Reasons of health care expenditure growth: related literature

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Miniar Ben Ammar Sghari [#1], Sami Hammami [*2]
[#] Doctor in Economics, Faculty of management and economics,
Sfax University, Tunisia

[1]first. miniarb@yahoo.fr

[*] Professor, Faculty of management and economics
, Sfax University, Tunisia

[2] second. sami_hammami2005@yahoo.fr

Abstract— The rapid growth of healthcare expenditures in the past 40 years in many industrial countries has contributed to an improvement in life expectancy and the quality of life, but economists have to date failed to reach an agreement on what the main determinants of this development are. The share of health care expenditure in GDP rises rapidly in virtually all OECD countries, causing increasing concern among politicians and the general public. This paper offers a ready explanation for the observed inexorable rise in health care expenditure.

Keywords—Health care expenditures, industrial countries, determinants, increasing, GDP

I Introduction

COMPARISONS OF AGGREGATE HEALTH EXPENDITURE ACROSS DIFFERENT COUNTRIES HAVE BECOME POPULAR OVER THE LAST THREE DECADES AS THEY PERMIT A SYSTEMATIC INVESTIGATION OF THE IMPACT OF DIFFERENT INSTITUTIONAL REGIMES AND OTHER EXPLANATORY VARIABLES.

The various models for measuring sources of economic growth began with Solow (1957) and Denison (1962). These authors did not consider the factor of factor. But Bloom, Canning and Sevilla (2001) and Sala-i-Martin (2001) considered health as a major source of growth. Indeed, a healthy population is a driving force in economic growth. These authors perceived health as a final product of the process of growth. They state that high-income people are in good health because they have easier access to goods and services conducive to good health.

In addition, according to Philippe Ulmann (2003), improving health depends on technical progress and medicine. He noted that economic growth leads to higher household income. Access to better living conditions improves health status (good nutrition, safe housing ...), but also spending on health increases.

II Determinants of health expenditure

The empirical literature on health expenditure determinants has dealt very little with the implications of more complex specifications regarding the effect of the population age distribution as well as technological change in driving health expenditure.

International, national and regional level data is used to examine health expenditure drivers. All studies use a "determinants" approach in which per capita health care expenditure is regressed on variables believed to affect health expenditures. Positive drivers of health expenditures include per capita income, the proportion of population either over age 65 or under age 15, the public share of health care spending, urbanization, the amount of foreign aid and the number of physicians per capita. Some of the studies have also incorporated a time trend variable to serve as a simple measure of technological change. The preoccupation with

income as a key expenditure driver has lead to a neglect of other factors such as the effect of age distribution, technological change and even expenditure inertia.

Much attention has focused on income's role in explaining variations in health care expenditures. The income elasticity of health expenditure is the percent-For an excellent survey of the international health expenditure determinants literature.

Expenditure inertia occurs when a preceding period's health care expenditures are hypothesized to impact positively on a given period's medical expenditures. Income elasticity below one denotes health care expenditure as income inelastic and therefore a "necessary" good. On the other hand, elasticity estimates greater than one denotes health care as income elastic and therefore a "luxury" good. Of course, all this means is that if the elasticity is greater than one, health expenditures will increase faster than income while if less than one, health expenditures will increase more slowly than income.

The income elasticity of health expenditures is important for several reasons. First, understanding the role of income in determining health spending is important because of the light shed on the ultimate question—what is the optimal amount of health spending for a society? While health economists and policy analysts have determined which countries spend the most and the least of their GDP on health care, economic theory has yet to determine what the optimal percentage ought to be.6 Second, the result has policy overtones for the conduct and financing of health care as those who argue that health care is a "necessity" are often on the side of greater public involvement in health care. On the other hand, many of those who feel it is a luxury would argue it is a commodity much like any other and best left to market forces alone.

The subsequent interpretation of health care as a luxury good because of the high estimated income elasticities has been criticized because intuition suggests that health care is more of a necessity than a luxury. Moreover, since health care is heavily subsidized in many countries, the expectation is that ability to pay should be a less important determinant of expenditure. Culyer suggests that the luxury good view of health care may be based on a mis-specification of The concept of income elasticity is related to the Engel Curve which is a function describing how expenditure shares respond to changes in household income. One study of

Engel Curves for developing nations found that medical care expenditure was

generally inelastic for a large number of African countries.

In addition, Getzen [9] makes the case that income elasticity can vary with the level of analysis. Getzen found that individual income elasticities are typically close to zero while national health expenditure income elasticities are often greater than one.

As highlighted earlier, there is a large literature on the determinants of health expenditures. Thus, it is impossible to review all of the studies. In this section, we only review some selected studies that reflect a good mix of the overall literature. We begin with a study by Jerrer and al (2003) , who examined the relationship between environmental quality (proxied by total pollution emissions and government expenditures devoted towards defending environmental quality) and health care expenditures. They used cross-sectional data from 49 counties of Ontario, Canada. They found that countries with higher pollution have higher per capita health expenditures, and countries that spend more on defending environmental quality have lower expenditures on health care. Neidell (2004) estimated the effect of air pollution on child hospitalisations for asthma. He found that carbon monoxide had a significant positive effect on asthma.

