ECFIN COUNTRY FOCUS

Highlights in this issue:

- **Growth composition helped contain fiscal deterioration in 2009**

- **Discretionary measures did not always have a counter-cyclical effect**

- **New deficit rule necessitates greater fiscal prudence *ex ante***

Decomposing total tax revenues in Germany

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Summary

With the start of the new decade, budgetary planning in Germany is becoming more demanding. First, public finances need to be consolidated after the economic crisis. Second, Germany introduced a deficit rule into its Constitution in 2009, which prescribes stringent structural deficit ceilings for different levels of government and limits possibility of budgetary overruns. This requires prudent budgetary planning. However, fiscal planning is difficult since the link between total tax revenue and economic activity is unstable. This Country Focus identifies three key drivers behind developments in total tax revenue. The first is the composition of the GDP growth. If economic growth is driven by less "tax-rich" components, such as exports, the revenue-to-GDP ratio tends to decline even without any discretionary policy which constitutes the second factor. At the same time, with more frequent and complex policy interventions, the budgetary impact of discretionary measures is difficult to estimate. In addition, direct and indirect tax receipts are also affected by fiscal drag effects or changes in the behaviour of tax-payers. The new fiscal rule could help give budgetary policy a longer-term orientation, as it necessitates a clearer and stable fiscal strategy. Given non-negligible residual effects in the past and the risk that unexpected developments might lead to high consolidation requirements, the new rule necessitates greater fiscal prudence ex ante.

Introduction

The new constitutional deficit rule implies more demanding requirements for budgetary planning

The abrupt economic downturn in 2009 and the fiscal stimulus implemented by the German authorities to address the crisis have put an end to ambitious consolidation plans aimed at reaching a balanced federal budget in 2011[1]. In line with the Council Recommendation addressed to Germany under the excessive deficit procedure (EDP), consolidation is now foreseen to start in 2011, and the excessive deficit should be corrected by 2013[2]. The necessary adjustment is likely to be aided by the retrenchment steps implied by the new constitutional fiscal rule that sets out a ceiling for the federal structural deficit at 0.35% of GDP as of 2016 and prescribes balanced structural budgets for the Länder as of 2020[3]. However, the new rule also implies tougher requirements for budgetary planning, because unexpected developments would need to be better dealt with in the existing fiscal framework (Kremer and Stegarescu, 2009). Unforeseen incidents during the fiscal year, e.g. structurally lower-than-anticipated receipts from profit-related taxes or unexpected behavioural shifts by taxpayers, might not only influence the ongoing budget execution, but also affect the subsequent fiscal years through a "carry-over effect". Therefore, given the obligation to respect the regular borrowing ceilings during the budgetary planning for the following year, the unexpected developments might lead to high consolidation requirements in the short-term if borrowing is regularly pushed to the constitutional limit (Kremer and Stegarescu, 2009).

Budgetary planning is burdened by high uncertainty and forecasting revenue is particularly difficult, *inter alia*, because the link between total tax revenue (direct and

indirect taxes plus social security contributions) and economic activity is unstable. Considering the period 1992 to 2011, the elasticity of total tax revenues with respect to nominal GDP exceeded its long-term average of one in periods of positive output gap (or turning positive) and fell below this value in times of negative output gap (or becoming negative) (Table 1). At the same time, revenues were overestimated in the downturn after the bursting of the dot.com bubble 2000, while they were under-estimated in the upturn 2006-2008, when the boost in revenues went considerably beyond normal cyclical sensitivity[4].

