

## A disaggregated framework for analysing public finances: Germany's fiscal track record between 2000 and 2005

Various approaches to analysing the development of public finances are possible depending on the objective. In view of the European fiscal framework and especially the Stability and Growth Pact, identifying the structural pattern of development after adjustment for cyclical influences and temporary effects is of particular interest. This article explains a method devised within the Bundesbank and the Euro-system by which the development of the structural general government fiscal balance is explained on a disaggregated basis from the changes in the underlying revenue and expenditure categories. The method is illustrated by a study of recent developments in Germany. It shows that, while cyclical influences played some part in the sharp rise in the deficit after 2000, the main cause was the decline in the structural revenue ratio due to a fall in profit-related taxes from their very high base in 2000, the sluggish structural growth of key macroeconomic bases for taxes and social contributions, and tax cuts. This development was partly offset by expenditure restraint.

### The disaggregated framework

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There are many possible ways of and approaches to describing and analysing the development of public finances. For example, the analysis can be targeted at general gov-

*Possible ways  
of analysing  
public finances*

ernment or at individual components thereof, such as central, state and local government or the social security funds. Central government, in particular, is frequently the focus of attention. The data from the budgetary accounts (government financial statistics) or the national accounts are mostly used as the statistical basis. In addition, the analysis may take account of cyclical influences or exceptional factors. Studies with a longer-term horizon also embrace the implications of the predicted demographic changes, especially in the context of generational accounting.

*Analytical requirements of the European fiscal framework ...*

In connection with the EC Treaty, the national accounts data for general government (ie central, state and local government plus the social security funds) assume prominent importance. The Stability and Growth Pact details the budgetary surveillance procedure at the European level as well as the excessive deficit procedure. A major role is played in this context by the structural picture in the sense of the underlying fiscal evolution adjusted for cyclical and other temporary factors. The “disaggregated framework” presented below seeks to meet these requirements.<sup>1</sup> It is a largely standardised methodology and is therefore also suited to cross-country budgetary analysis, which requires a compressed representation of the most important information as well as comparability and transparency. In analysing forecasts of public finances, the disaggregated framework has the added advantage that it can pinpoint the quantitative importance of the key determinants – macroeconomic development, fiscal policy decisions and exceptional factors.<sup>2</sup>

In the disaggregated framework the structural evolution of the most important budget categories are derived in a first step by factoring out cyclical influences and temporary effects. Then the significance of the cyclically adjusted macroeconomic development for changes in the structural revenue ratio is calculated and separated from the consequences of fiscal policy measures. Together with additional information on expenditure-related factors, such as the influence of financing conditions on the change in the interest expenditure ratio, the calculations form the starting point for further analysis.

*... are tackled in the disaggregated framework*

A central component of this framework is factoring out the influence of cyclical fluctuations on general government finances. The cyclical adjustment method developed by the European System of Central Banks (ESCB) is used for this purpose. Individual general government revenue and expenditure categories are linked via constant elasticities to their related macroeconomic reference variables – for example, wage tax receipts are linked to gross wages and salaries (see box on pages 64 and 65). Based on the legal *status quo*, the elasticities express the relative change in a given

*Cyclical adjustment*

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1 This approach was proposed in: J Kremer and K Wendorff (2004), Germany after the qualification for EMU: A disaggregated approach to the analysis of structural public finance developments, *Vierteljahreshefte zur Wirtschaftsforschung* 73, 3, pp 358-370. It was further developed into the form used in this article and applied in a cross-country study in: J Kremer, C R Braz, T Brosens, G Langenus, S Momigliano, M Spolander, A disaggregated framework for the analysis of structural developments in public finances, ECB Working Paper Series, 579/2006, and Discussion Paper Series 1, 05/2006, of the Deutsche Bundesbank's Research Centre.

2 A retrospective application to the countries Belgium, Finland, Germany, Italy, the Netherlands and Portugal as well as an analysis of forecast budgetary developments in Belgium is contained in: Kremer et al (2006), loc cit.

budget category as a result of a 1% change in the underlying reference variable. The cyclical fluctuation of the respective reference variable thus determines the cyclical movements of the corresponding budget category. Adjustment methods which derive the cyclical component of the overall fiscal balance directly from the output gap (ie deviation of GDP from its trend or potential),<sup>3</sup> are less suitable for use in the disaggregated framework as they supply no information on the cyclical components of individual budgetary positions. Given the in part very different patterns of development of the individual macroeconomic reference variables and of GDP (eg in the case of an export-driven upswing), the ESCB procedure permits a more differentiated recording of cyclical influences than methods oriented simply to the output gap.

The cyclical influences on the macroeconomic reference variables are calculated as the deviation from their medium-term trend using a statistical filter. This also includes forecasts of future macroeconomic developments which may have to be adjusted to new findings. At the current end this may entail corrections of the assessment of the cyclically related fiscal balance or of the overall development of public finances.<sup>4</sup> Cyclical adjustment is nonetheless an important basis of budgetary analysis and planning. The latter requires a macroeconomic forecast and should be supplemented by a classification of the budgetary situation in the light of its structural component – undertaken in the context of the current assessments.

Besides cyclical influences, temporary effects may also influence budgetary performance. In this study, both temporary fiscal policy measures and temporary influences not triggered by concrete decisions are included as long as their financial impact can be gauged. There is usually some scope for discretion regarding the effects to be included and in gauging their financial impact. Apart from the UMTS proceeds in 2000, temporary effects had very little impact on fiscal performance during the period under review.

Besides cyclical influences and the temporary effects included here, other transitory influences may have an impact on public finances. Among the factors discussed in this context, for example, are the direct consequences of short-term asset price changes for general government revenue.<sup>5</sup> As there is at present no standardised approach to estimating such other temporary effects, they are dealt with on a case-by-case basis.

