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WOULD ECONOMIC RECOVERY IMPLY FISCAL STABILIZATION IN SERBIA?[1]

Da li bi privredni oporavak u Srbiji doveo do fiskalne stabilizacije?

Abstract

For many years Serbia has been running fiscal deficit, which has considerably increased since 2008, leading to rise in public debt from 29.2% of GDP in 2008 to 60.3% of GDP in the end of 2012. This paper is aimed at resolving the dilemma if the economic recovery would be sufficient to reduce large fiscal deficit in Serbia or additional fiscal consolidation measures have to be implemented. Since the actual fiscal deficit is the result of macroeconomic trends and policies, in order to answer this question it is necessary to exclude the effects of cyclical trends in macroeconomic aggregates on fiscal deficit. Although new EU fiscal rules impose limit to cyclically-adjusted deficit (at 0.5% of GDP), in the countries facing high foreign trade imbalance not only cyclical trends in output, but also the impact of absorption gap has to be accounted. In this paper we provide econometric estimate of the size and the dynamics of structural fiscal deficit (cyclically and absorption adjusted deficit) in Serbia, in the period 2001-2012, based on quarterly macroeconomic data. The results suggest that most of the fiscal deficit in Serbia is structural in its nature. After the initial consolidation in 2002 and 2003, structural fiscal deficit in Serbia was relatively low (below 2% of GDP) in the period 2004-2006, and rose sharply starting from 2007, so to achieve 6% of GDP in 2012. We also quantify the impact of particular tax/expenditure measures which contributed to creation of structural fiscal deficit in Serbia. Based on the results, economic recovery will not lead to substantial decline in fiscal deficit in Serbia, which is why it will be necessary to perform fiscal consolidation through significant cut in public expenditures and slight increase in taxes.

Key words: *structural fiscal deficit, fiscal responsibility rules, sustainability of public finance, economic growth*

Sažetak

Godinama se u Srbiji vodi politika fiskalnog deficita, koji je znatno povećan od 2008. godine, dovodeći do rasta javnog duga sa 29,2% BDP-a u 2008. godini na 60,3% BDP u 2012. godini. Cilj ovog rada je da pruži odgovor na pitanje da li bi oporavak privredne aktivnosti bio dovoljan za smanjenje visokog fiskalnog deficita u Srbiji, ili je potrebno primeniti dodatne mere fiskalne konsolidacije. Pošto je fiskalni deficit posledica makroekonomskih kretanja i politika, odgovor na prethodno pitanje je moguće dati tek nakon što se izoluju efekti cikličnih kretanja makroekonomskih varijabli na visinu fiskalnog deficita. Iako nova fiskalna pravila u EU uvode limit u pogledu ciklično prilagođenog deficita (na nivou od 0,5% BDP), u zemljama koje imaju visoku spoljnotrgovinsku neravnotežu, pored visine proizvodnog jaza, u obzir je neophodno uzeti i apsorpcioni jaz. U ovom radu izvršena je ekonometrijska ocena visine i dinamike strukturnog fiskalnog deficita (ciklično i apsorpciono prilagođenog deficita) u Srbiji u periodu od 2002. do 2012. godine, na osnovu kvartalnih makroekonomskih podataka. Rezultati pokazuju da je najveći deo fiskalnog deficita u Srbiji strukturne prirode. Nakon inicijalne konsolidacije u 2002. i 2003. godini, strukturni fiskalni deficit je bio relativno nizak (ispod 2% BDP) u periodu 2004-2006. godine, nakon čega je snažno porastao počev od 2007. godine, tako da je u 2012. godine dostigao 6% BDP. U radu su takođe kvanitfikovani uticaji pojedinačnih mera na strani javnih prihoda i javnih rashoda, koje su doprinele nastanku strukturnog fiskalnog deficita u Srbiji. Na osnovu dobijenih rezultata zaključuje se da rast privredne aktivnosti neće dovesti do značajnijeg smanjenja fiskalnog deficita u Srbiji, te da je za njegovo značajnije smanjenje neophodno sprovesti mere fiskalne konsolidacije, kroz smanjenje javnih rashoda i povećanje poreza.

Ključne reči: *strukturni fiskalni deficit, pravila o fiskalnoj odgovornosti, održivost javnih finansija, privredni rast*

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Introduction

Under the new EU fiscal rules, structural fiscal deficit ceiling and mandatory procedures in case of exceeding the Maastricht limits on public debt are introduced in order to provide fiscal stabilization and sustainability [7]. The structural fiscal deficit is obtained when the impact of cyclical fluctuations of GDP and absorption, as well as the effects of one-off and temporary factors that impact on government revenues and expenditures, is excluded from the real fiscal deficit. Therefore, the structural fiscal balance can be interpreted as a systemic fiscal balance, reflecting discrepancy between public revenues and expenditures, due to relatively enduring feature of the tax system and public expenditure policies. Precisely, structural fiscal deficit corresponds to fiscal deficit that would be achieved if all the macroeconomic variables which affect the public revenues (GDP, employment, absorption, etc.), and expenditures (unemployment) were in equilibrium level. In addition to measures of discretionary economic policy, structural fiscal balance reflects the impact of long-term macroeconomic and social trends on revenues and expenditures, such as change in economic growth model – from domestic demand led growth to export and investment led growth, or aging population and the like.

Conceptually, the structural fiscal balance is a superior base for estimating a country's fiscal position and conducting fiscal policy, compared to the actual fiscal balance. A good illustration of this is apparently good, but in the long run unsustainable fiscal position of European countries in transition during absorption and expansion boom that preceded the current crisis [10], [11]. High economic growth and high external deficits have generated temporarily high public revenues that most governments interpreted as a permanent, resulting in the adopted legislation that permanently increased public spending. Despite that, the actual fiscal deficit in most countries in the period 2006-2008 was relatively low, suggesting pursuing expansionary fiscal policies. However, the structural fiscal deficit in these countries was already very high suggesting the need for tighten fiscal policy – in this period, countries are supposed to generate surpluses and accumulated reserves for "hard times".

However, estimation of the fiscal position of the country and running the fiscal policy based on the structural fiscal balance are faced with some methodological difficulties, which may represent a fertile ground for political manipulation. The structural fiscal balance is the size that is not directly measured, but it is estimated by using different econometric methods, which may produce different results based on the same data in specific period of time. The problem can be partially solved through prescribing mandatory methods for estimation of the structural fiscal deficit at the EU level. However, as these methods are getting more statistically complex, they leave more room for different choices during the estimation procedure, leading to different estimations, although the same data and the same method are used. An additional problem with the estimation of the structural fiscal balance is that its results for a specific period change with the addition of new observations. Basically, the problem is that the structural fiscal balance in a specific period of time depends not only on the past but also on future observations. In "normal" times future observations can be relatively precisely forecasted by using specific econometric methods, but that is not the case when the economy moves from expansion to recession or vice versa. Additional difficulties arise in transition countries, especially in Serbia, where there are no basic data for the application of some methods for estimation of structural fiscal deficit (data on capital, the final use of GDP on a quarterly basis, etc.). In such cases, it is necessary to use certain approximations to estimate the missing data, creating an extra space for arbitrariness.

