Accounting Aspects of Financing Healthcare from the Budget in the Republic of Serbia in the Time of the World Economic Crisis

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Abstract

Healthcare system funding represents one of the basic tasks of every modern state. Focusing on a financial institution such as the budget, we can represent the level of needs and possibilities to satisfy basic ones regarding establishment and functioning of the healthcare system.

Using statistical methods we will represent cause and effect relationship between certain elements of the healthcare system and their financial base in the economic power of the state in conditions of the new world economic crisis in the case of the Republic of Serbia.

Keywords

accounting, budget, healthcare, economic crisis

1. Introduction

Market structure during the world economic crisis leads to distortion of the overall economic balance which imposes the need for the state to use its instruments through financial institutions to intervene and try to mitigate these negative effects.

Healthcare is significant for proper functioning of state institutions, as well as maintaining good health of citizens in a country. New economic crisis (from 2008) that hit all state institutions as well as the very state has a huge impact, not only the state budget and budget apparatus for funding healthcare but health conditions of the population as well.

Considering that the healthcare system of Serbia is funded through special healthcare funds and to some extent from the budget of the Republic of Serbia, focus of the paper will be on funding provided from the budget and the way in which the budget apparatus funds healthcare of the Republic of Serbia.

Due to the complexity of the research we selected the portion of the indicators of the healthcare system and the portion of the budget of the Republic of Serbia that relate to expenditure for healthcare in the period shortly before the world economic crisis, from 2007 to 2014.

2. Methods

In this paper we used the correlation method to determine the relation of state and structure of expenditures that are budget funded and specific factors of the healthcare system in the Republic of Serbia. Different analytical indicators will be used with the goal to perceive the economic factors and ways of funding of the budgetary healthcare system (Burda & Viploš, 2012) and elements of the healthcare system, among which are the number of patients treated. GDP (Gross Domestic Product) is one of the main variables which will be the starting value considered in this research because of its abstraction of the influence of the economic crisis on the overall state sector, and with it the healthcare sector. Other than that, we will use the relationship between budget's appropriations which represent contributions in budget's expenditure (Mićović, P. & Mićovic, I., 2013) defined for the purpose of funding health expenditures, which is also an indicator of contribution of expenditures in the overall state spending as an integral part of GDP.

We have used indicators of the number of general practitioners on 100,000 citizens, the number of patients and number of hospital beds on 100,000 citizens as a measurement of the healthcare system's state. These indicators point to a level of personnel and material equipment of the healthcare system (Mladenović & Noiković, 2015), necessary elements for implementing basic healthcare activity as well as the number of patients which represent the measure of using healthcare capacities.

Data used in this paper is from the National Bank of the Republic of Serbia, World Health Organization, Statistical Office of the Republic of Serbia, Institute of Public Health of Serbia "Dr Milan Jovanovic Batut" in the period from 2007-2014.

For the needs of this research the model GDP=C+G+I+X-M is used, an expenditure method of determining GDP in which C represents consumption, G government (public spending), I investment, X exports and M import (Radičić & Raičević, 2011).

During the research we applied the Pearson correlation coefficient model $r_{xy}=C_{xy}/SD_x...SD_y$ where C_{xy} represents the covariance, and $SD_x...SD_y$, the product of standard deviations x and y (Simeunovicć, 2016).

In order to perform an assessment of values in the following period depending on economic movements, the method of linear trend is used $\hat{y}=b_0+b_1x$, where $\hat{y}$ represents the linear function, b_0 (average) and b_1 (median absolute increase) parameter estimates, and (x) data on time (Stiglic, 2008). When calculating the estimate of trend parameters, the smallest square method is used (Žižić et al., 2007).

3. Result

Starting from the data gathered and methods applied, we performed a statistical preparation of the data for the possibility of their processing.

Table 1. Financial Indicators in the Republic of Serbia in Millions of USD

Years	GDP	Budget of the Republic of Serbia	Expenditure from the budget for healthcare			Overall expenses for health care
			Expenses for personal expenditure	Expenses for current expenditure	Expenses for capital expenditure	
2007	21,918.6	5,415.2	3.15	73.34	75.110	151.60
2008	25,546,9	5,952.8	4.36	72.75	4.780	81.89
2009	26,804.7	6,503.3	5.30	109.46	0.211	114.97
2010	28,546.5	6,652.9	3.54	101.24	0.424	105.20
2011	31,714.2	7,491.6	3.44	140.44	1.552	145.43
2012	33,358.5	7,673.4	3.79	87.73	4.512	96.04
2013	36,077.7	8,987.8	4.09	89.58	2.120	95.79
2014	36,007.2	8,654.6	4.36	96.71	1.616	102.68
Total	239,974.3	57,331.6	32.03	771.25	90.32	893.60

We performed the analysis of expenses for capital expenditure in healthcare (x) and overall expenses for health care from the budget of the Republic of Serbia (y). By applying the Pearson's correlation method we established that the correlation value is r_{xy}=0.62 which falls in medium positive correlation. If we take the amount of overall budget of the Republic of Serbia for projected years (2007-2014) from the previous table as occurrence (x), and occurrence (y) as overall expenses for health care, by applying the Pearson correlation method we established that the value of correlation coefficients is r_{xy}=-0.33 which means that the correlation is weak and inverse, i.e., weak negative correlation.

