Assessment of Public Expenditures in Selected Areas of Public Services in EU Countries

Martina Halásková
VSB - Technical University of Ostrava
Faculty of Economics, Department of Public Economics
Sokolská třída 33
Ostrava, 701 21
Czech Republic
e-mail: martina.halaskova@vsb.cz

Renáta Halásková
College of Logistics
Department of Economic, Legal and Social Sciences
Palackého 1381/25
Přerov, 750 02
Czech Republic
e-mail: renata.halaskova@vslg.cz

Abstract
The paper deals with public finances, with focus on public expenditures in EU countries (27). The aim of this paper is to compare public expenditures, including the assessment of their changes in selected areas of public services in EU countries. The theoretical part deals with basic concepts of public expenditures, theory explaining growth of public expenditures, and comparison of various viewpoints of public expenditures. Close attention is paid to the classification of functions of the government (COFOG) and its structure. In the application part, based on statistical method, we provide analysis and comparison of public expenditures in EU countries over the years 2001-2012. Public expenditures are compared with selected areas of public services, i.e. social protection, health and education in the EU (27) and their changes in the years 2002, 2008 and 2011 are evaluated using the multidimensional-scaling method.

Keywords: public expenditure, social protection, health, education, multidimensional scaling
JEL codes: H75, H51, H55

1. Introduction

Public finances are a part of classical, neoclassical and Keynesian economy. The basic concept of the comprehensive theory of public finance is laid in the 19th century, and is further developed over the 20th century. Public finances can be characterized as an instrument of public policies created to implement their targets. From this viewpoint, public finances in relation to public policies fulfil fiscal functions, i.e. allocation, redistribution and stabilisation. Taking the function of public finance as a scientific discipline, it is possible to say that the public finances also play an explanatory and practical economic role. Presently, theory of public finances is facing a challenging task of assessing the causes and effects of the global economic crisis from the beginning of the 21st century, and of making the conclusions and recommendations regarding the position of the government and lower administrative levels in economics.

In the majority of developed countries, the share of public expenditures in public budgets has been rising in recent decades. Numerous economic theories attempt to explain the rise of public expenditures, of which a significant one is the theory of welfare economy. It postulates that the government should provide certain standards to all citizens and is responsible for ensuring satisfaction of certain needs and social protection of the public. Consequently, the expenditures on social protection are higher. The aim of this paper is to compare public expenditures, including the assessment of their changes in selected areas of public services (social protection, health and education) in EU countries in the years 2002, 2008 a 2011.

2. Theories Related to Public Finance and Public Expenditures

Development of economic thinking in the area of public finances is markedly influenced by the dichotomy of fiscal theory and the economy of public sector. That is on the one hand the role of state (the government or public administration), including fiscal functions, and on the other hand the imperfections of the market, so-called market failure. These two issues and the attempts to solve them are the key matters of the fiscal theory and the theory of public sector. Works by respected economists (Mazzola, 1964; Samuelson, 1954, 1992; Stiglitz,1988) helped find the solution to these questions.

The theory of public expenditures is methodologically based on the theoretical concepts of the management of public administration since public expenditure management constitutes a subsystem of public administration (Wright and Nemec, 2002). Some authors such as Ochrana et al. (2010) use three basic concepts of management of public expenditure as the basis, as shown in Table 1. These basic concepts, in particular public business enterprising, and the New Public Management (NPM) have their supporters and opponents and currently are undergoing a series of modifications and partial adjustments and reforms.

Table 1: Basic Concepts of Public Expenditure Management

Title of the concept	Substantiality
Neo Taylorism	Planning and control of expenditure targets
Public business enterprising	Public expenditure management "mimics" the principles of "business administration"
New public management	Allocation of public resources based on public demand; budgeting is done on the basis of the results

Source: Ochrana et al. (2010)

Many authors are dealing with an optimal allocation of public expenditures and try to create optimized systems of allocation. Ochrana, et al. (2010) attempt to compare the optimized and non-optimized allocations of public expenditures (see Table 2). As is evident from the comparison of optimized and non-optimized allocation of public expenditures (Table 2), the optimized allocation of public expenditures is based on the principle that targets of expenditures are compiled in the order of importance (weight), depending on the importance (weight) of corresponding targets of public policies.

