The use of GDP in public sector fiscal ratio statistics

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1 Background

The monthly Public Sector Finances (PSF) statistical bulletin aims to inform its users of the state of the public sector finances and fiscal position and is produced jointly by the Office for National Statistics (ONS) and HM Treasury.

The PSF statistical bulletin provides important information on the UK government financial position. It enables users (including government, the public, economists and financial analysts) to monitor public sector expenditure, receipts, investments, borrowing and debt. By comparing these data with forecasts from The Office for Budget Responsibility (OBR) the current UK fiscal position can be evaluated.

PSF is compiled on the National Accounts framework and in accordance with the standards set out in the European System of Accounts 2010 (ESA2010) under European law.

2 Aim of article

Public sector fiscal statistics are often presented as ratios of Gross Domestic Product (GDP), which is a measure of the total value of all goods and services produced within a country within a given time period.

In the United Kingdom (UK) the PSF statistical bulletin reports as ratios of GDP:

- public sector net borrowing
- public sector current budget deficit
- public sector net investment
- public sector net debt.

This article aims to explain the methodology used for the presentation of GDP ratios in the UK PSF publication and in particular for the public sector net debt where a centred approach (requiring forecasts) is used.

3 The monthly public sector finances bulletin

All monetary values in the PSF bulletin are in terms of “current prices‟, that is, they represent the price in the period to which the expenditure or revenue relates and are not adjusted for inflation.

In order to remove the effects of inflation, to aid international comparisons and provide an indication of a country’s ability to service borrowing and debt, the OBR and other commentators often discuss changes over time to fiscal aggregates in terms of GDP ratios. The Government's mandate for fiscal policy includes a target for public sector net debt as a percentage of GDP to be falling in each year from 2015-16.

The monthly PSF bulletin presents (Table PSA5A and PSA5B) public sector current budget deficit, net investment, net borrowing and net debt as ratios of GDP on both an including and excluding public sector banks basis.

Table PSA5A presents the fiscal statistics as a proportion of GDP by financial years (April to March) for the period 1997 onwards. Table PSA5B presents the same information but as a quarterly rather than annual time series.

Similarly, graphical presentations in the Public Sector Finances bulletin present some of the key fiscal statistics as a ratio of GDP. Specifically:

- Figure 1 illustrates public sector net borrowing as a ratio of GDP
- Figure 2 illustrates public sector net debt as a ratio of GDP
- Figure 4 illustrates central government current budget deficit as a ratio of GDP.

4 The Current budget deficit, net investment and net borrowing

Public sector current budget deficit, net investment and net borrowing measure activity over a period of time and so to calculate their ratios as a proportion of GDP, the GDP values used are those of the published UK National Accounts values over the same time period. The particular GDP measure used is the non-seasonally adjusted, nominal GDP (ONS series identifier BKTL) largely because public sector current budget deficit, net investment and net borrowing are also not seasonally adjusted.

This is generally a straightforward exercise; however, complications arise when the latest financial year has just been completed. At this point the financial year outturn for current budget deficit (along with the net investment and net borrowing) is available but only three of the four quarterly GDP observations are published. Until this remaining quarter becomes available (towards the end of June) a forecast of GDP is required.

The procedure for deriving GDP forecasts for periods when National Accounts outturn GDP is not available is described below.

The Office for Budget Responsibility (OBR) produces forecasts of the economy and public finances twice a year (normally in March and November or December) within their Economic and Fiscal Outlook (EFO) publications. The EFO contains forecast financial year growth rates in nominal GDP (i.e. GDP in current prices).

Financial year growth rates are applied to ONS published GDP outturn data for the corresponding quarters of the previous financial year to create forecasts for periods where there is no outturn available.

So, for example;

The OBR forecast growth rate in nominal GDP for the financial year 2014/15 is applied to the outturn 2014q1 to produce a GDP estimate for 2015q1:

2015q1 = 2014q1 + (OBR forecast 2014/15 x 2014q1) /100

This GDP estimate for 2015q1 can then be used with GDP outturn data for 2014q2, 2014q3 and 2014q4 to produce an estimate of the GDP in 2014/15.

This 2014/15 GDP estimate is then used in the fiscal ratios published in the monthly public sector finances in April, May and June 2015.

5 Net debt

Debt is a measure of how much the government owes at a point in time, whereas GDP is a measure of the country's economic activity during a period of time. Debt, represented as a proportion of a country's GDP, is often viewed as an indication of that country's ability to pay back their debt.

Unlike the fiscal measures in the previous section, net debt is measured at a point in time. Therefore, in order to calculate net debt as a ratio of GDP, the GDP denominator is calculated so that it represents the 12 months centred round the debt observation (the six months before it and six months after it). This approach requires monthly GDP to be derived and as GDP is only published as a quarterly time series, monthly GDP is calculated by simply dividing the quarterly data by three.

The procedure for deriving GDP forecasts for periods when National Accounts outturn GDP is not available is based on the OBR forecasts as explained in the previous section.

As an example, consider the Public Sector Finances, December 2014 statistical bulletin published in January 2015. This release published an estimate of public sector net debt for end-December 2014 for the first time and alongside this an estimate of this public sector net debt as a percentage of GDP.

The GDP estimate required for the December 2014 net debt ratio covers the period from July 2014 to June 2015. In January 2015 the published outturn GDP was only available up until the third quarter (September) of 2014. In this case forecasts were needed for the fourth quarter (December) of 2014 and the first two quarters of 2015 (March and June).

The OBR forecast growth rate in nominal GDP for the financial year 2014/15 is applied to the outturn 2013q4 to produce an estimate for 2014q4:

2014q4 = 2013q4 + (OBR forecast 2014/15 x 2013q4) /100

Similarly,

2015q1 = 2014q1 + (OBR forecast 2014/15 x 2014q1) /100

And,

2015q2 = 2014q2 + (OBR forecast 2015/16 x 2014q2) /100

As a result of this estimation procedure, the debt ratio is provisional when first published and subject to later revision when outturn GDP becomes available.

6 International comparisons of debt and deficit

The European Union's two key fiscal statistical measures are general government (central and local government in the UK) net borrowing (deficit) and consolidated general government gross debt.

These measures are required to be reported as part of the Excessive Deficit Procedure. Article 104 of the 1992 Maastricht Treaty obliges Member States to avoid excessive budgetary deficits.

The Protocol on the Excessive Deficit Procedure, annexed to the Maastricht Treaty, and the related Stability and Growth Pact legislation, defines the measures of deficit and debt and the reference values required for compliance. These reference values are presented as ratios between the current price measures and GDP.

The Protocol on the Excessive Deficit Procedure defines the GDP series to be used as Gross Domestic Product at current prices (that is, nominal GDP) which is the same GDP valuation as used in the ratios in the UK monthly public sector finances.

There are, however, two differences. Firstly, the GDP data used in the Excessive Deficit Procedure (EDP) statistics is seasonally adjusted (ONS series identifier YBHA). Secondly, and more significantly, the GDP data used in the EDP statistics is that for the year being reported for both deficit and debt statistics. For deficit (that is, net borrowing) this is the same treatment as in the UK PSF release, but for debt the treatment is different as the GDP used is not centred on the time of the debt observation (as in the PSF) but instead what is used is the GDP over the 12 month period preceding the time of the debt observation. Taking the example of debt at the end of December 2014, the PSF approach is to take the debt as a proportion of GDP between July 2014 and June 2015) whereas the EDP statistical approach is to take it as a proportion of GDP between January 2014 and December 2014.

7 Contact details

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