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Structural balance and structural effort: towards a breakdown by general government sub-sector

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STRUCTURAL BALANCE AND “STRUCTURAL EFFORT”: TOWARDS A BREAKDOWN BY GENERAL GOVERNMENT SUB-SECTOR

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This working paper expresses the views of its authors alone. Its purpose is to stimulate discussion and elicit comments and criticism.

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ABSTRACT

The evolution of the public budget balance is strongly influenced by short-term economic developments. Consequently, the “structural” budget balance, i.e. the balance adjusted for the impact of the business cycle, is traditionally used to assess the stance of the fiscal policy. This paper clarifies the definition and calculation of this balance and enriches the analysis by presenting two additional tools. Firstly, it recalls in a detailed manner the definition of the “structural effort”, a concept first introduced by Duchêne & Lévy (2003), which aims at isolating the discretionary part of the change in the structural balance, on which policy decisions may have an influence, from its non-discretionary part, which includes the impact of changes in the elasticity of tax revenues. Secondly, it presents a breakdown of this decomposition between the various sub-sectors of general government, thus improving the understanding of the evolution of public finances at a more detailed level.

RÉSUMÉ

L'évolution du solde public est fortement influencée par les variations de la conjoncture économique. Ainsi, pour apprécier l'orientation de la politique budgétaire, on a traditionnellement recours au solde public « structurel », c'est-à-dire corrigé de l'impact du cycle économique. Après avoir explicité la définition et la méthode de calcul de ce solde, ce document de travail enrichit l'analyse des variations du solde public en exposant deux outils supplémentaires. D'une part, il rappelle de manière détaillée la définition de l'« effort structurel », un concept introduit par Duchêne et Lévy (2003) qui permet d'isoler la partie discrétionnaire des évolutions du solde structurel, sur laquelle les décisions politiques peuvent influencer, de leur partie non discrétionnaire, qui inclut notamment l'impact des variations des élasticités des prélèvements obligatoires. D'autre part, il présente une ventilation de cette décomposition du solde entre les différents sous-secteurs des administrations publiques, ce qui permet notamment de comprendre les évolutions des finances publiques à un niveau plus fin.

Summary

A key issue in the conduct of fiscal policy is to evaluate what share of fluctuations in the public balance can be explained by cyclical or temporary factors (the “cyclical balance”), and what share can be attributed to variations in the underlying balance (the “structural balance”). Traditionally, the cyclical balance is calculated using the average sensitivity of spending and revenues to the economy’s position in the cycle (i.e. the output gap)¹. The structural balance is then obtained by deducting the resulting cyclical balance from the public balance. The detailed procedure for calculating this is described in part one of this paper, using a method akin to the one used by the various international organisations (EC, IMF, OECD). However, there are two main limitations to this method.

(1) The structural balance imperfectly captures the cyclical component of the public balance, being based on an inherently imperfect evaluation of the economy’s current position in the cycle (this problem lies outside the scope of this paper), and on assumptions of the average sensitivity of the different components of the public balance. In so doing, in its traditional definition the structural balance always contains a cyclical component, arising in particular from fluctuations in the elasticities to GDP of the different components of the public balance.

Partially addressing this difficulty, part two of this paper recalls the definition of the general government structural effort, a concept advanced by S. Duchêne and D. Lévy (2003)². This corresponds to the component of the variation in the structural balance attributable to discretionary factors. By construction, the structural effort is equal to the sum of an expenditure effort (equal to the reduction of the structural public expenditure ratio) and of new tax raising measures. The remainder of the variation in the structural balance is known as the “non-discretionary component, embracing effects connected with fluctuations in the elasticities of different compulsory levies and the contribution of changes in revenues other than compulsory levies (dividends, revenues from productive activities, etc.).

(2) The second limitation is that the concept of structural balance is confined to an aggregate analysis, which may be relevant if one is interested primarily in analysing macroeconomic stimuli, but fails to provide sufficient details to allow policymakers to define quanta of consolidation or room for manoeuvre to stimulate different general government sub-sectors (the State, other government bodies, local governments, and social security funds). This difficulty can be addressed by “mechanically” applying the method for calculating the structural balance to the balances of the different sub-sectors. To ensure overall consistency between the aggregated indicators and the disaggregated indicator, it is enough to maintain the same estimates of sensitivity of the broad components of spending and revenue at the level of the sub-sectors. This breakdown is sufficient to produce an evaluation of the underlying position of the different sub-sectors, but the limitations referred to above with respect to the evaluation of this indicator at the level of all local governments remain just as valid.

¹ More precisely, it is assumed that tax receipts and unemployment benefit spending alone are sensitive to the fluctuations in the output gap. Tax receipts are divided into four broad families, namely: (personal) income tax and corporation tax, for which a timing difference is allowed for between assessment date and recovery date; social insurance contributions; and other compulsory levies.

² “*Solde structurel et structural effort: un essai d’évaluation de la composante discrétionnaire de la politique budgétaire*” (Structural balance and structural effort: an attempt to evaluate the discretionary component of fiscal policy), S. Duchêne and D. Lévy, DPAE No. 18, November 2003.

It is therefore desirable to cross the two analytical frameworks, and to break down trends in the structural balance by sub-sectors according to its discretionary and its non-discretionary components. There is nothing mechanical in this, unlike evaluation of the structural balance of sub-sectors. Attempts to interpret variations in the structural balances of the different sub-sectors are indeed blurred perimeter changes and by variations in general government cross-flows, and it may be desirable to correct these in order to define the different sub-sectors' "contributions" on a like-for-like basis. This is because, since general government expenditure and revenues are consolidated for these cross-flows, a measurement of a sub-sector's expenditure effort that treated a cut in spending following a transfer of powers or a reduction in transfers to a sub-sector as a "discretionary effort" would be of limited value only.

This paper describes the method used to calculate a breakdown by sub-sectors of variations in the structural balance and its components (structural effort, and so forth), and illustrates, via the next two examples, how this tool can enrich our analysis of trends in public finances:

- a breakdown of the structural variation and the structural effort by sub-sectors for 2009;
- a backward analysis of changes in the State's contribution to variations in the structural balance.

Finally, a third example illustrates the sensitivity of the foregoing estimates to uncertainty over measurement of the output gap.

Altogether, this new tool enriches both our backward and forward-looking analysis of variations in the structural balance. It is important to be aware of its limits, however. For example, using the cyclical balance by sub-sectors would not suffice to define a "crisis deficit" level, notably because of the uncertainty as to the level of the output gap or the "structural" level of the rate of taxation. Moreover, it is important to point out that analysis of sub-sectors' past contributions to changes in the structural balance remain dependent on the assumptions regarding perimeter changes, which is often estimated ex-ante and not revised ex-post.

1. The structural balance: definition, calculation and limitations

1.1 Definition of the structural balance

Estimates of the structural public balance, i.e. the cyclically-adjusted public balance, depends on one's definition of potential GDP. This can be defined as the highest level of real gross domestic product that could persist for a substantial period without raising the rate of inflation. The output gap refers to the difference between actual GDP and potential GDP, expressed in p.p. of potential GDP, and it is this that indicates the economy's position in the cycle. Estimating it goes beyond the scope of this working paper and will therefore be treated as a given in what follows.³

The method of calculating the structural balance described below is broadly common to all of the international organisations.

In it, the structural general government revenue and expenditures are defined as revenue and expenditures that would be observed if GDP were equal to its potential, i.e. if there were neither excess demand nor a demand deficit in the economy. Cyclical revenue and expenditures are defined as the difference between actual revenue and expenditures and structural revenues and expenditures.

On the expenditure side, only unemployment benefit expenditures are considered here to be cyclical. The other expenditure items are not considered to be directly linked to the economic cycle, either because of their discretionary nature, or because their linkage to the economic cycle is weak and/or hard to measure⁴. Moreover, while certain studies suggest there is a cyclical dimension to healthcare or pension spending, there is no consensus as to the precise causes of this phenomenon or to its scale⁵.

On the revenue side, all revenue from compulsory levies is assumed to be cyclical, whereas revenue other than from compulsory levies is assumed not to be. Because the cyclical sensitivity of tax revenue differs from one tax to another, structural revenue is obtained by correcting actual revenue for cyclical effects based on the elasticities of the main taxes to the output gap.

The method distinguishes four categories of compulsory levies, namely: income tax; corporation tax; social insurance contributions (which comprise contributions by employees and employers, the self-employed and the jobless, and the “contribution sociale généralisée” (general social security contribution); and other compulsory levies. The sensitivities of the different components of the public balance to the output gap are assumed to be constant. For income and corporation tax, the method allows for the one-year time lag between the chargeable event (the change in the taxable base) and actual recovery. The method differs on this point from that of the European Commission (EC), which ignores this time lag.

The elasticities used for the different categories of compulsory levies, and for unemployment benefit spending, correspond to those measured by the OECD⁶, which are also those

³ For further details regarding estimates of potential growth of the French economy, see for example “Estimates of French medium to long-term potential growth revisited”, M. Coupet, Trésor-Economics, no. 2 November 2006.

⁴ For example, spending on the French “minimum integration income” depends a priori on the economic cycle, but its elasticity to the cycle is poorly understood.

⁵ See on this point “Le solde structurel des administrations de sécurité sociale: méthode et évaluation”, E. Bretin et R. Soullignac, *Documents de travail de la DGTPE*, 2009, together with “Social spending and automatic stabilizers in the OECD”, J. Darby and J. Melitz, October 2008.

⁶ “Measuring cyclically-adjusted budget balances for OECD countries”, N. Girouard and C. André, OECD Economics Department, *Working Paper n°434*, 2005.

measured by the European Commission⁷. The sole exception is the elasticity of social insurance contributions (0.825 versus 0.79 according to the OECD), which corresponds to a DGTPE estimate⁸. These different elasticities are presented in the table below.

Table 1: Cyclical elasticity of the different categories of compulsory levies and unemployment benefit spending

	Income tax	Corporation tax	Contribution Sociale de Solidarité (CSS)	Other compulsory levies	Unemployment benefit spending
Elasticity to output gap	1.18	1.59	0.825	1.00	-3.3

Interpretation: a 1 percentage point (p.p.) increase in the output gap raises income tax revenues by 1.18%, while unemployment benefit spending falls by 3.3%.

The elasticities of the different categories of compulsory levies depend on the following in particular:

- the extent to which the taxes in question are progressive⁹: for a proportional tax such as VAT, the elasticity is generally close to unity. Secondly, the more progressive the tax, the higher the elasticity associated with it: this is because, in the case of a progressive tax, the level of economic activity will affect both taxable bases and the average tax rate. This explains in particular why income tax has an elasticity greater than 1;
- the sensitivity of the taxable base to the level of economic activity: for instance, company profits generally vary more than their value added, as a result of which the aggregate elasticity of corporation tax is greater than unity. Similarly, the total wage bill, which is the taxable base used to calculate social insurance contributions, is partially protected from cyclical swings owing to a degree of inertia in the public sector wage bill, leading to an elasticity of social insurance contributions of less than unity.

