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PUBLIC SPENDING AND ITS IMPACT ON GROSS DOMESTIC PRODUCT (GDP)

Assoc. Prof. Kamelia Assenova, PhD
Department of Economics,
"Angel Kanchev" University of Ruse
Phone: 082-888 557
E-mail: kassenova@uni-ruse.bg

The global recession after the crisis during 2008 reduces the Gross domestic product (*GDP*) *and increases quickly unemployment in all over the world. As it known, to be overcame the recession, it is possible to put in the practice monetary and fiscal instruments. First of them influence on expected inflation, with second of them it looks for to be increased aggregate demand in the economy and as a result - GDP. The last recession requires more aggressive actions comparing with previous.*

It is created original model for testing of the impact of total public spending, capital, for salary and social insurance and for maintenance by consolidated fiscal program on value of GDP. The period of research is 2005 - 2013 in the case of Bulgaria.

The coefficient of determination shows strong correlation between GDP and public spending by the consolidated fiscal program. The calculated coefficients of correlation between aggregate supply and capital spending and such for salary and social insurance maintain the stimulating of economic activity in the country significantly depends on public spending.

Keywords: *Public spending, GDP Growth, regression model*

JEL **Codes:** H50, E62, C13

INTRODUCTION

The global recession after the crisis during 2008 reduces the Gross Domestic Product (GDP) and increases quickly unemployment in all over the world. As it known, to be overcame the recession, it is possible to put in the practice monetary and fiscal instruments. First of them influence on expected inflation, with second of them it looks for to be increased aggregate demand in the economy and as a result - GDP. The last recession requires more aggressive actions comparing with previous.

The downward trend of the GDP could overcome with following monetary measures:

- exchange rate stability policy;
- quasi-debt management;
- active credit policy;
- management of bank reserves[1].

The fiscal measures to overcome the recession include a mix of rising public spending and tax cuts (mainly direct income). An increasing public spending has a direct effect on the economy, because higher demand for goods and services. As a result, income and employment increase not only in the sectors where public spending is taking place. Its movement stimulates consumer spending, due to higher purchasing power of household. The empirical data indicates increased public spending has stronger effect on the stage of the economy than tax cuts.

The present study research only the impact of fiscal policy on stimulating of economic growth. Fiscal "shocks" and their impact are being tested for Bulgaria for the period 2005 - 2013.

As has been written above, public spending has a direct effect on aggregate demand and on the volatility of GDP. This research will test the degree of impact of public spending of

[1] Carvalho, Carlos, Stefano Eusepi and Christian Grisse, " Policy Initiatives in the Global Recession: What Did Forecasters Expert?", Federal Reserve Bank of New York, Current issues in Economics and Finance, Volume 18, N 2, 2012

consolidated fiscal program on GDP. The correlation will be examined for total, capital, salary and social insurance and maintenance costs (according to the classification of the consolidated fiscal program). Some of them have a direct and multiplier effect on aggregate demand and another - indirect - via consumer spending and their impact could be lower.

EXPOSITION

1. Limitation of research

- The spending is distinguished by the well-known classification of current and capital according to their economic characteristics;
- Due to the different calculation of variables by the statistics - with or not accumulation, monthly or quarterly - are recalculated the different variables to be mathematically compatible-quarterly, without accumulation and in BGN;
- The survey uses the data of consolidated fiscal program for the period 2005 - 2013.

2. Model

It is created original model for testing of the impact of total public spending, capital, for salary and social insurance and for maintenance by consolidated fiscal program on value of GDP according to Carvalho, EusepiandGrisse (quoted above).

$$GDP_t = a_0 + a_1 PS\ total_t + a_2 PS\ total_{t-1} + \varepsilon, \quad (1)$$

where
GDP_t - Gross Domestic Product for the current quarter
$PS\ total_t$ - total public spending by the consolidated fiscal program for the current quarter
$PS\ total_{t-1}$ - total public spending by the consolidated fiscal program for the previous period

$$GDP\ t = b\ 0 + b\ 1PCS\ t + b\ 2\ PCS\ t\text{-}1 + \varepsilon, \quad (2)$$

where
GDP_t - Gross Domestic Product for the current quarter
PCS_t - capital public spending by the consolidated fiscal program for the current quarter
PCS_{t-1} - capital public spending by the consolidated fiscal program for the previous period

$$GDP_t = c_0 + c_1 PSS_t + c_2 PSS_{t-1} + \varepsilon, \quad (3)$$

where
GDP_t - Gross Domestic Product for the current quarter
PSS_t - public spending for salary and social insurance by the consolidated fiscal program for the current quarter
PSS_{t-1} - public spending for salary and social insurance by the consolidated fiscal program for the previous period

$$GDP_t = d_0 + d_1 PMS_t + d_2 PMS_{t-1} + \varepsilon, \quad (4)$$

where
GDP_t - Gross Domestic Product for the current quarter
PMS_t - public spending for maintenance by the consolidated fiscal program for the current quarter
PMS_{t-1} - public spending for maintenance by the consolidated fiscal program for the previous period

