

# HEALTH CARE SPENDING IN CROATIA AND SELECTED EU COUNTRIES – A PANEL UNIT ROOT ANALYSIS

Ivo Družić, Šime Smolić and Marija Penava  
Faculty of Economics and Business, University of Zagreb, Croatia

## ABSTRACT

*In the past four decades, a sharp increase in total health care spending, especially in developed countries, can be observed. The rise in share of the health care expenditures in GDP is driven mostly by the ageing population, the medical technology progress and the expectations of the population, namely the patients. In this paper health care spending and the outcomes of the health care system in Croatia and 11 selected countries of the European Union (EU) will be analyzed. The link between per capita health care expenditures and GDP per capita will be investigated, using panel data unit root tests. The outcomes use of the health care resources and the effectiveness of the health care systems will be observed through the data on infant mortality, the life expectancy and standardized death rates.*

## INTRODUCTION

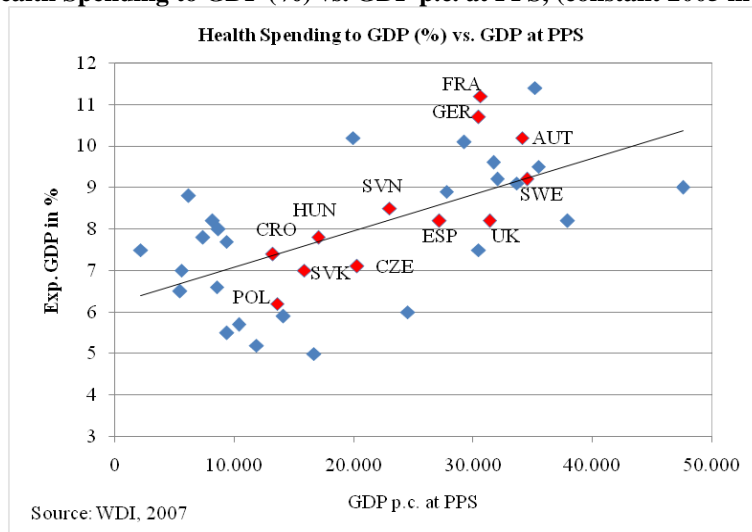
The relationship between health care expenditures and its drivers has been examined in large number of studies and papers in past decades. As medical care spending continues to escalate in some countries, the search for alternatives to slow its growth has focused on the supply side. According to Getzen (2006), studies of health care costs on the national level clearly show that cost rises with an increase in per capita income, but the linkage between income and expenditures is often not found in studies of individual health care costs. This was explained through disparity between national and individual cost variations. Furthermore, Henderson (2007) highlights that demand for medical care is derived from the individual's desire for good health. Individual patient factors (health status, demographic characteristics) play a key role in determining the demand for medical care. Policymakers are more interested in economic factors that affect demand since the individual incomes, the level of out-of-pocket spending, and the availability of medical insurance are more easily manipulated. Dreger and Reimers (2005) presented the cointegration relationship among health care expenditures, GDP, both real and in per capita levels, and medical progress. They also found that the income elasticity in the panel models is not different from unity, implying that health care expenditures are not a luxury good. In that study, the income is not the only determinant of health care expenditures but rather a medical progress. Blomqvist and Carter (1997) investigated health care-income relationship by testing for presence of an independent time trend in the health expenditure series. Their conclusion was that the demand for health is also predominantly affected by technological progress in medicine. Technological progress would shift out the demand curve for health services so that total spending could increase, no matter price elasticity being less than one. They also estimated income elasticity around one considering institutional differences among the countries in the sample, otherwise the result was a much higher elasticity estimate.

In this paper a different set of countries, primarily Transition countries are observed. Like in chosen developed countries of the EU, health care systems in Transition countries are passing through a numerous reforms in adapting to new conditions. First there is a pressure for higher private expenditure due to the rising costs of health care services, especially for pharmaceuticals. For the long period of time GDP growth rates in selected countries were lower than the growth rates of health expenditures, increasing total health expenditure share in GDP. That disparity can definitely be confirmed in some health care systems where the countries, such as Croatia, are struggling to reduce the fiscal pressure. The reasons for the cost-containment policy in Croatia are maybe different of those in Slovakia or Hungary, or even in Sweden, but they all have the same denominators – increasing share of elderly in total population, new and sophisticated medical equipment, high pharmaceutical expenditures and rising expectations of patients. Many countries have introduced or increased co-payments over time, especially for inpatient care and pharmaceuticals, in attempt to control the growth rate of public health care expenditures. Recent results of cost-containment policies suggest on mixed successes.

## HEALTH EXPENDITURES

According to OECD (2007) expenditure on health care measures the final consumption of health goods and services (current health expenditure) plus capital investment in health care infrastructure. This includes spending by both public and private sources, public health and prevention programmes and administration. It is common that health spending to GDP ratio and health spending per capita should be considered together. Countries having a relatively high health spending to GDP ratio might have relatively low health expenditure per capita and conversely. Due to data availability, our analysis includes Croatia and set of eleven countries of European Union, namely Austria, Czech Republic, France, Germany, Hungary, Poland, Slovenia, Slovakia, Spain, Sweden and UK over the 1990 - 2005 period.