1.2 Calculating the structural balance

This paragraph presents the calculation of the structural public balance as described above in a more formal manner.

The public balance is written S , actual GDP Y , potential GDP Y^* , actual revenues R , actual expenditures D , and the output gap is written $\frac{Y - Y^*}{Y^*}$. The indices s and c respectively refer to structural and cyclical values. Finally, the four categories of compulsory levies and unemployment benefit spending are respectively indexed IR , IS , CSS , APO and cho .

⁷ “New and Updated Budgetary Sensitivities for the EU Budgetary Surveillance”, European Commission, September 2005.

⁸ Cf. “Le solde structurel des administrations de sécurité sociale: méthode et évaluation”, E. Bretin and R. Soullignac, *Documents de travail de la DGTPE*, December 2009.

⁹ A progressive is one whose marginal rate is higher than the average rate, i.e. for which the average tax rate rises as the taxable base increases.

1.2.1 Calculating structural revenue

For each category of taxes and social security R , the structural component R_s is written as a function of the conventional elasticity θ to the output gap:

$$R_s = R \left(\frac{Y^*}{Y} \right)^\theta$$

This formula holds for the categories CSS and APO. For IR and IS, allowance is made for the one-year time lag between the chargeable event (the change in the taxable base) and actual recovery (the index -1 referring to the previous year):

$$R_s = R \left(\frac{Y_{-1}^*}{Y_{-1}} \right)^\theta$$

Cyclical revenues R_c being deducted from this:

$$R_c = R - R_s = R \left(1 - \left(\frac{Y^*}{Y} \right)^\theta \right) = R \left(1 - \left(1 + \frac{Y - Y^*}{Y^*} \right)^{-\theta} \right)$$

I.e. after linearisation as a first order approximation relative to the output gap:

$$R_c = R - R_s \approx \theta R \left(\frac{Y - Y^*}{Y^*} \right)$$

Where other revenues are concerned (i.e. revenues other than compulsory levies), their structural level is regarded as always being equal to their actual level.

1.2.2 Calculating structural expenditures

Where public spending is concerned, unemployment benefit spending alone is assumed to be dependent on the cycle. The cyclical share of these expenditures is assumed to depend on the relationship between the actual unemployment rate and the structural employment rate¹⁰. We then hypothesise that this relationship is proportional to the output gap, which comes down to applying Okun's law¹¹. If η designates the elasticity of unemployment benefit spending to the output gap, by analogy to what was written for revenue:

$$D_s^{cho} = D^{cho} \left(\frac{Y^*}{y} \right)^\eta$$

From this we deduce unemployment-related cyclical spending (first order approximation relative to the output gap):

$$D_c^{cho} \approx \eta D^{cho} \left(\frac{Y - Y^*}{Y^*} \right)$$

¹⁰ For further details on the structural unemployment rate, see "Distinguishing cyclical from structural components in French unemployment", J.P. Renne, *Trésor Economics No. 10*, March 2007.

¹¹ The fact that employment generally adjusts to activity after a time lag of a few months could lead to a slight timing difference between the ratio of actual unemployment to structural employment and the output gap; this timing difference is discounted here.

For other public spending, the structural level is considered to be equal to its actual level.

1.2.3 Calculating the structural balance

The structural and cyclical balances are deduced from the foregoing calculations:

$$S_s = R^{IR} \left(\frac{Y_{-1}^*}{Y_{-1}} \right)^{\theta^{IR}} + R^{IS} \left(\frac{Y_{-1}^*}{Y_{-1}} \right)^{\theta^{IS}} + R^{CSS} \left(\frac{Y^*}{Y} \right)^{\theta^{CSS}} + R^{APO} \left(\frac{Y^*}{Y} \right)^{\theta^{APO}} + R_{hors_PO} - D^{cho} \left(\frac{Y^*}{Y} \right)^{\eta} - D_{hors_cho}$$

$$S_c = S - S_s,$$

noting revenue other than compulsory levies R_{hors_PO} and expenditure excluding unemployment benefit spending D_{hors_cho} .

Assuming that the shares δ of the different categories of compulsory levies and unemployment benefit spending in actual GDP are constant over time, we express the variation in the cyclical balance in p.p. of actual GDP (writing the output gap OG), as a first order approximation relative to the output gap:

$$\Delta \left(\frac{S_c}{Y} \right) \approx \theta^{IR} \delta^{IR} \Delta OG_{-1} + \theta^{IS} \delta^{IS} \Delta OG_{-1} + \theta^{CSS} \delta^{CSS} \Delta OG + \theta^{APO} \delta^{APO} \Delta OG - \eta \delta^{cho} \Delta OG$$

The variation in the structural balance is generally expressed in p.p. of potential GDP. It can be written as the difference between the variation in the actual balance (in p.p. of actual GDP) and the variation in the cyclical balance (in p.p. of actual GDP), plus a term correcting for the difference between the denominators used (actual or potential GDP):

$$\Delta \left(\frac{S_s}{Y^*} \right) = \Delta \left(\frac{S}{Y} \right) - \Delta \left(\frac{S_c}{Y} \right) + \left[\Delta \left(\frac{S_s}{Y} \right) - \Delta \left(\frac{S_s}{Y^*} \right) \right]$$

This term between square brackets corresponds to the “denominator effect”. It is insignificant as a first order approximation relative to the output gap, but may prove to be significant in the event of sharp variations in the output gap. In 2009, for instance, it is reckoned to have contributed 0.3 percentage point (p.p.) of the deterioration in the public balance. The cyclical variation in the public balance is defined as the sum of the variation in the cyclical balance (in p.p. of actual GDP) and this denominator effect. In what follows, the variation in the public balance is frequently and misleadingly referred to as the variation in the cyclical balance, which is justifiable only when the denominator effect is negligible.

Box 1: The “rule of thumb”: a simplified method of calculating the structural balance

The structural balance can be estimated approximately by adopting the following simplified assumptions:

- no allowance is made for “lagged” income tax (IR) and corporation tax (IS) effects (i.e. the one-year time lag between the change in the taxable base and actual recovery of the tax);
- the shares δ of the different categories of compulsory levies and of unemployment benefit spending in actual GDP are assumed to be constant;
- we reason in terms of first order approximation relative to the output gap, notably treating the “denominator effect” referred to at the end of paragraph 1.2 as negligible..

According to these hypotheses, the variation in the cyclical balance may be written:

$$\Delta\left(\frac{S_c}{Y}\right) \approx (\theta^{IR} \delta^{IR} + \theta^{IS} \delta^{IS} + \theta^{CSS} \delta^{CSS} + \theta^{APO} \delta^{APO} - \eta \delta^{cho}) \Delta OG$$

Given the elasticities presented in table 1 and the average weight of the different compulsory levies and unemployment benefit spending in GDP between 2000 and 2008, we obtain the following approximate formula, which we call the “rule of thumb”:

$$\Delta\left(\frac{S_c}{Y}\right) \approx 0,46 \Delta OG$$

The sensitivity of the cyclical balance to variations in the output gap is thus estimated at around 0.46. This sensitivity can vary over time if the weight of the different categories of compulsory levies or unemployment benefit spending in GDP varies. Using the weights for 2003 and slightly different fields, the OECD estimated this sensitivity at 0.53 for France, and the European Commission estimated it at 0.49¹². It should be noted that the Commission uses this method directly to evaluate the structural balance.

More generally, this sensitivity is on the order of one half for the main western European countries¹³. According to OECD estimates, it is closer to one-third for the United States and Japan, chiefly due to the lower burden of compulsory levies in these two countries.

1.3 Allowing for exceptional events affecting the public balance

Certain exceptional events or measures affect the public balance in a given year but have no lasting impact on the balance. This is the case, for example, with certain stimulus measures enacted in 2009 in response to the economic crisis, or with exceptional revenues arising in connection with compensating payments. Owing to their exceptional nature, one may question whether they should be excluded from the structural balance or not.

The European Commission, for instance, distinguishes between the concepts of “cyclically-adjusted balance” and “structural balance”. The cyclically adjusted balance corresponds to the definition of the structural balance given above. The structural balance referred to by the EC, meanwhile, is equal to the cyclically adjusted balance after eliminating the exceptional measures affecting the public balance.

By exceptional measures, the Commission means all measures temporarily affecting the public balance, including those entailing a lasting change in legislation. Thus, the impact on

¹² Sources: “Measuring cyclically-adjusted budget balances for OECD countries”, N. Girouard and C. André, OECD Economics Department *Working Paper No 434*, 2005; “New and updated budgetary sensitivities for the EU budgetary surveillance”, European Commission, September 2005.

¹³ According to OECD estimates: 0.51 for Germany, 0.53 for Italy, 0.44 for Spain, 0.45 for the United Kingdom.

the public balance of measures such as interim dividends, resulting from a lasting change in the dividend payment policy of State-held companies, is eliminated from the Commission's calculation of the structural balance. Defining what constitutes an exceptional measure, however, remains very much a question of interpretation: for example, despite its temporary nature, the Commission did not consider the 2009 stimulus plan to be "exceptional", even though the temporary additional cost in 2010 of the business tax reform was so considered.

The DGTPE takes a different approach, as presented in this working paper: the effects of events having a temporary impact on the public balance are included in the calculation of the structural balance. This is notably justified by the difficulty of agreeing on whether or not a particular measure is exceptional.

However, in addition to its evaluation of the "structural balance", the DGTPE publishes a "structural balance excluding compensating payments", which deducts exceptional revenues in the form of compensating balances from the structural balance, since they cannot be regarded as lasting measures. And indeed the so-called "Marcoule", "IEG" and "La Poste" compensating payments, which compensated for the transfer of these companies' employee pension obligations to the general pension system, temporarily raised revenues other than compulsory levies in 2004, 2005 and 2006 respectively.