The structural general government revenue and expenditure figures are shown in relation to trend GDP (see table on page 66). In order to identify the factors that have determined

*Adjustment  
for temporary  
effects*

*Other transitory  
influences*

*Changes in  
structural  
revenue and  
expenditure  
explain devel-  
opment of  
structural  
deficit*

<sup>3</sup> Such "aggregated" methods are used, for example, by the European Commission, the OECD and the IMF. For details see inter alia N Girouard and C André (2005), Measuring cyclically-adjusted budget balances for OECD countries, OECD Economics Department Working Papers, No 434.

<sup>4</sup> The role of wrong assessments of the macroeconomic perspectives for the budgetary plans after 2000 is discussed in Kremer and Wendorff (2004), loc cit.

<sup>5</sup> For measuring the impact of asset price changes on public finances see for example N Girouard and R Price (2004), Asset price cycles, one-off factors and structural budget balances, OECD Economics Department Working Papers, No 391 or F Eschenbach and L Schuknecht (2002), Asset prices and fiscal balances, ECB Working Paper Series, 1/2002.

## The basis of the disaggregated framework \*

### 1 The influence of macroeconomic developments on the general government budget

Under the disaggregated framework, the general government budget is first adjusted for the influence of cyclical fluctuations. Following this, the importance of trend economic growth for changes in the cyclically adjusted ratios of tax and social contributions receipts to GDP is computed. To this end, individual budget categories are linked with macroeconomic reference variables using elasticities. The institutional rules (for example the tax legislation) are taken into account in determining the elasticities. They specify the size – under the legal *status quo* – of the percentage change in a budget category in consequence of a 1% change in the respective reference variable.

On the revenue side, the following categories are taken into account (respective macroeconomic reference variables in brackets): wage tax (gross wages and salaries per employee and number of employees), profit-related taxes defined as the sum of corporation tax, local business tax, assessed income tax and investment income taxes (entrepreneurial and investment income), turnover tax (nominal private consumption, nominal private homebuilding investment and nominal government consumption expenditure subject to VAT), the – largely volume-based – excise taxes (real private consumption) and social contributions (gross wages and salaries). The cyclical adjustment is performed on the assumption that social contributions and wage tax paid on gross wages and salaries in the general government sector, as well as government expenditure subject to VAT, are not af-

ected by cyclical fluctuations. On the expenditure side, unemployment benefit (unemployed persons) and statutory pension insurance expenditure (gross wages and salaries per employee) are adjusted for cyclical influences.

Certain special features are taken into consideration for individual categories. For example, the elasticity of wage tax receipts to changes in gross wages and salaries per employee is greater than one owing to the progressive income tax scheme, while the elasticity to changes in the number of employees is set to one. In the case of turnover tax, changes in the respective shares of zero-rate, reduced-rate and regular-rate components in the reference variables are approximately taken into account. Profit-related taxes and pension expenditure are assumed to have a lagged correlation to the respective reference variable. The long-term elasticity of profit-related taxes is distributed across the current year and the two preceding years using constant weights. The computation of the pension component takes into account that the pattern of individual pension payments approximately follows the growth in gross wages and salaries per employee with a time lag.

#### (a) Cyclical adjustment

The cyclical influence on a given category is derived by multiplying the elasticity by the relative trend deviation of the real reference variable. The trend deviation is calculated using a Hodrick-Prescott filter with a smoothing parameter of  $\lambda = 30$ .<sup>1</sup> For the price adjustment of gross wages and salaries, as well as entrepreneurial and investment income, for which no de-

gated approach is provided by Kremer et al (2006), loc cit. — 1 The choice of filter and smoothing parameter is discussed in Bouthevillain et al (2001), loc cit. The derived statements also apply qualitatively if a higher value of the smoothing parameter is used, for example 100

\* For further information on the ESCB's cyclical adjustment procedure see C Bouthevillain, P Cour-Thimann, G van den Dool, P Hernández de Cos, G Langenus, M Mohr, S Momigliano and M Tujula, Cyclically adjusted budget balances: an alternative approach, ECB Working Paper Series, No 77/2001. A more detailed description of the disagre-

flators are specified in the national accounts, the private consumption deflator and the GDP deflator are used respectively. To determine the structural revenue and expenditure ratios, adjusted nominal GDP is calculated in the denominator as the product of the GDP deflator and HP trend of real GDP. Thus, the same procedure is used for the nominator and the denominator.<sup>2</sup>

(b) Fiscal drag and structural decoupling of the macroeconomic base from GDP

For the structural ratios of the individual types of tax and social contributions to GDP, we calculate what proportion of a change is due to a fiscal drag or a trend decoupling of the allocated macroeconomic bases from GDP. A fiscal drag for a specific category arises when the elasticity  $\varepsilon$  of the revenue  $R$  from this category deviates from one. As a rule, the influence is determined as follows.

$$\frac{(\varepsilon - 1) m_t^T R_{t-1}}{Y_t^T},$$

in which  $m^T$  stands for the growth rate of the adjusted macroeconomic base and  $Y^T$  for adjusted GDP. For excise taxes, which are mostly volume-based taxes, the fiscal drag arises when changes occur in the private consumption deflator. In the case of wage tax, the fiscal drag is produced by changes in average gross wages and salaries. For profit-related taxes, the assumed time lag between changes in the macroeconomic base and tax revenue is taken into account.

as used by the European Commission in its production function approach, or if a lower value, for example 6, is used as suggested in some academic literature. — 2 In the cyclical adjustment, the cyclical influence on the nominal reference variable is equated de facto with

The influence of a decoupling of the macroeconomic base from GDP, ie of differences between the growth  $m^T$  of the adjusted macroeconomic base and  $y^T$  of adjusted GDP, is approximated from

$$\frac{(m_t^T - y_t^T) R_{t-1}}{Y_t^T}.$$

2 The development of the structural interest expenditure ratio

The annual structural change in interest expenditure  $I$  in relation to GDP is computed via the influence of changes in the average interest rate  $i$  and in the debt level  $D$ . The importance of changes in the average interest rate is determined as

$$\frac{(i_t - i_{t-1})(D_{t-1} + D_t)/2}{Y_t^T}, \text{ whereby } i_t = \frac{I_t}{(D_{t-1} + D_t)/2}.$$

The effect of changes in the debt level is calculated as a residual.

the relative trend deviation of the real reference variable. This means that the adjusted value of the nominal reference variable is identical to the product of the deflator and the trend of the real reference variable.

