

EUROPEAN COMMISSION DIRECTORATE GENERAL ECONOMIC AND FINANCIAL AFFAIRS

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NEW AND UPDATED BUDGETARY SENSITIVITIES FOR THE EU BUDGETARY SURVEILLANCE

(Information note for the Economic and Policy Committee)

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1. BACKGROUND

Based on the work carried out by the output gap working group of the Economic Policy Committee (EPC), on 27 June 2005 the EPC parent committee discussed the revised OECD methodology for updating the budgetary elasticities and extending the coverage to the EU10 Member states.¹ The committee was able to unanimously agree that the Commission services shall use the elasticities obtained from the new OECD method for the autumn 2005 evaluation exercise. Specifically, as outlined in a letter of the president of the EPC output gap working group, J.-L. Tavernier, to the President of the EFC Alternates, G. Brouhns, of 27 June 2005 the Commission services will continue to apply its existing approach to calculate the cyclically-adjusted budget balance, with the only difference being the introduction of the new elasticities.

This note presents the new and updated elasticities and outlines the aggregation of the individual elasticities as well as the transformation into budgetary sensitivity parameters. A brief account on how the sensitivities feed into the cyclically-adjusted budget balance is also provided.

2. New and updated budgetary elasticities and sensitivities for all EU Member States

The new and updated budgetary elasticities obtained from the new OECD method and adopted by the EPC on 27 June 2005 are reported in Table 1 attached to this note. The OECD method distinguishes between four different types of taxes (personal income tax, corporate income tax, indirect taxes and social contributions) and only one cyclically-sensitive spending items (unemployment related transfers).

The elasticity of personal taxes is close but greater then unity for most countries; this is mainly the result of progressive tax schedules. The elasticity of corporate taxes is also higher than one in general, but in this case the result is mostly driven by the fact that corporate profits, the tax base for corporate taxes, react more than proportionally with output. Regarding the elasticity of social contributions this is generally below unity instead, mainly due to a less than proportional reaction of the tax base (i.e., the wage bill) to output. As for indirect taxes, the elasticity has been assumed to be equal to unity for all countries. On the expenditure side, elasticities are relatively small (equal to -0.12 for EU25 average), given the relatively low share of unemployment related transfers on total primary current expenditure. EU 15 countries exhibit on average slightly higher revenue elasticities than EU 10 countries (by about 1 decimal point). A stronger difference is observed for expenditure elasticities (-0.15 for EU 15 versus -0.06 in the case of EU 10 countries).

Revenue elasticities for each tax component are aggregated into a single revenue elasticity using the weight of each tax category on the current tax burden (the weights used are shown in table 3). The figures obtained indicate that aggregate revenue elasticities are equal to 1.04 for EU 15 and to 0.96 for EU 10 countries.

¹ The new OECD method is described in detail in: Girouard, N. and C. André (2005) Measuring Cyclically-Adjusted Budget Balances for the OECD Countries, OECD Working Paper No. 434.

As budgetary variables are generally expressed in percent of GDP, the revenue and expenditure elasticities are transformed into sensitivity parameters (see section 3 for details). The weights used for the transformation (i.e. the share of current tax burden on GDP for revenues and the share of primary current expenditure on GDP) are shown in table 3.

The budgetary sensitivities reported in table 2 are on average lower for EU 10 Member States (0.36 as opposed to 0.49 for the EU 15 average). The result is explained by (i) a lower average revenue elasticity, (ii) lower expenditure elasticities (in absolute value); and (iii) a lower share of the current tax burden on GDP and of primary current expenditure on GDP.

3. BUDGETARY SENSITIVITIES: DEFINITION AND CONSTRUCTION

Budgetary sensitivity parameters are a principal ingredient to the Commission services method for calculating the cyclically-adjusted budget balance (CAB). Specifically, the CAB is derived by subtracting the temporary component of the budget balance from the overall nominal figure:

$$CAB_t = b_t - \varepsilon \cdot OG_t \tag{1}$$

where b_t is the nominal budget balance-to-GDP ratio in year t, ε the budgetary sensitivity parameter and OG_t the output gap in year t. The output gap is defined as the difference between real GDP and potential GDP expressed in percent of potential GDP:²

