THE USE OF CYCLICALLY ADJUSTED BALANCES
AT BANCO OF PORTUGAL

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1. Introduction

The evaluation of fiscal policy has gained a new relevance with the introduction of some fiscal norms in the Treaty of the European Union. These fiscal norms were reinforced by the approval of the Stability and Growth Pact.

In the Stability and Growth Pact the Member States "…commit themselves to respect the medium-term budgetary objective of positions close to balance or in a surplus…"[2]. It seems to be consensual that the medium-term should be viewed as a situation where GDP is at its potential level. Even if the European Council avoided the use of word "potential" GDP, the analysis of the fiscal position should be carried on taking into account the cyclical position of the economy. In this sense, it is particularly important to identify the effects of the economic cycle on the evolution of general government accounts.

Since 1994, Banco de Portugal has been using the cyclically adjusted balances as indicators of the stance of fiscal policy, and, at least, once a year, Banco de Portugal publishes, in its Annual Report, an estimate of the change of cyclically adjusted overall and primary balances.

The current fiscal consolidation process in Portugal illustrates two

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[2] Resolution of the European Council on the Stability and Growth Pact, Amsterdam, 17 June 1997.

points that should be taken into account in any analysis of fiscal policy:

— the changes in the cyclically adjusted overall balance may be misleading, as they are influenced by interest payments and temporary measures;

— the estimation of the cyclical component of government balances must be complemented by a detailed analysis of fiscal measures both on the revenue and expenditure sides.

This presentation is divided in three sections. The following section presents and discusses the methodology used by the Banco de Portugal to determine the cyclically adjusted balances. The evolution of the cyclically adjusted deficit is shown and commented in the second section. The results presented in the second section are used to exemplify the importance of the two remarks made above. In the last section, the directions of further work are justified, and the major conclusions are drawn.

2. The methodology used by the Banco de Portugal

The HP-filter

The Banco de Portugal uses the same methodology as the European Commission[3] to estimate the cyclical component of the public deficit. In this methodology, the output is detrended by using a HP-filter. The estimation of the output gap and a set of fiscal elasticities allow the calculation of the cyclical component of general government balances.

The HP-filter has the advantage of not being too demanding in terms of database. However, the HP-filter suffer from two major drawbacks:

— the end point problem;

— the smoothing of structural breaks.

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[3]   European Commission (1995), "Technical note: The Commission service's method for cyclical adjustment of government budget balances", European Economy No. 60.
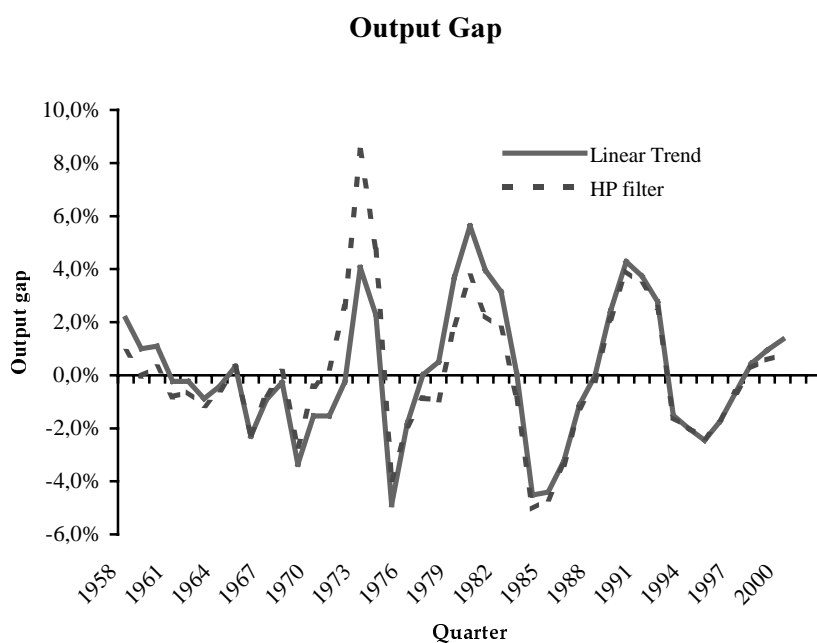
Graph 1

