VOL. 2, NO. 3, May 2013
International Journal of Economics, Finance and Management

http://www.ejournalofbusiness.org

Determinants of Health Expenditure in France

[1] Miniar Ben Ammar Sghari, [2] Sami Hammami
[1] Doctor in Economics, Faculty of management and economics, Sfax University, Tunisia.
[2] Economics Professor, Faculty of management and economics, Sfax University, Tunisia
[1] miniarb@yahoo.fr, [2] sami_hammami2005@yahoo.fr

ABSTRACT

Health expenditure is growing at a faster rate than GDP. Newhouse (1977) [1], emphasizes in his that theory on health would be made as a typical example of a higher good. In a context of failure of the measures taken so far to curb the growth of health spending, it is crucial to identify the factors explaining the increase of the latter. In this paper, we denote by health spending, the overall spending on medical, whatever their nature (ie, mainly spending on hospital, outpatient, pharmacy and medical goods expenditures) or the mode of financing (socialized expenses, reimbursed by private insurance or direct payments to households).

Keywords: *health expenditure, health care demand, supply of care, technical progress*

1. INTRODUCTION

The idea that health is the greatest good is probably done explained without foundation: A good example is now provided by the superior products and services from the new technologies. Private agents delegate a significant portion of that the income supplements to the consumption of such products and services, whose share, in total consumption, increases mechanically. Behavior at work, however, isn't the same as health. Patient demand is filtered by doctors that verify the therapeutic correction. Thus the essential socialized medical spending causes a decorrelation of the individual level between the dynamics of income and the consumption of health care.

2. LITERATURE REVIEW

The first econometric studies conducted on the cross-sectional data in the 1970s sought to assess the income elasticity and the price elasticity of health expenditure volume. The seminal work of Newhouse (1977) concluded that the income elasticity is significantly greater than unity (1.35). The GDP alone explains 92% of the variation in health spending. Newhouse draws conclusions about health which is the greatest good and the purchase of the additional care unit that improves the advantage of the subjective state of the well-being as objective indicators of mortality and morbidity.

Other studies have taken the approach and Newhouse enriched it by introducing particularly the price variable in the determinants of expenditure (Kravis and al (1978)[2], Gerdtham and Jonsson (1991) [3], Murillo and al (1993) [4]. Most of these studies also lead to an income elasticity which is greater than unity, but the diagnosis is shared by the estimation of the price elasticity. The latter varies between O and -2 (Murillo and al).

The difficulty in estimation of the price elasticity is probably due to the highly socialized health care spending. Indeed, consumers generally do not know the price of care they consume (eg hospital stays). When, as in medicine, a public price exists, it rarely translated into market equilibrium because it is often set by the government, and the marginal cost purchase for the consumer is usually lower than the official price, since health insurance, social security and supplemental coverage repay all or part of the cost.

Subsequent studies were therefore tied to estimate the models that include the more specifics good health by expanding the range of the explanatory variables: the income and the price effects of the previous work, Horty and al (1997) [5] added institutional characteristics with an estimation of the level of support to the volume of care. According to the hypothesis of ex-post moral hazard (overconsumption induced pathology insurance once appeared) generally used in health economics. But this factor can explain the less an important part in the growth of the health spending in France, that the public health insurance continuously reduced its level of support over the past fifteen years (through higher co-payments or hospital daily fee) which is now stabilizing at around 75%. This decline in the public support is seen also in most other countries over the last twenty years (Table 1) with the exception of the United States. In fact, in this country, the increased public support is due in part to the increase in the share of the total population over age 65 who are eligible for the federal medical program.

Table 1: Selected Economic Indicators

	Per capita expenditure			Share of GDP spent on health expenses			socialized Share (in%)		
	2000	2005	2009	2000	2005	2009	2000	2005	2009
Etats-Unis	1091	1869	2361	8.9	13.5	12.9	42.4	44.8	44.5
France	711	1866	2115	7.6	9.7	11.2	79.4	74.4	76.2
Royaume-Uni	453	1211	1569	5.6	6.9	6.8	89.4	84.1	83.3

Source: Eco-Santé OECD

The policy of reducing public support in France has disadvantages. It restrict: the access to the care for low-income people, which justified the creation in 1998 of the Universal Health Coverage (CMU) - d be somewhat effective in its goal of controlling health spending as public health insurance undergoes a negative externality from the supplementary insurance which pay the bulk of payments left at the expense of the patients. The introduction of the user fees in public, would probably be more effective on the dynamics of the expenditure.

