Estimation and Analysis of the Structural Budget Deficit in Romania

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Abstract

Specialized analysts put a special emphasis on the significant role that fiscal policy lies within macroeconomic policies. Analytical assumption from which I started is that the room for maneuver available to operate fiscal policy as a macroeconomic stabilizer vector turns out to be limited by the threshold of budget deficit. Experts reiterates that, in recent decades, the budget deficit has become a feature of national economies, observing a worrying increase of this indicator. The point on which I intend to reflect in this paper is that the budget deficit taken itself, is not a sufficient and relevant indicator for assessing the sustainability of fiscal policy. It is increasingly clear that a way of separating the effects determined by the changes in discretionary economic policy from the effects of the business cycle is to determine the structural budget deficit. The importance of this indicator is derived from the fact that allows to obtain a clean view on the tax situation of an economy, undistorted by the influence of the economic cycle.

Keywords: Fiscal Policy, Cyclical Adjustment, Structural Budget Balance, Output Gap

Introduction

One way of assessing the fiscal management performance and how fiscal policy performs its role of macroeconomic stabilization involves the determination of structural and cyclical budget deficit for the Romanian economy.

Cyclically adjusted balance is an indicator through which one can analyze government budget imbalances without influence induced by fluctuation cycles. This indicator is commonly used in research on the sustainability of fiscal and budgetary policies, but also in research aiming episodes of fiscal adjustment taken in various countries.

It is interesting to note that the concept of structural deficit is not new, curiosity for this concept dates back to 1950. Brown (1956) was among the first economists who calculated the excess full employment surplus, the predecessor of the structural budget deficit, which measures the budget balance if the economy is operating at the level of full employment. Thanks to advances in statistics and computing technology, in 1970 a wide range of methods have been introduced to extract the temporary and permanent components from macroeconomic variables.

What is the structural budget deficit? Consolidated budget deficit consists of two components: a cyclical component (influenced by the evolution of the economic cycle - expansion or recession) and a structural component. Structural budget deficit represents the permanent component of budget deficit and reflects the level of budget balance would be if the economy of a country should follow the normal trajectory of growth (GDP is equal to its potential) and operates at full employment of labor, ie the unemployment rate is between 5-6% according to Dornbusch and Fischer (1990) and inflation is stable.

It can be concluded that the structural balance has the following practical application: it is used to assess fiscal sustainability; it is used to quantify the fiscal impulse (annual change in the structural budget deficit has become a common measure of discretionary fiscal policy impact on the budget and on aggregate demand) and, not least, it is a normative indicator.

Methodology used for determining the structural budget deficit

The concrete determination of structural budget deficit is still a difficult operation because it was not chosen a generally accepted methodology. Although there are many methodologies for determining this indicator, all aimed essentially three steps proposed by Hegemann (1999) :

(1) determine the gap between actual GDP and potential GDP achieved (called output gap);

(2) quantify the cyclical component of the budget aggregates (revenues and expenses) based on the output gap and estimate their elasticity depending on GDP;

(3) determine the structural component by removing the cyclical component from the current levels of budget aggregates.

Since potential output is not an observable variable (can not be directly analyzed from statistical data) to determine its level is one of the main difficulties in estimating the structural deficit.

The Estimation of potential GDP and the output gap

The concept of potential GDP was wide and varied defined in the literature. Potential GDP is defined as that level of real GDP that can be achieved by an economy without causing inflationary pressures. On medium term, the level of GDP may temporarily deviate from the equilibrium value reached on long-term, potential GDP. The value reached of potential GDP reveal information regarding the production capacity of one country in terms of uninflationary increase. Potential GDP represents that level of GDP what can be achieved when there is "full employment" labor.

In order to determine potential GDP and the output gap for Romania it was used Hodrick-Prescott filter.

Most commonly method of determining potential GDP encountered in specialized studies is the Hodrick-Prescott filter. Although this method was often criticized in the literature, as it involves a simple calculation and the results determined for different countries can be easily compared, HP filter is the most used in empirical research and the study of macroeconomic policies in order to determine the trend component of macroeconomic time series.

Hodrick-Prescott filter determines trend as the minimal solution of the following equation:

$$\underset{y_P^t}{Min} \sum \left[\left(y_t - y_t^p\right)^2 + \lambda \left[\left(y_{t+1}^p - y_t^p\right) - \left(y_t^p - y_{t-1}^p\right) \right]^2 \right]$$, where:

y_t, y_t^p - logarithm of real GDP and logarithm of potential GDP ;

$$\left(y_t - y_t^p\right)^2$$ - sum of the squared deviations of real GDP compared to its trend ;

$$\lambda\left[\left(y_{t+1}^p - y_t^p\right) - \left(y_t^p - y_{t-1}^p\right)\right]^2$$ - function that penalizes variations in growth rate of the trend component.

In order to determine potential GDP was considered parameter λ = 1600, the data used are quarterly. Quarterly data expressed in million real GDP was provided by the National Institute of Statistics. For seasonal adjustment of the data it was used the function Tramo / Seats Eviews program.