Table 2. Indicators of Personnel and Material Resource in Health Care in the Republic of Serbia

Years	Number of hospital beds per 100,000 citizens	Number of general practitioners per 100,000 citizens	Total number of patients
2007	540	59	1,051,150
2008	540	61	1,006,643
2009	541	61	1,131,589
2010	544	62	1,154,930
2011	548	62	1,132,146
2012	551	61	1,126,382
2013	551	61	1,126,382
Total	3815	427	7,729,222

By analyzing overall expenses for health care (x) from Table 1 and total number of patients in Table 2

(y), by using the Pearson correlation method we established that the value of the correlation coefficient is r_{xy}=0.09, which means that the correlation is insignificant, it's small between these two occurrences.
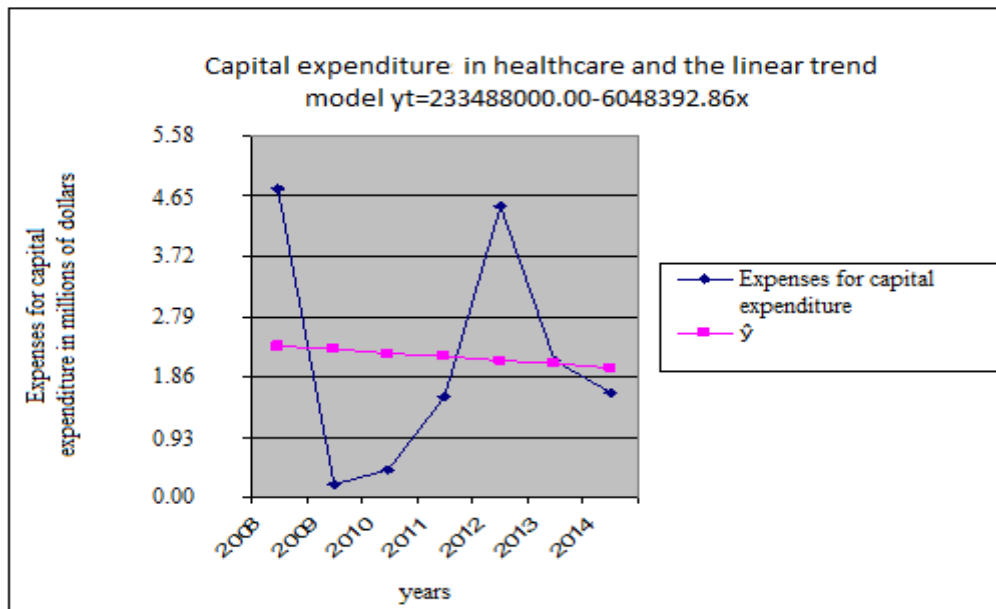

Figure 1. Capital Expenditure in Healthcare

By calculating the time linear trend we came to the linear trend model ŷ=233.49-6.05x where the average in the considered period of capital expenditures is 233.49 millions of dinars, and medium absolute growth in the presented period is 6.05 millions of dinars. By calculating the trend value for the year 2020 we came to the result of 179.05 millions of dinars.

4. Discussion

Analyzing the given results it can be concluded that expenses for capital expenditure for healthcare and overall expenses for healthcare from the budget of the Republic of Serbia has medium positive correlation level, which means that in this case when overall expenses from the budget for healthcare decrease, in conditions of world economic crisis, expenses for capital investment in health decrease as well. This is especially significant because expenses for healthcare are treated as expenses for social activities, and unlike the real sector they shouldn't be tightly connected with the employment level of work capacities.

The decision to decrease the budget share for healthcare due to the economic crisis in the Republic of Serbia is explainable, however economically unjustified. Based on research results it can be concluded that the decrease was done on capital expenses, because short-term they are most elastic expenses, however this is not sustainable long-term, due to the tendency for personal and current expenditure for healthcare to be held at the existing level. Tendency to decrease expenses for capital expenditure doesn't greatly influence the functioning of funding for the healthcare system as a whole however it

223

doesn't decrease the significance of capital expenditure as necessary means for development of the healthcare system.

Research results related to the amount of approved funds for funding healthcare from the budget of the Republic of Serbia for projected years (2007-2014) shows us that there is there was a tendency of a decrease in shares for expenses for the Ministry of health in the overall budget in the observed period. There is also a continual increase in the number of patients. Based on this we can conclude that the world economic crisis negatively influenced the state of health of citizens in the Republic of Serbia due to a decrease in expenses for funding healthcare (firstly we classify neurological, neuropsychiatric and cardiovascular diseases).

