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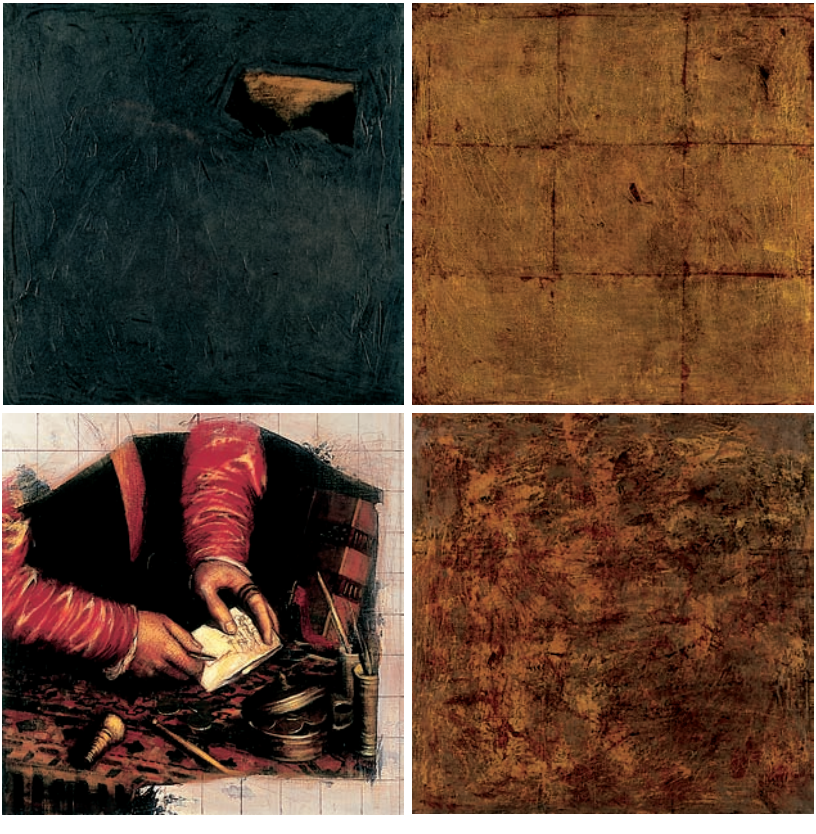
CYCLICALLY ADJUSTED BALANCE OF LATVIA'S GENERAL GOVERNMENT CONSOLIDATED BUDGET



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ABSTRACT

This study estimates cyclically adjusted balances of Latvia's general government consolidated budget using methodologies of the ESCB and OECD and assesses the consistency of the implemented fiscal policy with the EU fiscal policy framework. During the period of rapid economic growth the Latvian government pursued fiscal expansion instead of ensuring budgetary consolidation in cyclically adjusted terms. Fiscal policy of the Latvian government has been inconsistent with the requirements of the Stability and Growth Pact and has exerted an additional pressure on consumer prices and the current account.

Key words: *cyclically adjusted budget balance, Stability and Growth Pact, pro-cyclical fiscal policy, budgetary elasticity*

JEL classification codes: *E62, H62*

The views expressed in this publication are those of the authors, employees of the Monetary Policy Department of the Bank of Latvia. The authors assume responsibility for any errors and omissions.

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ABBREVIATIONS

CABB – cyclically adjusted budget balance
CAPBB – cyclically adjusted primary budget balance
CIT – corporate income tax
Council – Council of the European Union, Council of Ministers
EC – European Commission
ECOFIN – Economic and Financial Affairs Council
EMU – Economic and Monetary Union
ESCB – European System of Central Banks
EU – European Union
EU10 – Member States which joined the EU on May 1, 2004
EU15 – EU before expansion on May 1, 2004
GDP – Gross Domestic Product
IMF – International Monetary Fund
IT – indirect taxes
LGGB – Latvia's general government budget
NAWRU – non-accelerating wage-inflation rate of unemployment
OECD – Organisation for Economic Co-operation and Development
PIT – personal income tax
SGP – Stability and Growth Pact
SSC – social security contributions
Treaty – EU Treaty, Treaty on European Union
URE – unemployment related expenditure

INTRODUCTION

Fiscal policy is one of the most important components of a country's economic policy. Annual compilation of the budget plan helps a country attain the goals it has set. However, the government budget balance does not solely depend on fiscal policy; it is also determined by factors that cannot be affected or controlled by the government, e.g. economic or business cycles. Therefore, when the government fiscal policy is in view, CABB shall be assessed on the back of the assumption that the economy is in the state of its potential. EU countries have to pursue such budget policies that would enable full operation of automatic stabilisers and ensure compliance with the provisions under the Treaty at the same time. In the EU, this is the way to minimise the risk of macroeconomic imbalances. Henceforth, the EU countries employ CABB to estimate how unobstructed the functioning of automatic stabilisers is in the circumstances of the maximum budget deficit allowed under the Treaty.

For the estimation of a country's CABB, methodologies of different institutions are used. This study reviews methodologies of the ESCB, OECD, EC and IMF, and uses ESCB and OECD methodologies in the estimation of CABB of LGGB. The paper pursues the aim to assess the fiscal policy of the Latvian Government and its consistency with the EU fiscal policy rules in particular.

Chapter 1 of the study describes CABB and its place within the framework of EU fiscal policy regulations. Chapter 2 deals with CABB estimation methodologies. Chapters 3 and 4 present CABB calculations of LGGB. Chapter 5 gives the assessment of the fiscal policy of the Latvian Government.

1. CABB WITHIN THE EU FISCAL POLICY FRAMEWORK

1.1 Meaning of CABB

The general government budget balance reflects the effects of long-term (structural) and short-term (cyclical) factors. The cyclical component of the budget balance is determined by shifts in the economic growth. The economic growth triggers an increase in budget revenues and a decrease in unemployment related expenditure (unemployment benefits), as a result of which the cyclical component of the budget balance increases. CABB is the difference between the actual budget balance and its cyclical component, i.e. the component of the budget balance that remains after the effect of the economic cycle has been removed.

CABB estimation follows three stages:
– the economic growth potential and the actual deviation from the potential are assessed,
– cyclical components of budget revenues and expenditures are computed on the basis of their sensitivity to economic growth fluctuations, thus deriving the cyclical component of the budget balance,
– the cyclical budget component is subtracted from the actual budget balance.

When interpreting CABB, the interest rate dynamics should also be considered. An increase in interest rates causes a rise in debt servicing costs and, accordingly, also deterioration of CABB; such worsening may misleadingly be interpreted as a result of the government's fiscal policy. Correspondingly, in a medium term, the fiscal policy is assessed also on the back of CAPBB, which does not include interest rates on debt servicing. A fall in CAPBB implies that fiscal policy pursued by the state is expansionary, while the rise in the former points to a restrictive fiscal policy. At the same time, together with the indicator of the fiscal policy stance, the respective development stage of the economy shows whether pro-cyclical or counter-cyclical fiscal policy is conducted.

1.2 EU Fiscal Policy Rules

Article 104 of the Treaty and the Protocol on the Excessive Deficit Procedure annexed to it govern the EU fiscal policy. Provisions under Article 104 are supplemented with the SGP, which initially incorporated Council Regulation (EC) No. 1466/97 of 7 July 1997 on the strengthening of the surveillance of budgetary positions and the surveillance and coordination of economic policies (preventive arm), Council Regulation (EC) No. 1467/97 of 7 July 1997 on speeding up and clarifying the implementation of the excessive deficit procedure (corrective arm), and Resolution of the European Council of 17 June 1997 on the Stability and Growth Pact, which defined the political stance for the implementation of the SGP. The Stability and Growth Pact was reviewed in 2005. On 20 March 2005, the Council adopted a report entitled *Improving the Im-*

plementation of the Stability and Growth Pact, which reviewed and revised the SGP. Afterwards, amendments were introduced to the two Council Regulations.

Article 104(1) stipulates that "Member States shall avoid excessive government deficit". The compliance of a Member State with this requirement is assessed on the basis of deficit and government debt reference values (3% and 60% of GDP, respectively). The deficit criterion is not complied with if "the ratio of the planned or actual government deficit to gross domestic product exceeds a reference value, unless either the ratio has declined substantially and continuously and reached a level that comes close to the reference value, or, alternatively, the excess over the reference value is only exceptional and temporary and the ratio remains close to the reference value". The government debt criterion is not complied with when "the ratio of government debt to gross domestic product exceeds a reference value, unless the ratio is sufficiently diminishing and approaching the reference value at a satisfactory pace". There is a difference between sets of regulations for the countries within the euro area and other EU countries. Article 104(9) and (11) stipulating measures, including sanctions, that can be imposed by ECOFIN if a Member State does not implement ECOFIN recommendations regarding excessive deficit procedures, shall not be applicable to non-participating Member States, including also the EU10, that have not introduced the euro until the moment when they become full-fledged members of the EMU. However, if the reference value of the deficit or government debt in an EU country is exceeded, eligibility for financing from the Cohesion Fund may be restricted.[1] Moreover, the compliance with the fiscal policy criteria stipulated by the Treaty is a prerequisite for an EU country to participate in the EMU as a full-fledged member.