Table 1: Average total tax elasticities, 1992-2011[1]

Period	Output gap[2]	Real GDP % growth	Average annual nominal growth rate in %		Tax burden[3]	Average total tax elasticity[3]
			GDP	Tax revenue		
1992-1995	0.5	1.5	4.8	5.8	44.3	1.2
1996-2000	-0.3 (↑)[5]	2.0	2.2	2.8	45.6	1.3
2001-2005	-0.4	0.6	1.7	0.4	43.5	0.2
2006-2008	2.3	2.3	3.6	3.8	43.0	1.0
2009	-2.9	-5.0	-4.2	-2.3	43.4	0.5
2010	-2.6	1.2	1.8	-1.2	42.2	-0.6
2011	-2.2	1.7	2.2	1.2	41.8	0.5

Note: [1] National accounts. 2009-2011: Commission services' autumn 2009 forecast; [2] % of potential output; [3] Ratio of nominal tax revenue to nominal GDP in %; [4] Annual average elasticity of nominal tax revenue with respect to nominal GDP; [5] The output gap is negative but closing.
Source: AMECO and own calculations.

The above described pattern is projected to be interrupted in 2010 and 2011, when the total tax revenue is expected to fall in 2010 and to grow more slowly than nominal GDP in 2011, despite the foreseen overall economic recovery from 2010 onwards and improving output gap. As the result, the tax burden is projected to fall by 1½ percentage points of GDP (from 43½% in 2009 to around 42% in 2011). This is related to the nature of the underlying economic shock and the government response to counter the crisis in 2009. An unprecedented collapse in world trade pushed the highly export-dependent German economy into recession at the end of 2008. In response to the crisis, German authorities adopted a wide range of measures, including a sizeable fiscal stimulus for 2009 (around 1¾% of GDP) and 2010 (around ½% of GDP[5]). Moreover, automatic stabilisers were allowed to operate fully.

Box 1: Decomposition of changes in tax revenues

Following Martinez-Mongay et al. (2007) and Kremer et al. (2006), under the assumptions that taxes are strictly proportional with respect to the tax base and at the same time the share of the tax base in the GDP remains constant, in the absence of changes in the cyclical position and discretionary measures, the corresponding tax revenues are expected to evolve in line with nominal GDP. A deviation from the tax elasticity with respect to the trend GDP may be attributable to the cyclical effects (when the nominal GPD does not grow at the same rate as trend GDP), composition effects (when the tax base does not grow at the same rate as nominal GDP), discretionary effects (changes due to modified statutory tax rates or tax bases) and residual effects capturing one-off effects (e.g. tax amnesties) or other factors (e.g. unobservable composition effects within the observable tax base, effects due to a non-proportional tax system, changes in the behaviour of taxpayers, etc.).

Deviation from trend GDP: the difference between the nominal total tax revenues and the total tax revenues given the trend GDP rate.

$$DT_t = T_t - T_{t-1} \times \frac{Y_t^T}{Y_t^T} \qquad (1) = (2) + (3) + (4) + (5)$$

Cyclical effect: the difference between total tax revenues given the nominal GDP growth rate and total tax revenues given the trend GDP growth rate.

$$CYCLE_t = T_{t-1} \times (1 + (\frac{Y_t^A}{Y_{t-1}^A} - 1) * \varepsilon_{TB}) - T_{t-1} \times \frac{Y_t^T}{Y_{t-1}^T} \qquad (2)$$

Composition effect: the difference between total tax revenues given the tax base structure and total tax revenues given the nominal GDP growth rate.

$$CE_t = T_{t-1}((\frac{B_t}{B_{t-1}} - 1) \times \varepsilon_{TB} - (\frac{Y_t}{Y_{t-1}} + 1) \times \varepsilon_{BY}) \qquad (3)$$

Discretionary effect: includes the (*ex ante*) budgetary impact of discretionary measures as estimated by the government sources for the past[6] and in the Commission services' forecast for the projection. (4)

Residual effect: the difference between the nominal total tax revenues corrected for the discretionary measures and the total tax revenues given the tax base structure.

$$RE_t = T_t^{DM} - T_{t-1}(1 + (\frac{B_t}{B_{t-1}} - 1) * \varepsilon_{TB}) \qquad (5)$$

where T is total tax revenues in nominal terms, Y^T is trend GDP, Y is nominal GDP, B is the tax base (i.e. gross wages and salaries, private consumption and gross operating surplus), ε_{TB} is the elasticity of taxes with respect to the tax base and ε_{BY} is the elasticity of tax base with respect to GDP. The elasticities are assumed to be constant and are calculated following the standard OECD/EC methodology[7].

