Fritz Breuss / Werner Roeger[1]

Sluggish Growth and the SGP Fiscal Rule: Model Simulations[2]

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1 The views in this paper are entirely those of the author and do not necessarily reflect those of the European Commission.

2 A shorter version of this chapter has been published in *Breuss/Roeger* (2005).

I. Introduction

In the last decade, many OECD countries have experienced with budgetary rules in order to help restore or safeguard fiscal sustainability.[3] The most prominent examples are the USA with the 1985 Balanced Budget and Emergency Deficit Control Act (Gramm-Rudman Act) which was relaxed and renamed in the 1990 Budget Enforcement Act (BEA) introducing caps on discretionary spending. The caps could be exceeded in the event of "emergencies". In the end most of its provisions elapsed in September 2002, without being extended or replaced.[4] In the United Kingdom, two fiscal rules were set out in 1997: the so-called "golden rule", which states that over the cycle current outlays, including the consumption of fixed capital should not be financed by borrowing; and a debt rule, or "sustainability investment rule", stipulating that over the cycle the ratio of net debt to GDP should not exceed a prudent level, defined for the time being as 40 per cent. Several other OECD countries have adopted new rules since the 1990s (e.g. New Zealand and Switzerland with its debt brake - "Schuldenbremse").[5]

In the European Union the Maastricht Treaty and the Stability and Growth Pact (SGP) put in place in 1997 by two regulations (1466/97 – surveillance - and 1467/97 – clarifying the excessive deficit procedure) and one resolution of the European Council set out conditions necessary to safeguard fiscal discipline in a common currency area.[6] The Treaty set the deficit hurdle for entry into

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3 For an overview, see *OECD* (2002) pp. 117-136.
4 For an evaluation, see *Fatás/Mihov* (2004).
5 See *Brandner et al.* (2004).
6 See *Brunila et al.* (2001); *Buti/Giudice* (2002); *Emmerson et al.* (2003).

monetary union at 3 per cent of GDP, allowing for long-run debt convergence around 60 per cent of GDP (on the assumption of trend growth around 3 per cent and trend inflation around 2 per cent, which satisfies the Domar formula). The SGP – which introduced possible financial penalties for non-compliance with the deficit ceiling – , also calls for fiscal positions to be "close to balance" or in surplus over the medium run, which would asymptotically lead to zero net debt. These conditions are the minimum to achieve long-term fiscal sustainability in the individual countries. In practice, the emphasis has gradually shifted from the actual deficit measure to the cyclically-adjusted one, to avoid pro-cyclical budgeting. This approach was made very explicit in 2001 in the revised Code of Conduct on the format and content of the stability and convergence programmes.[7] Besides, some euro area member states have also put in place domestic "stability pacts" in order to promote fiscal discipline at sub-national levels.[8]

Although there are many efforts to justify the fiscal rules of the SGP theoretically[9] or to formulate optimal fiscal rules in general,[10] in practice there are no indisputable optimal criteria. Therefore any indebtedness target is bound to remain judgemental. However, rules not only have the purpose to safeguard long-run fiscal sustainability, they also limit the room for discretionary policy and hence increase macroeconomic stability. *Badinger* (2004) concludes from a cross-section and panel analysis for a sample of 20 OECD countries over the period of 15 years that discretionary fiscal policy has a significant and sizeable effect on volatility of GDP per capita;[11] but he did not find a direct effect on inflation volatility as postulated by *Rother* (2004).

Beyond their importance for ensuring sustainability, rules also have a role to play in communicating with the public. Therefore they should fulfil some criteria.[12] Rules should be credible but not overly rigid, simple to understand, perceived as binding and backed

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7 See *European Commission* (2002) pp. 201-206.

8 Austria, Belgium, Germany and Spain; for Austria, see *Schratzenstaller* (2005) pp. 12-22.

9 For an overview, see *Breuss* (1998); *Brunila et al.* (2001); *De Grauwe* (2003).

10 E.g., see *Schmitt/Grohe/Uribe* (2004); *Annichiarico/Giammaroli* (2004).

11 Like *Fatas/Mihov* (2003).

12 See *OECD* (2002) p. 126.

by sanctions.[13] A way to alleviate the trade-off between credibility and flexibility is by improving transparency. In the EU, the requirement that member states submit annual stability and convergence programmes and their obligations to notify flow and stock outcomes twice a year is also meant to enhance transparency.

After a promising start the SGP seems not to have passed the "Elch" test during the low-growth or stagnation phase in Europe since 2001. The Excessive Deficit Procedure (EDP) according to Article 104 of the EC Treaty had to be initiated already against 4 EMU members (Greece, France, Germany and Portugal) and one non-member (Hungary). Whereas Greece and Portugal violated the rules ex-post,[14] France and Germany breached the 3% hurdle over four years, starting in 2002. Over the continuation of the EDP against both countries there was a legal row between the Commission and the ECOFIN resulting in a case before and the ruling of the *European Court of Justice* (2004).

Due to several shortcomings of the SGP a reform was overdue. The ECOFIN on 20 March 2005 and the European Council on 22 and 23 March 2005 agreed upon concrete reform steps aiming at more flexibility and practicability in implementing its rules, while retaining its two nominal anchors – the 3 percent of GDP reference value for the deficit and the 60 percent of GDP reference for the debt to GDP ratio.

In our contribution we do not put forward a new or alternative rule to the existing SGP rules but rather we want to study why the two largest EMU countries ran into the deficit troubles during the past recession and whether an alternative more SGP-like fiscal adjustment policy could have led to a better overall macroeconomic performance. For this purpose we reproduce the sluggish growth situation in some member states of the Euro area. Then we analyse fiscal policy under two alternative shock scenarios. One scenario views the sluggish growth period caused by a supply shock, one originating from a (negative) demand shock. For both types of shocks we analyse the response of the economy under two alternative fiscal rules: a) no SGP rule and b) the SGP rule. The exercise is

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[13] *Buti/van den Noord* (2004) show that the current difficulties of EMU's fiscal policy framework have little to do with its alleged fault lines and much to do with the resurgence of the electoral budget cycles.

[14] For an overview of creative accounting in Europe, see *Koen/van den Noord* (2005).

carried out by simulations with the European Commission's QUEST model.[15]

The next section provides an overview of the model, its coverage and a brief description of its main features. In the third section we briefly describe the seven years experience with the SGP and the concrete reform proposals by the ECOFIN and the European Council. The fourth section discusses and presents the results of the model simulations of the alternative scenarios concerning the fiscal policy stance in case of a period of sluggish growth. Then tentative conclusions are drawn from our exercise.

II. The QUEST model

The QUEST model[16] is a New Neoclassical-Keynesian synthesis model, which combines the rigours of dynamic general equilibrium models with features of Keynesian style rigidities. The behavioural equations in the model are based on principles of dynamic optimization of private households and firms. Economic agents are assumed to maximize utility and profit functions subject to intertemporal budget constraints and consumption and investment decisions, therefore incorporate forward looking behaviours. Economic theory not merely determines the long-run model properties, but also drives its short run dynamics. The dynamic responses of the model have a theoretical basis, like the presence of adjustment costs and overlapping contracts, and adding ad hoc dynamics has been avoided as much as possible.

The supply side of the economy is modelled explicitly via a neoclassical production function. This assures that the long run behaviour of the model resembles closely the standard neo-classical growth model and the model reaches a steady-state growth path with a growth rate essentially determined by the rate of (exogenous) technical progress and the growth rate of the population.

There are two major departures from the neo-classical model in the long run. Because firms are not perfectly competitive but can charge markups over marginal cost in the long run, the level of economic activity will be lower than that predicted from a model with

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[15] In a recent model simulation exercise *Neck et al.* (2005) study the different combinations for co-operation between fiscal and monetary policy in the enlarged EMU.

[16] This model description follows *Roeger/in't Veld* (2004). For a more detailed description, see *Roeger/in't Veld* (1997).

perfect competition. Also, a bargaining framework along the lines of *Pissarides* (1990) is used to describe the interaction between firms and workers. Labour market rigidities and therefore involuntary unemployment persist even in the long run and the model economy will therefore not reach steady state equilibrium with full employment. The short run behaviour of the model is influenced by standard Keynesian features since the model allows for imperfectly flexible wages and prices, liquidity constrained consumption, adjustment cost for investment and labour hoarding.

A. Private consumption

The specification of consumption and saving behaviour in the model is based on the concept of intertemporal utility maximisation of households, as formalised by *Blanchard* (1985) und *Buiter* (1988). It is a generalisation of the Permanent Income Hypothesis, since it allows for the analysis of consumption and saving behaviour of households under possibly only a finite planning horizon (positive probability of death). Consumers decide how much to consume and how much to save each period by maximising the present discounted expected utility from the consumption stream subject to their intertemporal budget constraint. Under the assumption of isoelastic or constant relative risk aversion (CRRA) utility, the consumption function, i.e. the optimal consumption rule for the household's optimisation problem, depends on human wealth *H* and financial wealth *F*; the marginal propensity to consume out of total wealth δ is a function of the rate of time preference θ, the probability of death *p*, the intertemporal elasticity of substitution σ and the real interest rate *r* at period *t*

$$C_t = \delta(\theta, p, \sigma, r_t)\left[H_t + F_t\right]P_t / PC_t \,. \qquad (1)$$

Human wealth *H* is the present discounted value of the entire future stream of after-tax income (*L.w* including benefits *U.ben*)

$$H_t = E_t \sum_{j=0}^{\infty} b_{tj}\left[(1-t_l\right]L_{t+j}w_{t+j} + U_{t+j}ben_{t+j}$$

and financial wealth *F* equals the sum of the total equity wealth *V*, bonds (*B*), real money (*M/P*) and net foreign assets *NFA*

$$F_t = V_t + B_t + M_t / P_t + NFA_t \,.$$

Eq. (1) above assumes all consumers can freely substitute consumption today for consumption in the future at the going real interest rate. In reality, not all people may be able to borrow against their future income due to capital market imperfections and as a

result they will not be able to smooth their consumption over time. These "liquidity constrained" consumers cannot achieve intertemporal optimisation and their consumption is better represented as a function of current real disposable income ("rule-of-thumb" consumers). In the model, total consumption is, therefore represented as the aggregation of the responses of two groups of consumers, one forward looking group of consumers who follow the optimal consumption rule (1) and another group that does not obey the life cycle/permanent income hypothesis and whose consumption depends on current disposable income

$$C_t = (1-\lambda)\delta(\theta, p, \sigma, r_t)\left[H_t + F_t\right] + \lambda Ydis_t \qquad (1a)$$

where λ is the share of liquidity constrained consumption and *Ydis* current real disposable income.

Intertemporal substitution constitutes an important stabilising feedback, as a rise in interest rates can induce consumers to postpone consumption. When other components of aggregate demand rise, an increase in interest rates reduces consumption and the effect on total output is dampened. Consumption smoothing is an essential feature of this consumption specification. If households expect a temporary decline in their income, then according to this hypothesis, they will mainly react via a reduction in their savings rate. Alternatively, if they expect an increase in their future net income, e.g. because of credibly announced tax reductions, the current savings rate may also fall, i.e. consumption may already increase in the present period in anticipation of higher future income. The estimates used in the model lie within the range found in the empirical literature: the values for the share of consumption that is liquidity constrained is approximately 30%, while the elasticity of intertemporal substitution for that fraction of consumption that obeys the life cycle model is approximately 0.5.

B. Production

Firms operate in a monopolistically competitive environment. Private sector GDP Y_t is produced via a nested CES and Cobb Douglas production function with capital K_t, energy E_t and private sector employment L_t as inputs. The variable T_{Kt} represents an efficiency index for the fixed capital stock and the variable T_{Lt} represents labour augmenting technical progress. The following equation describes potential output $YPOT_t$ of the corporate sector under the assumption that all factors of production are fully utilised.

$$YPOT_t = \left(\left[aK_t^{-\rho} + (1-a)E_t^{-\rho} \right]^{-1/\rho} T_{Kt} \right)^{(1-\alpha)} (L_t T_{Lt})^{\alpha} \qquad (2)$$

Labour augmenting technical progress grows with an exogenous rate and the efficiency index for capital T_{Kt} is a function of the mean age of capital and captures embodiment effects resulting from current and past investment. Firms may not always operate at full or optimal capacity; therefore actual output can differ from potential output. The objective of the firm is to maximise the present value of its cash flow (total revenue minus costs), subject to a capital accumulation constraint and costs of adjustment associated with capital and labour. The solution of the maximisation problem gives the behavioural equations for investment, employment and energy.

C. Investment

Firms maximise profits by buying labour services from households and renting capital to produce output. The investment demand equation is the optimal rule for the firms' optimisation problem. The model specification is based on a framework that extends the neo-classical model of investment by incorporating adjustment costs. The neo-classical model of investment can be linked to Tobin's Q-model, which couples investment decisions to forward-looking stock market valuations of the firm. According to this hypothesis, investment is determined by the gap between the market value of a firm and the replacement value of its capital. The ratio between these two variables is referred to as *Tobins's Q*. This model can be derived from the neo-classical theory if it is assumed that investment is subject to adjustment costs, which are a convex function of the rate of change of the firm's capital stock. Firms face such adjustment costs when changing their capital stock, as there are disruptions to the existing production process: installation of new capital can be costly; workers may have to be retrained, etc. Convexity implies that these installation costs increase at an increasing rate and a too rapid accumulation of capital is more costly.

Total real investment expenditures are equal to investment purchases J_t plus the costs of installation. The unit installation costs are assumed to be a linear function of the investment to capital ratio. Total investment expenditure I_t can be written as

$$I_t = J_t \left\{ 1 + (\phi/2) \left\{ \frac{J_t}{K_t} \right\} \right\} \frac{PI_t}{P_t} \qquad (3)$$

where ϕ is the adjustment cost parameter, K the capital stock and PI_t / P_t denotes the relative price of investment goods relative to the GDP deflator.

