The Stabilizing Role of Fiscal Policy:
Theoretical Background and Empirical Evidence

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Abstract: *h study sheds light on the stabilizing role of government budget. It finds that in Bulgaria both taxes and government spending are negatively related to the real growth rate. This leads to the conclusion that budgetary expenditure influence output in a non-Keynesian fashion. The size of discretionary fiscal impulse is the main determinant of the non-Keynesian outcome. The results imply that although the balanced budget ensures the sustainability of public finances, it does not guarantee a growth-stimulating effect in case of a large government sector. Abstention from an active fiscal policy would allow the automatic stabilizers to operate freely and to counteract the negative shocks to the economy.*

Keywords: government budget, stabilizing fiscal policy, Keynesian effects, non-Keynesian effects

Introduction

The standard Keynesian view of fiscal policy implies that budgetary expansions foster economic growth in the short run. When an economy is operating below its potential output, the government should either increase spending or cut taxes in order to reduce the fluctuations in demand. On the contrary, the neoclassical models point out that the fiscal consolidation could stimulate the short run aggregate activity and improve the quality of public finances. These effects are called "non-Keynesian fiscal policy effects".

Recently, there has been a renewed interest in fiscal policy issues. In the Eurozone Member States, fiscal policy has an important role to play for achieving economic stabilization and growth, given the loss of the monetary policy instruments. Also, the countries are required to satisfy the budgetary rules imposed by the Stability and Growth Pact (SGP). In this vein, the article presents the theoretical background of the stabilizing impact of government budget. It places emphasis on the theoretical explanation of non-Keynesian effects because the traditional Keynesian view is well established in the theoretical literature. On the empirical side,

the paper focuses on the Bulgarian experience under the Currency Board Arrangement (1998-2004) - a few years prior to the EU accession. The analysis demonstrates the presence of non-Keynesian influences of government outlays on output, and looks at the factors that determine it. Tax policy affects the short-run real growth in the traditional Keynesian manner.

Section 2 briefly summarizes the literature. Section 3 explains the methodology of the study and provides an empirical analysis of the effects of budgetary items on real GDP in Bulgaria. The main findings are summarized in Section 4.

Literature Review

Theoretical literature

The Keynesian view predicts that the countercyclical fiscal policy may be a corrective device to keep unemployment at its equilibrium level, and output near its trend growth path. (Burda and Wyplosz, 1997). Fiscal deficits achieved by tax reductions or higher public outlays could effectively counteract recessions. When the government changes its spending or the level of taxes, it affects aggregate demand.

The stabilizing role of budgetary policy is questioned by the Ricardian equivalence theorem. This view applies the logic of the forward-looking consumer (Mankiw, 2003). The rational economic agents understand that a tax cut financed by higher public debt means higher taxes in the future. A debt-financed tax cut does not reduce the tax burden; it merely reschedules it. It does not encourage households to spend more, and leaves private consumption unaffected.

In the standard neoclassical dynamic general equilibrium model, the short run effects of fiscal policy depend on a number of factors such as the type of taxation, the size and persistence of the discretionary fiscal impulse, the elasticity of labor supply (Baxter and King, 1993). In contrast with the conventional IS-LM model, this view emphasizes on the possibility for a negative short run expenditure multiplier in case of distortionary taxation (i.e. the tax varies with the income). Initiated by Giavazzi and Pagano's seminal paper (1990), recent studies have focused on the expansionary influence of budgetary consolidations on output in the short run. These effects are called "non-Keynesian fiscal policy effects".

One of the theoretical explanations is based on the wealth effect on consumption (Giavazzi and Pagano, 1990, Bertola and Drazen, 1993,

Perotti, 1999). Restrictive budget policy triggers expectations for a future tax cut and a higher present value of household's income, which stimulates private consumption and thus output. Opposite to the traditional understanding, the wealth effect entails an increase in consumption as a result of an expenditure cut. This explanation represents the "expectation view" of fiscal policy.

The effect is stronger when the fiscal changes are perceived as permanent. As well, the presence of a positive wealth effect might depend on the debt-to-GDP ratio. Economic agents expect that when this ratio reaches a certain high level, an upward jump in taxation will occur. If a fiscal restriction is undertaken before this expected level of government debt, the expectation of a further additional tax increase is lower. This, in turn, may boost consumption thus generating a positive wealth effect.