Following the methodology of Martinez-Mongay et al. (2007), this Country Focus analyses the extent to which the observed developments in total tax receipts can be

associated with (i) changes in the economic activity (cyclical effects), (ii) changes in the composition of GDP growth (composition effects), (iii) changes in tax legislation (discretionary effects), and (iv) a residual capturing other factors (see Box 1). In the following table, tax revenues are decomposed first at the aggregate level and then disaggregated into four broad categories: social contributions (around 41% of total tax revenues in 2008), indirect taxes (about 31%), direct taxes on households (about 25%) and direct taxes on corporations (about 3%)[8].

Changes in total tax revenues decomposed

Table 2: Decomposition of changes in total tax revenues (% of GDP) and the output gap (% of potential output), 1992-2011[(1) (2)]

	Period						
	1992-1995	1996-2000	2001-2005	2006-2008	2009	2010	2011
Growth differential between nominal tax revenues and trend GDP	**1.3**	**0.7**	**-0.3**	**1.2**	**-1.3**	**-0.8**	**0.0**
Indirect taxes	0.5	0.2	0.1	0.5	-0.4	0.0	0.1
Direct taxes on households	0.9	0.2	-0.3	0.6	-0.4	-0.8	-0.1
Direct taxes on corporations	0.0	0.1	-0.1	0.0	-0.4	0.0	0.0
Social contributions	1.2	0.1	0.0	0.0	-0.1	0.0	0.0
Cyclical effect	**0.9**	**0.2**	**0.2**	**1.0**	**-1.7**	**0.3**	**0.4**
Indirect taxes	0.3	0.1	0.1	0.3	-0.5	0.1	0.1
Direct taxes on households	0.5	0.2	0.2	0.5	-0.7	0.2	0.2
Direct taxes on corporations	0.1	0.0	0.0	0.1	-0.1	0.0	0.0
Social contributions	0.1	-0.1	0.0	0.2	-0.5	0.0	0.0
Composition effect	**0.2**	**0.2**	**-0.2**	**-0.1**	**1.1**	**-0.8**	**-0.2**
Indirect taxes	0.0	0.0	0.0	-0.2	0.5	-0.2	-0.1
Direct taxes on households	0.1	0.1	-0.1	0.1	0.4	-0.4	-0.1
Direct taxes on corporations	0.0	0.0	0.0	0.0	-0.1	0.0	0.0
Social contributions	0.1	0.0	-0.1	0.0	0.3	-0.2	-0.1
Discretionary effect	**0.7**	**0.1**	**-0.2**	**0.0**	**-0.7**	**-0.5**	**0.0**
Indirect taxes	0.3	0.2	0.2	0.4	0.0	0.1	0.0
Direct taxes on households	-0.1	-0.3	-0.4	0.0	-0.6	-0.5	-0.1
Direct taxes on corporations	0.2	0.0	-0.1	-0.1	0.0	0.0	0.0
Social contributions	0.3	0.2	0.1	-0.3	0.0	-0.1	0.1
Residual effect	**-0.4**	**0.2**	**-0.2**	**0.2**	**0.0**	**0.1**	**-0.1**
Indirect taxes	-0.3	-0.1	-0.2	0.0	-0.3	0.0	0.0
Direct taxes on households	-0.2	0.2	0.1	0.1	0.5	-0.2	-0.1
Direct taxes on corporations	-0.3	0.2	-0.1	0.1	-0.3	-0.1	0.0
Social contributions	0.4	0.0	0.0	0.0	0.2	0.3	0.1
Output gap	**0.5**	**-0.3**	**-0.4**	**2.3**	**-2.9**	**-2.6**	**-2.2**

Note: [(1)] National accounts. 2009-2011: Commission services' autumn 2009 forecast; [(2)] Differentials possible due to rounding.
Source: AMECO, Federal Ministry of Finance and own calculations.

