THE AFTERMATH OF THE ECONOMIC CRISIS: HEALTHCARE SYSTEMS' INEQUALITIES IN EUROPE

Silvia PALASCA[*]
Sebastian ENEA[**]

Abstract: *During an economic downturn the non-productive sectors (education, health, and social services) are the most exposed to sudden policy changes, as a result of austerity measures. This article aims to assess the impact of the late 2000's crisis on some European countries' healthcare systems in order to highlight the link between the breakdown of the economic context and the negative outcomes on a social level. In this regard, a panel data analysis was employed, focusing on out-of-pocket health expenses as an estimation of a nation's wellbeing and healthcare development level. The cross-time results indicated a clear collapse of all national healthcare systems in 2009 while the cross-section effects implied that the twenty three countries could be divided in three groups according to their healthcare policy, especially regarding health insurance. Thus, countries should pay more attention to the private insurances component of the healthcare systems as the others are defenseless against business cycle fluctuations.*

Keywords: economic crisis; healthcare; out-of-pocket payments; social inequalities; panel data
JEL Classification: C23; I13; I14

Introduction

The recent economic events have showed that, during times of crisis, health outcomes become more and more vulnerable. National welfare, described on the basis of socio-economic relations, is affected by the increased scarcity of the financial resources, thus widening social inequalities and decreasing the general living standard.

The government's response in times of crisis is to make cuts in the expenditures of non-productive public sectors, such as health and education, in order to counter-balance the effects of the economic downturn. The global crisis that started in 2007 was considered to be "a health system shock – to be more exact, an unexpected occurrence originating outside the health system that has a large negative effect on the availability of health care resources" (Mladovsky *et al*., 2012). However, the link between the crisis and the national health care system has not been fully addressed.

The connection between the two is rather an indirect one. If one would take into account the fact that crisis represent periods of income losses for households, then it can be stated that this represents a very dangerous situation where health does not represent a priority, individuals focusing

[*] PhD Fellow, SOP HRD/ 159/1.5/S/134197 Project, PhD Candidate, Alexandru Ioan Cuza University of Iasi, Faculty of Economics and Business Administration, Doctoral School of Economics and Business Administration, Romania; e-mail, silvia_palasca_uaic@yahoo.com
[**] PhD Fellow, SOP HRD/159/1.5/133675 Project, Romanian Academy, Iasi Branch, PhD Candidate, Alexandru Ioan Cuza University of Iasi, Faculty of Economics and Business Administration, Doctoral School of Economics and Business Administration, Romania, e-mail: enea.seby@gmail.com (corresponding author)

more on daily expenditures. Moreover, as the international economy presents a cyclical evolution and the economic crisis represents the troughs of the business cycle, one is inclined to think that healthcare outcomes experiencing a pro-cyclical behavior.

Following the idea stressed out by the World Health Organization (WHO) concerning the need for a "systematic cross-country analysis" (Mladovsky *et al*., 2012) as regards to the healthcare systems' reactions to the economic crisis, the present paper aims to emphasize the effects of the late 2000's financial crisis on the national healthcare systems, in order to measure the social impact of the economic downturn.

The importance of the study resides in the fact it analyzes the negative indirect effects of the economic downturn on health care systems by highlighting the structural differences between the considered countries. What is more, it constructs a time line for health care related measures, in accordance with the international economic dynamics. Overall, the research represents one of the few empirical studies that have addressed the issues of health care expenses, before and during the crisis, in Europe.

The remaining part of the article is structured as follows. Section 2 presents the most important opinions and ideas regarding the issues of health care expenses and out-of-pocket payments, as depicted by the international literature, section 3 comprises the sample and the data description, as well as the methods employed in the analysis, while section 4 highlights the result of the empirical approach. The last section presents the authors' conclusions, the limitations of the research and the future study directions.

1. Literature review

In the new global economy, healthcare and its related cost have been considered important research topics by numerous studies in the international literature.

The approach regarding healthcare costs should start from the Liberal – Keynesian dispute regarding the government's intervention. If the Keynesian doctrine promoted the active participation of the state and the provision of goods and services to the people was considered to be a mean of ensuring social welfare, the liberalism and neo-liberalism approach are towards a minimalist state (Horton, 2007). Given the fact that the healthcare system represents a social service, the question that comes to mind is what approach should the governments have towards it, either an active or passive, minimalistic one.

An important issue that is addressed by the literature concerns the effects of supranational structures' decisions and actions as regards to national healthcare systems. Stuckler and Basu, (2009, p. 773) consider that "IMF programs have been significantly associated with weakened health care systems, reduced effectiveness of health-focused development aid, and impeded efforts to control tobacco, infectious diseases, and child and maternal mortality". Moreover, short-term cuts of public expenditures, especially in times of economic crisis, can be performed in the health care system, thus leading to negative effects such as emigration of qualified personnel, reduction of disease testing (Stuckler and Basu, 2009), as well as additional cost for patients, paid out of the pocket.

