

ANALYSIS OF GOVERNMENT EXPENDITURE OF BULGARIA BY FUNCTION, ACCORDING THE CLASSIFICATION OF THE FUNCTIONS OF GOVERNMENT (COFOG)

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Abstract

This paper focuses on the analysis of the expenditures of the Government sector by functions of the Classification of the functions of government (COFOG), as the redistribution of income and the production of public goods for collective consumption are made by this sector. The purpose of the article is to analyse the government expenditures by functions of COFOG of Bulgaria in the period 1998–2018 and on this basis to formulate conclusions and recommendations in favour of business representatives and institutions operating in Bulgaria, to plan their economic actions based on objective information, reducing the uncertainty of the economic system. The methods used for cost analysis of the Government sector by functions of COFOG in the present study are statistical study of the trend; measuring dependences in time series; statistical methods for analysis of structural changes.

Key words: government expenditures, functions of COFOG, methods for analysis, government policy.

JEL: H5, H50.

Introduction

The general government sector is composed by four subsectors: *Central government* (S.1311), *General government* (S.1312), *Local government* (S.1313) and *Social security funds* (S.1314) [16, 17]. This article analyses the expenditure of the Central Government subsector by function in Bulgaria. The emphasis is placed on the subsector *Central government*, since mainly through it is carried out the redistribution of income, as well as the production of public goods for collective consumption. The subsector covers all administrative units whose accounts are included in the central budget.

The functional division of expenditures is performed on the basis of the Classification General Government Expenditure by function (COFOG). It was created by the Organization for Economic Cooperation and Development (OECD), and has been established as a standard in national accounts [16; 17]. According to the purpose for which the funds are intended, the expenditures of the General Government sector by functions of COFOG are systematized in ten groups: general public services; defence; public order and safety; economic affairs; environmental protection; housing and community amenities; healthcare; recreation, culture and religion; education; social protection.

The main goal of the research is to analyse the government expenditure by functions of COFOG of Bulgaria for the period 1998–2018 and on this basis to formulate conclusions and recommendations in favour of the representatives of the business and the institutions carrying out the activity on the territory of Bulgaria; to plan their economic actions on the basis of objective information, reducing the uncertainty of the economic situation.

1. Theoretical and methodological framework of the research

After the Great Depression in 1929–1933, there was a tendency to a continuous increase in public expenditure, due to the growing needs of society for public goods. Of particular importance, here are the costs that the state incurs to maintain social security. It is precisely the payment by the state for pensions, public health insurance, unemployment, cash benefits for disadvantaged social groups, is one of the reasons for the increasing amount of public expenditure, especially after 1970. This trend is still characteristic today [7, 12].

In the past XX century and in the current XXI century the role of the state in economic and social life is seriously challenged. The reason is related to the fact that each individual in society has different needs that are met by public goods, i.e. there is a different need for government intervention. In this sense, no public consensus can be reached on the quantity and type of public goods provided by the state. The latter requires a strict calculation of government expenditure and a continuous study of the reasons for their increase. In recent years, there has been great public dissatisfaction with the amount of government spending and the quality of public goods received. This necessitates the study of theories about the emergence and development of public finances with an emphasis on government spending [14, 15].

With the development of public needs comes the necessity to produce more public goods. The latter is associated with a steady increase in public expenditure. Therefore, the concept of collective societal needs is considered as a second theoretic-

