Box 6

THE STRUCTURAL BALANCE AS AN INDICATOR OF THE UNDERLYING FISCAL POSITION

The government budget balance has fluctuated strongly in recent years. Cyclical economic developments have certainly been an important factor behind these budgetary developments, and discretionary government action – in the form of fiscal stimulus and consolidation measures – has also had a very sizeable impact. In addition, special factors such as those related to the rescue operations for the financial sector were at play. The government deficit for the euro area as a whole still stood at 3% of GDP in 2013, while that for several euro area countries was significantly higher.

For fiscal surveillance, it is important to understand the nature of budgetary developments and to assess the underlying fiscal position. The latter adjusts the overall government balance for the impact of the economic cycle (cyclical component), as well as for temporary measures taken by governments, such as one-off revenues (for example sales of telecommunication licences) or one-off capital transfers (for example financial assistance to the banking sector).

This is typically reflected in the estimate of the structural balance, which can be interpreted as the part of the fiscal position which would prevail if the economy operated at its potential.[1] However, estimates of the structural balance are surrounded by considerable uncertainty with regard to the assessment of the cycle as well as the size and nature of temporary measures. Moreover, there are differences in the methodology used to estimate the structural balance. The ESCB estimate and the projection of the structural government balance for the euro area have been published in the Monthly Bulletin since December 2013 (for the most recent estimates, see Table 2). This box sheds some light on the methodologies used by the ESCB and the European Commission to estimate the structural government balance.

Methodologies used for the cyclical adjustment of the government balance

The ESCB and the European Commission apply different methods for the cyclical adjustment of government balances. They also use different definitions of temporary and one-off measures, but this is less significant. The major methodological difference is that the European Commission[2] derives the cyclical budgetary component directly from the aggregate output gap (the difference between actual GDP and potential output), whereas the ESCB applies a specific fiscal methodology which is not based on the aggregate output gap.

1 For further details, see the box entitled "Cyclical adjustment of the government budget balance", *Monthly Bulletin*, ECB, March 2012.
2 The Commission's cyclical adjustment method is based on previous work by the OECD. A detailed description can be found in Mourre, G., Isbasoiu, G.-M., Paternoster, D. and Salto, M., "The cyclically-adjusted budget balance used in the EU fiscal framework: an update", *European Economy – Economic Papers*, No 478, European Commission, March 2013.

The European Commission's methodology is based on the reaction of government expenditure and revenue to the deviation of aggregate output from its potential. The cyclical component of the budget balance is then calculated as the product of the output gap and a parameter reflecting the automatic reaction of the government balance to the size of the output gap. This parameter, called semi-elasticity, is country-specific and reflects the estimated elasticities of individual budget components with respect to the output gap as well as the size and structure of the public sector. Consequently, in the Commission's approach, the cyclical budget component tends to track the movement of the aggregate output gap closely. Thus, in the absence of temporary measures, the structural government balance is in sync with the unadjusted government balance when the economy is operating at potential.

The ESCB's specific fiscal methodology applies what is known as the "disaggregated approach".[3] The essence of this approach is that cyclical positions are estimated separately for the main macroeconomic tax and expenditure bases which determine the development of individual budget items, namely tax revenues and unemployment benefits; for taxes, mostly national account aggregates and their forecasts are used to approximate the size of the tax bases. For instance, private consumption expenditure is used as the underlying basis for taxes on consumption, and compensation of employees is applied as the basis for personal income taxes. In this way, the ESCB approach accounts for differences between the individual macroeconomic bases with regard to their cyclical development. The cyclical component of each budget item is then calculated on the basis of the deviation of the relevant macroeconomic aggregate from its trend, using a statistical filtering technique known as the Hodrick-Prescott (HP) filter, as well as the (estimated or calibrated) elasticity of the budget item to this aggregate. Adding up the cyclical components of all budget items then yields the overall cyclical component of the budget balance. The result of this calculation is compared with an alternative "aggregate" estimation of the cyclical component based on the deviation of GDP from its trend (also using the HP filter) and aggregate budget sensitivity. The difference between the two is typically referred to as the "composition effect". Expressed as an annual rate of change, this is a measure of the effect on the budget balance-to-GDP ratio caused by changes in the composition of real GDP compared to trend.

The main advantage of the ESCB approach is that it explicitly allows the identification of such composition effects. In the short run, composition effects emerge if the cyclical movement of a macroeconomic base differs from that of GDP. This reflects, inter alia, the fact that tax bases often react with a time lag to a change in the macroeconomic environment. Moreover, the ESCB approach accounts for a possible trend decoupling of tax and expenditure bases from overall GDP, for example due to a permanent shift in the composition of GDP growth. This is relevant because the cyclical position of underlying tax and expenditure bases may be quite different from the aggregate cyclical position. Looking only at the aggregate cyclical position could provide inadequate signals about the self-correcting part of the government budget balance.

3 A detailed description of the disaggregated approach and applications can be found in Bouthevillain, C., Cour-Thimann, P., Van den Dool, G., Hernández de Cos, P., Langenus, G., Mohr, M., Momigliano, S. and Tujula, M., "Cyclically adjusted budget balances: an alternative approach", *Working Paper Series*, No 77, ECB, September 2001, and Kremer, J., Rodrigues Braz, C., Brosens, T., Langenus, G., Momigliano, S. and Spolander, M., "A disaggregated framework for the analysis of structural developments in public finances", *Working Paper Series*, No 579, ECB, January 2006.