A central concept introduced by the literature is that of out-of-pocket payments, considered as those expenses which an individual accepts to pay additionally for health care services. OOP payments represent a very important financing method for health care services, especially in developing regions such as Asia (O'Donnell *et al.*, 2008).

Regarding the classification of the OOP, Gottret (2006, p. 232) divides the costs into direct and indirect costs. The indirect costs such as food, accommodation, transport for the patient and family are more difficult to cover, but user fees either regulated or "under the table" could be attended through insurance coverage or provided by the national health system.

Out-of-pocket payments are considered by the international literature to be a threat to the living standards (Van Doorslaer *et al.*, 2005). This situation is analyzed in connection with the level of unpredictability for OOP payments, as well as their impact on household incomes. An extensive part of the literature focuses on this link between the income and OOP payments and underlines the idea of catastrophic payments, defined as those expenditures in excess of a substantial fraction of the household budget (Berki 1986; Wyszewianski 1986; Pradhan and Prescott 2002; Wagstaff and Van Doorslaer 2003; Russell 2004; as cited in Van Doorslaer *et al.*, 2005), thus considered to have an poverty impact on the household.

Related to the situation presented above, numerous studies have found it important to address the issue of health care expenses, particularly out-of-pocket payments, before and during economic crisis. Most of the researches conducted focused on the problem either from a national point of view (Cutler *et al.*, 2002; Belli *et al.*, 2004; Cavagnero and Bilger, 2010; Svensson, 2010), or from a regional perspective (Van Doorslaer *et al.*, 2005; Mladovsky *et al.*, 2012). All of them reached nearly the same conclusion, namely the fact that between economic crisis and health outcomes there is a pro-cyclical relationship. To be more specific, during periods of economic crisis the public health systems usually tends to suffers financial cuts, which in turn means that individuals are required to spend more for health services.

As regards to the idea that health care expenditures are connected with the national or regional business cycle, the international literature shows a gap in terms of studies that have statically analyzed OOP payments, as part of the total health care costs, before and after economic crisis in Europe. That is why the present study wishes to address this situation by aiming to emphasize the effects of the economic crisis on health care expenses.

The research hypotheses we propose in this study are the following:

H_1: The healthcare systems' evolutions are pro-cyclical in relation to the business cycle, thus making healthcare systems vulnerable to economic recessions.

H_2: There is an inversely proportional connection between the OOP and the private healthcare insurance.

H_3: There are significant differences among European countries as regards to their healthcare systems' ability to manage during an economic downturn.

The last hypothesis evolved from the opinions of Pavolini and Guillén (2013), who underlined the fact that among the countries that have a Beveridge health care system there are structural differences which lead to divergent outcomes in health care provision, a fact also noted by Mladovsky's report (2012) for Europe.

These vulnerabilities arise from the structure of the total expenses on health care, depicted in Figure 1. While the total need for healthcare expenditure grows, the amount of financing provided by the state tends to remain constant or even diminish during downturn periods. The necessary funding for covering the remaining healthcare expenses comes from private sources, which are either insurances or OOP. As in some countries from the selected sample, private insurances have only a marginal role, OOP remaining the primary healthcare financing method. The trade-off between these two components of the private sector will be studied in depth by hypothesis.

Figure 1 - Health care expenses
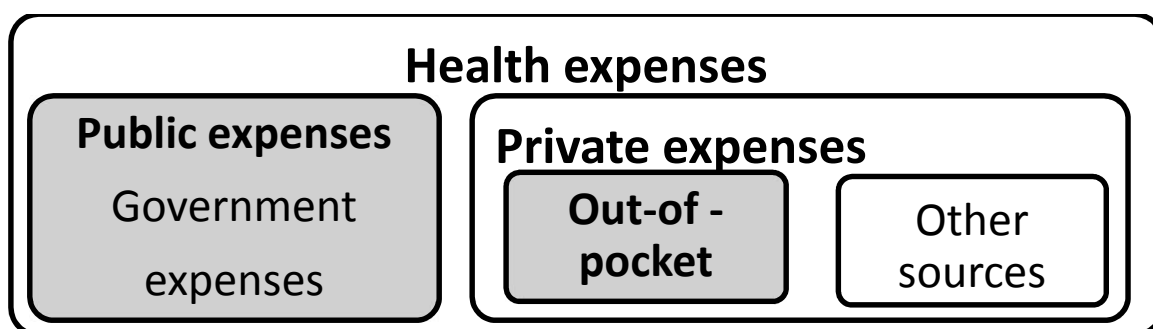
Source: authors' personal perspective

2. Empirical approach

2.1. Data

We have selected a sample of 23 European countries, excluding from our study those which have highly competitive social protection systems, based upon a Bismark-type social insurance model, such as Norway, Sweden, and Germany, focusing mainly on eastern and central European countries, together with some western states which are known to have been severely affected by the crisis of the late 2000's like Spain, Portugal and Ireland. A list of the selected countries can be found in Table 6. These countries have mainly Beveridge-type healthcare models funded by national revenue, thus are more prone to budget cuts during a crisis.