The second strand of expansionary fiscal contractions calls attention to the credibility effect on the interest rates (Alesina et al., 1992, McDermott and Wescott, 1996, Sutherland, 1997). This effect works when the debt/GDP ratio is high, that is during periods of fiscal stress. At high levels of public debt, investors may face an interest rate premium due to the default risks or inflation. Fiscal consolidation, that is the improvement of the structural government budget balance, can bring a downward pressure on the interest rates by reducing the risk premium, which could crowd in funding.

In addition, there is a supply-side channel at work (Alesina and Ardagna, 1998). According to the labor market view, cuts in government employment or transfer payments may boost employment in the private sector and stimulate private economic growth, when economy is near its potential level.

The supply channel operates in both competitive and unionized labor markets, although in a different manner (Ardagna, 2007). An increase in public employment or government wages in competitive labor markets leads to a fall in private sector employment. As was noted earlier, this results in a real wage increase and a decline in profits, investments, and thus output, in the business sector.

With unionized labor markets, an increase of public employment or wages of public sector employees raises unions' wage claims in the private sector which, in turn, may cause wage increases. The result is a negative relationship between the government spending, specifically its wage

component, and the short-run GDP growth.

Survey of empirical studies on post-communist economies

Recently, a large number of papers have been exploring the stabilizing effect of government budgets in the EU-15 (for an extensive summary, see, Hemming et al., 2002, Prammer, 2004). This study illuminates the balance between Keynesian and non-Keynesian effects of fiscal policy in post-communist countries.

Purfield (2003) examines fiscal adjustments in a number of transition economies between 1992 and 2000. Large and expenditure-based fiscal consolidations are successful in sustainable improvement in primary balance within two years after the adjustment. The study does not find evidence that fiscal tightening could stimulate real growth in the short run.

In post-communist countries, consumption reacts in a non-linear fashion to the budgetary interventions (Siwinska and Bujak, 2006). Households tend to behave in a Keynesian manner in "good times" when the level of the fiscal deficit is small (within the limits of the mean value plus/minus one standard deviation). In "bad times", fiscal expansions stimulate private consumption but on a much smaller degree. In general, the non-Keynesian response of consumption during periods of fiscal stress does not outweigh the Keynesian effects observed during normal times.

Rzonca and Cizkowicz (2005) give evidence that in the NMS (New Member States) fiscal restrictions accelerate the short-run real growth. An important determinant of this non-Keynesian influence is the size of the fiscal intervention. Large consolidations have been almost always accompanied by higher rates of output growth. In support of the relevant studies mentioned above, the study confirms that fiscal adjustments in the NMS have been achieved mainly through expenditure cuts.

An extensive descriptive analysis of budgetary consolidations in Central and Eastern Europe and Central Asia between 1996 and 2004 is provided by Rzonca and Varoudakis (2007). They demonstrate that fiscal adjustments in these economies have occurred during periods of high debt levels. The improvements of fiscal stance result solely from a decrease of public expenditure, specifically wages and salaries, subsidies or defense spending. One exception is the fiscal tightening in Georgia in 2004, which has been achieved mainly by broadening the tax base. Georgia's experience (1999-2000) was among the most successful ones because over two years after the adjustment, the primary balance improved by 4.9 percentage

points of GDP in comparison with its level one year before the adjustment.

Effects of Fiscal policy in Bulgaria

This paper provides insights into the output effects of discretionary budgetary policy in the Bulgarian economy under the Currency Board Arrangement. It differs from the abovementioned empirical studies in the methodology.

As is known, the government budget responds automatically to the shifts in economic activity. In order to estimate the fiscal policy conducted by the authorities, one has to isolate these endogenous changes from the discretionary interventions. Most studies on post-communist countries use the primary budget balance, which is not cyclically adjusted. Some authors employ the "growth-accounting approach" (von Hagen, 2004, Afonso et al., 2005).

In this paper, the discretionary fiscal stance is calculated by the Hodrick-Prescott filter. Although this method for cyclical adjustment of budgetary items is common for studies on the advanced economies (see, for example, Brandner et al., 1998, Talvi and Vegh, 2000, Kremer et al., 2006), few papers on post-communist countries employ it. Kattai et al. (2002) use the HP filter to estimate the output gap in Estonia. Bezdek et al., (2003) calculate the natural rate of unemployment and the structural budgetary categories in the Czech Republic. This is a novelty approach regarding the studies which focus on the short-run effects of fiscal policy on output in Central and Eastern Europe. In addition, the article makes first attempt to evaluate the discretionary budgetary policy and its stabilizing role in Bulgaria under the Currency Board Regime.