There are also methodological differences related to the assessment of the cyclical position. The European Commission estimates the aggregate output gap on the basis of the production function approach[4]. The main advantage of this approach is that it allows for a structural interpretation in terms of contributions of capital, labour and total factor productivity to GDP. However, it is typically only feasible for an aggregate estimate of the output gap, not for the disaggregated ESCB approach. The ESCB approach utilises the HP filter for calculating the cyclical positions of the underlying macroeconomic bases.[5] The advantage of this statistical approach, apart from feasibility considerations, is that it can be applied mechanically and is therefore transparent since the results are easily replicated. Moreover, it is symmetrical over the business cycle since positive and negative deviations from the trend offset each other over time. Nevertheless, one should bear in mind that estimates of the unobservable cyclical position – using either of the different methods – are always fraught with considerable uncertainty, which is also reflected in sizeable revisions of the estimates, even after an extended period of time.

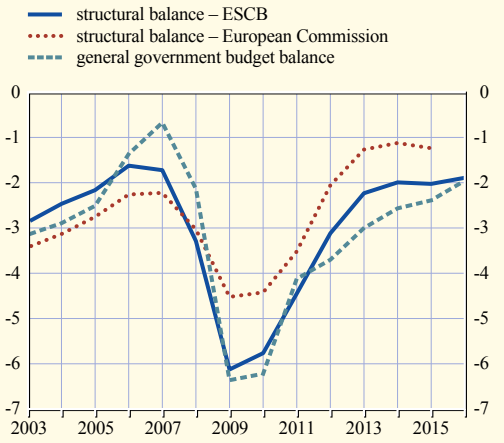
Estimates of the structural balance

In the chart, the estimates of the structural balance published by the ESCB and the European Commission are shown along with the corresponding figures for the (unadjusted) general government balance. Even though the measures used by the ESCB and the Commission show qualitatively similar amplitudes, their levels in many years differ markedly. This is particularly the case for 2009 and 2010, the years following the outbreak of the financial crisis. The steep decline in the aggregate output gap in 2009 was mainly due to the decline in components with a weak effect on tax revenues, in particular private investment, while the tax bases of the main revenue items, such as compensation of employees and private consumption, reacted much less sharply, and with a time lag, to the sudden drop in GDP. Consequently, in the disaggregated approach, the worsening of the fiscal position is interpreted only to a lesser extent as being cyclical and to a greater extent as being due to structural changes in the Member States.

This raises the question of what factors are behind the strong structural budgetary deterioration in the ESCB disaggregated framework in 2009. A large part of the answer lies in the fiscal stimulus measures which were adopted in most euro area countries in response to the global financial crisis. Moreover, the bursting of the real estate bubble led to significant revenue shortfalls, which are interpreted as being structural because they are not expected to be recovered even after a full closure of the output gap. Consequently, in these

Comparison of the general government budget balance and estimates of the structural balance for the euro area

(percentage of GDP)



Sources: ECB, European Commission and Eurostat.
Note: The values for the general government budget balance in 2014 and 2015 are ECB staff projections which can be found in Table 2.

4 This approach is explained in greater detail in D'Auria, F., Denis, C., Havik, K., McMorrow, K., Planas, C., Raciborski, R., Röger, W. and Rossi, A., "The production function methodology for calculating potential growth rates and output gaps", *European Economy – Economic Papers*, No 420, European Commission, July 2010.

5 The application of the HP filter involves selecting a smoothing parameter λ, which imposes a trade-off between the smoothness of the trend and its fit to the actual data. The ESCB estimates are based on a choice of λ=30.

years the ESCB approach indicates a smaller cyclical component, and a larger structural component, of the budget balance compared with that of the Commission.[6] The size of the subsequent structural improvement is similar in both approaches, and mainly reflects the sizeable fiscal consolidation efforts.

Conclusions

Estimates of the structural balance are necessary in order to assess the underlying fiscal position. However, apart from the general uncertainty surrounding any estimate of the cyclical position of the economy, there are also different ways of estimating the cyclical component of the budget balance. For the purposes of macroeconomic analysis, such as assessing the degree of slack in the economy and possible inflationary pressures, international organisations use a variety of methods to estimate the output gap.[7] The European Commission uses a methodology for the cyclical adjustment of the budget balance which is also directly related to the aggregate output gap. By contrast, the ESCB applies a specific fiscal methodology known as the "disaggregated framework". This means, in turn, that the ESCB's estimate of the cyclical component of the budget balance cannot be used to infer the aggregate output gap, and therefore gives no indication of the ESCB's assessment and prediction of the euro area's cyclical position. The main advantage of the disaggregated framework used by the ESCB is that it accounts for differences between the individual macroeconomic bases with regard to their cyclical development. It may therefore enable a more precise estimate of the underlying fiscal position.

6 Moreover, in 2010 differences in the calculation of one-off and temporary effects contributed about 0.4 percentage point of GDP to the gap between the two measures.
7 See the box entitled "Slack in the euro area economy", *Monthly Bulletin*, ECB, April 2014.