Table: 2 Comparison of Aspects of Public Expenditures

Viewpoint that is compared	Optimized allocation of public expenditures	Non-optimized allocation of public expenditures
The way of compiling expenditure targets	Objectives are compiled into priorities based on the criteria of allocative urgency.	Expenditure targets are compiled by using the index-budgeting method, without a specified criterion of "objectification".
The method of allocation of public expenditures	Resources are allocated to programs. It is determined by the target allocative function.	Resources are allocated into the organizational structure. No targeted allocative function is determined.
Method of restriction of public expenditures	Public expenditures are subject to "retrenchment" with regard to priority programs (optimization criterion).	Public expenditures are reduced "across the area", with no regard to importance (priority) of expenditure programs.
Monitoring of public expenditures	It is carried out by the economic control and performance audit evidencing the fulfilment of optimization criteria and 3E criteria.	Only a formal check of public expenditures is carried out (checking the accountancy and documentation).

Source: Ochrana et al. (2010)

The volume and structure of public expenditures are influenced by the extent and structure of actions taken by the government (government, municipalities) in relation to allocating, redistributing and stabilizing the fiscal function. The more the government is engaged in these actions, the larger is the volume and structural variety of public expenditures, and vice versa. Jackson and Brown (1994), Stiglitz (1988), Musgrave and Musgraeova (1994) define objective factors of growth (or fall) of public expenditures also. These are geographic, demographic, urban, technological, economic, political or social. Among the most popular theories that explain growth of public expenditures are Wagner's law, displacement effect, the theory of the gradual growth and the theory of welfare state.

When assessing dynamics of public expenditures, it is important to consider which indicators will be assessed and which proportions are observed in the analysis. Also, the fact that public expenditures are developing in terms of an economic system has to be taken into account. This is enabled by the indicator of the public-expenditure share on the GDP. For dynamics of public expenditures and analysis of changes in their structure, instruments indicating key proportions inside the total public expenditures can be used.

Public expenditures can be divided into expenditures of the central government and the budget, or into expenditures of regional governmental level and its budget, or local administration (self-administration) and its budget. Different arrangements of public expenditures allow for different aggregations of public expenditures, e.g. total public expenditures, expenditures of central or lower budget. The arrangement of public expenditures is used mainly in analytical and comparative research in EU countries.

2.1 Public Expenditures in EU Countries in Relation to Public Services

As Jackson and Brown (1994) state, theory of public finances comprises economic connections of public services. Many authors deal with matters associated with providing public services by the government from the economic viewpoint, and they appear in the theory of state and in public finances. One of the authors who deals with the theory of public finances and the theory of public services is Stiglitz (1997). Classic political economists in terms of the theory of state and theory of public finance define three functions of the government, where also belongs the function connected with providing public services.

The theory of public finances deals with the issue of financing public services in the concept of a number of former and contemporary authors (Aaberge et al., 2010; Buchanan, 1969; Brender and Drazen, 2013; Hillman, 2009; Larch and Lechthaler, 2013; Kaul and Conceição, 2006; Pigou,1960; Rosen and Gayer 2010; Ševič, 2008; Ulbrich, 2011).

Expenditures on education, health care and employment, public investment and expenditures on science and research have, in accordance with the conclusion of endogeneous economic growth, a positive influence on efficiency. As Benčo et al. (2011) states, a big problem is measuring the outputs of the public sector because of their intangible character. There are similar difficulties also with the sector of services since many such services take place without any provider. However, as research of this area across EU countries shows, the share of public expenditures on the GDP are information of too aggregated a nature, which does not necessarily provide data about the quality of these expenditures. When considering the economic power of a country and their preferences, EU countries approach the issue of public expenditures quite differently (Hamerníková and Maaytová, 2010; Peková, 2011; Ochrana and Nekola, 2009). The attempts to grasp trends of expenditures in the structure of public expenditures, consequently, lead to the division of public expenditures according to their functions.

For a more exact classification of public expenditures from the functional point of view, the Classification of the functions of the government (COFOG), important for international comparison of policies on expenditures, which helps to overcome organisational and methodological differences, is used. According to functional classification COFOG we can classify the public services in the form of ten categories that represent the functional areas of the government (state). Public expenditures, according to the functions of governmental institutions in the EU (COFOG), are designed for:

- **General public services** (Executive and legislative organs, financial and fiscal affairs, external affairs foreign economic aid, basic research, R&D related to general public services, public debt services, transfers of a general character between different levels of government.

- **Defence** (military and civil defence, foreign military aid, R&D related to defence).
- **Public order and safety** (police, fire-protection services, law courts, prisons, R&D related to public order and safety).
- **Economic affairs** (general economic, labour and commercial affairs, agriculture, forestry, fishing and hunting, fuel and energy, mining, manufacturing and construction, transport, communication, other industries, related R&D).
- **Environmental protection** (waste and water waste management, pollution abatement, protection of biodiversity and landscape, related R&D).
- **Housing and community amenities** (housing development, community development, water supply, street lighting, R&D related).
- **Health** (medical products, appliances and equipment, outpatients, hospital and public health service, R&D related to health).
- **Recreation, culture and religion** (recreational and sporting, cultural services, broadcasting and publishing services, religious and other community services, R&D).
- **Education** (pre-primary, primary, secondary and tertiary education, post-secondary non-tertiary education, education non-definable by level, subsidiary services to education, R&D).
- **Social protection** (sickness and disability, old age, survivors, family and children, unemployment, housing, R&D, social exclusion), (Eurostat, 2012).