1.4 Example: breakdown of the change in the public balance between 2000 and 2008

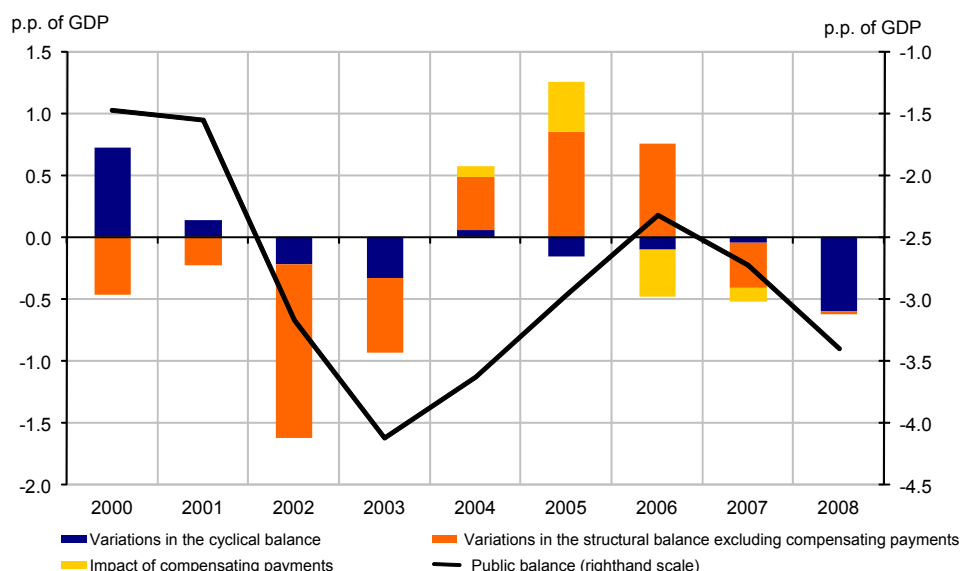
By way of illustration, here, for the period 2000-2008, is the breakdown of the public balance as between its cyclical component and its structural component.

Data used are derived from the national accounts for most of the macroeconomic and public finances aggregates. Government tax revenues (income and corporation tax in particular) are derived from the budget accounts. Potential growth corresponds to a DGTPE estimate published notably in the *Rapport économique social et financier* (Economic, social and financial report) appended to the 2010 Budget Bill.

Table 2: Breakdown of changes in the public balance between 2000 and 2008

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Public balance (% of GDP)	-1.5	-1.6	-3.2	-4.1	-3.6	-3.0	-2.3	-2.7	-3.4
Structural balance excluding compensating payments (% of potential GDP)	-2.5	-2.8	-4.2	-4.8	-4.4	-4.0	-2.9	-3.1	-3.1
Variation in the public balance (p.p. of GDP)	0.3	-0.1	-1.6	-1.0	0.5	0.7	0.6	-0.4	-0.7
Variation in the cyclical balance (p.p. of potential GDP)	0.7	0.1	-0.2	-0.3	0.1	-0.2	-0.1	0.0	-0.6
Variation in the structural balance (p.p. of potential GDP)	-0.5	-0.2	-1.4	-0.6	0.4	0.9	0.8	-0.4	0.0
Of which impact of compensating payments	0.0	0.0	0.0	0.0	0.1	0.4	-0.4	-0.1	0.0
Variation in the structural balance excluding compensating payments (p.p. of potential GDP)	-0.5	-0.2	-1.4	-0.6	0.3	0.5	1.1	-0.3	0.0

Chart 1: Breakdown of variations in the public balance



Source: DGTPE calculations

We find that, when the economy slowed between 2001 and 2003, the public deficit widened primarily due to a worsening of the structural balance and, to a lesser extent, to the deterioration in the cyclical balance. Subsequently, it was the improvement in the structural balance that accounted for the improvement in the public balance between 2003 and 2006, whereas the level of economic activity had a slightly negative impact during the period. In 2007 and 2008, the public deficit widened again, for structural reasons in 2007, and for cyclical ones in 2008.

This initial analysis of variations in the public balance is useful, but it needs to be fleshed out. This will be done in what follows, with the definition of the concept of structural effort, which seeks to measure what, in the change in the structural balance, can truly be said to be discretionary (part 2), and with an analysis of the change in the structural balance by general government sub-sectors (part 3).

1.5 Uncertainties surrounding measurement of the structural balance, and limits to its interpretation

A first difficulty in evaluating the structural balance lies in the use of potential GDP, a concept that cannot be measured directly and that is evaluated differently from one international institution to the next, depending on the method used. Different measurements of the output gap and hence of the state of the economy yield different levels for the structural balance. On the other hand, as we shall see in paragraph 4.3, the variation in the structural balance is less sensitive to the choice of method used, to the extent that potential growth itself is below the level of potential GDP.

Beyond these problems of measurement, the structural balance is ill-suited to evaluating discretionary public measures. This is because calculating the structural balance depends on the conventional elasticities to the cycle of the different categories of compulsory levies and unemployment benefit spending, these elasticities being assumed to be constant over time. This hypothesis is valid over the long run but is not so at each instant in time, and this skews the measurement of the structural balance, insofar as the gaps between conventional elasticities and actual elasticities are fully reflected in it. Finally, by construction, the change

in the structural balance includes the variations in revenue other than compulsory levies, even though these variations are not necessarily of a discretionary nature.

2 The structural effort, a discretionary component of the variation in the structural balance

2.1 Defining structural effort

The general government structural effort represents the share of the variation in the structural balance that is attributable to discretionary factors.

It is defined as the sum of an “expenditure effort” and a “revenue effort”. The expenditure effort is measured as the opposite to the variation in the ratio of structural expenditure (i.e. adjusted for the impact of the cycle on unemployment benefit spending) to potential GDP; it thus depends on the gap between the rate of growth in public expenditure and the economy’s nominal potential growth. The “revenue effort” is equal to the estimated impact of new taxation and welfare decisions on the compulsory levies collected by the whole of general government.

The concept of structural effort thus defined partly allows us to overcome the inherent limits to the measurement of the structural balance.

- The structural effort needs to be compared with the variation in the structural balance, which is less sensitive to the choice of method used to calculate the output gap, to the extent potential growth itself is less than the level of potential GDP.
- The structural effort allows us to subtract from the variation in the structural balance the effects of fluctuations in fiscal elasticities and changes in revenue other than compulsory levies, by focusing exclusively on the impact of discretionary decisions on the revenue side.
- However, the definition of “expenditure effort” used, which treats any increase in expenditure that is faster than potential GDP—rather than at a trend rate for expenditure—as discretionary, is open to discussion.

The non-discretionary component of the variation in the structural balance, which is defined by the difference, can also be broken down as the sum of two terms, i.e.:

- the contribution of revenue other than compulsory levies, which is equal to the increase in the share of potential GDP of revenue other than compulsory levies;
- the contribution of the fluctuations of fiscal elasticities of compulsory levies, which is obtained as a residue, as compared with the spontaneous change in the rate of compulsory levies¹⁴.

¹⁴ The contribution of the spontaneous change to the variation in the rate of compulsory levies is defined as the variation in the rate of compulsory levies (in p.p. of GDP) between T-1 and T from which is deducted the share of new decisions in GDP in T. If the elasticities are unity, and in the absence of any time lag between assessment and recovery of the different taxes, the contribution ought to be equal to zero. Consequently, the contribution of the spontaneous change provides a measure of the *ex post* deviation of elasticities from this “norm”. The contribution of the spontaneous change in compulsory levies to the change in the structural balance differs somewhat from the foregoing. This is because it measures deviations not from the reference situation of unit elasticities of compulsory levies and the absence of time lag, but relative to the reference situation implicit in the calculation of the cyclical balance (elasticities changing along with the historically observed average sensitivity, and allowing for the time lag between the collection date and the recovery date of income tax and corporation tax).

2.2 Calculation of the structural effort

To express this more formally, and adopting the notation used in paragraph 1.2, we may define the structural effort as follows.

2.2.1 Breakdown of the variation in structural revenue

Let MN denote the new measures relating to compulsory levies and ε the actual elasticity of revenue to actual contemporary GDP, the variation in actual revenue may be written:

$$\Delta R = MN + R^{IR} \varepsilon^{IR} \frac{\Delta Y}{Y} + R^{IS} \varepsilon^{IS} \frac{\Delta Y}{Y} + R^{CSS} \varepsilon^{CSS} \frac{\Delta Y}{Y} + R^{APO} \varepsilon^{APO} \frac{\Delta Y}{Y} + \Delta R_{hors_PO}$$

(IR = income tax; IS = corporation tax; CSS = “social security contribution”; hors PO = excluding compulsory levies; APO = other compulsory levies)

Based on the calculations in paragraph 1.2, the variation in cyclical revenues is written, as a first order approximation relative to the output gap:

$$\Delta R_c \approx \theta^{IR} R^{IR} \Delta OG_{-1} + \theta^{IS} R^{IS} \Delta OG_{-1} + \theta^{CSS} R^{CSS} \Delta OG + \theta^{APO} R^{APO} \Delta OG$$

Whence the variation in structural revenue:

$$\Delta R_s = \Delta R - \Delta R_c$$

The variation in structural revenue in p.p. of GDP may be written as follows, as a first order approximation relative to the output gap, noting y^* the nominal potential growth rate:

$$\Delta \left(\frac{R_s}{Y^*} \right) = \frac{R_s}{Y^*} - \frac{R_{s-1}}{Y^*} + R_{s-1} \left(\frac{1}{Y^*} - \frac{1}{Y_{-1}^*} \right) \approx \frac{\Delta(R_s)}{Y^*} - y^* \left(\frac{R_s}{Y^*} \right)_{-1}$$

We thus obtain the following breakdown for the variation in structural revenue in p.p. of GDP, as a first order approximation, considering the share of revenues ε^* in potential GDP to be constant:

$$\Delta \left(\frac{R_s}{Y^*} \right) = \frac{MN}{Y^*} + \Delta \left(\frac{R_{hors_PO}}{Y^*} \right) + Reste$$

The first term corresponds to the structural effort on the revenue side, i.e. the impact of new decisions concerning compulsory levies on structural revenue. The second term represents the impact of variations in revenues excluding compulsory levies. Finally, the term *Reste* (remainder) may be written as follows in the first order:

$$\begin{aligned} Reste \approx & \sum_{i=CSS, APO} (\varepsilon^i - \theta^i) \frac{\Delta Y}{Y} \delta^{*i} + \sum_{i=IR, IS} \left(\varepsilon^i \cdot \frac{\Delta Y}{Y} - \theta^i \left(\frac{\Delta Y}{Y} \right)_{-1} \right) \delta^{*i} \\ & + \sum_{i=IR, IS, CSS, APO} (\theta^i - 1) y^* \left(\frac{R_s^i}{Y^*} \right)_{-1} \end{aligned}$$

This term depends on the differences between spontaneous elasticities and conventional elasticities, and between conventional elasticities and unity. It will be designated as the contribution of “elasticity effects” to the variation in structural revenue.

The last two terms of the breakdown of the variation of structural revenue are not discretionary.

2.2.2 Breakdown of the variation of structural expenditures

Using the above-defined notation, the variation in cyclical expenditure is written (as a first order approximation relative to the output gap):

$$\Delta\left(\frac{D_c}{Y^*}\right) \approx \eta \delta^{*cho} \Delta OG$$

The change in the share of public expenditure in potential GDP may be written (as a first order approximation):

$$\Delta\left(\frac{D}{Y^*}\right) \approx \frac{D_{-1}}{Y^*_{-1}} (d - y^*)$$

noting d the nominal rate of growth in public expenditure.