In Figure 1 is shown the real GDP series (million average prices of year 2000) and real GDP seasonally adjusted. Figure 2 shows the potential GDP calculated using the Hodrick-Prescott filter.

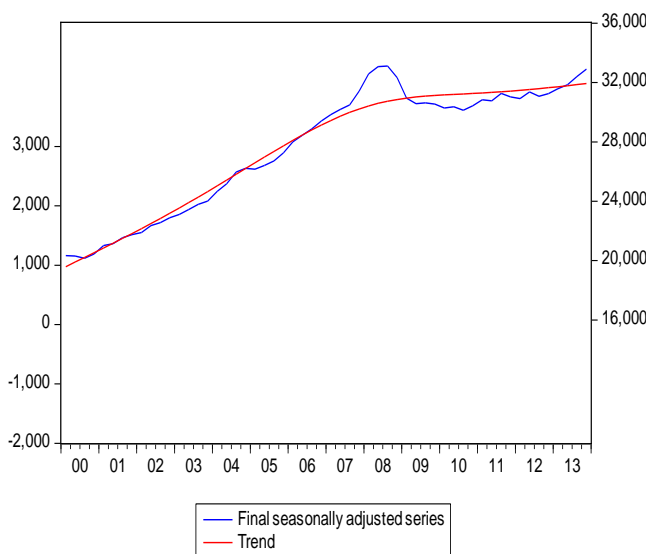**Figure 1: Real GDP and real GDP seasonally adjusted**   **Figure 2: Potential GDP**
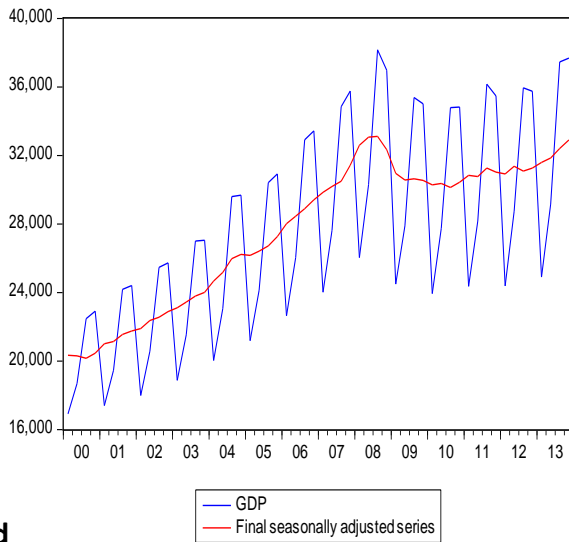
determined   **using   HP   filter**

Source: own processing using Eviews

We define the output gap as the percentage difference between actual real GDP and potential GDP. Output gap is a synthetic aggregate indicator of inflationary pressures in the economy. Output gap was estimated using the Hodrick-Prescott filter, in the table below being highlighted the output gap values obtained:

Table 1:
Estimated output gap for Romania using Hodrick-Prescott filter

Year	Output gap (%)
2000	-3,22
2001	-0,60
2002	-0,48
2003	-0,97
2004	1,34
2005	-1,09
2006	2,37
2007	2,21
2008	6,20
2009	-2,95
2010	-3,46
2011	3.95
2012	-3.30
2013	-2.60
2014*	-2.80
2015*	-2.30

Source: own processing

Output gap indicates the cyclical position of a country: a negative "gap" shows an underperforming economy, operating below its potential; a positive "gap" suggests that the economy produces above its potential and is the result of excess aggregate demand, which might induce inflationary pressures.

The correct determination of this indicator is very important, a value of the output gap more negative than its true value involves inappropriate economic policies.

Estimating the cyclical and structural budgetary deficit

Determining structural component involved identifying the cyclical budget component. Estimating the cyclical component includes using the elasticity of budgetary revenuee (have been taken into account following categories of revenue: direct taxes, indirect taxes, social security contributions) and the elasticity of budgetary expenditure (were considered only the expenses involving transfers to the unemployed, they are considered to be sensitive to the fluctuation of production) in relation to GDP. Based on these two elasticities was determined the sensitivity of the budget deficit. The sensitivity of budgetray deficit related to the cyclical evolution of the economy is actually the change in percentage points of the budget balance to changes by one percentage point of the output gap.

To obtain the structural component of the budget, the cyclical component should be reduced from actual budget balance, using the following formula:

$$CAB_t = B_t - B_t^C = B_t - \sum_j B_t^C j \, ,$$

where : CAB_t = structural component of the budget (cyclically adjusted component);
B_t = actual budgetary balance;
B_t^C = cyclical budgetary components by categories of expenditure and revenue.

Cyclical budgetary component is calculated as the product between the sensitivity of the budget (determined taking into account the revenue and expenditure elasticities) and the output gap estimate. It is defined using the following formula:

$$B_t^C j = B_{t\,j} \, x \, \alpha_j^{PIB} \, x \, output \, gap_t$$

The table below shows the results for cyclical budget balance between 2006 - 2015 in Romania.