Council Regulation (EC) No. 1467/97 of 7 July 1997 provides details for identification and deterrence of the excessive deficit procedure referred to in the Treaty. First, this Regulation specifies more precisely in which cases and under what terms the government deficit reference value of 3% of GDP stipulated by the Treaty can be exceeded; second, it stipulates sanctions that can be imposed under Article 104(11) of the Treaty, if an EMU member country does not comply with the rules. The revision of the SGP notably eased the provisions of this Regulation; the amendments to the latter, in particular, expanded the scope of terms under which the deficit reference value of 3% of GDP can be exceeded. It likewise extended the decision-making period for all stages of the excessive budget procedure.

For the purpose of safeguarding EU Member States from excessive government deficits, ECOFIN has established a mechanism for fiscal policy surveillance, the details of which are set forth in Council Regulation (EC) No. 1466/97 of 7 July 1997. It stipulates that all full-fledged EMU Member States shall submit stability programs on a regular basis, with the other EU countries submitting convergence programs that incorporate medium-term fiscal policy provisions. Convergence programs shall also

[1] In compliance with Council Regulation (EC) No. 1164/94 of 16 May 1994 establishing a Cohesion Fund.

include information about medium-term monetary policy goals and the stability of prices and foreign exchange rates.

Jointly with the Economic and Financial Committee, the EC assesses the program of each country. On the back of EC recommendations and conclusions made by the Economic and Financial Committee, ECOFIN voices its stance regarding the submitted program policies. Where ECOFIN considers that the program policy is not in line with the provisions of the two regulations and an excessive deficit risk is in place, it may propose to the respective Member State to revise its program.

Medium-term objectives of budgetary positions and the targeted adjustment path (for budget surplus or deficit correction) must be defined in the program. It is important that adherence to the medium-term budgetary objectives will allow Member States to deal with normal cyclical fluctuations while keeping the government deficit below the 3% of GDP reference value. When ECOFIN detects an unfounded deviation from the targeted medium-term adjustment path or the implementation pace set down in the stability or convergence program, it issues an early warning.

Prior to the recent SGP revision, the medium-term budgetary objective implied such a budgetary position that was close to a balanced budget or budget with a surplus. The meeting of ECOFIN on 7 March 2003 adopted a report entitled *Strengthening the co-ordination of budgetary policies*, which stipulates that the close to balance or in surplus requirement of the Stability and Growth Pact should be monitored on the basis of CABB; euro area countries with CABB exceeding the close to balance or in surplus requirement should reduce their budget deficits by 0.5% of GDP on an annual basis (full EMU member states with an excessive budget deficit should annually reduce it by more than 0.5% of GDP for the entire period during which the deficit is in excess of 3% of GDP). The amendments to Council Regulation (EC) No. 1466/97 of 7 July 1997 revise the definition of the medium-term objective. The amendments stipulate that medium-term budgetary objectives should be differentiated for individual euro area economies as well as EMR II members, with the country-specific medium-term budgetary positions being set within the range from –1% of GDP to a balanced or in excess budgetary positions in cyclically adjusted terms, excluding net one-off and temporary measures to take into account "the diversity of economic and budgetary positions and prospects". At the same time, the pace at which a country is approaching the medium-term objective remains unchanged (0.5% of GDP annually); the amendments stipulate, however, that a temporary deviation from it is possible in exceptional cases when a country is implementing major structural reforms, which have direct long-term cost-saving effects (e.g. for old-age pensions), including by raising potential growth of the economy. The Regulation emphasises that the improvement of CABB (excluding one-off and other temporary measures) should be higher in economic good times, while in economic bad times the adjustment could be more limited. The SPG stipulates that EU countries should avoid pro-cyclical expansionary policy. Under pro-cyclical expansionary fiscal policy, the budgetary balance is subject to deterioration in economic good

times (in the years of economic upsurge). If a government is unable to improve CABB in economic goods times, it may later incur serious problems with meeting the Maastricht criteria.

Consequently, CABB plays a significant role in an overall assessment of the economic policy as well as for the EU policy framework. It supports the assessment of the government fiscal policy and helps determine how unaffected the functioning of the automatic stabilisers is under a budget deficit that does not exceed 3% of GDP reference value.

2. CABB ASSESSMENT METHODOLOGIES

In practice, no uniform CABB assessment methodology exists. A number of international institutions have been engaged in working out such methodologies, the ESCB (2), EC (3), OECD (8) and IMF (4) among them. The developed methodologies primarily differ in their approach to the estimation of the economic growth potential and of cyclical sensitivity of budgetary revenues and expenditures to economic growth.

One of the two methods is usually used in the estimation of the economic growth potential, of which the first is based on the assessment of the production function, while the other rests upon the Hodrick–Prescott or HP filter.(5)

The EC, OECD and IMF use the production function in the assessment of the economic growth potential. The ESCB uses the HP filter for its simplicity and because it leads to more comparable results for different countries. In their assessment of cyclical sensitivity of budget revenues and expenditures to economic cycles, the EC, OECD and IMF estimate elasticities of budget revenues and expenditures (hereinafter, budgetary elasticities) in relation to GDP. The ESCB uses an approach, which takes into account the composition effect, i.e. unbalanced development of the macroeconomic indicators when assessing budgetary elasticities relative to macroeconomic variables – the corresponding macroeconomic bases of budget revenues and expenditures.

The OECD, EC and IMF assume that the respective tax revenue shares from both the public sector and the private sector are cycle-sensitive. In turn, the ESCB methodology assumes that only the tax revenue share of the private sector is cycle-sensitive.

For the assessment of CABB of LGGB, the study makes use of two methodologies: the ESCB methodology (see Chapter 3) and the OECD methodology (see Chapter 4). The period selected for CABB estimation is between 1996 and 2006 for both methodologies. The computation uses budget revenues, expenditures and the budget balance on the accrual basis, as well as macroeconomic indicators and the Bank of Latvia forecasts.[1]

[1] The computation results rest upon statistical data and forecasts that were valid at the time of the study writing. When statistical data and forecasts are modified, the computation results may also change.

2.1 CABB Assessment Methodology Used by the ESCB

In compliance with the CABB estimation methodology of ESCB, the statistical HP filter is used when computing the potential of macroeconomic variables.

The HP filter is a statistical data smoothing method, which is consistent with the computation of the moving average variable whose weights depend on the number of observations and the value of parameter λ. Values Y^* of time series Y are calculated by the following optimisation procedure:

$$\min_{Y^*} \sum_{t=1}^{T} [(Y_t - Y_t^*)^2 + \lambda(\Delta Y_{t+1}^* - \Delta Y_t^*)^2] \quad [1].$$

In this way, the sum of the deviation of the actual value *(Y)* from its trend and the variability of the trend itself depending on the selected value of parameter λ has been minimised. The higher the value of parameter λ, the smoother the trend (with λ approaching infinity, the trend would become a straight line (linear trend)), and *vice versa*, the lower the value of parameter λ, the more volatile the trend (if λ = 0, the time series trend is equal to the series itself, because in this case the variability of the trend is not accounted for in the optimisation procedure at all). Consequently, with λ value increasing, the time series deviation from the trend grows, and, *vice versa*, with λ value decreasing, it declines.

The HP filter has the following advantages:
1) it is easy for application;
2) it produces results that are comparable among countries.

Nevertheless, it is not ideal, its main shortcoming being deviations at the end points of the series. The time series trend values Y_t^* are estimated as the moving averages of actual values with their absolutely symmetric weight distribution only in the middle of the sample period. The distribution gradually becomes more skewed at the beginning and the end of the sample period, and Y_t^* values are predominantly dependent on the actual values of the respective years. At the beginning of the period, the given problem is solved with the first estimations being ignored; for the solution of the problem at the closing years of the period, the time series are extended by forecasts.

Another drawback of the estimation using the HP filter lies in the absence of a uniform stance regarding the most suitable value of parameter λ the choice of which might considerably affect the trend values. According to the ESCB methodology, the value of parameter λ is *30*.(2) This choice is based on an assumption that the economic growth cycle lasts eight years. In the EC calculations, on the other hand, the value of the smoothing parameter λ is assumed to be *100*.(3)

According to the ESCB methodology, budgetary elasticities are estimated relative to their corresponding macroeconomic bases, and not GDP. Thus, the effect of differing

fluctuations of GDP and other macroeconomic variables, known as the composition effect, has been accounted for. ESCB specialists have identified four tax revenue categories and one expenditure category as depending on the impact of the cycle. They are direct taxes on enterprises and households, indirect taxes (IT), and social security contributions (SSC) as well as unemployment related expenditure (URE). All other revenue and expenditure items are assumed to be unaffected by business cycles.

An adequate macroeconomic base is employed for each revenue and expenditure category. Cyclical fluctuations of direct taxes on households and SSC depend on their taxable base defined as the income of employees in the private sector, which, in turn, is determined by the number of employed persons and the amount of compensation of employees. The base of direct taxes on enterprises is corporate profit. The macroeconomic base of unemployment benefits is linked to the number of unemployed. Revenues from IT fluctuate under the impact of private consumption growth cycles.

