

## **RULES VERSUS FLEXIBILITY - DOES THE STABILITY PACT LIMIT BUDGETARY STABILISERS?**

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### **1 Introduction<sup>1</sup>**

One of the most pressing issues of Economic and Monetary Union for both economists and policymakers is whether monetary union requires closer co-ordination of budgetary policy than currently envisaged by the excessive deficit procedure and the Stability and Growth Pact. Basically, such closer co-ordination may be desirable because of the negative spillovers associated with unsustainable budgetary deficits, because of stabilisation and policy mix purposes or to provide risk insurance. This paper will focus on the relation between the first and the second rationale. Nowadays, most economists acknowledge that the negative externalities of unsustainable deficits justify some restrictions on budgetary policy of individual Member States participating in EMU. At the same time, it has been argued that the fiscal straitjacket of the Stability and Growth Pact unnecessarily limits countries to cushion asymmetric shocks by means of automatic or budgetary fiscal policy (e.g. Goodhart and Smith, 1993; Masson, 1996; Eichengreen and Von Hagen, 1996). Others have argued that the Stability and Growth Pact does not limit countries in pursuing budgetary stabilisation as the

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<sup>1</sup> Any views expressed in this paper are my own and do not represent those of the Dutch Ministry of Finance or OCFEB. However, see also a related article on this topic by Zalm (2000).

Pact explicitly requires Member States to have a budgetary position of close to balance or in surplus. Even stronger, the Pact explicitly requires Member States to strive for a medium term budget balance that leaves sufficient budgetary room for manoeuvre for letting the automatic stabilisers operate over the cycle.

This paper goes one step further by arguing that the Stability Pact – if correctly implemented – may even facilitate stabilisation. The reason is that uncertainty about the sustainability of the budgetary position will limit the leeway for budgetary stabilisers to operate as a stabilisation device. This implies that -- rather than irrelevant or harmful -- the disciplinary incentive offered by the Stability Pact to pursue prudent budgetary policies is even beneficial from a stabilisation point of view. This line of reasoning suggests that the common trade-off between rules (of the Stability Pact to prevent the externalities from unsustainable budget balances) and flexibility (required to stabilise output) does not hold in this case. On the contrary, by enhancing credibility, the former creates the necessary room for the latter.

Against this backdrop, the purpose of this paper is twofold. The main objective is to investigate the relation between budgetary sustainability and budgetary stabilisers. Addressing this question requires estimates of the budgetary stabilisers for the European countries concerned. Here the second (and secondary) purpose of this paper comes into play. By comparing these estimates with existing estimates for US states and regions, it is investigated whether European countries need a federal mechanism like the US in order to generate an adequate degree of (automatic) stabilisation.

The following of this paper is organised as follows. Section 2 briefly touches upon the rationale of having strict, one-size-fits-all, numerical rules for fiscal policy on top of the safeguards already included in the Treaty to prevent (the negative spillovers of) budgetary profligacy. Moreover, it goes more deeply into the relation between budgetary stabilisation and budgetary sustainability.

As to the best of our knowledge calculations on the degree of budgetary stabilisation exist only for a few European countries, section 3 estimates budgetary stabilisers for 13 EU countries. An error correction specification is used to estimate the impact of the output gap on the

budget balance. The outcomes of this exercise are compared with existing estimates for US states. This gives some indication as to whether the intertemporal stabilisation provided for by national budgets is comparable in size with the interregional stabilisation offered by the federal budget in the US. In addition, a comparison is made with existing estimates of automatic stabilisers, which have been calculated by the OECD, the European Commission and the IMF. The fundamental difference between these estimates and the estimates in section 3 is that the former may be interpreted as the size of the *automatic* stabilisers, whereas the estimates in section 3 give the *'actual'* stabilisers, *i.e.* the sum of the automatic and discretionary stabilisers.

Section 4 investigates three potential hypotheses explaining the budgetary stabilisation coefficients found in section 3. Besides the hypothesis that lack of budgetary prudence limits the extent of budgetary stabilisation, it is investigated whether the size of the government and the degree of openness correlate positively resp. negatively with the extent of budgetary stabilisation. Section 5 summarises the main findings and concludes.

