

HEALTHCARE EXPENDITURES VS. HEALTH OF THE POPULATION

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Abstract

Healthcare tends to play a crucial role in every country and its society. Appropriate and well-performing healthcare systems constitute an important aspect of national policy. The most important issue connected with this matter is the appropriate adjustment of the health financing system. That is why the subject of evaluation of the performance of healthcare systems in the context of financial management and the quality of public health has been undertaken by many Polish and foreign researchers. The main goal of this study is to conduct a comparative analysis of healthcare systems in selected countries in order to answer the question of whether the increase in expenditures on healthcare has had a positive influence on improvement of the health of the population.

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INTRODUCTION

Health constitutes an important notion for every person in the world. It is also a crucial, but troublesome element of policy for every country. The most important issue connected with this matter is the appropriate adjustment of the health financing system, which is connected with the applied model of healthcare. The way of financing healthcare systems constitutes one of the most fundamental social and economic problems (Siwińska, et al., 2008, p. 358).

The main goal of this study is to conduct a comparative analysis of healthcare systems in selected countries in order to answer the question of whether the increase in expenditures on healthcare has had a positive influence on improvement of the health of the population. This is an extremely important issue from a corporate financial management standpoint. Institutions that manage healthcare financial resources strive to ensure that funds allocated for specific goals positively affect the healthcare system. This positive impact should be reflected in improvement of the quality of service, which translates into a satisfactory level of the society's health.

The study was conducted on the example of four selected countries Poland, Germany, Czech Republic

and Sweden, whose healthcare systems were built on the basis of different models of healthcare systems. The performance evaluation of the countries in question covered the years 1995-2009. Factors used in the study concerned indicators of society's health and financial resources of each healthcare systems. The subject of evaluation of the performance of healthcare systems in the context of financial management and the quality of society's health has been undertaken by many Polish (Kuszewski, Gericke, 2005; Nojszewska, 2011; Skrzypczak, Ryć, 2011; Suchecka, 2011) and foreign researchers (Healy, McKee, 2002; Hussey, Anderson, 2003; Lewis, Eskeland, Traa-Valerezo, 2004; Taguri, Nasef, 2008). However, the problem of identifying the nature of the relationship between these two factors deserves a separate analysis.

DESCRIPTION OF HEALTHCARE SYSTEMS. THE EXAMPLE OF POLAND, GERMANY, CZECH REPUBLIC AND SWEDEN

In this part of the paper brief descriptions of healthcare systems in Poland, Czech Republic, Germany and Sweden will be presented.

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POLAND

Poland has a mixed system for public and private healthcare financing. Social health insurance contributions represent the major public source of healthcare financing. The National Health Fund (NHF) with its regional branches administers the social health insurance scheme. The National Health Fund takes responsibility for planning and purchasing public financed health services. Its major task is to finance health services provided for insured citizens. Health insurance contributions for certain groups of individuals are not covered by the standard scheme and specific public health activities are funded directly by the government through general taxation. The management and financing functions in the Polish healthcare system are divided among three different types of institutions: Ministry of Health, National Health Fund and Territorial self-government administration (Kuszewski, Gericke, 2005, p. XV-11).

CZECH REPUBLIC

In the Czech Republic the healthcare system is based on health insurance funds that operate on the principle of public funds controlled by management and supervisory boards. This system ensures equal access to benefits with minimal financial participation (Suchecka, 2011, p. 51).

The system is based on solidarity and equity and it is financed by contributions from individuals, employers and the State. The State acts on behalf of: unemployed, pensioners, children and dependants up to 26 years of age, students, women on maternity leave, men serving in the military, prisoners, and people receiving social welfare, as guarantor of the system (Rokosova, Hava, 2005, p. 38).

Healthcare in the Czech Republic is provided primarily on the basis of statutory health insurance, which in turn, is provided by nine health insurance funds (Rokosova, Hava, 2005, p. 27).