3. Methodology

When elaborating this paper, analytical methods were applied that are used in the examination of the professional literature, of the statistical data and EU documentation focused on the structure of public expenditures in the EU. The comparison of public expenditures in selected areas of public services in EU countries in the years 2002, 2008 and 2011 was carried out using the method of comparative analysis. In the empirical part, the method of multidimensional-scaling method is used (Hendl, 2009; Harlow, 2010). The multidimensional-scaling method reveals important dimensions based on similarity or distance of objects. Multidimensional scaling is used primarily to compare objects when it is impossible to derive the basis for comparison. It is a method that allows us to compare objects or features that are normally not measureable. The aim of multidimensional scaling is to determine the number of dimensions, and position of the object (coordinates of the object). This means that the greater the similarity between two objects is, the closer the points that are shown in the model are. The advantage of multidimensional scaling is that it does not require assumptions of linearity, multivariate normality or metrics. In addition, multidimensional scaling allows us to analyze relative frequencies and convert them to an array of distances, from which it is subsequently possible to create a two-dimensional graph with dots that indicate similarity or distance of objects. The output of multidimensional scaling is a scatter chart ("a perceptual map"), in which the coordinates are the basic measures (dimensions) and points are products, respondents, opinions, or other comparison objects.

This means that graphic multi-dimensional scaling shows how various objects do or do not clump (Mazzocchi, 2008; Hendl, 2009). However, it is difficult to define dimensions of the axis in relation to the subject of research (in this article 27 EU countries in which the changes to public expenditures on social protection and health in the years 2002, 2008 and 2011 are assessed). Two indicators are crucial for assessing the validity of the multidimensional scaling results. Firstly, there is so-called **"s-stress",** a measure of stress ranging from 1 (worst possible fit) to 0 (perfect fit). Unfortunately, it is not possible to put an absolute value on the goodness of fit, since s-stress varies with the number of stimuli, or matrices, used in its calculation. Consequently it is necessary to look at several fit indices and get a sense of if any of them indicate large amounts of error. Secondly, there is **so square of the correlation coefficient (RSQ)** of input distance and the calculated distance multi-dimensional scaling, which are determined from the coordinate values of each object in the perceptual map with corresponding number of dimensions. RSQ can take values within the interval <0, 1>; where values >= 0.60 are considered acceptable for the validity of the result (Mazzocchi, 2008).

4. Empirical Part – Comparing Public Expenditures in EU Countries

This part focuses on analysis and comparison of public expenditures in the EU (27) over the years 2001-2012. Further, public expenditures on selected areas of public services (social protection, health and education) in EU countries are compared, and changes from the years 2002, 2008 and 2011 are assessed.

4.1 Development of Total General Government Expenditures in EU Countries

Total general government expenditures are defined in ESA-95 §8.99 in a reference to a list of categories: intermediate consumption, gross capital formation, compensation of employees, other taxes on production, subsidies, payable property income, current taxes on income, wealth, etc., social benefits, some social transfers, other current transfers, some adjustments, capital transfers and transactions on non-produced assets. Local public sector: classified S1313 by the ESA 95, it comprises local authorities with general competencies (local and regional governments) and bodies with more specialised competencies. Total general government expenditure in EU (27) for the period of 2001-2012, see Table 3.

Table 3: Total General Government Expenditure in EU (27) 2001-2012 (% of the GDP)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
General government expenditure	46,1	46,6	47,2	46,7	46,7	46,2	45,5	47,0	51,0	50,6	49,0	49,3
Local government expenditure	10,9	11,1	11,3	11,4	11,3	11,4	11,3	11,6	12,4	12,2	11,9	11,8

Source: Eurostat and authors

As table 3 shows, general government expenditures in the EU (27) (% of the GDP) were ranging from 46-51%. In the majority of EU countries, public expenditures reached their peak in 2009 and 2010. In 2010, public expenditures reach 67% of the GDP in Ireland, while up to 2008, Ireland had been among the countries with the lowest level. This can be, to some extent, explained by the government support of banks during the financial crisis through capital investments. The ramifications of the economic and financial crisis and concomitant need for public intervention were the main factors of growing expenditures in 2008 and 2009 and following huge growth in 2010 in most EU countries. As the analyses of total general government expenditures in EU countries show, over the period of 2001-2012, Denmark, France, Finland and Belgium were above the average rate of EU countries, below average were mainly Bulgaria, Estonia, Lithuania, Latvia and Romania (Freysson, 2011; Eurostat, 2013).