## **2 Budgetary sustainability and budgetary stabilisers: some conceptual considerations**

### ***Budgetary sustainability***

It is by now generally accepted that an unsustainable debt accumulation of one or more EMU Member States may hinder the ECB in complying with its primary objective of (internal) monetary stability. The negative externalities of lax budgetary policies include, among other things, its impact on interest, inflation and exchange rates in the monetary union and the potential pressure on the central monetary authorities to impose an inflation tax or to monetize debt. Moreover, limits on debt accumulation intend to avoid that Member States have to choose between default on government debt of an insolvent EMU Member State on the one hand and bailing-out the country concerned on the other. Finally, undisciplined budgetary policy of an individual Member State may interfere with a balanced policy mix at the euro level,

which would undermine the credibility and adequacy of the common monetary policy of the ECB.

It has been argued that a more sophisticated design than simply capping the maximum deficit at an arbitrary value would have been appropriate. Yet, the first experience with the implementation of the Stability Pact, including its procedure on budgetary surveillance, suggests that the Pact might develop into an effective device to prevent unsustainable budgetary positions. Moreover, a more sophisticated design would require the introduction of judgemental discretion in assessing whether a fiscal position qualified 'excessive' in the jargon of the Treaty. This could seriously hamper the efficacy of the budgetary rules. First, depending on their exact nature, more sophisticated arrangements<sup>2</sup> might give rise to information problems and moral hazard. Second, a credibility problem arises as the room for discretion may be used for *de facto* softening the budgetary arrangements.<sup>3</sup> Irrespective of whether decision-makers *would* use their discretion in such a partisan way, the mere possibility that they *could* do so may already undermine the credibility of a more sophisticated arrangement, thereby undermining its efficacy. Drawing up simple, numerical rules with minimal room for interpretation partly obviates this credibility problem. Yet, it does not fully solve it because, as long as no country has ever breached the budgetary rules of the Stability Pact, financial markets have no actual proof that the Ecofin Council will really impose and enforce sanctions once the Pact requires doing so. Paradoxically, this implies that the more successful the Stability Pact functions as a credible deterrent to decision-makers fearing either the financial penalties or the political shame of

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<sup>2</sup> Here, one could think of defining a deficit ceiling for the structural balance rather than for the actual balance, distinguishing between permanent and temporary breaches of the deficit ceiling, provisions related to the underlying cause for the breach of the deficit ceiling, *etc.* Indeed, to some extent, suchlike clauses are included in the Treaty and the Stability and Growth Pact.

<sup>3</sup> It was for this reason that the former German Minister of Finance Theo Waigel called for automatic and immediate sanctions for countries breaching the 3% ceiling in his initial proposals for a Stability Pact. This would practically eliminate all discretionary room for manoeuvre granted by the Treaty to the Ecofin Council in deciding (i) whether a deficit exceeding 3% GDP is excessive and (ii) whether a financial sanction should be imposed.

breaching the budgetary rules, the less probable it is that the Ecofin will be able to show its determination to enforce these rules rigorously.

A second potential flaw of the Stability Pact is that it leaves insufficient room for budgetary stabilisation at the national level. This is all the more important in EMU, as participating Member States do not have the interest and exchange rate instrument at their disposal. Moreover, it is generally taken for granted that alternative equilibrium restoring mechanisms like price and wage flexibility and labour mobility function far from optimal in most EMU Member States. Finally, EMU lacks a federal mechanism of interregional transfer as in the US. Following the line of reasoning in the seminal paper of Sala-i-Martin and Sachs (1991), several authors have argued in favour of some degree of fiscal federalism for the viability of monetary union (e.g. Masson and Taylor, 1993). In response, others (see e.g. Bayoumi and Masson, 1995; Fatás, 1998) have noted that national budgets can in principle obtain the same size of budgetary stabilisers compared with the stabilisers provided for by the federal budget.