### Structural revenue and expenditure\* of general government as a percentage of trend GDP

Item	2000	2001	2002	2003	2004	2005
<b>Fiscal balance</b>	- 1.7	- 3.4	- 3.9	- 3.5	- 3.4	- 3.0
Interest payable	3.2	3.1	2.9	3.0	2.8	2.8
<b>Primary balance</b>	1.5	- 0.3	- 0.9	- 0.6	- 0.5	- 0.2
<b>Revenue</b>	47.3	45.3	44.5	44.2	43.0	43.3
<i>of which</i>						
Taxes and social contributions	43.5	41.5	40.7	40.6	39.6	39.8
Non-tax-related revenue <sup>1</sup>	3.8	3.9	3.8	3.7	3.4	3.5
<b>Primary expenditure</b>	49.1	48.8	48.4	47.7	46.4	46.3
<i>of which</i>						
Social payments <sup>2</sup>	27.2	27.4	27.5	27.4	26.7	27.0
Subsidies	2.0	1.9	1.8	1.7	1.6	1.5
Compensation of employees	8.2	8.0	7.9	7.7	7.6	7.4
Intermediate consumption	4.1	4.1	4.2	4.1	4.0	4.2
Gross fixed capital formation	1.8	1.8	1.7	1.5	1.4	1.3
Other expenditure <sup>3</sup>	2.6	2.6	2.4	2.4	2.2	2.1
<i>Memo item <sup>4</sup></i>						
<b>Unadjusted fiscal balance</b>	1.3	- 2.8	- 3.7	- 4.0	- 3.7	- 3.3
Cyclical component	0.6	0.6	0.2	- 0.3	- 0.3	- 0.4
Temporary effects	2.5	- 0.1	0.0	- 0.1	0.0	0.1

\* Adjusted for cyclical influences and temporary effects. In accordance with ESA 95. From 2005 including post office pension funds. This leads to a slight rise in the revenue and expenditure ratios compared with the as yet unadjusted previous years. In contrast to the figures shown by the Federal Statistical Office, totals include (without affecting net lending/net borrowing) customs

duties, the EU share in VAT revenue and EU subsidies. — <sup>1</sup> Other current transfers receivable, sales and total capital revenue. — <sup>2</sup> Including other current transfers to households. — <sup>3</sup> Other current transfers payable to corporations and the rest of the world, other net acquisitions of non-financial assets and capital transfers. — <sup>4</sup> Percentages of nominal GDP.

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the development of the structural deficit ratio, the structural changes in the main budget categories in relation to trend GDP are calculated (see table on page 70). The underlying calculations are described in greater detail in the box on pages 64 and 65.

#### Structural trends on the expenditure side

On the expenditure side a distinction is first made between interest payments and primary spending. The evolution of interest payments is basically determined by the interest rate, new borrowing and maturing debt. Under the disaggregated framework, changes in the structural interest expenditure ratio are differentiated according to whether they result from a change in average interest rates or in the debt level.

*Change in structural expenditure: interest payments and ...*

The development of the structural primary expenditure ratio is explained via the contribution of social payments, subsidies, public employee compensation, intermediate consumption, government investment and other national accounts categories (other current transfers payable, other net acquisitions of non-financial assets and capital transfers). This information is supplemented by calculations on the influence of spending on health-care, old-age pensions and the labour market as well as the change in the staffing level in the general government sector.

*... primary spending*

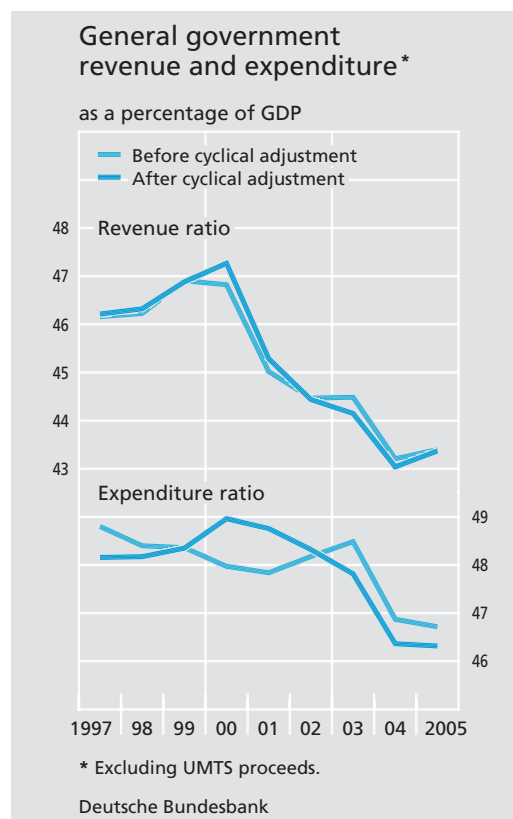
Although much expenditure is unrelated to cyclical swings, the development of the unadjusted expenditure ratios is nonetheless heavily influenced by cyclical fluctuations in nominal GDP. If, for example, expenditure

rises in line with trend GDP but current GDP grows more weakly for cyclical reasons, the unadjusted expenditure ratio increases. In this case, however, expenditure policy must not necessarily be characterised as expansive. By contrast, the changes in the structural expenditure ratios shown here reveal the underlying development tendencies (see chart on this page).