The variables used in the model are:

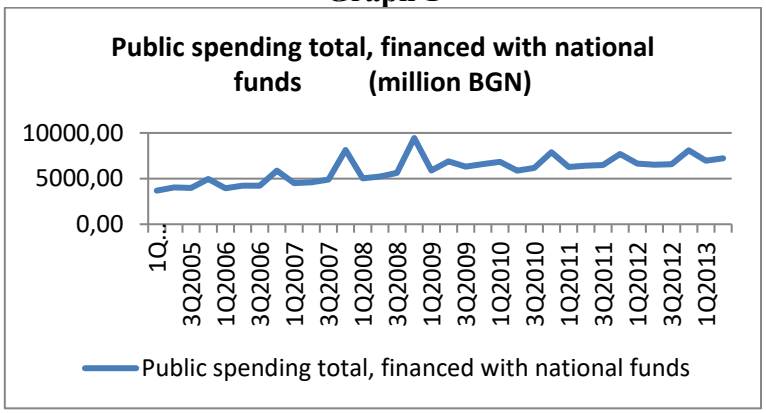
- GDP - quarterly, the data used for its measurement on the components of Final Consumption Expenditure. This indicator of GDP fully correspondents to public spending as a component of aggregate demand, including consumption, investments, public spending and net export;

- Public spending, financed with national funds - quarterly, total, capital spending, for salary and social insurance, for maintenance by the consolidated fiscal program for the period 2005 - 2013;

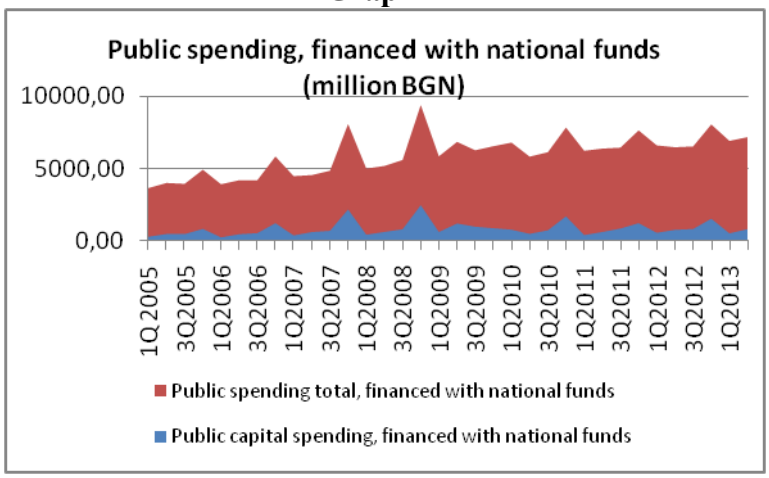
3. Graphic presentation of the data

Below is shown the dynamics of total public spending, capital, for salary and social insurance and for maintenance by consolidated fiscal program quarterly for the period 2005 - 2013:

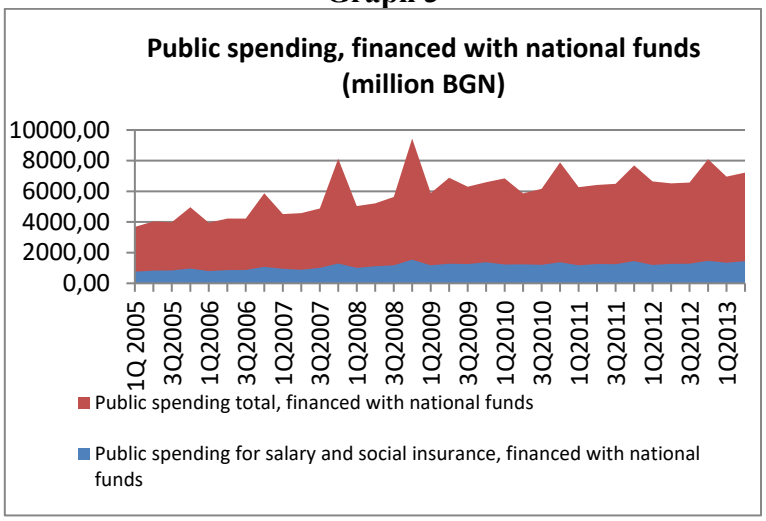
Graph 1



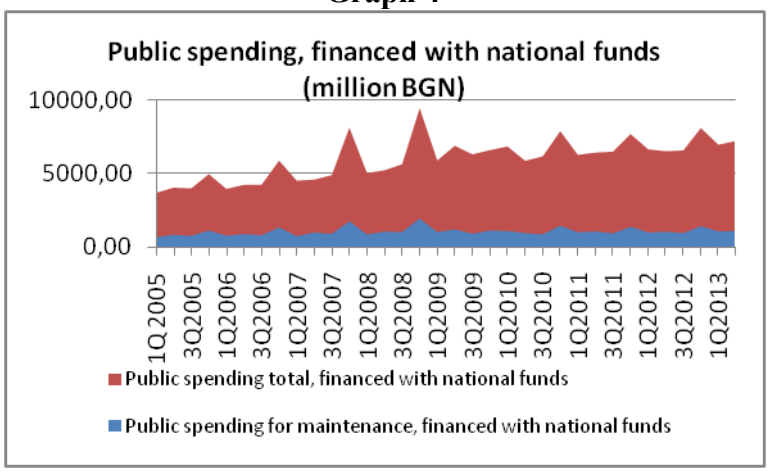
Graph 2



Graph 3



Graph 4



Source: www.minfin.bg - Statistics - Consolidated Fiscal Program - Consolidated Fiscal Program Data (*Quarterly*)