### ***Budgetary stabilisers***

Several economists have argued that stabilisation should take place at European (federal) level rather than at national (regional) level. First, national governments will provide less budgetary stabilisation than is deemed optimal from a European point of view, as the effect of the stabilisers partly spills over to other countries or regions. National (regional) governments have no incentive to take such externalities into account. Although this argument holds true as a general notion, one might question its empirical and analytical relevance. As to the empirical relevance, the cross-border effects of budgetary policy are generally thought to be minimal, whereas even uncertainty exists as to the sign of this effect (see e.g. European Commission, 1990, Englander and Egebo, 1993). The analytical relevance seems to be limited because it is not clear *a priori* whether national stabilisers are too small or too big from an EMU point of view. In case of *symmetric* shocks, national budgetary stabilisers will be too small from an EMU point of view if external effects are ignored. However, in case of *asymmetric* shocks, budgetary stabilisers have adverse externalities, resulting in too much stabilisation if these effects are ignored. Taking into account that monetary policy

remains available to deal with symmetric shocks and, consequently, that budgetary stabilisation should be mainly directed at asymmetric shocks, it might be concluded that - if anything - national governments have an incentive to offer too much stabilisation from a European point of view.

A second reason why stabilisers offered by a central authority may be more effective than national (or regional) stabilisers is that Ricardian equivalence effects may be in place.<sup>4</sup> In that case, agents will anticipate the impact of intertemporal stabilisation on their future tax liability, mitigating the effect of changes in net taxes and transfers on aggregate expenditure. Although this notion is widely accepted, it should be noted that it only holds true to the extent shocks -- and their resulting impact on net taxes and transfers -- are permanent. A temporary shock, *i.e.* a deviation from trend GDP, will only have a negligible impact on lifetime disposable income, irrespective of whether stabilisation takes place interregionally or intertemporally. Consequently, the irrelevance between interregional and intertemporal stabilisation in case of temporary shocks undermines the Ricardian equivalence argument in favour of centralised stabilisation, as stabilisation is by its very nature associated with temporary deviations from trend GDP. With respect to permanent shocks, it may be argued that interregional transfers are undesirable for both equity and economic reasons.<sup>5</sup> As to the equity argument, net interregional transfers based on permanent GDP shocks may lead to a permanent redistribution from relatively poor to relatively rich Member States. This is because the process of economic catching-up of the relatively poor countries may lead to convergence of GDP levels. Consequently, countries with below average GDP levels may experience higher growth rates than the relatively rich countries, making them net contributors in a system where net transfers are determined by permanent

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<sup>4</sup> Bayoumi and Masson (1998) present some evidence for Canada indicating that the impact of a liability-creating provincial deficit on provincial consumption is only one-third to one-half as large as the impact of a non-liability-creating federal deficit (specific to the province).

<sup>5</sup> See Fatás (1998) for a more elaborate exposition on the conceptual differences between (intertemporal) stabilisation and (interregional) insurance.

GDP shocks (see also Fatás, 1998, pp 186-91)<sup>6</sup>. From an economic point of view, permanent budgetary flows in response to permanent shocks may frustrate structural adjustment and give rise to moral hazard.

Thirdly, Krugman (1993) argues that the impact of national (regional) budgetary stabilisers may be hampered by the mobility of tax bases within a monetary union, thereby frustrating budgetary stabilisation. A first thing to note is that the empirical relevance of this argument remains to be seen, because the mobility of tax bases in response to cyclical shocks or measures may be limited. Moreover, this argument seems not to apply to automatic stabilisers. Automatic stabilisers imply that tax and social security arrangements (including tax and contribution rates and benefit levels) remain constant over the cycle. It is hard to see how in such a situation mobile tax bases frustrate the impact of national (regional) stabilisers as compared with interregional stabilisers. Turning to discretionary measures, it may even be argued that the mobility of tax bases improves the efficacy of a counter-cyclical stabilisation policy. If a country lowers taxes during a slump this may, if anything, attract labour and capital from abroad, thereby stimulating domestic economic activity at home and broadening the domestic tax base.