Quarterly data for primary government spending and total tax revenue of the general government budget between 1998 and 2004 form the basis of the analysis. Primary government spending includes wages and social insurance payments, subsidies, expenditure on goods and services, social expenditure and capital outlays.

The Hodrick-Prescott filter (HP)[2] with a smoothing parameter =480 is applied in order to isolate the endogenous changes from the discretionary movements of the budgetarycategories. The structural (cyclically adjusted) series are expressed as a share of real GDP and

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[2] HP filter computes the cyclically adjusted measure (X*) of a variable (X) by minimizing the expression
(Xt – X*t)2 +   [(X*t+1 – X*t) – (X*t – X*t-1)]2,   is the weighting factor. (Hodrick and Prescott, 1997). We do not apply a test for causality between fiscal policy variables and short-run real growth because the HP filter removes the endogenous component of budgetary items.

denoted by small letters g and t, respectively. The coefficient =480 for quarterly data corresponds to =30 for annual data, which is the value used by the European Central Bank (Bouthevillain et al., 2001). The lower the weighting parameter, the better the discretionary policy shocks are captured. The HP filter has been chosen among a number of alternatives for cyclical adjustment because of its popularity, transparency and suitability for international comparisons. For a description of other popular methods, see Giorno et al. (1995), Blanchard (1993).

The discretionary impulse for government expenditure (GIt) is defined as a difference between the cyclically adjusted value of primary government outlays in the given period and that in the previous period (1):

$$GI_t = g_t - g_{t-1}, = ? \ g \qquad (1),$$

where **g** is the HP filtered expenditure expressed as a share of GDP. A positive/negative value of GI indicates an expansionary/restrictive fiscal impulse.

Respectively, the discretionary changes in tax revenues can be calculated in an analogous way by using the cyclically adjusted tax revenue (2):

$$TI_t = t_t - t_{t-1}, = ? \ t \qquad (2),$$

where t_t is the HP filtered tax revenue (% GDP).

Table 1. Discretionary fiscal changes in Bulgaria

	Total number of episodes	*Average size*	*Standard deviation*	*Number of expansionary episodes*	*Number of adjustments*
Discretionary expenditure impulse (% GDP)*	27	0.2	0.53	18	7***
Discretionary tax impulse (% GDP)**	27	0.10	0.43	14	13

*calculated by expression (1)
** calculated by expression (2)
*** the discretionary expenditure impulse is equal to zero during two periods
Source: author's calculations

Expansionary episodes are those for which the expenditure impulse (? g) is positive or the tax impulse (? t) is negative. On the contrary, during fiscal adjustments ? g takes negative values, while ? t is greater than zero.

The descriptive analysis (Table 1) demonstrates that during the period under observation, the government has followed a policy of expenditure loosening. The expansionary episodes outnumber the episodes of expenditure restrictions more than two to one. The negative or near to zero structural budget balance (Table 2) indicates that the budget surpluses reported by the authorities were due to the automatic tax revenue increases in times of economic growth observed in Bulgaria under the Currency Board Arrangement (introduced in July, 1997).

Table 2. General government budget balance (1998-2004)

	1998	*1999*	*2000*	*2001*	*2002*	*2003*	*2004*
Structural primary budget balance (% GDP)*	1.6	1.3	-0.7	-0.9	0.7	0.6	1.3
Declared primary budget balance (% GDP)	5.5	3.9	3.4	3.1	1.6	2.1	3.5
Real GDP growth (%)**	4.0	2.3	5.4	4.1	4.5	5.0	6.6

*The structural primary budget balance is calculated using the HP filtered tax revenues and government spending.
**average annual growth rate
Source: author's calculations, National Statistical Institute, Ministry of Finance

Figure 1 gives evidence of a negative relationship between the discretionary expenditure changes and the real GDP growth on impact, which implies a presence of non-Keynesian effects. The correlation between the expenditure impulse and the real GDP growth is strong and negative (correlation coefficient of -0.91). As can be seen from the graph, the restrictive fiscal impulse has always been accompanied by a positive rate of growth. Such a negative relationship is not observed in all cases of a positive spending shock, but it is clear that the negative rates of real growth have occurred during times of large fiscal expansions.