The optimisation problem yields the following investment rule

$$I_t = \frac{1}{\phi}\left\{\frac{q_t}{PI_t / P_t} - 1\right\}K_t. \tag{4}$$

The shadow price of capital q is equal to the marginal product of capital plus any anticipated future events which are expected to influence the marginal product after period t. It is a function of current and discounted future expected profitability, including adjustment costs, and adjusted for profit taxes tc and monopoly rents. This representation of q allows us to interpret it as reflecting the present discounted value of the marginal revenue from current investment and illustrates the forward-looking nature of capital accumulation. Central to investment decisions are expectations about future demand conditions and costs. Estimates show that the adjustment costs amount to approximately 10% of total investment expenditure.

D. Labour market

The labour market specification is based on theoretical search models of the labour market as developed by *Pissarides* (1990). The basic incentive for search activities in the labour market by both workers and firms are the profit opportunities in present value terms, which are associated with a successful job match for both parties. Wages are determined by an implicit bargain at the individual level, i.e. the firm engages in Nash bargains with each individual worker by taking the wage of all other employees as given. Thus, wage contracts are set such as to maximise the product of their respective profit opportunities. In the case of households, this is given by the difference between the present value of labour income a household can earn in the case of a successful current job match (net wages) vs. the net present value of labour income in case of a failure (the reservation wage, i.e. unemployment benefits and/or the value of leisure). Arbitrage equations for the returns from their respective human capitals incorporate the expected capital loss from a job separation, and the expected capital gain from finding a job, depending on labour market tightness. For the firm, the return from a successful job match is given by the real pure profit of a firm per employee, the difference between the return of an occupied

position and the costs of a vacant position. The wage rule is then the outcome of the maximisation of the product of both parties' profit opportunities and how much of the total return of a successful job match goes to each party depends on their relative bargaining position.

$$W_t = \frac{(1-\beta)}{(1-t_l)} Z_t + \beta \left\{ \alpha \frac{Y_t}{L_t} + \frac{P(\cdot) vc_t}{q(\cdot)} \right\} \tag{5}$$

Where β is the relative bargaining strength of workers, t_l the labour income tax rate and Z the reservation wage (unemployment benefits). The last term in brackets reflects the probability of finding and quitting a job for an unemployed/employed person and the vacancy cost incurred by the firm, and this is assumed to depend on labour market tightness (unemployment rate).

Nominal rigidities are introduced into the wage setting process through the assumption of wage staggering, as suggested by *Taylor* (1980). Contracts last for four periods (quarters) and at each date, exactly one quarter of all workers signs a new contract with firms. At each date t firms bargain with one quarter of the work force over a nominal wage contract, which will remain fixed for one year. Wage contracts in the current period are thus indexed to an average of the current price level and expected price levels for three consecutive periods. They are further determined by labour productivity Y / L, the reservation wage Z, vacancy costs vc and labour market tightness in the current and three consecutive periods.

This wage rule exhibits the feature that the importance by which the marginal product of labour and labour market tightness influence the level of current wage contracts, depends positively on the bargaining power of workers. As the bargaining strength of workers diminishes, firms can tie wages more narrowly to the reservation wage. The average nominal wage rate in period t is thus given by the average value of all wage contracts signed in the current and the previous three periods.

E. Pricing behaviour

The version used in this paper has a hybrid version of forward and backward looking pricing behaviour.[17] It derives price setting behaviour as the product of optimisation by monopolistically competitive firms subject to constraints on the frequency of price ad-

[17] See *Gali/Gertler* (1999) pp. 195-222.

justment. It allows for a 'cost-push' effect influenced by expected inflation, which makes inflation a forward-looking phenomenon. However, it is assumed that a fraction of firms uses a backward looking rule of thumb.[18]

F. Government

Governments follow exogenously given spending patterns. Government expenditure is divided into unemployment benefits, purchases of goods and services, government wages, investment expenditure, transfers to households and interest payments on government debt. Revenues are divided into labour income taxes (including social security contributions), corporate profit taxes, value added taxes, energy taxes and other receipts (lump sum tax).

A debt rule is imposed in order to make the evolution of the government budget sustainable. In default setting, it is lump sum taxes that adjust proportionally to the gap between the debt to GDP ratio and its target level b_0 according to

$$\Delta T_t = \Psi_1(b_0 - B_t / Y_t) - \Psi_2 \Delta(B_t / Y_t)\,. \tag{6}$$

G. Financial markets

Asset markets are assumed to be fully integrated across all the industrialised regions covered in the model, i.e. there is full capital mobility. Exchange rates between European currencies, US dollar and the yen are fully flexible. The exchange rate *e*, expressed as the amount of domestic currency per unit of foreign currency, is determined endogenously according to the following (uncovered) interest arbitrage relation with respect to the dollar

$$i_t^j = i_t^{US} + E_t\left[\frac{\Delta e_{t+1}}{e_t}\right] + risk_t\,. \tag{7}$$

The second term on the right hand side denotes the expected depreciation of the currency vis-a-vis the US dollar. The risk premium 'risk' is assumed to be exogenous and reflects, among other factors, the markets' perception of the risk differential between assets denominated in the two currencies.

The impact of shocks in the model depends to a large extent on the response of the monetary authorities and the expected future monetary stance. The model can be simulated under alternative monetary policy assumptions, and short term interest rates can be set to target the money stock, an inflation target, or in accordance to

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[18] See *Gali et al.* (2001) pp. 1237-1262.

some formulation of a Taylor rule. The standard setting in the simulations for this paper is based on an agreed policy rule, which assumes that the monetary authorities adhere to an inflation forecast based rule

$$rs_t = rr^{eq} + \inf_{t+1} + a(\inf_{t+1} - \inf^{t\,\arg\,et}) + bGAP_t \qquad (8)$$

where the equilibrium real rate is taken from the steady state model solution (here shocks were designed in such a way that the *ss* real interest rate was unchanged). The weight given to expected inflation ($a = 1$) is much larger than that to the output gap ($b = 0.25$). It is assumed that of the three EU member states not participating in EMU, Denmark follows the ECB and keeps the interest rate differential vis-a-vis the euro-area constant, while Sweden and the UK have an independent monetary policy and floating currencies against the euro.

H. International trade

The model consists of structural models for each of the EU member states, the United States and Japan, while the rest of the world is modelled through smaller trade feedback models, determining imports, exports and the evolution of net foreign assets.[19]

Table 1: Countries and Zones in the Quest II model (to be continued)

Complete country models		Zone trade-feedback models		
1. BE	Belgium-Luxembourg Economic Union (BLEU)	21. RO	The rest of the OECD	Korea, Iceland, Mexico, New Zealand, Turkey
2. DK 3. DE 4. GR 5. ES	Denmark FR of Germany Greece Spain	22. OP	OPEC	Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates, Venezuela

[19] See Table 1.

Table 1(continued): Countries and Zones in the Quest II model

6. FR 7. IR 8. IT 9. NL	France Ireland Italy Netherlands	23. CE	Central and Eastern European Countries	Bulgaria, Czech Republic, Slovakia, Hungary, Poland, Romania, Slovenia, Estonia, Latvia, Lithuania
10. OS 11. PO	Austria Portugal	24. SU	Former Soviet Union	Russia, Ukraine, Rest of FSU-10
12. SF 13. SW 14. UK	Finland Sweden United Kingdom	25. DA	Dynamic Asian Economies	Hong Kong, Malaysia, Singapore, Taiwan, Thailand
15. US 16. JA 17. CA 18. AU	USA Japan Canada Australia	26. OA	Other Asia	Jordan, Nepal, Oman, Pakistan, Papua New Guinea, Philippines, Sri Lanka, Syria
19. NO 20. CH	Norway Switzerland	27. LA	Other Latin America and Africa	All countries of Latin America and Africa not listed elsewhere

It is assumed that each country or region produces a product which is an imperfect substitute for the products of other regions. Trade volumes are simple functions of demand and relative prices. Competitor's prices for each country are constructed as a weighted average of import prices, where the weights denote the share of the individual exporting country in total imports of the importing region. World demand for an individual country is defined as a weighted average of total imports with the weights representing the share of the exporting country in total imports of the importing country or region.

III. Seven years of experience with the SGP

A. Sluggish growth in Europe since 2001

The starting point of our analysis is the sluggish economic growth in some member states of the Euro area. The three large countries France, Germany, and Italy exhibited a period of slow growth over three years. In this period France and Germany were

not able to keep their budget deficits below the 3%-SGP hurdle. Therefore, on 21 January 2003 the ECOFIN Council following the recommendation by the European Commission initiated the Excessive Deficit Procedure (EDP) under Article 104 of the EC Treaty.[20] The same happened with France on 3 June 2003. With the decision of 25 November 2003 the ECOFIN council stopped the EDP for both countries against the intention of the Commission. Therefore the Commission filed a suit against the ECOFIN before the European Court of Justice (ECJ). Its judgment was announced on 13 July 2004, declaring that on the one hand the ECOFIN has the right to decide against a recommendation by the Commission by qualified majority but on the other hand nullified the conclusions by the Council of 25 November 2003.[21] On 14 December 2004 the Commission decided (and recommended it to the ECOFIN council) that no further steps are necessary under the EDP because the budgetary forecasts for 2005 are plausibly showing that both countries will bring down the deficit below 3% of GDP.

Since the inception of EMU in 1999 we exhibited already EDPs against four Euro area members:[22] Portugal (November 2002 until April 2004), Germany and France (2003 to 2004) and Greece (after the announcement by Eurostat that it had faked its budgetary figures and due to the recent permanent breach of the SGP rules). The ECOFIN council initiated the EDP against Greece on 5 July 2004 and additionally on 1 December 2004 the Commission launched an infringement procedure against Greece to prevent incorrect or incomplete data transmission in the future. Base was a final Eurostat report for 1997-2003 showing that the government deficit in Greece has been revised upwards by 2.1% of GDP on average over that period, leading to the conclusion that the government deficit ratio has always exceeded 3% of GDP in the period.

After EU enlargement on 1 May 2004 the ECOFIN council initiated EDPs against six new member states (Czech Republic,

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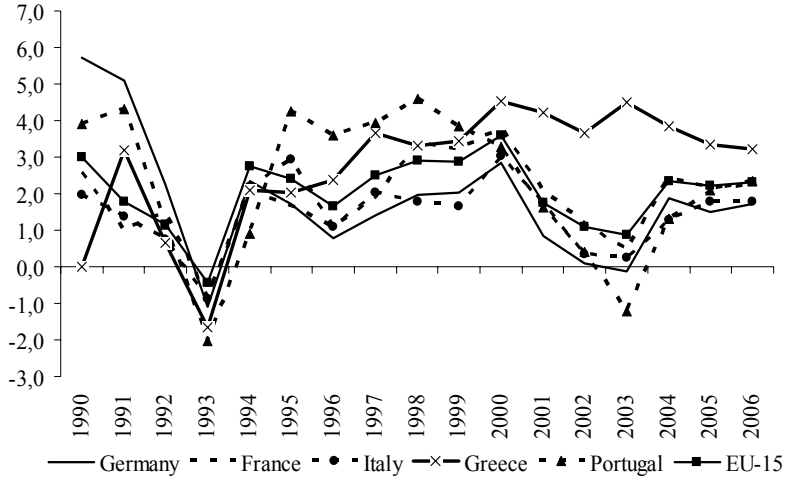
[20] Information about the framework and ongoing procedures in the context of the SGP and Fiscal Surveillance can be found on the website of the European Commission – DG Economic and Financial Affairs: http://europa.eu.int/comm/economy_finance/about/activities/sgp/main_en. htm (last visited May 2006).

[21] See *European Court of Justice* (2004).

[22] For a more comprehensive analysis of five years with EMU, see *European Commission* (2004a). A more recent evaluation of the EMU is done in *Breuss* (2006), chapters 11 and 12.

Cyprus, Hungary, Malta, Poland and Slovak Republic). On 5 July 2004 the ECOFIN council stopped the EDP against five countries, only in the case of Hungary the EDP continues with further budgetary surveillance.

Figure 1: GDP growth rates in % in selected Euro area countries



Source: *European Commission* (2004c).

Primarily we concentrate on the events in the three large Euro area countries France, Germany and Italy. However, we also show the performance of the two EDP countries Greece and Portugal in the following figures. The cyclical pattern of growth of real GDP was similar in the four countries; an exception is Greece. It exhibited a sustained high growth since the mid nineties (see Figure 1). Taking the output gap as business cycle indicator, one reaches at the same interpretation of the economic performance as shown with the GDP growth figures of Figure 1.

France's general government budget deficits exceeded the 3% SGP hurdle from 2002 to 2004 and according to the autumn forecast by the *European Commission* (2004c) a continuation of deficits at or above 3% of GDP in 2005 and 2006 is probable.[23] The budgetary situation in Germany was similar.[24] In both countries the performance of the structural deficit (cyclically adjusted)[25] was

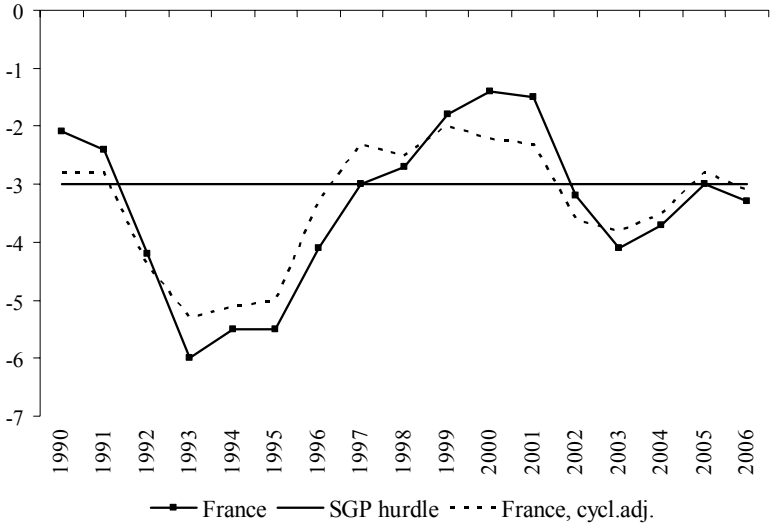
[23] See Figure 2a.

[24] See Figure 2b.

[25] For the proper interpretation and use of cyclically-adjusted budget balances (CAP), see *Larch/Salto* (2003).

somewhat better, but also fell short of the 3% limit. In Italy the budget deficit hit the 3% limit in 2004 and will stay there in 2005 and 2006 according to the latest forecasts.[26] Despite an excellent GDP growth performance, Greece permanently surpassed the 3% deficit hurdle in the actual and cyclically adjusted budget balance. Portugal surpassed the 3% limit in 2001 and the forecasts expect deficits higher than 3% of GDP in 2005 and 2006.[27]

Figure 2a: France: Budget balance, actual and cyclically adjusted (in % of GDP)

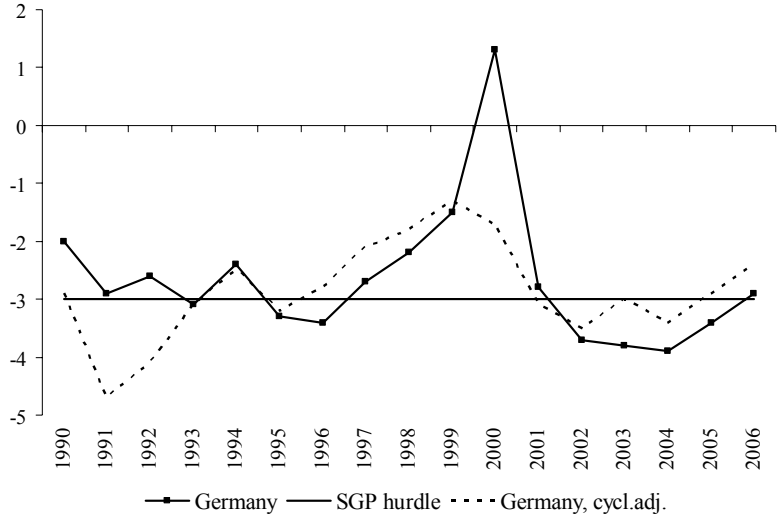


Source: *European Commission* (2004c).

[26] The short-term improvement in the actual budget balance figures in 2000 and 2001 was primarily due to the one-off proceeds relative to UMTS licenses, while the cyclically adjusted balances exclude these amounts. In 2000 these effects amounted to 50.8 bn DM in Germany, 13.8 bn Lira in Italy and 0.4 bn Pesetas in Portugal. In 2001 the UMTS effect amounted to 1.2 bn francs in France and 0.6 bn Drachma in Greece; see *European Commission* (2004c) p. 148; see Figure 2c.

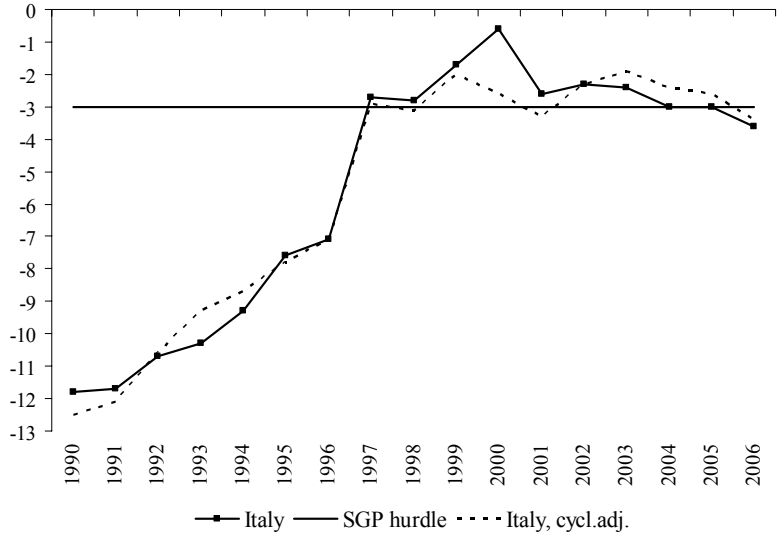
[27] See Figure 2d.

Figure 2b: Germany: Budget balance, actual and cyclically adjusted (in % of GDP)



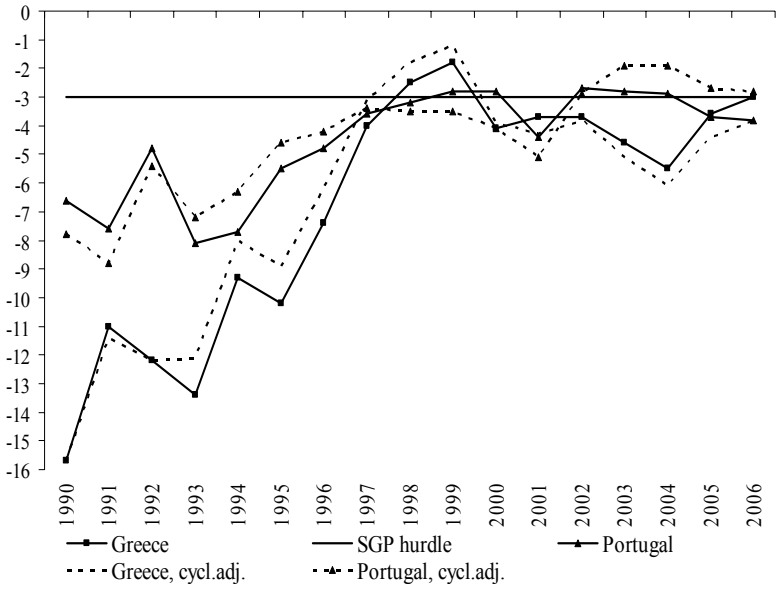
Source: *European Commission* (2004c).

Figure 2c: Italy: Budget balance, actual and cyclically adjusted (in % of GDP)



Source: *European Commission* (2004c).

Figure 2d: Greece and Portugal: Budget balances, actual and cyclically adjusted (in % of GDP)

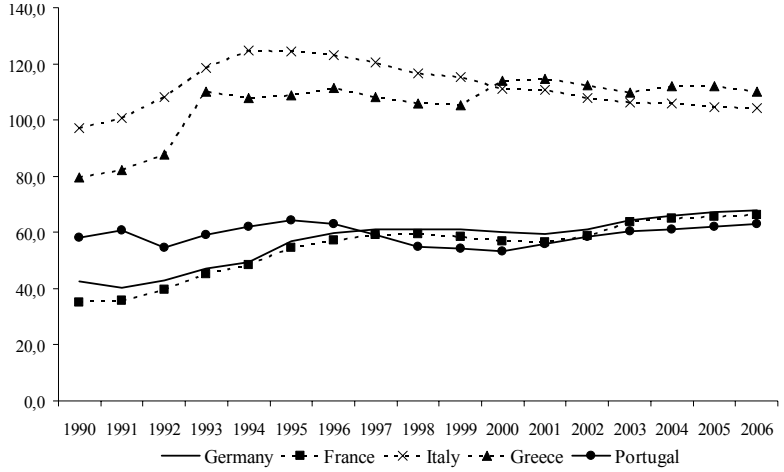


Source: *European Commission* (2004c).

When evaluating fiscal sustainability one looks at the performance of the debt to GDP ratio. Considering our four Euro area countries, some features stand out: First the level of the debt to GDP ratio in France, Germany and Italy is only half that of Greece and Italy. However, one also can detect a divergent dynamic. France, Germany and Portugal either stabilized or decreased its debt to GDP ratios during the run-up to the evaluation of the Maastricht convergence criteria in 1998. Since then we see an increasing trend, although the levels are still close to 60% of GDP. In Greece and Italy, although still at high levels of over 100% of GDP the debt to GDP ratios exhibit a declining trend.[28] In general we have three countries in the Euro area with still high and possibly unsustainable debt to GDP ratios. These are Belgium (the forecast for 2006 is 91%), Greece (110%) and Italy (104%). All other countries of EU-25 exhibit debt to GDP ratios around 60% or below. This is particularly true for the new member states. Only Cyprus (69%) and Malta (74%) are somewhat above this general tendency.

[28] See Figure 3.

Figure 3: Gross debt general government (in % of GDP) in selected Euro area countries



Source: *European Commission* (2004c).

B. The SGP mark II

Seven years of experience with the SGP have also highlighted its shortcomings. One important insight is the heterogeneity of the performance of the Euro are member states; either concerning GDP growth or budgetary stability. The "European business cycle" is still more a phantom than reality! The EU enlargement 2004 additionally will contribute to the amplification of the economic performance in the EU-25. The fact of the rather heterogeneous picture of the performance of public debt sustainability and - due to the protracted slowdown or "sluggish growth" period since 2001 - the non-compliance with the SGP fiscal rules of two major EMU players was the reason why the *European Commission* (2004b) was rethinking the economic governance and implementation of the SGP.[29]

The *ECOFIN* (2005) unanimously agreed to overhaul the present SGP by making proposals for "strengthening and clarifying" its implementation, "with the aim of improving the coordination and monitoring of economic policies according to Article 99 of the Treaty and of avoiding excessive deficits as required by Article 104(1) of the Treaty". These proposals were then introduced into

[29] Many of these suggestions were taken up by the *ECOFIN Council* (2005) on 20 March 2005 and were endorsed by the *European Council* (2005) on 22 and 23 March 2005.

the new Regulations (EC) No. 1055/2005 and No. 1056/2005 of 27 June 2005 (OJ L 174/1 and 174/5 of 7.7.2005) amending the old Council Regulations 1466/97 and 1467/97 and will – together with *ECOFIN* (2005) and *European Council* (2005) - form the "SGP mark II".

The Council, reviewing the SGP provisions, detected mainly five areas for improvements:[30] (i) enhance the economic rationale of the budgetary rules in order to improve their credibility and ownership; (ii) improve "ownership" by national policy makers (the Member States are responsible to implement the fiscal policies of their choice; the Council and the Member States respect the Commission's responsibility as guardian of the Treaty and its procedures); (iii) use more effectively periods when economies are growing above trend for budgetary consolidation in order to avoid pro-cyclical policies (this should help to better adhere to the medium term objective (MTO) for the Member States budgetary positions of "close to balance or in surplus" (CTBOIS)); (iv) take better account in Council recommendations of periods when economies are growing below trend and (v) give sufficient attention in the surveillance of budgetary positions to debt and sustainability.

Derived from this diagnosis the Council aims at clarifying the SGP rules in the following areas:

- Strengthening the preventive arm: In light of the increased economic and budgetary heterogeneity in the EU of 25 Member States, MTOs should be differentiated and may diverge from CTBOIS of individual Member States on the basis of their current debt to GDP ratio and potential growth. In cyclically adjusted terms (net of one-off and temporary measures), the range for the country-specific MTOs for euro area and ERM II Member States should be between -1 percent of GDP for low debt/high potential growth countries and balance or surplus for high debt/low potential growth countries. Hence, long-term fiscal sustainability is taken into account better than hitherto. However, in order to reach their MTO, Member States should pursue an annual adjustment in cyclically adjusted terms of 0.5 percent of GDP as a benchmark. In order to avoid pro-cyclical policies the Council demands a more symmetrical approach to fiscal policy over the cycle through enhanced budgetary discipline in periods of economic recovery.

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[30] See *ECOFIN* (2005) p. 4.

- Improving the implementation of the Excessive Deficit Procedure (EDP): The EDP should remain simple, transparent and equitable. The guiding aim of the EDP is the prompt correction of an excessive deficit. Assistance and not punishment should be the purpose. Policy errors should be distinguished from forecast errors. In the end, the Council should have the power to apply sanctions. In evaluating whether an excess over the reference value is only "exceptional and temporary" – according to new proposals for "SGP mark II"[31] - the Commission should take into account a variety of "relevant factors". In this respect, the Council calls for a clarification of the relevant framework in the following lines: (i) a stronger link with the Lisbon targets for medium to long-run growth meaning considering expenditures to foster R&D and innovation;[32] (ii) fiscal consolidation efforts in "good times", debt sustainability, public investment and the overall quality of public finances; (iii) due consideration should be given to any other factors, such as budgetary efforts towards increasing or maintaining at a high level financial contributions to fostering international solidarity and to achieving European policy goals, notably the unification of Europe (e.g. costs of German unification; net-contributions to the EU budget); (iv) taking into account systemic pension reforms (net costs of the reform to the publicly managed multi-pillar system) for the initial five years after a Member State has introduced a mandatory fully-funded system, or five years after 2004 for Member States that have already introduced such a system.

The deadlines connected with the EDP will also be handled more flexibly. The deadline for adoption of a decision under Article 104(6) of the Treaty should be extended from three to four months, those under Article 104(7) from four to six months. The one month deadline for the Council to take a decision to move from Article 104(8) to Article 104(9) should also be extended to two months, and the two months deadline under Article 104(9) should be extended to four months. Also the deadline for correcting an excessive deficit should be extended to the second year after its occurrence. Under special circumstances, the initial deadline for correcting an excessive deficit could be set one year later, normally the third year after its occurrence.

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[31] See *ECOFIN* (2005) p. 15.
[32] See also *Breuss* (2005).

In the light of the experience of the slow growth in Europe since 2001, the Council also considered the definition of "a severe economic downturn" given in Article 2(2) of Regulation 1467/97 as too restrictive. There it was defined – as a rule – as an annual fall of real GDP of at least two percent. The paragraphs (2) and (3) of Article 2 in Regulation 1467/97 are replaced in the new Regulation 1056/2005 by the following definition: The Commission and the Council, when assessing and deciding upon the existence of an excessive deficit ….., may consider an excess over the reference value resulting from a severe economic downturn as exceptional …. if the excess over the reference value results from a negative annual GDP volume growth rate or from an accumulated loss of output during a protracted period of very low annual GDP volume growth relative to its potential.

In anticipating the major changes in the "SGP mark II" this study – by using the method of model simulations - analyzes two aspects: (i) the consequences of a protracted period of very sluggish growth as experienced in Europe since 2001 for the fiscal policy stance in the largest euro area countries; and (ii) the long-run impact of potential GDP and debt sustainability of different fiscal policy adjustments (either adhering to the SGP rules or ignoring it).

IV. Simulating alternative fiscal policy strategies to overcome a slow growth period

The starting point of our exercise is the sluggish economic growth in some member states of the Euro area (in particular Germany) over the period 2001 to 2004. Our aim is to reproduce this cyclical downturn and study the pros and cons of sticking to the SGP. One important problem one faces when analyzing this economic situation is the uncertainty concerning the nature of the slowdown. At least two alternative interpretations seem possible.

Interpretation 1:

- The euro area has been hit by a negative supply shock in the form of weak growth of total factor productivity (TFP) over a period of three years. This view is consistent with the decline in TFP growth over a period of three years, which is unusual for pure cyclical variations in capacity utilization.

Interpretation 2:

- It is not 100% sure that the supply side interpretation is correct. There is evidence for weak private domestic demand. Consumer spending has been low in Germany, possibly related to structural

and pension reform debates. Also there has been a significant decline in the investment rate (especially in construction). The more permanent nature of sluggish demand could have contributed to the unusual pattern of productivity growth.

It turns out that a proper assessment of the economic situation is crucial, since both interpretations have different medium term consequences. If the supply interpretation is correct then the current slowdown is associated with at least a permanent level shift of GDP. In case the demand interpretation holds, a cyclical recovery can be expected and GDP returns to the historic trend line.

A. Designing the simulation experiment

Supply shock: It is assumed that the decline in growth rates is temporary and that TFP growth returns back to pre 2001 growth rates. The supply shock is generated by a 1% reduction of TFP growth over a period of three years. After three years, TFP growth returns to the trend in the 90s. Notice, this means a permanent level shift of GDP.

Demand shock: It is assumed that private consumption declines exogenously at an increasing rate, starting with 1% of GDP in 2001 and ending with 4% at the end of 2003. Similarly for investment which is down by 0.5% of GDP in 2001 and where the shock ends with 2% at the end of 2003. Both shocks are reversed after three years in order to stress the pure cyclical nature of the economic downturn.

Both types of shocks are analyzed under two alternative fiscal rules:

- *Fiscal rule 1- No SGP:* Full working of automatic stabilizers (possibly violating the 3% deficit ceiling), which means no change in expenditure levels except for unemployment benefits and no change in tax rates. In order to avoid long run unsustainability, a debt rule is invoked after ten years which adjusts capital and corporate taxes in such a way as to stabilize the level of debt attained after ten years.
- *Fiscal rule 2- SGP:* Strict adherence to the 3% limit. This is achieved by a reduction in government spending in the recession.

B. Simulation results

1. Supply shock scenario

a) Results for Germany[33]

No SGP scenario:

- The growth rate shock lasts for three years and then returns to the historical growth rate.[34] That means potential and actual GDP is permanently down. With government expenditure and receipts hardly changed, this means that the fiscal deficit exceeds the 3% ceiling. Since the fiscal adjustment only occurs after ten years the deficit remains high and leads to an accumulation of government debt as a % of GDP by about 15% points.[35] Stabilisation of the government budget is eventually achieved via a tax increase. The additional tax burden is shared equally by capital and labour taxes which are increased by 2.5% points each.
- The supply shock has clear adverse short term effects on growth. Interestingly growth never returns fully to the historic growth path. This is related to the two negative long run effects of this policy, namely higher real interest rates and a larger tax burden[36] and the fact that the increase in taxes as well as the permanent increase in interest rates is understood by the private sector.

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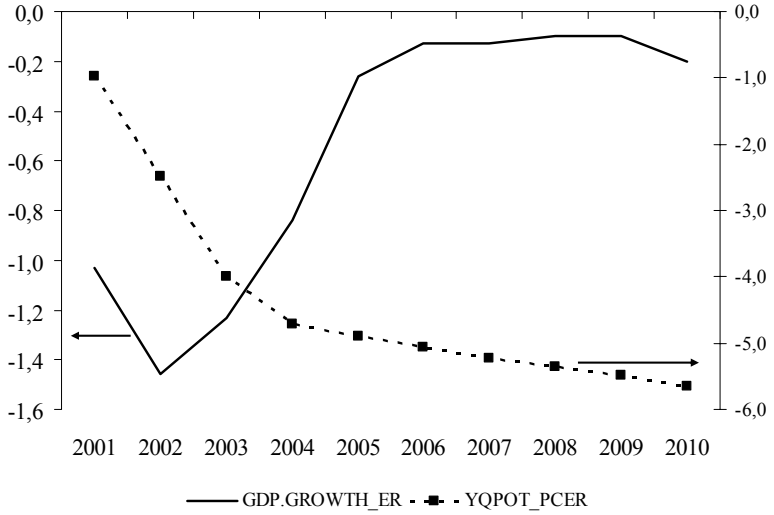
[33] We only present results for Germany and Austria (as a representative neighbouring country). Results for France and Italy are similar.

[34] See Figure 4 and Table I.A in the Appendix B.

[35] See Figure 5.

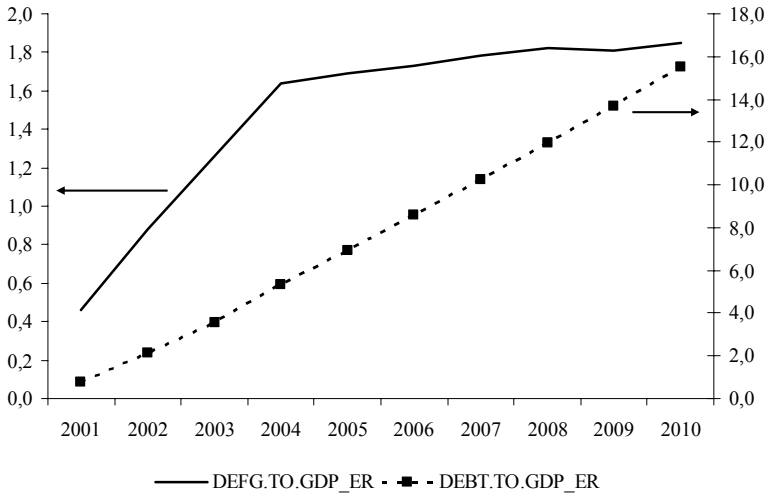
[36] The interest rate effect of a permanent increase of Government debt by 10% points is below ten basis points and is therefore at the lower end of available estimates.

Figure 4: Germany: GDP growth and potential output level after a TFP shock of 1% over 3 years



Source: Own simulations with the QUEST model.

Figure 5: Germany: Budget deficit (DEFTG) and debt to GDP ratio after the 3 years TFP shock



Source: Own simulations with the QUEST model.

Other features of the adjustment are the strong response of investment and consumption to the permanent output loss[37] and the anticipation of higher taxes. The strong response of private demand leads to an improvement in the trade balance. Also because of the negative response of aggregate demand the exchange rate depreciates initially, followed by an appreciation in the longer run because of the permanent decline in domestic output. The combination of negative supply and (induced) negative demand shock implies that inflation does not pick up strongly.

Alternative or SGP scenario:

- Fiscal policy responds to the slowdown in Germany, France and Italy with a rapid adjustment of government expenditure in order to stabilize government debt at the pre shock level. This is the response of a country which is close to 3% deficit and is then hit by a negative shock, i.e. there is no room for countercyclical fiscal policies.

Economic interpretation of the SGP results in comparison with those of no SGP:

- Obeying the SGP rules would have resulted in 1 percentage point higher potential output level in the medium to long-run.[38] The SGP approach would be only worse than the no SGP strategy in the first year of fiscal adjustment by around 0.1 percentage points. Thereafter it results permanently in a growth bonus of 0.1 percentage points annually.[39] In addition to more growth the SGP strategy would have resulted in an improvement of the budgetary situation in Germany: the budget deficit is reduced and the debt to GDP ratio increases only by 1 ½ percentage points, resulting in a better performance compared to the no SGP strategy as far as the debt to GDP ratio is concerned by around 14 to 15 percentage points.[40]

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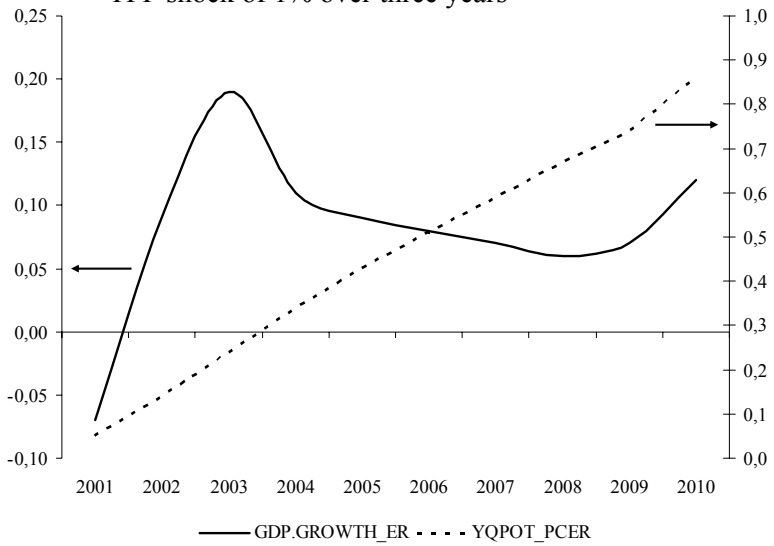
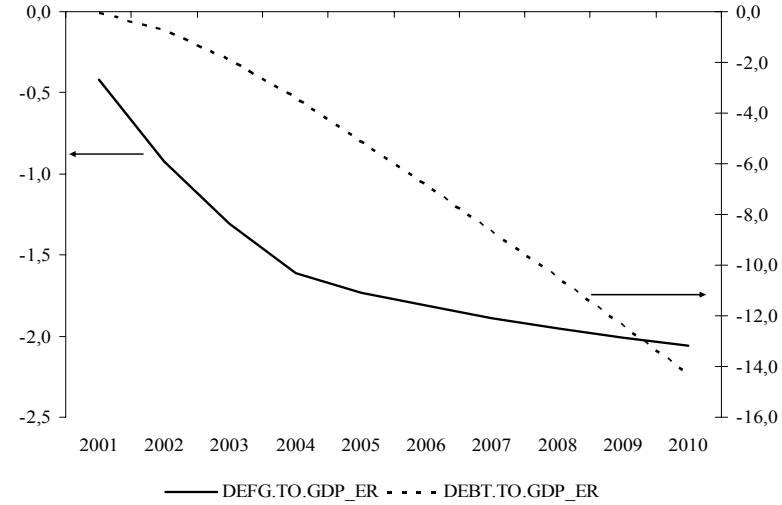
37 See Figure 4.
38 See Figure 6 and Tables I.B and I.C in the Appendix B.
39 See Figure 6.
40 See Figure 7.

Figure 6: Germany: Comparing the SGP with the no SGP scenario results: GDP growth and potential output level after a TFP shock of 1% over three years



Source: Own simulations with the QUEST model.

Figure 7: Germany: Comparing the SGP with the no SGP scenario results: Budget deficit (DEFTG) and debt to GDP ratio after the three years TFP shock



Source: Own simulations with the QUEST model.

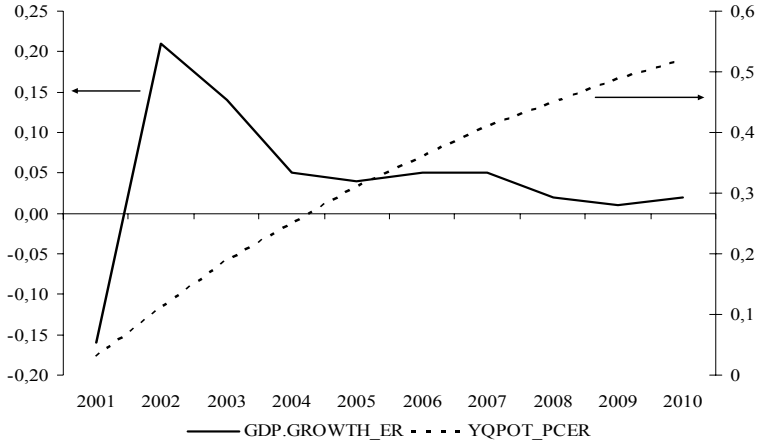
b) Spill overs to neighbors – The case of Austria

The current SGP is looking primarily on the performance of a single Euro area country. This might be acceptable when evaluating a small country. If, however, a large country is scrutinized one should also consider the potential spill-over effects a large country might have. In order to study these additional effects we look at the outcome of the fiscal policy strategies in the three large Euro area countries on its neighbors. In order to make the presentation as simple as possible we only report the effects in Austria because Austria is highly connected with Germany and Italy and hence the spill-over effects are highest in this country.

Again the SGP strategy beats the no SGP fiscal approach. Only in the first year Austria would have suffered a small loss in real GDP growth by 0.2 percentage points. Thereafter, however the effects are always better in the SGP case.[41] Also potential output would be higher in the SGP scenario by ½ percentage points in the medium to long run.

The budgetary position would improve in Austria if the three largest Euro area countries would stick to the SGP strategy in order to overcome the economic crisis since 2001.[42]

Figure 8: Austria: Comparing the SGP with the no SGP scenario results: GDP growth and potential output level after a TFP shock of 1% over three years

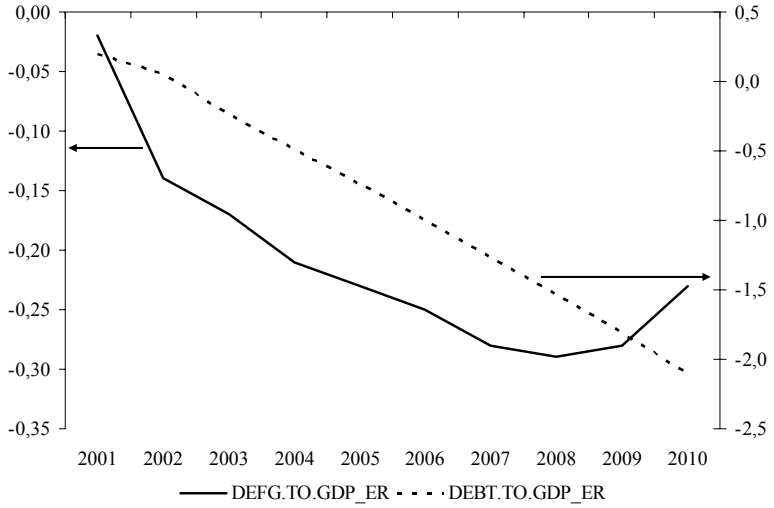


Source: Own simulations with the QUEST model.

[41] See Figure 8 and Table I.D in the Appendix B.

[42] See Figure 9.

Figure 9: Austria: Comparing the SGP with the no SGP scenario results: Budget deficit (DEFTG) and debt to GDP ratio after the three years TFP shock



Source: Own simulations with the QUEST model.

2. Demand shock scenario

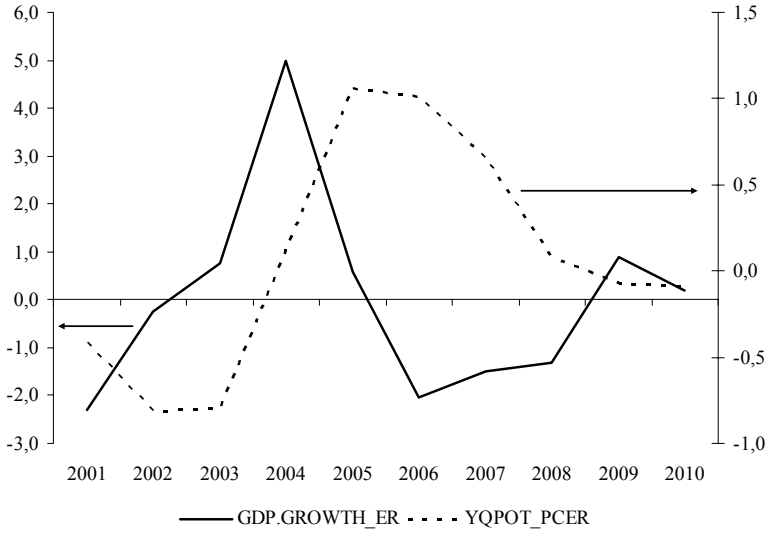
a) Results for Germany

No SGP scenario:

- We explore the following scenario: A group of countries (notably Germany) has been hit by a negative (private) demand shock, which leads to a reduction in GDP over three years (similar in magnitude to the decrease under the supply scenario). Notice, the shock is designed to be a typical demand shock (i.e. the shock is temporary!); this means that the recession is relatively short lived and investment recovers strongly in the third year.[43] A second feature which we want to highlight in this scenario is that not only is the negative demand shock temporary but it is followed by a positive demand shock after three years. In other words we want to stress a typical cyclical downturn with this scenario. This creates additional room for countercyclical fiscal policy, since any debt accumulated over the first three years will be eliminated (by a corresponding countercyclical policy in the following boom period).

[43] See Figure 10 and Table II.A in the Appendix B.

Figure 10: Germany: GDP growth and potential output level after a demand shock

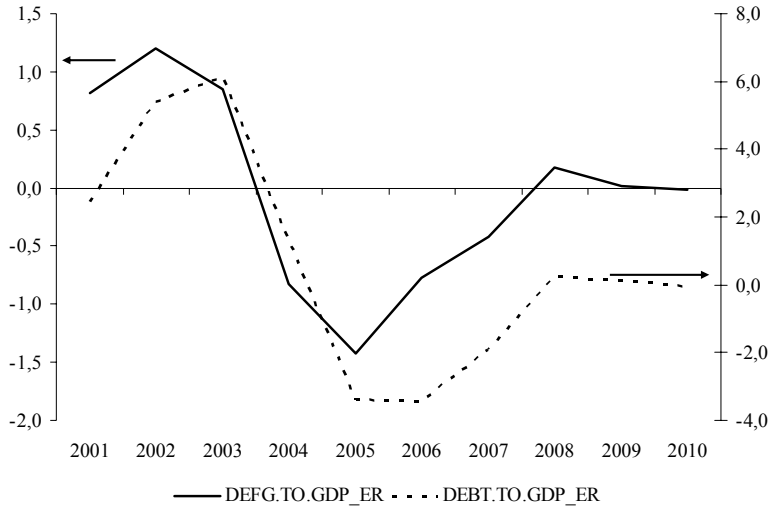


Source: Own simulations with the QUEST model.

The shock originates from private consumption. However since it leads to a decline in prices and a rise in real interest rates it also has negative implications for investment. The exchange rate starts to depreciate because of the negative demand shock in the Euro area as a whole. Importantly: the design of the shock experiment does not lead to a build up of debt with a strong countercyclical policy.[44]

[44] See Figure 11.

Figure 11: Germany: Budget deficit (DEFTG) and debt to GDP ratio after a demand shock



Source: Own simulations with the QUEST model.

SGP scenario:

- Here we assume that the short-term demand shock is adjusted with a SGP-like fiscal policy stance. That means that the short-term deterioration in the budgetary situation is counteracted by a cut in public expenditures.

Comparing the two demand shock scenarios with each other:

- With a temporary demand shock, countercyclical fiscal policy is more effective in stabilising the economy, though the fiscal multiplier[45] remains relatively small (below 50% of the change in the deficit). But, as can be seen from the comparison between the SGP and No SGP scenario, short run output stabilisation is achieved with practically no cost in terms of future output losses.[46] Also the budgetary performance is balanced in the medium to long-run.[47] Fiscal stabilisation is more effective in this case since the shock and therefore the fiscal response is only of a temporary nature. Because of the consumption smoothing motive of households, private con-

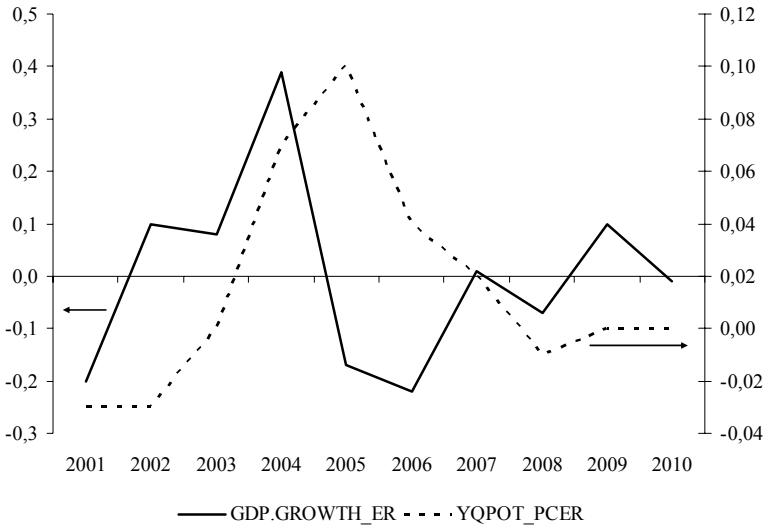
[45] There are several studies dealing with the importance of automatic stabilizers in Europe; see *Al-Eyd et al.* (2004), *Andrés/Doménech* (2003); *Barrell/Pina* (2004).

[46] See Figure 12 and the Tables II.B and II.C in the Appendix B.

[47] See Figure 13.

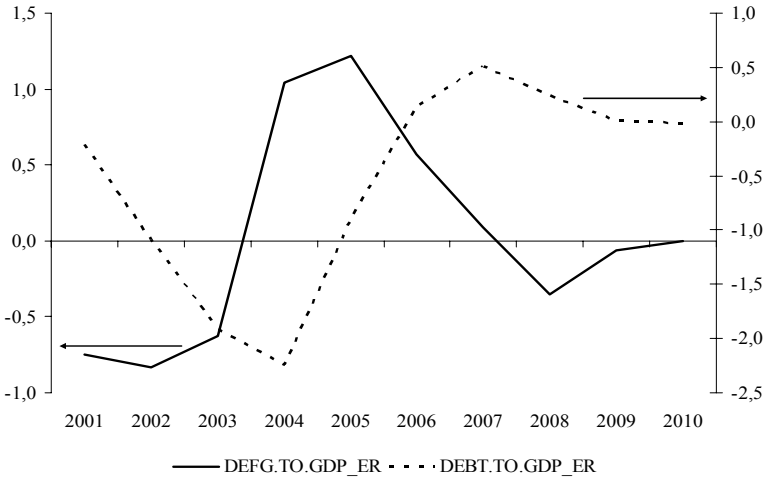
sumption responds less to a temporary fiscal shock. Secondly, there are no long run adverse income effects.

Figure 12: Germany: Comparing the SGP with the no SGP scenario results: GDP growth and potential output level after a demand shock



Source: Own simulations with the QUEST model.

Figure 13: Germany: Comparing the SGP with the no SGP scenario results: Budget deficit (DEFTG) and debt to GDP ratio after a demand shock

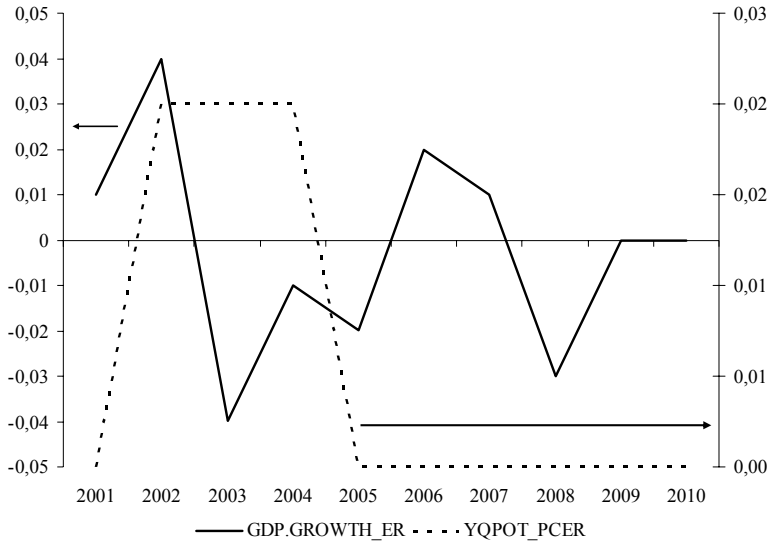


Source: Own simulations with the QUEST model.

b) Spill overs to neighbors – The case of Austria

Due to the small net effects in the three large Euro area countries the net spill-over effect (SGP minus no SGP strategy) after a demand shock in the large countries is neutral in the medium or long-run. This is the case in terms of real GDP[48] as for the budgetary performance.[49]

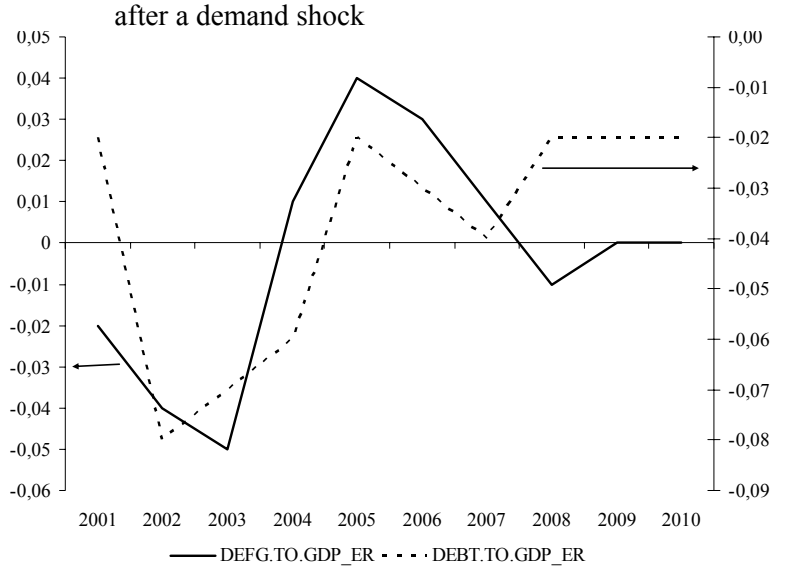
Figure 14: Austria: Comparing the SGP with the no SGP scenario results: GDP growth and potential output level after a demand shock



Source: Own simulations with the QUEST model.

[48] See Figure 14 and the Table II.D in the Appendix B.
[49] See Figure 15.

Figure 15: Austria: Comparing the SGP with the no SGP scenario results: Budget deficit (DEFTG) and debt to GDP ratio after a demand shock



Source: Own simulations with the QUEST model.

V. Conclusions

In this paper we tried to study the advantage or disadvantage of applying the SGP fiscal rule in the case of a sluggish growth period which dominated the economic situation in Europe in the years after 2001. The debate about "refocusing the SGP" tried to improve the Pact exactly in view of the most recent bad experiences in France and Germany, struggling with the task to comply with the 3% deficit hurdle in the light of a slow but still positive growth over several years. The reform aims at improving the SGP in the following areas:[50] "(i) placing more focus on debt and sustainability in the surveillance of budgetary positions; (ii) allowing for more country-specific circumstances in defining the medium-term objectives of "close to balance or in surplus"; (iii) considering economic circumstances and developments in the implementation of the Excessive Deficit Procedure; (iv) ensuring earlier actions to correct inadequate budgetary developments."

With the Quest model we reproduced the downturn of the European economy since 2001 assuming two extreme interpretations: a)

[50] See *European Commission* (2004b) p.3.

on the one hand it could have been a consequence of a negative supply shock (TFP decline over three years) or b) a negative aggregate demand shock (reluctant consumption and investment demand) could have caused the slowdown. In any case we implemented these two shock scenarios in the three largest Euro area countries – France, Germany and Italy.

From our exercise we can draw the following tentative conclusions:

- *Supply shocks*

Obeying to a rule which forces the debt level back to the pre recession level (via cuts in government expenditure) gives the better permanent results (e.g. as measured by changes in private consumption or real GDP). This is in line with the SGP fiscal rules.

There is however a "small" cost in terms of current year output losses. This is to some extent model dependent and one could consider a sensitivity analysis with a few modifications to the model which make it less forward looking.

The SGP type rule is more favorable for neighbor countries, at least seen from a permanent perspective.

The long run effects of a lax fiscal policy response (no SGP rule), in terms of higher distortionary taxes and higher real interest rates are sizeable.

- *Demand Shocks*

With pure temporary demand shocks (which are followed by demand shocks going in the opposite direction) countercyclical fiscal stabilization (the no SGP scenario) does not seem to be harmful but to the contrary can contribute to stabilizing the economy.

A final judgment on fiscal rules and the SGP in particular must therefore be based on an analysis of the nature of recessions in the euro area. If recessions are fairly symmetric cyclical phenomena (followed by a boom of equal size) then countercyclical policies may be a good idea. If one believes that recessions in the euro area are of a more asymmetric nature, i.e. the economy does not fully return to the pre recession trend, then a more restrictive fiscal framework (the SGP scenario) may be more optimal.

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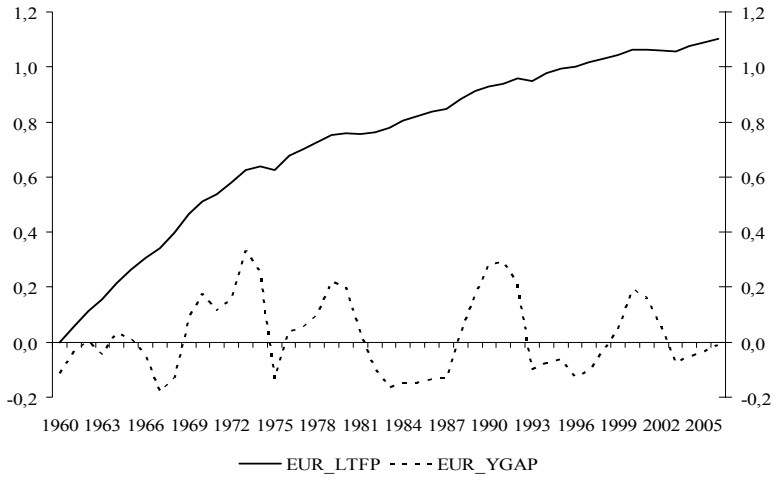
Appendix A: Some facts on the nature of recessions in the Euro area:

Recessions and Productivity trends - Is there a level/growth shift after recessions?

- The following Figure A1 suggests that the supply interpretation is more correct for the euro area. Productivity growth has a concave shape and it is noticeable that trend productivity has a tendency to change direction right after recessions. Concerning the current situation, long period of strong growth would be required to bring the economy back to the 90s productivity trajectory.

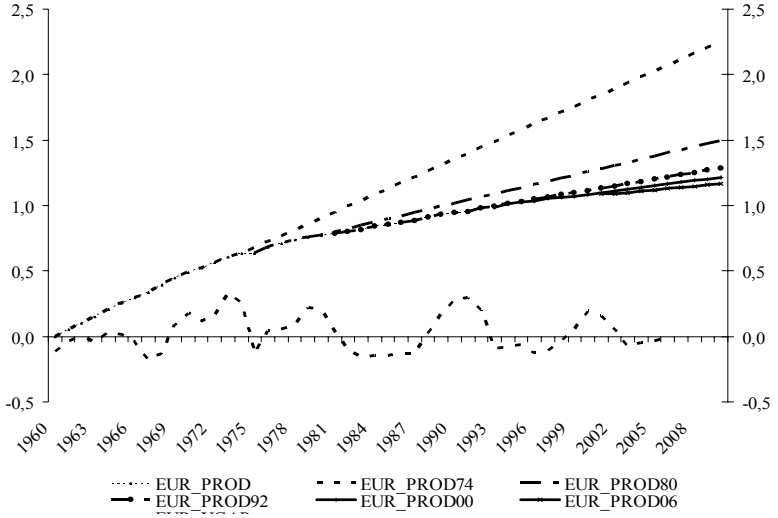
Figure A1: The level of TFP and output gap in the Euro area



Source: *European Commission* (2004c).

The following Figure A2 shows this phenomenon more explicitly for labour productivity. Here we extrapolate forward at each recession (74, 81, 92, 01) the trend between the current and the previous recession the permanent output losses associated with recession episodes.

Figure A2: The level of productivity and output gap in the Euro area



Source: *European Commission* (2004c).

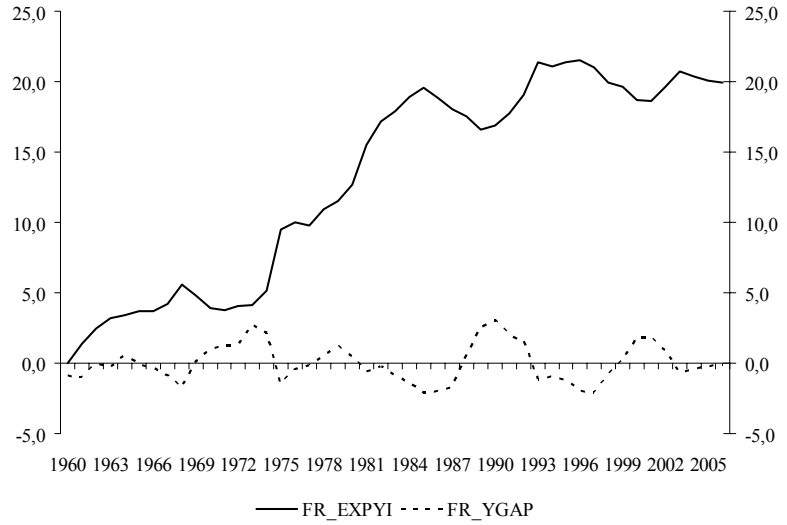
Recessions and government expenditure shares:

- Another feature of fiscal policy that we highlighted in our supply shock scenario is the fact that there is a tendency for the fiscal expenditure share to increase after recessions.[51] This would arise naturally when there is a misperception about the nature of the recession (fiscal policy believes in a cyclical downturn followed by a boom while in fact previous GDP trends are not fully recovered after the recession).
- In the 70s and 80s there was a tendency for countries to come out of a recession with a permanently higher government expenditure share. This has changed in the 90s which was a period with more fiscal discipline. What will happen to government expenditure shares after this recession? DG ECFIN forecasts[52] assume that expenditure shares will not be permanently higher. See the examples of France, Germany and Italy in the Figures A3 to A5.

[51] For such analysis in more detail, see also *Joumard/Kongsrud* (2003) and *Joumard et al.* (2004).

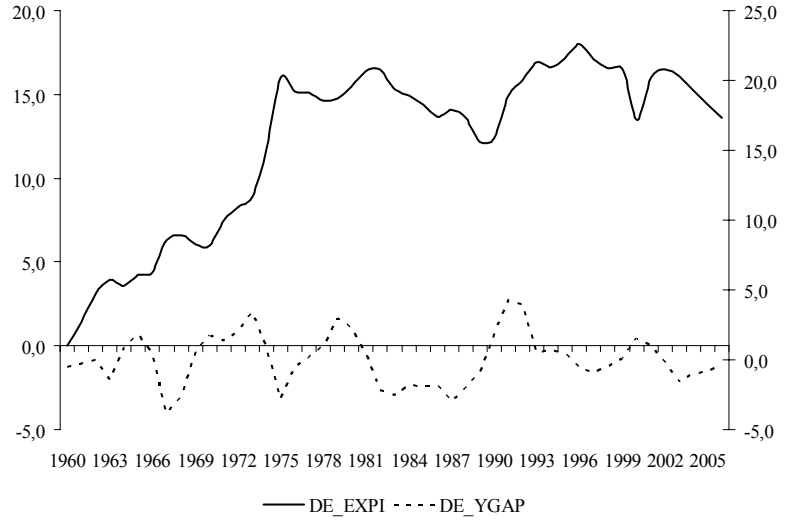
[52] See *European Commission* (2004c).

Figure A3: Public expenditure shares in GDP and output gap in France



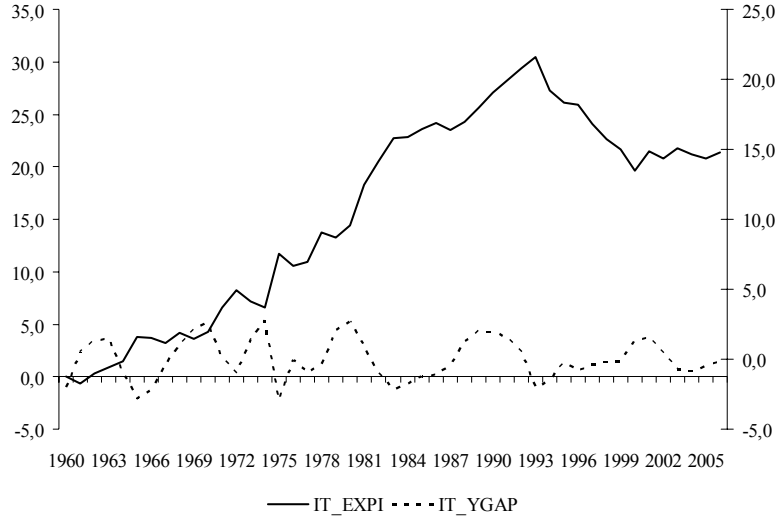
Source: *European Commission* (2004c).

Figure A4: Public expenditure shares in GDP and output gap in Germany



Source: *European Commission* (2004c).

Figure A5: Public expenditure shares in GDP and output gap in Italy



Source: *European Commission* (2004c).

Appendix B: Detailed simulation tables

Table I.A: Supply Shock Scenario: Germany
No SGP = Baseline

	2001A	2002A	2003A	2004A	2010A	2020A	2030A
TOTAL.GDP_PCER	-1.02	-2.46	-3.65	-4.45	-5.34	-7.39	-8.06
YQPOT_PCER	-0.98	-2.49	-3.99	-4.71	-5.65	-7.89	-8.56
PRIV.CONS_PCER	-2.92	-5.32	-5.89	-6.32	-6.44	-7.71	-7.69
PRIV.INV.I_PCER	-1.96	-5.12	-8.50	-10.27	-12.43	-14.34	-13.90
GOV.CONS_PCER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GOV.TRANS_PCER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXPORTS.EX_PCER	0.96	0.45	-0.52	-1.22	-2.13	-4.58	-6.10
EXPORT.PRICES_PCER	0.77	1.27	1.49	1.60	1.54	1.25	1.08
IMPORTS.IM_PCER	-2.87	-5.36	-5.96	-6.22	-6.35	-6.29	-5.34
EMPLOYMENT_PCER	-0.11	-0.1	-0.10	-0.03	0.22	-0.89	-0.75
REAL.WAGE.COSTS_PCER	-0.74	-2.36	-3.77	-4.71	-5.72	-7.01	-7.80
PRICE.LEVEL_PCER	0.11	0.45	0.90	1.17	1.40	1.91	2.27
CONS.PRICE.LEVEL_PCER	0.55	0.81	1.12	1.31	1.37	1.41	1.47
IMPORT.PRICES_PCER	2.46	2.48	2.10	1.91	1.24	-0.68	-1.89
.NEER.PM1_PCER	2.24	2.60	2.24	1.94	1.34	-0.63	-1.85
DOLLAR.EXCH.RATE_PCER	6.37	6.15	5.42	5.04	3.59	0.19	-1.95
REER.PM.P_PCER	2.35	2.02	1.19	0.73	-0.16	-2.54	-4.07
LAB.TAX.REV.NOM_PCER	-0.73	-2.08	-3.01	-3.62	-4.19	-0.28	-0.64
VAT.TAX.REV.NOM_PCER	-2.39	-4.55	-4.83	-5.09	-5.16	-6.42	-6.33
GDP.GROWTH_ER	-1.03	-1.46	-1.23	-0.84	-0.20	-0.10	-0.05
INV.GDP_ER	-0.21	-0.57	-1.09	-1.36	-1.69	-1.63	-1.30
SHORT.RATE_ER	0.03	-0.55	-0.48	-0.01	-0.26	-0.05	-0.01
INFLATION.PGDP_ER	0.11	0.33	0.44	0.27	-0.00	0.04	0.03
INFLATION.PC_ER	0.55	0.26	0.30	0.19	-0.05	0.01	0.01
.INF.TARGET_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.INF.GAP_ER	0.21	0.40	0.44	0.15	-0.01	0.04	0.03
LONG.RATE.10YRS_ER	-0.16	-0.20	-0.16	-0.12	-0.13	-0.03	0.01
REAL.SHORT.RATE_ER	-0.24	-0.98	-0.87	-0.09	-0.25	-0.09	-0.04
VAT_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TL_ER	0.00	0.00	0.00	0.00	0.00	2.50	2.50
TC_ER	0.00	0.00	0.00	0.00	0.00	2.50	2.50
DEBT.TO.GDP_ER	0.75	2.11	3.58	5.30	15.49	17.19	17.12
DEFG.TO.GDP_ER	0.46	0.88	1.26	1.64	1.85	0.05	0.04
TRADE.BAL.TO.GDP_ER	0.78	1.63	1.77	1.82	1.75	1.34	0.74

Note: _PCER = cumulative percentage difference from base; _ER = absolute difference from base.

Table I.B: Supply Shock Scenario: Germany
SGP Scenario

	2001A	2002A	2003A	2004A	2010A	2020A	2030A
TOTAL.GDP_PCER	-1.10	-2.45	-3.45	-4.16	-4.58	-5.02	-5.29
YQPOT_PCER	-0.93	-2.36	-3.75	-4.38	-4.83	-5.28	-5.54
PRIV.CONS_PCER	-2.00	-3.80	-4.32	-4.75	-4.91	-4.82	-4.66
PRIV.INV.I_PCER	0.99	2.70	5.22	6.45	6.42	6.29	6.10
GOV.CONS_PCER	1.09	2.44	3.46	4.19	4.58	5.01	5.29
GOV.TRANS_PCER	1.11	2.44	3.45	4.16	4.58	5.02	5.29
EXPORTS.EX_PCER	0.39	1.07	1.62	2.29	3.25	4.01	0.06
EXPORT.PRICES_PCER	-0.12	-0.14	0.02	0.15	0.27	0.25	0.23
IMPORTS.IM_PCER	-1.26	-2.60	-3.17	-3.45	-3.35	-2.99	-2.61
EMPLOYMENT_PCER	-0.06	-0.03	0.08	0.17	0.47	0.57	0.58
REAL.WAGE.COSTS_PCER	-0.95	-2.61	-3.81	-4.62	-5.37	-5.87	-6.14
PRICE.LEVEL_PCER	-0.06	0.01	0.36	0.62	0.90	1.09	1.24
CONS.PRICE.LEVEL_PCER	-0.11	-0.09	0.14	0.32	0.48	0.54	0.60
IMPORT.PRICES_PCER	-0.32	-0.54	-0.81	-0.92	-1.17	-1.69	-2.08
.NEER.PM1_PCER	-0.28	-0.43	-0.72	-0.91	-1.14	-1.67	-2.07
DOLLAR.EXCH.RATE_PCER	-0.42	-0.70	-1.22	-1.39	-1.72	-2.31	-2.74
REER.PM.P_PCER	-0.26	-0.54	-1.17	-1.54	-2.05	-2.75	-3.28
LAB.TAX.REV.NOM_PCER	-1.06	-2.63	-3.38	-3.86	-4.07	-4.31	-4.43
VAT.TAX.REV.NOM_PCER	-2.11	-3.89	-4.19	-4.45	-4.45	-4.30	-4.09
GDP.GROWTH_ER	-1.10	-1.38	-1.03	-0.74	-0.08	-0.04	-0.02
INV.GDP_ER	0.02	-0.05	-0.38	-0.52	-0.41	-0.27	-0.17
SHORT.RATE_ER	-0.06	-0.52	-0.37	0.04	-0.09	-0.06	-0.05
INFLATION.PGDP_ER	-0.06	0.06	0.35	0.26	0.00	0.02	0.01
INFLATION.PC_ER	-0.11	0.01	0.23	0.18	-0.02	0.01	0.00
.INF.TARGET_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.INF.GAP_ER	-0.09	0.20	0.39	0.15	-0.01	0.02	0.01
LONG.RATE.10YRS_ER	-0.14	-0.14	-0.10	-0.07	-0.07	-0.05	-0.05
REAL.SHORT.RATE_ER	-0.01	-0.80	-0.73	-0.06	-0.08	-0.08	-0.06
VAT_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TL_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TC_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DEBT.TO.GDP_ER	0.70	1.40	1.67	1.86	1.15	0.06	-0.03
DEFG.TO.GDP_ER	0.04	-0.03	-0.05	0.03	-0.22	-0.18	-0.15
TRADE.BAL.TO.GDP_ER	0.53	0.90	1.05	1.10	0.94	0.60	0.30

Note: _PCER = cumulative percentage difference from base; _ER = absolute difference from base.

Table I.C: Supply Shock Scenario: Germany
Comparison SGP Scenario (I.B) minus No SGP Scenario (I.A)

	2001A	2002A	2003A	2004A	2010A	2020A	2030A
TOTAL.GDP_PCER	-0.07	0.01	0.21	0.31	0.80	2.56	3.01
YQPOT_PCER	0.05	0.14	0.24	0.34	0.86	2.83	3.30
PRIV.CONS_PCER	0.95	1.61	1.67	1.68	1.63	3.14	3.28
PRIV.INV.I_PCER	0.99	2.54	3.59	4.26	6.86	9.39	9.05
GOV.CONS_PCER	-1.09	-2.44	-3.46	-4.19	-4.58	-5.01	-5.29
GOV.TRANS_PCER	-1.11	-2.44	-3.45	-4.16	-4.58	-5.02	-5.29
EXPORTS.EX_PCER	-0.89	-0.84	-0.56	-0.40	-0.16	1.39	2.23
EXPORT.PRICES_PCER	-0.88	-1.40	-1.45	-1.42	-1.25	-0.99	-0.84
IMPORTS.IM_PCER	1.67	2.92	2.97	2.95	3.20	3.52	2.88
EMPLOYMENT_PCER	0.05	0.12	0.18	0.21	0.25	1.47	1.34
REAL.WAGE.COSTS_PCER	-0.22	-0.25	-0.03	0.09	0.37	1.22	1.80
PRICE.LEVEL_PCER	-0.17	-0.44	-0.53	-0.54	-0.50	-0.81	-1.01
CONS.PRICE.LEVEL_PCER	-0.65	-0.90	-0.97	-0.98	-0.87	-0.85	-0.86
IMPORT.PRICES_PCER	-2.72	-2.95	-2.85	-2.78	-2.38	-1.02	-0.20
IMPORT.PRICES.USD_PCER	3.91	3.75	3.68	3.57	2.89	1.52	0.61
.NEER.PM1_PCER	-2.47	-2.95	-2.90	-2.80	-2.45	-1.05	-0.23
DOLLAR.EXCH.RATE_PCER	-6.38	-6.46	-6.30	-6.12	-5.12	-2.50	-0.80
REER.PM.P_PCER	-2.55	-2.52	-2.33	-2.25	-1.89	-0.21	0.82
LAB.TAX.REV.NOM_PCER	-0.33	-0.57	-0.38	-0.24	0.12	-4.04	-3.82
VAT.TAX.REV.NOM_PCER	0.29	0.69	0.68	0.68	0.74	2.26	2.39
GDP.GROWTH_ER	-0.07	0.09	0.19	0.11	0.12	0.06	0.03
INV.GDP_ER	0.23	0.52	0.71	0.85	1.28	1.36	1.14
SHORT.RATE_ER	-0.10	0.03	0.11	0.04	0.17	-0.01	-0.04
INFLATION.PGDP_ER	-0.17	-0.27	-0.09	-0.01	0.01	-0.02	-0.02
INFLATION.PC_ER	-0.65	-0.25	-0.07	-0.01	0.03	0.00	-0.00
.INF.TARGET_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.INF.GAP_ER	-0.30	-0.20	-0.04	0.01	0.00	-0.02	-0.02
LONG.RATE.10YRS_ER	0.02	0.06	0.06	0.06	0,06	-0.02	-0.06
REAL.SHORT.RATE_ER	0.23	0.18	0.14	0.03	0.17	0.01	-0.02
VAT_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TL_ER	0.00	0.00	0.00	0.00	0.00	-2.50	-2.50
TC_ER	0.00	0.00	0.00	0.00	0.00	-2.50	-2.50
DEBT.TO.GDP_ER	-0.06	-0.71	-1.92	-3.43	-14.34	-17.12	-17.16
DEFG.TO.GDP_ER	-0.42	-0.92	-1.31	-1.61	-2.06	-0.23	-0.19
TRADE.BAL.TO.GDP_ER	-0.25	-0.73	-0.72	-0.72	-0.80	-0.74	-0.44

Note: _PCER = cumulative percentage difference from base; _ER = absolute difference from base.

Table I.D: Supply Shock Scenario:
Spill overs to neighbors – Austria: Comparison SGP minus No SGP

	2001A	2002A	2003A	2004A	2010A	2020A	2030A
TOTAL.GDP_PCER	-0.16	0.05	0.19	0.24	0.43	0.82	1.01
YQPOT_PCER	0.03	0.11	0.19	0.25	0.52	0.88	1.07
PRIV.CONS_PCER	0.87	1.96	2.17	2.24	2.19	2.41	2.14
PRIV.INV.I_PCER	0.70	1.65	2.06	2.31	2.63	2.72	2.76
GOV.CONS_PCER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GOV.TRANS_PCER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXPORTS.EX_PCER	-0.55	-0.45	-0.32	-0.25	-0.06	0.40	0.65
EXPORT.PRICES_PCER	-0.83	-1.26	-1.21	-1.13	-0.90	0.17	0.58
IMPORTS.IM_PCER	1.06	2.28	2.52	2.60	2.62	3.02	2.82
EMPLOYMENT_PCER	0.02	0.08	0.11	0.12	0.09	0.09	0.06
REAL.WAGE.COSTS_PCER	-0.23	-0.16	0.06	0.12	0.36	0.78	1.00
PRICE.LEVEL_PCER	-0.17	-0.32	-0.27	-0.20	-0.06	0.85	1.04
CONS.PRICE.LEVEL_PCER	-0.72	-0.91	-0.88	-0.85	-0.66	0.23	0.53
IMPORT.PRICES_PCER	-1.90	-2.26	-2.23	-2.18	-1.90	-1.09	-0.60
IMPORT.PRICES.USD_PCER	4.79	4.48	4.34	4.20	3.40	1.44	0.20
.NEER.PM1_PCER	-1.54	-2.24	-2.25	-2.19	-1.94	-1.12	-0.62
DOLLAR.EXCH.RATE_PCER	-6.38	-6.46	-6.30	-6.12	-5.12	-2.50	-0.80
REER.PM.P_PCER	-1.73	-1.94	-1.97	-1.98	-1.84	-1.93	-1.63
LAB.TAX.REV.NOM_PCER	-0.38	-0.40	-0.10	0.03	0.40	1.73	2.12
VAT.TAX.REV.NOM_PCER	0.15	1.03	1.27	1.37	1.52	2.65	2.68
GDP.GROWTH_ER	-0.16	0.21	0.14	0.05	0.02	0.03	0.01
INV.GDP_ER	0.22	0.39	0.46	0.53	0.56	0.45	0.40
SHORT.RATE_ER	-0.10	0.03	0.11	0.04	0.17	-0.01	-0.04
INFLATION.PGDP_ER	-0.17	-0.16	0.06	0.07	0.11	0.03	0.01
INFLATION.PC_ER	-0.72	-0.20	0.03	0.03	0.10	0.04	0.02
.INF.TARGET_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.INF.GAP_ER	-0.28	-0.04	0.08	0.05	0.16	0.03	0.01
LONG.RATE.10YRS_ER	0.02	0.06	0.06	0.06	0.06	-0.02	-0.06
REAL.SHORT.RATE_ER	0.17	0.01	0.04	0.00	-0.02	-0.03	-0.06
VAT_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TL_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TC_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DEBT.TO.GDP_ER	0.20	0.05	-0.24	-0.49	-2.11	-0.32	-0.02
DEFG.TO.GDP_ER	-0.02	-0.14	-0.17	-0.21	-0.23	0.13	0.02
TRADE.BAL.TO.GDP_ER	-0.30	-0.89	-0.97	-1.01	-0.94	-0.73	-0.51

Note: _PCER = cumulative percentage difference from base; _ER = absolute difference from base.

Table II.A: Demand Shock Scenario: Germany
No SGP = Baseline

	2001A	2002A	2003A	2004A	2010A	2020A	2030A
TOTAL.GDP_PCER	-2.26	-2.52	-1.76	3.28	0.00	-0.21	-0.23
YQPOT_PCER	-0.42	-0.81	-0.80	0.12	-0.09	-0.23	-0.25
PRIV.CONS_PCER	-2.58	-6.29	-11.16	-4.32	-0.21	-0.61	-0.97
PRIV.INV.I_PCER	-4.36	-3.59	8.36	17.55	-0.48	-0.79	-0.41
GOV.CONS_PCER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GOV.TRANS_PCER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXPORTS.EX_PCER	1.35	4.97	5.72	2.29	0.21	0.23	0.39
EXPORT.PRICES_PCER	-0.60	-2.50	-3.18	-1.60	-0.00	0.03	-0.02
IMPORTS.IM_PCER	0.41	-1.97	-6.01	-4.63	-0.45	-0.71	-0.94
EMPLOYMENT_PCER	-0.49	-0.81	-0.81	0.10	-0.00	-0.03	-0.04
REAL.WAGE.COSTS_PCER	-0.61	-1.89	-1.18	0.78	0.03	-0.19	-0.20
PRICE.LEVEL_PCER	-1.23	-4.28	-5.04	-2.01	-0.11	-0.09	-0.20
CONS.PRICE.LEVEL_PCER	-0.81	-3.26	-3.93	-1.82	-0.04	-0.02	-0.09
IMPORT.PRICES_PCER	1.10	1.65	1.03	-1.07	0.24	0.30	0.35
IMPORT.PRICES.USD_PCER	-1.33	-1.79	-1.61	0.59	-0.15	-0.17	-0.20
.NEER.PM1_PCER	0.00	1.65	1.42	0.28	0.25	0.29	0.35
DOLLAR.EXCH.RATE_PCER	2.46	3.50	2.68	-1.67	0.39	0.47	0.55
REER.PM.P_PCER	2.36	6.19	6.39	0.96	0.35	0.39	0.55
LAB.TAX.REV.NOM_PCER	-2.31	-6.85	-6.92	-1.17	-0.08	-0.31	-0.44
VAT.TAX.REV.NOM_PCER	-3.37	-9.34	-14.65	-6.17	-0.25	-0.62	-1.06
GDP.GROWTH_ER	-2.29	-0.26	0.77	5.00	0.18	-0.01	0.00
INV.GDP_ER	-0.48	-0.23	1.92	2.56	-0.10	-0.12	-0.04
SHORT.RATE_ER	0.23	0.02	-1.88	-1.52	-0.04	0.01	0.01
INFLATION.PGDP_ER	-1.24	-3.17	-0.79	3.05	0.07	-0.01	-0.01
INFLATION.PC_ER	-0.81	-2.52	-0.70	2.13	0.05	-0.01	-0.01
.INF.TARGET_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.INF.GAP_ER	-2.59	-2.57	0.31	5.26	0.14	-0.01	-0.01
LONG.RATE.10YRS_ER	0.03	0.01	0.01	0.20	0.01	0.01	0.01
REAL.SHORT.RATE_ER	2.94	1.94	-2.83	-6.90	-0.17	0.03	0.02
VAT_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TL_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TC_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DEBT.TO.GDP_ER	2.43	5.39	6.12	1.31	0.04	0.03	0.01
DEFG.TO.GDP_ER	0.82	1.20	0.85	-0.83	-0.01	-0.02	-0.01
TRADE.BAL.TO.GDP_ER	-0.11	1.17	2.70	2.22	0.16	0.25	0.34

Note: _PCER = cumulative percentage difference from base; _ER = absolute difference from base.

Table II.B: Demand Shock Scenario: Germany
SGP Scenario

	2001A	2002A	2003A	2004A	2010A	2020A	2030A
TOTAL.GDP_PCER	-2.46	-2.61	-1.78	3.67	0.02	-0.21	-0.23
YQPOT_PCER	-0.45	-0.84	-0.80	0.19	-0.09	-0.23	-0.25
PRIV.CONS_PCER	-2.80	-6.57	-11.32	-4.03	-0.18	-0.57	-0.93
PRIV.INV.I_PCER	-3.95	-2.62	9.29	17.21	-0.48	-0.80	-0.41
GOV.CONS_PCER	-2.45	-2.59	-1.77	3.66	0.02	-0.21	-0.23
GOV.TRANS_PCER	-2.50	-2.61	-1.78	3.66	0.02	-0.21	-0.23
EXPORTS.EX_PCER	1.42	5.19	5.90	2.27	0.21	0.23	0.40
EXPORT.PRICES_PCER	-0.63	-2.62	-3.30	-1.62	0.01	0.04	-0.02
IMPORTS.IM_PCER	0.15	-2.28	-6.21	-4.26	-0.43	-0.71	-0.94
EMPLOYMENT_PCER	-0.54	-0.87	-0.85	0.15	-0.00	-0.03	-0.04
REAL.WAGE.COSTS_PCER	-0.65	-1.98	-1.20	0.88	0.05	-0.20	-0.20
PRICE.LEVEL_PCER	-1.30	-4.47	-5.21	-2.00	-0.10	-0.09	-0.19
CONS.PRICE.LEVEL_PCER	-0.85	-3.41	-4.08	-1.83	-0.03	-0.01	-0.09
IMPORT.PRICES_PCER	1.15	1.69	1.01	-1.17	0.25	0.31	0.36
IMPORT.PRICES.USD_PCER	-1.41	-1.86	-1.64	0.68	-0.14	-0.17	-0.20
.NEER.PM1_PCER	0.00	1.71	1.42	0.22	0.25	0.31	0.36
DOLLAR.EXCH.RATE_PCER	2.59	3.62	2.70	-1.86	0.39	0.48	0.56
REER.PM.P_PCER	2.48	6.44	6.56	0.84	0.35	0.39	0.55
LAB.TAX.REV.NOM_PCER	-2.47	-7.17	-7.14	-1.01	-0.06	-0.31	-0.43
VAT.TAX.REV.NOM_PCER	-3.64	-9.75	-14.93	-5.91	-0.21	-0.58	-1.01
GDP.GROWTH_ER	-2.49	-0.16	0.86	5.39	0.17	-0.01	0.00
INV.GDP_ER	-0.34	-0.00	2.08	2.43	-0.11	-0.12	-0.03
SHORT.RATE_ER	0.18	-0.05	-1.99	-1.48	-0.03	0.01	0.01
INFLATION.PGDP_ER	-1.31	-3.30	-0.77	3.24	0.10	-0.01	-0.01
INFLATION.PC_ER	-0.86	-2.62	-0.70	2.27	0.07	-0.01	-0.01
.INF.TARGET_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.INF.GAP_ER	-2.73	-2.65	0.37	5.55	0.16	-0.01	-0.01
LONG.RATE.10YRS_ER	0.04	0.02	0.02	0.22	0.01	0.01	0.01
REAL.SHORT.RATE_ER	3.02	1.90	-3.02	-7.13	-0.18	0.03	0.02
VAT_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TL_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TC_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DEBT.TO.GDP_ER	2.21	4.30	4.21	-0.94	-0.05	0.01	0.01
DEFG.TO.GDP_ER	0.07	0.37	0.22	0.21	-0.01	-0.01	-0.01
TRADE.BAL.TO.GDP_ER	-0.02	1.28	2.80	2.08	0.15	0.25	0.34

Note: _PCER = cumulative percentage difference from base; _ER = absolute difference from base.

Table II.C: Demand Shock Scenario: Germany
Comparison SGP Scenario (II.B) minus No SGP Scenario (II.A)

	2001A	2002A	2003A	2004A	2010A	2020A	2030A
TOTAL.GDP_PCER	-0.20	-0.10	-0.02	0.37	0.02	-0.00	-0.00
YQPOT_PCER	-0.03	-0.03	0.00	0.07	0.00	-0.00	-0.00
PRIV.CONS_PCER	-0.23	-0.30	-0.17	0.30	0.03	0.04	0.04
PRIV.INV.I_PCER	0.43	1.01	0.86	-0.29	0.00	-0.01	0.00
GOV.CONS_PCER	-2.45	-2.59	-1.77	3.66	0.02	-0.21	-0.23
GOV.TRANS_PCER	-2.50	-2.61	-1.78	3.66	0.02	-0.21	-0.23
EXPORTS.EX_PCER	0.06	0.21	0.17	-0.02	0.00	0.00	0.00
EXPORT.PRICES_PCER	-0.03	-0.12	-0.13	-0.02	0.01	0.01	0.01
IMPORTS.IM_PCER	-0.26	-0.31	-0.22	0.39	0.02	0.00	0.00
EMPLOYMENT_PCER	-0.05	-0.06	-0.03	0.05	0.00	0.00	0.00
REAL.WAGE.COSTS_PCER	-0.05	-0.09	-0.02	0.10	0.01	-0.00	-0.00
NOM.WAGES_PCER	-0.12	-0.29	-0.20	0.11	0.03	0.01	0.01
BENEFITS_PCER	-0.03	-0.05	0.01	0.08	0.01	-0.00	-0.00
PRICE.LEVEL_PCER	-0.07	-0.20	-0.18	0.01	0.01	0.01	0.01
CONS.PRICE.LEVEL_PCER	-0.05	-0.15	-0.15	-0.01	0.01	0.01	0.01
IMPORT.PRICES_PCER	0.05	0.04	-0.01	-0.11	0.01	0.01	0.01
IMPORT.PRICES.USD_PCER	-0.08	-0.07	-0.04	0.09	0.00	0.00	0.00
.NEER.PM1_PCER	0.00	0.05	0.01	-0.05	0.01	0.01	0.01
DOLLAR.EXCH.RATE_PCER	0.13	0.11	0.03	-0.20	0.00	0.01	0.01
REER.PM.P_PCER	0.12	0.24	0.17	-0.12	-0.01	0.00	0.00
LAB.TAX.REV.NOM_PCER	-0.16	-0.35	-0.24	0.16	0.03	0.01	0.00
VAT.TAX.REV.NOM_PCER	-0.28	-0.45	-0.33	0.28	0.05	0.04	0.04
GDP.GROWTH_ER	-0.20	0.10	0.08	0.39	-0.01	0.00	0.00
INV.GDP_ER	0.14	0.23	0.16	-0.12	-0.00	-0.00	0.00
SHORT.RATE_ER	-0.05	-0.07	-0.11	0.04	0.00	0.00	0.00
INFLATION.PGDP_ER	-0.07	-0.13	0.01	0.18	0.03	-0.00	0.00
INFLATION.PC_ER	-0.05	-0.11	0.00	0.13	0.03	-0.00	0.00
.INF.TARGET_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.INF.GAP_ER	-0.14	-0.07	0.06	0.30	0.02	-0.00	0.00
LONG.RATE.10YRS_ER	0.00	0.01	0.01	0.02	0.00	0.00	0.00
REAL.SHORT.RATE_ER	0.08	-0.03	-0.19	-0.22	-0.00	0.00	0.00
VAT_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TL_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TC_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DEBT.TO.GDP_ER	-0.22	-1.09	-1.91	-2.24	-0.01	-0.03	-0.01
DEFG.TO.GDP_ER	-0.75	-0.83	-0.63	1.04	0.00	0.00	0.00
TRADE.BAL.TO.GDP_ER	0.08	0.12	0.09	-0.14	-0.01	-0.00	0.00

Note: _PCER = cumulative percentage difference from base; _ER = absolute difference from base.

Table II.D: Demand Shock Scenario:
Spill overs to neighbors – Austria: Comparison SGP minus No SGP

	2001A	2002A	2003A	2004A	2010A	2020A	2030A
TOTAL.GDP_PCER	0.01	0.05	0.01	0.00	0.00	-0.00	0.00
YQPOT_PCER	0.00	0.02	0.02	0.02	0.00	-0.00	0.00
PRIV.CONS_PCER	-0.00	0.06	0.05	0.02	-0.00	0.00	0.00
PRIV.INV.I_PCER	0.24	0.43	0.26	-0.27	-0.00	-0.00	0.00
GOV.CONS_PCER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
GOV.TRANS_PCER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
EXPORTS.EX_PCER	-0.06	-0.08	-0.08	0.11	0.00	-0.00	-0.00
EXPORT.PRICES_PCER	0.02	0.03	-0.02	-0.07	0.01	0.01	0.01
IMPORTS.IM_PCER	0.03	0.12	0.09	-0.00	-0.00	0.00	0.00
EMPLOYMENT_PCER	-0.00	0.01	0.00	0.00	0.00	0.00	0.00
REAL.WAGE.COSTS_PCER	0.01	0.03	0.01	-0.00	0.00	-0.00	0.00
NOM.WAGES_PCER	0.02	0.06	-0.01	-0.06	0.01	0.01	0.01
BENEFITS_PCER	0.01	0.02	-0.01	-0.00	0.00	-0.00	-0.00
PRICE.LEVEL_PCER	0.01	0.02	-0.02	-0.06	0.01	0.01	0.01
CONS.PRICE.LEVEL_PCER	0.01	0.00	-0.04	-0.06	0.01	0.01	0.01
IMPORT.PRICES_PCER	0.01	-0.04	-0.07	-0.07	0.01	0.01	0.01
IMPORT.PRICES.USD_PCER	-0.12	-0.15	-0.10	0.13	0.01	0.00	-0.00
.NEER.PM1_PCER	0.00	-0.02	-0.06	-0.08	0.01	0.01	0.01
DOLLAR.EXCH.RATE_PCER	0.13	0.11	0.03	-0.20	0.00	0.01	0.01
REER.PM.P_PCER	0.00	-0.06	-0.05	-0.00	-0.00	-0.00	-0.00
LAB.TAX.REV.NOM_PCER	0.02	0.06	-0.01	-0.06	0.01	0.01	0.01
VAT.TAX.REV.NOM_PCER	0.01	0.06	0.01	-0.04	0.01	0.01	0.01
GDP.GROWTH_ER	0.01	0.04	-0.04	-0.01	0.00	0.00	0.00
INV.GDP_ER	0.06	0.09	0.06	-0.07	-0.00	-0.00	0.00
SHORT.RATE_ER	-0.05	-0.07	-0.11	0.04	0.00	0.00	0.00
INFLATION.PGDP_ER	0.01	0.01	-0.04	-0.04	-0.00	0.00	0.00
INFLATION.PC_ER	0.01	-0.01	-0.04	-0.03	0.00	0.00	0.00
.INF.TARGET_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
.INF.GAP_ER	0.02	-0.01	-0.06	-0.02	0.00	0.00	0.00
LONG.RATE.10YRS_ER	0.00	0.01	0.01	0.02	0.00	0.00	0.00
REAL.SHORT.RATE_ER	-0.07	-0.05	-0.05	0.05	0.00	0.00	0.00
VAT_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TL_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TC_ER	0.00	0.00	0.00	0.00	0.00	0.00	0.00
DEBT.TO.GDP_ER	-0.02	-0.08	-0.07	-0.06	-0.02	-0.00	-0.00
DEFG.TO.GDP_ER	-0.02	-0.04	-0.05	0.01	0.00	0.00	0.00
TRADE.BAL.TO.GDP_ER	-0.05	-0.07	-0.07	0.06	-0.00	-0.00	-0.00

Note: _PCER = cumulative percentage difference from base; _ER = absolute difference from base.