The time span of the analysis covers 5 years, between 2007 and 2011, hence including, 2 peaks (2008 Q1; 2011 Q3) and one through (2009 Q2) according to the European Business Cycle Dating Committee, thus being relevant for highlighting the effects of the crisis on the healthcare systems by offering a comparison among the measures taken in the pre-crisis period, and the consequences of the austerity procedures following the general economic downturn.

Since the study aims to emphasize the effects of the economic crisis on healthcare expenses, we have chosen public and private health expenses as relevant variables, as suggested by Figure 1, focusing on out of the pocket expenses, which the international literature considers to be a measure of economic development and national welfare.

In line with previous literature findings, we measure the occurrence of the economic crisis via the classical aggregate indicator GDP (annual growth rate). Table 1 synthesizes the selected variables as well as the data source from where these were retrieved. The code represents the name of the variable as it is given by the World Bank and can be used to download data in order to replicate the findings.

Table 1 - Variables and data source

Variable	Index	Data code
GDP per capita growth (annual %)	GDP_t^i	World Bank (NY.GDP.PCAP.KD.ZG)
Public (governmental) health expenditure (% of total expenditure on health)	$\dfrac{GDP_t^i}{GOV_t^i}$	World Bank (SH.XPD.PUBL)
Out-of-pocket health expenditure (% of total expenditure on health)	$\dfrac{GOV_t^i}{OOP_t^i}$	World Bank (SH.XPD.OOPC.TO.ZS)
Out-of-pocket health expenditure (% of private expenditure on health)	$\dfrac{OOP_t^i}{OOPpriv_t^i}$	
Other private sources (insurances, funds)	$\dfrac{OPpriv_t^i}{PRIV_t^i}$	

Source: World Bank, World Health Organization databases and own computation

In the context of the present study, these variables have the following meanings:

▪**OOP** – Out of pocket expenditure is any direct outlay by households, including gratuities and in-kind payments, to health practitioners and suppliers of pharmaceuticals, therapeutic appliances, and other goods and services whose primary intent is to contribute to the restoration or enhancement of the health status of individuals or population groups. It is a part of private health expenditure (World Bank, n.d.).

▪**GDP** – Annual percentage growth rate of GDP per capita based on constant local currency. Aggregates are based on constant 2005 U.S. dollars. GDP per capita is gross domestic product divided by midyear population (World Bank, n.d.).

▪**GOV** – Public health expenditure consists of recurrent and capital spending from government (central and local) budgets, external borrowings and grants (including donations from international agencies and nongovernmental organizations), and social (or compulsory) health insurance funds. Total health expenditure is the sum of public and private health expenditure. It covers the provision of health services (preventive and curative), family planning activities, nutrition activities, and emergency aid designated for health but does not include provision of water and sanitation (World Bank, n.d.).

▪**PRIV** – the value of private expenditures on health care services, including medical insurances, but excluding OOP. The values for other private sources were computed by the formula

$$PRIV_t^i = 100 - OOPpriv_t^i$$

An overview of the descriptive statistics of the variables included in the study can be consulted in Table 2.

While the public expenses are dictated by the executive authorities and can be directly influenced by austerity measures, the private expenditures on health are subject to a complex array of factors, which are in our opinion the country's degree of development, the purchasing power, the expectations of the inhabitants, their education level, and the self-awareness on health and wellness.

In this regard, the out of the pocket expenses (% total health expenses) become an important index for assessing the effects of the economic downturn on the wellbeing and health status of the European citizens.