In compliance with the ESCB methodology, the public sector share, which, in contrast to the private sector, is not affected by cyclical fluctuations, shall be excluded from direct taxes on households, SSC and IT. In addition, the share of IT transferred to the budget of the European Communities exhibits zero elasticity on the expenditure side and, consequently, should exhibit zero elasticity on the revenue side, i.e. this part should be subtracted from IT revenues.

Two budgetary elasticity estimation techniques are common: budgetary elasticities are derived from econometric analysis and on the basis of tax laws.

The econometric approach provides for the estimation with a regression equation in which an individual budget revenue or expenditure category is the dependent variable, and its respective macroeconomic base is the independent variable. Due to structural tax reforms as a result of amendments to tax legislation, an accurate budgetary elasticity estimation by employing econometric regressions has become complicated and presents certain problems of interpreting elasticities. It is of particular importance when time series are short and structural tax reforming is a recent development as in the case of Latvia. Be it so, country-specific tax legislation peculiarities are to be reckoned with when estimating budgetary elasticities. The closer the macroeconomic variable is to the actual tax base, the more reliable are the findings derived by this method.

CABB for each individual year t is computed by subtracting the cyclical component $(B_{c,t} = \sum_j B_{c,t}^j)$ from the actual budget balance (B_t):

$$CABB_t = B_t - B_{c,t} = B_t - \sum_j B_{c,t}^j \qquad [2].$$

The cyclical component $B_{c,t}^j$ of each budget category j is derived taking into account the deviation of the respective macroeconomic base from the potential:

$$B_{c,t}^{j} = B_{t}^{j*} \varepsilon_{B_{,}^{j} V^{j}} v_{c,t}^{j} \quad [3]$$

where $v_{c,t}^{j}$ is the deviation of the respective macroeconomic base V_t^j from the potential $v_{c,t}^{j} = \frac{(V_t^j - V_t^{j*})}{V_t^{j*}}$, ε_{B^j, V^j} is the elasticity of budget item *j* relative to the respective macroeconomic base, while B_t^{j*} captures the trend value B_t^j that can be replaced with B_t^j. Thus, inserting formula [3] into formula [2], and replacing B_t^{j*} with B_t^j, the following formula suitable for the estimation of CABB is obtained:

$$CABB_t = B_t - \sum_j B_t^j \varepsilon_{B_{,}^{j} V^{j}} v_{c,t}^{j} \quad [4].$$

It can also be calculated by using the following formula:

$$CABB_t = B_t - [\sum_j R_t^j \varepsilon_{R_{,}^{j} V^{j}} v_{c,t}^{j} - X_t^j \varepsilon_{X^{U}, U} u_{c,t}] \quad [5]$$

where the small letters *u* and *v* denote deviations from the potential of the respective macroeconomic bases, R_t^j is the value of revenue item *j* in year *t*, and X_t^j is the value of expenditure item *j* in year *t*.

In order to estimate how sensitive the budget balance is to economic growth fluctuations, an indicator capturing changes in the budget balance in relation to GDP in the presence of a 1% change in real GDP is used:

$$\sigma_B = \frac{\Delta(B/Y)}{\Delta Y_r / Y_r} \quad [6].$$

The indicator σ_B is known as the sensitivity of budget balance. Taking into account cyclically sensitive budget revenue and expenditure categories, it is estimated as:

$$\sigma_B = \sum_j \frac{R^j}{Y} \varepsilon_{R_{,}^{j}, Y_r} - \sum_j \frac{X^j}{Y} \varepsilon_{X_{,}^{j}, Y_r} - \frac{B}{Y} \quad [7].$$

This equation shows that under certain conditions the sensitivity of the budget balance depends on budgetary elasticities relative to GDP and the ratio in GDP of cyclically-sensitive budget revenue and expenditure categories.

Budgetary elasticities relative to GDP, on the other hand, are calculated as the product of budgetary elasticities to respective macroeconomic bases and the elasticity of these macroeconomic bases to GDP. Thus, formula [7] can be modified as follows:

$$\sigma_B = \sum_j \frac{R^j}{Y} \varepsilon_{R_{,}^{j} V^{j}} \varepsilon_{V_{,}^{j}, Y_r} - \sum_j \frac{X^j}{Y} \varepsilon_{X_{,}^{j} V^{j}} \varepsilon_{V_{,}^{j}, Y_r} - \frac{B}{Y} \quad [8].$$

Detailed description of the method used for the budget balance sensitivity estimation is given in Appendix 1.

2.2 CABB Assessment Methodology Used by the OECD, IMF and EC

In contrast to CABB estimation procedure used by the ESCB, the approach of the OECD, EC and IMF is based on the assessment of the potential output employing the production function. The estimation of the production function uses structural variables of the economy; hence the outcome produced by the production function rests upon a sounder theoretical basis. Moreover, the potential output estimated with the production function captures structural changes in the economy. In contrast to the HP filter, however, this method requires more data and longer time series that are not always available.

OECD Methodology

The OECD uses the two-factor Cobb–Douglas production function with a constant return to scale:

$$Y_t = A_t (K_t)^{\alpha} (L_t)^{1-\alpha} \qquad [9]$$

or, taking the log:

$$\ln Y_t = \ln A_t + \alpha \ln K_t + (1-\alpha) \ln L_t \qquad [10]$$

where
Y_t is GDP at constant prices;
A_t is the total factor productivity;
K_t is capital stock at constant prices;
L_t is the total number of persons employed in the economy;
α is real GDP elasticity relative to capital.

Potential output (Y_t^{pot}) depends on potential levels of capital stock and employment (L_t^{pot} and K_t^{pot}, respectively), and the value of the total factor productivity trend (A_t^{pot}):

$$Y_t^{pot} = A_t^{pot} (K_t^{pot})^{\alpha} (L_t^{pot})^{1-\alpha} \qquad [11].$$

The estimation of the potential output assumes that the potential capital stock (K_t^{pot}) at a particular point of time coincides with the actual capital stock value (K_t), i.e. it is assumed that capital stock has been used most efficiently:

$$K_t^{pot} = K_t \qquad [12].$$

Potential employment has been estimated on the basis of the value of economically active population trend (L_t^s) and NAWRU (u_t^{NAWRU}):

$$L_t^{pot} = L_t^s(1-u_t^{NAWRU}) \quad [13].$$

NAWRU captures such an unemployment rate at which wage inflation remains unchanged. NAWRU, in fact, is the natural rate of unemployment. When assessing NAWRU, it is assumed that it changes at a very slow pace, and, therefore, changes in the gross average wage of persons employed in the economy and changes in the actual unemployment rate are used in its estimation:

$$u_t^{NAWRU} = u_t - \frac{\Delta u_t}{\Delta^3 \omega_t}\Delta^2\omega_t \quad [14].$$

Then, the estimated NAWRU is smoothed with the HP filter.

Total factor productivity trend values are derived by applying the HP filter to the actual values of total factor productivity. The actual total factor productivity log can be estimated as a residual of the production function or the Solow residual:

$$\ln A_t = \ln Y_t - \alpha \ln K_t - (1-\alpha)\ln L_t = a + bt + \gamma_{y_t} \quad [15]$$

where *b* is a technology parameter determining the increase in the total factor productivity trend and γ_{y_t} is a stochastic error.

The OECD methodology estimates budgetary elasticities to GDP, not to their macroeconomic bases. Nevertheless, fluctuations of macroeconomic bases are also taken into account when macroeconomic base elasticities relative to GDP and budgetary elasticities relative to macroeconomic bases are estimated separately. Thus, budgetary elasticities relative to GDP are derived by multiplying the two elasticities (formulas for computing budgetary elasticities relative to GDP are given in Appendix 2).

Consequently, according to the OECD methodology, CABB can be estimated using the following formula:

$$CABB_t = B_t - [\sum_j R_t^j \varepsilon_{R^j, Y^j} \varepsilon_{Y^j, Y_r} y_{r,c,t} - X_t \varepsilon_{XU,U} \varepsilon_{U,Y_r} y_{r,c,t}] \quad [16]$$

where $y_{r,c,t}$ denotes the deviation of the actual GDP from the potential GDP (hereinafter, the output gap), and ε is the respective elasticity.

IMF Methodology

Similar to the OECD, the IMF employs production function estimates in measuring the output gap. Furthermore, in computing the cyclical component of budget revenues, IMF specialists rest upon budgetary elasticities estimated by the OECD, which for some economies are subject to revision incorporating the latest data. The elasticity of total budget revenues to GDP is computed from budgetary elasticities and ratios of

individual budget revenue items in total budget revenues. Some countries experience lags in CIT collection, which IMF specialists also take into account when computing the partial elasticity ε_{lag}. Thus, cyclically adjusted revenues in year t $(R_{s,t})$ are estimated using the following formula:

$$R_{s,t} = R_t \left(\frac{Y_t^*}{Y_t}\right)^{\varepsilon} \left(\frac{Y_{t-1}^*}{Y_{t-1}}\right)^{\varepsilon_{lag}} \qquad [17]$$

where Y_t^* is the potential value of GDP and R_t is the total budget revenues.