The discussion above raises serious doubt as to the claim that – ignoring the potential trade-off between the budgetary rules of the Stability Pact and the budgetary flexibility required for stabilisation purposes – centralised stabilisers is inherently superior to stabilisation at the national (regional) level. Hence, this makes the issue whether such a trade-off exists all the more relevant. If such a trade-off would exist, it could be argued that from an economic point of view some scope exists for introducing federal elements in the European budget, in order to overcome this limitation.

One way to address this issue is to point at increasing evidence indicating that countries maintaining an underlying fiscal position of

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<sup>6</sup> This is not an argument against redistribution as such, but merely against redistribution based on permanent GDP shocks. To the extent that one wishes to redistribute income among Member States, the level of GDP would be the logical variable determining eligibility.

close to balance or in surplus create sufficient room for the budgetary stabilisers to operate (see e.g. Buti *et al*, 1997; IMF, 1997). This would imply that the Stability and Growth Pact is irrelevant for the issue of budgetary stabilisation. In this paper, we develop a different, though related argument. This argument is that lack of budgetary prudence limits a country's leeway for the operation of budgetary stabilisers, be they automatic or discretionary. This holds true, with or without budgetary rules as laid down in the Stability and Growth Pact. The reason is that countries are subject to an intertemporal budget constraint. The more doubt exists about the budgetary sustainability of a country, the less room countries have (or take) for budgetary stabilisers. This may be due to the fact that responsible decision-makers realise the potential disastrous consequences of budgetary insolvency – in economic, social, or political terms -- or because governments are not prepared to pay an increasing risk premium on their debt. Moreover, a budgetary stimulus in case of an adverse shock may be less effective and therefore less desirable the more evidence exists that a country may be on an unsustainable budgetary path. The stronger the belief that government finances are unsustainable, the more consumers believe that a program of budgetary consolidation will occur rather sooner than later. This latter belief reduces the possibility that the impact of the fiscal impulse on future disposable income can be shifted onto future generations. Sutherland (1997) shows that a fiscal deficit can even have a contractionary, *i.e.* anti-Keynesian, effect in such a case. The Stability and Growth Pact, by disciplining countries to refrain from policies that could give rise to even the slightest doubt about their budgetary sustainability, may for these reasons enhance the size of the budgetary stabilisers offered by budgetary authorities.

### **3 Calculating budgetary stabilisers**

Whether or not countries experience a trade-off between budgetary sustainability and budgetary stabilisation is in the end an empirical question. In order to investigate such a relation, this section presents estimates of the cyclical impact on the budget balance of 13 EU countries. In this respect, this paper contributes to existing empirical evidence on budgetary stabilisers in four ways. First, although ample research has been done as to the size of budgetary stabilisers at state (or

regional) level in the US since Sachs and Sala-i-Martin (1991), to the best of our knowledge, such estimates do not exist for a majority of EU countries.

Second, unlike most other studies, we make use of (changes in) the output gap rather than changes in GDP for measuring the cyclical sensitivity of the budget. The reason is that budgetary stabilisers should – if anything – be directed at smoothing the business cycle rather than smoothing GDP. Though no perfect measure for the business cycle exists, it seems reasonable to assume that measures computed by the OECD and the IMF at least outperform actual GDP as a measure for potential output or trend GDP.

Thirdly, rather than including only government revenue and expenditure categories considered cyclically sensitive, we look at the balance of total revenue and expenditure categories, *i.e.* we focus on the cyclical sensitivity of the budget balance. For one thing, this prevents us from making sometimes-arbitrary assumptions as to whether a certain revenue or expenditure category is cyclically sensitive. How to interpret, for example, the balanced budget requirement of social security funds which applies in several countries? Such a requirement is attended with discretionary adjustments in contribution rates in response to GDP changes. These adjustments, though discretionary in the sense that they require an explicit policy decision, are also automatic in a way because they follow automatically from the underlying policy rule. Also the often-applied policy practice not to redress a-cyclical budgetary setbacks if they are compensated by cyclical windfalls (and *vice versa*), may to some extent be considered as a policy automatism which should be captured by measuring the cyclical impact on the budget. More generally, estimating the cyclical sensitivity of the budget by including the actual policy response of governments to the cycle is in itself a relevant measure. In the end, it is the size of the entire stabiliser – both automatic and discretionary – that determines the stabilisation properties of budgetary policy.

