' acts (D).

* The explanatory variables are constituted by demographic components such as age and sex : because of their biological nature, they influence health care use.

P15 : ratio of under fifteen year old population,

P65 : ratio of over sixty-five year old population,

PW : ratio of over fifteen and under sixty-five year old women.

* Socio-economic components are the average income (Y) and the average amount of social security benefits paid to health care (SSB).

* Fees, assessing the price of medical services are divided into the average overpricing per act (OP) and the average fee without overpricing per act (P). The distinction is made according to the assumption that patient sensitivity to overpricing may be the greatest as overpricing is not reimbursed.

* In order to take into account travelling costs, the average distance (DIS) to reach the physician's surgery is introduced as an explanatory variable¹⁴.

* The explanatory variables which are revealing supply levels

¹³*It means that it is assumed that demand is equal to consumption. We'll come back to this assumption later.*

¹⁴*Those distances were assessed by F. Faure, C. Legrain and F. Tonnelier (1987).*

are :

DENSG : GPs' density

DENS : Density of alternative practitioners and specialists.

2.2.3. Estimation and results

The empirical relationships to be estimated and tested is a linear function which explains per capita utilization of health care in terms of the explanatory variables and an error term ε (C is a constant).

$$[1] \quad D = C + \alpha_1 P_{15} + \alpha_2 P_{65} + \alpha_3 PW + \alpha_4 Y + \alpha_5 SSB + \alpha_6 OP + \alpha_7 P + \alpha_8 DIS + \alpha_9 DENSG + \alpha_{10} DENS + \varepsilon$$

Ninety-five cross-section data points (there are 95 departments in France) have been collected for each variable for 1987. Equation [1] has been estimated by OLS, on a linear form and on a log linear form basis. Table 3 gives the results of both regressions. The variables SSB and P are eliminated because their parameters are not significant (individual tests and one simultaneous test).

The test of parameters stability and the test of global linearity give positive results.

Finally, the simultaneous test of the parameters of DENSG and DENS allows us to reject the assumption of independence between supply and demand.

The sample of ninety-five cross-section data points has been divided into two samples. In sample one, the level of physicians workload (i.e. the number of acts per GP) is less than the average workload. In sample two, the level of physicians workload is above the average. The division into both samples would allow us to distinguish revealed demand from induced demand¹⁵ :

- whenever there is excess-demand on the market, physicians workload is expected to be high. Then, a positive correlation between health care utilization and GPs density can be defined by revealed demand ;
- whenever there is excess supply on the market, physicians workload is expected to be low. Then ,the same positive correlation between health

¹⁵This distinction has been made thanks to relevant discussions with M.O. Carrere.

care utilization and GPs density can be defined by induced demand (and not revealed demand).

The results of the regressions on sample one are given in table 4 (only the results on sample one are interesting in this respect).

2.2.4. Analysis of empirical results

The expected influence of the demographic factors (age, sex) is confirmed.

The income elasticity of acts consumption is low (0,296) : primary care supplied by GPs is that for which demand changes least according to the income level. This low income elasticity might also reflect the social legislation which helps successfully the most disadvantaged sections of the population reach health care.

The distance to the GPs' surgery does not influence so much the health care consumption and his parameter sign is positive : it is disturbing but it could be explained by a substitution of consultations (at the GPs' surgery) to home visits . It cancels the influence of the distance which dissuades from consuming health care at the GPs' office (see A. Mizrahi and A. Mizrahi, 1989).

The non significance of the SSB shows a misassessment of the patient's social insurance level.

The variable P does not influence health care utilization either. Fees without overpricing do not represent real costs to the patient as this amount is completely or partly reimbursed. The non significance of variable P may reflect the absence of patient's sensitivity to reimbursed fees.

The overpricing elasticity of demand is very low (- 0,092). This result confirms a low patient sensitivity to health care prices, according to the assumption that the discretionary power is all the more used by physicians since price elasticity of demand is close to zero.

The estimated parameter of GPs' density is positive and it corroborates the supplier induced demand hypothesis. An increasing competition brings practitioners to induce quantities : whenever GPs density rises by 10 per cent, the consumption of GPs services rises by 8,73 per cent.

The results of the regressions on sample one (where physicians workload is low so that it can be assumed that there is no excess demand on the market) also corroborate the induced demand hypothesis as they

allow to distinguish induced demand from revealed demand : in sample one, whenever GPs density rises by 10 per cent, the consumption of GPs services rises by 9,3 per cent and it is defined by induced demand.

Table 3 - Results on the whole sample

Dependent variable : D
Data sample : 95

Linear form

Explanatory variables	C	DENSG	DENS	OP	Y	PW	P15	P65	DIS	R. SQUARE	ADJUSTED R. SQUARE
Estimated parameter	- 10,58	0,035	- 0,005	- 0,086	$4,1 \times 10^{-5}$	17,23	10,66	4,21	0,204	0,798	0,775
T for H_0 : parameter = 0	(- 3,08)	(11,43)	(- 2,87)	(- 5,89)	(3,54)	(2,9)	(3,09)	(1,73)	(2,31)		

Log-linear form

Estimated parameter	- 2,601	0,873	- 0,168	- 0,092	0,296	1,634	0,502	0,115	$6,2 \times 10^{-6}$	0,803	0,785
T for H_0 : parameter = 0	(- 2,05)	(11,32)	(- 4,37)	(- 6,53)	(2,94)	(2,30)	(2,85)	(1,28)	(1,32)		

Table 4 - Results on sample one

Dependent variable : D

Data sample : 38

Linear form

Explanatory variables	C	DENSG	DENS	OP	Y	PW	P15	P65	DIS	R. SQUARE	ADJUSTED R. SQUARE
Estimated parameter	- 10,17	0,035	- 0 0016	- 0,087	$3,6 \times 10^{-5}$	12,53	13,62	7,35	0,13	0,93	0,9
T for H_0 : parameter = 0	(- 2,85)	(11,42)	(- 0,8)	(-4,68)	(2,51)	(1,65)	(2,35)	(2,09)	(0,94)		

Log-linear form

Estimated parameter	- 3,25	0,93	- 0,086	- 0,086	0,26	1,35	0,38	0,14	0,0011	0,91	0,88
T for H_0 : parameter = 0	(- 1,83)	(9,7)	(- 1,95)	(- 4,44)	(1,77)	(1,27)	(1,08)	(0,8)	(0,11)		

As a conclusion, the results of this study bring up a choice for a "supply" regulation of the health care expenditures, all the more because the costs of inducement are not only measured by the number of induced acts but also in terms of medicines and technical tests prescribed during these induced visits.

Furthermore, this econometric study does not take into account the potential inducement by fee rising in "sector 2" where fees are freely fixed.

However, the theoretical impact of this study is limited because of different causes :

- first of all, additional research on data construction has to be made, especially in order to elaborate on a satisfactory index of the social insurance level ;
- the framework assumptions about the quality of medical services are at issue because the corroboration of the induced demand hypothesis is dependent on those assumptions ;
- finally, it should be mentioned that hypotheses about the individual behaviour of the patient, or the physician, can be firmly corroborated only when empirical studies are completed on individual data basis.

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