Fiscal policy in Serbia in recent years was led on the base of the actual fiscal deficit, so that in years of strong economic expansion and growth of absorption there was a systematic increase in public expenditure and reduction of certain taxes [1], which at the beginning of the crisis in late 2008 led to a strong and lasting growth of fiscal deficits and rapid growth of public debt. In the past few years, Serbia consistently runs relatively high fiscal deficit, of over 4% of GDP per year, which led to a rapid and substantial growth of public debt to a level of over 60% of GDP at end 2012, threatening to undermine the sustainability of public finances. The data for other developing countries that have faced the public debt crisis show that in most

of them the problem occurred at the level of public debt below 50% of GDP. To avoid such a scenario in Serbia, it is necessary to reduce the fiscal deficit below 1% of GDP (i.e. by 4-5 pp of GDP) in relatively short period time. In that context, the question is whether the existing fiscal deficit in Serbia is a result of slowing economic activity, which means that it could be eliminated in case of return to moderate growth rates of GDP, or a consequence of systemic imbalances between revenue and expenditure, which will not be eliminated when economic crisis is over. With regards to that, in this study the structural fiscal deficit in Serbia in the period since 2002 to 2012 has been estimated, and its causes and possible solutions are discussed. The results show that most of the fiscal deficit in Serbia (about 4% of GDP) is of a systemic nature, and less than 1% of GDP is for macroeconomic reasons. The results also suggest that the structural deficit is mostly formed in the period since 2006 to 2008. This means that the recovery of economic activities will not *per se* lead to a significant reduction of fiscal deficit, but that for its overthrow it is necessary to apply appropriate measures, such as cuts in public spending and increase in taxes.

Estimation of the structural fiscal balance: Methodology and data

Methodology

The movements of fiscal variables are affected by: systemic factors (i.e. the way of designing tax policy and public expenditures policy), long-term macroeconomic and demographic trends, cyclical fluctuations of macroeconomic aggregates and one-off events. The goal of estimation of cyclically-adjusted fiscal balance (CAB) is to disaggregate actual fiscal balance (B) to the part which is the result of cyclical fluctuations of GDP and one-off events (CB) and the part from which the influence of the mentioned factors is excluded (CAB):

$$B = CB + CAB \qquad (1)$$

Cyclical balance, as well as consequently cyclically-adjusted fiscal balance, can be estimated by using two methodological approaches: aggregated and disaggregated [3]. The advantage of the disaggregated approach, which will be used in this paper, is that the impacts of cyclical fluctuations of GDP on the major taxes and expenditure position of the country are separately modelled[2].

Cyclical component of fiscal balance (CB) depends on the sensitivity of fiscal balance (η) to output gap (ygap):

$$CB = ygap \cdot \eta \qquad (2)$$

Output gap or economic cycle is relative deviation of the actual GDP from potential GDP:

$$y_{gap} = (Y_t - Y_t^*)/Y_t \qquad (3)$$

where Y_t and Y_t^* are actual and potential (natural, equilibrium) GDP, respectively.

The coefficient of sensitivity (or semi-elasticity) of the fiscal balance in relation to the output gap is the difference between the coefficient of sensitivity of tax revenues in relation to the output gap (η_T) and the sensitivity of public expenditure (η_G) in relation to the output gap:

$$\eta = \eta_T - \eta_G \qquad (4)$$

According to the OECD approach, the coefficient of sensitivity of tax revenues in relation to the output gap depends on the elasticity of tax revenues in relation to the output gap ($\varepsilon_{T,y/y^*}$) and share of tax revenues in GDP (T/Y). In the same manner, the coefficient of sensitivity of expenditures in relation to the output gap is calculated as the product of elasticity of current primary public expenditures relative to output gap ($\varepsilon_{CPG,y/y^*}$) and share of current primary public expenditures in GDP (CPG/Y).

Cyclically-adjusted fiscal balance shows how much would be the fiscal balance of the country, if GDP grew at a natural (trend) rate. However, in addition to the dynamics of GDP, the fiscal balance of the country is affected by other variables, such as: *i)* absorption, *ii)* price of energy and natural resources (important for the countries which are large exporters of these resources), *iii)* real estate prices (important for the countries where the share of revenues from property taxes in total tax revenues is high). Therefore, for the evaluation of the countries' fiscal position it is necessary to exclude the effects of deviations of these variables from the natural level. Based on the previous research [11], [10], [1], it is estimated that of all the variables, the Serbian fiscal balance is mostly affected by the state of absorption (balance of the current account

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2   Detailed description of methodology for estimation of cyclically-adjusted and structural fiscal balance is described in [8] and [5]. Alternative approach is presented in [4].

of balance of payment). Therefore, for the evaluation of the structural fiscal balance it is necessary to consider not only production but also the absorption gap, defined as the deviation of actual current account deficit (ca_t) from its sustainable (equilibrium) level (ca_t^*):

$$ab_t = ca_t - ca_t^* \qquad (5)$$

where ab_t, ca_t and ca_t^* reflect share of respective variables in potential GDP. Precisely, the absorption gap (ab_t) is the sum of the output gap and the exterior gap [10].

From the above-mentioned considerations, it follows that the structural fiscal balance is equal to the actual fiscal balance from which the impact of cyclical fluctuations in GDP (output gap – $ygap_t$) and absorption (absorption gap – ab_t), as well as the effect of one-off factors, are excluded:[3]

$$caab_t^* = b_t - \beta ygap_t - \gamma ab_t \qquad (6)$$

Output gap affects the fiscal deficit through direct taxes, while absorption gap makes impact through indirect taxes. From the previous equation it is concluded that the impact of the production and absorption gap on the height of the structural balance depends on the coefficient of sensitivity of the fiscal balance in relation to the output gap (β) and the coefficient of sensitivity of the fiscal balance in relation to the absorption gap (γ). Sensitivity coefficients β and γ can be obtained through econometric estimations. However, in practice they are usually calculated on the basis of participation of direct (β) and indirect taxes (γ) in GDP, from which it follows that the $\eta = \beta + \gamma$. The reasons for the calculation of sensitivity coefficients based on the share of taxes in GDP is that it is estimated that they better reflect the automatic response of fiscal balance to cyclical fluctuations in the economy, than was the case with econometrically-estimated coefficients. Besides, the econometric evaluations of the previous equation are faced with numerous difficulties (endogeneity problem, the linear dependence of two gaps, etc.). By calculating these parameters instead of estimating them econometrically, double counting problem is avoided [6].

Data

Assessment of cyclically-adjusted and structural fiscal deficit relates to the period starting from the first quarter of

2001 to the fourth quarter of 2012. The analysis was based on quarterly data, because the number of annual data is insufficient for econometric estimations. Data relating to the period before 2001 are strongly influenced by external shocks (international sanctions, bombing, change of territory over which economic authority is exercised since 1999, etc.), which made it almost impossible to ensure their comparability with more recent data. In addition, after 2001 there was a relatively strong alteration in economic policy and the process of reforms of the economic system begun, leading to the change in the values of parameters which describe the relationships between economic variables. Although this is a relatively short period, only a decade, there is a significant problem of comparability of data in most of the analysed time series, and in some cases, there is also a problem of their reliability. Therefore, in some cases adjustments to the official data were necessary in order to improve their comparability, while in other cases it was not possible (in those cases dummy variables were used in order to isolate the impact of methodological changes).

Empirical estimation of cyclically-adjusted fiscal balance in Serbia

The procedure of estimation of cyclically-adjusted deficit consists of: *i*) estimation of output gap, *ii*) estimation of the budget elasticities and coefficient of sensitivity of the fiscal balance in relation to the output gap, *iii*) estimation of the cyclically-adjusted fiscal balance.