### Structural trends on the revenue side

*Macro influences, fiscal policy and exceptional factors on the revenue side*

On the revenue side, the development of receipts from taxes and social contributions and of non-tax-related revenue (other current transfers receivable, sales and total capital revenue) are shown separately. In the case of taxes and social contributions a distinction is made between the influence of macroeconomic developments and the effects of (discretionary) fiscal policy measures. Since the latter can often be calculated only approximately, the tax base can only be very roughly gauged in some cases and exceptional factors frequently play a role, part of the change cannot be explained in this way. The factors embraced by this residual should be explained in qualitative terms. As additional information, that part of the change in revenue is specified which also shows up on the expenditure side. This comprises social contributions and wage tax paid on the gross wages and salaries of public sector employees and turnover tax payments made by government (to itself). The table on page 70 shows the aggregate results. They are based on the calculations for the individual tax types, which are also treated separately in the cyclical adjustment pro-



cess, and for social contributions (see table on page 72).

The adjusted tax bases and the elasticities from the cyclical adjustment are used for determining the influence of macroeconomic trends. If the elasticity of a given revenue category is different from unity or if the trend growth of its macroeconomic tax base deviates from that of GDP, the structural ratio of this category changes. The first case is subsumed under the general heading of fiscal drag while the second is denoted as a (structural) decoupling of the tax base from GDP. Both factors influence the structural revenue ratio even though no active fiscal intervention is involved.

*Macroeconomic trends influence the structural ratios*

*Fiscal drag*

The progressive structure of the income tax regime leads to a positive fiscal drag, as the average tax rate applied increases with rising income. By contrast, in the case of excise taxes – which are largely volume-based (eg mineral oil tax) – the fiscal drag is usually negative since nominal trend GDP in the ratio's denominator depends on price developments, whereas the tax revenue in the numerator is hardly influenced directly by this. On balance, the fiscal drag on income tax had a greater weight during the period under review, resulting in a positive net influence on the structural revenue ratio.

*Decoupling of the macroeconomic base from GDP*

For various reasons, the development of the macroeconomic base of a given revenue category may diverge from GDP both in the short and longer run. For example, following increases in indirect taxes the structural growth of national income is slower than that of GDP (at market prices). As direct taxes and social contributions are levied on factor income, this uneven development results in a negative decoupling of these levies from GDP. In addition, a shift, for example, in national income in favour of entrepreneurial and investment income leads to a positive decoupling of profit-related taxes and a – larger – negative decoupling of wage tax and social contributions. A decoupling of indirect taxes occurs, for example, if GDP components that are exempted from turnover tax, such as exports, develop differently over the medium term than total final consumption, which is subject to turnover tax.

A large part of the change in the structural revenue ratios is due to changes in legislation

and adjustments of the social contribution rates. For the calculations presented here the financial effects of changes in legislation were partly taken from the estimates submitted by the government during the legislative process and partly computed on the basis of the past development of the macroeconomic bases. However, estimates are subject to a large margin of error, particularly when extensive legislative changes are adopted – such as the business tax reform of 2001 or the gradual lowering of income tax rates. This needs to be taken into account when interpreting the results.

Developments of taxes or social contributions which cannot be explained by the above factors are captured by the residual. Residuals can result, for example, from a wrong assessment of the effects of legislative changes. Moreover, the macroeconomic reference variables used here as proxies only very roughly mirror the development of the actual assessment bases. For example, shifts may occur in the reference variable for turnover tax towards components that are tax-exempt or taxed at the reduced rate which can be captured only approximately owing, in particular, to insufficient data. This lowers the average tax rate in relation to the proxy macroeconomic base, which leads to a negative residual in the case of turnover tax. In the case of profit-related taxes, in particular, the development of the actual assessment base and that of entrepreneurial and investment income – which is used as a proxy for the want of better information – sometimes differ considerably. This is due *inter alia* to the fact that depreciation can lessen tax receipts but not

*Impact of fiscal measures hard to gauge*

*Residual captures estimation uncertainty and exceptional effects*



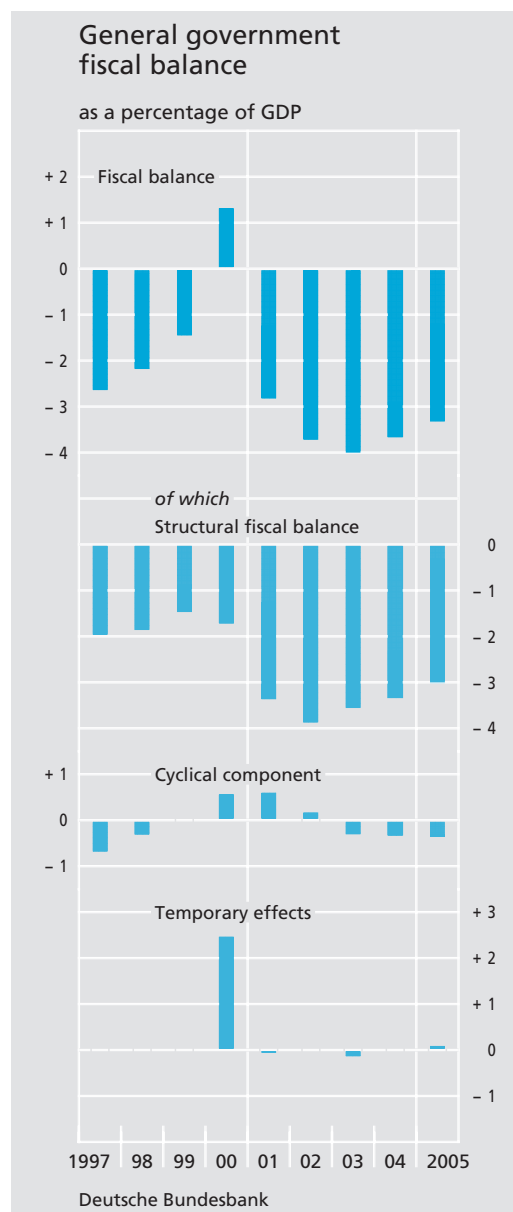
the macroeconomic base taken from the national accounts which is used here. The (limited) tax loss-offsetting facility may also play a role. Furthermore, varying time lags in the assessment or transfer of taxes – eg in the course of a business cycle – are not captured by the underlying stylised tax model. As a result, sizeable residuals can arise in individual years, although they should largely cancel out over a longer period.