$$\frac{Y_t^{real} - Y_t^{pot}}{Y_t^{pot}} \cdot 100.$$
⁽²⁾

The overall sensitivity parameter ε is obtained by aggregating the elasticities of individual budgetary items. The individual revenue elasticities, $\eta_{R,i}$, are first aggregated to an overall revenue elasticity η_R using the share of each on the total current tax burden (R_i / R) as weight:

$$\eta_{R} = \sum_{i=1}^{4} \eta_{R,i} \, \frac{R_{i}}{R},\tag{3}$$

The weights R_i/R are computed by the Commission services as an average over recent years. The period over which the average is computed for the new and updated values for budgetary elasticities is 1995-2004 (or 1995-2003 in case 2004 is not available). As for the expenditure elasticity, η_G , it can expressed as

$$\eta_G = \eta_{G,U} \frac{G_U}{G} \tag{4}$$

where $\eta_{G,U}$ is the elasticity of unemployment-related expenditures and G_U/G is the share of unemployment related expenditure on total current primary expenditure. Parameter $\eta_{G,U}$ has been computed on the basis of the methodology developed by the

² The commonly agreed method for calculating potential and the output gap is described in Denis et al. (2002). Some elements of the method have been changed since the publication of the paper. The most up to date information can be found on the following CIRCA webpage: <u>http://forum.europa.eu.int/Public/irc/ecfin/outgaps/library?l=/spring05_forecast&vm=detailed&sb=Title</u>.

OECD and agreed by the EPC output gap working group. The weight G_U/G is computed by the Commission services using OECD data or data from national source for non-OECD countries. The reference year is 2003 (2002 if not available).

As budgetary variables are generally expressed in percent of GDP, the revenue and expenditure elasticities η_R and η_G (which measure the change in the *level* of a budgetary item with respect to the output gap) are transformed into sensitivity parameters as follows:

$$\varepsilon_R = \eta_R \frac{R}{Y}, \quad \varepsilon_G = \eta_G \frac{G}{Y},$$
 (5)

where R/Y is the share of the current tax burden on GDP and G/Y is the share of primary current expenditure on GDP. Both weights are computed by the Commission services using 2003 as the reference year. The difference $\varepsilon_R - \varepsilon_G$ eventually yields the sensitivity parameter of the overall budget balance ε used in equation (1).

	Personal tax	Corporate tax	Social contribution s	Indirect taxes	Elasticity of revenues	Elasticity of expenditur e
BE	1.09	1.57	0.80	1.00	1.00	-0.16
CZ	1.19	1.39	0.80	1.00	0.99	-0.02
DK	0.96	1.65	0.72	1.00	1.00	-0.30
DE	1.61	1.53	0.57	1.00	0.97	-0.27
EE	0.80	1.40	0.70	1.00	0.88	-0.05
EL	1.80	1.08	0.85	1.00	1.07	-0.04
ES	1.92	1.15	0.68	1.00	1.09	-0.16
FR	1.18	1.59	0.79	1.00	0.98	-0.12
IE	1.44	1.30	0.88	1.00	1.14	-0.16
IT	1.75	1.12	0.86	1.00	1.17	-0.04
CY	2.10	1.50	0.70	1.00	1.14	-0.02
LV	0.90	1.30	0.70	1.00	0.89	-0.05
LT	0.90	1.40	0.70	1.00	0.90	-0.03
LU	1.50	1.75	0.76	1.00	1.14	-0.04
HU	1.70	1.44	0.63	1.00	1.02	-0.03
MT	2.20	1.40	0.40	1.00	1.04	-0.02
NL	1.69	1.52	0.56	1.00	1.01	-0.42
AT	1.31	1.69	0.58	1.00	0.96	-0.08
PL	1.00	1.39	0.69	1.00	0.91	-0.17
РТ	1.53	1.17	0.92	1.00	1.08	-0.09
SI	1.40	1.50	0.70	1.00	0.96	-0.13
SK	0.70	1.32	0.70	1.00	0.88	-0.04
FI	0.91	1.64	0.62	1.00	0.92	-0.21
SW	0.92	1.78	0.72	1.00	0.94	-0.19
UK	1.18	1.66	0.91	1.00	1.10	-0.05
Euro area	1.48	1.43	0.74	1.00	1.04	-0.15
EU 15	1.39	1.48	0.75	1.00	1.04	-0.16
EU 10	1.29	1.40	0.67	1.00	0.96	-0.06
EU 25	1 35	1 45	0.72	1.00	1.01	-0.12

Table 1. New and updated budgetary elasticities

Source of elasticity parameters: Girouard and André (2005) for OECD Member States, Commission services, DG ECFIN unit A1 for non-OECD Member States.