**Figure 1: Health Spending to GDP (%) vs. GDP p.c. at PPS, (constant 2005 international \$)**

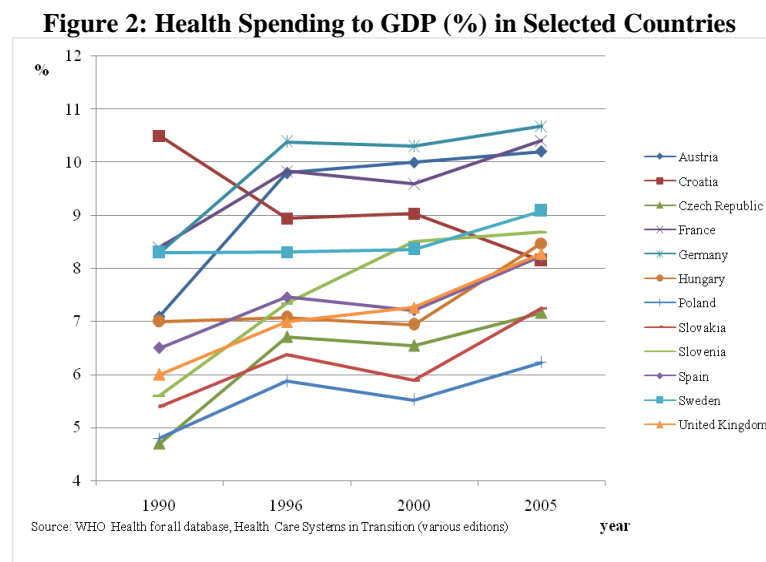


On Figure 1 a positive correlation between GDP per capita at purchasing power parity, and health spending to GDP ratio can be viewed. Richer countries typically spend a greater share of their GDP for health while some of them like Germany and France spent on health care in 2005 more than it is expected according to their GDP per capita. These two countries are the greatest outliers too. One possible reason for high health expenditures, primary per capita public health expenditures, is the population ageing effect. It was weak in the past, however it is very strong today in developed countries and in a quite large number of Transition

economies.<sup>i</sup> This assessment is based on the combined effect of the projected increase in the share of older people (65 and over) and the tendency of health expenditures per capita to increase with age. Another driver of health expenditures is certainly income growth. According to Oliveira and de la Maisonneuve (2006) study, between 1981 and 2002, public health spending grew by 3.6% per year in OECD countries, of which 2.3 percentage points by income effects. The factors underlying the residual expenditure growth are technology, pure demographic effects and relative prices of health care services. It is proven that the relationship between income and health is strong, but the nature of that relationship is far from clear.

## Effectiveness and efficiency

Getzen (2007) emphasized that wealthier countries are also healthier, and they spend more on medical care. But more spending does not necessarily buy a better health. Many other factors associated with higher incomes, such as education, nutrition, and sanitation, are also known to improve health. Furthermore, the life expectancy has increased highly in many poor countries over past decades, even when the availability of doctors and GDP per capita declined.<sup>ii</sup> There is a strong relationship between mortality and income, although it is difficult to demonstrate crucially that medical care has an independent effect on average life expectancy as it is mentioned before. The infant mortality rates are among the most commonly cited international comparisons of health status. These rates measure much more than differences in health care across countries, and are affected by the socioeconomic factors as well. Filmer and Pritchett (1999) find that the impact of public spending on child health (under-5 infant mortality) is quite small, while other factors, such as income per capita, inequality in income distributions and female education are more influential determinants.



When compared to countries at a similar level of income, Croatia has performed well in terms of health outcomes. Croatia's standardized death rate of 886 per 100,000 (2005) is very close to the average EU rate of 678. Infant mortality rate of 5.7‰ (2005) is also low, lower than in Poland, Hungary and Slovakia, but still above the average of 4.7‰ in the European Union. The costs of achieving health outcomes in Croatia come at a moderate price in terms of per capita spending. However Croatia spent 8.1 per cent of GDP on health in 2005 and 8.4 percent in 2007, which is far above 6.9 percent of GDP in new member states and close to 8.8 percent spent on average by the EU15 (World Bank 2008). We can state that Croatia is one of the top spenders on health when compared to the EU member states, close to spending in Spain, UK and Sweden. Figure 2 depicts rising trend in health care spending in all the countries, except in Croatia where this trend was negative. One interesting notice from Figure 2 is stable convergence in health spending in Transition countries to that spending in

developed EU countries. This figure can be explained in higher GDP growth rates in Transition countries which lead to larger increase in total health expenditures, and higher private health spending, especially for pharmaceuticals (Czech Republic, Slovakia and Poland).<sup>iii</sup> The exception is health spending in Croatia which fell in observed period around 2.5 percentage points. High health expenditures at the beginning of 1990s in Croatia can be justified by increased health demand due to Homeland war (1991-1995).

Further increase in national and personal income, life expectancy, population ageing and dependency ratios, may lead to unsustainable growth in demand for health services and over-proportional growth in health spending. Incentives will have to be changed to address the problem, in particular to eliminate demand which does not lead to increase in health output.

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<sup>i</sup> The share of elderly (65 years old and over) in total population was in 2005 16.26% in Austria, 16.84% in Croatia, 14.12% in Czech Republic, 16.3% in France, 18.8% in Germany, 15.7% in Hungary, 13.2% in Poland, 11.74% in Slovakia, 15.47% in Slovenia, 16.75% in Spain, 17.2% in Sweden and 16.3% in the United Kingdom.

<sup>ii</sup> The average life expectancy in some less developed European countries is higher than it is expected according to their national income, health care services etc. In 2004 Albania had average life expectancy at birth of 76.24, Azerbaijan 72.47, Tajikistan 73.34 years. Similar examples can also be found in some countries of Central and the Southern America (Costa Rica, Colombia and Cuba).

<sup>iii</sup> In 2006 total pharmaceutical expenditure as % of total health expenditure amounted 23.4% in Czech Republic, 27.2 in Poland, 31% in Hungary, and 31.9% in Slovakia (data for Slovakia is from 2005).