### Application of the disaggregated framework: the development of public finances in Germany from 2000 to 2005

#### Development of the general government fiscal balance

*Underlying budgetary situation at start of decade obscured by positive exceptional effects*

At first sight the situation of public finances in the year 2000 appeared very favourable. The unadjusted general government fiscal balance showed a surplus of 1.3% of GDP, and the debt ratio fell for the first time since the reunification of Germany. On closer inspection, however, it can be seen that the structural budgetary position was much more unfavourable. It was merely obscured temporarily by strong exceptional effects. Thus without the non-recurrent proceeds from the sale of UMTS licences the recorded surplus would have turned into a deficit amounting to 1.1% of GDP. The above-trend growth rates in 2000 and the preceding years had the further effect that the unadjusted deficit ratio at the start of the new millennium was around ½ percentage point lower than the structural deficit ratio owing to cyclical influences. An even more important factor, how-



ever, was that profit-related taxes grew much more rapidly up to 2000 than can be explained by changes in tax legislation and the development of entrepreneurial and investment income. In 2000 receipts from profit-related taxes reached an exceptionally high level.

In the following two years these positive influences vanished or were inverted. The un-

## Structural development\* as a percentage of trend GDP

Year-on-year change in percentage points

Item	2001	2002	2003	2004	2005	Total 2001-2005
<b>Fiscal balance</b>	-1.7	-0.5	0.4	0.2	0.3	-1.3
Interest payable	-0.1	-0.2	0.0	-0.1	0.0	-0.4
Owing to change in average interest rate	0.0	-0.1	-0.1	-0.2	-0.1	-0.6
Owing to change in debt level	-0.1	0.0	0.1	0.1	0.1	0.3
<b>Primary balance</b>	-1.8	-0.6	0.4	0.1	0.3	-1.7
<b>Revenue</b>	-2.0	-0.8	-0.3	-1.2	0.3	-4.1
<i>of which</i>						
Taxes and social contributions	-2.0	-0.7	-0.2	-0.9	0.1	-3.7
Fiscal drag	0.1	0.1	0.1	0.1	0.1	0.5
Decoupling of base from GDP	-0.2	-0.3	-0.1	-0.2	0.0	-0.9
Legislation changes	-1.1	0.7	0.4	-0.6	-0.2	-0.8
Residual	-0.9	-1.3	-0.6	-0.2	0.3	-2.6
<i>of which: Profit-related taxes</i> <sup>1</sup>	-0.7	-0.8	-0.1	0.1	0.0	-1.5
<i>Memo item: Share of expenditure</i> <sup>2</sup>	-0.1	0.0	-0.1	-0.2	-0.1	-0.3
Non-tax-related revenue <sup>3</sup>	0.1	-0.1	-0.1	-0.3	0.1	-0.3
<b>Primary expenditure</b>	-0.2	-0.2	-0.7	-1.2	0.0	-2.4
<i>of which</i>						
Social payments <sup>4</sup>	0.2	0.1	-0.1	-0.7	0.3	-0.2
Subsidies	-0.1	-0.1	-0.1	-0.1	-0.1	-0.5
Compensation of employees	-0.2	-0.1	-0.2	-0.2	-0.2	-0.8
Intermediate consumption	0.0	0.1	-0.1	-0.1	0.2	0.1
Gross fixed capital formation	0.0	-0.1	-0.2	-0.1	-0.1	-0.5
Other expenditure <sup>5</sup>	0.0	-0.1	0.0	-0.1	-0.2	-0.5
<i>Memo item</i>						
Unadjusted fiscal balance <sup>6</sup>	-4.1	-0.9	-0.3	0.3	0.3	-4.6
Cyclical component <sup>6</sup>	0.0	-0.4	-0.5	0.0	0.0	-0.9
Temporary effects <sup>6</sup>	-2.5	0.1	-0.1	0.2	0.1	-2.3
Pension expenditure <sup>7</sup>	0.0	0.1	0.0	-0.2	-0.1	-0.2
Healthcare expenditure <sup>8</sup>	0.1	0.0	0.0	-0.3	0.1	-0.2
Labour market expenditure <sup>9</sup>	0.0	0.0	-0.1	-0.2	0.3	-0.1
Rate of change in government employees <sup>5</sup>	-2.1	-0.9	-0.8	-1.2	-0.9	-1.2
Rate of change in real trend GDP	1.3	1.2	1.1	1.1	1.1	1.2
Rate of change in GDP deflator	1.2	1.5	1.0	0.8	0.5	1.0