Finally, as opposed to previous investigations, we explicitly take into account that the impact of the cycle on the budget may take place with a lag. There are several reasons for such lags to occur. For one thing, unemployment related changes in tax on labour income as well as unemployment related benefits follow the cycle with a lag of about three

quarters of a year or so. Moreover, to the extent that discretionary budgetary policy takes place in response to the cycle, a policy lag will arise, as both the decision-making and the implementation of budgetary measures take some time.

### *Methodological issues*

An error correction specification is used as a starting point for the time series analysis on the relation between the output gap and the general government budget balance, for both statistical and theoretical reasons. First, for a majority of countries, the existence of a unit root in either the output gap or the budget balance could not be rejected at conventional confidence intervals on the basis of an augmented Dickey-Fuller test. This may be surprising, as non-stationarity of both the output gap and the budget balance may be ruled out from a theoretical point of view. Nevertheless, the statistical evidence of a unit root may complicate the interpretation of the regression results if the relation between the output gap and the budget balance is estimated in levels. In addition, an error correction specification is more suitable to capture both the short run impact of the cycle on the budgetary position and a possible long run relationship. In contrast, a specification in levels is more appropriate to estimate the long run effect. Regardless of the above-mentioned statistical objections to estimating in levels, a specification that focuses on the long run effect is also less suitable from a theoretical point of view. This follows from the fact that the output gap is by construction a variable that hovers around (a constant value slightly below) zero. Thus, the long run value of the output gap is (nearly) constant. This latter needs not to be the case for the budget balance. Obviously, a variable with a stable average value cannot be expected to explain the long run movements in the budget balance, which for most European countries have occurred during the last 20 years or so. At the same time, a long run relation between the budget balance and the output gap cannot be ruled out for those countries where the budget balance moves around a more or less stable long run value. Hence, the following specification will be used as a starting point for the empirical analysis:

$$\Delta D_0 = c + \beta_1 \Delta G_0 + \beta_2 \Delta G_{-1} + \beta_3 D_{-1} + \beta_4 G_{-1} + \varepsilon \quad (1)$$

Here,  $D$  denotes the budget balance (a negative value indicates a deficit),  $G$  the output gap (which is positive if actual GDP exceeds

potential GDP),  $\varepsilon$  the error term, and  $\Delta$  the difference operator. The subscript refers to time.

In this equation, the sensitivity coefficients  $\beta_1$  and  $\beta_2$  represent the contemporaneous resp. the lagged budgetary impact effect with respect to a change in output gap. It follows that the sum of  $\beta_1$  and  $\beta_2$  equals the accumulated budgetary stabiliser we are interested in. Furthermore,  $\beta_1$  ( $\beta_2$ ) divided by the sum of  $\beta_1$  and  $\beta_2$  gives the relative share of the contemporaneous (lagged) stabiliser with respect to the accumulated stabiliser. Splitting up the cyclical effect into a contemporaneous effect and a lagged effect has implications for the interpretation of the t-values and the assessment on significance. Though eq. (1) captures the cyclical impact effect on the cycle by two coefficients, from an economic point of view they represent only one and the same transmission channel, notably the cyclical effect on the budget. Obviously, the smaller the share of either the contemporaneous or the lagged effect in the total cyclical effect on the budget, the less probable that a significant coefficient will be found. This may lead to incorrectly dropping one of the two variables. Therefore, besides assessing significance levels by looking at the t-values of the individual variables, a Wald test on the joint significance of  $\beta_1$  and  $\beta_2$  will be executed. Of course, the possible drawback of relying on the joint significance of  $\beta_1$  and  $\beta_2$  is that the null hypothesis of no joint significance may be rejected if only one of the two variables appears to be very significant. On the basis of these considerations, the evaluation of whether or not a marginally insignificant coefficient is included will – besides on the basis of the Wald test on joint significance -- also be determined by the overall fit of the equation.