Table 2 - Descriptive statistics

Variable	Mini mum	Maxi mum	Mean	Std. Devia tion	Variable	Mini mum	Maxi mum	Mean	Std. Devia tion
GDP_07	.270	10.55	5.55	3.00	OOP_07	12.44	47.78	26.96	10.43
GDP_08	-4.08	8.09	2.19	3.61	OOP_08	12.13	49.70	26.83	10.44
GDP_09	-17.5	1.53	-6.75	4.61	OOP_09	12.33	49.45	26.91	10.94
GDP_10	-5.15	9.51	1.59	2.9	OOP_10	12.94	49.37	27.87	11.08
GDP_11	-7.04	18.69	3.67	5.77	OOP_11	12.95	49.38	28.42	11.39
GDP_total (2007-2011)	-17.5	18.68	1.25	5.87	OOP_total (2007-2011)	12.13	49.69	27.40	10.60
GOV_07	42.59	87.03	68.01	10.99	PRIV_07	0.76	53.05	15.72	12.61
GOV_08	41.36	84.87	68.38	10.73	PRIV_08	0.79	53.55	15.32	12.63
GOV_09	43.44	84.89	67.85	10.62	PRIV_09	0.88	53.75	16.23	14.26
GOV_10	43.28	84.80	67.04	11.04	PRIV_10	0.88	52.39	15.59	14.25
GOV_11	43.27	84.73	66.52	11.32	PRIV_11	0.88	52.39	15.57	14.25
GOV_total	41.36	87.03	67.56	10.76	PRIV_total	0.76	53.75	5.68	13.38

Source: own computation in Eviews 7

2.2 Methods

This study employs panel data analysis in order to identify the countries which have suffered important structural changes in health expenses and afterwards to empirically measure the extent of the changes due to the late 2000's crisis.

Panel data analysis can be considered a bi-dimensional extension of the regression analysis, including both a time and a cross-sectional component, which can be subject to fixed or random effects.

The validation of a certain model requires the completion of the following steps:

1. Stationarity check of the time series used in the model (to determine the possibility of co-integration);

2. Panel co-integration tests (if necessary, as stated by step 1);

3. Panel data analysis with fixed/random effects

As Hsiao (1985, 1986) and Baltagi (1995) argued, panel data reduces the risks of obtaining biased results and provides a large number of data points (observations) to increase the degrees of freedom, thus providing dynamic adjustment.

2.2.1. Fixed effects method

The fixed effects method treats the constant as belonging to a certain group, providing the equation for fixed effect method as:

$$y_{i,t} = \alpha + \beta x_{i,t} + \mu_i + v_{i,t}$$

where, μ_i is the individual specific effect and $v_{i,t}$ stands for the 'remainder disturbance'.

2.2.2. Random effects method

The Random effects method employs ε_i which measures the random deviation of each entity's intercept term from the 'global' intercept term α. We can write the random effects panel model as

$$y_{i,t} = \alpha + \beta x_{i,t} + \omega_{i,t}$$

where $\omega_{i,t} = \varepsilon_i + v_{i,t}$

2.2.3. Hausman Specification Test

This test compares the fixed versus random effects under the null hypothesis that the individual effects are uncorrelated with the other regressors in the model (Hausman 1978).

The advantage of the proposed method resides in the fact that it allows the testing of all three hypotheses using the same equation.

$$OOP_t^i = c + \alpha_1 GDP_t^i + \alpha_2 GOV_t^i + \alpha_3 PRIV_t^i + \mu_i + \mu_t + v_t^i$$

The first hypothesis is confirmed if there is a sign change of the time component μ_t when the phase of the business cycle shifts (presumably in 2008 or 2009). A positive estimation of this variable could indicate an increase in OOP.

H2 can be considered confirmed if the sign of the α_3 estimator is negative, proving an inverse relation between the private insurance and OOP and the last hypothesis is true if the range of the cross-sectional index, μ_i, is wide, showing significant differences among the sample.

3. Results and discussions
3.1. Panel data analysis

The results of the Philips-Perron unit root test are presented in Table **3**3 and show that the unit root hypothesis can be rejected, thus the series are stationary. Because they are stationary in level, there is no need for co-integration.

Table 3 - Stationarity check-unit root PP test

Variable	PP panel unit root test result p-values
$\frac{aria^{5je}}{GDP_t^{ti}}$	123.32 (0.0000)***
$\frac{GDP_t^{ti}}{GOV_t^i}$	123.074 (0.0000)***
$\frac{GOV_t^{ti}}{OOP_t^{ti}}$	176.35 (0.0000)***
$\frac{OOP_t^i}{PRIV_t^{ti}}$	82.15 (0.0000)***
p-values are in parentheses.*** shows significance at 1%.	

Source: own computation in Eviews 7

We further proceed to the estimation of the parameters and their significance for each of the proposed models by resorting to Ordinary Least Squares (OLS).

The selection of the right model is done using the Hausman test, which compares a more efficient random model to a less efficient but consistent fixed effects model to ensure that the stochastic model is consistent.