Rate of growth
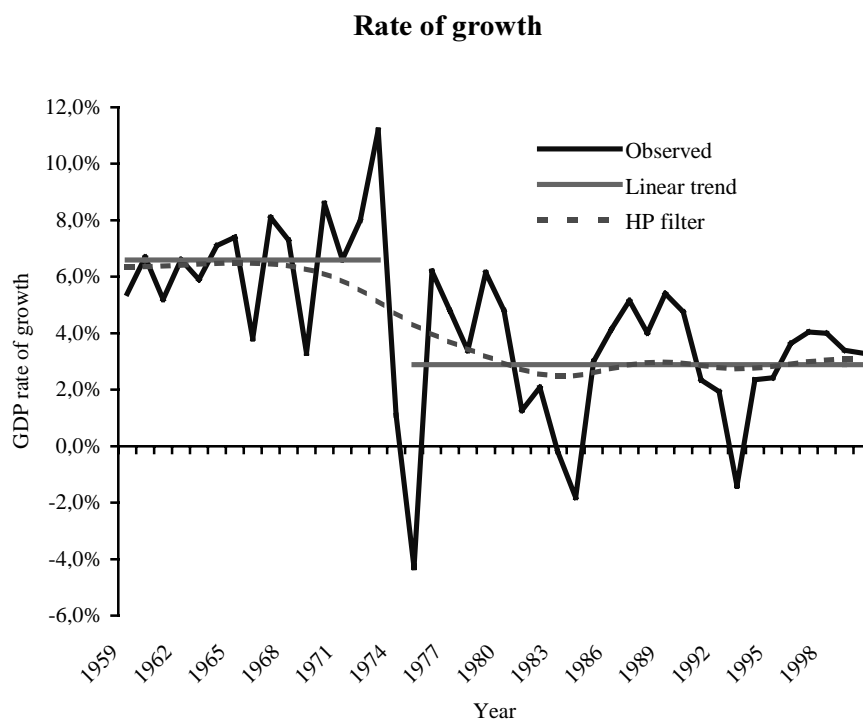
The end point problem results from the fact that the series smoothed by the HP-filter tend to be close to the observed data at the beginning and at the end of the estimation period. This problem is more important when the real output is far from the potential output. At Banco de Portugal, to address the end point problem, we expand the GDP series for some years, using our own projections of GDP growth, for the next years.

The second drawback of the HP-filter has to do with its inability to recognise the structural breaks. In fact the HP-filter tends to smooth the changes over time. In the case of the Portuguese economy, the studies carried out, concerning GDP growth, have only detected a structural break in 1974. As we can see in Graph 1, this structural change appears to have been totally absorbed until the beginning of the 80's by the HP-filter.

The Graph 1, also illustrates the need to complement the analysis with other indicators about the cyclical position of the economy. Since the HP filter (or the linear trend) is a mechanical procedure to determine the output gap, it does not take into account the changes that occur in the economy. For instance, if the potential rate of growth of the countries participating in Monetary Union increases with the introduction of the Euro, the HP filter will overstate the output gap in the firsts years after the introduction of the Euro. In this case, the result obtained by the HP filter may be misleading.

In the case of Portugal, as in other countries, the estimates of the output gap based on a production function or on a linear trend are much in line with the ones based on the HP-filter. The Graph 2[4] shows the output gap calculated by the two methods, using annual data.

Graph 2

Output Gap

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[4]   The data of the Graph 2 was based on Botas et al. (1999).

As it appears clearly, the two methods provide quite similar patterns for the economic fluctuations in the Portuguese economy. The Graph 3 also shows the output gap calculated by the two previous methods and by the production function, but using quarter data. In this case, the similitude of the patterns of the output gap is less apparent, but one can argue that they do not differ widely from each other.