Figure 2 illuminates the behavior of tax policy. The lower average tax burden has accelerated the real GDP growth. So, the fiscal categories influence the Bulgarian economy in a non-linear fashion: while a typical Keynesian result prevails for taxes, a non-Keynesian outcome is valid for government outlays. In this vein, the study tries to answer the question about the factors, which determine the effects of expenditure on output. An
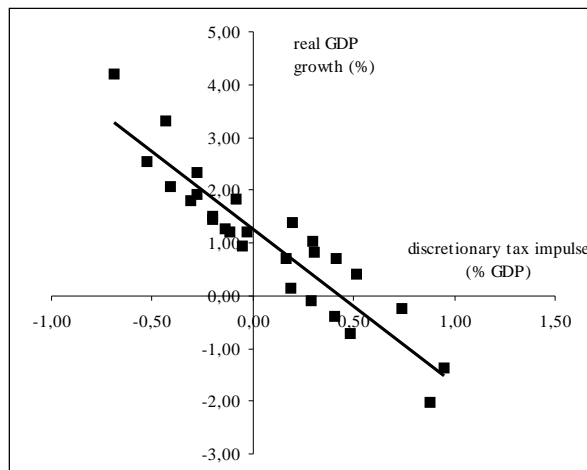
appropriate instrument for evaluating the determinants of non-Keynesian effects of budgetary outlays is the Logit regression.

Figure 1. Impact of expenditure policy.
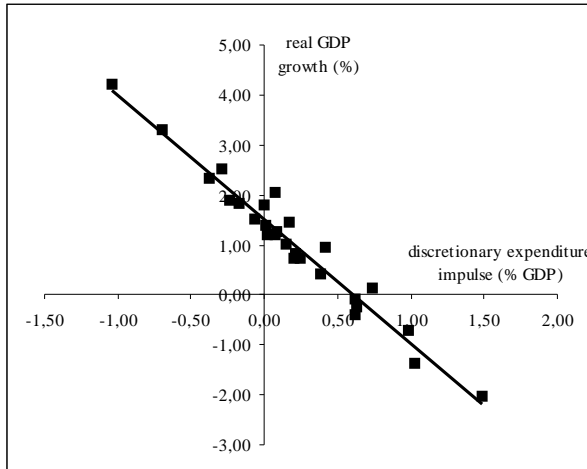
Source: author's calculation

Figure 2. Impact of tax policy

Source: author's calculations

The regression model is of the following form:

$$P_i = E(y = 1 | X_i) = \beta_1 + \beta_2 X_i$$

where y is a binary variable reflecting the influence of the discretionary expenditure impulse on output. It takes the following values:

y = 1 in case of a non-Keynesian effect of government expenditure on output, that is when the discretionary fiscal impulse (g) and the real GDP growth (y_{growth}) are moving inversely: an economic downturn/upturn is observed when the cyclically adjusted budgetary expenditure increase/decrease;

y = 0 in case of a traditional Keynesian effect of government expenditure on the short-run economic activity, that is when g and y_{growth} are moving in the same direction: the positive interventions on government spending have been accompanied by a positive rate of real GDP growth.

The choice of factor variables (x) depends on the relevant theoretical and empirical findings as well as on the descriptive analysis presented above. According to the previous studies, main determinants of non-Keynesian effects are the size of the fiscal impulse and the level of debt-to-GDP ratio. Also, fiscal restrictions are more likely than fiscal expansions to demonstrate a non-Keynesian impact on output. Each of these factors is tested as a possible determinant through a Logit model. In light of this, the independent variables (x) are defined as follows.

TYPEIMPU denotes the type of the discretionary expenditure impulse.

$$\text{TYPEIMPU} = \begin{cases} 1 \text{ in case of an expansionary impulse (} g > 0) \\ 0 \text{ in case of a restrictive impulse (} g < 0) \end{cases}$$

The inclusion of this variable in the model would show whether the non-Keynesian effects of government spending prevail in times of expenditure increases or in times of expenditure restrictions. Most studies underline the expansionary effects of fiscal consolidations.

SIZEIMPU presents the size of the discretionary fiscal impulse (g)

$$\text{SIZEIMPU} = \begin{cases} 1 \text{ for significant expenditure impulses} \\ 0 \text{ for neutral (insignificant) expenditure impulses} \end{cases}$$

The fiscal intervention is defined as "significant" if the discretionary expenditure impulse (GI= g) lies outside the interval of the mean value (μ_g) plus/minus one half the standard deviation ($_g$). Otherwise, the fiscal intervention is insignificant (neutral). Table 3 presents the values of the binary variable SIZEIMPU. The discretionary expenditure impulse is defined as expansionary if its value is greater than ($\mu_g + \frac{1}{2}$ $_g$). The

expenditure intervention is restrictive if g is negative, smaller than (μ_g - ½ $_g$). Otherwise, the discretionary impulse is defined as neutral.