Table 4 - Panel analysis parameter estimates

Variable	Fixed/Fixed	Fixed(country) Random (year)	Random(country) Fixed (year)	Random/Random
$\frac{aria^{3l}}{GDP_t^{ti}}$	0.03 (0.0038)	0.01 (0.0255)	0.03 (0.0028)	0.01 (0.0244)
$\frac{GDP_t^{ti}}{GOV_t^i}$	-0.82 (0.0000)	-0.83 (0.0000)	-0.86 (0.0000)	-0.8665 (0.0000)
$\frac{GOV_t^i}{PRIV_t^{ti}}$	-0.38 (0.0000)	-0.238 (0.0000)	-0.31 (0.0000)	0.31 (0.0000)
C	88.95 (0.0000)	89.03 (0.0000)	90.73 (0.0000)	90.83 (0.0000)
$\frac{C}{R^2}$	**0.99**	0.99	**0.97**	0.97
Idiosync.random		0.39	0.39	0.39
Cross-sec. Random		-------------------	0.71	0.71
Period random		0.00		0.00

Source: own computation in Eviews 7

Table 4 indicates that the fixed/fixed model is the most appropriate, which implies that the economic conditions are particularly different for each year and each country, leading to different outcomes of the studied variable, hence we can proceed to writing the estimated equation.

Table 5 - Hausman test result

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	31.910742	3	0.0000

Source: own computation in Eviews 7

$$OOP_t^i = c + \alpha_1 GDP_t^i + \alpha_2 GOV_t^i + \alpha_3 PRIV_t^i + \mu_i + \mu_t + v_t^i$$

which becomes

$$OOP_t^i = 88.95 + 0.03 GDP_t^i - 0.82 GOV_t^i - 0.38 PRIV_t^i + \mu_i + \mu_t + v_t^i$$

Given the purpose of the study, it is mandatory to address the significance of term in the equations above. Thus we have:

▪*Constant* – 88.95% represents the amount of out-of-pocket expenses, perceived as percentages of the total health expenses, which could be paid if the other factors were disregarded (equal to 0). This is a hypothetical scenario due to the fact that the government will have at least a partial contribution to the health in some states, as declared by constitution. For example, if we consider that the average of the minimum contribution of the government is 41.36%, which corresponds to the average value of government contribution in 2008, replaced in the proposed equation, it follows that the real value of the constant is around 88.95-0.82×41.36=55.03%. If we take into consideration also the minimum value of the private insurances which is 0.76%, this constant drops even further, namely to 55.03-0.76×0.38=54.74% 41.36% and the minimum private insurance is 0.76, hence the new constant is 54.75. Thus, it can be said that if the contributions to the health care system, public and private, register the lowest values, the individuals would have to pay more than half of the total health care expenditures.

▪*GDP* – the influence of the GDP is a direct positive one, which is in line with previous studies in the literature (as the level of economic development rises, people increase their living standards and are more willing to pay out-of the pocket for healthcare services). Furthermore, the GDP acts indirectly because the positive economic environment sets the stage for negotiation regarding the government's contributions. The coefficient is positive but small (0.03) which means that for an increase of 1% in the GDP, the OOP expenses will tend to rise, in average, with 0.03%. The influence

of the GDP is also indirect due to the fact that during economic expansions governments tend to allocate more funds to social expenses, such as education, healthcare, pensions, etc.

▪*GOV* – This represents a very important indicator because any changes in the expenditures should take into account the potential impact they have on the health care system in general (Mladovsky *et al.*, 2012), as in most countries the medical sector relies heavily on public financing sources. The equation proves that this is the most important factor, as a decrease of 1% change in the public expenses triggers an increase of 0.82% in the OOP expenses.

▪*PRIV* – In general, the private sector has a minimal role in health care expenditures across OECD, but it has the advantage of covering a wide area of financing methods, from primary converge for individuals to supporting national medical systems (Tapay *et al.*, 2004).   The sample is very heterogeneous regarding this variable, ranging from below 1% to over 50%, thus the influence is country-specific. In average, an increase of 1% of the private insurances, as percentage of the total private spending, will decrease the OOP by 0.38%, hence proving that preventive health spending is preferable to OOP spending which can be disastrous for household budgets, especially on the short term, usually associated with major hospital interventions which are not avoidable (accidents, cancer, etc.)

Table 6 - Country fixed effects

OOP positive countries			OOP negative countries			OOP neutral countries		
Country	Index	$\overline{\mu_i}$	Country	Index	$\overline{\mu_i}$	Country	Index	$\overline{\mu_i}$
Bulgaria	BGR	0.75	Croatia	HRV	-3.15	Greece	GRC	0.15
Cyprus	CYP	0.80	Czech R.	CZE	-1.75	Hungary	HUN	0.40
Finland	FIN	1.02	Estonia	EST	-1.89	Latvia	LVA	-0.50
Ireland	IRL	3.44	Italy	ITA	-0.68	Macedonia	MKD	-0.38
Spain	ESP	0.98	Lithuania	LTU	-1.70	Moldova	MDA	0.13
Slovenia	SVN	4.10	Romania	ROU	-3.03	Poland	POL	-0.01
Ukraine	UKR	0.63				Portugal	PRT	0.34
						Russian F.	RUS	0.08
						Serbia	SRB	0.01
						Slovak R.	SVK	0.27

Source: own computation in Eviews 7

▪μ_i – represents the cross-section effect, and its display three value categories.