In calculating the cyclical expenditure component, the IMF employs methodologies developed by the other institutions, assuming that unemployment benefits constitute the only single expenditure item that is subject to the cycles of economic activity. Unemployment benefits are adjusted basing on the deviation of the actual unemployment rate from the natural unemployment rate. Therefore, cyclically adjusted budget expenditure $(E_{s,t})$ is derived from the following formula:

$$E_{s,t} = E_t - UB_t + UB_t \frac{UR_t^n}{UR_t} \qquad [18]$$

where E_t is the total budget expenditure for year t, UB_t is the budget expenditure for unemployment benefits in year t, UR_t is the unemployment rate in year t, and UR_t^n is the natural unemployment rate in year t. CABB is thus estimated by subtracting cyclically adjusted budget expenditures from cyclically adjusted budget revenues.

EC Methodology

The approach of the European Commission is also similar to the OECD methodology. The EC resolved on a pass-over from the previously employed HP filter to the production function for the estimation of the output gap.[1] The principal difference between the EC and OECD output gap estimations is their approach to the calculation of NAWRU. According to the EC methodology, NAWRU is calculated employing the multi-dimensional Calmann filter where the unemployment cyclical component corresponds to the Phillips curve relationship and NAWRU is subject to random walk with drift.

In CABB computations, the EC applies estimates of the OECD budgetary elasticities. The main advantage of the OECD elasticity estimates is their structure, which takes into account several factors. Consistently with the OECD methodology, budget elasticity comprises two components, of which one reflects the impact of economic

[1] The new approach was developed by the working group on the output gap (formed in 1999) of the Economic Policy Committee and adopted by the ECOFIN on 12 July 2002. As an exception, Spain, Germany and Austria were allowed to use the HP filter in the estimation of the output gap for some time.

growth on corresponding macroeconomic bases of budget categories, and the other captures the impact of macroeconomic bases on budget categories. For this reason, a number of countries and international organisations (including the EC and the IMF) give preference to the OECD approach when estimating CABB.

In the recent past, the intensity of using one-off and temporary budget revenues and expenditures has increased in several EU economies, and some countries stick to them with the aim to escape breaches of the Maastricht criteria. However, the amendments to the SGP stipulate that one-off and temporary measures shall be excluded from the budget balance when the compliance of the government fiscal policy with the medium-term objective and the adjustment path towards it are in view. As classification of budget revenues and expenditures into discretionary and one-off items is missing, it is assumed that an individual approach shall be used. Due to weaknesses of budget category classification, the authors of the paper estimated CABB without excluding one-off and temporary budget revenues and expenditures from the analysis.

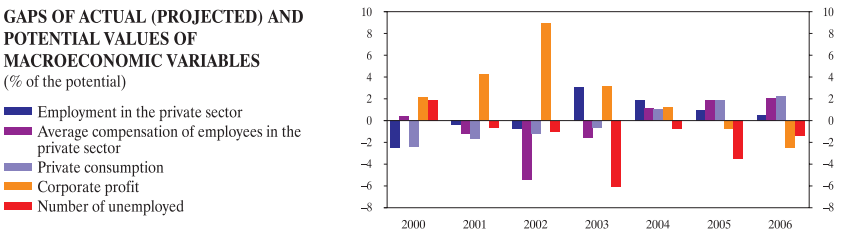
3. ASSESSMENT OF LATVIA'S CABB USING THE ESCB METHODOLOGY

3.1 Estimation of Potential Values of Macroeconomic Variables

When estimating CABB consistently with the ESCB methodology, an HP filter with a parameter λ value of *30* is used for dividing macroeconomic variables into the trend and cyclical component. However, the problem of biases at the beginning and the end of a time series referred to above shall not be forgotten. For the purpose of avoiding misinterpretations regarding biases at the beginning of the time series, Latvia's results and their interpretation refer to the period starting with 2000. At the same time, to minimise the effect of the end-point bias, macroeconomic series are extended with forecasts up to year 2011. Chart 1 presents the actual and potential value gaps for macroeconomic variables.

Chart 1

GAPS OF ACTUAL (PROJECTED) AND POTENTIAL VALUES OF MACROECONOMIC VARIABLES
(% of the potential)



In 2000, the gap between the actual and potential employment as well as the private consumption gap were negative due to the effects of the 1998 Russian financial crisis. The employment gap remained negative up to and including year 2002. Latvia's

economy managed to recover relatively rapidly from the recession that followed the 1998 Russian financial crisis because Latvia was able to re-channel its goods exports to western, primarily EU, markets. Employment in the private sector exceeded its potential in 2003 as a result of an exceptionally high growth rate. The notable rise in the number of persons employed in the private sector in 2003 was partly due to robust growth of economically active population, as well as to the elimination of the provision stipulating restrictions on working pensioners' eligibility to receive pensions from the Law On State Pensions in 2002. Employment growth in the private sector is expected to moderate and the employment gap to narrow in the future. The private consumption gap remained negative up to and including 2003. In 2004, private consumption exceeded its potential, and the gap is expected to become more pronounced in the situation of a further fast growth of the former. Also the average compensation of employees in the private sector rose at a high pace in 2003 in line with the overall economic recovery from the impact of the 1998 Russian financial crisis, yet it exceeded its potential only in 2004. The corporate profit gap was notably affected by the low actual corporate profit in the period after the banking crisis of 1995, reflected by low potential values of corporate profits in the years to come. Up to 2004, the corporate profit gap was positive. Looking ahead, profits of the corporate sector are expected to fall below the trend value. Speaking about the unemployment dynamics, the number of unemployed persons exceeded the potential level in 2000 due to the disruption in the unemployment decline trend as a consequence of the 1998 Russian financial crisis. Starting with 2001, the trend reversed, and the number of unemployed persons fell below the potential indicator already in 2001.

3.2 Budgetary Elasticities Relative to Corresponding Macroeconomic Bases

To estimate how fluctuations of macroeconomic variables impact budget revenues and expenditures, the deviations of respective revenue and expenditure categories' macroeconomic bases from their potential levels and the sensitivity of these categories to shifts in corresponding bases shall be both accounted for. Given the short time series of Latvia, a flawless econometric estimation of budgetary elasticities is not possible, therefore assumptions are made on the basis of tax legislation.[1]

Direct taxes on households

The category of direct taxes on households comprises PIT. PIT is a direct tax levied on the taxable income earned by private individuals in the taxation period (calendar year) from which non-taxable minimum is subtracted. The rate of PIT has been unchanged since 1996 and stands at 25%. Since then, revenues from PIT have gradually been increasing (both in absolute terms and as percentages of GDP) due to both rising wages and salaries of employees in the economy and improved tax administration.

[1] The econometric estimation of budgetary elasticities has been conducted, yet its outcomes are not useful due to the short time series.

CABB estimation uses only that part of PIT, which is collected from the employees in the private sector. The estimation of Latvia's CABB rests on the following assumptions:
– with the number of employees in the private sector increasing by 1%, PIT revenues from the private sector employees grow by 1%,
– with the average real wage of employees in the private sector rising by 1%, PIT revenues from the private sector increase by 1.2% taking into account that PIT is not levied on the non-taxable minimum.

Direct taxes on companies

This category comprises CIT whose rate was 25% until 2001; this rate was gradually lowered starting with 2002 to enhance investment and economic growth. It was 22% in 2002, 19% in 2003, and 15% as of 2004. Despite the rate cuts, PIT revenues more than doubled in the given period as corporate profits grew at a fast pace. Nevertheless, their ratio to GDP declined slightly. As the CIT rate is the same for all income groups, it is assumed that with the corporate profits increasing by 1%, the amount of CIT revenues grows by 1%.

Social security contributions

SSC comprise payments made by both the employer and the employee, and they are levied on gross income of employees. Between 1996 and 2003, the employer's rate was gradually reduced from 33% to 24.09%, while the employee's rate was increased from 5% to 9% in line with improvements in employment situation and the reduction of shadow economy. The total SSC rate dropped from 38% in 1996 to 33.09% in 2004. In absolute terms, the SSC revenues increased in the given period, while their ratio to GDP declined. The increase in SSC revenues was triggered by the rise in average wages and salaries of employees in the economy as well as in the number of employed in the period of recovery that followed the recession caused by the 1998 Russian financial crisis. In addition, the reforming of the country's pension system facilitated the reduction of the shadow economy and increased the amount of revenues from SSC. The estimation of CABB is strictly limited to SSC made by the private sector. It is assumed on the basis of Latvia's tax legislation that the elasticity of SSC relative to both bases (the number of employees in the private sector and average real compensation of employees in the private sector) is *1*.

Indirect taxes

In Latvia, IT constitute the largest budget revenue category. This category primarily comprises revenues from value added tax, excise tax, and customs duties. IT revenues relative to GDP in Latvia have gradually been shrinking despite the expansion of IT taxation bases and tax rate increases to meet the EU requirements. It may partly be due to the expansion of exports and the existence of shadow economy in the country. The estimation of CABB is strictly limited to IT made by the private sector. It is

assumed that with the private consumption strengthening by 1%, IT revenues from the private sector increase by 1%.

Unemployment related budget expenditure

URE incorporates all expenditures of the special employment budget in Latvia underpinned by the unemployment related expenditure. URE depends on the number of unemployed persons, the ratio of benefit recipients in the total number of unemployed persons, and the amount of the benefit paid to one recipient. The study assumes that with the number of unemployed persons increasing by 1%, URE also goes up by 1%, while the other factors (ratio of benefit recipients and the amount of the benefit) remain unchanged (*ceteris paribus* condition is necessary because of the opinion that neither the benefit recipient ratio nor the amount of the benefit are sensitive to the economic growth cycles).