Whence the variation in structural expenditure in p.p. of GDP, or “structural expenditure effort”, which depends primarily on the gap between the rate of growth in structural public expenditure and the nominal growth in potential GDP:

$$\Delta\left(\frac{D_s}{Y^*}\right) \approx \frac{D_{-1}}{Y^*_{-1}} (d - y^*) - \eta \delta^{*cho} \Delta OG$$

2.2.3 Breakdown of the variation in the structural balance

Finally, thanks to the foregoing, we obtain the following breakdown of the variation in the structural balance:

$$\Delta\left(\frac{S_s}{Y^*}\right) = \left[\frac{MN}{Y^*} - \frac{D_{-1}}{Y^*_{-1}} (d - y^*) + \eta \delta^{*cho} \Delta OG \right] + \left[\Delta\left(\frac{R_{hors-PO}}{Y^*}\right) + Re\ ste \right]$$

The first square bracket corresponds to the discretionary variations in the structural balance, i.e. the structural effort. This may be broken down as the sum of new decisions concerning compulsory levies and the expenditure effort. The second square bracket represents non-discretionary variations in the structural balance. These may be broken down as the sum of two terms, namely the contribution of revenue other than compulsory levies and elasticity effects.

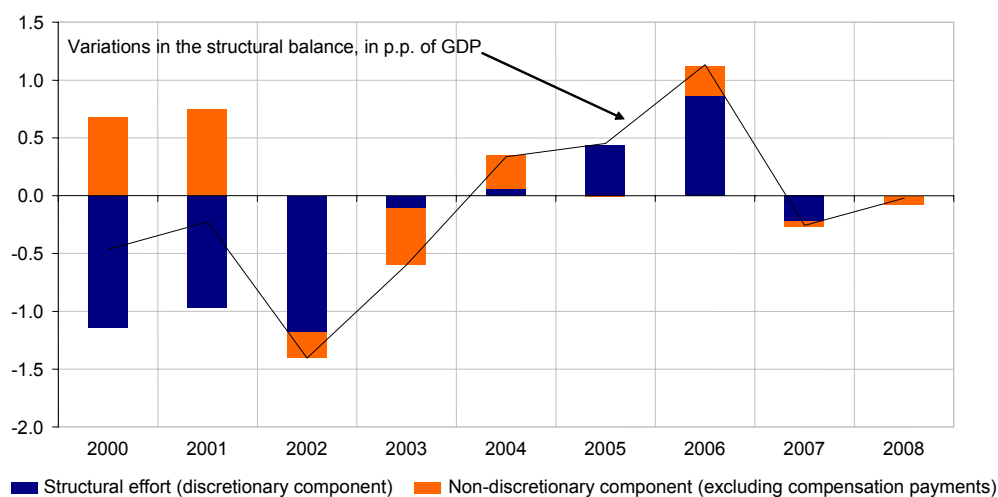
2.3 Example: breakdown of the change in structural balance between 2000 and 2008

By way of illustration, table 3 and charts 2, 3 and 4 present a breakdown of the variation in the structural balance between 2000 and 2008 based on the foregoing definitions. In particular they serve to refine the analysis of the changes presented in paragraph 1.4.

Table 3: Breakdown of the change in the structural balance between 2000 and 2008

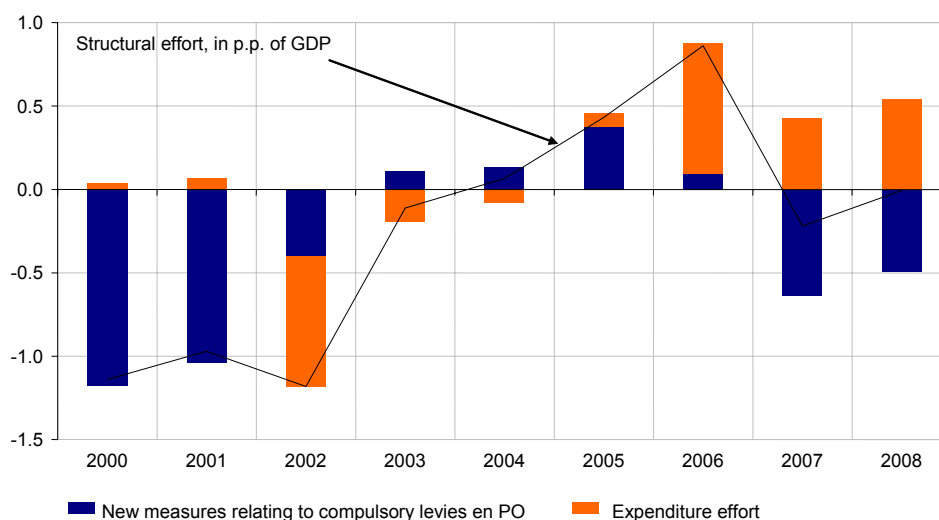
	2000	2001	2002	2003	2004	2005	2006	2007	2008
Variation in the structural balance (in p.p. of GDP)	-0.5	-0.2	-1.4	-0.6	0.4	0.9	0.8	-0.4	0.0
<i>Of which: impact of compensating payments</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.0</i>	<i>0.1</i>	<i>0.4</i>	<i>-0.4</i>	<i>-0.1</i>	<i>0.0</i>
Variation in the structural balance excluding compensation payments	-0.5	-0.2	-1.4	-0.6	0.3	0.5	1.1	-0.3	0.0
Of which: structural effort	-1.1	-1.0	-1.2	-0.1	0.1	0.4	0.9	-0.2	0.0
of which: new measures relating to compulsory levies	-1.2	-1.0	-0.4	0.1	0.1	0.4	0.1	-0.6	-0.5
of which: expenditure effort	0.0	0.1	-0.8	-0.2	-0.1	0.1	0.8	0.4	0.5
Of which: non-discretionary component (excluding compensation payments)	0.7	0.7	-0.2	-0.5	0.3	0.0	0.3	0.0	-0.1
of which: revenue other than compulsory levies, excluding compensation payments	0.3	0.2	0.0	-0.3	0.0	0.0	0.0	0.0	0.0
of which: elasticity effects	0.5	0.6	-0.2	-0.2	0.3	0.0	0.2	-0.1	0.0

Chart 2: Breakdown of variations in the structural balance (excluding compensation payments)



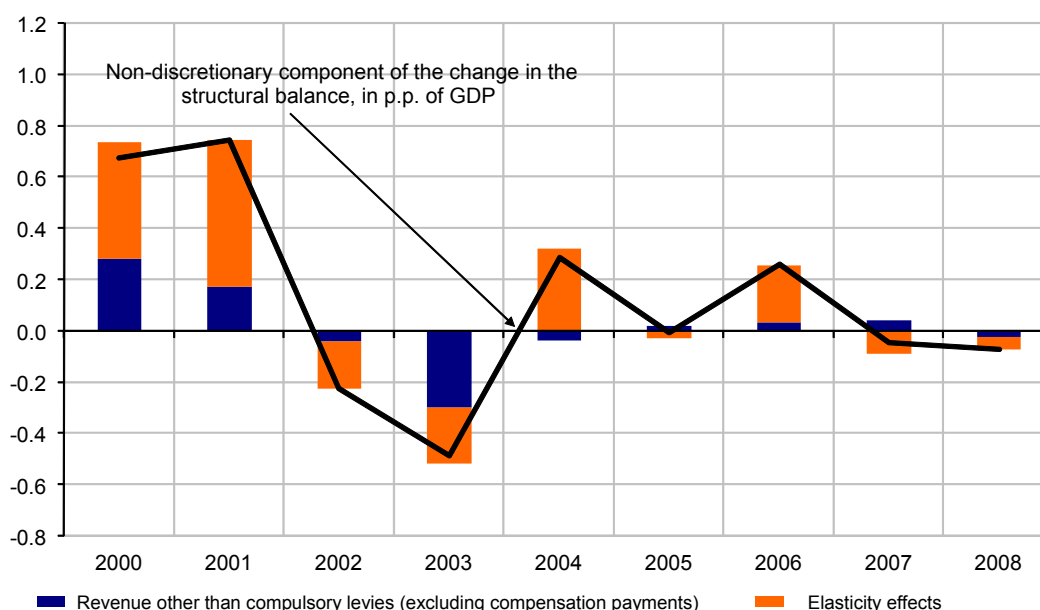
Source: DGTPE calculations

Chart 3: Breakdown of the structural effort



Source: DGTPE calculations

Chart 4: Breakdown of the non-discretionary component of the change in the structural balance



Source: DGTPE calculations

The structural balance deteriorated by 2.7 p.p. of GDP between 2000 and 2003. This deterioration was due in the first place to a hefty relaxation of the structural effort between 2000 and 2002 (representing roughly 1 percentage point (p.p.) of GDP per year over these three years), as a result of numerous tax reductions. These included income tax cuts in 2000 and 2001, the introduction of the *Prime pour l'emploi* (earned-income tax credit), the cut in the standard VAT rate from 20.6% to 19.6% in 2000, a 30% reduction in the tax (*TIPP*) on home heating oil, abolition of the road tax for cars, a cut in the corporation tax rate for SMEs in particular, and a reform of the business tax reducing the share of a company's wage bill in its taxable base, etc.¹⁵ The high level of elasticity of tax revenue in 2000 and 2001, together with buoyant revenue other than compulsory levies nevertheless limited the deterioration in the structural balance over this period. In 2003, on the other hand, the deterioration in the structural balance was non-discretionary in nature, mainly, with a negative contribution from growth in revenue other than compulsory levies.

We see here an example of correlation between the non-discretionary component and the economic cycle: this contributed to the improvement in the public balance in 2000 and 2001, when the economy was doing well, but it contributed negatively in 2002 and 2003 when the economy slowed. This can be explained by a degree of correlation between the economic cycle and tax elasticities together with revenue other than compulsory levies (e.g. dividends paid to the State in respect of its shareholdings in companies). But this correlation is irregular, however, which helps to justify the fact that fiscal elasticity effects are not taken into account in the cyclical balance.

The structural balance (excluding compensation payments) improved by 2.0 p.p. of GDP overall, between 2004 and 2006, under the combined effect of a substantial (1.4 percentage point (p.p.)) structural effort and a positive (0.6 percentage point (p.p.)) contribution of the non-discretionary component. The structural effort over the period resulted from a combination of slower expenditure growth than potential GDP, in 2006 in particular, and from new measures relating to compulsory levies tending towards an improvement in the

¹⁵ See *L'Économie française*, Insee, 2001-2002 and 2002-2003 editions, for additional details.

public balance, particularly in 2005 (with the health insurance reform, the creation of the *contribution de solidarité pour l'autonomie* (welfare contribution for elderly people living alone), a reform of the advance corporation tax regime, etc.¹⁶).

In 2007, the structural balance (excluding compensation payments) deteriorated by 0.4 percentage point (p.p.) under the effect of various new measures relating to compulsory levies (in particular: the reform of income tax rate schedule and the reduction in corporation tax). Slow growth in public expenditure relative to potential growth limited the deterioration in the structural balance, however.