Graph 3

Output Gap
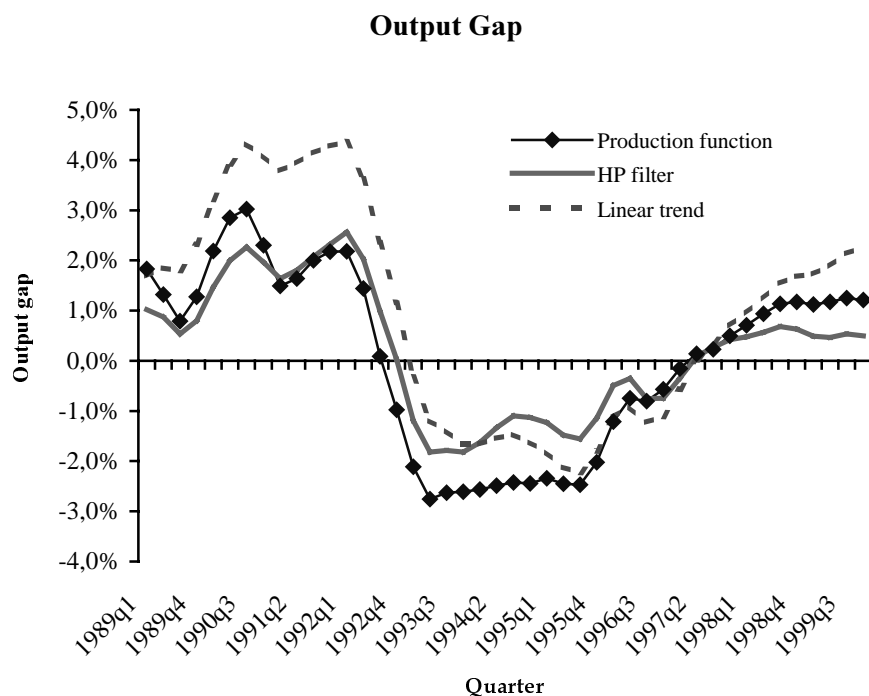
Tax elasticities

The set of fiscal elasticities necessary for calculate the cyclical component of the fiscal balances may be estimated using a macroeconomic model to simulate the impact of a change in the GDP growth, in each of the components of public revenue. This is the

procedure followed by Chouraqui et al. (1990)[5], using the OCDE INTERLINK model. Giorno et al (1995)[6] used weighted averages of the marginal and average personal tax rates to calculate a tax revenue elasticity with respect to the gross earnings. This elasticity was converted into one elasticity with respect to the GDP, using the employment and wage elasticities with respect to GDP. Another alternative would be, as we did at Banco de Portugal, to calculate the elasticities by estimating econometric relations between the growth rates of each main item of tax revenue and the growth rate of the GDP.

The elasticities estimated for Portugal (Centeno[7] (1994)) are presented on Table 1.

Table 2 compares the elasticities obtained by the OECD, for selected countries, the weighted average used by the European Commission, and the ones in use by Banco de Portugal.

The elasticities calculated by the Banco de Portugal are not independent of the discretionary decisions that had an impact during the years covered by the database selected to estimate the elasticities. Therefore, the results must be analysed with some caution. However, they do not seem to differ widely from those obtained by the OECD for other countries.

Table 1

Tax elasticities estimated by the Banco de Portugal

Taxes on families	Taxes on firms	Social contributions	Taxes on goods and services	Other current revenues	Weighted average
1.2	1.5	1.1	1.0	1.0	1.1

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5   Chouraqui, Hageman and Sartor (1990), "Indicators of Fiscal Policy: A Reassessment", OECD, Department of Economics and Statistics, Working Paper, No. 78.

6   Giorno, C., P. Richardon and D. Roseveare (1995), "Estimating potential output, output gaps and structural budget balances", OECD, Department of Economics and Statistics, Working Paper, No. 152.

7   Centeno, M., (1994) "Política Orçamental: indicadores e análise", Banco de Portugal, Boletim Trimestral, Volume 16, No. 1, Março.

Table 2

Tax elasticities - international comparisions

Country		Taxes on families	Taxes on firms	Social contri- butions	Taxes on goods and services	Other current revenues	Weighted average
Portugal	(BP)	1.2	1.5	1.1	1.0	1.0	1.1
	(OECDb)	1.2	2.5	0.5	1.0	—	—
	(EC)	—	—	—	—	—	1.01
Spain	(OECDa)	1.2	2.1	1.4	0.5	—	1.0
	(OECDb)	1.9	2.1	1.1	1.0	—	—
	(EC)	—	—	—	—	—	1.32
France	(OECDa)	1.2	3.0	0.9	0.5	—	0.9
	(OECDb)	1.4	3.0	0.7	1.0	—	—
	(CE)	—	—	—	—	—	0.97
Italy	(OECDa)	0.8	2.9	0.8	0.4	—	0.9
	(OECDb)	0.4	2.9	0.3	1.0	—	—
	(CE)	—	—	—	—	—	0.77
United Kingdom	(OECDa)	1.0	3.4	0.7	0.5	—	1.2
	(OECDb)	1.3	4.5	1.0	1.0	—	—
	(CE)	—	—	—	—	—	1.1
Germany	(OECDa)	1.4	2.5	0.8	0.5	—	1.0
	(OECDb)	0.9	2.5	1.0	0.7	—	—
	(CE)	—	—	—	—	—	0.94