Table 1 sums up budgetary elasticity values produced in compliance with the ESCB methodology for Latvia (Bank of Latvia estimates), EU15 on the average (ESCB estimates) and EMU members (ESCB estimates).

Table 1

BUDGETARY ELASTICITIES RELATIVE TO CORRESPONDING MACROECONOMIC BASES

Category of budget revenues or expenditures	Macroeconomic base used in CABB calculation	Budgetary elasticities		
		Latvia	EU15 average (ESCB estimates)	EMU member average (ESCB estimates)
PIT (private sector share)	Employment in the private sector	1.00	1.00	1.00
	Average compensation of employees in the private sector	1.20	1.50	1.60
SSC (private sector share)	Employment in the private sector	1.00	1.00	1.00
	Average compensation of employees in the private sector	1.00	1.00	1.00
CIT	Corporate profit	1.00	1.20	1.20
IT (private sector share)	Private consumption	1.00	1.00	1.00
URE	Number of unemployed	1.00	0.90	0.80

3.3 CABB Calculation

The cyclical component of the budget balance (in % of GDP) is calculated from the budgetary elasticities relative to corresponding macroeconomic bases and the gaps of macroeconomic variables that are computed applying the HP filter. CABB is derived by subtracting the cyclical component of the budget balance in formula [4] from its actual value. Authors' estimates of the actual budget balance, its cyclical component and CABB are presented in Chart 2; additional CAPBB assessment produced by the authors is given separately in Table 2.

Chart 2

LGGB BALANCE, ITS CYCLICAL COMPONENT AND CABB
(consistently with ESCB methodology; % of GDP)

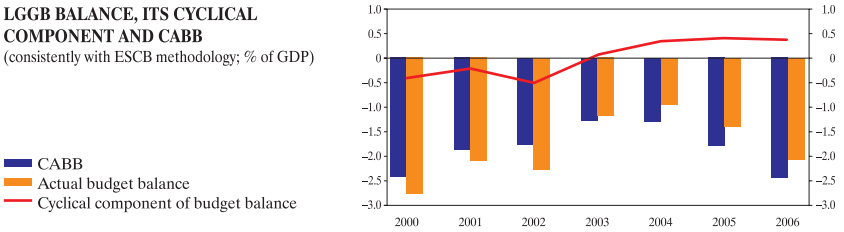


Table 2

LGGB BALANCE, ITS CYCLICAL COMPONENT, CABB AND CAPBB
(consistently with the ESCB methodology; % of GDP)

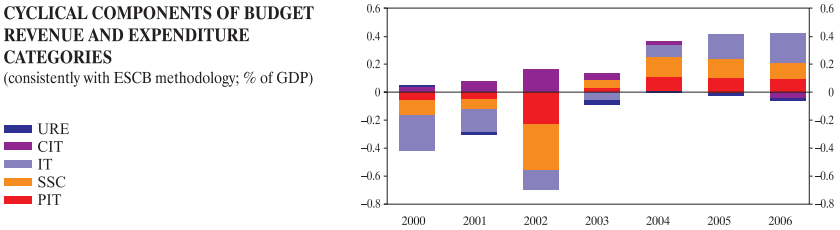
Year	Budget balance	Cyclical component of budget balance	CABB	CAPBB
2000	–2.8	–0.4	–2.4	–1.4
2001	–2.1	–0.2	–1.9	–0.9
2002	–2.3	–0.5	–1.8	–1.0
2003	–1.2	0.1	–1.3	–0.5
2004	–1.0	0.4	–1.3	–0.6
2005	–1.4	0.4	–1.8	–1.1
2006	–2.1	0.4	–2.5	–1.8

Calculations show that Latvia's deficit primarily is structural and that fluctuations of macroeconomic variables do not play a significant role. It is underpinned, first, by a comparatively light tax burden (correspondingly small ratios of revenue and expenditure categories to GDP), and, second, proportionate tax rates and small values of budgetary elasticities due to them. The dynamics of CAPBB is close to that of CABB, as changes in interest rate payments relative to GDP are moderate, with the two factors moving in opposite directions (the government debt growing and the effective interest rate declining).

Chart 3 shows some components of the cyclical budget balance revenue and expenditure categories (in % of GDP). In Latvia, the cyclical component of the budget balance is most affected by IT that constitute the largest group of taxes. The impact of SSC and PIT cyclical fluctuations cannot be neglected either. The contribution of these taxes to the negative cyclical budget balance was particularly strong in 2002 determined by a very large negative average wage gap for persons employed in the private sector. CIT, despite its small share in GDP, is a substantial contribution to the cyclical component of the budget balance in some years (particularly in 2001 and 2002) due to strong fluctuations of the corporate profit.

Chart 3

CYCLICAL COMPONENTS OF BUDGET REVENUE AND EXPENDITURE CATEGORIES
(consistently with ESCB methodology; % of GDP)



3.4 Assessing the Composition Effect

The estimation of the cyclical component of the budget balance on the back of cyclical fluctuations of individual macroeconomic bases allows for the assessment of the composition effect emerging in situations where macroeconomic base cycles do not coincide with GDP cycles. The ESCB has developed a methodology for measuring the magnitude of the composition effect, which rests upon the sensitivity of the budget balance. The value of the budget balance sensitivity is not constant and changes on an annual basis along with shifts in the tax burden and elasticities of macroeconomic variables relative to GDP. Table 3 demonstrates that the sensitivity of LGGB balance declined gradually in 1996–2004 under the impact of an easing tax burden due to cuts in a number of tax rates in some past years. The average sensitivity value of the budget balance for the given period was 0.34% of GDP.

Table 3

SENSITIVITY OF LGGB BALANCE
(consistently with the ESCB methodology; % of GDP)

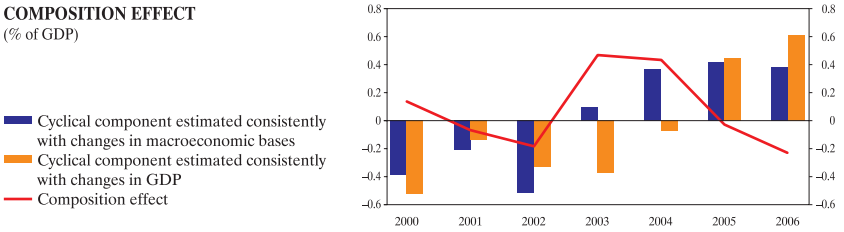
Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	Average value
Sensitivity of budget balance	0.37	0.32	0.36	0.39	0.34	0.33	0.32	0.32	0.32	0.34

For the purpose of measuring composition effect, GDP was divided into the trend and cyclical component applying the HP filter, and output gaps were calculated. The

cyclical component of the budget balance was calculated on the basis of the balance sensitivity and output gap. The difference between cyclical components of the budget balance calculated by the methodologies referred to above reflects the composition effect. For Latvia, this effect is relatively large in some years, pointing to the validity of the macroeconomic bases approach (see Chart 4). The effect was particularly significant in 2003 and 2004 when the dynamics of macroeconomic variables determined a positive cyclical component of the budget balance but the GDP dynamics triggered a negative cyclical component.

Chart 4

COMPOSITION EFFECT
(% of GDP)



4. ASSESSMENT OF LATVIA'S CABB USING THE OECD METHODOLOGY

4.1 Estimation of Output Gap

CABB assessment using the OECD methodology is based on the estimation of the output gap. Budgetary elasticities are estimated relative to GDP, not relative to macroeconomic variables. In addition, the OECD methodology does not foresee the exclusion of the public sector share from budget revenues and expenditures.

The OECD methodology provides for the application of the production function to the estimation of the GDP potential. For the purpose of assessing the production function of Latvia, the study makes use of the actual quarterly data for the period from the first quarter of 1996 to the fourth quarter of 2004. Quarterly data on capital stock *(K)* at constant prices is not available therefore it is assumed that a quarterly increase on capital is achieved via investment from which depreciation is subtracted.

The result of the production function estimation is following:

$$\ln(GDP_t) = 4.448 + 0.286\ln(K_t) + 0.714\ln(L_t) + 0.008t + u_t \qquad [19]$$

$DW = 0.90$

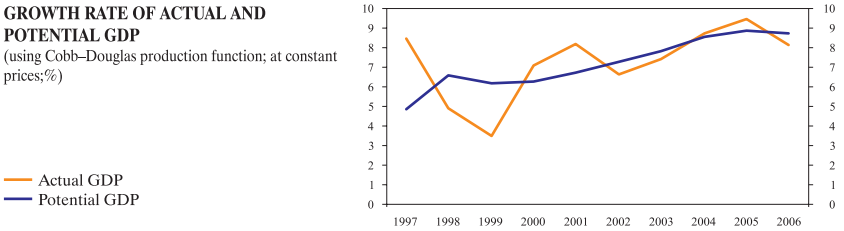
where
GDP_t is Latvia's GDP at constant prices;
L_t is the number of persons employed in the economy;
K_t is capital stock.