It seems in the specific context of health analysis focused exclusively on the application that is not able to properly explain the dynamics of expenditures. The provision of care is able to play heavily on consumption, and first through its increasing technological content: in deed we have seen that in the analysis of the demand analysis, the correlation between consumption of care and income, other income, the other demographic structures can be explained in part by the processes of care benefiting continually from the important therapeutic innovations.

The intermediary viewpoint between supply and demand, the role of producers care, mainly doctors, the dynamics of consumption cannot be completely ignored: the existence of the asymmetric information between health care provider and the patient can influence the patient's request since it is not always able to judge the relevance of the treatment he prescribed. The generalization of the insurance (the almost universal today in most developed countries except the United States) has also reduced the price elasticity of the demand of patients, which strengthens the power induction of demand which is generated by the monopoly of medical knowledge which benefit physicians.

3. PROPOSED DESIGN

We take the main following results of an econometric analysis conducted on an aggregate data from the database Eco-OECD Health. We draw the method Gerdtham (1992) [6], by consolidating into a single panel the database on 20 OECD countries (the fifteen countries of the European Union, the USA, Canada, Switzerland, Australia and Iceland), giving a total of 477 points for the period 1977-2010;

Analogous to Hourriez (1992) [7], we seek to evaluate in advance the magnitude of the impact of the demographic changes on the total consumption of health care. For this, we assume that people aged between 0 and 3 years consume twice more care than those aged 4 to 64 years, (over 65 years), three times. This hypothesis does not claim obviously that the rude way to provide an accurate estimate of the impact of the demographics on the medical consumption, but only an order of magnitude: profits age consumption varies more continuously than what is suggested by this simplification, and vary over time and across countries.

Table 2: Simulated impact of demographics on the total consumption of health care

	Average annual growth	Impact of changing demographic structures
Germany	3.4%	0.0%
Denmark	2.4%	O.2%
France	5.2%	0.1%
Italy	4.2%	0.2%
Pays-Bas	1.6%	0.1%
United States	3.0%	0.2%

Source: OECD Health Data for the period 1977-2010

The simulated impact of changing the demographic structures (reduced from 0 to 3 years and increased that of 65 years and older; however this encryption does not address the impact of population growth since the further analysis will focus on the dynamics of the volume of care per capita) does not exceed 0.2% as an annual rate, which is compared to the low growth rate of the total volume of care consumed. In France, in particular, the impact is very low. It is even lower than Hourriez (1992) which leads to a figure of 0.26%: this difference can achieve both a difference of method and these the period that is not the same (Hourriez (1992)).

4. RESULTS AND DISCUSSIONS

To take into account these effects which are purely demographic-rather an analysis of the demand-the regressions were performed on the variable describing the amount of health care per capita which is adjusted for the

demographic effects as estimated in the table ed. To consider the differential purchasing power between countries, we also introduce the variable and U.S. $ purchasing power parity (PPP).

We introduce among the regressors a measure of the technical progress. The existing studies have considered the following various types of indicators: eg The Hortty and al (1997) have considered the volume of expenditure in therapeutic devices as an indicator of the technological progress. This indicator has the disadvantage of not taking into account the investment made in expensive heavy equipments (scanners, nuclear magnetic résonnace device, etc.). Another indicator proposed in the same study is the rate of renal dialysis: if the prevalence of kidney disease and may be the first coarse analysis considered constantly in time and a relatively homogeneous across countries, rates of the dialysis then it reflects quite accurately the technological advances in the medical field.

To give the character "multipathologique" to our technical progress, we use here to construct an indicator of the technical progress. Associate addition rates of kidney dialysis, rates of heart transplants and rates scanners and camera equipment Nuclear Magnetic Resonance (NMR). We are used in this analyses note that, depending on the indicator used in France, in terms of assimilation of the technological medicine (that Belgium, the country where heart transplant is mostly used), is in the bottom of the distribution (the equipment rate scanners and NMR are relatively low). This is why we choose a composite indicator suggesting that the diffusion of the technical progress is more important in the United States than in the UK.

We note that less diffusion of the technological medical ipso facto does not cause a poor health performance as shown by the comparison of the United States with France and the United Kingdom (Table 3): In deed the quality of care provided, depends on a complex set of factors that cannot be reduced solely to the technological equipment, but the health indicators often resulting from the cultural phenomena (lifestyles ...) or the economy (degree of concentration of national income) without indicators that are related medical technical progress is only one of the determinants of health performance.