A first group (the OOP positive) comprises the positive values ([0.62,4.09]) and is characteristic for the countries where people show more willingness to pay out of the pocket for health services, like Slovenia, Ireland, Finland and Spain (Pavolini and Guillén, 2013), or have no option but to pay like in Cyprus, Bulgaria and Ukraine (Miller, Grødeland, and Koshechkina, 2000).

The first four countries have recorded higher OOP due to the fact that, since 2009 they have enacted more user charges for health services, some of which are partially reimbursable by private health insurance systems, if the amount exceeds a certain threshold. This can be considered OOP, because the money has to be paid first by the user, who afterwards can reclaim a portion the amount spent and usually receive it during the next year (Folino-Gallo *et al*., 2008). Also, these states have imposed increased compulsory insurance to help government spending and have taken secondary measures such as raised medical awareness regarding medicine use by educational trainings and e-health implementations. These actions make people more aware of their health status and more willing to spend extra money on their health and wellbeing.

The last three states from this group either lack a public health care insurance program (Ukraine, Cyprus), or this is a weak one (Bulgaria) and their response to the crisis was to reduce public spending on health, to diminish the number of public healthcare facilities (hospitals, dispensaries), the only valid leverage being to increase taxation on alcohol and tobacco.

The negative values category [-3.15, -.0.38] engulfs Croatia, Romania, Estonia, the Czech Republic, Lithuania, Italy and Macedonia, thus including countries that cannot increase their OOP due to limited resources. Therefore, this group will be called OOP negative. As concerns the healthcare system, inhabitants rely mostly on government support because the countries either are deficient in or have expensive private health care insurances. In the context of the 2009 crisis, these nations have been subject to important budget cuts (de Belvis *et al*., 2012), doubled by the introduction of co-payment for the patients, which resulted in increased OOP and social inequality. Other austerity measures common for these states were to postpone the development of healthcare facilities and the increase of public insurance contributions together with user charges. These countries are fairly reluctant to extensive OOP and the economic crisis was the trigger of a downward spiral effect amplified by increased taxes, unemployment rates growth and the incapacity to sustain a health-conscious living style.

The neutral values [-0.49, 0.39] are recorded mostly for the countries that have implemented measures in order to harness the negative effects of the crisis on healthcare with a minimum impact on OOP. These include Hungary, Portugal, the Slovak Republic, Greece, Moldavia, the Russian Federation and Serbia as positive OOP countries and Poland, Macedonia and Latvia as OOP reluctant countries. The common feature of these nations is that they use a mix of the previously mentioned policies, such as reducing investments, cutting research and development expenses, implementing heath awareness programmes, imposing more taxes on the employers and using social safety nets to prevent a rise of the OOP.

The positive and negative OOP countries display somewhat of a paradox, namely, on the one hand, the fact that in OOP positive countries people are willing to pay more for health care services but have no reason to do so since their expenses are covered by healthcare programmes or private insurances and, on the other hand, in OOP negative countries individuals do not wish to pay additional sums, but they are obliged to conform in order to have access to medical facilities, a situation in line with the previous literature (Cutler *et al*., 2002; Belli *et al*., 2004).

The wide array of values and the possibility to group them accordingly is a confirmation of H$_3$

▪μ_t – represents the time effect and it shows the annual values for the OOP payments. Negative values represent moments when the national economic situation was good, meaning that people did not need to pay more to health services. The opposing situation, starting from 2009, comprises the positive values for μ_t and underlines the fact that the anti-crisis methods enacted at national levels meant additional expenditures for individuals, as regards to healthcare.

This situation can be better understood if we look closely at the values for 2007 and 2009, where we can see a difference of 0.39, signifying an increase in OOP payments, thus highlighting the negative effects of the current economic crisis on the health care system and confirming H$_1$.