	Sensitivity of revenues	Sensitivity of expenditur e	Overall sensitivity			
BE	0.47	-0.07	0.54			
CZ	0.36	-0.01	0.37			
DK	0.50	-0.15	0.65			
DE	0.40	-0.11	0.51			
EE	0.29	-0.01	0.30			
EL	0.42	-0.01	0.43			
ES	0.38	-0.05	0.43			
FR	0.44	-0.06	0.49			
IE	0.36	-0.05	0.40			
IT	0.49	-0.02	0.50			
CY	0.38	-0.01	0.39			
LV	0.26	-0.02	0.28			
LT	0.26	-0.01	0.27			
LU	0.48	-0.01	0.49			
HU	0.45	-0.01	0.46			
MT	0.36	-0.01	0.37			
NL	0.39	-0.17	0.55			
AT	0.43	-0.04	0.47			
PL	0.33	-0.06	0.40			
РТ	0.41	-0.04	0.45			
SI	0.39	-0.05	0.44			
SK	0.27	-0.02	0.29			
FI	0.41	-0.09	0.50			
SW	0.48	-0.10	0.58			
UK	0.40	-0.02	0.42			
Simple averages						
Euro area	0.42	-0.06	0.48			
EU 15	0.43	-0.06	0.49			
EU 10	0.33	-0.02	0.36			
EU 25	0.39	-0.05	0.44			

Table 2. New and updated budgetary sensitivities

	Sh	ares in total c	Current tax burden and current primary expenditure as a share of GDP			
	Personal income tax	Corporate tax	Social security contribution	Indirect taxes	Current tax burden in % of GDP	Current primary expenditure in % of GDP
BE	29.96	7.01	35.38	27.65	47.2	42.9
CZ	13.42	12.13	41.65	32.80	36.0	40.2
DK	54.01	5.63	5.64	34.73	49.9	49.6
DE	24.01	2.66	45.11	28.23	40.9	41.4
EE	23.97	5.24	31.68	39.12	33.0	29.7
EL	14.28	9.53	37.75	38.44	39.3	36.1
ES	21.09	8.66	37.91	32.35	35.0	31.2
FR	18.75	5.55	41.50	34.19	44.5	45.2
IE	29.26	11.50	18.65	40.60	31.2	27.8
IT	27.59	7.30	31.73	33.38	41.5	39.5
CY	19.13	6.94	35.43	38.51	33.3	36.1
LV	19.04	6.47	35.22	39.26	29.1	32.9
LT	34.76	3.48	25.02	36.82	28.6	28.6
LU	30.07	8.48	28.74	32.72	42.0	39.0
HU	17.92	6.46	34.87	40.74	43.4	40.9
MT	19.13	6.94	35.43	38.51	34.3	38.9
NL	19.79	9.86	40.16	30.19	38.2	39.0
AT	24.58	5.39	37.49	32.54	45.0	43.5
PL	15.12	7.54	37.30	40.04	36.6	37.1
РТ	16.76	9.86	32.94	40.44	38.0	39.8
SI	16.31	3.12	38.67	41.90	40.4	40.3
SK	12.53	11.05	39.04	37.38	31.2	44.4
FI	32.12	9.27	28.19	30.42	44.6	43.4
SW	33.81	5.46	28.38	32.35	51.5	50.6
UK	33.66	9.36	20.73	36.25	36.6	37.6

Table 3. Weights used in the construction of aggregate revenue and expenditure elasticities and sensitivity parameters

Sources. The shares of government revenues on current tax burden are obtained from OECD data (OECD tax database) for OECD Member States and from data provided by Member States to the Commission services, DG ECFIN, unit A1 for non-OECD Member States (except for CY and MT where figures are a simple average of EU 10 excluding CY and MT. The sample is 1995-2004 except DE, EE, CY, LV, LT, MT and SI for which the sample stops at 2003. The source for the share of current tax burden on GDP and that of current primary expenditure on GDP is AMECO and the year is 2003 (due to consolidation issues and the ensuing volatility in the series, the 1999-2002 average of the current primary expenditure on GDP was used for SK).