\* Adjusted for cyclical influences and temporary effects. In accordance with ESA 95. From 2005 including post office pension funds. This leads to a slight rise in the revenue and expenditure ratios compared with the as yet unadjusted previous years. In contrast to the figures shown by the Federal Statistical Office, totals include (without affecting net lending/net borrowing) customs duties, the EU share in VAT revenue and EU subsidies. — **1** Assessed income tax, investment income taxes, corporation tax, local business tax. — **2** Payments attributable to the general government sector (estimated). — **3** Other current transfers receivable, sales and total capital revenue. — **4** Including other current transfers to

households. — **5** Other current transfers payable to corporations and the rest of the world, other net acquisitions of non-financial assets and capital transfers. — **6** Percentages of nominal GDP. — **7** Spending by the statutory pension insurance scheme, on civil servant pensions and transfers to or payments by the post office pension fund. — **8** Spending by the statutory health insurance scheme and assistance towards civil servants' healthcare costs. — **9** Spending by the Federal Employment Agency (excluding its compensation payment to the Federal Government), on unemployment assistance (up to 2004) and unemployment benefit II (from 2005) and on labour market reintegration measures.

*Dramatic rise in the deficit in 2001 and 2002*

favourable structural budgetary position became starkly apparent. In 2002 the unadjusted deficit ratio reached 3.7%, which was well above the 3% ceiling laid down in the EC Treaty. This was 2½ percentage points above the deficit ratio for 2000 adjusted for the one-off effect of the UMTS proceeds. Cyclical influences were responsible for barely ½ percentage point of this rise. Nor were the sizeable tax cuts chiefly to blame, as considerable revenue falls in connection with the first stage of the income tax reform in 2001 were accompanied by substantial discretionary increases in taxes and social contributions in 2002. The decisive factor was that the exceptionally favourable development of profit-related taxes was reversed and the revenue from them plummeted.

*Moderate consolidation in the ensuing years*

The following years saw a moderate improvement in the structural fiscal balance. Although the unadjusted deficit ratio rose a little further in 2003, this was mainly due to the unfavourable cyclical setting. By contrast, the structural deficit ratio improved by roughly ¼ percentage point in 2003 and in each of the ensuing two years. With the adverse impact of cyclical influences barely growing and temporary effects providing small net relief on balance, the unadjusted deficit ratio duly declined to 3.3% in 2005.

### Development of revenue

*Dramatic drop in structural revenue ratio*

The structural revenue of general government in relation to trend GDP fell by around 4 percentage points between 2000 and 2005. The spin-off of some municipal fee budgets with their associated removal

from the general government sector accounts (which was correspondingly mirrored on the expenditure side as well) probably played only a minor role in this during the period under review. They can be roughly proxied by government sales, which mostly involve fees receivable, adjusted for the extra income from the first-time levying of motorway tolls for heavy goods vehicles in 2005. They receded only slightly in relation to trend GDP.

Fiscal drag pushed up the structural revenue ratio by around ½ percentage point between 2000 and 2005. This was due mainly to the effect of wage tax progression, although this was comparatively small owing to the weak growth of gross wages and salaries per employee. This revenue-boosting effect was outweighed, however, by the structural decoupling of the macroeconomic bases of the high-yielding taxes and levies from GDP growth. This was particularly marked in the case of social contributions. Whereas nominal GDP growth trended at around 2.1% between 2000 and 2005, the trend growth of gross wages and salaries averaged 1.2%. This also significantly dampened wage tax receipts.

Changes in legislation also contributed to the decline in the structural revenue ratio. Discretionary measures caused a net drop in government revenue amounting to ¾% of trend GDP. The most important measure in this context was the multi-step income tax reform. The associated lowering of tax rates in 2001, 2004 and 2005 led to considerable revenue

*Certain rise due to fiscal drag*

*But mainly due to negative decoupling of macroeconomic bases, ...*

*... legislative changes, ...*

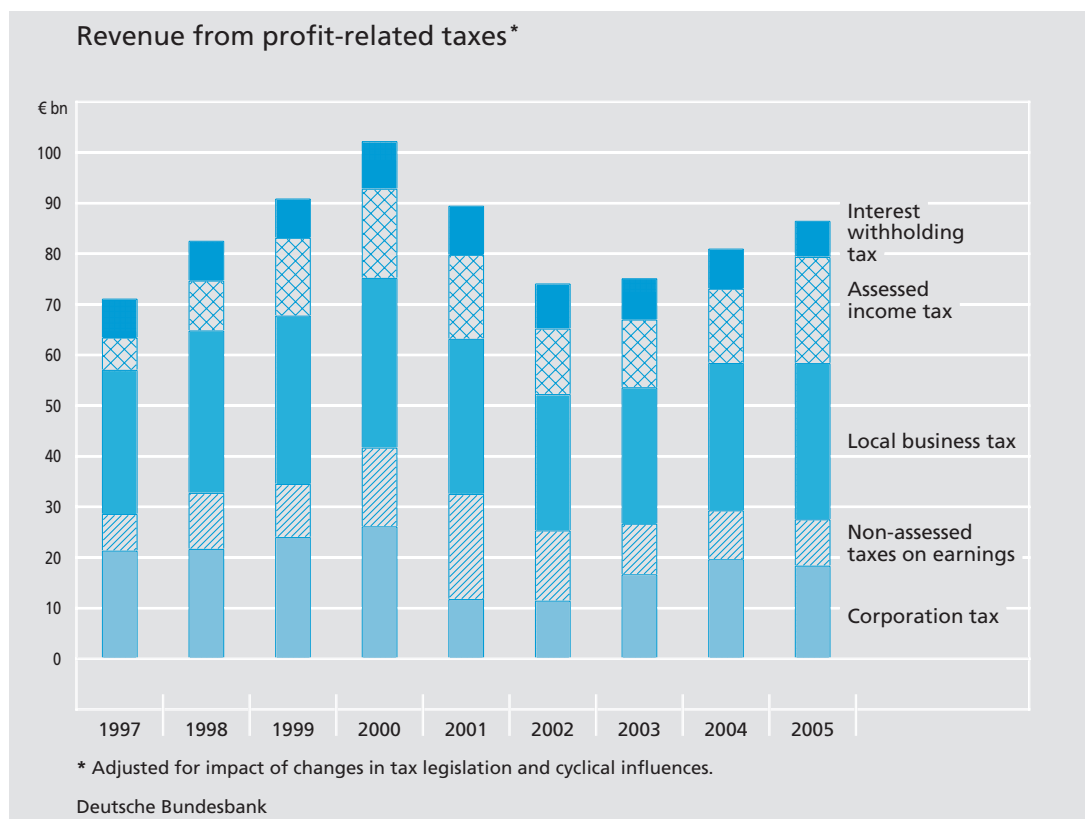
### Structural development\* of tax revenue and social contribution receipts as a percentage of trend GDP