Decomposition of changes in total tax revenue (Table 2) shows that cyclical effects[9] contribute positively throughout the reference period, except for the 2009 downturn when the output gap is forecast to have turned sharply negative (by almost 6 pps.).

Tax favourable growth composition helped contain fiscal deterioration in 2009

The composition effects move roughly with the cycle until 2000 and decouple thereafter due to the changing drivers of GDP growth. Initially after reunification, economic activity was supported by domestic demand, under which dynamic private consumption, fuelled by wage increases in excess of productivity growth, was supported by private investment. Rising wages eroded German price competiveness until 1995, which led to losses in export market shares and zero or negative contributions of net exports to real GDP growth. In the beginning of the 2000s, private consumption virtually stagnated due to the sluggish performance of household disposable income which may be attributed to wage moderation and employment contraction[10]. With the recovery of cost and price competitiveness, supported by moderate wage growth and robust external demand, net exports became the key growth driver. This led to less tax-rich growth composition, because an export boom does not translate directly into higher tax yields. In 2009, due to the collapse in the world trade, net exports became sharply negative. This, however, had a relatively contained effect on total tax revenue which benefitted from stable private consumption (tax base for indirect taxes) and still moderate gross wage growth (direct taxes on households and social contributions). With the likely recovery in exports in 2010-2011 and the lagged adverse effects of the recession on the labour market, the composition effect is expected to turn negative once again.

Discretionary measures did not always have counter-cyclical effect

Discretionary measures seem to be broadly counter-cyclical. However a closer examination by tax revenue categories (Table 2) and on year-by-year basis reveals that this was not always the case (Chart 1). Until 2000, tax policy was rather procyclical: when the output gap was negative in the mid-1990s, taxes were increased, and were subsequently lowered in the upswing. In 2001, with a still positive output gap, tax rates were reduced. In the following downturn, taxes (mainly social contri-

butions) were initially raised and then reduced. The opposite picture holds for the upswing of 2006-2008, with initial tax increases in 2007 (mainly indirect taxes) and, with a still-positive output gap, tax decreases in 2008 (mainly direct taxes). The discretionary response to the crisis in 2009 implies a counter-cyclical effect. Overall, it seems that policy decisions were taken in the context of a short-term budgetary outlook.

The relatively small residual effects at the aggregate level mask a high volatility and magnitude when examined from a yearly perspective. Possible explanations for the residuals in particular years are provided by a discussion of each of the four broad categories.

Chart 1: Discretionary measures as % of GDP and the output gap developments as % of potential output (1992-2011)
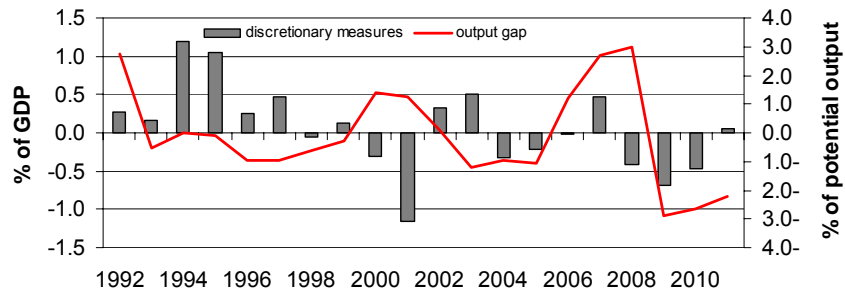
Note: National accounts. 2009-2011: Commission services' autumn 2009 forecast.
Source: AMECO, Federal Ministry of Finance and own calculations.

Decomposition of changes in the main tax categories

Decomposition at the aggregate level and based on averages for all forms of taxation conceals the differential impact of the respective effects in annual terms on each category of taxes. This section provides a more detailed analysis on a yearly basis for all four broad tax categories, with particular focus on key economic developments, major discretionary interventions and factors behind the residual effects.