Table 7 - Year fixed effects

| Year	μ_t
2007	-0.191179
2008	-0.068577
2009	0.209586
2010	0.000614
2011	0.049556

Source: own computation in Eviews 7

Figure 2 - Residuals' distribution
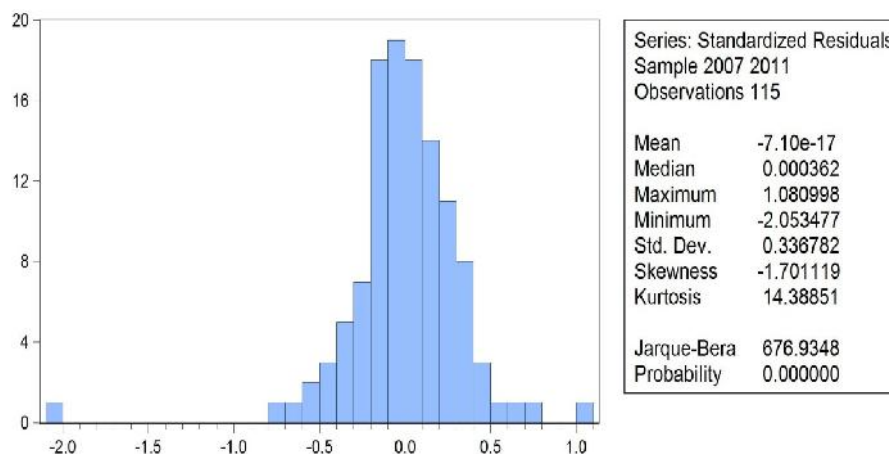
Source: own computation in Eviews 7

▪v_t^i – defines the residuals of the model or the combined cross-time/cross-section effect. The residuals are generally small, have a normal distribution, as can be inferred from Figure 2. This proves that the model is statistically significant and that the deviations from the proposed equation do not have a magnitude that could mean that another model would be more appropriate. The only outliers are for Macedonia in 2009 (-5.84% GDP growth) and for Italy in 2009 (-4.15% GDP growth) and 2010 (+4.83% GDP growth), as seen in Figure 3.

Figure 3 - Residuals of the model
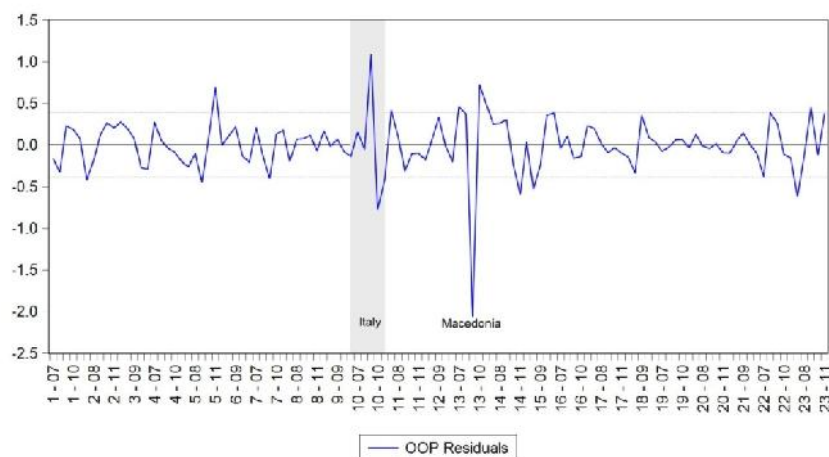
Source: own computation in Eviews 7

Conclusions

This study has set out to emphasize the effects of the late 2000's financial crisis on the national healthcare systems of 23 European countries, in order to measure the social impact of the economic downturn.

The welfare status of each nation was approximated by the amount of out of the pocket payments for healthcare services and the variation thereof served as an indicator of structural changes which followed political decisions as responses to the crisis situation.

The empirical approach via panel analysis made it possible to highlight both the time effects, out of which the moment 2009 is most relevant for the study as the trough of the business cycle, and the cross-sectional effect which stressed out the strengths and most importantly the weaknesses of national healthcare systems.

The findings imply a strong pro-cyclical behaviour of the healthcare systems, as most countries in the research sample rely heavily on public expenditures, thus are vulnerable to business cycle fluctuations, thus confirming the first hypothesis of our study.

Secondly, it can be inferred that private insurances reduce drastically the OOP, validating the second hypothesis, thus should be taken into consideration on a larger scale, especially in countries which lack a public healthcare system or in those where the economic fluctuations have weakened the health budget.

Although this shift of healthcare policy towards the increased importance of private insurance could mean an increase of an individual's or a family's expenses on healthcare on the short term, especially at the beginning when there are not many participants to this kind of risk avoidance, the benefits of such a change should be considered on the long term. As more and more people join the private insurance scheme, the risk is pooled, thus divided between the users of such a system. Under these circumstances, the paid insurance prime will decrease consistently over time, as the healthcare conditions improve due to more resources available. In this situation, if we compare the expenses of the private insurance and the potential catastrophic OOP, it becomes clear that the private insurance component should be considered a reasonable alternative to both OOP and government expenditure.

The present study has proved that the private insurance component can help divide the studied sample in three groups, according to their policy regarding private healthcare and highlighting the differences as stated by the last hypothesis of our study. The countries with affordable private insurances are also those where people are more aware of their living standard and welfare, while in countries where the insurances are not an important component, their role is taken up by OOP.