Year-on-year change in percentage points

Item	2001	2002	2003	2004	2005	Total 2001-2005
Wage tax	-0.4	0.1	0.0	-0.6	-0.2	-1.1
Fiscal drag	0.2	0.1	0.1	0.1	0.1	0.6
Decoupling of base from GDP	-0.1	-0.1	-0.1	-0.1	-0.1	-0.4
Legislation changes	-0.6	0.0	0.1	-0.6	-0.4	-1.5
Residual	0.1	0.0	-0.1	0.0	0.2	0.2
Social contributions	-0.3	-0.2	-0.1	-0.3	0.0	-0.9
Fiscal drag	0.0	0.0	0.0	0.0	0.0	0.0
Decoupling of base from GDP	-0.1	-0.2	-0.1	-0.1	-0.1	-0.6
Legislation changes	-0.1	0.1	0.2	0.0	-0.1	0.1
Residual	0.0	-0.1	-0.2	-0.1	0.1	-0.3
Profit-related taxes 1	-1.3	-0.3	0.0	0.2	0.3	-1.2
Fiscal drag	0.0	0.0	0.0	0.0	0.0	0.1
Decoupling of base from GDP	0.0	0.0	0.1	0.1	0.1	0.2
Legislation changes	-0.5	0.4	0.0	0.0	0.1	0.0
Residual	-0.7	-0.8	-0.1	0.1	0.0	-1.5
Turnover taxes	-0.2	-0.2	-0.1	-0.1	0.0	-0.6
Fiscal drag	0.0	0.0	0.0	0.0	0.0	0.0
Decoupling of base from GDP	0.0	-0.1	0.0	-0.1	0.0	-0.1
Legislation changes	0.0	0.0	0.0	0.0	0.0	-0.1
Residual	-0.2	-0.1	-0.1	0.0	0.0	-0.4
Excise taxes	0.2	0.1	0.1	-0.2	-0.1	0.1
Fiscal drag	0.0	-0.1	-0.1	-0.1	-0.1	-0.3
Decoupling of base from GDP	0.0	0.0	0.0	0.0	0.0	0.0
Legislation changes	0.2	0.2	0.2	0.1	0.1	0.7
Residual	0.0	0.0	0.0	-0.2	-0.1	-0.3

\* Adjusted for cyclical influences and temporary effects. —

1 Assessed income tax, investment income taxes, corporation tax, local business tax.



losses.<sup>6</sup> This was, admittedly, accompanied by countervailing increases in excise taxes, especially mineral oil tax and electricity tax as part of the final stages of the ecology tax reform, and tobacco tax. But even taken together, they did not have the same impact. Legislative changes in the area of social contributions and profit-related taxes played no noticeable role on balance during the period under review, although some significant effects occurred in individual years. Thus the reform of business taxation in 2001 initially triggered substantial tax revenue losses, but this was offset in the very next year by the impact of various revenue-boosting measures.

Yet by far the largest component of the fall in the structural revenue ratio, with a weight of 2½ percentage points, was attributable to ex-

ceptional factors. A key element in this was the aforementioned development of profit-related taxes, which generally are highly volatile (see chart above). After rising steeply over several years, they had reached an exceptionally high level in 2000 which can by no means be explained by the development of the associated macroeconomic base and changes in tax legislation. Thus the cumulative residual effect in the case of these taxes totals almost 1½ percentage points over the period 1997 to 2000. High retrospective payments coincided with a steep raising of advance payments and favourable develop-

*... and above all exceptional factors in the case of profit-related taxes ...*

<sup>6</sup> The Federal Ministry of Finance's estimate of the revenue losses adopted here may be overstated in respect of 2005, however, as is indicated not least by the positive residual in explaining the change in the structural wage tax ratio using the disaggregated framework in the last year.

ments in the financial markets. In the following two years this scenario was reversed, however, as the unexplained fall in profit-related taxes amounted to about 1½ percentage points altogether in relation to trend GDP. Lower advance payments were compounded by large refunds in respect of previous years. Declining financial market prices probably also had an effect, especially since the revaluation of balance sheet assets contributed to high write-downs in the enterprise sector.<sup>7</sup>

... and other  
levies

The development of receipts from social contributions, turnover tax and excise taxes was likewise muted. In the case of excise taxes, the steep rises in energy prices in 2004 and 2005 led to a marked contraction in energy demand. For this reason receipts from (the volume based) mineral oil tax receded more sharply than might have been expected from the change in real private consumption, which was the associated macroeconomic base used here. A similar consequence ensued from consumer responses to the raising of tobacco tax. The unexplained weak development of turnover tax captured by the residual might be related to the fact that a shift in the pattern of consumption in favour of products that are tax-exempt or subject to the reduced VAT rate is captured only approximately. An increase in VAT fraud or in insolvency-related tax losses would also be reflected in the residual. One of the causes of the weak revenue trend in social contributions not related to macroeconomic developments or changes in legislation is the fact that highly paid employees opted out of the statutory health insurance scheme and joined private

schemes instead, so that aggregate income subject to social contributions developed even more weakly than overall gross wages and salaries.