Source: BP: Centeno (1994)
    OECDa: Chouraqui, Hageman and Sartor (1990)
    OECDb: Giorno, Richardson and Roseveare (1995)
    EC: European Economy (1995)

Graph 4

Unemployment benefits
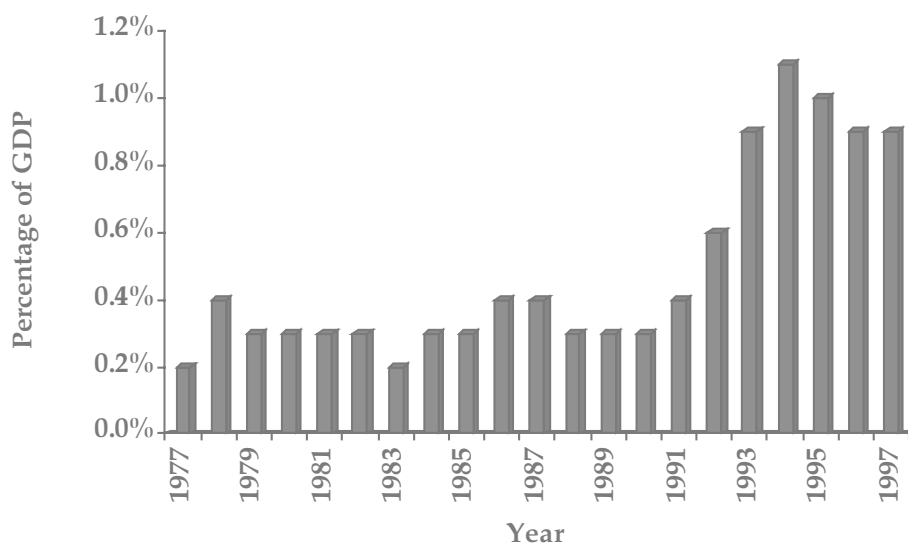
As usual, it was assumed that almost all public expenditure is independent from the cyclical position of the economy, with the exception of the unemployment benefits. In the Portuguese case, however, the unemployment benefits did not have a major role as an income substitute before the beginning of the 90's (see Graph 4). The change in unemployment benefits was significant for the first time, in 1993.

The recent evolution of the cyclical adjusted balance

From 1993 to 1998, the General Government deficit, in Portugal, declined continuously from 6.4 to 2.3 percentage points (p.p.) of GDP. This consolidation process resulted from some fiscal measures and from the improvement of the economic environment. In fact, the cyclically adjusted deficit improved by 3.4 p.p. of GDP, during this period. Graph 5

shows the change in both the overall and primary cyclically adjusted deficits.

The recent consolidation process in Portugal gives a clear example of the advantage of looking to the primary balance to assess the fiscal policy. The difference between the primary and the overall balance is given by actual interest payments. These ones are mostly independent relative to both the present fiscal policy and cyclical position of the economy, as they are determined by the accumulation of deficits in the past and by the situation in capital markets. On the other hand, they may be influenced by the composition of debt instrument. For these reasons, at Banco de Portugal we look predominantly to the change in the cyclically adjusted primary balance to analyse the current stance of fiscal policy.

During the 1993 crisis the overall deficit increased by 1.9 p.p. of GDP. But if one looks to the primary balance one can see that the primary balance had decreased 2.9 p.p. The reason for this difference was that the issue of news bonds with automatic capitalisation of interests, in the years preceding 1993. As in the ESA-79 the interests are only recorded when they are actually paid, the substitution of the public bonds with coupon for the new ones, induced an artificial reduction of the overall deficit. On the contrary, in 1995, when the interests of capitalisation bonds were paid, the primary balance improved more than the overall balance.