Evaluation of the output gap for Serbia

In practice it is often evaluated by means of *Hodrick-Prescott* filter and by *Cobb-Douglas* production function[4]. Since both methods provide similar results [2], we will use HP filter for estimation of output gap in Serbia, which is also a common practice of the European Commission for Central and Eastern European countries. Quarterly data on GDP (from 2001 to 2012) at constant prices from 2005

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3 Structural fiscal balance is often referred to as CAAB, which is abbreviation for "Cyclically and Absorption Adjusted Budget Balance".

4 In Serbia there are no data on the capital stock of corporate sector, while the data on the number of employees are not reliable, which is why estimation of production function requires "construction" of the data on capital stock as well corrections to the official data on employment. Therefore, it is questionable if it is justified to make estimation of production function for these purposes. For further details see [2].

are used for estimation of the output gap in Serbia. For the purpose of estimation of output gap by using the HP filter, GDP series is forecasted by the end of 2014, based on the official forecasts of the IMF and the Ministry of Finance, available at the time of estimation.

Output gap in Serbia (see Figure 1) was negative (recession) in 2003 and in the period 2009-2011, while in 2002 and in the period 2004-2006 the economy was in balance. In 2007 and 2008 output was significantly above the potential level (expansion). A large drop in output gap in 2003 is a consequence of the fact that potential growth rate was almost double larger than the real growth rate, due to fall in real GDP growth rate in that period, because of political instability. In 2007 and 2008 strong economic growth was achieved, which was encouraged primarily by domestic demand and large inflows of foreign capital, which is why the output gap was positive, i.e. economy was in a strong expansion. Significant increase in output above the natural level in 2007 (by nearly 3% of potential GDP) and high positive output gap in 2008 clearly signal that the economy was "overheated" (that period was characterized by high inflow of foreign capital, as well as by high credit growth and real wage growth). In other words, strong economic growth recorded in this period was not sustainable in the long term. It is clearly seen from the trade deficit, which stood at around 22% of GDP in 2008, and the current account deficit which amounted to 17.1% of GDP, requiring additional borrowing. After a mild recovery in 2010 and 2011, economic activity declined again in 2012.

Estimation of budget elasticities in Serbia

The coefficient of sensitivity of the fiscal balance depends on the elasticity of public revenues and expenditures in relation to the output gap, as well as on the amount of cyclically sensitive taxes and expenditures, measured as share of GDP. It is therefore necessary for its calculation to estimate the budget elasticity of the most important taxes (personal income tax, social security contributions, corporate income tax and consumption taxes) and cyclically sensitive categories of public expenditure (benefits for the unemployed).

1) The elasticity of personal income tax to output gap

Standard OECD procedure implies use of data on earnings for an approximation of personal income, since the income from employment makes over ¾ of the total income of citizens. The elasticity of income tax in relation to the output gap is calculated as a product of elasticity of income tax in relation to the wage bill and the elasticity of the wage bill in relation to the output gap.

Elasticity of income tax in relation to the wage bill is determined as the ratio of the weighted marginal tax rate and weighted average rate of income tax, for the earnings ranging from 50% to 300% of average wage, where the weights refer to the share of wages of a given percentile in the total wage bill [2], [8].

Starting from the percentile distribution of earnings in Serbia in 2009, the estimated elasticity of income tax in relation to the wage bill is as follows:

Figure 1: Output gap for Serbia: HP approach
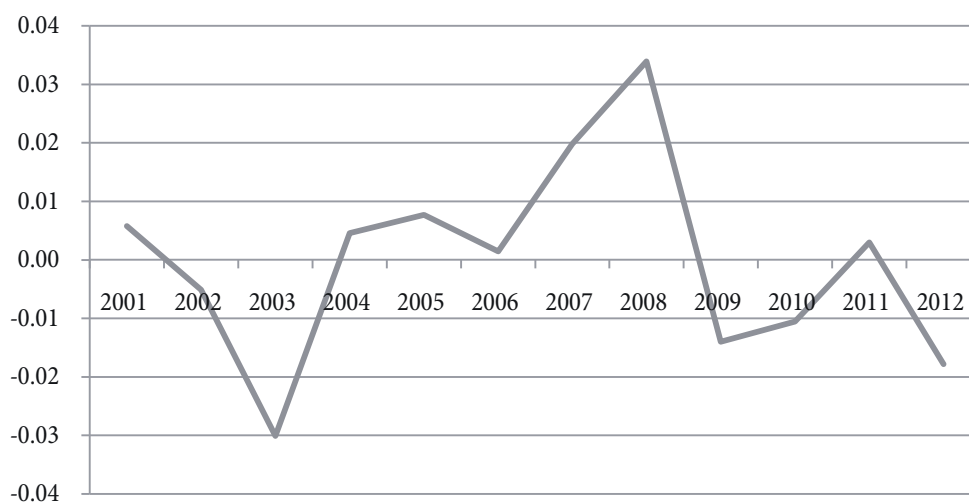
Source: Authors' calculations

$$\varepsilon_{tw,w} = \frac{\sum_{i=1}^{n} \gamma_i MA_i}{\sum_{i=1}^{n} \gamma_i AV_i} = 1.16 \qquad (7)$$

The estimated elasticity of income tax in relation to the wage bill in Serbia is relatively low as a result of low progressivity of income tax, since wages, above non-taxable threshold are taxed at the flat rate of 12%. Similar values of estimated elasticities are obtained in other countries where personal income is taxed at flat marginal tax rate (Slovak Republic, Estonia, etc.). Estimated elasticity in Serbia is lower than in developed OECD countries, which mostly apply progressive marginal rates in taxing personal income, where the elasticity is between 1.5 and 2.

Estimation of elasticity of the wage bill, defined as the product of the average wage (W_t) and the number of employees (L_t), in relation to the output gap ($ygap_t$), is performed by econometric methods.

Since it is determined that the wage bill and output gap series are non-stationary, having one unit root, estimation will be conducted on the respective first differences. In addition, because wage bill series has structural break in the first quarter of 2009, it is necessary to include dummy variable (which will have a value of zero in all quarters, except in the first quarter of 2009, where the value will be one) in the model. In addition, wage bill series has seasonal fluctuations (decrease) in the first quarter of each year, which will be taken into account through inclusion of appropriate seasonal dummy variable ($seas1$).

Estimation of elasticity of wage bill in relation to output gap will be conducted using the following econometric equation:

$$\Delta \log(W_t L_t/Y_t^*) = a_0 + a_1 \Delta \log(Y_t/Y_t^*) + v1q2009 + seas1 \quad (8)$$

Dependent variable	Independent variables			
$\Delta \log (W_t L_t/Y_t^*)$	constant	$\Delta \log(Y_t/Y_t^*)$	V1q2009	seas1
Estimate	0.035	0.716	-0.156	-0.095
t-statistics	5.266	2.558	-4.174	-7.019
Probability (p)	0.0000	0.0150	0.0002	0.0000
Other statistical properties	R^2=0.74; F=32.59 (p=0.000); DW=1.99; JB=0.7447(p=0.689)			

The results suggest that the statistical properties of the estimated model are satisfactory. The equation explains around 3/4 of the total variation of the wage bill in the considered period. The whole regression, as well as all individual explanatory variables, is statistically significant at the significance level of 5% (as indicated by the probability associated with it – calculated F and t statistics). In the model there is no autocorrelation, which is confirmed by examination of correlogram of residuals and the value of the *Durbin-Watson* (DW) statistics. By introducing respective dummy variables the normal distribution of residuals has been achieved.

The estimated elasticity of the wage bill in relation to the output gap is 0.72. This means that the reduction of GDP in relation to potential (trend) level by 1% leads to a decrease in wage bill by 0.72%. In addition, there is a statistically significant decrease in income in the first quarter of each year in the considered period as well as in the first quarter of 2009 – the latter being caused by the economic crisis.