The joint effect of  $\beta_3$  and  $\beta_4$  represents the error correction component and indicates whether, and to what extent, a long run relation exists between the output gap and the budget balance. The long run coefficient can be calculated from eq. (1) by  $(-\beta_3/\beta_4)$ .

For all countries, we systematically checked for the significance of a dummy variable on the constant for the remaining years

in the nineties. A significant dummy in the beginning of the nineties could point at a 'Maastricht effect' inducing governments to consolidate their financial balance in time in order to comply with the Maastricht criteria<sup>7</sup>. A significant dummy around 1996 captures the same effect, but may also be due to one-off budgetary measures. Obviously, such measures limit the informational content of the budget balance for our purpose, as they blur the underlying relation between the cycle and the budget balances. In either case, it is expected that the coefficient for the dummy concerned is positive.

Initially, regressions were run for all EU countries, except Luxembourg. For Greece, no stable empirical relationship could be found on the basis of eq. (1). The basic sample period covers 1975-1998. However, lack of data availability made it necessary to shorten the sample period in six cases, notably Ireland (data available as from 1977), Belgium, Finland, and the UK (1978), Sweden (1983), and Denmark (1988). In addition, in case of three countries, shortening the sample period by suppressing the first observation(s) improved the fit of the equation because the first observations were outside the confidence interval of 5% around the fitted values. Thus, for Austria and Spain the beginning of the regression period was shortened to 1976 resp. 1980, whereas for Ireland shortening took place from 1978 to 1982. For Germany, the observations for 1990 and 1991 were suppressed because of German unification. This leads to three missing years in the estimation output ('89, '90, and '91). One of the consequences of eliminating two observations is that the Breusch-Godfrey statistic testing for serial correlation cannot be calculated anymore. Finally, for Portugal, the time series for the budget balance shows an outlier in 1980: the budget balance improves from a deficit of 6.2% GDP in 1979 to a surplus of 5.5% GDP in 1980 and then returns to a deficit of -10.5% GDP in '81. We dropped this observation, thereby missing both 1979 and 1980 in the regression output.

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<sup>7</sup> Note that the Maastricht Treaty allows the launch of monetary already as from the first of 1997. It was not until the European Council in December 1995 that it was decided to start EMU at the latest possible date allowed for in the Treaty.

## Results

Table 1 summarises the regression results of eq. (1) for thirteen countries, *i.e.* the EU 15 excluding Luxembourg and Greece. The column  $(\beta_1 + \beta_2)$  displays the cumulative sensitivity coefficient of the budget balance with respect to (a change in) the output gap. The average coefficient is 0.53: a 1% increase in the output gap (defined as potential minus actual GDP) leads to an improvement of the budget balance of about 0.5% GDP. Ignoring the cumulative impact coefficient for Sweden, which is an outlier with a value of 1.6, the average accumulated stabiliser reduces to 0.44.

The average contemporaneous stabiliser amounts to 0.45. Ignoring Sweden, the impact coefficient falls with about 0.1 to 0.36. For eight countries, including a lagged impact effect improves the fit of the regression. Excluding the negative lagged coefficient for Belgium, the average lagged coefficient is slightly above 0.2. In all cases where the lagged coefficients are included, the Wald test statistic confirmed the joint significance of both the contemporaneous and the lagged impact effect at conventional levels, though for Denmark only at 90% (see table A1 in the appendix).

Interestingly, the average stabiliser exceeds the value generally found for US interregional stabiliser offered by the federal level. Indeed, Sala-i-Martin and Sachs (1991) estimate that about 65% of regional pre-tax income shocks are transmitted to fluctuations in disposable income, implying a fiscal stabiliser of about 0.35. By now, it is generally acknowledged that the results of Sala-i-Martin and Sachs give an upper-limit for the size of the interregional stabiliser offered by the federal budget, as their estimates capture both budgetary stabilisation and budgetary redistribution (or insurance). Subsequent calculations (see e.g. Bayoumi and Eichengreen, 1995) which do take this distinction into account, suggest that the interregional budgetary stabiliser amounts to about 0.3. All in all, our results seem to confirm that intertemporal stabilisers (at the national level) can in principle be as large as interregional stabilisers (at the federal level).