### Development of expenditure

The drop in the revenue ratio in the first half of the current decade was accompanied by a fall in the structural expenditure ratio (-2¾ percentage points). This did not suffice, however, to prevent a sharp rise in the deficit. The structural interest expenditure ratio declined by almost ½ percentage point. While the rapidly rising debt ratio led *per se* to a marked increase in interest payments in relation to trend GDP, this was far outweighed by the interest saved by refinancing debt on the favourable terms available in the capital market.

*Decrease in structural expenditure ratio due to falling interest payments, ...*

The structural primary expenditure ratio fell by nearly 2½ percentage points. This decrease was due above all to curbing current employee compensation, which is the largest expenditure item of central, state and local government. It hardly went up at all in absolute terms during the period under review, with the result that its share of trend GDP decreased by ¾ percentage point in total. This was chiefly attributable to the ongoing cut in headcount averaging just over 1% per year, which was accompanied by an extension of working time. Negotiated pay rates in the public sector rose by an annual average of around 1½% between 2000 and 2005 and thus a little less than in the private sector.

*... curbing staff expenditure, ...*

<sup>7</sup> See also Deutsche Bundesbank, Recent tax revenue trends, Monthly Report, December 2002, p 15 ff.

*... investment ...*

Government gross fixed capital formation actually fell continuously in absolute terms and contributed ½ percentage point to the fall in the structural primary expenditure ratio. Its share of trend GDP declined from 1.8% to just 1.3%. This development is due in part to the ongoing precarious budgetary situation of local government, which accounts for the bulk of general government fixed investment and evidently retrenched spending, in particular, on this very elastic expenditure item. To a certain degree, however, the contraction of fixed investment probably also reflects hive-offs of fee budgets and of government real estate management (including the associated investment) as well as the conclusion of public-private partnerships. This leads to a shift from public to private investment.

shown as a social transfer in the national accounts, whereas the accounting entries for the preceding years have not yet been revised and the federal grant paid then was booked under other spending.

The share of government healthcare spending in trend GDP declined by not quite ¼ percentage point between 2000 and 2005. The underlying pressure for high expenditure stemming from the disproportionately rising demand for health services associated with growing prosperity, cost-boosting advances in medical technology and an ageing population was temporarily reversed, in particular, by the 2004 healthcare reform. This failed to place the statutory health insurance scheme on a sustainable long-term footing, however.<sup>8</sup>

*Healthcare spending temporarily stabilised*

*... and subsidies*

The fall in government subsidies tends to suggest an efficiency gain. Notable factors in this respect were the continued reduction in government support for coalmining and the decrease in expenditure on active labour market policy measures. It should be pointed out, however, that subsidies are very narrowly defined in the national accounts and that their decrease might be overstated by statistical shifts.

By contrast, the expenditure growth of the statutory pension insurance scheme was lastingly curbed. Although the number of pensioners is constantly growing owing to demographic trends, the rise in spending on old age pensions triggered by the annual pension adjustment was dampened by the change in the method of computation initiated by the pension reform of 2001 and the introduction of a sustainability factor. Further savings are likely to ensue in future if – as the government envisages – the long-term effectiveness of the sustainability factor is ensured and the statutory retirement age is raised. Even so, in the longer run the growing ageing of the population is likely to lead to a structural rise in age-related spending in relation to GDP.

*Rise in pension spending lastingly curbed*

*Fairly small consolidation contribution of social payments*

Given that they make up more than 58% of total general government expenditure, social payments – which predominantly comprise social security spending – made only a moderate contribution to consolidation on the expenditure side. This remains true also if the fact is taken into account that the payments to post office pensioners for 2005, amounting to €6.3 billion or 0.3% of GDP, were

<sup>8</sup> See Deutsche Bundesbank, Financial development and outlook of the statutory health insurance scheme, Monthly Report, July 2004, p 15 ff.

*Little change in structural labour market spending*

Structural labour market spending showed little change in relation to trend GDP on balance over the period under review. The curbing of active labour market measures was offset by the structurally rising number of unemployed persons and, in particular, by the unexpected increase in expenditure following the Hartz IV reform.

## Conclusions

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The disaggregated framework presented in this article supplements the existing instruments available for analysing public finances. It permits a structured and standardised examination of the development of general government finances in the national accounts. It also takes due account, in particular, of the analytical requirements of the European fiscal framework. The disaggregated framework reveals the structural development – understood here to mean after adjustment for cyclical influences and temporary effects – of individual revenue and expenditure categories of the general government sector. This makes it possible to identify the underlying causes of the changes in the general government fiscal balance. It needs to be borne in mind, however, that the findings at the current edge are provisional to the extent

that they are based on estimates of future macroeconomic developments.

Applying the disaggregated framework to the development of public finances in Germany since 2000 reveals not least that a fundamental change in the public finance situation may be triggered not only by current fiscal policy decisions but also by developments that are independent thereof. Thus it can be seen that although the sharp rise in the deficit ratio was partly attributable to negative cyclical influences and significant tax cuts, the main cause was a considerable reduction, after factoring out cyclical influences and temporary effects, in the government revenue ratio on a scale that had not been anticipated. Much of this decrease was due to a drop in receipts from profit-related taxes, which had reached an exceptionally high level in 2000. But this decrease also reflects *inter alia* the fact that the trend growth of wages and salaries, which are the macroeconomic base for wage tax and social contributions, was markedly weaker than trend GDP growth. Although the structural expenditure ratio also declined noticeably, this did not suffice to compensate for the deterioration on the revenue side and to prevent a marked increase in the structural deficit.