Starting from the estimated elasticity of income tax in relation to the wage bill and the elasticity of wage bill in relation to the output gap, it has been estimated that the elasticity of income tax in relation to the HP output gap amounts to:

$$\varepsilon_{tw,y/y^*} = 1.16 \; x \; 0.72 = 0.84 \qquad (9)$$

Therefore, with the decrease of GDP in relation to its potential (trend) level by 1%, *ceteris paribus*, the revenues from personal income tax would decline by 0.84%.

2) The elasticity of social security contributions to output gap
The methodological procedure for estimation of elasticity revenue from social security contributions in relation to the output gap is identical to the procedure applied in case of personal income tax.

Starting from the percentile distribution of wages in Serbia, it was found that the elasticity of social security contributions in relation to the wage bill in Serbia equals one. Unit elasticity of contributions in relation to the wage bill is a consequence of the fact that social security contributions in the observed interval (from half to three times average wages) are calculated on the basis of the full amount of income, by applying flat rates, totalling to 35.8%.

The elasticity of the wage bill in relation to the output gap, which was estimated in the previous step, is also used for estimating the overall elasticity of contributions in

relation to the output gap, due to the fact that both income tax and social security contributions are calculated on gross wages. Starting from the estimated elasticity of contributions in relation to the wage bill and the elasticity of the wage bill in relation to the HP output gap, it was estimated that the total elasticity of social contributions to HP output gap equals:

$$\varepsilon_{ssc,y/y^*} = 1 \cdot 0.72 = 0.72 \qquad (10)$$

This means that with the reduction of GDP in relation to its potential (trend) level by 1%, the revenues from social security contributions would fall by 0.72%, other things being the same.

3) The elasticity of corporate income tax to output gap

According to the standard OECD methodology, the estimation of corporate income tax elasticity in relation to the output gap is based on the assumption that the elasticity of corporate income tax in relation to company profit equals one, so the overall corporate income tax elasticity in relation to the output gap is equal to the elasticity of company's profit in relation to the output gap.

The OECD methodology for estimating company's profit elasticity in relation to the output gap is based on the balance identity, according to which added value (GDP) equals the sum of labour income (wage bill) and income from capital (gross operating profit). Based on the aforementioned, the company's profit elasticity in relation to output gap can be calculated on the basis of the share of gross operating profits in GDP (PS) and the elasticity of the wage bill in relation to the output gap ($\varepsilon_{wt,y/y^*}$) [8]. Given that based on previously estimated equations the elasticity of personal income in relation to output gap in Serbia is 0.72, while based on the data for the period 2005-2008 it was found that the share of gross operating profit in GDP amounted to 34.69% (PS = 0.3469), the calculated elasticity of profit compared to the HP output gap is:

$$\varepsilon_{pr,y/y^*} = \frac{1-(1-PS)\varepsilon_{wt,y/y^*}}{PS} = 1.52 \qquad (11)$$

Due to the assumption of unit elasticity of corporate income tax in relation to the tax base, the estimated elasticity of corporate income tax in relation to output gap amounts to 1.52. This means that, other things being equal, if GDP relative to its potential (trend) level falls by 1%, corporate income tax revenues would fall by 1.52%.

4) The elasticity of consumption taxes to output gap

According to the OECD methodology it is assumed that the overall elasticity of the consumption taxes in relation to the output gap equals 1. However, the actual value of the coefficient of elasticity could be different from 1, due to several factors such as changes in structure of consumption, which is taxed at different rates of VAT, the existence of the absorption gap, etc. Therefore, it is considered justified to perform econometric estimation of elasticity of the consumption taxes in relation to the output gap. Strict adherence to the logic based on the OECD methodology would require performing estimations of elasticity in two steps: estimation of elasticity of consumption taxes in relation to personal consumption and estimation of elasticity of consumption to output gap. However, since there are no sufficiently long and reliable series of data on personal consumption in Serbia, the elasticity of consumption taxes (T_c) in relation to the output gap will be estimated directly.

The ADF unit root test has showed that the series of log (T_c/Y_t^*) is non-stationary, while according to the KPSS test it is stationary. Since in the given series there is a structural break in 2006, it is reasonable to conclude that this series has unit root. For the series of HP output gap, log (Y_t/Y_t^*), it is previously found that they have one unit root. Accordingly, estimation of elasticity will be performed by using the first differences of the given series. In addition, graphical inspection of consumption taxes series shows that there was a structural break in the second quarter of 2006, and that this series also has expressed seasonality in terms of a significant drop in the first quarter of each year it is necessary to include the respective dummy variables in the model − for the structural break (v2q2006), and the corresponding seasonal artificial variable (*seas*1). Estimation of consumption tax elasticity with respect to the output gap is based on the sample from the second quarter of 2002, to the second quarter of 2011, using the following model:

$$\Delta\log(T_c/Y^*) = a_0 + a_1\Delta\log(Y/Y^*) + a_2 \, seas1 + a_3 v2q2006 \quad (12)$$

Starting from the estimated values of output gap, we had the following results:

Dependent variable	Independent variables			
$\Delta \log (T_t/Y_t^*)$	constant	$\Delta \log(Y/Y_t^*)$	seas1	V2q2006
Estimate	0.0619	1.0445	-0.2631	0.1574
t-statistics	5.5286	2.2160	-11.7195	2.6520
Probability (p)	0.0000	0.0337	0.0000	0.0122
Other statistical properties	R^2=0.82; F=51.5457 (p=0.000); DW=2.47; JB=1.7018 (p=0. 427)			

Evaluated models have satisfactory statistical properties, since all explanatory variables individually or all together are statistically significant, and the model explained 82% of variations in revenues from consumption taxes, while there is no autocorrelation present, as evidenced by the value *Durbin-Watson* statistics. Also, the introduction of dummy variables provided the normal distribution of residuals.

Estimated coefficient of elasticity of the consumption tax in relation to the HP output gap was 1.05. The estimated coefficient is statistically significant (at the significance level of 5%). This means that with the reduction of GDP in relation to potential (trend) level by 1%, there is a fall in revenue from taxes on consumption to 1.05%, other things being equal. The obtained coefficients of elasticity are consistent with the results of empirical analyses in other countries, and with assumption of the OECD methodology, according to which the elasticity is around one. The results also confirm that in the first quarter of every year there is a statistically significant decrease in the consumption taxes revenues, and that there was statistically significant one-off increase in revenues from taxes on consumption recorded in second quarter of 2006 (as estimated coefficients are statistically significant at 1% and 5% respectively).

5) The elasticity of expenditures for unemployed to output gap

According to the OECD methodology, only unemployment benefits expenditures are regarded as automatically related to cyclical fluctuations in output, while all other public expenditures are seen as the consequence of discretionary measures. Under this methodology, the elasticity of expenditures for unemployed in relation to the output gap is the product of the elasticity of expenditure for unemployed in relation to the number of unemployed

and the elasticity unemployment gap to the output gap. According to the same methodology and practice for OECD countries it is assumed that the elasticity of expenditure for the unemployed in relation to the number of unemployed equals one, which implicitly means that the scope of rights per user of unemployment benefits does not change during the economic cycle, but only the number of unemployed persons fluctuates. Accordingly, the total elasticity of expenditures on unemployed in relation to the output gap is equal to the elasticity of unemployment gap (log (U_t/U_t^*)) in relation to the output gap (log (Y_t/Y_t^*)).