The DW (Durbin–Watson) statistic points to autocorrelation, yet further calculations to exclude it are not required, as according to equation [15] the total factor productivity log can be estimated as a residual of the production function.

Substituting the actual data with potential estimations consistently with equations [12], [13] and [15], and employing the obtained production function elasticities, the potential output is calculated for the period from the first quarter of 1996 to the fourth quarter of 2006. Chart 5 shows the growth rate of the potential and actual GDP. In the reviewed period, Latvia's GDP grew by 7.0% per year on average. The actual GDP was relatively volatile, showing the lowest growth rate in 1999 (a mere 3.3% increase year-on-year). The actual GDP is expected to achieve its highest growth rate in 2005 (9.3% year-on-year).

Chart 5

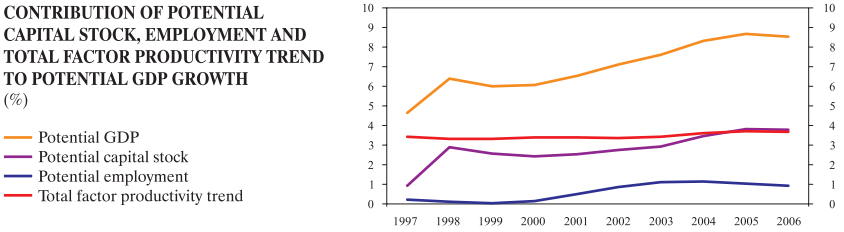
GROWTH RATE OF ACTUAL AND POTENTIAL GDP
(using Cobb–Douglas production function; at constant prices;%)



The potential GDP growth rate is affected by the growth in potential capital stock, potential employment and total factor productivity trend. The dynamics in Chart 6 shows that shifts in the potential GDP growth primarily depend on fluctuations in the potential fixed capital growth because the potential labour force growth was relatively slow in the reviewed period, and the total factor productivity increased evenly over the entire period. Nevertheless, the acceleration of the potential labour force growth in 2001 and 2002 made a substantial contribution to the potential GDP growth in this period.

Chart 6

CONTRIBUTION OF POTENTIAL CAPITAL STOCK, EMPLOYMENT AND TOTAL FACTOR PRODUCTIVITY TREND TO POTENTIAL GDP GROWTH
(%)

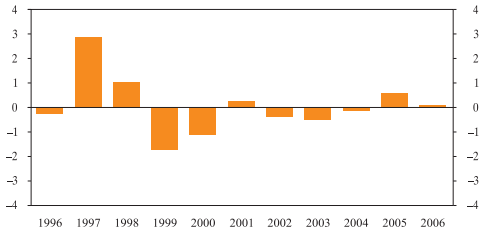


Output gaps calculated from the production function are given in Chart 7. Unfortunately, the results do not allow for making sound judgments about the duration of the

economic cycle in Latvia as it is not distinctly marked. For the period under review, the strongest positive deviation of actual GDP from the level of potential GDP was recorded in 1997 when the actual GDP exceeded the potential GDP by 2.8%; the largest negative deviation, in turn, occurred in 1999 when the potential GDP exceeded the actual GDP by 1.7%. A higher level of actual GDP in 1997 was a result of ample investments in the economy of Latvia, while the negative output gap in 1999 was due to the consequences of the 1998 Russian financial crisis. To relate output gaps to changes in the respective revenue and expenditure categories and for computing cyclically adjusted revenues and expenditures and hence also CABB, the budgetary elasticities relative to GDP must be estimated. The OECD methodology dealt with in Chapter 2 and Appendix 2 has been used in the estimation.

Chart 7

OUTPUT GAP
(% of potential GDP)



4.2 Budgetary Elasticities Relative to GDP

The assessment of budgetary elasticities relative to GDP using the OECD methodology goes through two phases: first, budgetary elasticities relative to corresponding macroeconomic bases are estimated, and then elasticities of macroeconomic bases relative to GDP are assessed.

The values of budgetary elasticities relative to macroeconomic bases are analysed in Chapter 3.2 and summed up in Table 1. As their econometric estimation produced illogical results due to Latvia's short time series, these elasticity values were computed on the basis of Latvia's tax legislation characterised by proportional direct tax rates.

Computations of macroeconomic base elasticities relative to GDP are given in Appendix 3, with their values summed up in Table 4.

Overall, budgetary elasticities relative to GDP answer the following description.

1. They compare well to average values of budgetary elasticities in OECD countries, though in most cases they are smaller by their absolute value (elasticity of CIT excluding). The elasticity of SSC relative to GDP is the closest to the OECD average. By contrast, the URE elasticity value relative to GDP (in absolute value terms) in OECD countries is two times above the respective value of Latvia. In these countries, the

Table 4

BUDGETARY ELASTICITIES RELATIVE TO GDP
(consistently with OECD methodology)

Budget category	Elasticity formula	Value of budgetary elasticity	Elasticity component	Value of elasticity component
PIT	$\varepsilon_{PIT, Y_r} = \varepsilon_{E, Y_r}(1 + \varepsilon_{PIT, \omega}\varepsilon_{\omega, E})$	0.73 (OECD average: 1.00)	ε_{E, Y_r}	0.42
			$\varepsilon_{\omega, E}$	0.62
			$\varepsilon_{PIT, \omega}$	1.20
CIT	$\varepsilon_{CIT, Y_r} = \frac{1-(1-\frac{F}{Y_r})\varepsilon_{E, Y_r}(1+\varepsilon_{\omega, E})}{\frac{F}{Y_r}}$	1.86 (OECD average: 1.30)	ε_{E, Y_r}	0.42
			$\varepsilon_{\omega, E}$	0.62
SSC	$\varepsilon_{SSC, Y_r} = \varepsilon_{E, Y_r}(1 + \varepsilon_{SSC, \omega}\varepsilon_{\omega, E})$	0.68 (OECD average: 0.80)	ε_{E, Y_r}	0.42
			$\varepsilon_{\omega, E}$	0.62
			$\varepsilon_{SSC, \omega}$	1.00
IT	$\varepsilon_{IT, Y_r} = \varepsilon_{IT, C}\varepsilon_{C, Y_r}$	0.47 (OECD average: 0.90)	$\varepsilon_{IT, C}$	1.00
			ε_{C, Y_r}	0.47
URE	$\varepsilon_{URE, Y_r} = -\varepsilon_{E, Y_r}[\frac{1-\varepsilon_{L^S, E}}{u^{NAWRU}} - 1]$	–2.13 (OECD average: –4.30)	ε_{E, Y_r}	0.42
			$\varepsilon_{L^S, E}$	0.37

natural unemployment level is lower and sensitivity of the number of employed persons relative to GDP is higher than in Latvia.

2. As a component in formula for the CIT elasticity relative to GDP is the ratio of corporate profit to real GDP, and a component in the formula for URE relative to GDP is the natural unemployment level, these elasticity values can be computed for each individual year. Nevertheless, the authors came to a conclusion that the choice of the year does not significantly affect CABB values, which, changing by some hundredths at the most, play an insignificant role. The authors opted for 2004 as the base year for the estimation of these elasticities.

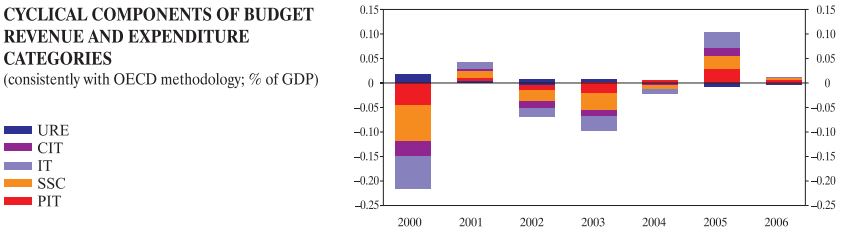
3. The elasticity value of the number of employed persons relative to GDP is consistent with the Okun's Law according to which GDP fluctuates more than does the number of employed persons. With GDP increasing by 1% in Latvia, the number of persons employed in the economy grows only by 0.42%. In OECD countries, the average elasticity of the number of employed persons relative to GDP is 0.60%. Consequently, the number of employed persons in Latvia is less sensitive to changes in GDP, implying that labour force productivity increases at a faster pace in Latvia than in OECD countries.

4.3 CABB Estimation

Chart 8 presents cyclical components of cyclically sensitive budget revenue and expenditure categories, which were estimated consistently with the OECD methodology[1] using output gaps given in Chart 7 and budgetary elasticities given in Table 4.

Chart 8

CYCLICAL COMPONENTS OF BUDGET REVENUE AND EXPENDITURE CATEGORIES
(consistently with OECD methodology; % of GDP)

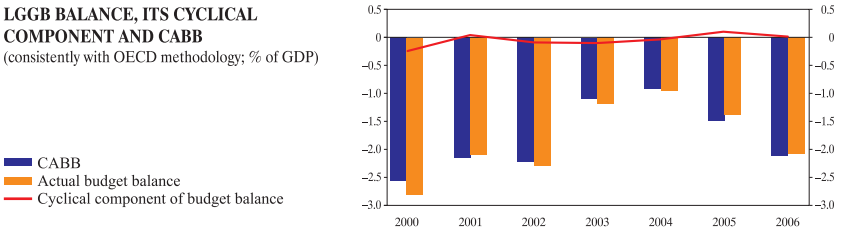


All budget categories are subject to the same cycle, i.e. the cycle of GDP, and, consequently, cyclical components all depend on the same factor. In some years, the directions of cyclical components of budget categories estimated consistently with the ESCB methodology do not coincide because the corresponding various macroeconomic bases are in different phases of the cycle. IT, SSC and PIT are budget categories with the highest share in GDP. That determines their significant impact on the cyclical component of the budget balance when the latter is estimated also by the production function.