Social contribution revenue

Social contributions were mostly affected by frequent changes in the social contribution rates

Social contributions constitute the largest share of total tax revenues. Their evolution may be explained mainly by discretionary changes in the contribution rate (Chart 2), which contributed greatly to the pro-cyclicality of fiscal policy (Table 2). In the initial growth slowdown of the early 1990s, total tax revenues would have fallen much more strongly had it not been for the rising social contributions which financed to a considerable extent the economic transformation in East-Germany[11]. Frequent changes of different social contribution rates followed. The contribution rate to the health-care system increased steadily until 2009, with particularly steep rises in 2002 and 2003. In 1996 and 1997, the contribution rate to the pension system was raised, subsequently lowered in 1999, 2000 and 2001, only to be raised again in 2003 and 2007. However, in 2007 the contribution rate to unemployment insurance was reduced by a far greater amount. The 2008 negative discretionary effect can be attributed to the reduced rate to unemployment insurance which was not fully offset by the higher rate of contribution to long-term care insurance. In 2009, the contribution rate to health-care insurance was first raised by 0.6 percentage points with the introduction of the central health-care fund (*Gesundheitsfonds*) but reduced by the same amount in response to the crisis six months later. This reduction will reveal its full budgetary impact only in 2010. The discretionary effect turns positive in 2011 with the higher contribution rate to unemployment insurance.

Composition effects can be partly linked to the underlying cycle, reflecting gross wage developments. In the upswing of 1999-2000, the wage share in GDP grew relatively strongly, followed by a period of pronounced wage moderation in the downturn after 2001. This development was reversed somewhat in 2007 and 2008, affecting also 2009. Residual effects may be related to changes in the tax base through adjustment of the age-income thresholds below which public insurance is mandatory or through the introduction of jobs with reduced rates. Negative residuals may also be explained by migration of higher-earners from the statutory into the private health-care insurance.

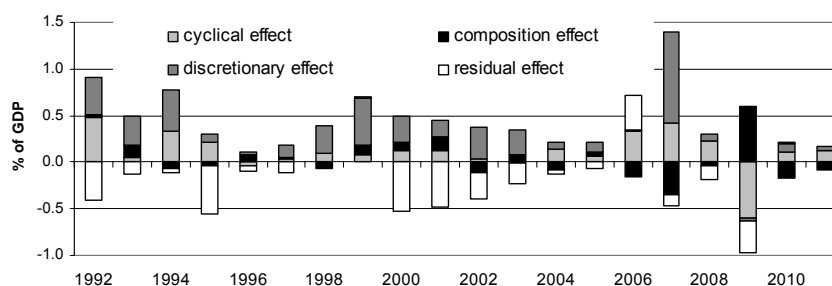**Chart 2: Decomposition of changes in social contributions revenue (1992-2011)**
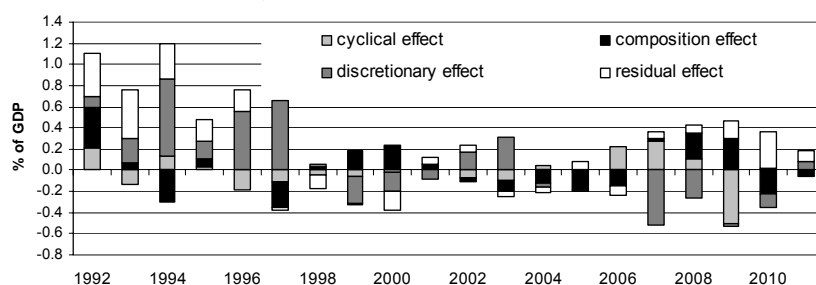
Note: National accounts. 2009- 2011: Commission services' autumn 2009 forecast
Source: AMECO, Federal Ministry of Finance and own calculations.