Pursuant to the mentioned, estimation of elasticity of unemployment gap in relation to output gap was carried out, using the following model:

$$\log(U_t/U_t^*) = a_0 + a_1\log(Y/Y^*) + a_2v3q2004 + a_3v1q2005 + a_4v1q2007 + a_5v0810 \quad (13)$$

Dependent variable	Independent variables					
$\log (U_t/U_t^*)$	constant	$\log(Y_t/Y_t^*)$	v3q2004	v1q2005	v1q2007	v0810
Estimate	0.0333	-1.4721	-0.1014	-0.0802	0.0609	-0.0871
t-statistics	5.2821	-6.3703	-3.6296	-2.8279	2.1751	-6.8153
Probability (p)	0.0000	0.0000	0.0013	0.0093	0.0397	0.0000
Other statistical properties	R^2=0.76; F=15.3145 (p=0.000); DW=1.86; JB=0.056 (p=0.972)					

Estimated equation explained about 76% of the total deviations in unemployment from its long-term trend. The whole regression, as well as relevant individual explanatory variables, is statistically significant (as indicated by the probability associated with t and F statistics). In the model there is no residual autocorrelation. Normal distribution of residuals is not reached despite the introduction of dummy variables, which correspond to changes in conditions to get the status of unemployed person.

Estimations show that the elasticity of unemployment gap in relation to the HP output gap is -1.47, which means that with reduction of GDP in relation to the potential (trend) level by 1%, *ceteris paribus*, there is a rise in unemployment by 1.47%, in relation to its potential level.

Estimation of coefficient of sensitivity of the fiscal balance to output gap in Serbia

Sensitivity of fiscal balance in relation to the output gap depends on the elasticity of total tax revenues and current primary public expenditures in relation to the output gap and the relative size of the mentioned variables in relation to GDP.

The total elasticity of tax revenue in relation to the output gap is equal to the weighted average elasticity of individual taxes, with the weights (the share of individual forms of taxes in total tax revenues – T_i/T) calculated on the basis of data for the period from 2006 to 2010. Starting from the estimated values of budget elasticities, the total elasticity of tax revenue compared to the HP output gap is 0.92.

The total elasticity of current primary expenditure in relation to the output gap is equal to the product elasticity of unemployment gap in relation to the output gap and the share of expenditure on unemployment benefits in primary current public expenditures. Starting from the estimated elasticity of the unemployment gap in relation to the output gap in Serbia and the share of expenditures for unemployment in primary current expenditures in the period 2006 to 2010 it was estimated that the total elasticity of primary current expenditure in relation to output gap is -0.03. Obtained estimations of budgetary elasticities for Serbia, based on output gap are within the range (usually around the middle) of budget elasticities for other European countries [5].

Coefficient of sensitivity of the fiscal balance as the difference between the coefficient of sensitivity of public revenue (η_T) and the coefficient of sensitivity of current primary expenditure (η_G) can be determined by starting from the total elasticity of tax revenues and current primary public expenditures in relation to the output gap.

Estimated coefficient of sensitivity of fiscal balance in relation to the output gap in Serbia is 0.34. This means that the reduction of GDP in relation to the potential (trend) level by 1%, *ceteris paribus*, results in increase in fiscal deficit by 0.34%.

Comparative data show that the coefficient of sensitivity of fiscal balances in Serbia is lower than the average of OECD countries. At the same time, it is comparable to the values for the countries in the region (such as the Slovak Republic). This is partly due to low sensitivity of tax revenues, but mainly to the low sensitivity of current primary expenditures. The coefficient of sensitivity of tax revenues in Serbia is only slightly lower than the average for OECD countries and EU-10, primarily due to a smaller degree of progressivity of personal income tax and smaller relative amount of this tax (as % GDP) compared to these countries. On the other hand, the coefficient of sensitivity of primary current public expenditures in Serbia is much lower than the average for OECD countries and EU-10, because of the relatively small amount of expenditures on unemployment benefits in Serbia, but also due to a lower elasticity of the unemployment gap in relation to the output gap (starting from 2001 unemployment rate is rising although GDP is growing, because of the excessive employment inherited from the previous decades).

Estimation of cyclically-adjusted fiscal balance in Serbia

Starting from the estimated coefficients of sensitivity of fiscal balance and procedures for estimation of cyclically-adjusted fiscal balance (CAB), described in the first part of this paper, the cyclically-adjusted fiscal balance for Serbia has been estimated (see Figure 2).

Figure 2: Actual and cyclically-adjusted fiscal balance in Serbia
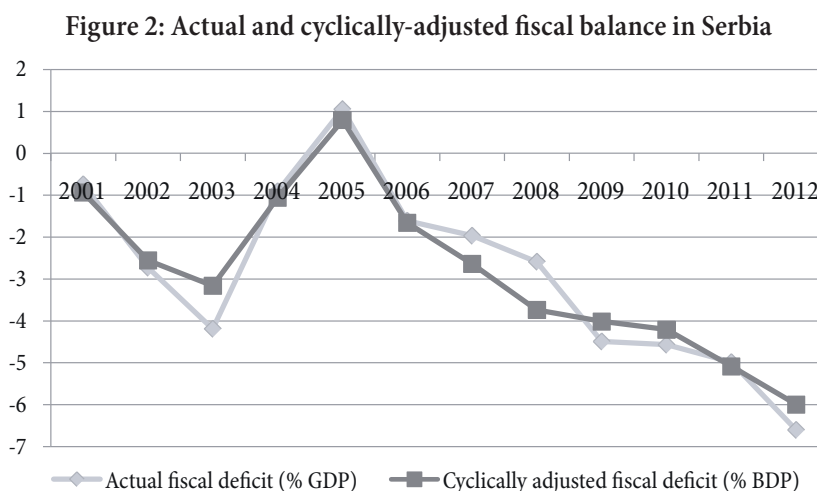
Source: Authors' calculations

By comparing the actual and cyclically-adjusted deficit it can be concluded that the cyclically-adjusted deficit was relatively close to the real deficit, which means that the actual deficit was dominantly influenced by systemic factors, related to tax policy and spending policy and long-term macroeconomic trends, rather than cyclical fluctuations in GDP. However, in the period 2007-2008 cyclically-adjusted deficit is significantly larger than the actual deficit, suggesting that in this period, economic activity remained above the equilibrium level. Although the absorption gap is not included in this model, its effects are partially "captured" by the high revenues from taxes on consumption during absorption boom. In period of crisis, cyclically-adjusted deficit is smaller than the actual deficit, which is consistent with the expectation that crisis increases the fiscal deficit above the systematic level. It is similar in 2003, when economic activity was slowing below potential level, combined with a one-off increase in spending in the pre-election period, which made actual current deficit larger than the cyclically-adjusted fiscal deficit.

It is interesting to compare the actual and cyclically-adjusted fiscal deficit in Serbia and the new EU member states (EU-10) in pre-crisis year 2008 and 2012 – the fourth year of the crisis (see Table 1). Average actual fiscal deficit in the EU-10 in 2008 amounted to 2.8% of GDP and it was approximately equal to the actual fiscal deficit in Serbia. The average cyclically-adjusted deficit in the EU-10 in 2008 was 5.8% of GDP, which means that it was higher than

the actual fiscal deficit by 3 pp. The difference between the actual and the cyclically-adjusted deficit in 2008 in Serbia is much lower and amounted 1.1 pp of GDP, which indicates that in Serbia the other factors, besides output gap, have had significant impact on the fiscal deficit – the main candidate for this is the absorption gap. In 2012 the average cyclically-adjusted deficit in EU-10 was reduced to 2.2% of GDP, while in Serbia it was increased to 6% of GDP. The differences between actual and cyclically-adjusted deficit in the new EU member states and Serbia have been significantly reduced in 2012 comparing to 2008. The most likely reason for this is the reduction of deviation in the absorption gap in Serbia from the absorption gap in the new EU member states.[5] From the above-mentioned, it can be concluded that the evaluation of the fiscal position of Serbia during the former decade has to take into account not only cyclical fluctuations of GDP but also cyclical fluctuations in absorption.