Chart 9 and Table 5 show the actual budget balance, the cyclical component of the budget balance estimated using the OECD methodology, and CABB, with CAPBB given separately in Table 5. The estimation results support the opinion voiced above that Latvia's budget deficit primarily is structural and GDP fluctuations affect the budget balance to a little extent. That is determined by, first, a moderate tax burden (and accordingly small revenue and expenditure ratio to GDP), and, second, proportionality of tax rates (and small elasticity values resulting from it). It should be noted that the cyclical components determined by the OECD methodology are smaller by

Chart 9

LGGB BALANCE, ITS CYCLICAL COMPONENT AND CABB
(consistently with OECD methodology; % of GDP)



[1] Assessments refer to the period beginning with 2000 to render them comparable with those made using the ESCB methodology.

Table 5

LGGB BALANCE, ITS CYCLICAL COMPONENT, CABB AND CAPBB
(consistently with OECD methodology; % of GDP)

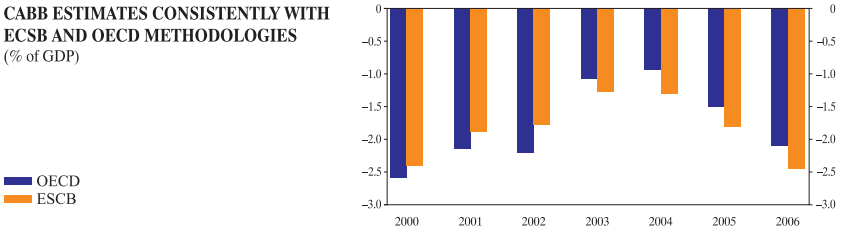
Year	Budget balance	Cyclical component of budget balance	CABB	CAPBB
2000	–2.8	–0.2	–2.6	–1.6
2001	–2.1	0.0	–2.1	–1.2
2002	–2.3	–0.1	–2.2	–1.4
2003	–1.2	–0.1	–1.1	–0.3
2004	–1.0	0.0	–0.9	–0.2
2005	–1.4	0.1	–1.5	–0.8
2006	–2.1	0.0	–2.1	–1.4

their absolute value than those determined using the ESCB methodology across the entire reviewed period (except 2003), which can be basically associated with small budgetary elasticities relative to GDP.

Chart 10 shows that the absolute value of CABB estimated using the OECD methodology was higher between 2000 and 2002, whereas the opposite is true for the up-coming years. Due to differences in CABB estimation results, the assessment of the fiscal policy of the Latvian Government must rest on CABB estimations consistently with the both methods.

Chart 10

CABB ESTIMATES CONSISTENTLY WITH ECSB AND OECD METHODOLOGIES
(% of GDP)



5. ASSESSMENT OF THE GOVERNMENT FISCAL POLICY IN LATVIA

It has been stated in Chapter 1 that EU countries have to implement such fiscal policy that would help avoid the risk of excessive budget deficit. Provided a country has not met the medium-term budget objective, it has to introduce an improvement to CABB that would be particularly significant in economic good times. If the medium-term objective has been met, later deviations from it are not desirable. The experience of EU countries shows that the deficit exceeding 3% of GDP occurs mainly because economies do not pursue high enough improvements of their CABB during economic

good times to ensure that the fiscal policy criteria stipulated by the Treaty would be met in economic bad times. In addition, the abidance by the Maastricht budget deficit and government debt criteria helps countries avoid the excessive budget procedure, which may translate into sanctions for the EMU countries and into postponement of EMU membership for the EU10 countries. In addition, the availability of financing from the Cohesion Fund rests upon meeting the above criteria.

In 2004, CABB of LGGB was –1.3% of GDP according to the ESCB methodology, and –0.9% of GDP according to the methodology of the OECD.

The sensitivity of LGGB balance to macroeconomic cycles is low (0.32% in 2004). At such CABB, the risk for the government deficit to exceed the 3% of GDP reference value in the event of falling economic growth rates is insignificant. Nevertheless, the risk of an unexpected fall in tax revenues always exists. In addition, the on-going population aging process in Europe and also in Latvia is an additional upward risk to fiscal sustainability over a longer horizon. An overall burden resulting from population aging may be alleviated, if prior to an expected worsening of the demographic situation long-term sustainability of public finances is ensured. Therefore, further budgetary consolidation that would help contain also inflationary pressures and reduce the current account deficit threatening the country's economic growth is welcome in Latvia.

Table 6

LATVIA'S FISCAL POSITION

Year	ESCB methodology			OECD methodology		
	Output gap (% of potential GDP)	Changes in CAPBB	Fiscal position	Output gap (% of potential GDP)	Changes in CAPBB	Fiscal position
2000	–1.6	3.1	Pro-cyclically restrictive	–1.1	2.6	Pro-cyclically restrictive
2001	–0.4	0.5	Pro-cyclically restrictive	0.2	0.4	Counter-cyclically restrictive
2002	–1.0	0.0	Neutral	–0.4	–0.2	Counter-cyclically expansionary
2003	–1.2	0.5	Pro-cyclically restrictive	–0.5	1.1	Pro-cyclically restrictive
2004	–0.2	–0.1	Counter-cyclically restrictive	–0.1	0.1	Pro-cyclically restrictive
2005	1.4	–0.5	Pro-cyclically expansionary	0.5	–0.6	Pro-cyclically expansionary
2006	1.9	–0.7	Pro-cyclically expansionary	0.1	–0.6	Pro-cyclically expansionary

The Bank of Latvia forecasts and estimates, however, point to a worsening of CAPBB by 0.5–0.6 percentage point of GDP in 2005 (see Table 6). In economically favourable periods, the Government of Latvia pursues expansionary fiscal policy. Pro-cyclical expansionary fiscal policy is inconsistent with the provisions under the SGP. Latvia is most likely to opt for a pro-cyclical expansionary fiscal policy also in 2006. Apparently, it would contribute to an increase in budget imbalances with a simultaneous upward risk to exceed the 3% budget deficit of GDP reference value.

The Government of Latvia's argument for its fiscal expansion primarily is the need to launch and complete a medium-term structural reform of the health care sector, to introduce changes and improvements to the social sector, and to ensure co-financing to projects implemented under the EU financing. Such commitments are to be positively evaluated. Nevertheless, the Latvian Government must prudently review all budget expenditure items for the above commitments (structural reforms and improvements in the social area) not to obstruct the attainment of Latvia's goal of joining the euro area and for the economy not to incur new problems due to a larger current account deficit and higher inflation.

CONCLUSIONS

The paper deals with methodologies that are most commonly used in the estimation of CABB. The ESCB methodology substantially differs from other methodologies, and this difference consists in the fact that, first, it takes into account the effect of uneven growth, which emerges when development trends of budget revenue and expenditure macroeconomic bases do not coincide with GDP growth trends, and, second, it uses the statistical HP filter in the estimation of potential values of macroeconomic variables. Consequently, elasticities of individual budget revenue and expenditure categories are not estimated relative to GDP but relative to the corresponding macroeconomic bases. All other methodologies, in turn, are closely related and their distinctions primarily lie in the estimation of NAWRU and hence also the potential output level.

The research paper estimates CABB values of LGGB using methodologies of the ESCB and OECD. The findings lead to a conclusion that budget deficit in Latvia is basically structural, i.e. it is a result of the Government's fiscal policy, whereas fluctuations of macroeconomic variables have a relatively weak effect. It is determined by a comparatively light tax burden, proportional tax rates and small unemployment benefits.

Despite restrictive fiscal policy of the Government in 2003, LGGB was not balanced in terms of cyclical adjustment. Moreover, in the period of the economy undergoing fast growth and hence exceeding its potential, the Government of Latvia is pursuing fiscal expansion instead of ensuring an on-going improvement of CAPBB. According to the Bank of Latvia forecasts, the Government's fiscal policy in 2005 is pro-cyclically expansionary and likely to remain such also in 2006, which is at variance with the criterion of fiscal sustainability and inconsistent with the SGP requirements. Fiscal expansion in years of economic growth and prosperity brings about additional pressure on consumer prices and the current account deficit.

APPENDICES

Appendix 1
SENSITIVITY OF THE BUDGET BALANCE TO ECONOMIC CYCLES

The ESCB methodology for computing CABB defines several cyclically sensitive budget categories: direct taxes on households, direct taxes on companies, SSC, IT and URE. Moreover, it has been emphasised that tax payments of the private sector are cyclically sensitive. The average compensation of private sector employees *(ω_p)* and employment in the private sector *(E_p)* are the macroeconomic bases for PIT and SSC. Corporate profit *(F)* forms the base for CIT, and private consumption *(C_p)* is the base for IT. URE depends on the number of unemployed *(U)* in the country.