Table 3. Values of variable SIZEIMPU

Size of discretionary expenditure impulse	Type of discretionary expenditure impulse	Value of SIZEIMPU	Number of episodes
$-? < ?g < \mu_g - ½ _g$	Significant (Restrictive)	1	6
$\mu_g - ½ _g < ?g < 0$	Neutral	0	1
$0 < ?g < \mu_g + ½ _g$	Neutral	0	13
$\mu_g + ½ _g < ?g < ?$	Significant (Expansionary)	1	7

μ_g=0.2 is the sample average of g, $_g$ = 0.5 is the standard deviation. The discretionary expenditure impulse is regarded as neutral (SIZEIMPU=0) if its value is between (μ_g - ½ $_g$) and (μ_g + ½ $_g$), otherwise, the fiscal impulse is defined as significant (SIZEIMPU=1).
Source: author's calculations

Although small discretionary expansions prevail, significant expenditure changes - either expansionary or restrictive - have been enforced in 13 out of 27 cases. The qualitative analysis shows that 85% of these large interventions have been accompanied by a non-Keynesian response of real GDP. On the contrary, the Keynesian outcome prevails (92%) during times of small changes in government outlays.

The inclusion of this variable allows verification of the hypothesis that the size of the discretionary impulse is an important factor for the appearance of non-Keynesian effects. The relevant literature concludes that the larger the fiscal impulse, the greater the probability of a non-Keynesian result.

The variable GOVDEBT reflects the role of initial conditions, specifically the level of government debt. According to the theoretical explanations, a non-Keynesian result is more probable when the debt-to-GDP ratio is high. During times of "fiscal stress", economic agents appreciate the authorities' efforts to improve the long-term sustainability of public finances through fiscal tightening, which stimulate private demand and output. GOVDEBT is a nominal variable equal to the government debt/GDP ratio.

The next exogenous variable SIZET reflects the size of the

discretionary tax change. It is introduced in order to test the connection between the tax policy and the non-Keynesian response of output to an expenditure shock. SIZET is a binary variable, similar in nature and definition to the variable SIZEIMPU. Its value is based on the size of the discretionary tax revenue impulse (TI_t) defined in (2). SIZET is equal to 1 when the tax intervention is above the mean value (μ_t) plus/minus a half the standard deviation (σ_t).

$$SIZET = \begin{cases} 0, \mu_t - 1/2 * \sigma_t < ? t < \mu_t + 1/2 * \sigma_t \\ 1, \text{otherwise} \end{cases}$$

A positive value of SIZET would mean that the non-Keynesian influence of government outlays on the economy is more probable in case of higher discretionary tax changes. In Bulgaria, large revenue changes have occurred at times of significant increases in government outlays (2/3rds of cases).

The reduced-form model takes the following form:

$$\log \frac{Pi}{(1 - Pi)} = a_0 + a_1 * TYPEIMPU + a_2 * SIZEIMPU +$$
$$+ a_3 * SIZET + a_4 * GOVDEBT$$

The results of regression analysis are presented in Table 4. Two exogenous variables have statistically significant coefficients: SIZEIMPU and SIZET. The type of the discretionary impulse (TYPEIMPU) is not among factors determining the outcome, since non-Keynesian effects have occurred during both fiscal expansions and fiscal contractions (see, Figure 1). In addition, the level of government debt does not influence the behavior of real output. Such a conclusion is not unreasonable in light of the above analysis that non-Keynesian effects result not only from an accomodating budgetary policy leading to higher debt levels but also from expenditure consolidations.

able 4. Determinants of non-Keynesian effects: econometric results*

Variable	*Regr.coeff.*	*Wald test*	*Pseudo R^2*
Size of discretionary expenditure impulse (SIZEIMPU)	5.05**	5.2	0.77
Type of discretionary expenditure impulse (TYPEIMPU)	10.1	0.07	0.51
Size of discretionary tax impulse (SIZET)	1.5***	3.07	0.16
GOVDEBT	-0.0	1.06	0.05

* the dependent variable presents the probability of a non-Keynesian impact of
government expenditure on output
**significant at 0.05 level
*** significant at 0.1 level

The size of the fiscal intervention is a statistically significant determinant of the stabilizing impact of public spending. As figure 3(a) emphasizes, significant changes in public spending entail a higher probability of a non-Keynesian response of output. This probability is approximately 0.9 if the discretionary expenditure impulse is above the mean value plus/minus a half the standard deviation. By contrast, small changes lead to a traditional Keynesian impact on aggregate activity in the short run. This implies that larger expenditure cuts have more successfully stimulated the economy.