**Table 1. Budgetary stabilisers; cyclical sensitivity of the budget balance; results of regression analysis; various sample periods**

Country	Contemporaneous stabiliser ( $\beta_1$ )	Lagged stabiliser ( $\beta_2$ )	Cumulative stabiliser ( $\beta_1 + \beta_2$ )
Austria	0.15	0.34	0.49
Belgium	0.61	-0.50	0.11
Denmark	0.29	0.33	0.62
Finland	0.56	0.24	0.80
France	0.35	0.13	0.48
Germany	0.25	-	0.25
Ireland	0.15	-	0.15
Italy	0.41	-	0.41
Netherlands	0.36	0.23	0.59
Portugal	0.22	0.19	0.41
Spain	0.41	-	0.41
Sweden	1.63	-	1.63
UK	0.31	0.26	0.57
Avg coeff	0.45	0.13	0.53
Avg ex. Swd	0.36		0.44
Avg ex Blg		0.22	

*Note: See table A1 in the appendix for a more detailed presentation of the results; a positive output gap implies that actual GDP exceeds potential GDP; a budget deficit (surplus) is defined negatively (positively); a positive coefficient therefore indicates that an increase in the output gap is associated with a decline (increase) in the budget deficit (surplus).*

It is interesting to compare the estimated budgetary stabilisers with the estimates for the cyclical sensitivity of the budget balance. These estimates are displayed in table 2. The OECD, the European Commission and the IMF have executed such estimates, using different methods but all making a 'no-policy-change' assumption. In this latter respect, these estimates differ conceptually from the coefficients shown in table 1, as discussed above<sup>8</sup>. Therefore, one might interpret the

<sup>8</sup> Moreover, data for the budget balance used to calculate the stabilisation coefficients also include one-off factors. To the extent that these factors do not correlate systematically with the output gap, there is no reason to expect a bias in the coefficients calculated by means of eq. (1).

**Table 2. Budgetary stabilisers: cyclical sensitivity of the budget balance; calculations from OECD, European Commission (EU) and IMF**

Country	OECD	EU	IMF
Austria	0.5	0.5	0.6
Belgium	0.6	0.6	0.6
Denmark	0.6	0.7	0.8
Finland	0.6	0.6	0.6
France	0.6	0.5	0.6
Germany	0.5	0.5	0.5
Ireland	0.4	0.5	0.5
Italy	0.3	0.5	0.4
Netherlands	0.6	0.8	0.7
Portugal	0.5	0.5	0.4
Spain	0.6	0.6	0.7
Sweden	0.7	0.9	1.1
UK	0.5	0.6	0.6
Average	0.54	0.60	0.62

*Note: The coefficients give the effect of a 1% improvement of the output gap on the budget balance (in % GDP); a budget deficit (surplus) is defined negatively (positively). Source: OECD Economic Outlook 62, December 1997, p. 24.*

coefficients in table 2 as automatic stabilisers, whereas the results in table 1 present actual stabilisers.

Comparing the results in table 1 with those in table 2, it appears that, on average, EU countries did not allow the automatic stabilisers to operate freely. Had they done so, the size of the actual stabilisers would have been around 0.55-0.60, rather than the 0.45 in table 1. Again, there are substantial differences among countries. In Sweden, the budgetary stabiliser exceeds the automatic stabilisers substantially. On the other hand, for Belgium and Ireland, the size of the actual stabiliser is far less than the automatic stabiliser. The next section tries to account for these differences.