The structural balance stayed fairly stable in 2008, with slow growth in public expenditure offsetting the impact of tax cuts, concerning in particular various measures in the 2007 *TEPA* (work, employment and purchasing power) Act in favour of household, measures to reduce corporation tax, and reductions in employers' social insurance contributions. This slow growth in public expenditure (relative to nominal GDP growth) is partly accounted for by a surprise increase in inflation. This is because observed inflation (2.8%) for 2008 was distinctly higher than inflation forecast at the time of the Initial Budget Act (1.6%). This had the result of limiting the rise in central government expenditure in volume terms, the change in this item being decided on the basis of forecast inflation at the time of the Initial Budget Act.

2.4 Limits to the concept of structural effort

The concept of structural effort unquestionably represents a step forward relative to the structural balance in the search for an indicator of the discretionary component of the public balance. In particular it serves to eliminate movements in the elasticities of fiscal revenue from the variation in the structural balance, which by construction affect the variation in the structural balance even though they do not result from discretionary decisions by the Government.

However, if on the revenue side the new measures relating to compulsory levies are a good indicator of the conduct of fiscal policy, the evaluation of the expenditure effort rests on a conventional reference for growth in public expenditure, namely potential growth. It looks as though it would be hard to make this hypothesis less conventional, though.

Which, in the case of an increase in the civil service points-based pay scale (point d'indice) for example, would be regarded as discretionary: an increase in the value of each point (the legal approach); an increase in the value of each point above inflation (in order to preserve civil servants' absolute purchasing power); or an increase above private sector wages (to preserve civil servants' relative purchasing power)?

Then there is the question of the perimeter of discretionary public expenditure: a certain number of public expenditures, such as interest payments on public debt, cannot be trimmed and one might be tempted to discount them from the structural expenditure effort. In the approach adopted here, we consider that all public expenditure is inherently discretionary, based notably on the idea that public expenditure changes are decided at an aggregate level, which is the case for the State, for example, within the framework of the budgetary norm.

¹⁶ See *L'Économie française*, Insee, 2005-2006 and 2006-2007 editions, for additional details.

3 Structural balance and structural effort in general government sub-sectors

We can further refine our analysis of variations in the public balance by applying the method used to calculate the structural balance and the structural effort, described above, to the four broad sectors of general government, i.e.: the State (État), other government bodies (ODAC), local governments (APUL), and social security funds (ASSO). This disaggregated approach aims notably at estimating the structural position of the different sub-sectors, and also at determining the contribution of each sub-sector to the structural effort.

Apportioning the structural effort and the non-discretionary component of the variation in the structural balance requires further restatement of perimeter changes on the one hand, and of variations in transfers between sub-sectors on the other.

3.1 The structural balance of general government sub-sectors

One can apply the method of calculating the structural balance mechanically to the different general government sub-sectors. Thus we define the structural revenue and expenditure for each sub-sector that would be observed if GDP were equal to potential GDP.

We retain at sub-sector level the estimated sensitivities of the broad expenditure and revenue components defined above, thereby ensuring overall consistency between the aggregated indicator and the disaggregated indicator.

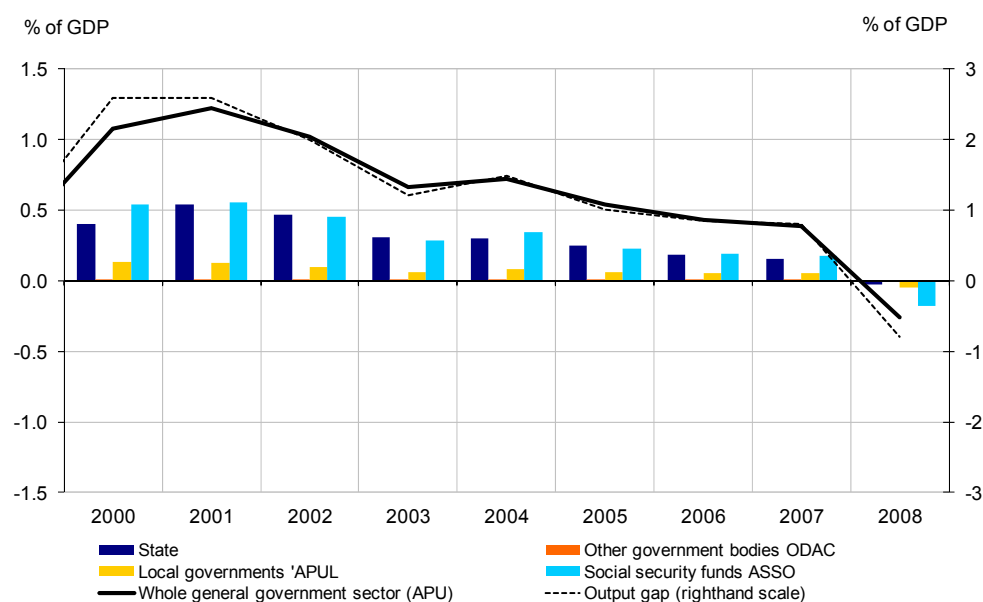
Table 4 below shows the share of GDP of each component of general government sub-sectors' finances.

Table 4: Share of DGP of the cyclical and structural components of general government sub-sectors' finances (in 2008)

	Share of GDP, in %				
	General government APU	State	Other government bodies (ODAC)	Local governments (APUL)	Social security funds (ASSO)
Revenue	49.3	17.1	3.4	10.9	24.2
Compulsory levies	42.5	13.7	0.9	5.8	22.2
<i>of which Income tax (IR)</i>	3.0	3.0	0	0	0
<i>of which Corporation tax (IS)</i>	2.5	2.5	0	0	0
<i>of which Social insurance (CSS)</i>	20.1	0	0	0	20.1
<i>of which other compulsory levies (APO)</i>	16.9	8.1	0.9	5.8	2.1
Revenues excluding compulsory levies	6.7	3.4	2.5	5.1	2.0
Expenditure	52.7	19.9	3.5	11.3	24.2
Unemployment benefit expenditure	1.0	0	0	0	1.0
Other public expenditure	51.6	19.9	3.5	11.3	23.2

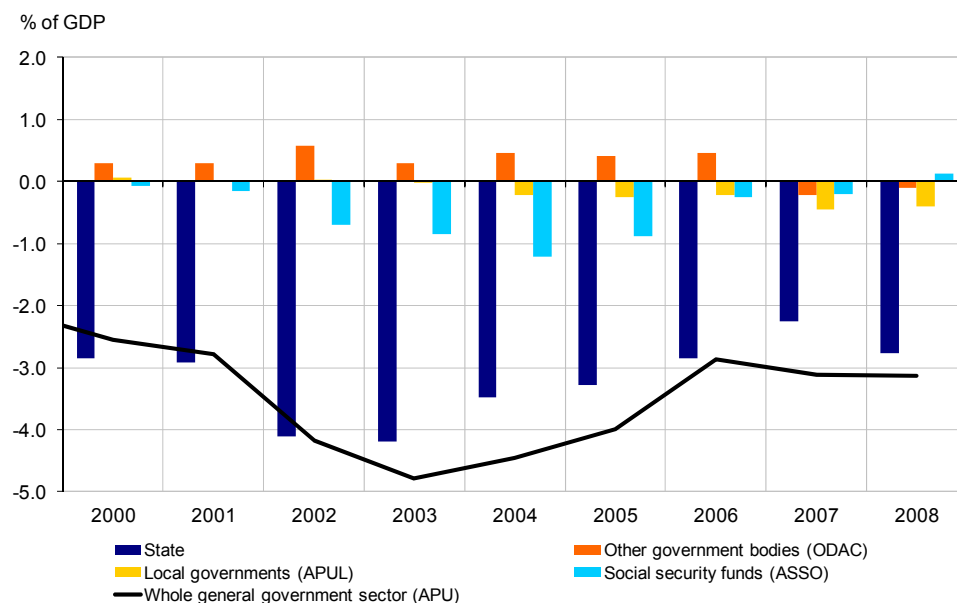
(*)Expenditures excluding unemployment benefit and revenue excluding general government compulsory levies are consolidated for transfers between sub-sector.

Cyclical balance of general government sub-sectors and output gap



Source: DGTPE calculations

Chart 6: Structural balance (excluding compensation payments) of general government sub-sectors



Source: DGTPE calculations

Charts 5 and 6 present the change in the cyclical balance and structural balance of the different general government sub-sectors between 2000 and 2008.

Given the preponderant share of compulsory levies of the State and social security funds in total general government levies, these two sub-sectors account for the bulk of variations in the cyclical public balance, as illustrated in chart 5. Chart 6, meanwhile, highlights the fact that it is the State that has been the main contributor to the general government's structural deficit over the period in question.

While this breakdown between cyclical balance and structural balance is sufficient to yield an evaluation of the underlying position of the different sub-sectors, the limitations already referred to earlier regarding the evaluation of this indicator at the level of the whole general government sector remain valid here. It would therefore be worthwhile applying the concept of structural effort introduced in Part 2 to this breakdown, and determining what portion of the change in the structural balance of each sub-sector is discretionary.

3.2 Apportioning the structural effort and the non-discretionary component of the variation in the structural balance

Unlike the evaluation of the structural balance of the sub-sectors, there is nothing mechanical about the way we state the breakdown between the structural effort and the non-discretionary component. This is because, over and beyond the limitations already identified regarding the scope of the whole general government sector (which obviously remain valid at the disaggregated level), calculating the structural balance and the structural effort by sub-sectors raises two additional difficulties that call for specific restatements.

3.2.1 Restatements for perimeter changes and transfer expenditures and revenue

- Perimeter changes

Efforts to interpret the change in ratio of expenditure and revenue at the level of general government sub-sectors are hampered by problems relating to the perimeter changes and transfers of powers between different government bodies, even though these are neutral at the level of the whole general government sector.

Two examples serve to illustrate the point.

The merger of the French Job Centres, the ANPE (other government bodies) and the UNEDIC unemployment benefit fund (other government bodies) to form the new “Pôle emploi”, has led to the whole of this new body being classified under social security funds. This change of perimeter has increased the social security funds’ expenditures and revenue, while symmetrically lowering those of other government bodies. Yet this reduction in other government bodies’ expenditure does not constitute an “effort” in terms of this category’s expenditures.

The transfer of the RMI “minimum integration income” to the départements has reduced State expenditures while raising those of the local governments, with no expenditure effort on the part of the State or negative expenditure effort on the part of the local governments.

Here, then, we need to reason on an annualised constant scope basis, i.e. adjusting changes in revenue and expenditures for perimeter changes, which includes transfers of power.