4. Results from testing the model

$$GDP_t = (1.00) + 0.721 \text{ PS total}_t - 0.483 \text{PS total}_{t-1} + \varepsilon \quad (1)$$

The statistical analysis indicates the correlation coefficients are significant. The determination coefficient is close to 0.5, confirming stable correlation between the dependent and the independent variables. The economic analysis shows the impact of total spending by consolidated fiscal program on aggregate supply in the current quarter is the strongest. Total costs include such with direct impact on aggregate demand as capital spending and others - effecting indirectly through consumer spending. All costs will be tested separately below. The calculated correlation coefficient between GDP and total spending for the previous quarter in developed countries is positive. The figure for Bulgaria is negative, which most probably means:

- the unevenness of total spending by consolidated fiscal program quarterly, confirms typical figure for Bulgaria - each year in the fourth quarter there is the largest magnitude of these costs;
- most of the costs are immediately spent. It confirms the high elasticity of consumer spending on income for countries like Bulgaria. Total cost is covered by significant part of income in different form. The impact of total public spending on aggregate demand and therefore GDP is reflected and lost within a short timeframe;
- The short time horizon of the economic agents in a country.

$$GDP_t = (1.00) + 0.611 \text{ PCS}_t - 0.276 \text{ PCS}_{t-1} + \varepsilon \quad (2)$$

The statistical analysis shows coefficient of determination is more significant compare with such for total expenditures. On this base, it is confirmed by the economic analyze capital spending has a direct and additional multiplier effect on aggregate demand and on GDP. The impact of the current quarter is significant, indicating these costs immediately trigger higher demand for goods and services. As is known from the theory, earnings and profit increase not only in the sectors where public capital expenditure is carried out. This result does not realize only an increase in aggregate demand through its public expenditure element (G), but also indirectly through consumer spending (C). The correlation coefficient for the previous quarter is negative, but less than by the total cost equation. The capital expenditures due to the longer duration of each round of turnover of capital have their impact on aggregate demand and hence on GDP for longer period of time.

$$GDP_t = (1.00) + 1.068\text{PSS}_t - 0.722 \text{ PSS}_{t-1} + \varepsilon \quad (3)$$

By the statistical analyze, the determination of the cost of salary and social insurance is highest compared to other costs. It confirms the thesis of author in other studies. For Bulgaria the most significant impact on aggregate demand and hence on GDP has consumer spending. The Bulgarian economy differs from other developed European countries. The correlation coefficients are absolutely significant. For the current quarter, this ratio shows an extremely strong impact of labor costs on aggregate demand. There is also a multiplier effect for other non-public sectors. It confirms the high elasticity of consumption expenditure on income and high marginal propensity of consumption in the country. The income revenue is transformed in consumer spending through a short period of time and increases aggregate demand without time lag. This thesis is also evidenced by the second correlation coefficient in this equation, which is negative and with highest value compared to those coefficients for previous quarters for other costs. The impact of revenue received with public funds is lost in a very short period of time and confirms once again the extremely short time horizon of economic agents in the country.

$$GDP_t = (1.00) + 0.431\ PMS_t - 0.327 PMS_{t-1} + \varepsilon \quad (4)^1$$

$$GDP_t = (1.00) + (0.493)\ PMS_{t+}\varepsilon \quad (5)^2$$

Two equations were tested for maintenance, taking into account and without taking into account the impact of maintenance for the previous quarter. It due to the type of costs transforming into goods and services and immediately increases aggregate demand. Therefore, the initial assumption implies maintenance from the previous quarter will not affect economic activity during the current quarter. When testing two independent variables - for the current and the previous quarter - the determinant coefficient is not significant and should be viewed critically. When testing only the maintenance for the current quarter, it is kept at approximately the same level. The economic analysis shows the maintenance does not affect significantly on the aggregate demand in the country. In both equations, correlation coefficients are significant, but greater by the impact of only the current quarter. As in the above cases, it confirms the economic agents without a time lag transform the income received in various forms into purchases of goods and services and affect the level of GDP in the same quarter.

CONCLUSION

The global recession after the crisis during 2008 reduces the Gross domestic product (GDP) and increases quickly unemployment in all over the world. As it known, to be overcame the recession; it is possible to put in the practice monetary and fiscal instruments. First of them influence on expected inflation, with second of them it looks for to be increased aggregate demand in the economy and as a result - GDP. The last recession requires more aggressive actions comparing with previous.

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