Table 3: Selected health indicators

	Infant mortality (Per 1,000 births)			**Life expectancy at age 65**			
Germany	2000	2005	2010	2005(M)	2005(F)	2010(M)	2010(F)
United States	12,4	5,6	4,6	14,8	18,5	15,3	19,0
France	12,6	8,0	7,2	15,5	19,0	16,0	19,2
	10,0	5,9	4,6	16,2	20,6	16,4	20,9

Source: SESI, DIRIS: Health indicators H: Male F: Female

Then we estimate the panel OLS that is considered by a model with individual fixed effect. The dependent variable is the logarithm of the volume of care per capita. In such a model, the individual effects are intended to "absorb" the persistent features of each country while the temporary effects are generally intended to correct the common annual effects (especially cyclical) in all the countries and also the common technical progress. These temporary effects were here were not significant, which is quite logical since we introduced an explicit indicator of technical progress and that health spending in volume is only weakly correlated with the business cycle. It would have also been possible to use the dynamic modeling, but the purpose of this study was the search for long-term growth factors and not a detailed understanding of the dynamics of a short-term spending, which justifies a lighter approach.

The prices (for example elasticity is about 0.6) and the indicator of the technological progress are also significant. The price effect is fairly robust to the inclusions. In contrast, the results indicate a degree of substitutability between the income effect and the effect of the technical progress, since if you remove the regressors indicators of the technical progress, the elasticity of the volume of expenditure on health per capita is $ 1.4;

However, this formalization does not sufficiently take into account the structural characteristics of each country. The analysis of the contributions of explanatory variables to the growth in the volume of care shows that several countries remain important. Thus the expenditure growth is largely overestimated in Suede and Ireland, and to a lesser extent in Germany and Denmark. Conversely, it is underestimated in France, Spain, Greece, Italy and the United States (see chart below).

The contribution of the different factors to the annual growth per capita volume of care provided by the model: Estimation period 1977-2010.

Table 4: Estimation of the model with individual fixed effects

Explanatory variable	Coefficient	Statistics Student
Log(GDP percapita)	0.91	13.8
Log (Price)	-0.63	-9.7
Technical progress	0.12	8.8
Adjusted R^2	0.97	

Estimation period: 1977-2010
Explanatory Variable: The volume of the health spending per capita in log

GDP per capita with Salmonberry with a significant elasticity is slightly less than unity (Table 4). The estimated contribution of the technical progress to growth in the volume of care is very important in most countries and in the same order of magnitude as the income effect.

The contribution of prices is positive in France thanks to the decline in the price of health expenditures (ie proindice prices gression lower the price index for consumption) that are imposed by the public regulator to limit the budgetary cost of the energy consumption of care. The importance of those unexplained in this model leads, however, to seek other explanations for the dynamics of health care consumption.

We try to understand the differences in the institutional type that exists between the health systems: In this way we can distinguish between the integrated type (where funding obligations and benefits to a single, the reimbursement systems).

Of course, no country is strictly dealing with one of these categories. Thus, in France, the ambulatory medicine is essentially a system of reimbursement, the integrated system in the public hospital and private clinics. Mainly, for a very long term, we expect differences in the volume level of care (though some systems promote the creation of informational rents while others discourage). But over a period of about twenty years, it is extremely likely that the progressive character level of the impact of the health care reforms on the behavior of agents rather implies differences in the growth rates. Moreover, when analyzing the share of GDP devoted to the health spending in each country (cf. tableau 1), we see that the gaps have widened between 1980 and 1994. We will resume the previous model by introducing the linear which are trends differentiated according to the category to which the care system of the countries.

The inclusion of the differentiated linear trend according to the nature of the system of care and the support reduces considered income elasticities and the technical progress: In fact the income elasticity is then about 0.64 which is consistent with the value of 0.7 adopted by Gerdtham when taking into account the specific institutional.

Taking into account institutional specificities, this suggests significant differences depending on the type of system considered. The annual growth (excluding income, prices and technical progress) in the reimbursement systems would amount to 1.52%, according to the health economists. Thus, the interpretation of the impact of these institutional factors, however, requires further analysis which is much more accurate at the micro-economic level.

ACKNOWLEDGEMENT

Foremost, I would like to express my sincere gratitude to my advisor Prof. Ying Wu for the continuous support of my Ph.D study and research, for his patience, motivation, enthusiasm, and immense knowledge. His guidance helped me in all the time of research and writing of this article.

My sincere thanks also goes for your very careful review of our paper, and for the comments, corrections and suggestions that ensued.

Last but not the least, I would like to thank my family: my parents Mohamed and Samia, for giving birth to me at the first place and supporting me spiritually throughout my husband Saber.

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