1. PIT (SSC) elasticity to GDP is computed as a product of the elasticity of PIT (SSC) to total compensation of private sector employees *(W_p)* and the elasticity of W_p to GDP *(Y_r)*:
1.1 PIT (SSC) elasticity to total compensation of private sector employees can be estimated in compliance with one of the methodologies described in Chapter 2;
1.2 the elasticity of total compensation of private sector employees to GDP is calculated as follows:

$$\varepsilon_{W_p, Y_r} = \frac{1 - \varepsilon_{IT, C_p} \dfrac{IT}{D_p}}{(W_p + F)/Y_r} \qquad [1A1]$$

where D_p is the total private demand of the economy.

2. CIT elasticity to GDP is computed as a product of the elasticity of CIT to F and the elasticity of F to Y_r:
2.1 CIT elasticity to F is estimated in compliance with one of the methodologies described in Chapter 2;
2.2 the elasticity of F to Y_r equals ε_{W_p, Y_r}.[1]

3. IT elasticity to GDP is the product of the elasticity of IT to C_p and the elasticity of C_p to Y_r:
3.1 IT elasticity to C_p is estimated in compliance with one of the methodologies described in Chapter 2;

3.2 the elasticity of C_p to Y_r is computed as follows: $\varepsilon_{C_p, Y_r} = \dfrac{Y_r}{D_p}$ [1A2].

4. URE elasticity to GDP is the product of the elasticity of URE to U and the elasticity of U to Y_r:

[1] It can be concluded from several assumptions of the ESCB methodology.(2)

4.1 URE elasticity to U is estimated in compliance with one of the methodologies described in Chapter 2;

4.2 URE elasticity to Y_r is computed as follows: $\varepsilon_{U, Y_r} = -\varepsilon_{E_p, Y_r} \frac{E_p}{U}$ [1A3],

ε_{E_p, Y_r} can be estimated as coefficient a_2 of regression $\ln E_p = a_0 + a_1 t + a_2 \ln Y_r + u$.

Appendix 2

FORMULAS OF OECD BUDGETARY ELASTICITIES

Elasticity formulas for PIT and SSC are:

$$\varepsilon_{PIT, Y_r} = \varepsilon_{E, Y_r} (1 + \varepsilon_{PIT, \omega} \varepsilon_{\omega, E}) \quad [2A1],$$

$$\varepsilon_{SSC, Y_r} = \varepsilon_{E, Y_r} (1 + \varepsilon_{SSC, \omega} \varepsilon_{\omega, E}) \quad [2A2]$$

where E denotes the total number of persons employed in the economy, ω is the average compensation of persons employed in the economy (at constant prices), Y_r is GDP at constant prices, and ε is the respective elasticity.

To calculate the elasticity of the number of employed to real GDP (ε_{E, Y_r}), the following regression is used:

$$\log(\frac{E}{E^*}) = a_0 + a_1 t + a_2 \log(\frac{Y_r}{Y_r^*}) \quad [2A3]$$

where E^* and Y_r^* are potential values of the respective variables. The regression coefficient a_2 is the estimate of elasticity ε_{E, Y_r}.

The elasticity of the average real compensation to the number of employed ($\varepsilon_{\omega, E}$) is estimated using the following regression equation:

$$\log(\frac{\omega E^*}{Y_r^*}) = b_0 + b_1 t + b_2 \log(\frac{E}{E^*}) \quad [2A4]$$

where coefficient b_2 is the estimate of this elasticity.

Elasticity formula for CIT is:

$$\varepsilon_{CIT, Y_r} = \frac{1 - (1 - \frac{F}{Y_r}) \varepsilon_{E, Y_r} (1 + \varepsilon_{\omega, E})}{\frac{F}{Y_r}} \quad [2A5].$$

Elasticity formula for IT is:

$$\varepsilon_{IT,\,Y_r} = \varepsilon_{IT,\,C_P}\varepsilon_{C_P,\,Y_r} \qquad [2A6].$$

The elasticity of private consumption to GDP $\varepsilon_{C_P,\,Y_r}$ can be estimated using the regression

$$\log(\frac{C_P}{Y_r^*}) = d_0 + d_1 t + d_2 \log(\frac{Y_r}{Y_r^*}) \qquad [2A7]$$

where d_2 is the estimate of this elasticity.

Elasticity formula for URE is:

$$\varepsilon_{URE,\,Y_r} = -\varepsilon_{E,\,Y_r}[\frac{1-\varepsilon_{L^S,\,E}}{u^{NAWRU}} - 1] \qquad [2A8]$$

where *URE* is the unemployment related expenditure, L^S is the number of economically active population, and u^{NAWRU} is the natural unemployment rate. The elasticity estimate for the number of economically active population to the number of employed $(\varepsilon_{L^S,\,E})$ is the respective coefficient e_2 in the following regression:

$$\log(\frac{L^S}{E^*}) = e_0 + e_1 t + e_2 \log(\frac{E}{E^*}) \qquad [2A9].$$

The elasticity of URE to GDP must be negative since the upsurge in the economy reduces the respective expenditure.

Appendix 3

ESTIMATES OF BUDGETARY ELASTICITIES CONSISTENTLY WITH THE OECD METHODOLOGY

PIT elasticity relative to GDP is:

$$\varepsilon_{PIT,\,Y_r} = \varepsilon_{E,\,Y_r}(1 + \varepsilon_{PIT,\,\omega}\varepsilon_{\omega,\,E}) = 0.73$$

where $\varepsilon_{E,\,Y_r}$ in the regression equation

$$\log(\frac{E}{E^*}) = 0.001 + 0.421\log(\frac{Y_r}{Y_r^*})$$

t-*statistic* *(0.131)* *(2.094)*

R^2 = *0.65*

DW = 1.72

is the coefficient at $\log(\frac{Y_r}{Y_r^*})$, i.e. $\varepsilon_{E,\,Y_r} = 0.42$.

To avoid adverse consequences of autocorrelation, the error of the regression was modelled as an AR(1) process. The trend was incorporated into the regression; however, the trend coefficient turned out to be statistically insignificant.

$\varepsilon_{\omega, E}$ in the regression equation

$$\log(\frac{\varpi E^*}{Y_r^*}) = -2.181 + 0.618\log(\frac{E}{E^*}) + 0.004t$$

t-*statistic* *(–59.359)* *(2.920)* *(3.213)*

R^2 = *0.96*

DW = 2.28

is the coefficient at $\log(\frac{E}{E^*})$, i.e. $\varepsilon_{\omega, E}$ = 0.62.

To avoid adverse consequences of autocorrelation, the error of the regression was modelled as an AR(1) process.

SSC elasticity to GDP is measured as

$$\varepsilon_{SSC, Y_r} = \varepsilon_{E, Y_r}(1 + \varepsilon_{SSC, \omega}\varepsilon_{\omega, E}) = 0.68$$

where ε_{E, Y_r} and $\varepsilon_{\omega, E}$ are coefficients computed with the help of the above regressions, i.e. ε_{E, Y_r} = 0.42 and $\varepsilon_{\omega, E}$ = 0.62.

CIT elasticity to GDP is measured as

$$\varepsilon_{CIT, Y_r} = \frac{1 - (1 - \frac{F}{Y_r})\varepsilon_{E, Y_r}(1 + \varepsilon_{\omega, E})}{\frac{F}{Y_r}} = 1.86$$

where ε_{E, Y_r} and $\varepsilon_{\omega, E}$ are coefficients computed with the help of the above regressions, i.e. ε_{E, Y_r} = 0.42 and $\varepsilon_{\omega, E}$ = 0.62.

IT elasticity to GDP is measured as

$$\varepsilon_{IT, Y_r} = \varepsilon_{IT, C_P}\varepsilon_{C_P, Y_r} = 0.47$$

where ε_{C_P, Y_r} in the regression equation $\log(\frac{C_p}{Y_r^*}) = -0.456 + 0.474\log(\frac{Y_r}{Y_r^*})$

t-*statistic* *(–48.630)* *(1.594)*

R^2 = *0.67*

DW = 2.68

is the coefficient at $\log(\frac{Y_r}{Y_r^*})$, i.e. $\varepsilon_{C, Y_r} = 0.47$.

To avoid the adverse consequences of autocorrelation, the error of the regression was modelled as an AR(1) process. The trend was incorporated into the regression; however, the trend coefficient turned out to be statistically insignificant.

URE elasticity to GDP is measured as

$$\varepsilon_{URE, Y_r} = -\varepsilon_{E, Y_r}[\frac{1-\varepsilon_{L^S, E}}{u_{NAWRU}} - 1] = -2.13$$

where ε_{E, Y_r} is a coefficient calculated using one of the above regressions, i.e. $\varepsilon_{E, Y_r} = 0.42$, and $\varepsilon_{L^S, E}$ in the regression equation

$$\log(\frac{L^s}{E^*}) = 0.213 + 0.366\log(\frac{E}{E^*}) - 0.003t$$

t-statistic (15.966) (2.620) (–5.446)

R^2 = 0.93

DW = 2.33

is the coefficient at $\log(\frac{E}{E^*})$, i.e. $\varepsilon_{L^S, E} = 0.37$.

To avoid the adverse consequences of autocorrelation, the error of the regression equation was modelled as an AR(1) process.

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