GERMANY

Health insurance has been mandatory in Germany for all citizens since 2009. It is mandatory either in the social or in the private health insurance scheme, depending on previous insurance and/or job status. The Statutory Health Insurance (SHI) benefit package covers preventive services, inpatient and outpatient hospital care, physician services, mental

healthcare, dental care, prescription drugs, medical aids, rehabilitation, and sick leave compensation. The SHI scheme is operated by about 180 competing health insurance funds (called “sickness funds”): autonomous, non-profit, nongovernmental bodies regulated by law. The scheme is funded by compulsory contributions levied as a percentage of gross wages up to a certain threshold. Private health insurance plays a substitutive role in covering the two groups who are mostly exempt from the SHI: civil servants, who are refunded part of their healthcare costs by their employers, the self-employed as well as high earners who choose to opt out of the SHI scheme (The Commonwealth Fund, 2010, p. 34).

SWEDEN

The coverage in Sweden is universal. It means that all residents are entitled to publicly financed healthcare. This system covers public health and preventive services; inpatient and outpatient hospital care; primary healthcare; inpatient and outpatient prescription drugs; mental healthcare; dental care for children and young people; rehabilitation services; disability support services; patient transport support services; home care; and nursing home care. Residents’ ability to choose primary care provider and hospital depends on the county council. Public funding for healthcare comes mainly from central and local taxation. County councils and municipalities have the right to levy proportional income taxes on their residents. The central government provides funding for drug prescription subsidies. It also provides financial support for county councils and municipalities through grants allocation using a risk-adjusted capitalization formula (The Commonwealth Fund, 2010, p.52).

RESULTS OF THE STUDY

The main goal of this study is to verify the hypothesis that the increase in expenditures on healthcare has had a positive influence on improvement in health of the population.

The study was conducted on the basis of data from the World Health Organization database – European health for all database, World Health Organization Regional Office for Europe. According to the webpage all the data were updated in January 2012.

All the data apply to Poland, Germany, Czech Republic and Sweden within the period of 1995-2009.

The study was based on the following factors created according to the methodology given on the World Health Organization webpage (Retrieved from: <http://data.euro.who.int/hfad/>):

- 1) total health expenditure, PPP\$ per capita - includes: household health expenses; government-supplied health services including those in schools, prisons and armed forces and special public health programmes such as vaccination; investment (e.g. in clinics etc.); administration costs; research and development; industrial medicine; outlays on voluntary and benevolent institutions. As for some central and eastern European countries the total health expenditures also include: direct state budget allocated to the health sector, state subsidies for the mandatory health insurance system; mandatory health insurance contributions by employers and employees; direct health expenditure of employers for running industrial, medical facilities; direct health expenditures of ministries and governmental agencies; charity health expenditures; foreign assistance; outstanding debt at the end of the year; private health insurance and direct private health charges.
- 2) public sector expenditures as % of GDP, WHO estimates
- 3) public sector expenditures as % of total health expenditures, WHO estimates – public sector expenditures is the sum of outlays for health maintenance, restoration or enhancement paid for in cash or in kind by government entities. It also includes transfer payments to households to offset medical care costs and extra-budgetary funds to finance health.
- 4) private sector expenditures as % of total health expenditure, WHO estimates – private sector expenditures comprises the outlays of insurers

and third-party payers other than social security, mandated and voluntary employer health services and other enterprises provided health services, non-profit institutions and non-governmental organisations (such as the Red Cross) financed healthcare, private investments in medical care facilities and household out-of-pocket spending.

- 5) SDR all causes – it is a standardized death rate calculated by WHO according to deaths caused by all causes, in all ages and presented per 100000 cases.
- 6) average length of stay in hospitals, days - total number of occupied hospital bed-days divided by the total number of admissions or discharges. Length of stay (LOS) of one patient = date of discharge - date of admission. If these are the same dates, then LOS is set to one day.
- 7) life expectancy at birth, years - calculated for all countries which report detailed mortality data to WHO, using Wiesler’s method. Age disaggregation of mortality data: 0, 1-4, 5-9,10-14, etc, 80-84, 85+.
- 8) life expectancy at age 65, years - calculated for all countries which report detailed mortality data to WHO, using Wiesler’s method. Age disaggregation of mortality data: 0, 1-4, 5-9,10-14, etc, 80-84, 85+.