Revenue from indirect taxes

Indirect taxes were affected by large positive discretionary effects and changes in the behaviour of taxpayers

The development of indirect tax revenues since 1992 has been dominated by large positive discretionary effects associated with new measures implemented basically every year, including prominent standard VAT rate increases in 1998 and 2007 (Chart 3). Residual effects were large throughout the period and often went in the opposite direction to discretionary effects. This could be due to two factors. First, the consumption of products on which excise duties or VAT were raised might have first risen and then fallen in response to the measure, leading to an initial underestimation of the actual fiscal effect on the eve of the rate increase and to overestimation of these effects thereafter (e.g. advance purchases of durable goods before the 2007 VAT rate increase). Second, according to the national accounts definition, indirect taxes include also revenues from the local trade tax (*Gewerbesteuer*) that is based on profits and is therefore subject to change along with reforms of company taxation (e.g. in 2001 or 2008). A more detailed disaggregation separating labour and capital income and/or introducing a lag structure might reduce the residuals.

Chart 3: Decomposition of changes in indirect tax revenue (1992-2011)

Note: National accounts. 2009- 2011: Commission services' autumn 2009 forecast
Source: AMECO, Federal Ministry of Finance and own calculations.

Revenue from direct taxes on households

Direct taxes on households were affected by gradual enactment of rate reductions and corporate tax reforms in 2001 and 2008

Frequent discretionary interventions were also the driving force behind the evolution of direct taxes on households (Chart 4). Three major interventions were particularly significant: (1) wage tax rates were cut gradually between 1999 and 2005, however subsequent laws altered the enacted rate reductions in almost every year during this period; (2) the 2008 company tax reform took effect through its impact on partnerships and the introduction of a withholding tax on capital income at the personal level; and (3) tax-based fiscal stimulus measures in response to the crisis, incl. bottom PIT rate reductions, higher basic allowance and tax deductibility of the contributions to the health-care and long-term care[12], result in a negative discretionary effect from 2009 onwards.

Composition effects are similar to those observed for the social contributions since the tax base (gross wages) is assumed to be the same. Nevertheless, composition effects are somewhat higher as the elasticity with respect to the base is higher for direct taxes. This is due to the progressivity of the income tax and the regressive social contributions[13].

The evolution of residuals is uneven, possibly reflecting the fact that contemporaneous gross wages are only a rough approximation of the tax base for direct taxes on households. The wage tax, a withholding tax at the level of the employer, amounts to only 70-80% of direct taxes on households. The remainder is assessed income taxes (including tax advances and arrears) and capital taxes. A large negative re-

sidual in 2002 reflects partly the special effect of the 2001 tax reform. In 2001, companies had an incentive to distribute accumulated retentions to shareholders in order to benefit from a retroactive reduced rate on distributed profits. This led to an increase in assessed personal income tax revenues and the revenues from capital taxation at the personal level were higher than expected. There might have been some normalisation in 2002 through a decrease in distributed profits. Moreover, the fall in interest rates may have affected the savings tax revenue. The residual might have been also influenced by fiscal drag developments, when in a progressive tax system wage inflation moved households into higher tax brackets and the revenue-richness of the tax base went up. The opposite may hold for periods of strong wage moderation. The large positive residuals in 2005, 2006 and 2009 may be linked to strong growth in capital taxes at the personal level.

Chart 4: Decomposition of changes in households direct tax revenue (1992-2011)
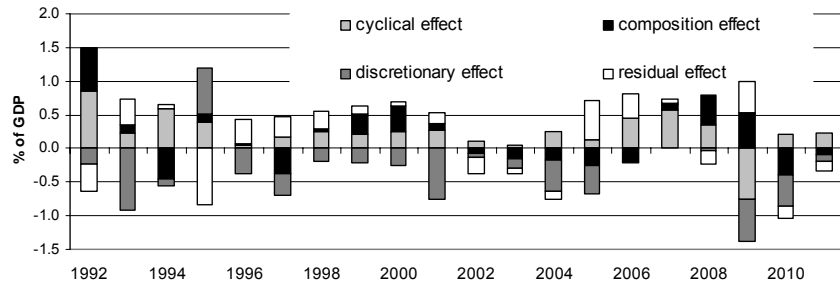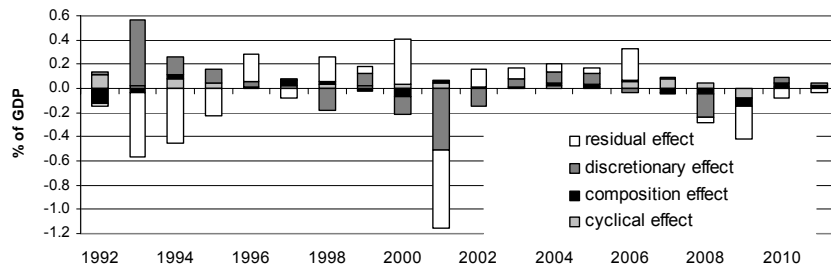