Empirical estimation of the structural fiscal balance in Serbia

As previously mentioned, structural fiscal deficit reflects relatively permanent imbalance between taxes and public expenditures, which was primarily the result of fiscal policy, and long-term trends in the economy and society, such as

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5   Non-weighted average of absorption gap in EU-10 in 2008 amounted to 10% of GDP (in Serbia 22% of GDP), while in 2012 it amounted to approximately 2% of GDP in EU-10 (and 9% of GDP in Serbia).

Table 1: Actual (B) and cyclically-adjusted fiscal balance (CAB) in Serbia and EU-10, % of GDP

	2008		2012	
	B	CAB	B	CAB
Serbia	-2.6	-3.7	-6.6	-6.0
Bulgaria	1.7	-1.9	-1.5	-0.7
Czech Republic	-2.2	-4.9	-3.5	-2.8
Estonia	-2.9	-5.3	-1.1	-0.4
Latvia	-4.2	-8.1	-1.7	-0.5
Lithuania	-3.3	-6.8	-3.2	-2.1
Hungary	-3.7	-5.6	-2.5	-1.5
Poland	-3.7	-4.9	-3.4	-3.7
Romania	-5.7	-9.3	-2.8	-2
Slovenia	-1.9	-5.9	-4.4	-3.6
Slovak Republic	-2.1	-4.9	-4.9	-4.8
Non-weighted average*	-2.8	-5.8	-2.9	-2.2
* excluding Serbia				

Source: For EU member states the European Commission, for Serbia authors' calculations

changing the structure of aggregate demand and ageing of the population. To assess the structural fiscal deficit it is necessary to exclude the impact of cyclical fluctuations of GDP, cyclical fluctuations in other macroeconomic variables that significantly affect public revenues and expenditures, as well as the impact of irregular – one-off and temporary factors.

Cyclical fluctuations in the current account balance around the sustainable level are significantly affecting the public revenues, and thus the fiscal deficit in many countries, including Serbia. Therefore, in the process of estimating the structural fiscal deficit, the impact of not only the output gap but also the absorption gap and the effects of one-off and temporary factors should be excluded. When GDP and current account deficit are at the equilibrium level, then the output and absorption gaps are zero, the structural fiscal deficit being equal to the actual fiscal deficit, provided that there are no effects of one-off and temporary factors.

As stated in equation (6), the structural deficit reflects both gaps – the output and absorption. In the previous analysis it was estimated that the coefficient of sensitivity of the fiscal balance in relation to the output gap (η) is 0.32, i.e. 0.34 – average 0.33. The parameters β and γ represent the share of direct and indirect taxes in GDP, and their sum equals the coefficient of sensitivity of the fiscal balance ($\beta+\gamma=\eta$). Starting from the results we have already obtained, the structural fiscal balance in Serbia can be described by the following equation:

$$caab_t = b_t - 0{,}17ygap_t - 0{,}17ab_t \qquad (14)$$

where b_t is the real fiscal deficit, $ygap_t$ – ratio of actual and potential GDP, and ab_t – absorption gap (as share in potential GDP). The output gap that was used in calculating the structural deficit represents the average of the estimated output gap based on HP filter output gap approach.

The main problem with estimation of structural fiscal deficit refers to the estimation of the sustainable current account balance, necessary to assess the absorption gap. Sustainable (equilibrium) current account balance is defined as a balance that stabilizes the relation of foreign debt (F) or net of foreign assets (NFA) to GDP, on the level at which the probability of balance of payment crisis or foreign exchange crisis is low. For Serbia, it is now more relevant to estimate sustainable current account deficit

based on the sustainable level of foreign debt, rather than NFA. Sustainable current account deficit, similar to the natural or potential level of GDP is not directly measurable, and it is estimated by the different methods which produce different results. Some methods of assessment of sustainable current account deficit are: *i)* estimating *Hodrick-Prescott* (HP) trend in current account balance, *ii)* assessment of CA* by means of econometric methods, based on economic fundamentals, *iii)* calculating the CA* to stabilize the relation of foreign debt and net foreign assets to GDP at the particular, predetermined level.

Due to the fact that the current account balance was not at the sustainable level in Serbia in the period from 2001 to 2012, we have used the method of estimation of sustainable current account deficit which stabilizes the ratio of foreign debt to GDP.[6] Deficit of primary current balance (cap_t) which stabilizes share of foreign debt ($\Delta f_{t+1}=0$) at a predetermined level (% GDP) is a function of: world real interest rate (r_t^*), real exchange rate changes ($\acute{z}_t$), GDP growth rate (g_t), the rate of world inflation (π_t)[7], the net inflow of foreign capital besides borrowing (k_t) which is approximately equal to the inflow of foreign direct and portfolio investments, and other irregular factors – debt relief, errors and omissions and others [9]:[8]

$$cap_t = \left(\frac{r_t^* + \acute{z}_t - g_{t-\pi t}}{(1+g_t)(1-\acute{z}_t)(1+\pi_t)} \right) f_t - k_t + \Delta rez_{t+1} + o_t \quad (15)$$

Assuming that there are no direct foreign investment and that the share of foreign exchange reserves to GDP ($k_t = \Delta rezy_{t+1} = 0$) is unchanged, the previous equation implies that the ratio of foreign debt to GDP is constant

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6   In case of Serbia, current account fundamentals were out of equilibrium in the last decade: dinar was overvalued, real wages have grown faster than productivity, inflow of capital was high due to one-off inflows related to large privatizations, while the fiscal deficit was also high. For more details on the estimation of sustainable current account deficit by means of HP filter and econometric models, see [2].

7   The world inflation rate is not usually included in the formula, but its inclusion seems to be justified, since in that manner the world inflation is extracted from the real exchange rate. This is important because the foreign debt to GDP ratio in Serbia depends on the relation between domestic inflation and the exchange rate, but not on world inflation.

8   In comparison to the original formula, two major corrections are performed in this paper: *i)* the sign before the real exchange rate is changed (in order to enable presenting the real exchange rate in accordance with continental tradition which implies that the increase in the real exchange rate reflects real depreciation, while its decline reflects appreciation), *ii)* the element which allows the change in foreign exchange reserves (as % of GDP) is added.

if the primary surplus in the current balance equal to the cost of servicing the interest, adjusted for capital gains / losses from changes in real exchange rate and GDP growth (the first member of the equation on the right), is achieved. However, if there is a significant inflow of foreign capital $k_t \gg 0$, then a constant relation of foreign debt to GDP can be achieved with a deficit in the current balance of payments. In this case, a condition for stability of ratio of foreign debt to GDP is that foreign capital inflow is equal to the sum of the primary current balance and the first member of equation on the right. Another important regularity – if the real interest rate are equal to the rate of growth of GDP, and there is no change in real exchange rate or foreign exchange reserves, then the ratio of foreign debt to GDP will be constant, provided that the deficit in primary current balance is equal to the inflow of foreign capital ($cap_t = k_t$).