- Consolidation of public expenditure

Further, the sum total of general government sub-sectors’ expenditures is greater than total public expenditure. This is because total public expenditure is “consolidated” for transfers between government bodies, to avoid counting the same expenditures twice. For example, the allocation spécifique de solidarité (ASS—specific solidarity payment) is paid by the Fonds de Solidarité (other government bodies) but is financed by a grant from the State.

By convention, each expenditure item is attributed to the sub-sector responsible for its final payment, which, for the purposes of calculating the structural effort of each general

government sub-sector, requires that we exclude transfers between government bodies when looking at expenditures (and, symmetrically, at revenue).

These conventions (which entail adjusting for perimeter changes and transfers between government bodies) are the same as those used in apportioning expenditures as presented in the report on public expenditure¹⁷; symmetrically, we make the same adjustments on the revenue side. For example, the reform of social security funding in 2006 led to the partial transfer of VAT receipts and other taxes to the social security funds, in order to finance exemptions from employers' social insurance contributions, in return for the ending of a transfer from the State to the social security funds. Although the two transactions affect expenditures and revenue, they are neutral for the sectors' balances: consequently they are restated so as to avoid giving rise to a positive structural contribution by social insurance contributions (either the discretionary or the non-discretionary component of the variation in the structural balance).

Concerning revenues other than compulsory levies, increases in revenues arising from the reclassification of one institutional sector to another sector are also deducted from contributions to the non-discretionary component of the variation in the structural balance. Accordingly, for instance, no non-discretionary fall in revenues excluding compulsory levies was recorded when the Direction des Constructions Navales was eliminated from the general government accounts in 2003.

Once these transfers between sub-sectors and perimeter changes have been restated, it is possible to measure the contribution of each sub-sector to variations in the structural balance.

3.2.2 Examples of restatements

Some examples may provide a better illustration of the consequences of these conventions for the definition of sub-sectors' contributions to the variation in the structural balance and to the discretionary and non-discretionary components.

- A. When flows between sectors do not reflect a change of budgetary policy at the macroeconomic level, these flows are restated so as to avoid making it harder to interpret the different components. For example, decentralisation of the RMI to the *départements* in 2004 did not reflect a change of overall general government policy. Its implementation was neutral in its impact on the sub-sectors' balances, thanks to an offsetting transfer of revenue from the TIPP (domestic duty on oil and gas products) for the same amount from the State to the *départements*.

Example A: Decentralisation of the RMI to the *départements* (illustrative amounts)

	In actual terms		Contribution to structural effort	
	State	Local governments	State	Local governments
Expenditures				
RMI expenditures	-10	10	0	0
Revenues				
Transfer of TIPP revenues	-10	10	0	0
Balance	0	0	0	0

¹⁷ See “Rapport sur la dépense publique et son évolution” (Report on public expenditure trends) appended to the 2010 Budget Bill, pages 16 and after.

- B. In 2009, the State topped up its grant to the *Agence de Financement des Infrastructures de Transport de France* (AFITF-French transport infrastructure finance agency), which is classified under other government bodies. The impact of this change on the total public balance was neutral, with no effect on aggregate expenditure. On the other hand, it raised State expenditure and other government bodies' revenue. This therefore entailed a structural deterioration in the State balance and a symmetrical improvement in the other government bodies' balance. We do not, however, count this as a "structural effort" on the part of other government bodies.

Example B: Top-up of State grant to the AFITF (illustrative amounts)

	In actual terms		Contribution to structural effort	
	State	Other government bodies	State	Other government bodies
Expenditures				
Transfer	10	0	0	0
Revenues				
Transfer	0	10	0	0
Balance	-10	10	0	0

- C. The TEPA Act clause exempting overtime from social insurance contributions represents a new decision, in the form of a cut in these contributions (under social security funds' compulsory levies), at the aggregate level, impacting the State balance, since it is the latter that compensates for this new decision by means of a transfer of revenues. This entails a deterioration in the structural balance of the State, but the drop in compulsory levies will be ascribed to the social security funds in the breakdown of the structural effort.

Example C: Exemption of overtime from social insurance contributions (illustrative amounts)

	In actual terms		Contribution to structural effort	
	State	Social security funds	State	Social security funds
Expenditures				
Revenues				
Overtime exemption decision	0	-10	0	-10
Transfer of revenues	-10	10		
Balance	-10	0	0	-10

These conventions, which are consistent with the breakdown of expenditures presented in the *Rapport sur la dépense publique et son évolution* (Report on public expenditure trends), thus attributes the expenditure of the sector that executes it and the corresponding compulsory levies to the sector that ultimately receives it. This would raise no problem if all sub-sectors were fully free to decide on the level and nature of their spending, as is essentially the case for local government bodies in virtue of the principle of the French "principle of administrative freedom".

They are open to discussion, however, given the various forms of interdependence between sectors and the preponderant role of the State in the decisions of government bodies. These

conventions have the merit of simplicity and consistency, allowing us to establish a simple rule for the purpose of analysing the contributions of sub-sectors to the variation in the structural balance, but they do not directly measure the impact of decisions taken by the different executive layers (State, local executives, and the social partners).

4 Examples of applications

The three examples that follow seek to illustrate how the scale-model for the apportionment of the structural balance by sub-sector presented above works. The first two show how it serves to enrich our analysis of changes in the public finances, first by breaking down trends in the public balance by sub-sector for a given year (2009), followed by a breakdown of trends in the State balance between 2000 and 2008.

Finally, the third example illustrates the sensitivity of this breakdown to uncertainties affecting the output gap.

4.1 Apportioning the structural variation and the structural effort by sub-sectors for 2009

This paragraph illustrates a possible application of the new tool defined previously in order to analyse a public finances forecast for a given year, taking the year 2009 as our example. The forecasts used are taken from the *Rapport économique social et financier* (Economic, social and financial report) appended to the 2010 Budget Bill.

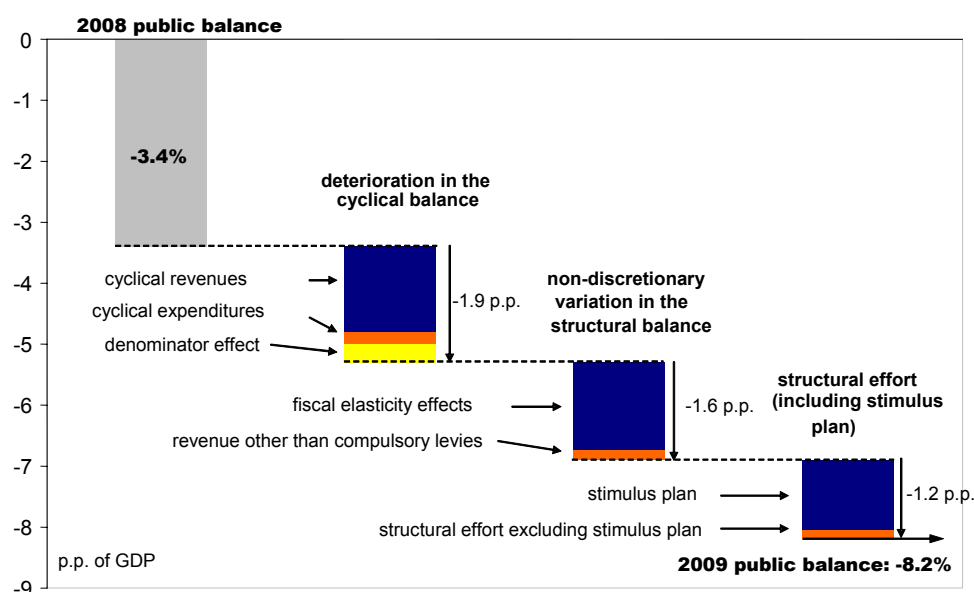
The general government deficit was forecast at 8.2% of GDP in 2009, coming after 3.4% of GDP in 2008 (see Chart 7). A key factor in this widening of the deficit was a deterioration in the general government cyclical balance, representing 1.9 p.p. of GDP, mainly as a result of a 3.9 p.p. widening of the output gap between 2008 and 2009. This was thought to be the result of a fall in cyclical revenues, representing 1.4 p.p. of GDP, a rise in cyclical expenditures, representing 0.2 p.p. of GDP, and a denominator effect (see paragraph 1.2.3.), representing 0.3 p.p. of GDP.

At the same time, the general government structural balance deteriorated by 2.9 p.p. of potential GDP under the impact of:

- a negative contribution by the non-discretionary component of the structural balance (-1.6 p.p. of potential GDP), chiefly due to a reduction in fiscal elasticities;
- a negative structural effort (-1.2 p.p. of potential GDP), chiefly as a result of the different measures contained in the stimulus plan (including social measures and measures to support the car manufacturing sector).

Overall, then, the bulk of the deterioration in the structural balance between 2008 and 2009 seems to have been due to the economic crisis, since it was caused almost entirely by the economic stimulus and the steep fall in fiscal elasticities, itself very probably attributable to the crisis.

Chart 7: Breakdown of the change in the public balance 2008 and 2009 (by type of change)



These changes would work out in the following way at the level of general government sub-sectors (see Chart 8).

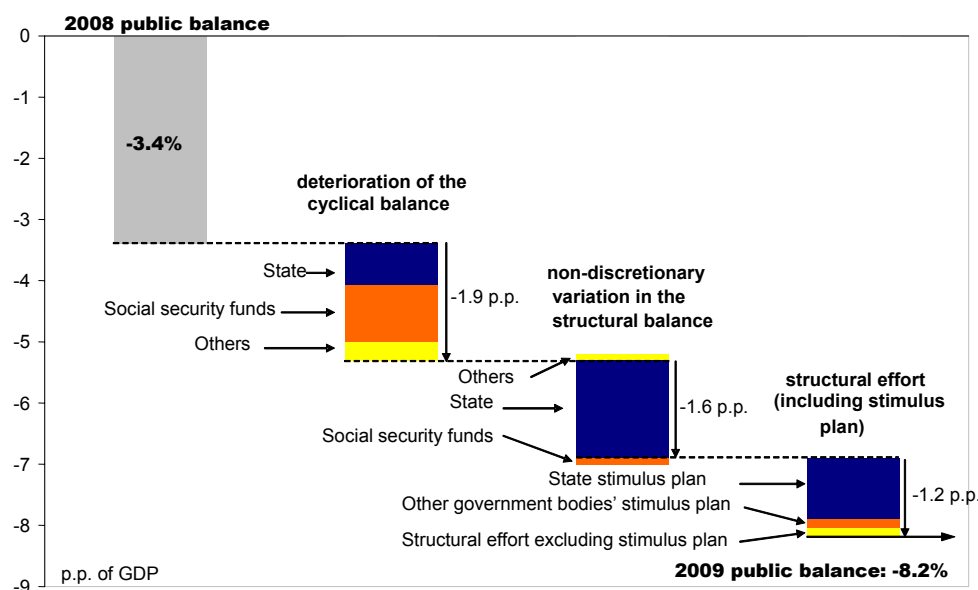
The deterioration in the general government cyclical balance mainly concerns the State and social security funds. The deterioration in the State cyclical balance was slightly weaker than that of the social security funds, due to the “delayed effects” on income tax and corporation tax in the scale model of the structural balance¹⁸.