Note: National accounts. 2009- 2011: Commission services' autumn 2009 forecast
Source: AMECO, Federal Ministry of Finance and own calculations.

Revenue from direct taxes on corporations

Direct taxes on corporations were affected by the corporate tax reforms in 2001 and 2008

The evolution of direct taxes on corporations was influenced mainly by residual and discretionary effects (Chart 5). The share of direct taxes on corporations in total tax revenue is relatively small[14]. The capital share in national income is lower than the labour share, and part of capital income is taxed at the personal level.

Chart 5: Decomposition of changes in corporate direct tax revenue (1992-2011)

Note: National accounts. 2009- 2011: Commission services' autumn 2009 forecast
Source: AMECO, Federal Ministry of Finance and own calculations.

Before 2001, corporate tax functioned as a withholding tax on personal income for company owners, i.e. the taxes paid at the corporate level were credited at the level of the owner against personal tax liability (imputation system). Following the 2001 tax reform, the corporate tax rate was significantly reduced and the tax itself was changed into a source tax which could no longer be credited at the personal level. These changes are reflected in the large negative discretionary effect in 2001 with counter-effects in the following years. The 2001 negative residual is exceptionally large, probably related to unexpected shifts in corporate behaviour also in the aftermath of the bursting of the dot.com bubble[15]. It is possibly picking up the fact that the tax base – gross operating profits – does not correspond well to the taxable profits at the corporate level and that the corporate taxes are paid with both advances and arrears. It could also reflect the special effects of the 2001 tax reform on distributed profits (see above), mirroring to some extent the positive residual of previous years. The positive residual effects up to 2008 may reflect an adjustment process at the corporate level. The large negative residual in 2009 may be a reflection of the 2008 corporate tax reform reinforced by the financial and economic crisis.

Revenue projections and the new constitutional budgetary rule

As just shown, overall tax revenue developments in Germany are to a great extent affected by the particular composition of GDP growth, frequent discretionary interventions and other factors related to changes in the behaviour of taxpayers, changing fiscal drag developments or particularly strong (weak) growth of receipts from profit-related taxes. While the growth composition effect may be taken into account in the projections as long as forecasts for the respective tax base indictors are available, the other effects pose challenges for revenue projections and increase uncertainty about achieving the planned fiscal targets.

Significant composition effects – when relying on standard tax elasticities – may lead to mis-estimation of revenues and thus to incorrect assessment of the fiscal stance. A finer disaggregation of tax categories, statistical bases moving closer to "true" tax bases and regular updates of short-run tax elasticities could help to control for the composition effects *ex ante* and reduce the associated forecast error[16].

Frequent and complex discretionary interventions complicate *ex ante* budgetary assessment of the new measures, as reflected by large residual effects in particular in cases of multifaceted reforms (e.g. 2001 tax reform) or in a rapidly changing macroeconomic environment (2008-2009). This is especially relevant for direct taxation, where a change in tax rates is often accompanied by changes in the tax base which, while each being often quite small and difficult to assess, may lead to more important estimation errors through aggregation. Official *ex post* assessments of the actual budgetary impact of the enacted measures are usually not available. The new fiscal rule could help give budgetary policy a longer-term orientation, as it requires a clearer and stable fiscal strategy. Moreover, given the non-negligible residual effects in the past and the risk that unexpected developments related to discretionary measures, behavioural shifts by taxpayers and negative revenue surprises might lead to higher consolidation requirements in the short-term, the new rule necessitates greater fiscal prudence *ex ante*.