Table 3 clearly shows that local government expenditures in the EU (27) were ranging from 11 to 12% of the GDP over the years 2001-2012. The highest levels of local government expenditures are observed in Scandinavian countries (Denmark 35%, Sweden 25% and Finland approximately 20%, and since 2009 as much as 23%). More to the topic of government expenditures on sub-sector of general government in EU countries (Wahrig and Vallina, 2012).

4.2 Changes to Public Expenditures on Selected Areas of Public Services in EU Countries

As has been mentioned in the theoretical part, public expenditures in EU countries can be divided according to their functions, which take into account 10 areas of public services (COFOG classification). Comparison of general government expenditures in the EU according to their function in the years 2002 and 2011 (% of the GDP) are provided in Table 4.

Table 4: General Government Expenditure by Function in EU (27) (% of the GDP)

General government expenditure by COFOG	2002	2011
General public services	6,6	6,6
Defence	1,6	1,3
Public order and safety	1,8	1,8
Economic affairs	4,0	4,0
Environmental protection	0,8	0,9
Housing and community amenities	1,0	0,9
Health	6,4	7,3
Recreation, culture and religion	1,1	1,1
Education	5,2	5,3
Social protection	18,2	19,6

Source: Eurostat and authors

Functional classification of expenditures according to the COFOG can be also used for definition of the extent of a so-called welfare state. As a quantitative definition of a welfare state can be considered the sum of three items, i.e. expenditures on social protection, health and education (Pestieau, 2006). Sum of these three services for EU countries in 2002 is 29.8% (of the GDP), in 2008 27.3% and in 2011 32.2%. For more information, see Table 5.

Table 5: Public Expenditures According to Welfare State in the EU (27) (% of the GDP)

Public expenditures in the EU (27)	2002	2008	2011
Health	6,4	6,1	7,3
Social protection	18,2	15,8	19,6
Education	5,2	5,4	5,3
Total	29,8	27,3	32,2

Source: Eurostat and authors

Table 5 clearly shows the most notable development and changes to public expenditures in the EU (27) in % of the GDP on social protection. In 2008, these expenditures fell by 2.4% in comparison to 2002. In 2011 they rose by 1.4% in comparison to 2002, and by 3.8% in comparison to 2008. Other changes in public expenditures in the EU (27) in the selected years can be perceived in health care. They fell by 0.3% in 2008 in comparison to 2002, and rose by 1.2% in 2011 in comparison to 2008. However, public expenditures on education failed to prove any significant changes in the years 2002, 2008 and 2011, being slightly over 5%. Social protection and health is a current issue and numerous studies and papers have been dealing with it (Van Stolk et al., 2010; Van Stolk et al., 2012; Freysson and Wahrig, 2013; Křupka and Provazníková, 2013; Halásková and Halásková, 2013).

4.3 Comparison of Changes to Public Expenditures in EU Countries Using the Method of Multidimensional Scaling

The comparison of EU countries (27) based on public expenditures on education fails to contribute to their discrepancies, as has been shown in the previous part. For multidimensional scaling, this variable decreases the quality of the model. Consequently, expenditures on education have been excluded from further analyses. For comparison of changes to public expenditures in the EU (27), two variables were used (public expenditures on social protection and health).

To asses the validity of outcomes of the multidimensional scaling, S-stress = 0.0 is crucial, i.e. the extent of positive correlation of the difference between object distances (EU countries) and RSQ = 1.0, i.e. the square of correlation coefficient of input object distances and distances arrived at through multidimensional scaling. The RSQ indicator reached the value of 1.0, which proved the quality of multidimensional scaling when using two axes. The model would not benefit significantly from a third dimension.