#### **4 Budgetary sustainability vs. budgetary stabilisers: is there a trade-off?**

In this section, we investigate three hypotheses explaining the differences in the size of the budgetary stabilisers as presented in table 1. A first hypothesis is that the size of the budgetary stabiliser depends on the size of the government. A large government sector will be characterised by high (average and marginal) tax rates, and by a generous social security system. Obviously, this will have an impact on the extent in which the business cycle influences the budget balance. We will use government expenditure as a share of GDP as a measure for the size of the government. A second hypothesis is that relatively open economies will have small stabilisers, as for these countries a relatively large part of the stabilisation effort will spill over to other countries due to the import leakage. The degree of openness will be measured as the average of the share of imports and exports in GDP. The third hypothesis – and the central empirical issue raised in this paper -- is that the size of budgetary stabilisers is determined by the financial position of the government. A country that has accumulated large deficits may feel that there is only limited room for the automatic stabilisers to operate freely, let alone to strengthen the budgetary stabilisers by an active, counter-cyclical budgetary policy (see section 2).

Below, we will use two measures for the degree of sustainability of the government's financial position. The first measure is the average debt level (general government) as a share of GDP, whereby the average will be taken from the period over which the budgetary stabiliser is measured for the individual countries. A second measure concerns the average budget balance (again general government) over the relevant period. On theoretical grounds, we prefer the average debt ratio as an indicator of the government's financial position during the specific period concerned. Unlike the budget balances, data for the debt as share of GDP correct for differences in (average) *ex post* growth rates between countries. Whether or not an average budgetary deficit of, say, 5% GDP may create uncertainty as to its sustainability, depends in an important way on the nominal (!) growth rate of the economy concerned. Moreover, the average deficit over a certain period of time ignores the initial financial position of the government. The relevance of these effects is illustrated by comparing the debt and deficit ratios of Belgium and Italy. Although the average budget deficit of Italy is with 9.5% GDP about

2,5% GDP above the average Belgian deficit of 7.0% GDP, the average Belgian debt ratio is some 30% above the Italian debt ratio (120% GDP *versus* 90% GDP)<sup>9</sup>.

In sum, we estimate the influence of three determinants, notably government size (SIZE), openness (OPN), and the degree of budgetary sustainability (SUST), on the budgetary stabilisers (STAB) in the following way:

$$\text{STAB} = \alpha_1 \text{SIZE} + \alpha_2 \text{SUST} + \alpha_3 \text{OPN} \quad (2)$$

We estimated this relation by simple OLS. Regressions were performed both with and without Sweden included in the sample, in order to control for possible outlier effects. This is indicated in the column 'remarks' by 'incl' resp. 'excl. Swd'. Table 3 below reveals the results.

The first row in table 3 shows the results when all three determinants are included in the regression and Sweden is left out in the calculations. Both the government size and fiscal prudence have the expected sign and are significant at conventional levels, whereas the coefficient for openness, though having the expected sign, is insignificant. Apparently, the potential spillover effects of budgetary stabilisation do not play a role in the composition of government budgetary policy. A possible explanation for this result is that openness may be relevant once a country contemplates a discretionary, counter-cyclical policy measure, but that this consideration does not play a role in deciding upon, for example, the tax structure or the generosity of the social security system. An alternative explanation is that the incentive-reducing effect in an open economy to provide stabilisation *given* the variability of the business cycle is counteracted by an increased desire for stabilisation, as open economies are more susceptible of external shocks and therefore face a higher variability of the business cycle. Indeed, Rodrik (1996) provides evidence that more open economies have

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<sup>9</sup> Obviously, if one would like to have a measure for the future sustainability, the (development of the) budget balance over the last couple of years would probably be a better indicator than the debt ratio.

bigger governments in order to cushion the amount of external risk. However, to the extent that openness has the effect suggested by Rodrik<sup>10</sup>, this effect is in our equations directly captured by government size itself rather than by the coefficient for openness.

The second row in table 3 shows the coefficients for government size and budgetary sustainability, when openness is dropped. The fit of the regression improves, with an adjusted  $R^2$  of 0.47. Moreover, both the value and the significance of the coefficient for budgetary rise sustainability. The third row repeats this equation, but now including Sweden in the sample. