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## Stability criteria and convergence : the role of the system of national accounts for fiscal policy in Europe

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Discussion Papers

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# Stability Criteria and Convergence: The Role of the System of National Accounts for Fiscal Policy in Europe\*

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## Abstract

The standardisation of the European systems of national accounts has progressed significantly in recent years. Some room for interpretation remains in regard to some accounting standards, the periodicity of the data, and the quality of the forecasts of budget deficits. Yet national accounts data of the eurozone countries are now a reliable basis for macroeconomic policy decisions. The stability and growth pact of the eurozone countries relies heavily on one indicator of fiscal discipline, the budget deficit as a share of gross domestic product. Drawing from simulation evidence of the German economy, it is argued that fulfilling the deficit target is no guarantee for achieving output stabilisation. The pact hence fails to internalise the externalities arising from a decentralised fiscal policy in the European monetary union. The deficit target could be replaced with an expenditure target. Given the macroeconomic policy objectives of the euro economies it would be more appropriate to hand the supervision of an amended stability pact to an independent council of economic experts. Such council could assess the macroeconomic environment more carefully and could have the authority to caution and fine fiscally irresponsible eurozone governments.

Keywords: Simulation, fiscal policy, international policy coordination.

JEL Codes: C82, E37, E62, F42.

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## **1. Introduction**

The European system of national accounts (ESA 1995) holds a key role in all major European economic policy debates of recent years. The Treaty of Maastricht, the introduction of the euro, the interest rate decisions of the European Central Bank (ECB) and the Stability and Growth Pact (SGP) all use aggregates of the ESA 1995. This article assesses how appropriate these aggregates are, especially for evaluating international fiscal policy. Given the strengths and weaknesses of the ESA 1995, we analyse the economic justification for the focus on just one target of the ESA 1995 in the SGP and the effect this has on macroeconomic growth and stability. In addition, we propose an institutional solution to the externality problem of fiscal policy in Europe in an age of an independent ECB which could restore the damaged credibility of the SGP.

In this article we demonstrate that the standardisation of the ESA 1995 is nearly complete. Some accounting rules, the interpretation of special events - like the revenues of the UMTS licence auctions - and the dependence on forecasted deficits continue to cause some uncertainty. Using a macro-economic simulation of the German economy, we show that the deficit target of the SGP is mildly inferior to an expenditure target and that focusing on either target is inferior to an appropriate discretionary fiscal policy. An independent advisory council on fiscal policy could restore credibility to the SGP if it had the power to caution and fine countries with inappropriately loose fiscal policies.

Section 2 will introduce and discuss the SGP while section 3 will provide an analysis of the robustness of the ESA 1995 for the purpose of the European fiscal policies. Section 4 will derive the effects of a deficit and an expenditure target for growth in macro-economic simulations of Germany which will motivate the institutional policy implications discussed in the final section.

## **2. The Stability and Growth Pact (SGP)**

The current macroeconomic policy debate in Europe is characterised by the SGP agreed in June 1997 in Amsterdam. What had been intended to safeguard the stability of the core euro economies from time-inconsistent fiscal policies in member states, has ironically become a constraint on the governments and on growth in the large eurozone economies. In practice, the SGP has lost much of its credibility due to the extensive debate surrounding its purpose, means and effectiveness (cf. Buti, Franco et al. 1998;

Buti and Martinot 2000; Sapir and Buti 2001). The current debate about possible modifications, additions or new interpretations of the pact are hence a critical phase in the move towards a new and genuinely stable macroeconomic framework for the eurozone.

In the analysis of the economic policy process in Europe, it is important to distinguish between the policies objectives, policy targets and the policy instruments. The main policy objectives are to achieve steady economic growth and to maintain internal price stability. A sustainable level of debt is not an explicit policy objective in itself (Wyplosz 2002). The policy targets are varied and include the Maastricht criteria. The instruments of economic policy in Europe are interest rates as set by the ECB, the fiscal and regulatory policies of the member states and, to a lesser extent, those of the European Commission (EC).

The main purpose of the SGP was to coordinate fiscal policy in the eurozone to reduce the ability of individual euro-countries to boost spending while other euro-countries run a tight fiscal policy (Pisani-Ferry 2002). The term „coordination” both in the SGP and in this article implies an intergovernmental agreement on the limitation of fiscal sovereignty supervised by the EC, not an explicit agreement between the fiscal and monetary authorities of the eurozone (cf. Beetsma, Debrun et al. 2001). While the European monetary union does not envisage a bail out, such scenario is possible and thus places an additional burden on the ECB. In addition, the stability pact aims to internalise the externalities of a monetary union with decentralised fiscal policy where a loose fiscal policy in one country has spill over effects for other countries in the eurozone.

The pact requires each member state to consolidate its public finances by aiming for a medium-term budget position of „close-to-balance or in surplus” (Artis and Buti 2000) and by adhering to the Maastricht target of public deficits of at most 3% of gross domestic product (GDP). Countries breaking this rule are cautioned by the EC and may have to pay a maximum fine of 0.5% of GDP. Given the recent history of countries striving to adhere to this Maastricht target before full monetary union, this arbitrary target was motivated by reasons of political credibility, thus providing the motivation and the excuse for governments to finally cut significant structural deficits.

However, it is also important to note what the pact does not say. The pact does not require the average eurozone fiscal deficit to stay below 3% of GDP, it does not specify by what year each member state has to consolidate its deficit, it does not rule on how governments should behave in times of a fiscal surplus, and it does not allow exemptions from the 3% rule if the total debt is below the 60% of GDP barrier also specified by the Maastricht treaty.

In addition, the issuing of cautions and fines by the EC does not appear to be as automatic or as predictable as the pact would suggest. Germany appears to have evaded its first caution in early 2002. This resulted in part from the size of the German economy, which appears to have afforded the German government a special status, and from possible consideration by the EC for domestic political difficulties before federal elections in September 2002. Finally, the trigger point at which a caution is issued is not simply set at a deficit of 3% of GDP *ex post* but at a lower yet rising percentage expected *ex ante*, thus giving further room for manoeuvre by the EC and the national governments.

In sum, the current international economic downturn precipitated a predictable crisis of the European SGP. The pact was never quite intended as a blueprint for fiscal policy during such turbulent times for the larger euro-economies. In addition, the pact was not intended to provide a new policy objective for the eurozone. It thus seems reasonable to ask how reliable the key aggregate of the ESA 1995 has been in practice and how the pact can be modified to achieve both fiscal discipline and output growth in Europe. The next two sections will deal with these issues in turn.

### **3. The Data Basis of the SGP**

The ESA 1995 has been a key concept for the measurement of progress towards a monetary union and of convergence in the EU as a whole (Europäische Kommission 1996). The status of convergence can be measured using GDP, while the treaty of Maastricht relied on the fiscal deficit and total debt as a share of GDP and on prices, exchanges rates and interests rates as non- ESA 1995 concepts. The SGP finally focuses exclusively on the fiscal deficit as a share of GDP. It is hence of prime importance that the systems of national accounts in all euro economies are robust and comparable. We argue that the ESA 1995 has been almost entirely standardised but that some concerns about the use of the ESA 1995 for fiscal policy still remain and will remain. These

differences concern the accounting standards within the ESA 1995, the periodicity of data and the quality of ESA 1995 forecasts.

The principles of the ESA 1995 do not differ across the EU member states. The definition of the state sector and the measurement of its financial flows are two key prerequisites for arriving at comparable values for the public deficit across Europe. However, the following four examples illustrate how some scope for different interpretations will always remain even within the standardised ESA 1995.

First, the date a government financial transaction is recorded differs between the fiscal statistics and the ESA 1995. The former records payments when these are received while the ESA 1995 records payments when the contracted good is delivered or the service is completed. As these dates can differ quite substantially (for example for large public infrastructure projects) the ESA 1995 includes estimated time lags for different payments (for example to distinguish different lags for different taxes). In addition, revisions resulting from the publication of new data (such as value added tax statistics) can cause discrepancies in the statistics which can have an effect on the final values reported. A small error margin in the data even of the ESA 1995 is thus unavoidable.

Second, the ESA 1995 at times prescribes counterintuitive accounting practices. The introduction of road pricing for trucks in Germany in 2003, for example, has created an expected revenue for the government of about 2 billion euro per annum. This income will be booked as negative expenditure of the government which causes the balance between sales and purchases to become negative as well. As this is part of the calculation of the government consumption, it will have a negative impact on that item. At the same time, GDP will fall with falling government consumption thus reducing the scale of the change in the budget deficit as a share of GDP. If the revenue is booked as an inflow in the current year but only used and booked as an investment in the subsequent year, then the deficit ratio can suffer further distortions. The nature of the accounting rules can thus affect the scale of the deficit ratio.

Another example for some disturbances with respect to the ESA 1995 accounting practices is the way the universal mobile telecommunications system (UMTS) revenues were accounted for in Germany. While there are rules by Eurostat prescribing how to account for revenues from special events such as the UMTS auctions, these rules do not result in clearly comparable variables across countries. In Germany, the UMTS revenue



was booked under the position „net income from non-produced wealth assets” thus increasing German federal revenues in the third quarter of 2000 by 50 billion euro. The problem for the interpretation of the SGP criteria calculated with the ESA 1995 accounting rules arises from the different auction designs chosen by the different member states and by the different uses the revenue was allocated to.

Had Germany awarded the licenses in a „beauty contest”, then less or no revenue would have been obtained but the growth effects would have been larger and the future losses offset against recent tax liabilities would have been smaller. Alternatively, had Germany paid the revenues into a „future fund” supporting for instance environmental, education or science projects over a period of say ten years, then the UMTS income could have been distributed across time more equally.

Finally, the UMTS revenue is excluded from the deficit ratio for the sake of the SGP thus pushing Germany’s deficit in 2000 from 1.1% of GDP (including the UMTS revenue) to -1.4% of GDP (excluding the UMTS revenue). Yet the interest gains from having used the majority of the UMTS revenue for paying off the national debt or the tax losses from the UMTS licence holders having written off their investments since the auction enter the deficit calculation. It thus appears that the treatment of special events, while difficult by the nature of the problem, is somewhat inconsistent and reduces the reliability of comparisons across countries within the ESA 1995.

Third, the ESA 1995 provides broadly reliable and comparable aggregates. However, the choice of aggregate, of its critical value and of its periodicity appears arbitrary. Figure 1 compares three different types of deficit ratios for Germany in the period 1991 to 2002. One ratio is the Maastricht criteria using annual data, one ratio uses quarterly data and one ratio is the three-year moving average. Had the SGP been in existence since 1992, then Germany would have received 17 cautions based on quarterly data, 3 cautions from the EC based on the annual data and 3 cautions also based on triennial data. The longer term deficit ratios hence appear better suited for evaluating a country’s underlying debt sustainability.

Fourth, the forecasts of the deficits play a critical role in the policy debate and in the issuing of cautions by the EC. Figure 2 shows the difference between the actual fiscal deficit and the deficit forecast as issued in autumn of each year for the three years 1999 to 2001. The forecasting error is quite variable across countries with 4% of GDP for

Luxembourg in 2000 and -2% of GDP for Ireland in 2001. For the eurozone as a whole but also for the United States the forecasting errors are much smaller. This suggests that a fiscal stabilisation policy targeted at a range of countries will also err more severely in its forecasts and thus in its issued cautions than a fiscal stabilisation policy only targeted at the monetary union as a whole. It is thus questionable if the stability pact is right in controlling the decentralised fiscal policy of the euro countries. It is worth considering if a pact aimed at the aggregate eurozone, thus mirroring the ECB's concern with the price stability of the aggregate eurozone, might not have been more effective or at least less prone to mistakes.

The discussion has shown that various accounting practices, the periodicity of the aggregates and the quality of the forecasts all leave room for errors or misinterpretations. The ESA 1995 has generally converged on a reliable set of standards and practices. Yet a task as ambitious as the comparison of all eurozone fiscal deficits, possible including future deficits, is bound to contain some room for ambiguities and uncertainty. The practice of evaluating fiscal discipline purely by the fiscal deficit as a share of GDP thus leaves too much room for speculation and interpretation.

Furthermore, the variance of the budget deficits in the member states of the European Monetary Union has been quite large since the euro was introduced (Figure 3). The aggregate fiscal deficit of the eurozone has been fairly constant at about -1% of GDP from 1999 to 2001. The different experience at the national and aggregate levels matters as the EC and the Council of Ministers consider the former while the ECB considers the latter aggregate. In addition, the high cross-sectional variance of growth rates in the eurozone implies that the necessity for controlling the deficit of individual members states is lower than if all economies behaved simultaneously and thus produced a larger degree of inter-temporal variance of the aggregate European fiscal deficit. With increasing macroeconomic convergence, the coordination of national fiscal deficits thus gains in importance.

The SGP as currently implemented requires governments to restrict their net borrowing to a maximum of 3% of GDP per annum. This criterion can be more restrictive than the additional Maastricht target of keeping the national debt below 60% of GDP. The former concept focuses on the flow of debt, which can be quite variable, while the latter focuses on its stock, which varies less across years. For an economy fulfilling the 60% target ex ante, it is possible to continue to fulfil this target as long as the net increase in

national debt does not exceed the nominal growth of the economy. For example, Germany's debt grew faster than nominal GDP in the period 1992 to 1996, thus increasing the debt per GDP ratio (Figure 4). In the period 1997 to 2001, the German debt as a share of the GDP declined marginally as the nominal growth rate exceeded the rate of debt formation. It is thus not the rate of debt accumulation which potentially undermines the fiscal stability of a country but the related issues of debt accumulation and growth.

#### **4. Simulation of Macro-Economic Shocks under Deficit and Expenditure Targets**

Having demonstrated that the 3% target is neither necessary nor sufficient for debt stabilisation, this section will contrast two alternative policy regimes and analyse their effects on growth and stability in the German economy using simulation results. We thus extend the usual comparison of alternative monetary policy rules to the area of fiscal policies within a monetary union (cf. Taylor 2000; Haber 2001). The first policy regime is simply the strict application of the SGP with its focus on the fiscal deficit. The analysis is thus in line with Artis and Buti, who also assess the effects of the pact under the assumption that the deficit target is credible (2000).

The alternative fiscal policy is to pursue a given expenditure path (Brunila 2002). Such expenditure path could be defined to allow annual government expenditure to rise by the long-term increase in productivity and the target rate of inflation as defined by the ECB. For Germany that would yield values of 1,5% each, thus setting the annual rise of nominal government expenditure at 3%. As many taxes vary and as some expenditure items vary with the business cycle, some components of spending must be adjusted for the government to stick to the planned expenditure path. The automatic stabilisers on the revenue side of the public budget then lead to increasing deficits in recession and surpluses in periods of positive growth.

An expenditure target may contribute to macroeconomic stabilisation (Hairault, Hénin et al. 1997; Auerbach and Feenberg 2000) as the variance of expenditure is less pronounced than the variance of revenues across most European countries in the period 1975 to 1997 (Figure 5).

In addition, the variance of expenditure has fallen more rapidly since 1975 than the variance of revenue. Finally, the variance of public expenditure for the eurozone as a whole is significantly lower than the variance of public revenues and it is lower than the

variance of almost all member states of the eurozone for that period. Linking the fiscal policy of the eurozone to an expenditure target may thus help stabilise the macroeconomic environment.

In the remainder of this section, we will describe the simulation model we use to compare the growth effects of the deficit and expenditure targets and we will discuss the simulation findings. The simulation is based on the macroeconometric European Business Cycle (EBC) model of the DIW Berlin for Germany for the period 1996 to 2001 (Zwiener 2002). Trade in the model is disaggregated into trade with EMU-countries and with non-EMU-countries. The model uses backward looking adaptive expectations and an error correction framework to distinguish between short term dynamics and the long run solution. Feedback rules for a variety of variables stabilise the model. These variables include unemployment, capacity utilisation, interest rates, unit labour costs, real effective exchange rates, and wealth.

The theoretical base of the model allows the existence of nominal rigidities. Economic policy may thus have real effects on the economy. Market spill-overs are explicitly included in the model and the possibility of unemployment in the long run is allowed. In the model for Germany the public sector is disaggregated using stochastic equations. The public expenditure equations are estimated as reaction functions, in which public revenues play an important role. In the revenue equations the appropriate tax bases are used. The public deficit augments the debt stock and the debt stock in turn affects interest payments.

Raw and seasonally unadjusted quarterly time series data is used whenever available. The estimation period is from 1980:1 to 2001:4 for most equations while the public sector is estimated for the period 1991:1 to 2001:4. National account data is taken from DIW Berlin and Eurostat.

To integrate the deficit target into the macroeconometric model, the budget deficit had to be made exogenous within the model. In turn, public investments were set to fulfil the deficit target, as this budget item can be adjusted most readily though at some cost to macroeconomic growth (Balassone and Franco 2000). This modelling strategy thus assumes a flexibility and accuracy of budget planning not usually feasible in practice.

The budget deficit was set at the level actually realised in Germany in the years 1996 to 2001. For these given levels, three different, permanent shocks were then simulated in

the model. First, the demand shock consists of a higher foreign demand for German products in the order of 1% of German GDP. Second, the price shock involves a rise of import prices by 10%, as might arise after an oil price shock. Third, the fiscal shock results from an exogenously agreed and implemented reduction of the direct tax rate for employees worth 1% of German GDP. This last scenario is not strictly a shock but represents the experience of Germany and other countries where strong political pressure led to lower tax rates and where governments subsequently had to deal with the implications for spending priorities and the fiscal deficit.

The simulations compare the deficit target and the expenditure target for the demand, price and fiscal shocks. The baseline scenario excludes these shocks while the alternative scenario includes the respective shock. In the Figures 6 to 11, the results of these six scenarios are summarised graphically, both in absolute levels for the baseline and the alternative scenarios and as deviations from the baseline scenario. The figures show the original shock in the top left graph, the real GDP in the top right graph, the nominal GDP in the bottom left graph and public investment in the bottom right graph.

The effects of these shocks are evaluated by their impact on the growth path of prices and output of the economy. The objective of the fiscal policy is to stabilise economic development by minimising deviations from the baseline scenario. Using the example of a demand shock with a deficit target (Figure 6), we will explain briefly the effects of this shock for the stabilisation of the economy before presenting a summary of all simulation results.

Exports are assumed to rise by 1% of GDP from 1996 onwards. Exports overshoot briefly and then grow at a diminishing rate over time. There are no significant price effects in the long-term. Rising exports lead to higher tax revenues, which in turn allow public investments to rise by about 10% above the baseline scenario within five years. The deficit target is not violated as only new revenue is used for new spending. The real GDP rises in the medium term by over 1% above the level of the baseline scenario, thus indicating that the deficit target, as for example embodied in the SGP, has pro-cyclical effects for a demand shock.

Figure 12 summarises the nature and the effects of all six simulations. The simulation of a demand shock with a deficit target is represented in column 1 of Figure 12. A price shock with a deficit target dampens growth, as shown in column 2. At the same time,

higher prices lead to an expansion of the tax base and thus to higher tax revenues. This boosts government revenues and hence government spending. The effect of the deficit target on growth is thus mildly counter-cyclically. Column 3 shows the effects of the tax cut. To fulfil the deficit target, public investment spending has to be cut accordingly which neutralises the growth effects of the tax cut. There is hence little trade-off between budget consolidation and growth under these circumstances (Lehment 2002).

For the expenditure target, higher exports do not lead to an automatic increase in public spending (column 4). Higher expenditures in some areas must be compensated by cuts of other budget items. This fiscal regime thus has counter-cyclical effects on growth. In the case of a price shock (column 5), the expenditure target is inferior to the deficit target for the purpose of stabilising the economy. Additional revenue derived from an increase in the tax base are not invested but used for reducing the deficit. In the case of a price shock, the expenditure target thus has a mildly pro-cyclical effect. Finally, column 6 represents the effects of fiscal shock under an expenditure target. Growth is strengthened but the deficit rises significantly. The benefits of such policy thus depends on the prevailing conditions. In times of growth, such target has pro-cyclical effects while in a recession this target has counter-cyclical effects. It thus depends on the position of the business cycle if adopting an expansionary fiscal policy appears desirable or not.

In this analysis, we do not model the entire eurozone economy and we do not examine explicitly the effects of symmetric or asymmetric shocks (De Grauwe 2000). Another issue requiring further attention from our point of view is the nature of structural change and its effects on fiscal policies. The half-hearted attempts at fiscal stabilisation in Germany are also indicative of the difficulties of undertaking structural reforms leading to reduced structural deficits, especially in a period of monetary union (Sapir and Buti 2001). The role of the SGP for reducing structural deficits in the core Eurozone economies certainly deserves more attention as do the potential growth effects of the pact.

In summary, the aim of stabilisation in the face of a variety of shocks cannot be achieved with either a deficit or an expenditure target. We are thus sceptical of the benefits of the SGP for the purpose of stabilisation (cf. Artis and Buti 2000; Brunila 2002; Buti, Eijffinger et al. 2002; Wyplosz 2002). On balance, the expenditure target may lead to more stabilisation than the deficit target but neither target dominates the

other in all scenarios. The sensitivity of public investment under both regimes to exogenous events weakens growth and undermines the main policy objectives (cf. Haber 2001).

In addition, the nature of the shocks is clearly important for the nature of the policy response (Buti, Roeger et al. 2001). The shocks can affect quantities, prices, technology or the government revenues directly. They may be positive or negative. They can affect single eurozone countries, the whole eurozone or the whole world. They may be temporary or permanent. The fiscal rules as defined by the SGP or by an expenditure target are incapable of accounting for these differences. Yet the coordination of fiscal policies in Europe remains important, even if we do not call for the explicit coordination of monetary and fiscal policies (cf. Alesina, Gali et al. 2001). We thus argue that the deficit target of the SGP, and the SGP as a whole, is at best a necessary but no sufficient condition for the successful coordination of European fiscal policies.

## **5. Implications for Fiscal Policy Coordination in Europe**

The policy objective of supporting economic growth in the eurozone while maintaining the monetary union requires a degree of fiscal coordination and probably self-binding mechanisms previously unpractised in Europe. While above we demonstrated that the SGP in its current format is not sufficient to achieve growth without risking fiscal discipline, we believe a modified version of the SGP may achieve that aim (cf. Beetsma and Uhlig 1999; Uhlig 2002).

The modifications concern both the deficit target and the interpretation of the pact. Both modifications would help to focus the attention of the policy debate on making debt more sustainable in Europe and on using revenues wisely in times of strong growth. We therefore propose that the deficit target be replaced by an expenditure target and that the new SGP is supervised neither by the council of ministers nor by the EC but by an independent council of economic experts. This council of economic experts would have as its main policy objective the fiscal stability of the eurozone, while considering also the growth prospects of the eurozone and the general economic conditions in all members states. The proposed council should look at both national and aggregate data (cf. De Grauwe 2000; Auerbach and Feenberg 2000). Given the independence of this council, it would be free to derive its own conclusions and to publish them irrespective of the preferences of the EC or the member states.

Most importantly, the council should have the responsibility of cautioning individual governments if they adopt loose fiscal policies. The council would have to base its analysis and hence its cautions on the newly interpreted stability pact. If countries continue to violate the expenditure target and do so in the absence of a macroeconomic crisis or a natural catastrophe, then the council could issue a caution to that country, which would trigger a fine collected by the EC. The proposed council must have the freedom to base its analysis both on aggregate and individual country data (De Grauwe 2000). Furthermore, it should have the responsibility to issue the caution and to impose the fines to lend it the necessary credibility as a supervisor of national fiscal policy decisions.

The council of economic advisors thus functions akin to the ECB (Wyplosz 2002), which pursues mainly one policy objective. Arguably, the ECB should attach more weight to European growth prospects than it currently does, thus freeing the fiscal policies to focus on letting the automatic stabilisers take effect (Taylor 2000; Gatti and van Wijnbergen 2002).

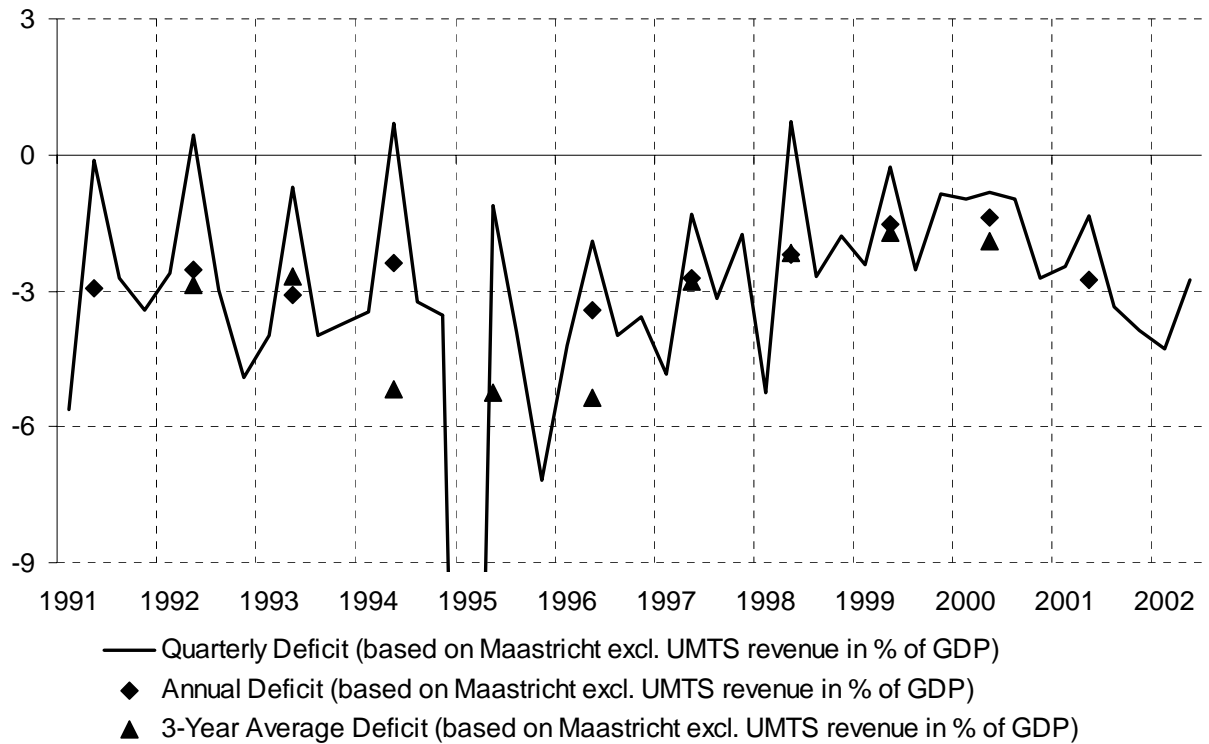
The independence of the council is also akin to the status of the ECB. The independence of the council can ensure that fiscal policy cannot be subordinated to short-term political objectives, thus raising the credibility of the European fiscal policies and of the SGP itself. This in turn allows the ECB to relax its monetary policy without risking inflation. We thus propose neither a fully discretionary nor a fully rules-based policy scheme. Instead, we grant governments the freedom to err while forcing them to anticipate and face the expected consequences.

In conclusion, the current systems of European national accounts and, to a lesser extent, the stability and growth pact are necessary tools in the management of European fiscal policies. However, they restrain growth unnecessarily without achieving full stability. Growth can be strengthened by placing the interpretation of the pact into the hands of an independent council of economic advisors. This will help alleviate the moral hazard and the externality problems of decentralised fiscal policies in a monetary union.



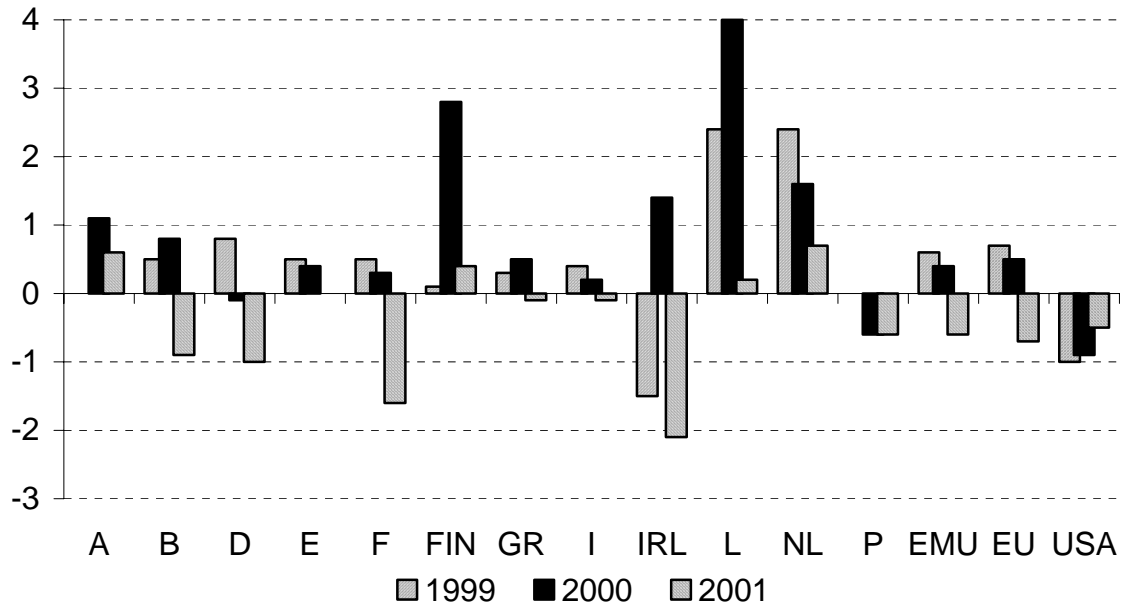
## Figures

**Figure 1. The Periodicity of Deficits.**



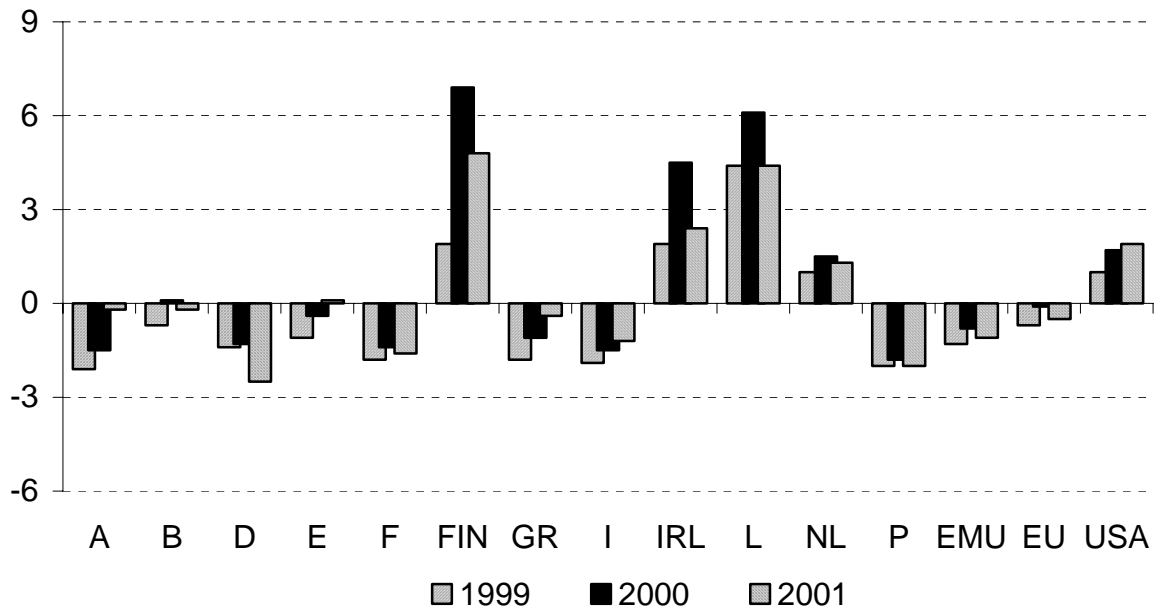
The deficit ratio in the first quarter of 1995 was 28.6% of GDP.

Sources: DIW Berlin quarterly national accounts calculation and authors' calculations.

**Figure 2. The Quality of Deficit Forecasts.**

The figures displays the difference between the actual deficit and the predicted deficit as a percentage of GDP. A positive (negative) value indicates that the deficit forecast was too low (large).

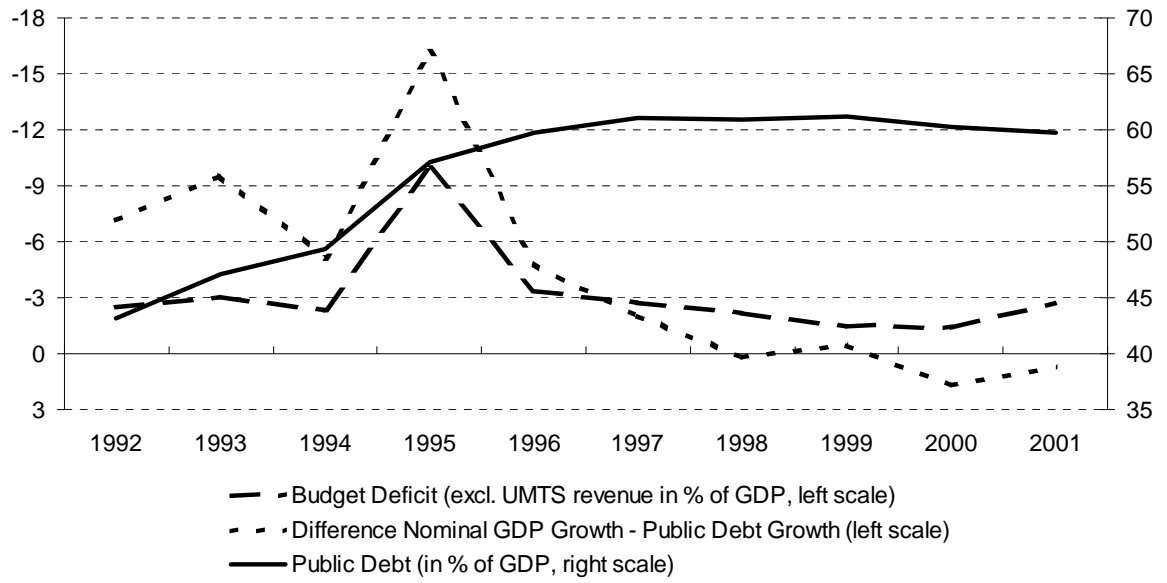
Sources: European Commission and authors` calculations.

**Figure 3. Budget Deficits 1999-2001.**

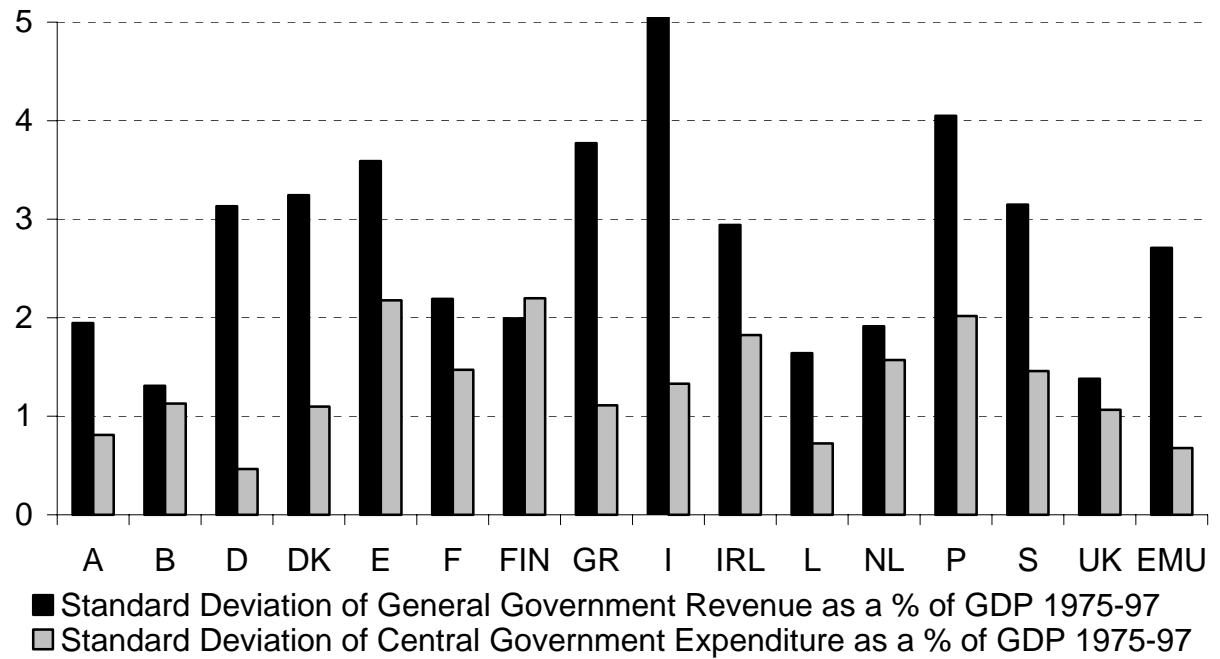
The figure displays budget deficits as a percentage of GDP excluding the UMTS revenue.

Sources: European Commission and authors' calculations.

**Figure 4. Debt and the Maastricht Criteria in Germany 1992-2001.**



Sources: Deutsche Bundesbank, DIW Berlin and authors' calculations.

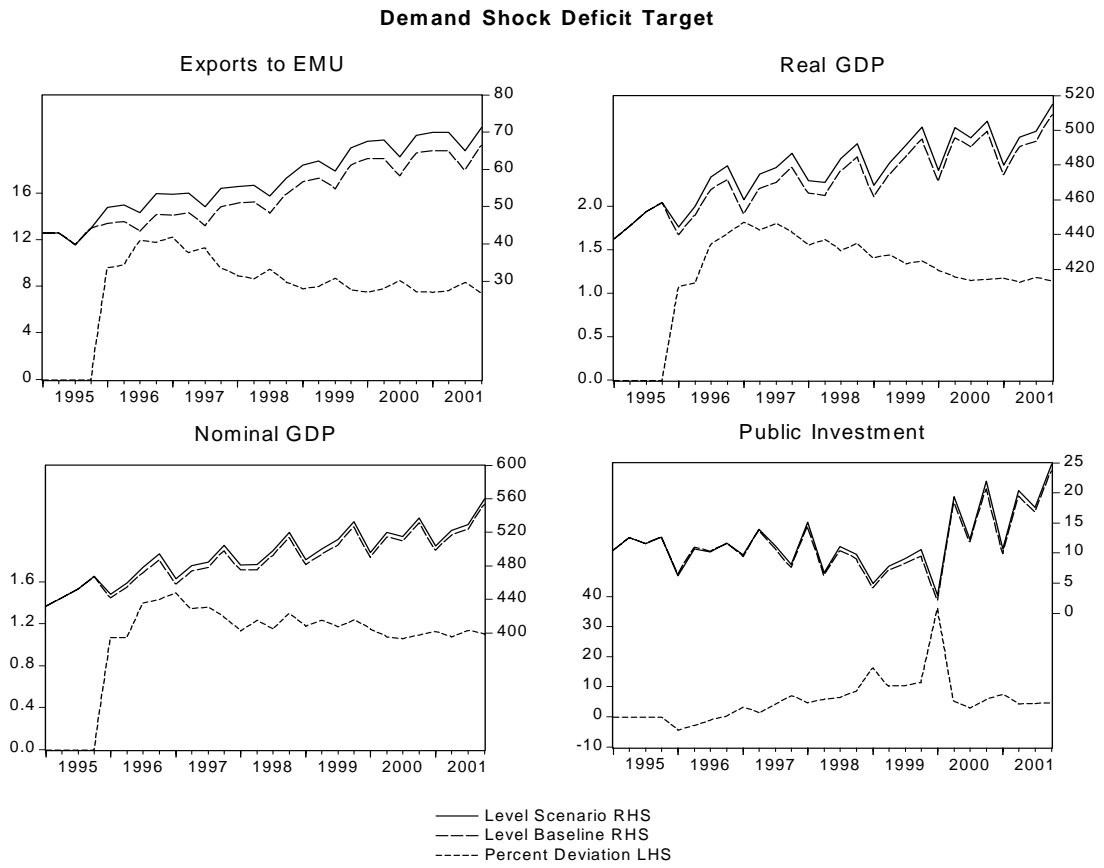


**Figure 5. The Variance of Fiscal Indicators 1975-1997.**

“Revenue” includes all levels of government while “expenditure” only includes central government due to the lack of comparable data. Central government expenditure is likely to be more volatile than local government expenditure, thus possibly introducing an upward bias in the calculation of the variance of central government expenditure.

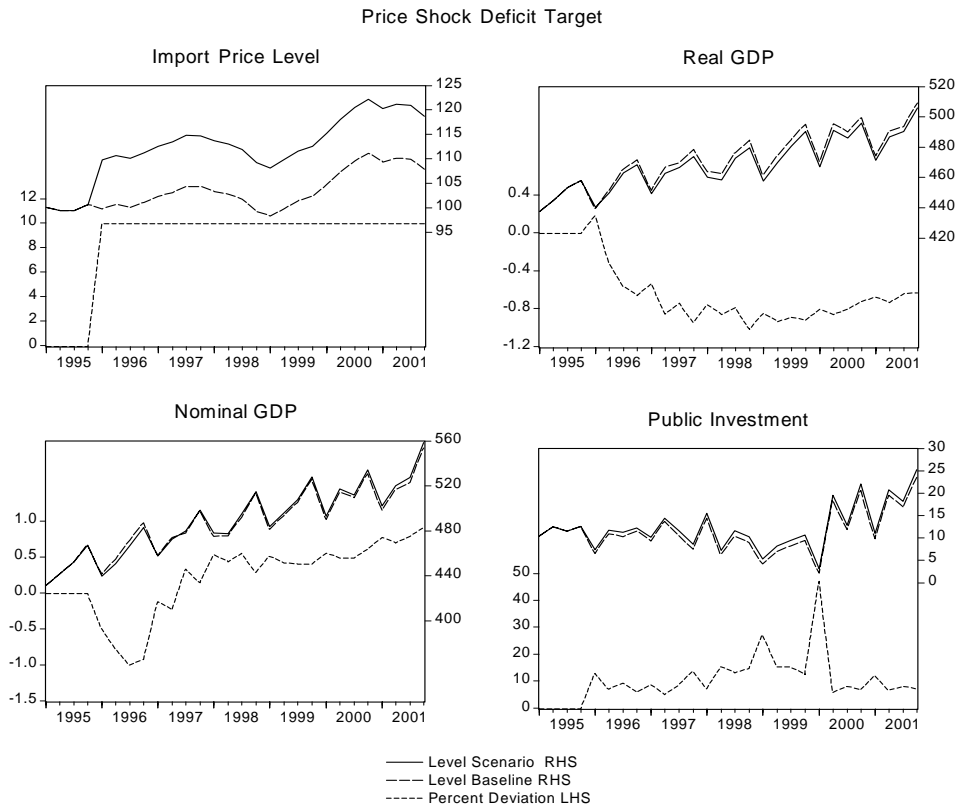
Sources: Eurostat and authors` calculations.

**Figure 6. Demand Shock with a Deficit Target.**



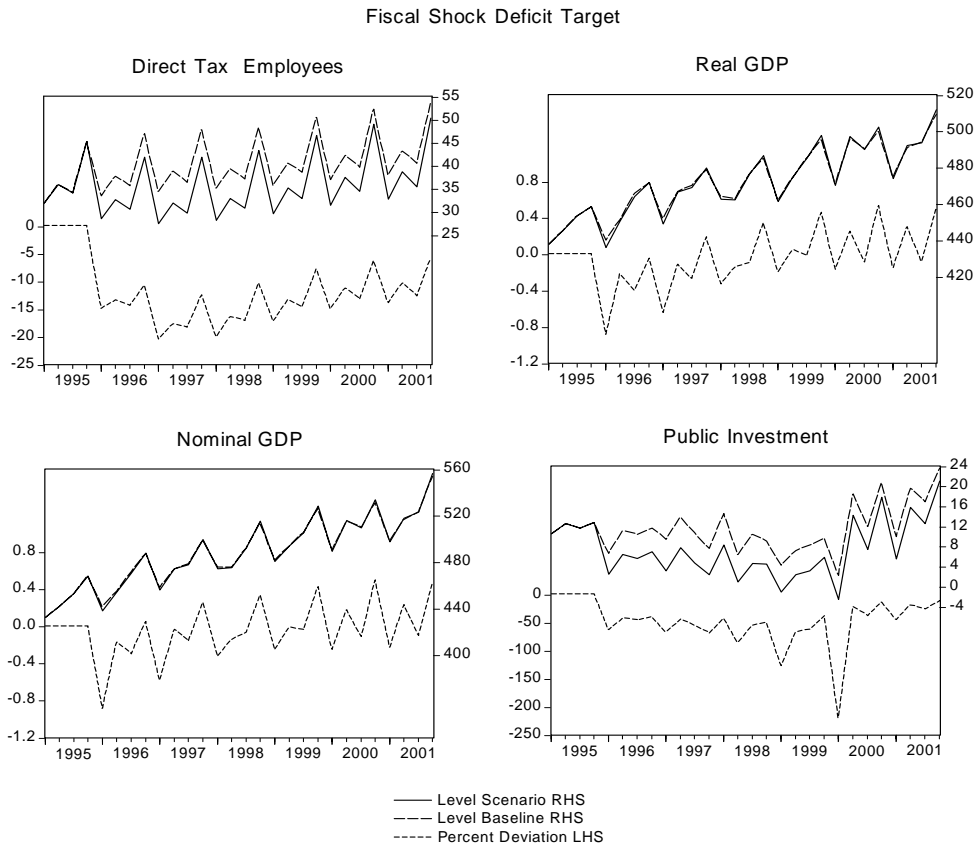
Sources: EBC Model of the DIW Berlin and authors' calculations.

**Figure 7. Price Shock with a Deficit Target.**



Sources: EBC Model of the DIW Berlin and authors` calculations.

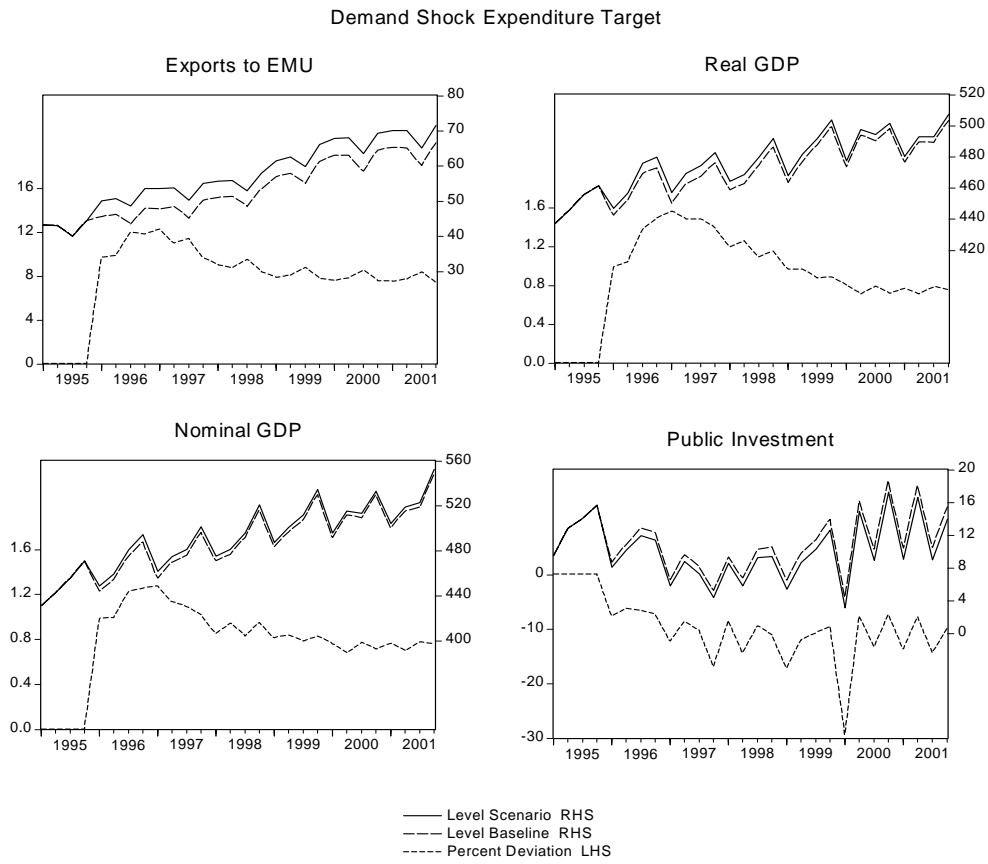
**Figure 8. Fiscal Shock with a Deficit Target.**



Sources: EBC Model of the DIW Berlin and authors` calculations.

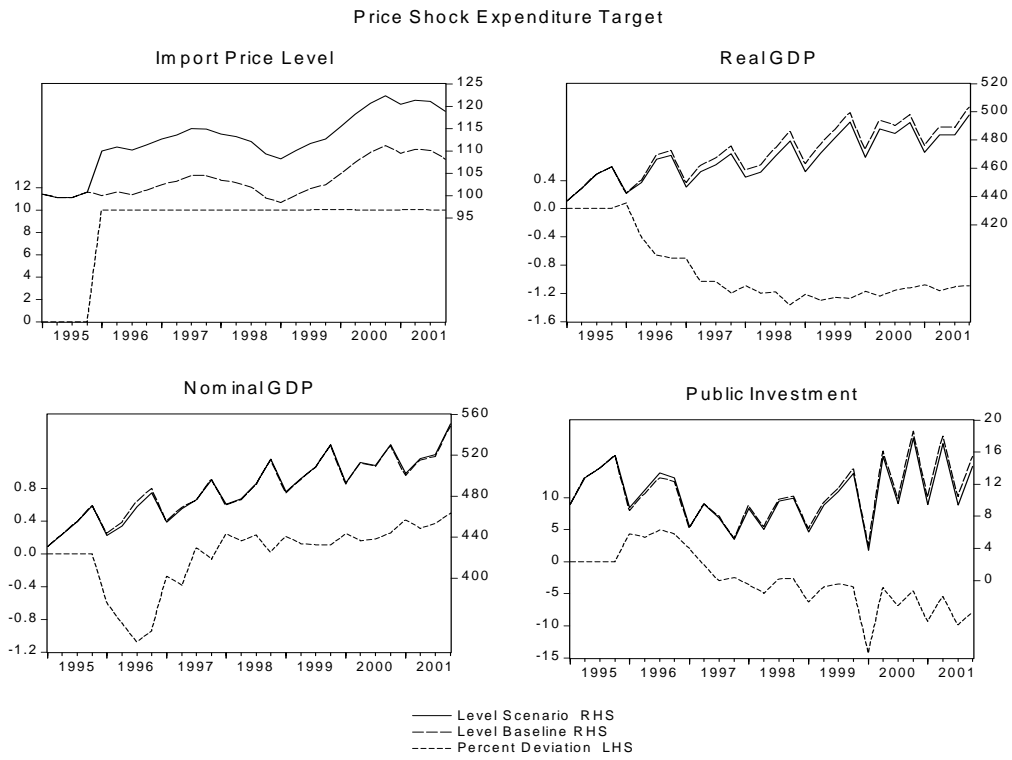


**Figure 9. Demand Shock with an Expenditure Target.**

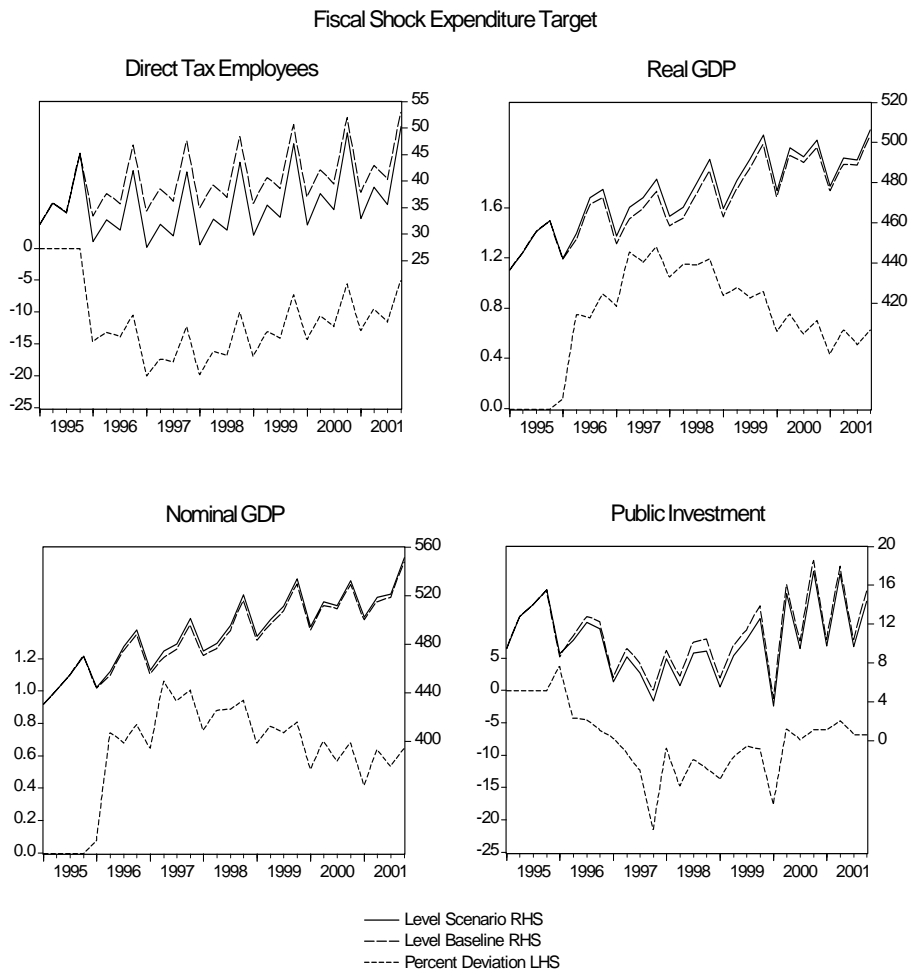


Sources: EBC Model of the DIW Berlin and authors' calculations.

**Figure 10. Price Shock with an Expenditure Target.**



Sources: EBC Model of the DIW Berlin and authors' calculations.



**Figure 11. Fiscal Shock with an Expenditure Target.**

Sources: EBC Model of the DIW Berlin and authors` calculations.

**Figure 12. Summary of Simulation Results.**

Column	Deficit Target (1)			Expenditure Target (2)		
	Demand Shock (3)	Price Shock (4)	Fiscal Shock (5)	Demand Shock (3)	Price Shock (4)	Fiscal Shock (5)
	1	2	3	4	5	6
Average 6-year deviation from the baseline scenario in %						
Exports, constant prices	3.8			3.8		
Import price index		10.0			10.0	
Direct taxes of employees			-9.9			-9.3
GDP, constant prices	1.4	-0.7	-0.1	1.0	-1.0	0.8
GDP, current prices	1.2	0.2	-0.1	0.9	0.0	0.7
Revenue, current prices	0.8	0.8	-2.2	0.6	0.6	-1.6
Expenditure, current prices	0.8	0.8	-2.2	0	0	0
Change in budget deficit (6)	0	0	0	-19.2	-17.6	34.1
Effects on stabilisation	pro-cyclical	mildly counter-cyclical	neutral	counter-cyclical	mildly pro-cyclical	varies with circumstances

(1) Public deficit ratio is kept at historical level.

(2) Overall public expenditures are kept at historical level.

(3) Exports to EMU countries above baseline.

(4) Import price index 10% above baseline.

(5) Reduction of direct taxes of employees.

(6) - : Reduction of public deficit ratio.

Sources: EBC Model of the DIW Berlin and authors' calculations.

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