Although there is no common theoretical framework for determining the optimal ratio of foreign debt to GDP, there are empirical regularities according to which the probability of balance of payments crisis increases with the growth of the foreign debt to GDP ratio. Based on empirical regularities, the World Bank has established the critical threshold of foreign debt at the level of 80% of GDP, which is approximately equal to the actual ratio of foreign debt to GDP in Serbia, during the past few years. However, as the critical level of foreign debt in Serbia is influenced by other factors, starting from equation (10) three current account scenarios have been developed, depending on the level at which foreign debt should be stabilized: *i)* the foreign debt equal to 80% of GDP, corresponding to the current situation, which is probably not sustainable in the long run, *ii)* the foreign debt equal to 60% of GDP, which corresponds to the situation to which Serbia should strive in the next 5-10 years, *iii)* the foreign debt equal to 64% of GDP, which could represent sustainable level in the long run.

In calculation of the current account deficit that stabilizes foreign debt at of each of these levels, three alternative sets of simulations have been performed, in which mutually consistent values of relevant economic parameters have been employed. These are: GDP growth rate, real interest rates, changes in relation of exchange rate and domestic prices, the share of foreign direct investment in GDP, changes in relation of foreign exchange reserves to GDP and others. The mutual consistency of economic variables in each of the three scenarios is taken into account my making joint simulations of movement in some macroeconomic variables: faster GDP growth coincides with the growing inflow of foreign investment, appreciation of real exchange rate, lower interest rates. By contrast with that, the slower growth of GDP is consistent with a smaller inflow of foreign investment, domestic currency depreciation, and higher real interest rates. Therefore, it is not necessary to simulate all possible mathematical combinations of variables that affect the variation of current account deficit, but only those whose realization is economically the most probable.

Based on the results presented in Table 2, it can be observed that the current account deficit that stabilizes foreign debt to GDP ratio varies in relatively wide interval from 3 to 11% of GDP. One of the observed expected regularities is that as the target foreign debt to GDP ratio is lower the sustainable deficit of current account balance is lower (compare the last column in Table 2). It can also be concluded that regardless of the level at which the foreign debt to GDP ratio is stabilized, faster GDP growth, higher foreign direct investments, real appreciation of dinar and lower real interest rates increase the sustainable/equilibrium level of current account deficit.

Starting from the realistic scenarios of movements in fundamentals, it is estimated that sustainable value of the current account deficit in Serbia in the future is between 3% and 6% of GDP[9]. Even if GDP growth and inflows of foreign direct investments are high, the sustainable current account deficit will be lower, since it is necessary to reduce the foreign debt to GDP ratio gradually from the current level of about 80% of GDP to 40-60% of GDP. These estimates of sustainable current account deficit are conditional and they correspond to "normal" conditions in the capital market, which means that in case of prolonged crisis in Europe sustainable current account deficit would be significantly lower.

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9 Due to an extended crisis in the EU and rise in foreign debt-to-GDP ratio in Serbia, estimation of sustainable current account deficit is corrected compared to the analysis disclosed in [2].

Table 2: Estimation of sustainable current account deficit, which stabilizes foreign debt to GDP ratio in Serbia

A) Stablization of foreign debt at 40% of GDP

	r*	ź	g	π*	f	k=fdi	Δrez	other *=o	Primary CA*	Interest	Total CA* (% GDP)
Option 1	0.030	0.00	0.02	0.02	0.40	0.02	0.01	0.00	-0.01	0.012	-0.03
Option 2	0.025	-0.01	0.04	0.02	0.40	0.04	0.01	0.00	-0.05	0.010	-0.06
Option 3	0.020	-0.02	0.05	0.02	0.40	0.05	0.01	0.00	-0.07	0.008	-0.07
Average	0.025	-0.01	0.04	0.02	0.40	0.04	0.01	0.00	-0.04	0.010	-0.05

B) Stablization of foreign debt at 60% of GDP

	r*	ź	g	π*	f	k=fdi	Δrez	other *=o	Primary CA*	Interest	Total CA* (% GDP)
Option 1	0.035	0.00	0.02	0.02	0.60	0.02	0.01	0.00	-0.01	0.021	-0.03
Option 2	0.030	-0.01	0.04	0.02	0.60	0.04	0.01	0.00	-0.05	0.018	-0.07
Option 3	0.025	-0.02	0.05	0.02	0.60	0.05	0.01	0.00	-0.08	0.015	-0.09
Average	0.030	-0.01	0.04	0.02	0.60	0.04	0.01	0.00	-0.05	0.018	-0.06

C) Stablization of foreign debt at 80% of GDP

	r*	ź	g	π*	f	k=fdi	Δrez	other *=o	Primary CA*	Interest	Total CA* (% GDP)
Option 1	0.040	0.00	0.02	0.02	0.80	0.02	0.01	0.00	-0.01	0.032	-0.04
Option 2	0.035	-0.01	0.04	0.02	0.80	0.04	0.01	0.00	-0.06	0.028	-0.08
Option 3	0.030	-0.02	0.05	0.02	0.80	0.05	0.01	0.00	-0.08	0.024	-0.11
Average	0.035	-0.01	0.04	0.02	0.80	0.04	0.01	0.00	-0.05	0.028	-0.08

Source: Authors' calculations

The absorption gap in the period 2002-2012 was calculated as the difference between the actual current account deficit and the estimated sustainable current account deficit of 6% of GDP[10]. By definition, the average absorption gap in the analysed period is the difference between the actual average current account deficit (11% of GDP) and the estimated sustainable current account deficit. Therefore, the sustainable current account deficit of 6% GDP corresponds to the average absorption gap of 5% of GDP.

Starting from equation (10), a sustainable current account deficit of 6% of GDP, and the corresponding values of the absorption gap[11] and the estimated output gap, the structural fiscal balance in Serbia can be computed (Figure 3).

Based on the estimated amount of output and absorption gaps, following the equation (14), structural fiscal deficit has been estimated. The estimates are compared with an average cyclically-adjusted fiscal deficit (CAB). The structural fiscal surplus was achieved only in 2005, while in other years a structural fiscal deficit was generated. The structural deficit (CAAB) has increased slightly in 2003, while in the period 2006-2008 it has increased substantially. In period of crises from 2009-2010 structural fiscal deficit decreases, but in 2011 and 2012 it increases again.

One of the interesting features is that the estimation of cyclically-adjusted and structural fiscal balance are close in the period 2002-2006, the difference increasing significantly in the period 2006-2008, and then decreasing during the period 2009-2010 and increasing starting from 2012. The greatest differences between cyclically-adjusted and structural deficit estimated by the two methods were in 2007 and 2008. We are reminding that the current account deficit in 2007 was about 17% of GDP and in 2008 up to 22% of GDP, which is considerably above a sustainable level. The structural fiscal deficit in Serbia, on average, deviates from the actual fiscal deficit more than is the case with cyclically-adjusted fiscal deficit. Based on the aforementioned, it follows that in case of Serbia it is necessary to take into account absorption gap when estimating the structural fiscal deficit. The structural deficit, which includes the absorption gap, is on average higher than the cyclically-adjusted deficit, which includes only the output gap.

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10 Note that in the past sustainable current account deficit was larger than it will be in the future, since in the past foreign debt was lower, the revenues from privatization were generated, etc.

11 For alternative estimations of absorption gap and respective structural deficits see [2].

Figure 3: Actual, cyclically-adjusted and structural fiscal deficit in Serbia, % of GDP
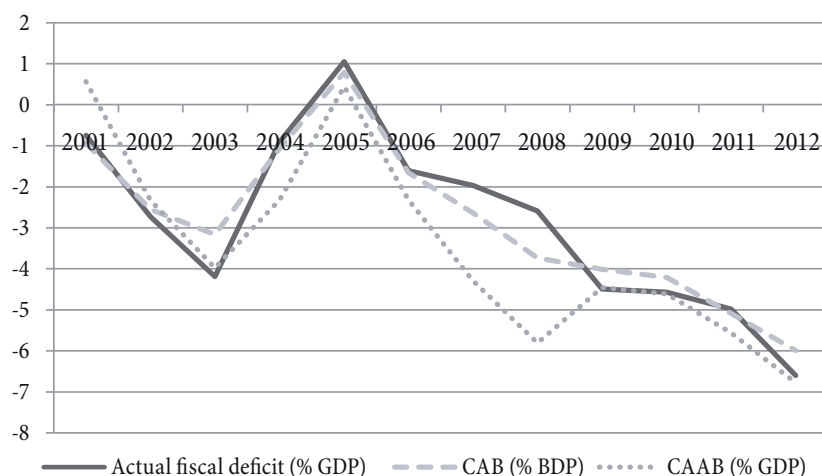
Source: Authors' calculations

Analysis of the contribution of individual factors to the structural fiscal deficit in Serbia

The formation of structural fiscal deficit in Serbia (see Table 3) in a relatively short period (2006-2008) occurred under the dominant influence of discretionary economic policy measures, or measures related to reduction in taxes and increase (more or less permanent) in public expenditure. Nominal freeze of public wages and pensions during 2009-2010, when inflation was relatively high, contributed to reduction in the structural fiscal deficit significantly. Fiscal decentralization program, consisting of transfer of 40% of wage tax revenues from central to local governments, contributed to considerable increase of structural deficit in 2011-2012. Influence of long-term trends on forming

the structural fiscal deficit also existed, but it was smaller, given the short period of time.

The formation of structural fiscal deficit in the period from 2006 to 2008 was partially masked by high tax revenues in the period of economic expansion and absorption boom. The start of formation of the structural fiscal deficit coincides with the ending of arrangement with the IMF, and generating high revenues from privatization and a series of parliamentary and presidential elections. In the last quarter of 2012 the Government of Serbia has started with implementation of fiscal consolidation measures (mostly based on increase in taxes), which are expected to reduce slightly structural fiscal deficit in 2013. However, in order to achieve significant cut in fiscal deficit, it would be necessary to implement additional measures, mostly through expenditure cuts, in 2013 and 2014.

Table 3: Contribution of particular measure and trends to the structural fiscal balance in Serbia

Year	Cause	Effect on structural fiscal deficit (% GDP)
2006	1) Increase in wages in pubblic sector, and agreed increase in 2007	≈ 0.7
2007	2) Reduction in wage tax and introduction of non-taxable threshold	≈ 1
2007	3) Transfer of some goods from standard to reduced VAT rate	≈ 0.7
2008	4) Extraordinary increase in public wages by 22%	≈ 2.5
2008 - ...	5) Reduction in customs rates on import of goods from the EU	≈ 1.5
2011	6) Redistribution of the part of wage tax revenues to local level	≈ 0.7
2009-2010	7) Freezing wages and pensions	≈ -2.5 do -3
2009-...	8) Increase in excise duties, etc.	≈ -0.5 do -1
2011-2012	9) Transfer of 40% of wage tax revenues to local governments	≈ 1
	10) Total effects of discretionary measures (1)+...+(9)	≈ 4,5 - 5
	11) Macroeconomic and demographic trends (rebalancing of the economy)	**≈ 1**
	TOTAL (10)+(11)	**≈ 5.5 - 6**

Source: Authors' calculations

Conclusion

Economic theory and practice in developed countries suggest the need to estimate the fiscal position of the country, and to run fiscal policy based on the structural fiscal balance, which indicates a systemic (im)balance between taxation and public expenditure policies. The actual fiscal balance, which is affected by the height of taxes and public expenditures, but also by cyclical movements in the economy, and various special, one-off events, may at certain times provide distorted picture of the country's fiscal position and encourage fiscal policy makers to adopt measures which are unsustainable in the long run. Therefore, the new fiscal pact in the European Union has been introduced, imposing the limit to the level of structural fiscal deficit, while keeping the existing limit for the actual fiscal deficit.

In the period before the 2008 crisis, Serbia was running modest fiscal deficit, due to higher revenues in the period of economic expansion and absorption boom. High tax revenues have created the illusion that there is a fiscal space for reducing tax rates and a permanent increasing of public expenditure. In the period from 2006 to 2008 the adopted measures that have resulted in increasing the structural fiscal deficit due to strong economic growth and even stronger growth of absorption, have not been reflected in the substantial growth in actual (measured) fiscal deficit. In the pre-crisis year actual fiscal deficit in Serbia amounted less than 3% of GDP while the structural fiscal deficit amounted to 5-6% of GDP. Increase in the structural fiscal deficit coincides with economic expansion, absorption boom, but also with the parliamentary elections in Serbia. The fiscal deficit was increased not only before the elections in order to gain votes, but also after the elections, to fulfil at least some of the pre-election promises. From the above it follows that the introduction of fiscal rules was justified for the realization of a sustainable fiscal policy in Serbia. At the same time, it is necessary to correct applicable rules in order to make their application compulsory.

After the beginning of the economic crisis there was a fall in economic activity and reduction in absorption gap, which directly caused the substantial increase in actual fiscal deficit in the period 2009-2010, despite the relatively harsh austerity measures, such as freezing public wages and pensions, reducing transfers to local governments and temporarily increase in some taxes. Starting from 2011, structural fiscal deficit rises again, mostly due to transfer of 40% of wage tax revenues to local self-governments.

High fiscal deficit during the crises triggered increase in the public debt by over 30% of GDP, in the period from the end of 2008 by the middle of 2012, reaching the level of 60% of GDP. For the country at low level of economic development and credit rating, this is the zone of high risk of sovereign debt crisis. To prevent such scenario, it is necessary to make reduction of the fiscal deficit by 4-5% of GDP in a relatively short period of time. In Q4 2012 the Government of Serbia started with implementation of fiscal consolidation program, which was mostly relying on increase in taxes and to lesser extent on cut in expenditures. These consolidation measures are expected to reduce structural fiscal deficit by 2% of GDP in 2013. However, in order to reach the target (structural deficit lower than 1% of GDP in 2015), it is necessary to implement additional measures, which should mostly consist of cut in expenditures, because further increase in taxes could have adverse effects on competitiveness of the Serbian economy. To determine how the reduction is possible and desirable, it is necessary to analyse the nature of the fiscal deficit in Serbia and the causes of its occurrence.

The results show that the most of the fiscal deficit in Serbia is of structural nature, and as such is stable and is present in almost all years of the analysed period, except in 2005, which is consistent with the systematic nature of this deficit. This means that the fiscal deficit in Serbia will not be automatically, spontaneously eliminated with the economic recovery, but large discretionary measures are necessary to reduce expenses and increase taxes to a lesser extent. Since the structural fiscal deficit reflects the impact of long-term macroeconomic trends, such as a rebalancing of the economy and ageing of the population, it is necessary to adopt economic policy measures timely, in order to prevent their influence on the growth of fiscal deficit. Rebalancing of the economy from consumption to investment and export-led growth will reduce taxes, while ageing of the population will affect the increase in expenditures for pensions, health and social care. This means that both trends (rebalancing of

the economy and ageing population) will lead to increase in the structural fiscal deficit in the following period. Therefore, timely reform of the pension system and the reforms of other segments of public consumption, as well as the tax reform are needed to neutralize the impact of long-term trends on the structural fiscal deficit in Serbia.

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