1996 fiscal outcome provides another example. During that year the cyclically adjusted primary balance improved by 0.6 p.p.. However, the sharp drop in nominal interests rates lead to an improvement of the overall cyclically adjusted deficit amounting to 2.2 p.p..

Summarising, one can give three reasons to look at the cyclical adjusted primary balance:

1) in the present European System of Accounts (ESA-79), the interests are only recorded when they are actually paid. Thus, the composition of debt by instruments influences the pattern of interest expenditure.

2) the primary balance is not influenced by the accumulation of deficits in the past.

3) the cyclically adjusted overall deficit is dependent on capital markets conditions.

Chart 4

Change in Overall and Primary Cyclical Adjusted Balances
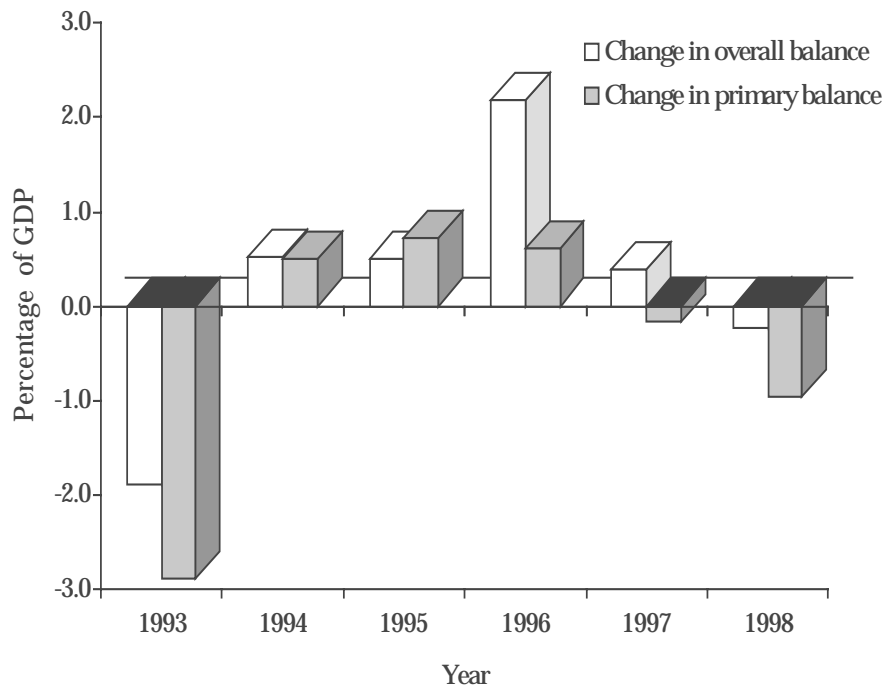
Another point that we would like to emphasise is the need to complement the use of the cyclically adjusted balances with detailed information on fiscal measures both on the revenues and on the expenditure sides. In fact, by observing the evolution of the cyclically adjusted balances, we can not distinguish changes due to structural changes, from those resulting from temporary measures or from long-term trends. The distinction of the change in the cyclically adjusted balance (overall or primary) resulting from structural change in fiscal policy from those resulting from temporary measures is crucial for a correct assessment the fiscal policy.

2. Major conclusions and future work

Banco de Portugal uses a standard method to detrend the GDP and adjusts the overall and primary balances for the cyclical position of the economy. The recent evolution of fiscal balances in Portugal shows the importance of looking to both the overall and primary cyclical balances. This need is motivated by reasons based on the accounting arrangements of the ESA-79, and on the determinants of the interest payments. Another point that must be emphasised is the need to complement the analysis of the fiscal policy with detailed information about the main items of revenue and expenditure.

The database used to estimate the fiscal elasticities used at the Banco de Portugal only covers the years before 1991. Tax elasticities are currently being estimated using the data released from 1991 onward. The preliminary results show some differences relative to the elasticities we got some years ago, namely a higher elasticity of taxes on firms, a slightly lower tax elasticity of social contributions, and a much lower elasticity of other current revenues. It is, also, expected a higher estimated marginal impact of output gap on unemployment benefits. Overall, the new estimates seem to lead to a slightly greater sensitivity of the general government balances relative to the economic cycle.

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