ANALYSIS OF CHOSEN FACTORS

Each country was analysed by means of factors concerning the financial sphere of healthcare management and health conditions of country’s population. The table below presents selected factors used to the analysis of healthcare systems of Poland and Germany. According to the limited availability of space these countries were shown as an example.

Table 1: Selected factors describing Polish and German healthcare systems used in further analysis

Years	Life expectancy at age 65, in years		Life expectancy at birth, in years		SDR all causes		Average length stay		Total health expenditures	
	Poland	Germany	Poland	Germany	Poland	Germany	Poland	Germany	Poland	Germany
1995	15,06	17,19	79,07	72,01	1061,86	764,09	10,80	13,50	410,00	2267,00
1996	15,06	17,30	79,29	72,39	1048,27	751,13	10,60	12,90	477,00	2392,00
1997	15,29	17,58	79,49	72,75	1019,56	724,13	10,40	11,90	497,00	2410,00
1998	15,53	17,70	79,59	73,14	990,58	708,68	10,10	11,70	559,00	2480,00
1999	15,50	17,88	79,63	73,17	993,38	693,27	9,30	11,60	573,00	2581,00
2000	15,86	18,14	79,92	73,86	946,23	675,65	8,90	11,40	583,00	2669,00
2001	16,12	18,38	80,01	74,28	918,00	657,62	8,40	11,20	642,00	2797,00
2002	16,38	18,29	80,09	74,65	891,55	661,03	7,90	10,90	733,00	2934,00
2003	16,29	18,19	80,37	74,74	895,50	665,20	7,70	10,60	748,00	3097,00
2004	16,62	18,69	80,55	74,99	872,01	628,63	6,90	10,40	807,00	3170,00
2005	16,75	18,80	80,82	75,12	862,44	620,48	6,70	10,20	857,00	3364,00
2006	17,04	19,16	81,05	75,38	842,17	596,56	6,40	10,10	934,00	3565,00
2007	17,13	19,34	81,19	75,45	836,29	585,21	6,20	10,10	1078,00	3724,00
2008	17,30	19,35	81,35	75,73	819,26	582,46	5,90	9,90	1265,00	3963,00
2009	17,33	19,44	81,61	75,91	809,66	575,92	5,80	9,80	1394,00	4218,00

Source: World Health Organization, <http://data.euro.who.int/hfad/>

According to the analysis of correlation between total health expenditures and: SDR all causes, life expectancy at birth, life expectancy at age 65 and average length of stay in hospitals the correlation coefficient reached the level of 90-93% in Czech Republic, 89-96% in Germany, 90-94% in Poland and 86-98% in Sweden. These results showed quite high correlation between health expenditures and chosen

factors of a population's health which constituted a basis for further analysis.

Recently a strong trend concerning average length of stay in hospital has been developed. It is said that the shorter the average length of a stay, the better or the more efficient the healthcare. Table 2 presents data concerning this factor.

Table 2: Average length of stay, all hospitals

Years	Czech Republic	Germany	Poland	Sweden
1995	13,10	13,50	10,80	7,80
1996	12,50	12,90	10,60	7,50
1997	12,00	11,90	10,40	6,60
1998	11,70	11,70	10,10	6,84
1999	11,60	11,60	9,30	6,61
2000	11,60	11,40	8,90	6,41
2001	11,50	11,20	8,40	6,36
2002	11,30	10,90	7,90	6,22
2003	11,20	10,60	7,70	6,15
2004	11,00	10,40	6,90	5,99
2005	10,80	10,20	6,70	5,93
2006	10,80	10,10	6,40	6,00
2007	10,30	10,10	6,20	5,84
2008	10,00	9,90	5,90	5,88
2009	10,00	9,80	5,80	5,81
2010	10,00	-	-	-

Source: World Health Organization, <http://data.euro.who.int/hfad/>

According to the data gathered in the table above all the countries are characterized by positive trends concerning the reduction of average length of stay in hospitals. It means that all hospitals tried to do as much as possible to shorten the average patient's stay in hospital, but at the same time not allowing the quality of service to worsen. In 2009 only Poland and Sweden went below the level of 6 days, however it is Sweden that had better results in the sampled period. Germany and Czech Republic behaved similarly in the years 1995 – 2009.

According to the data concerning the standardized death rate (SDR), presented in table 3, it must be said that Poland denoted the highest level. The state government should consider which factors caused such a situation. The Czech Republic was in the next position after Poland. However, the whole trend in the countries in question should be positively evaluated. In every case the standardized death rate has become lower and lower since 1995.

Table 3: SDR all causes, all ages, per 100000

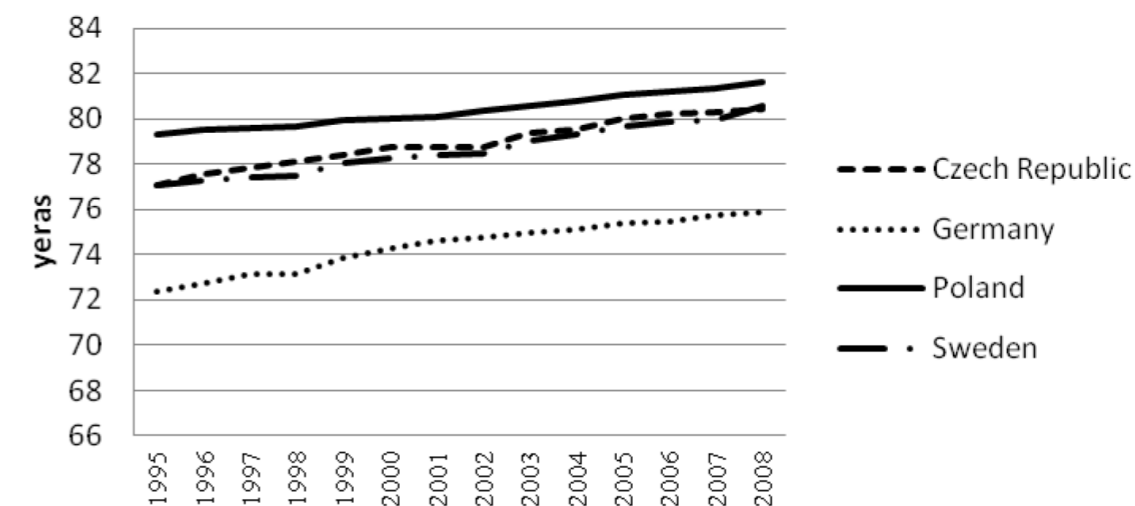
Years	Czech Republic	Germany	Poland	Sweden
1995	1024,82	764,09	1061,86	647,71
1996	970,25	751,13	1048,27	637,60
1997	960,84	724,13	1019,56	626,41
1998	922,28	708,68	990,58	620,74
1999	911,02	693,27	993,38	620,88
2000	891,51	675,65	946,23	604,60
2001	883,51	657,62	918,00	599,50
2002	881,05	661,03	891,55	598,45
2003	899,60	665,20	895,50	582,00
2004	851,92	628,63	872,01	567,92
2005	837,61	620,48	862,44	559,94
2006	789,26	596,56	842,17	547,20
2007	767,48	585,21	836,29	541,23
2008	746,21	582,46	819,26	533,12
2009	743,94	575,92	809,66	520,27
2010	724,19	565,56	-	514,07

Source: World Health Organization, <http://data.euro.who.int/hfad/>

According to the figure below the highest life expectancy at birth is in Poland. The trend in the presented countries should be evaluated in a positive way. In each country the life expectancy changed by: 3.58 in Czech Republic, 3.9 in Germany, 2.54

in Poland and 3.77 in Sweden. In each examined country the life expectancy has been growing steadily between these years, which can be easily seen in the figure 1. According to Nojszewska (2011) this trend is said to be visible in Western countries.

Figure 1: Life expectancy at birth

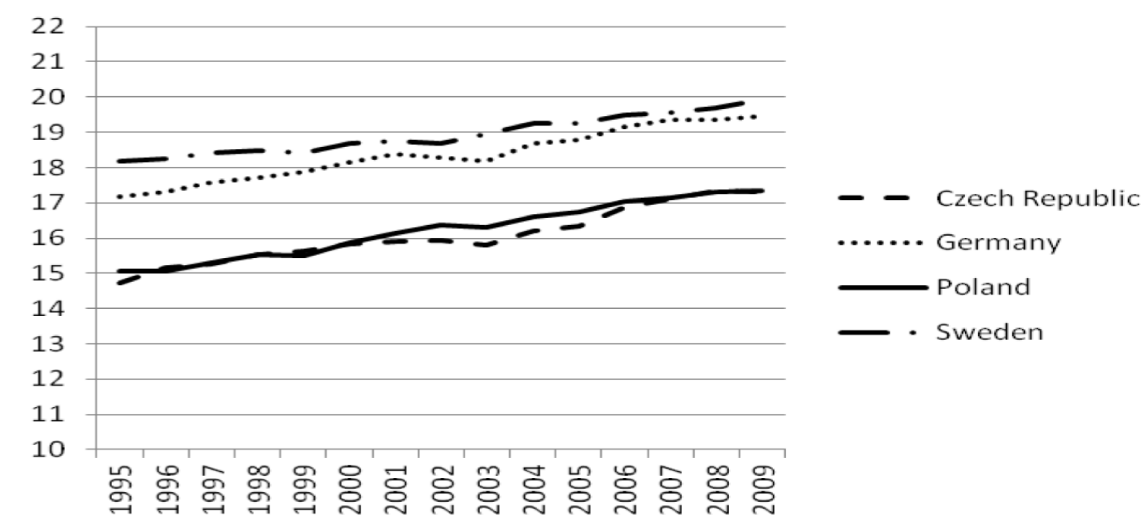


Source: Own elaboration based on data from <http://data.euro.who.int/hfad/>

Similarly, a positive trend can be observed with respect to life expectancy at the age 65. As it can be seen in the figure 2, Poland and Czech Republic saw a similar trend. In both countries life expectancy has risen since 1995 by about 17% (Czech Republic) and

15% (Poland). This should be evaluated positively, however it is still far from the example of Germany and Sweden. In those countries the indicator in question in 2009 reached the level of 19,4 and 19,2 years respectively.

Figure 2: Life expectancy at age 65, in years



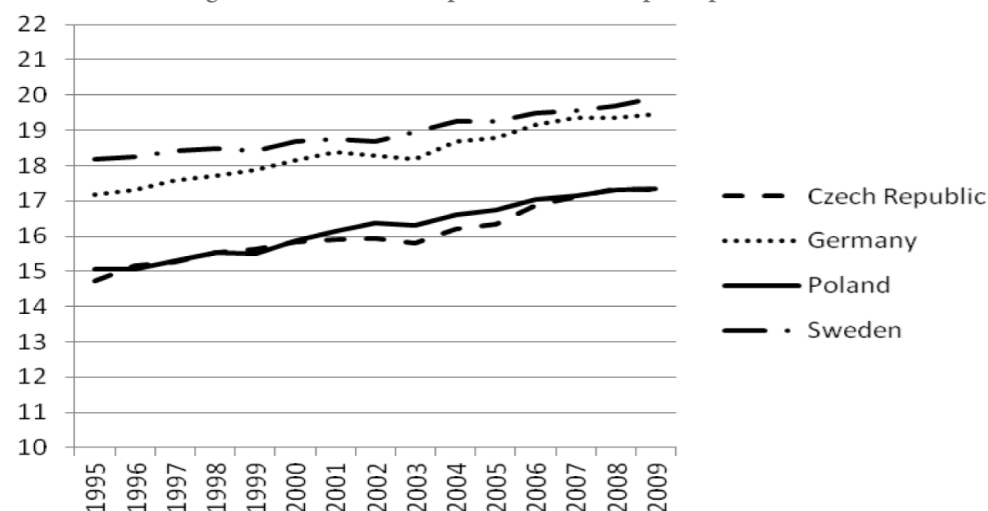
Source: Own elaboration based on data from <http://data.euro.who.int/hfad/>

On the issue of health expenditures, Figure 3 presents total health expenditures per capita expressed in PPP\$ (purchasing power parity in US\$).

Total health expenditures in the countries examined during the years 1995-2009 were characterized by a positive trend (see figure 3). In the period of 1995-2009 expenditures on health increased in the Czech

Republic 135%, in Germany by 86%, in Poland by 240% and in Sweden by 113%. In all countries total health expenditures have been rising steadily and because of this fact the healthcare system had more resources to invest in the system in order to improve the quality of service and as a consequence the population's health.

Figure 3: Total health expenditures, PPP\$ per capita



Source: Own elaboration based on data from <http://data.euro.who.int/hfad/>

The share of public expenditures in GDP is quite stable and has been slightly amended during the period (see table 4). Significant differences between

the countries are due to the wealth of the countries and the type of policy.

Table 4: The share of public expenditures in GDP [%]

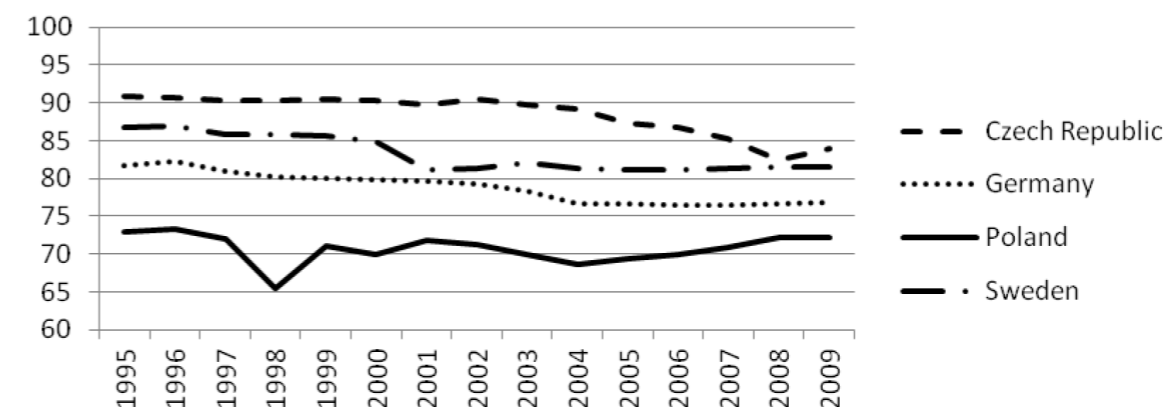
Years	Czech Republic	Germany	Poland	Sweden
1995	6,36	8,24	4,00	6,90
1996	6,08	8,54	4,32	7,14
1997	6,02	8,28	4,04	6,92
1998	6,00	8,2	3,86	7,02
1999	5,94	8,22	4,08	7,08
2000	5,92	8,22	3,88	7,00
2001	6,00	8,30	4,22	7,34
2002	6,42	8,44	4,52	7,64
2003	6,4	8,22	4,14	7,46
2004	6,18	7,86	4,02	7,26
2005	6,06	7,96	4,02	7,22
2006	5,84	7,84	4,06	7,16
2007	5,54	7,78	4,26	7,12
2008	5,70	7,88	4,74	7,34
2009	6,14	8,58	4,86	7,82
2010	-	-	-	-

Source: World Health Organization <http://data.euro.who.int/hfad/>

As for the share of public health expenditures in total health expenditures, it is presented in figure 4. During the sampled period the level of funding of health services with public money in Poland remained stable at the level 70%. On the other hand between years 1995-2008 there was observed in

Germany, Czech Republic and Sweden a decrease in that share respectively by: 5, 8 and 5 percentage points. However, according to the data it could be said that the implemented health and social policy has not changed significantly.

Figure 4: Public sector health expenditures as % of total health expenditures

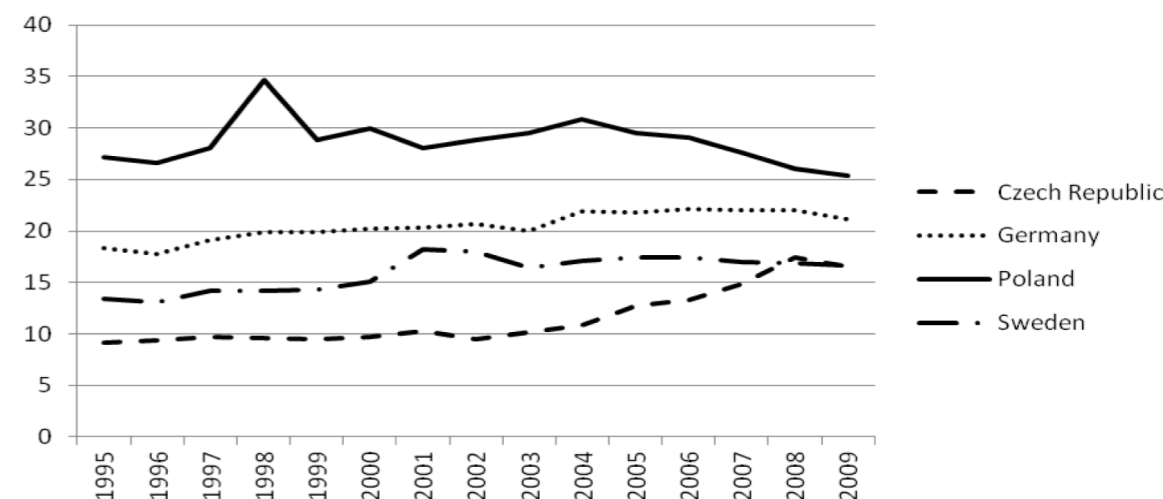


Source: Own elaboration based on data from <http://data.euro.who.int/hfad/>

The share of private sector expenditures on health in total health expenditures is presented in figure 5. The share of private sector expenditures has been slightly changing during the considered period. According to the figure below in Germany an average of 20% of

all expenditures is covered by the private sector. In Czech Republic it is about 11%, 28% in Poland and 15% in Sweden.

Figure 5: Private sector expenditures on health as % of total health expenditures



Source: Own elaboration based on data from <http://data.euro.who.int/hfad/>

CONCLUSION

Healthcare tends play a crucial role in every country and its society. Appropriate and well-performing healthcare systems constitute an important notion of each country's policy. All the countries analysed in the study improved their performance in the sampled period of years 1995-2009 and improved the level of people's health.

The level of correlation between health expenditures and the five chosen factors exceeded the level of 86% in all cases, which should be assessed positively, because it showed the existence of a relationship between these factors and, at the same time, provided the basis for further analysis.

The levels of the average length of stay in hospitals and the SDR have been steadily decreasing and at the same time life expectancy has been rising, which should be highly appreciated.

In all countries total health expenditures have been rising steadily and because of this fact healthcare systems had more sources to invest in the system in order to improve the quality of service and as a consequence the population's health.

The share of public expenditures in GDP is quite stable and has been slightly amended during the period. Significant differences between the countries are due to the wealth of these countries and the type of policy.

The share of public health expenditures in total health expenditures remained quite stable in the sampled period, which means that implemented health and social policy has not changed significantly.

In the light of the presented factors such as expenditures on healthcare and population health indicators it could be said that the increase in expenditures on healthcare positively affects the health of the population.

However, for a more detailed examination of the problem it would be crucial to look at the structure and the allocation of particular expenses. One could also enrich the analysis by answering the question of whether it is possible to reduce expenditures on health and to improve the health of the population. And if so, how it can be done? Future research could also be concentrated on all of the European countries and the performance of their healthcare systems.

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