The State is reckoned to have borne the brunt of the deterioration in the non-discretionary component of the public balance, having suffered notably from the reduced fiscal elasticities of corporation tax and, to a lesser extent, of VAT.

The State is reckoned to have borne the full cost of the measures contained in the stimulus plan, and is responsible for much of the plan’s execution. However, in keeping with the conventions presented above, the breakdown of the structural effort attributes to the other sectors the expenditures undertaken by them under the stimulus plan (in particular this concerns local governments as part of the *Fonds de Compensation de la TVA*—VAT compensation fund—measure), even though these were financed in full by the State in the form of transfers.

¹⁸ The output gap indeed declined a good deal less in 2008 than it was forecast to fall in 2009 (-1.6 percentage point (p.p.) in 2008 versus -3.9 p.p. in 2009).

Chart 8: Breakdown of the change in the public balance between 2008 and 2009 (by general government sub-sector)



4.2 Backward analysis of changes in the State contribution to the variation in the structural balance

This paragraph illustrates how the scale-model presented above serves to analyse a sub-sector's contribution to past changes in the public balance, taking the State as our example.

For the purposes of this analysis, we consider the cumulative contribution of the State over the period 2001-2008¹⁹. Starting from the observation that the State deficit in the national accounts widened slightly during this period (from -2.4% of GDP in 2001 to -2.8% of GDP in 2008), we seek to identify the share of cyclical and structural factors in this change.

Using the scale-model presented above, we estimate that the widening of the State deficit over the period 2001-2008 was due essentially to cyclical trends (growth being below its potential, on average), the latter having a 0.6 p.p. of GDP impact on the State balance. As a result, the deterioration in the State balance in fact conceals a slight structural improvement of 0.2 p.p. of potential GDP over the seven years²⁰ (see Chart 9).

¹⁹ Past perimeter changes have been reconstituted until 2002. Consequently, the breakdown of variations in the structural balance, and in its discretionary and non-discretionary components, is available only after that date.

²⁰ At the same time, measures that were neutral for the public balance (e.g. transfers to and from other general government sub-sectors, transfers of powers, etc.) made a practically nil contribution overall.

Chart 9: Breakdown of the State balance

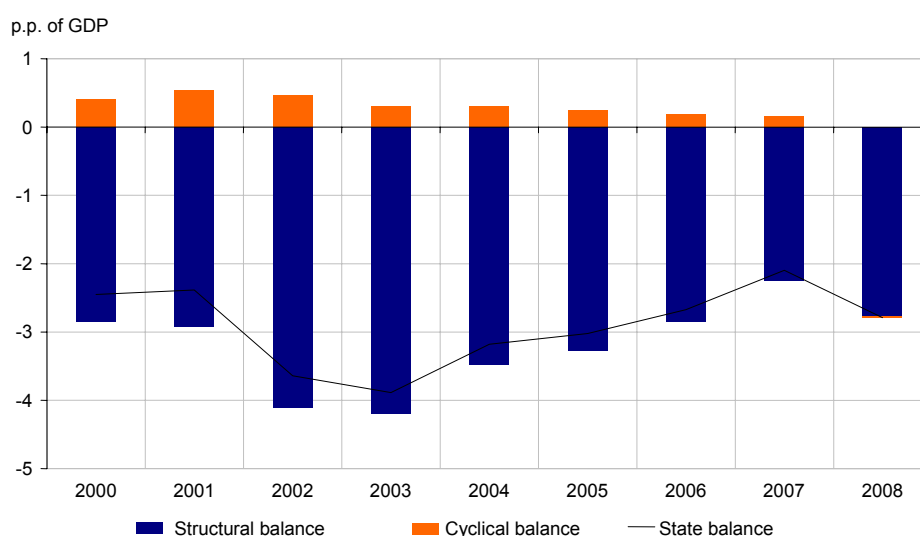
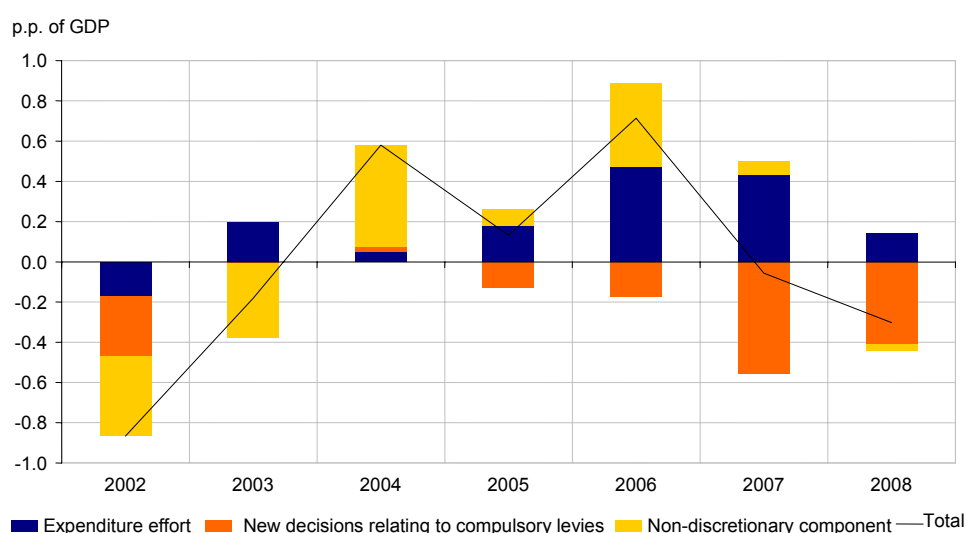


Chart 10: Contributions to the variations in the structural balance of the State



Source: DGTPE calculations

This structural improvement is the outcome of very contrasting trends (see Chart 10).

The total contribution of the State to the expenditure effort was very large over the period, representing 1.3 p.p. of potential GDP. This is because State expenditures on an annualised constant basis have systematically grown below the potential rate of growth, except in 2002. This effort may be explained in particular by the fact that since 2003 budget expenditures have grown at a rate close that of prices (under the “zero real spending growth” rule).

The profile of the State's contribution between 2002 and 2008 is not regular, however. Several factors account for this, namely: fluctuations in potential growth, the gap between State expenditures in the national accounts and expenditures in the budget accounts, and, finally, "terms of trade" effects²¹. These stem from a combination of:

- gaps between *ex ante* inflation, i.e. the inflation forecast at the time of the Initial Budget Act for a given year (which serves as the basis for setting the norm for the growth in State expenditure) and *ex post* inflation, i.e. actually observed inflation;
- gaps between inflation in the sense of the CPI index excluding tobacco (which serves as the basis for setting the norm for the growth in State expenditure) and inflation in the sense of the GDP deflator, which serves to measure potential nominal growth (which serves as a benchmark for assessing whether or not an expenditure effort has been made).

Alongside the expenditure effort made over the period in question, the State has introduced substantial measures to reduce the tax burden, representing 1.6 p.p. of GDP in all²². The largest tax cuts were made in 2002, and then again in 2007 and 2008. In 2002, the measures notably comprised reductions in social insurance contributions as part of the shift to the 35-hour week, income tax cuts, a reduction in corporation tax (with a cut in the reduced rate for SMEs, and the phasing-out of the 10% surcharge introduced in 1995), and further measures eliminating the wage element from the business tax. In 2007 and 2008, these measures mainly reflected the reform in income tax rate schedule, the increase in the "*prime pour l'emploi*", introduction of a sustainable development tax credit, and the measures introduced under the TEPA Act.

Finally, the non-discretionary factors (i.e. fiscal elasticity effects and revenue other than compulsory levies) were particularly adverse in 2002 and 2003, whereas they played a positive role in the period 2004-2007. This seems to show a degree of pro-cyclicality in the non-discretionary component of the structural balance

4.3 Sensitivity to estimates of the output gap

The main weakness of the concept of structural balance lies in the uncertainty surrounding estimation of the output gap, this uncertainty being even more acute in real time. For deeper insight into the implications of this uncertainty, the following example illustrates the sensitivity of the breakdown of the public balance presented above to estimation of the output gap.

4.3.1 Example the European Commission's potential growth estimate

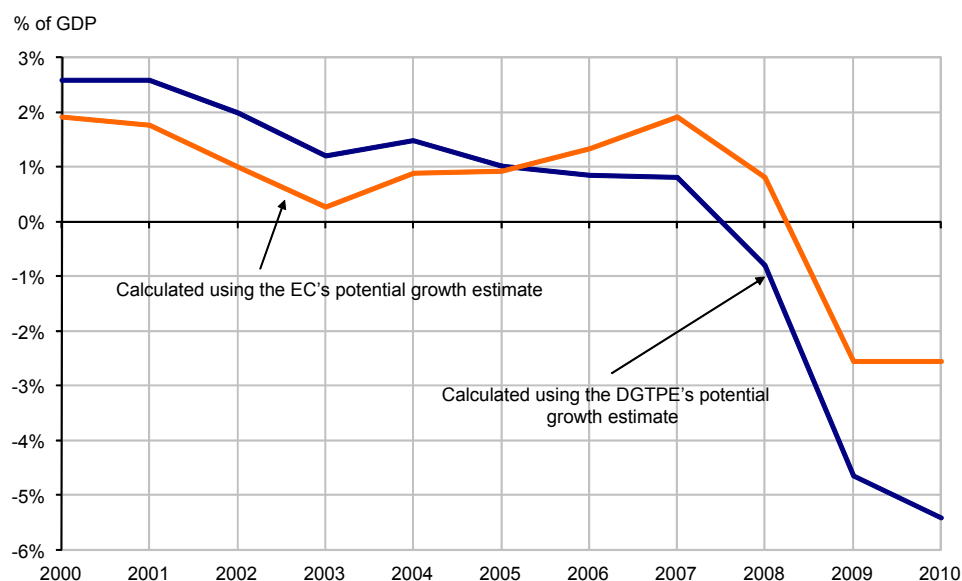
Here, we compare different results presented in this paper (based on the DGTPE's potential growth estimate) and those obtained with an identical method but using potential growth as estimated by the EC²³.

²¹ Gaps between *ex ante* and *ex post* inflation, and gaps between *ex post* inflation and the GDP deflator.

²² Excluding perimeter changes.

²³ The EC's potential growth estimate corresponds to estimates made in the course of its Autumn 2009 forecasts.