The regression coefficient for the variable SIZET is also statistically significant. If the variable SIZET lies outside the interval (μ_t - ½* $_t$; μ_t + ½* $_t$), the probability of a non-Keynesian response is near 0.6 Figure 3 (b) implies that larger increases in the average tax burden have been accompanied by non-Keynesian effects of budgetary purchases on output. This is due to the fact that under the Currency Board Arrangement, the Bulgarian authorities keep a budget close to balance or in surplus. Both spending and taxes are moving in an upward direction: in order to keep the government's budget constraint, higher spending requires a higher tax burden.

The results imply that the balanced-budget policy in countries with a growing public sector could have a negative impact on macroeconomic activity. Thus, the imposition of fiscal rules on the overall budget balance

only is not enough with a view of accelerating growth prospects. The Stability and Growth Pact provides benchmarks for fiscal frameworks of the Eurozone members. Each country should keep a budget balance-to-GDP ratio below 3% and a debt-to-GDP ratio below 60%. The Pact does not specify rules about the level of current government spending, public investments or taxes. In light of this study, it is important to evaluate how the country meets the budget balance, by raising taxes and spending or by lowering both. Following current SGP rules is not enough in order to create a growth-enhancing environment because an expenditure expansion accompanied by a tight tax policy could decelerate the real growth.

Figure 3. Predicted probability of non-Keynesian effects of government expenditure

a)
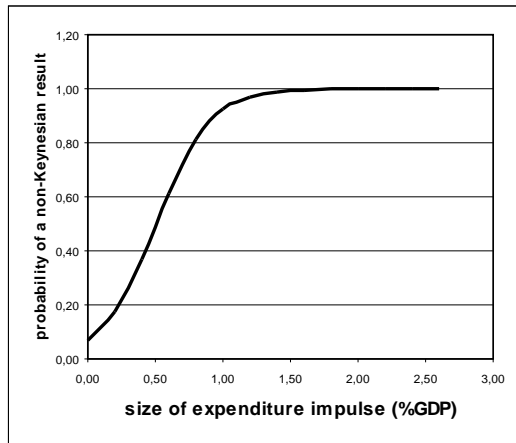
b)
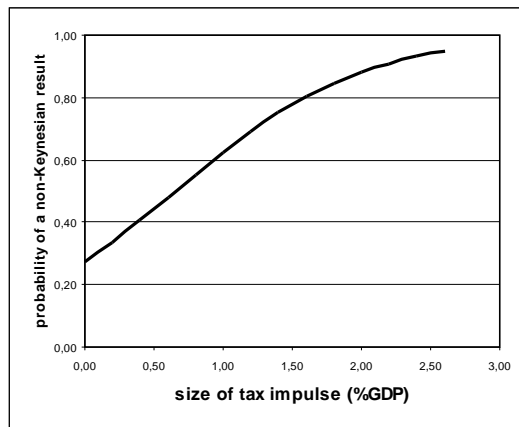
Conclusion

This study illuminates the macroeconomic effects of fiscal policy in Bulgaria during the period of EU accession. The descriptive analysis shows a negative relationship between the discretionary expenditure interventions and the short-run output growth. On the other hand, the tax policy affects output in the standard Keynesian manner.

The size of the discretionary impulse is the main determinant of the non-Keynesian impact of government outlays: the stronger fiscal expansions/contractions are more likely to decelerate/accelerate GDP growth. This result supports the relevant studies on both advanced and post-communist economies.

The findings of the study have important practical implications for Bulgaria's fiscal policy. Due to the Currency Board Arrangement, Bulgaria completely satisfies the criteria for the general government budget deficit and the debt-to-GDP ratio imposed by the SGP. Since 2002, the government debt has been constrained below 60% of GDP, while the overall budgetary balance has remained within the 3% reference value. The empirical results indicate that although the balanced budget ensures the sustainability of public finances, it could not guarantee a stimulating effect on output - the fiscal policy mix is a crucial factor for economic growth as well. The government's size was continuously growing during the period under observation. It remains among the highest ones in the New Member States during the last two years (40.5% in 2005 and 38% in 2006).

The imposition of restrictions on the overall budget balance and the level of government debt alone is not enough; there should be regulations on the budgetary categories themselves. The presence of both Keynesian and non-Keynesian effects of budgetary items shows that in view of accelerating growth prospects, the balanced budget should be achieved by a mix of government expenditure restrictions and lower taxes.

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