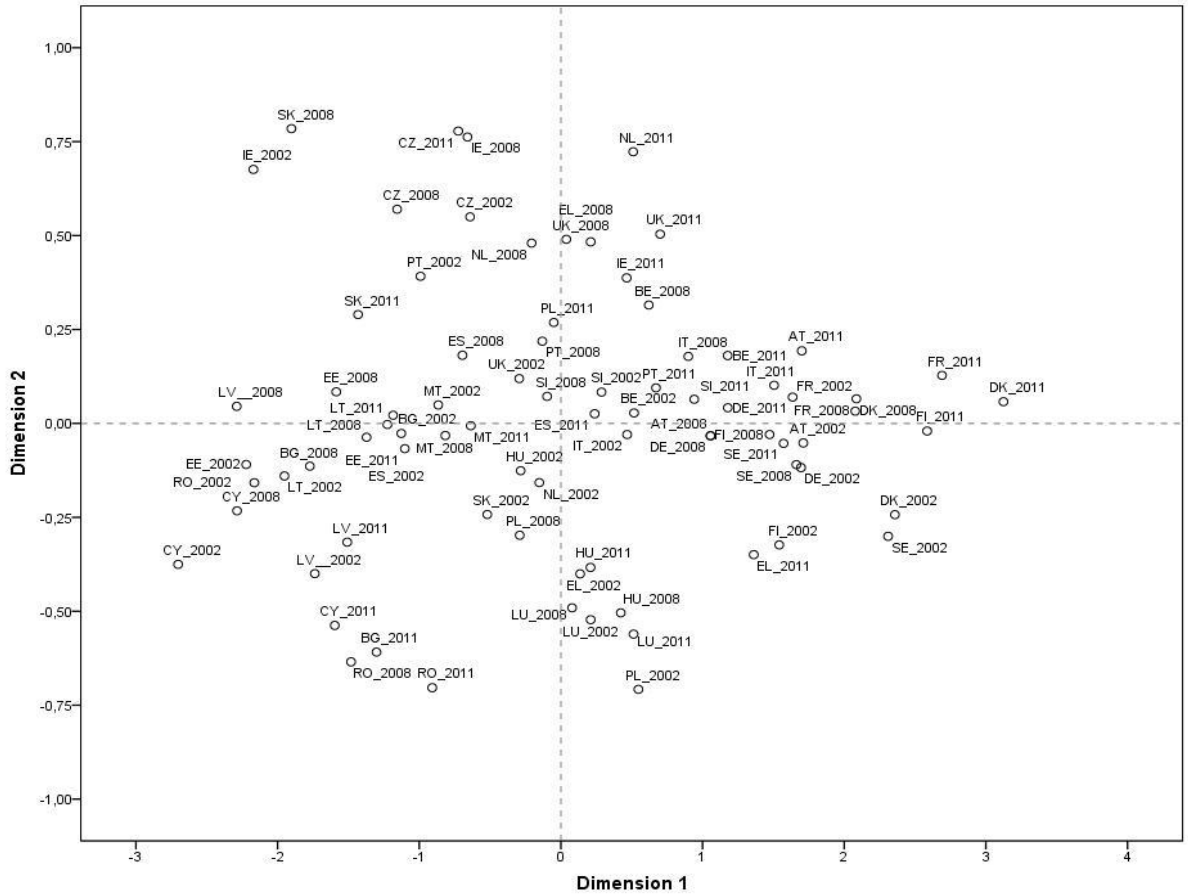
Among EU countries (27), from the viewpoint of public expenditures, there are more significant differences in social protection than health, which is proved by the distance on Dimension

1 (expenditures on social protection), where the values range from -2 to 4, while value on Dimension 2 (expenditures on health) range from -1 to 1. The following can also be perceived:

- Dimension 1: the more to the right a country is found, the higher its public expenditure share on social protection is, and vice versa.
- Dimension 2: the more to the top a country is found, the higher its public expenditure share on health is, and vice versa.

These dimensions thus show that the lowest public expenditures from the analyzed variables have countries most to the left and at the same time most to the bottom in the 3rd quadrant, and by contrast the highest public expenditures are in countries most to the right and to the top in the 1st quadrant. Also, Figure 1 makes it evident that countries around the intersection of the points 0,0 (dimension 1 – expenditures on social protection, dimension 2 – expenditures on health) reach average levels in the EU (27). Figure 1 also provides a more detailed comparison of expenditures on social protection and health in EU countries (27) using the method of multidimensional scaling in the years 2002, 2008 and 2011.

Figure 1: Outcome of the Comparison of Public Expenditures on Health and Social Protection in EU Countries (27) in the Years 2002, 2008 and 2011



Source: The authors (using of the SPSS software)

Figure 1 provides a notable division of EU countries (27) into 10 clusters, according to similarities or dissimilarities of their public expenditures, of health and social protection. **Cluster 1 -** Countries with high expenditures on health, and average to slightly above-average expenditures on social protection. Average expenditures on social protection from this cluster were achieved by Greece and the United Kingdom in 2008, the highest expenditures on both health and social protection by the Netherlands in 2011. **Cluster 2 -** Countries with a slightly above-average share of expenditures on health (the United Kingdom in 2002, Poland in 2011, Portugal and Slovenia in 2008) and average expenditures on social protection, with the exception of Spain in 2008, when these expenditures were slightly below average. **Cluster 3-** Countries with a relatively high expenditures on health, where the

highest levels were achieved by the Czech Republic in 2011 and Ireland in 2008. By contrast, Slovakia in 2011 showed the lowest rate of expenses on health in this cluster. In relation to the per cent rate to the GDP, expenditures on social protection were slightly below average in all countries.