Due to an increase in the number of patients in the analyzed period, in the time of the economic crisis when there was a decrease of the overall budget for healthcare, there is a need for expansion of hospital capacity, in order to treat more efficiently and purchase additional means and more contemporary equipment.

The relation of overall expenses for healthcare and total number of patients tells us that despite an increase in budget, during the years of economic crisis, total expenses for healthcare haven't decreased. The reason for a decrease in the budget for Ministry of health and healthcare for citizens in the conditions of the economic crisis, despite a slight nominal increase in the budget of the Republic of Serbia, can be the consequence of shifting priorities of the state on the question of roles of state institutions. This occurrence can greatly influence healthcare and health conditions of citizens as a "toll" of economic crisis.

It can also be noticed that appropriations for healthcare are significantly reduced in relation to the year before the economic crisis, which translated from nominal to real value shows even greater digression. It can be viewed through expenses for capital expenditure, where the emergence of the economic crisis caused for healthcare capital expenditure to decrease.

With the time linear trend we showed that the trend of movement of capital expenditure in health through the time period from 2008-2014. In the diagram of capital expenditure in health and linear trend model it can be seen that the amount of capital expenditure in health decreased when the economic crisis occurred, which tells us that appropriations for capital expenditure in health during the time of the economic crisis has greatly decreased.

By applying the linear trend for predicting the amount of capital expenditure in health in 2020, we came to the result that if the conditions of the economic crisis were to continue for the healthcare system of the Republic of Serbia, expenses for capital expenditure would continue to drop which would cause a distortion in the technological process of healthcare, because we emphasize that healthcare falls under social activities, due to which it is impossible to make business decisions as is the case in the real sector of the economy.

5. Conclusion

When analyzing healthcare funding in the Republic of Serbia in the time of the world economic crisis we have to mention that the Republic of Serbia is in the process of transition. The consequence of this is great unemployment which caused an effect on the healthcare system of the Republic of Serbia, observing in relation to economically more developed countries. Strong negative influence of the economic crisis and related factors on the economic situation as well as the budget of the Republic of Serbia has negatively influenced funding on the healthcare system.

Using the aforementioned statistical methods we presented relationships between elements of the healthcare system and their financial base in the economic power of the state in conditions of the world economic crisis in the case of the Republic of Serbia. According to our opinion supported by valid data, the biggest problem in funding the healthcare system of the Republic of Serbia in the time of economic crisis is decreased funding for capital expenditure. Expenses for capital expenditure are greatly reduced. A decrease in expenses for capital expenditure has occurred simultaneously with an increase in the number of patients, which indicates that it is necessary to greatly increase investment in expanding hospital capacity, purchase modern equipment and adapt existing capacities, primarily buildings necessary for conducting healthcare activities.

An important element and a crucial problem for funding the healthcare system in the Republic of Serbia is the unresolved relationship between funding the healthcare system through health insurance, relationship of mandatory and voluntary insurance, role of private and state apparatus for healthcare and other system elements, which results in consequences we obtained.

Finally by analyzing the role of budget in financing healthcare in the Republic of Serbia at the time of the economic crisis we can conclude that the world economic crisis negatively influenced all domains of social life and work, economic-social life and as such slowed development and creation of a strategic program for maintaining and improving health state of citizens.

References

Burda, M., & Viploš, Č. (2012). Makroekonomija: Evropski udžbenik, prevod 5. izd. *Centar za izdavačku delatnost Ekonomskog fakulteta*. Belgrade, Serbia.

http://www.batut.org.rs/download/zdravstveni_pokazatelji_rs_2014.html

http://www.mfin.gov.rs/pages/issue.php?sf=6&id=1578

http://www.nbs.rs/export/sites/default/internet/latinica/80/realni_sektor/SBRS01.xls

Mićović, P., & Mićović, I. (2013). Zdravstveni system. *Evropski centar za mir i razvoj (ECPD) Univerziteta za mir Ujedinjenih nacija*. Belgrade, Serbia.

Mladenović, Z., & Nojković, A. (2015). Primenjena analiza vremenskih serija. *Centar za izdavačku delatnost Ekonomskog fakulteta*. Belgrade, Serbia.

Radičić, M., & Raičević, B. (2011). Javne finansije: Teorija i praksa. *Data status*. Belgrade, Serbia.

Simeunović, T. (2016). Menadžerski aspekti međuzavisnosti zaštite životne sredine i budžeta. *Oditor*,

225

    2(1), 25-29.

Stiglic, E. Dž. (2008). Economy of the public sector. *Faculty of Economics*. University of Belgrade, Belgrade, Serbia.

Žižić, M., Lovrić, M., & Pavličić, D. (2007). Metodi statističke analize. *Centar za izdavačku delatnost Ekonomskog fakulteta*. Belgrade, Serbia.