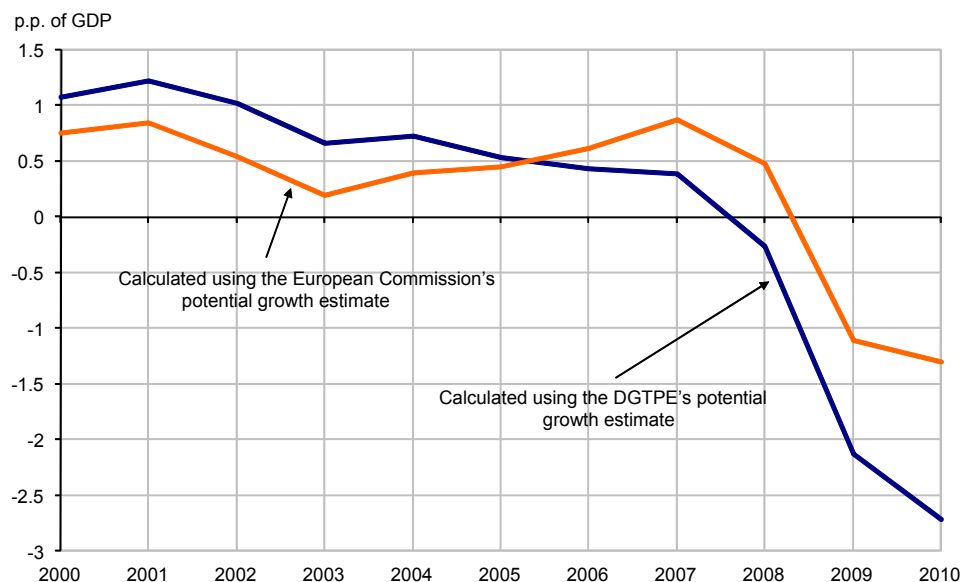
Chart 11: Output gap



The output gaps obtained using the DGTPE's potential growth estimate and that of the European Commission are presented in Chart 11. The growth forecast for 2009 and 2010 is the same and corresponds to the scenario described in the *Rapport économique, social et financier* (Economic, social and financial report) appended to the 2010 Budget Bill.

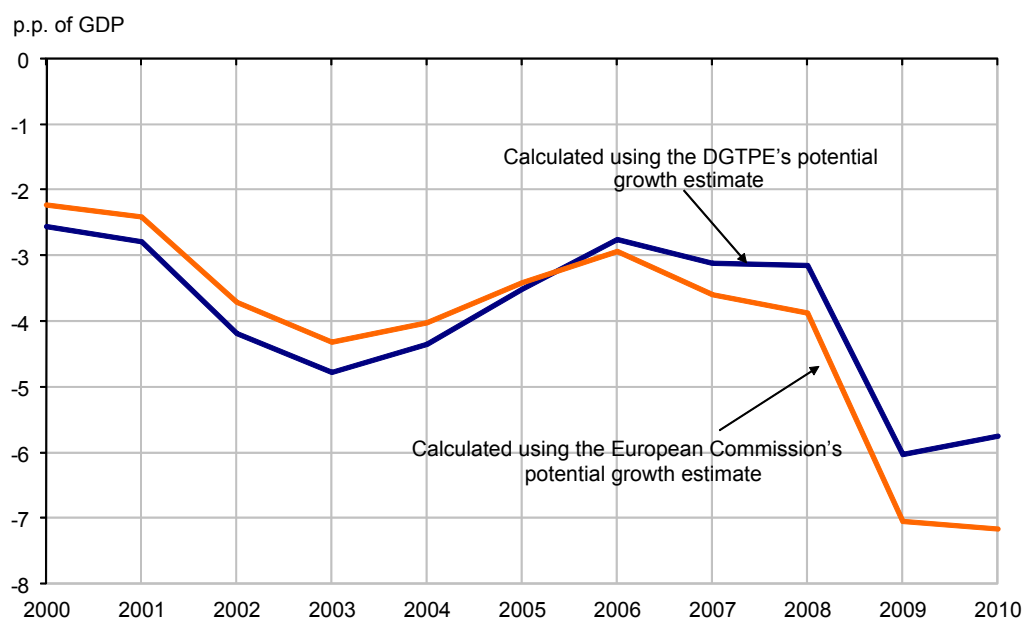
Owing to the substantial difference in the estimate of the output gap, the cyclical balance emerges as perceptibly different as between the two methods: for 2008, for example, it is positive using the European Commission's potential growth estimate, but negative using that of the DGTPE (cf. Chart 12).

Chart 12: Cyclical balance



Consequently, the estimated structural balances differ significantly (see Chart 13).

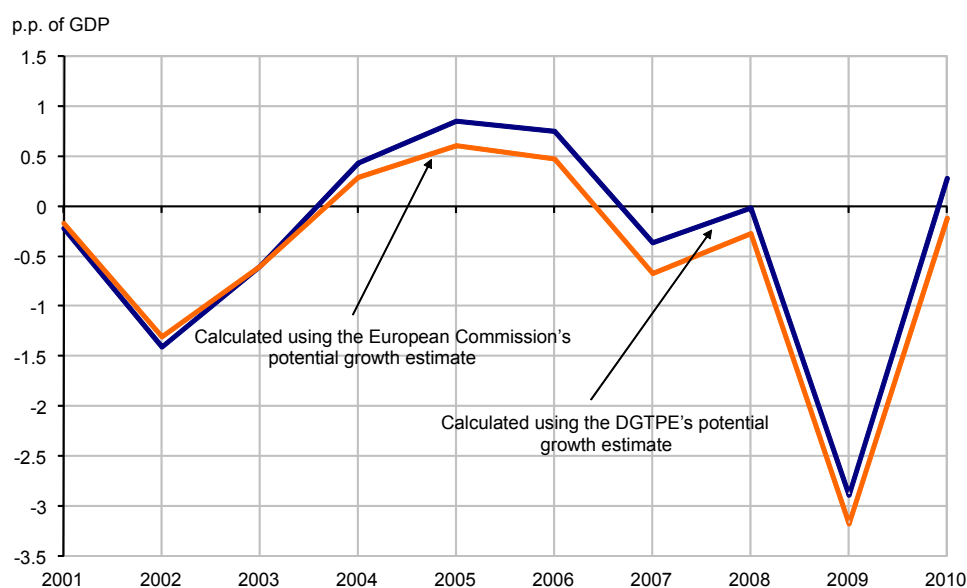
Chart 13: Structural balance



The level of the cyclical and structural balances is therefore particularly sensitive to uncertainty over the output gap. Their variations are less so, on the other hand: this is because they depend not on the level of the output gap but on its variations. But these are generally estimated with greater precision, since, for a given year, they correspond to the difference between observed and potential growth, whereas the level of the output gap depends on this cumulative difference over several years, leading to an accumulation of errors.

The variations in the structural balance using these two methods are presented in the charts that follow.

Chart 14: Variations in the structural balance



4.3.2 Structural effort and sensitivity to estimate of potential growth

As the last example shows, the uncertainty surrounding estimates of potential growth is one of the chief limits to the concept of the structural balance the breakdowns presented above. Consequently, it is worth observing what, in the breakdown of the variations in the structural balance (whether between structural effort and the non-discretionary component, or by general government sub-sectors), is sensitive to this uncertainty and what is not.

Table 7 below presents the sensitivity of the different components of the structural balance (as defined in Part 2) to estimates of potential growth: the figures shown correspond to the effect on these different components of an potential growth estimate one p.p. of GDP higher in year 1 than in a given central scenario. Potential growth in year 2 is unchanged relative to the central scenario. The actual growth and actual public balance trajectories are also unchanged.

Table 5: Sensitivity of components of the structural balance to estimates of potential growth
(impact of a difference of one p.p. of GDP in the potential growth estimate for year 1)

	Year 1	Year 2
Sensitivity of the variation in the cyclical balance	-0.4	-0.1
Sensitivity of the variation in the structural balance	0.4	0.1
Of which: structural effort (discretionary component)	0.6	0.0
<i>new measures relating to compulsory levies</i>	<i>0.0</i>	<i>0.0</i>
<i>expenditure effort</i>	<i>0.6</i>	<i>0.0</i>
Of which: non-discretionary component	-0.2	0.1
<i>revenue other than compulsory levies (excluding compensation payments)</i>	<i>-0.1</i>	<i>0.0</i>
<i>elasticity effects</i>	<i>-0.1</i>	<i>0.1</i>

In the scenario where potential growth is higher, the variation in the cyclical balance is less than in the central scenario, representing 0.4 p.p. in the first year and 0.1 p.p. in the second. Overall, we do indeed find a global elasticity of the cyclical balance to the output gap on the order of half, which corresponds to the figure put forward in Box 1.

Symmetrically, the variation in the structural balance is greater than that in the central scenario (since the actual balance is unchanged). This structural improvement is explained by:

- a 0.6 p.p. of GDP improvement in the structural effort, which corresponds to an expenditure effort on that scale—this is because the gap between the growth in expenditure and potential growth narrowed by one p.p., and the share of public expenditure in GDP is on the order of 55%;
- a slight deterioration in the non-discretionary component in year 1, under the impact of a decline in the revenue other than compulsory levies—the gap between the growth in revenue other than compulsory levies and potential growth has indeed fallen by one p.p. —and a negative contribution of elasticity effects, which is offset in the following year.

Finally, the structural effort is thus slightly more sensitive to the uncertainty surrounding the potential growth estimate than the variation in the structural balance. Its sensitivity flows entirely from the estimate of the expenditure effort, which in effect depends directly on potential growth. Here we come up against the limitation referred to in paragraph 2.4.

4.3.3 Sensitivity of the sub-sectors' cyclical and structural balances to estimates of potential growth

Similarly, table 8 below presents the sensitivity of the cyclical balance and the structural balance of the different general government sectors to the potential growth estimate.

Table 6: Sensitivity of general government sub-sectors' cyclical and structural balances to potential growth estimate
(impact of a one p.p. of GDP difference in the potential growth estimate for year 1)

	Year 1	Year 2
Sensitivity of the variation in the cyclical balance	-0.4	-0.1
of which the State	-0.1	-0.1
of which other government bodies	0.0	0.0
of which local governments	-0.1	0.0
of which social security funds	-0.2	0.0
Sensitivity of the variation in the structural balance	0.4	0.1
of which the State	0.1	0.1
of which other government bodies	0.0	0.0
of which local governments	0.1	0.0
of which social security funds	0.2	0.0

Due to the preponderance of State and social security funds' compulsory levies in total general government compulsory levies, estimates of their cyclical balance (and hence of their structural balance) are more sensitive to the uncertainty surrounding potential growth. Thus, an error of one p.p. in the potential growth estimate would give rise to an error of 0.2 p.p. for the structural balance of the social security funds, and of 0.2 p.p. for the structural balance of the State (0.1 p.p. for the first year and 0.1 p.p. for the second due to delayed effects on income and corporation tax). The estimated structural balance of local governments is less sensitive (a 0.1 p.p. error) and that of other government bodies' structural balance practically not at all.

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