Conclusions

The link between the major government revenue components and economic activity has been unstable in the past. This can be mainly attributed to shifts in the composition of GDP growth, frequent discretionary interventions and unexpected developments.

First, the boost of government revenues between 2006 and 2008 exceeded that of cyclical activity. Similarly, the decline of total tax revenues in 2009 was less strong than the fall in output in that year. After a period of slow growth between 2001 and 2005, the recovery up to 2008 only partially explains the rebound in revenues which benefitted also from stronger-than-expected revival of profit-related taxes, the increased VAT rate in 2007 and other discretionary consolidation measures. The sharp contraction of real GDP in 2009, mainly driven by the unprecedented collapse of net exports which are generally less tax-rich, had a relatively benign impact on total tax revenues.

Second, discretionary revenue measures were introduced every year resulting in both positive and negative effects. The observed pattern does not suggest a consistent longer-term fiscal stabilisation motive. It seems that policy decisions were often taken under a short-term budgetary perspective. For example, the tax reforms adopted in 2000, with gradual phasing-in until 2005, were modified in each subsequent year.

Third, frequent and complex interventions complicate *ex ante* budgetary assessment of new measures, as reflected by large residual effects in particular in cases of multifaceted reforms (e.g. 2001 tax reform) or in a rapidly changing macroeconomic environment (2008-2009).

Against this background, given imminent consolidation needs, the new fiscal rule could help give budgetary policy a longer-term orientation, as it necessitates a clearer and stable fiscal strategy. At the same time, non-negligible residual effects in the past and the risk that unexpected developments might lead to high consolidation requirements in the short-term if borrowing is regularly pushed to the constitution limit, the new rule necessitates greater fiscal prudence *ex ante*.

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[2] All the documents relevant to the excessive deficit procedure for Germany are available at: http://ec.europa.eu/economy_finance/sgp/deficit/countries/germany_en.htm

[3] For a discussion of the new deficit rule see C. Eppendorfer and K. Leib (2008) and European Commission (2009).

[4] See European Commission (2008).

[5] All figures regarding the budgetary impact of the fiscal stimulus measures are Commission services' estimates.

[6] The estimates of the budgetary impact of tax measures are taken from *Finanzbericht* published annually by the German Ministry of Finance. The figures are cast in cash terms which do not fully correspond to the national accounts definition. The transformation of cash estimates into national accounts format was not performed here due to the lack of sufficiently detailed information. The budgetary impact is usually presented for a five-year period, but the underlying macroeconomic scenario is not specified. An attempt has been made to introduce a rough correction for macroeconomic forecast errors: the nominal GDP growth rate of the government forecast valid at the time of the publication of the *Finanzbericht* was replaced by the actual growth rate. At the same time, we assume that the growth composition was correctly estimated in the *Finanzbericht*.

[7] The elasticities are estimated in N. Girouard and C. André (2005).

[8] The categories follow N. Girouard and C. André (2005).

[9] Cyclical effects must be interpreted with caution. The application of the commonly agreed methodology for the estimation of Germany's potential output might have led to an overestimation of potential output before the crisis and an underestimation in 2009. The HP filter methodology leads to similar results.

[10] See C. Eppendorfer and M. H. Stierle (2008).

[11] See Chapter 2 in: European Commission (2007).

[12] Calculations do not take into account the budgetary impact of the measures introduced by the Act to Accelerate Economic Growth (*Wachstumsbeschleunigungsgesetz*) of 22 Dec. 2009.

[13] See discussion on progressivity of the German tax and social security systems in Peichl, A. and T. Schaefer (2008).

[14] A very low share of German businesses is incorporated, thus explaining the low significance of taxes on corporations.

[15] See R. Morris et al. (2009).

[16] See Martinez-Mongay C., Maza Lasierra, L.A. and J. Yaniz Igal, (2007). In the official tax estimations in Germany projections for each tax category are derived separately.