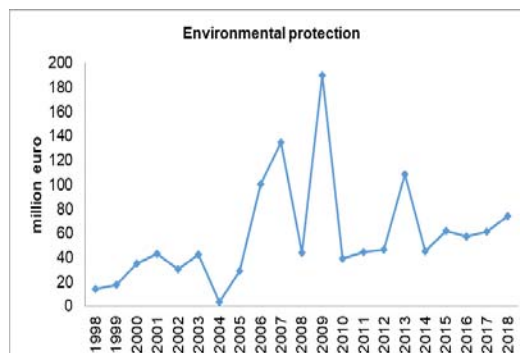
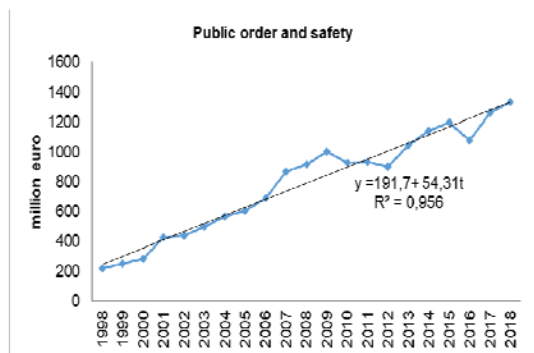
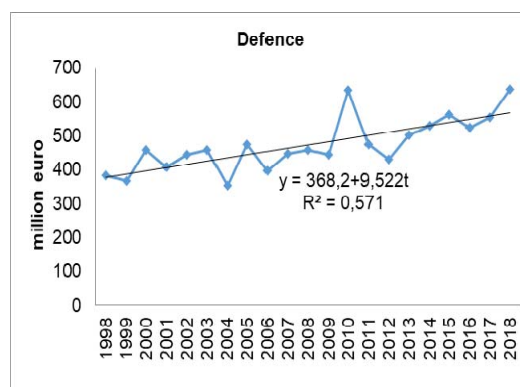
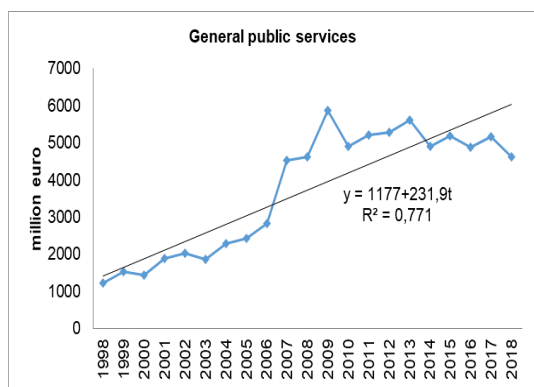
cal foundation that describes the nature and role of public expenditure [8]. This theoretical framework is based on the thesis that each individual experiences specific needs related to the protection of his property, improvement of the public social environment, minimum health services, educational and cultural goods, as well as built transport infrastructure, which the market and the private economy cannot provide to him. The difficult task of producing and distributing the mentioned public goods, intended to satisfy collective needs, is taken by the state [6, 15].

In modern society, the supply of public goods is an expensive process. Therefore, there is a real problem in society related to the financial inability of each member of society to afford to pay for police and fire services, educational, health and cultural goods, improved social environment and built and maintained transport infrastructure. For its part, it is perfectly legal for the state to collect in the form of taxes, fees, fines, confiscations or loans a certain amount of revenue, with the help of which it produces the public goods previously declared by the society. Thus, as collective needs increase, so the amount of public expenditure that the state generates for the production of public goods that meet public needs, also increases.

The methods for analysis of the expenditures of the subsector *Central government* by functions of COFOG, which are applied in the present study are: statistical study of the development trend; measuring dependences in time series; statistical methods for analysis of structural differences [1, 2, 9, 10, 13].

2. Analysis of the expenditure of the Central Government subsector by functions of COFOG in Bulgaria

There is no trend in the time series of expenditure for *Environmental protection* and *Housing and community amenities*. At the same time, in the time series of the other eight groups of COFOG expenditures there are trend, which are modelled with linear trend models. From them the following generalized statement can be made: during the analysed period 1998–2020 the expenditure for *General public services*, *Defence*, *Public order and safety*, *Economic affairs*, *Health*, *Recreation, culture and religion*, *Education* and *Social protection* increased on average per year by 231.9 million EUR, 9.522 million EUR, 54.31 million EUR, 143.5 million EUR, 43.15 million EUR, 21.81 million EUR, 25.47 million EUR and 33.92 million EUR.



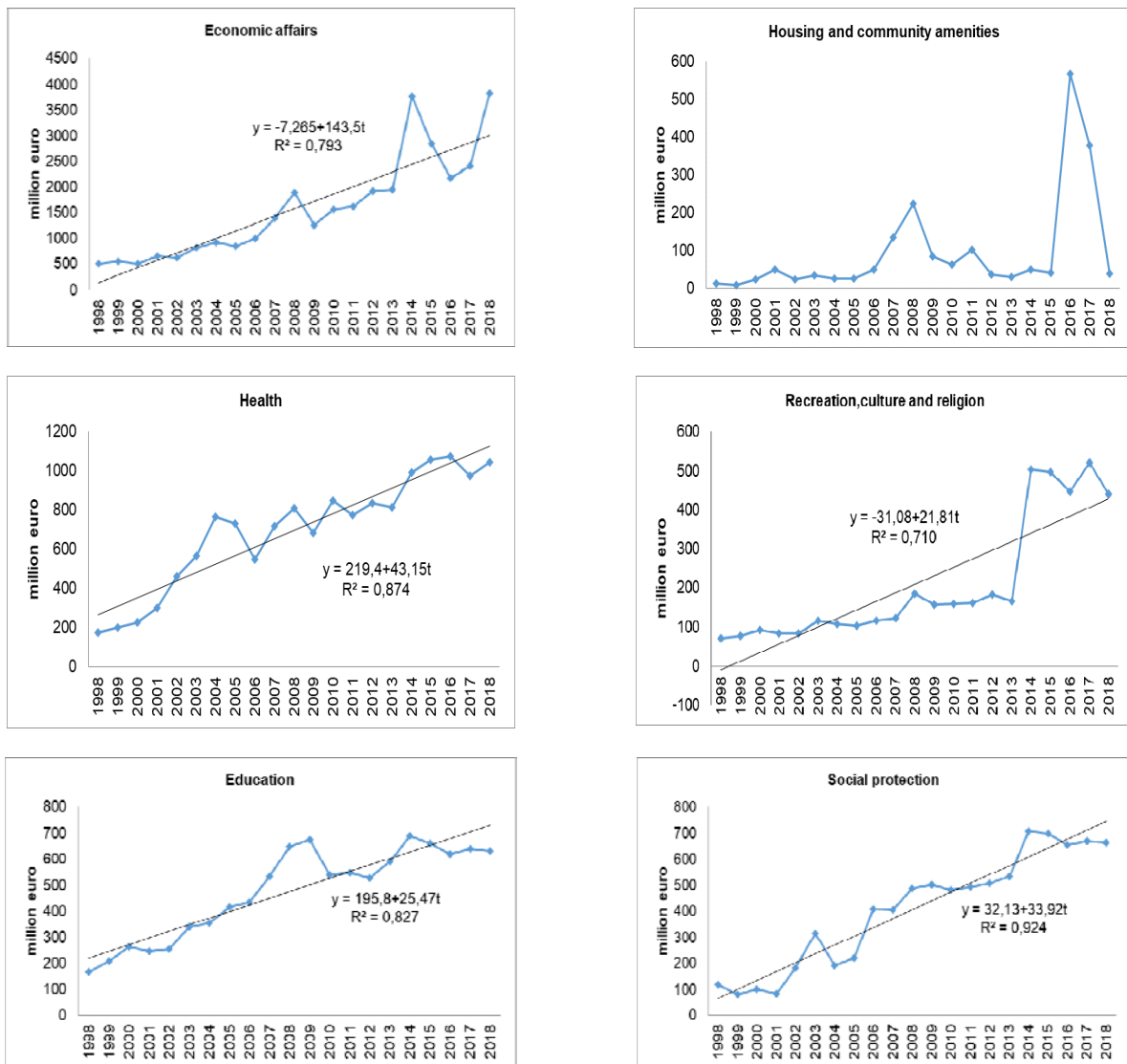


Fig. 1. Trends in the development of the expenditure of the Central Government subsector by functions of CO-FOG in Bulgaria during the period 1998–2018

The first-order autocorrelation coefficient establishes development trends in the time series of the total expenditure of the Central Government and GDP subsector in Bulgaria. Trends are modelled with linear trend models. About 94% of the changes in total expenditures and about 97.5% of the changes in GDP are explained by permanent reasons. Under their influence, the total expenditure of the Central Government subsector increased on average by 576,8 million EUR per year, and of GDP by 2199 million EUR.

The manifestation of Wagner's law is checked by modelling the relationship between GDP and total expenditure of the subsector *Central government*. With the Durbin-Watson test, whose value is 0.967 and is less than d_L the presence of autocorrelation in the residual elements around the regression line is established.

$$\hat{G}_t = 30,69 + 0,261 \cdot \text{GDP}$$

$$\text{se} = (455,863) \quad (0,013) \quad r^2 = 0,955 \quad (1)$$

$$t = (0,067) \quad (20,121) \quad \text{df} = 19$$

$$p = (0,947) \quad (0,000) \quad F_{1,19} = 404,852$$

The first-order autocorrelation coefficient $r_{u_t, u_{t-1}} = 0,422914$ is used to transform the variables G_t and GDP_t . A linear regression model is constructed with the transformed quantities. The residual elements around the regression line are not autocorrelated, as the value of the Durbin-Watson test is 1.736 and is greater than d_U . From the parameters of the regression model it can be concluded that during the studied period in Bulgaria with GDP growth of 1 million EUR, the total expenditure of the subsector *General Government* in-

creased by 0.280 million EUR. The value of the correlation coefficient, whose value is 0.956, determines the strength of the dependence between the variables G_t and GDP_t as very large.

$$\hat{G}_t = -257,683 + 0,280 \cdot GDP_t$$

$$se = (374,377) (0,02) \quad r^2 = 0,915 \quad (2)$$

$$t = (-0,688) (13,929) \quad df = 18$$

$$p = (0,05) (0,0000) \quad F_{1,18} = 194,030$$

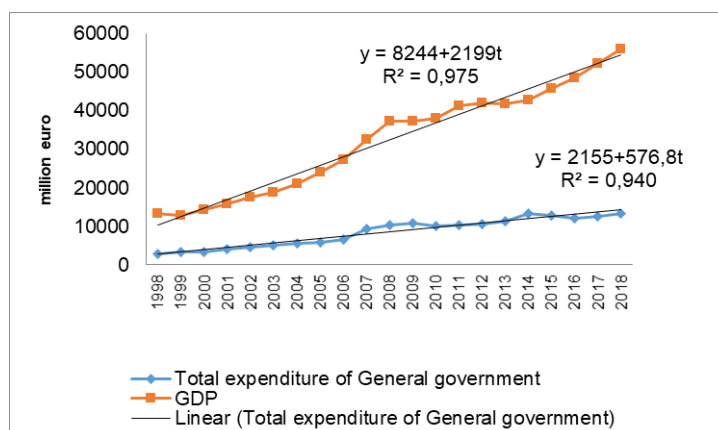


Fig. 2. Trend of GDP development and total expenditure of the Central Government subsector in Bulgaria during the period 1998–2018

The coefficient of elasticity amounts to 0.996, which means that 1% change in GDP corresponds to a change in the amount of total expenditure of the subsector *Central government* of 0.996%. In other words during the period 1998–2018 in Bulgaria the growth rate of budget expenditure is lower than the growth rate of GDP.

Over time, the cost structure has changed significantly compared to the base year 1998, with differences in 2013 amounting to 13.94% and in

2018 to 23.81% (see Table 1). The changes are a consequence of the decrease in the relative shares of the expenditure for *General public services* and *Defence* and the increase of those for *Economic affairs* and *Public Order and Safety*. It should be emphasized that in areas such as Social protection, Health and Education, costs are relatively low. At the same time, in areas such as infrastructure, costs are relatively high and their efficiency could be improved [3, 4].

Table 1. Expenditure structure of the Central Government subsector by functions of COFOG in Bulgaria in 1998, 2003, 2008, 2013 and 2018

Indicators	%				
	1998	2003	2008	2013	2018
General public services	42.42	36.99	44.89	49.42	34.73
Defence	13.21	9.07	4.44	4.42	4.78
Public order and safety	7.63	9.83	8.92	9.23	10.03
Economic affairs	17.55	16.15	18.45	17.14	28.72
Environmental protection	0.49	0.84	0.43	0.96	0.56
Housing and community amenities	0.41	0.67	2.18	0.27	0.30
Health	5.94	11.18	7.85	7.18	7.83
Recreation, culture and religion	2.41	2.29	1.80	1.46	3.30
Education	5.82	6.73	6.30	5.22	4.75
Social protection	4.11	6.26	4.72	4.71	5.00
Coefficient of structural differences at comparison base 1998 (KD), part of 1.0	-	0.1394	0.1363	0.1568	0.2381

Implications

- There is no development trend in the time series of expenditure for *Environmental protection* and *Housing and community amenities*, which testifies to irrational policies regarding the above-mentioned expenditure items. It should be added here that activities related

to environmental protection and restoration are widely covered in the Europe 2020 strategy. Regarding the expenditure for the Housing and community amenities function and the lack of an established long-term trend, it once again confirms the weakness of the Bulgarian urban planning policy, with an em-

phasis on the rehabilitation and energy efficiency of housing in Bulgaria.

- In the other eight groups, including: *General public services; Defence; Public order and safety; Economic affairs; Environmental protection; Housing and community amenities; Health; Entertainment, culture and religion; Education; Social protection*, there are development trends that are modelled with linear trend models.
- During the analysed period the expenditures for *General functional management of the state, Defence, Public order and security, Economic activities, Healthcare, Entertainment, culture and religion, Education and Social insurance and support* are the largest growth.
- During the studied period in Bulgaria with GDP growth of 1 million EUR, the total expenditure of the General Government subsector increased by 0.280 million EUR. The value of the correlation coefficient (0.956) determines the strength of the relationship between the variable expenditures of the general government subsector and GDP as very high.
- Over time, the structure of expenditure has changed significantly compared to the base year 1998, as in 2013 the differences amounted to 13.94%, and in 2018 to 23.81%.

Conclusion

The essence of government expenditure stems from the theory of modern state intervention in the economy. An important problem concerning the theory of public expenditure management is related to the optimal amount of state intervention, i.e. with the size of the state (as a structure and economic power), as well as the amount of public goods created by it. It is extremely difficult to find a collective approach in determining state intervention in the economy. The complexity is determined by the fact that each individual in society has an individual need for the size of state intervention, as well as the type and quantity of public goods. Therefore, taking into account trends in the development of government spending is an important element supporting the implementation of effective macroeconomic policy. The analysis and dynamics in the growth and structure of government expenditure, especially those related to the expenditure of the subsector *Central government* by functions of the classification of government functions (COFOG) allow to strictly plan government activities, to highlight the permanent reasons for increasing or decreasing a certain type of expenditure, as well as to be used as a control mechanism regarding the success or failure of government programs and the

goals and priorities set in them. The outflow of the tendencies in the development of the state expenditure are an important reference point, both for the managers of the public sector of the economy, and for the society, which by paying taxes and fees determines their existence.

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АНАЛИЗ НА ДЪРЖАВНИТЕ РАЗХОДИ НА БЪЛГАРИЯ ПО ФУНКЦИИ, СЪГЛАСНО КЛАСИФИКАЦИЯТА НА ФУНКЦИИТЕ НА ДЪРЖАВНО УПРАВЛЕНИЕ (КОФОГ)

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Резюме

В настоящата статия акцент е поставен върху анализ на разходите на подсектор „Централно управление“, тъй като основно чрез него се осъществява преразпределението на доходите и производството на публични блага за колективно потребление. Целта на статията е да анализира държавните разходи на България по функции, съгласно Класификацията на функциите на държавно управление (КОФОГ), през периода 1998–2018 г. и на тази основа да се формулират изводи и препоръки в ползва на представителите на бизнеса и институциите, осъществяващи дейността си на територията на България, да планират стопанските си действия на основата на обективна информация, намаляваща неопределеността на икономическата система. Използваните методи за анализ на разходите на подсектор „Централно държавно управление“ по функции на КОФОГ в настоящото изследване са: статистическо изследване на тенденцията на развитие; измерване на зависимости при динамични редове; статистически методи за анализ на структурни промени.

Ключови думи: държавни разходи, функции на КОФОГ, методи за анализ, държавна политика.