Table 2 :
Cyclical deficit in Romania

Year	Cyclical component
2000	-3,1
2001	-1,8
2002	-0,3
2003	0,1
2004	1,3
2005	1,1
2006	1,9
2007	2,1
2008	2,8
2009	0,1
2010	-0,8
2011	-0,6
2012	-1,0
2013	-0,5
2014*	-0,4
2015*	-0,3

*Source: own processing   (*- estimated data)*

For determining structural budget deficit is subtracted the cyclical component of current budgetary component. I estimated structural budget deficit for Romanian economy as this indicator is considered to be one of the most distinctive in assessing fiscal management performance in Romania and the extent to which fiscal policy is suitable to act as a single leverage able to stabilize the Romanian economy.

Using the calculations above, the structural budget deficit for Romania during 2006 - 2015 is shown in the following table:

Table 3 :
Estimated Structural Budget Deficit for Romania

Year	Current budget balance	Cyclical component	Structural budgetary deficit
2000	-4,7	-3,1	-1,6
2001	-3,5	-1,8	-1,7
2002	-2,0	-0,3	-1,7
2003	-1,5	0,1	-1,6
2004	-1,2	1,3	-2,6
2005	-1,2	1,1	-2,3
2006	-2,2	1,9	-4,1
2007	-2,9	2,1	-5,0
2008	-5,7	2,8	-8,5
2009	-9,0	0,1	-9,1
2010	-6,8	-0,8	-6,0
2011	-5,5	-0,6	-5,0
2012	-3,0	-1,0	-1,9
2013	-2,3	-0,5	-1,7
2014*	-2,2	-0,4	-1,8
2015*	-1,9	-0,3	-1,7

Source: own processing   *(*- estimated data)*

Outcomes point out some interesting things. In 2007 and 2008 the current budget deficits were 2.9% of GDP and respectively, -5.7% of GDP. Eliminating the influence of the economic cycle, it can be observed that budget deficit was actually -5.0% of GDP and 8.5% of GDP for the two years.

How did these values of the budget deficit became so high? In period of expansion, automatically has occurred an increase is revenues, and thus was recorded a significant increase of "unnecessary" expenses, such as goods and services, subsidies and administration expenses, to the detriment of accumulation of financial resources for the following recession periods. Since the consolidated deficit is defined as the sum of cyclical and structural component, cyclical component being strongly positive, it was able to camouflage the growing structural deficit.

During the economic upswing fiscal, policy adopted was a procyclical one, leading to depletion of necessary fiscal space to stimulate the economy during the recession that followed. During the crisis, reducing the structural budget deficit led inevitably to preserve the procyclicality of fiscal policy. In this way, automatic action, favorable and stabilizing of cyclical budget deficit through automatic stabilizers has been canceled by the procyclical discretionary policy.

To ensure the sustainability of fiscal policy was necessary to implement decisive action which led to the reduction of the structural budget deficit from 9.1% of GDP in 2009 to 5,0% of GDP in 2011. Helping targeted the side spending, reforms were adopted in the wage budgetary personnel and the public pension system.

The report of Fiscal Treaty recalls the Romanian success of diminishing the structural budget deficits in recent years. Compared with EU countries, Romania had one of the best fiscal adjustment programs, managing to achieve a reduction of 1.8% per year in terms of structural deficit.

Conclusions

Analysis of the structural budget deficit has allowed the observation that the Romanian economy is contrary to macroeconomic theory postulates. When the economy produced under potential, was switched to fiscal adjustment, and when it produced over potentially, it contribute to overheating.

In this period of overheatingon, on background of an increase animated by lax lending policies of banks and consumer appetite on debt, state budget recorded additional income, but on a temporary basis. During 2006-2009, the structural deficit escalated, considering that during 2000 - 2005 values recorded ranged around -2% of GDP.

In 2009, the structural deficit reached -9.1% of GDP, a negative record achieved in the last 17 years and with an increased impact on the budget. Debts from previous years have been felt on debut of the severe economic recession, contributing to high structural budget deficits.

Starting 2010, programs of adjustment and balancing of public finances are reflected in reversing the trend and in significant decrease of consolidated deficit and structural budget deficit, which reached -1.7% of GDP at the end of 2013. Year 2012 brings a new fiscal rule. Boundedness structural deficit to 0.5% is aimed at cleaning up public finances in Romania. The capacity to decrease the structural budget deficit, this indicator being the source of major macroeconomic imbalances, is considered by International Monetary Fund an appropriate measure for evaluating the health of an economy.

The importance of structural balance for Romania comes from the fact that it is often used: (a) as a landmark in the national economy; b) in order to assess the sustainability of fiscal policy and budgetary c) to assess the effectiveness of fiscal and budgetary policies adopted and promoted by the Romanian authorities c) to determine the effects of fiscal and budgetary policies on the Romanian economy.

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