Hansen and Selte (2000) examined the relationship between air pollution and human health effects. Their main focus was on investigating the impact of deteriorating health due to air pollution, which leads to more sick leaves, on labour productivity. They used data from Oslo and employed a logit model. They found that an increase in small particulate matter increases number of sick leaves, which negatively impacts trade and industry in Oslo.

Murthy and Ukpolo (1995) estimated the relationship between per capita health expenditures and per capita GDP, health services and medicare prices, practicising physicians, public health care expenditure as a ratio of total health care expenditures, and age, for the USA over the period 1960–1987. They found that health expenditure and its determinants were cointegrated and the exogenous variables were important determinants of health expenditures.

A more comprehensive analysis was undertaken by Karatzas (2000), who examined the relationship between per capita health expenditure

and economic factors, demographic factors, and health stock, for the USA over the period 1962 to 1989. His main findings were that per capita income, income distribution, number of physicians, number of nurses, and per capita expenditure on health administration had a statistically significant positive effect on per capita health expenditures, while the heath price index, number of hospital beds, and the US cities with population of over one hundred thousand inhabitants had a statistically significant negative effect on per capita health expenditures.

Matteo and Matteo (1998) examined the determinants of per capita health expenditures for Canada at the provincial level. They used a model in which they specified per capita provincial health expenditure as a function of provincial per capita income, provincial population over the age of 65 and provincial per capita federal transfer revenues for the period 1965 to 1991. They found that while income and age had a statistically significant positive effect, federal transfers had a statistically significant negative effect on per capita health expenditures.

Hitiris and Posnett (1992) examined the relationship between per capita health expenditures, per capita income and population over 65 years of age for 20 OECD countries for the period 1960 to 1987. Their results revealed that both income and population over the age of 65 had a statistically significant positive effect on health expenditures.

Gerdtham and al. (1992) estimated the impact of per capita income, number of physicians, female labour force participation ratio, share of population living in towns, and population over the age of 65 years together with several dummy variables for 19 OECD countries for the year 1987. They found that income and population over the age 65 had a statistically significant positive effect on per capita health expenditures, while physicians and urbanisation had a statistically significant negative effect on per capita health expenditures.

III What drives the growth of health care expenditure?

This paper offers a ready explanation for the observed inexorable rise in health care expenditure. In view of this large public concern, it is unfortunate how little we know about the factors that drive the rapid rise in HCE.

Back in 1994, Hoffmeyer and McCarthy (1994) wrote that "there is just one, very clear, very well-established statistical fact relating to health care expenditure: its correlation with GDP. No other robust and stable correlations have yet been found." This statement is confirmed by Roberts (1999) who dates the starting point of cross-country research into the determinants of HCE back to Newhouse (1977) and then writes: "During this time [the past 20 years] there has been little progress beyond the finding that variations in per capita national income are closely correlated with variations in per capita health spending" (Roberts, 1999).

In the literature this judgment is based on we can distinguish two stages. Between the mid-1970s and the mid-1990s, scholars such as Kleiman (1974), Newhouse (1977, 1987), Cullis and West (1979), Leu (1986), Parkin et al. (1987), Culyer (1990), Milne and Molana (1991), Getzen and Poullier (1991), Gerdtham and J¨onsson (1991a,b), Gerdtham et al. (1992), and Hitiris and Posnett (1992) provided evidence for a positive correlation between HCE and GDP (mostly) inOECDdata. This correlationwas found to be robust to varying years covered, estimators and use of conversion factors (such as deflators, exchange rates, or health care purchasing power parities). Other intuitively plausible explanatory variables were normally not found to be statistically significant.1 An important issue in this first stage of research was the question whether health care is a 'luxury good', i.e. whether a larger than proportionate increase in income is spent on health care (cf. Getzen,
2000).

A fresh approach might be attractive not only for methodological, but also for theoretical reasons. Over the past 30 years, research into the determinants of health care expenditure has concentrated on – and to some degree even confined itself to – evaluating the connection between national health expenditure and GDP. As already mentioned, attempts to detect other explanatory variables – or explanatory variables proper, since a correlation between health care expenditure and GDP does not explain much in terms of causal relations, unless one adopts a crude version of Keynesianism – have been sporadic and largely unsuccessful. Not even such obvious candidates as population shares above certain age thresholds (e.g., 65 years or 75 years) have been found to contribute to the explanation of health care expenditure – except in a few studies, e.g., Hitiris and Posnett (1992), Di Matteo and Di Matteo (1998), and Okunade et al. (2004). Zweifel et al. (1999) show that 'proximity to death' rather

than ageing drives health care expenditure. Evidently, this variable is contemporaneously unknown and hence inoperative for models intending to forecast HCE.

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