Cluster 4 - Countries with a high share on health (Slovakia in 2008 and Ireland in 2002). However, these countries showed on of the lowest rates of expenditures on social protection. **Cluster 5 -** Countries with average expenditures on health (Lithuania in 2008 and 2011, Belgium in 2002, Malta in 2011) and average expenditures on social protection (Netherlands in 2002, Hungary in 2002, Portugal in 2008). The lowest rates of expenditures on social protection were observed in Latvia in 2008, Romania and Estonia in 2002. **Cluster 6-** Countries with lowest expenditures on social protection and health. The lowest share of expenditures on social protection was in Cyprus in 2002, the lowest share of expenditures on health and social protection was in Romania in 2008 and 2011, and Bulgaria in 2011.

Cluster 7- Countries with a low share of expenditures on health and slightly above-average share of expenditures on social protection (Luxembourg in 2002, 2008, 2011, and Hungary in 2008, 2011). **Cluster 8 -** Countries with average expenditures on health. The highest public expenditures were observed in Austria and Belgium in 2011, and Italy in 2008. The lowest expenditures on health were observed in Germany in 2002, and Sweden in 2008. Countries from this cluster also showed an above-average share of expenditures on social protection. The highest expenditures on social protection were achieved by Denmark in 2008, and France in 2002 and 2008. The lowest expenditures on social protection were in Italy and Slovenia in 2002, and Spain in 2011. **Cluster 9 -** is represented by Scandinavian countries (Denmark, Sweden and Finland in 2002) with a high share of expenditures on social protection, but slightly below-average share of expenditures on health. **Cluster 10 -** includes countries (France, Denmark and Finland) that showed the highest shares of expenditures on social protection and average share of expenditures on health in 2011.

Table 6 provides the division of EU countries (27) into clusters, according to public expenditures on social protection and health, based on percentage of the GDP in the years 2002, 2008 and 2011.

Table 6: Division of EU Countries (27) into Clusters based on Public Expenditures on Social Protection and Health

Clusters	EU Countries (27) based on public expenditures on social protection and health
Cluster 1	EL 2008, UK 2008, UK 2011, IE 2011, BE 2008,
Cluster 2	UK 2002, ES 2008, PT 2008, SI 2008, PL 2011
Cluster 3	CZ 2002,CZ 2008, CZ 2011, PT 2002, IE 2008, SK 2011
Cluster 4	IE 2002, SK 2008
Cluster 5	HU 2002, ES 2002, RO 2002, LT 2002, LT 2008, LT 2011, LV 2008, BG 2002, BG 2008, MT 2002, MT 2008, MT 2011, EE 2002, EE 2008, EE 2011, PL 2008, SK 2002, NL 2002
Cluster 6	CY 2002, CY 2011, LV 2002, LV 2011, RO 2008, RO 2011, BG 2011
Cluster 7	PL 2002, EL 2002, LU 2002, LU 2008, LU 2011, HU 2008, HU 2011
Cluster 8	BE 2002, BE 2011, IT 2002, IT 2008, IT 2011, FR 2002, FR 2008, AT 2002, 2008, AT 2011, DE 2002, DE 2008, DE 2011, DK 2008, SE 2008, SE 2011, FI 2008, SI 2002, SI 2011, PT 2011, ES 2011
Cluster 9	SE 2002, DK 2002, FI 2002, EL 2011
Cluster 10	FR 2011, DK 2011, FI 2011

BE-Belgium, BG-Bulgaria, CZ-Czech Republic, DK-Denmark, DE-Germany, EE-Estonia, IE-Ireland, EL-Greece, ES-Spain, FR-France, IT-Italy, CY-Cyprus, LV-Latvia, LT-Lithuania, LU-Luxembourg, HU-Hungary, MT-Malta, NL-Netherlands, AT-Austria, PL-Poland, PT-Portugal, RO-Romania, SI- Slovenia, SK-Slovakia, FI-Finland, SE-Sweden, UK-United Kingdom

Source: The authors (using of the SPSS software)

Based on comparison of public expenditures on health and social protection in EU countries (27) as a percentage rate of the GDP in the years 2002, 2008 and 2011, using the method of multidimensional scaling, it is possible to say that:

- Cyprus, Latvia and Romania (cluster 6) are among the states with the lowest share of public expenditures (% of the GDP) on health and social protection.
- Scandinavian countries showed the highest share of public expenditures (% of the GDP) on social protection and average share of expenditures on health (cluster 8, 9, 10). The share of public expenditures on social protection peaked in 2002 in Sweden (23.1%) and Denmark (23.2%). In 2008 and 2011 Sweden lowered their expenses on social protection, but expenditures on health were stable in the analyzed years. In Denmark, expenditures on social protection decreased by 1% in 2008 and increased by 3% in comparison to 2002.
- The Czech Republic, Slovakia and Ireland belonged to the group of countries with a high share of public expenditures on health, bot low share of expenditures on social protection (cluster 3 and 4).
- Germany, Austria, France, Belgium and Italy (cluster 8) were among the countries which had a comparable share of expenditures on social protection (approximately 19-20%) and health (approximately 7%) in the years 2002, 2008 and 2011.
- From the Visegrad countries (Czech Republic, Slovakia, Poland and Hungary), Hungary and Poland had a comparable share of public expenditures (% of the GDP) on social protection (16-17%) and health (5-6) in the years 2002, 2008 and 2011. The Czech Republic had a relatively stable share of public expenditures on social protection (approximately 13%) and health (7%). However, Slovakia had stable expenditures on health only (approximately 6%) and decline in expenditures on social protection by approx. 3% in the year 2011, compared to 2002.

The comparison of public expenditures (% of the GDP) on health and social protection provided the conclusion that:

- majority of EU countries (27) show increase in public expenditures on health. The most notable increase was proved in the Netherlands and Poland, by 3% and 2.4% respectively, in 2011, compared with 2002.
- The highest share of public expenditures on social protection (approximately 22%) in the years 2002, 2008 and 2011 was proved in Scandinavian countries (Denmark, Sweden and Finland). The most marked increase of expenditures on social protection was observed in Finland, by 2.8%, and Denmark, by 2%, in 2011, compared with 2002.

4. Conclusion

Quality of public finances is generally influenced by structural reforms, whose aim it is to contribute to the most effective allocation of public resources with respect to identifiable priorities. The main priorities are permanent economic growth, full employment, competitiveness and, in the European context, mainly social cohesion. One possible quantitative definition of a welfare state is the sum of three items: expenditures on social protection, health and education. Based on the outcomes and comparison of public expenditures, it is possible to say that share of expenditures on social protection (% of the GDP) in EU countries in the years 2002, 2008 and 2011 are the highest in comparison to shares of public expenditures (% of the GDP) on other public services. Public expenditures on social protection in EU countries are, on average, approximately 18-19%, on health approximately 6-7% and on education approximately 5%. More marked differences in expenditures on these three areas are noticeable in each country owing to numerous factors, mainly of economic, demographic, social, political and technological nature. Expenditures on education were quite stable in EU countries in the selected years. It was the expenditures on health and social protection that underwent changes in EU countries in the selected years.

Based on the comparison of public expenditures on health and social protection, using the method of multidimensional scaling, similarities have been proved in EU countries (27), but also marked differences in the allocated resources and their changes in the years 2002, 2008 and 2011. The outcomes showed that the lowest share of public expenditures (% of the GDP) on health and social protection were in Cyprus, Latvia and Romania. By contrast, among the EU countries (27) with the best figures are Scandinavian countries that showed the highest shares of public expenditures (% of the GDP) on social protection and average share of expenditures on health.

References

AABERGE, R, BHULLER, M, LANGORGEN, A., MOGSTAD, M. (2010). The Distributional Impact of Public Services when needs Differ. *Journal of Public Economics,* vol. 94, no. 9–10, pp. 549–562.

BENČO, J., KUVÍKOVÁ, H. et al. (2011). *Ekonomika verejných služieb*. Banská Bystrica: Univerzita Mateja Bela, Ekonomická fakulta.

BRENDER, A., DRAZEN, A. (2013). Elections, Leaders, and the Composition of Government Spending. *Journal of Public Economics,* vol. 97, no. 1, pp. 18–31.

BUCHANAN, J. M. (1969). *The Demend and Supply of Public Goods.* Chicago: Rand Mc Nally Company.

EUROSTAT (2013). *Total General Government Expenditure.* Retrieved May 21, 2013 from http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table& plugin=1&language=en&pcode=tec00023

EUROSTAT (2012). *Classification of the Functions of Government (COFOG).* Retrieved December 28, 2012 from http://epp.eurostat.ec.europa.eu/portal/ page/portal/government_finance_statistics/data/database

FREYSSON, L., WAHRIG, L. (2013) General Government Expenditure in 2011 - Focus on the Function Social Protection and Health**.** *Eurostat Statistic in Focus,* no. 9, pp. 1–7.

FREYSSON, L. (2011). General Government Expenditure Trends 2005–2010: EU Countries Compared. *Eurostat Statistic in Focus,* no. 42, pp. 1–11.

HALÁSKOVÁ, M., HALÁSKOVÁ, R**.** (2013). Interrelations of Public Expenditures on Public Services in EU Countries. In *Proceedings of the 6th International Scientific Conference Finance and the Performance of Firms in Science, Education and Practice*. Zlín: Univerzita Tomáše Bati, Fakulta managementu a ekonomiky, pp. 255–269.

HAMERNÍKOVÁ, B., MAAYTOVÁ, A. et al. (2010). *Veřejné finance*. Praha: Wolters Kluwer ČR.

HARLOW, L.L. (2010). On Scientific Research: The Role of Statistical Modeling and Hypothesis Testing. *Journal of Modern Applied Statistical Methods,* vol. 9, no. 2, pp. 348–358.

HENDL, J. (2009). *Přehled statistických metod. Analýza a metaanalýza dat.* Praha: Portál.

HILLMAN, A.L. (2009). *Public Finance and Public Policy: Responsibilities and Limitations of Government*. Cambridge University Press.

JACKSON, P.M., BROWN, C. (1994). *Public Sector Economics*. Oxford UK & Cambridge USA: Blackwell.

KAUL, I., CONCEIÇÃO, P. (2006). *The New Public Finance: Responding to Global Challenges*. New York: Oxford University Press.

KŘUPKA, J., PROVAZNÍKOVÁ, R. (2013). Modelling of Standards of Living Eurozone Countries on the basis of Multiple Criteria Decision Analysis. In *Proceeding of 5th International Conference on Applied Economics, Business and Development (AEBD 13).* Chania: WSEAS Press, pp. 425–432.

LARCH, M., LECHTHALER, W. (2013). Buy National or Buy International? The Optimal Design of Government Spending in an Open Economy. *International Review of Economics & Finance,* no. 26, pp. 87–108.

MAZZOCCHI, M. (2008). *Statistic for Markting and Costumer Research*. London: Sage.

MAZZOLA, U. (1964). The Formation of the Prices of Public Good. In: MUSGRAVE, R.A., PEACOCK, A.T. *Classics in the Theory of Public Finance*. London: MacMillan & Co ltd. pp. 159–193.

MUSGRAVE, P., MUSGRAVE, R. (1994). *Veřejné finance v teorii a praxi*. Praha: Management Press.

OCHRANA, F., NEKOLA, M. (2009). Economic Evaluation of Public Programs. *Ekonomický časopis*, vol. 57, no. 5, pp. 458–474.

OCHRANA, F., PAVEL, J., VÍTEK, L. et al. (2010). *Veřejný sektor a veřejné finance. Financování nepodnikatelských a podnikatelských aktivit.* Praha: Grada Publishing.

PEKOVÁ, J. (2011). *Veřejné finance: teorie a praxe v ČR.* Praha: Wolters Kluwer ČR.

PESTIEAU, P. (2006). The *Welfare State in the European Union: Economic and Social Perspectives*. Oxford: Oxford University Press.

PIGOU, A.C. (1960). *A Study in Public Finance*. London: MacMillan& Co Ltd.

ROSEN, H. S., GAYER, T. (2010). *Public Finance.* New York: Mc Graw-Hill.

SAMUELSON (1954) The Pure Theory of Public Expenditure. In: *Review of Economics and Statistics*, vol. 36, no. 4, pp. 387–389.

SAMUELSON, P.A., NORDHAUS, W.D. (1992). *Ekonomie.* Svoboda: Praha.

STIGLITZ, J.E. (1988). *Economics of the Public Sector*, 2st. ed., London: Norton&Company New York.

ŠEVIČ, Ž. (2008). *Local Public Finance in Central and Eastern Europe*. Cheltenham, Northampton, MA: Edward Elgar.

ULBRICH, H. H. (2011). *Public Finance in Theory and Practice.* London: Routledge.

VAN STOLK, CH., BJORNSSON, G., GOSHEV, S. (2010). *Provider Incentives in Social Protection and Health*. *A Selection of Case Studies from OECD Countries*. Prepared for the World Bank: RAND Europe working paper series.

VAN STOLK, CH., STAETSKY, L., HASSAN, E., CHONG, W.K. (2012). Management of Occupational Safety and Health: Analysis of Data from the European Survey: European Risk Observatory Report. *European Agency for Safety Health at Work*, no. 3, pp. 1–58.

WAHRIG, L., VALLINA, I.G. (2012). Government Expenditure by Sub-sector of General Government, 2010 Data. The Share of Social Security Funds Spending Increased from 2008 onwards. *Eurostat Statistic in Focus*, no.16, pp. 1–8.

WRIGHT, G., NEMEC, J. (2002). *Management veřejné správy – teorie a praxe*. Praha: Ekopress, s.r.o.