In the context of economic crisis, the already shrinking incomes are redistributed from healthcare to more urgent needs such as food, thus the population living in countries with high OOP levels is faced with the pessimistic option to abandon healthcare in favour of day to day living, triggering a damaging spiral effect which includes sickness, inability to work, unemployment and in some extreme cases suicide.

The contribution of this endeavour to the existing literature is related to the empirical approach used to study the healthcare systems in Europe. The quantitative findings validate the previously existing qualitative discussions regarding the negative impact of the crisis.

 Moreover, it puts forward some policy implications regarding the necessity to increase the importance of the healthcare insurance. The public component should help create during economic expansions a safety fund which could be uses in recessions and the private component could help decrease OOP and avoid catastrophic payments.

The limitations of the present undertaking are mainly related to the number of countries and the time-span, thus further studies could include an extensive analysis of countries from Europe, Asia, the Americas as well as other past crises for a comparison. The division of the sample countries into 2 distinct behaviour groups also suggests a cluster approach of the problem and the 3rd mixed policies group implies that a fuzzy cluster would be most appropriate.

Acknowledgements

References

Belli, P., Gotsadze, G. and Shahriari, H. (2004), "Out-of-pocket and informal payments in health sector: evidence from Georgia", *Health Policy,* Vol. 70, Issue 1, pp. 109-123.

Cavagnero, E. and Bilger, M. (2010), "Equity during an economic crisis: Financing of the Argentine health system", *Journal of health economics,* Vol. 29, Issue 4, pp. 479-488.

Cutler, D. M., Knaul, F., Lozano, R., Méndez, O. and Zurita, B. (2002), "Financial crisis, health outcomes and ageing: Mexico in the 1980s and 1990s", *Journal of Public Economics*, Vol., 84, Issue 2, pp. 279-303.

de Belvis, A. G., Ferrè, F., Specchia, M. L., Valerio, L., Fattore, G. and Ricciardi, W. (2012), "The financial crisis in Italy: implications for the healthcare sector", *Health policy*, Vol. 106, Issue 1, pp. 10-16.

Folino-Gallo, P., Montilla, S., Bruzzone, M. and Martini, N. (2008), "Pricing and reimbursement of pharmaceuticals in Italy", *The European Journal of Health Economics*, Vol. 9, Issue 3, pp. 305-310.

Gottret, P. and Schieber, G. (2006), *Health financing revisited: a practitioner's guide*, The World Bank, Washington, DC.

Horton, E. S. (2007), *Neoliberalism and the Australian healthcare system*, Wellington, Proceedings 2007 Conference of the Philosophy of Education Society.

Miller, W. L., Grødeland, Å. B. and Koshechkina, T. Y. (2000), "If you pay, we'll operate immediately", *Journal of medical ethics*, Vol 26, Issue 5, pp. 305-311.

Mladovsky, P., Srivastava, D., Cylus, J., Karanikolos, M., Evetovits, T., Thomson, S. and McKee, M. (2012), "Health policy responses to the financial crisis in Europe", Policy summary 5, WHO Regional Office for Europe & European Observatory on Health Systems and Policies.

O'donnell, O., Van Doorslaer, E., Rannan-Eliya, R. P., Somanathan, A., Adhikari, S. R., Akkazieva, B., … and Zhao, Y. (2008), "Who pays for health care in Asia?", *Journal of health economics*, Vol. 27, Issue 2, pp. 460-475.

Pavolini, E. and Guillén, A. M. (2013), *Health Care Systems in Europe Under Austerity: Institutional Reforms and Performance*, Palgrave Macmillan.

Stuckler, D. and Basu, S. (2009), "The International Monetary Fund's effects on global health: before and after the 2008 financial crisis", *International Journal of Health Services,* Vol. 39, Issue 4, pp. 771-781.

Svensson, M. (2010), "Economic upturns are good for your heart but watch out for accidents: a study on Swedish regional data", *Applied Economics,* Vol. 42, issue 5, pp. 615-625.

Tapay, N. and Colombo, F. (2004), "Private health insurance in OECD countries: the benefits and costs for individuals and health systems", in: OECD, *Towards High-Performing Health Systems: Policy Studies*, pp. 265-319.

Van Doorslaer, E., O'Donnell, O., Rannan-Eliya, R. P., Somanathan, A., Adhikari, S. R., Akkazieva, B., ...and Zhao, Y. (2005), *Paying out-of-pocket for health care in Asia: Catastrophic and poverty impact*. EQUITAP Project: Working Paper no. 2.

World Bank, n.d. *World Bank Data Indicator.* [Online] available at: http://data.worldbank.org/ indicator (accessed 8 October 2013).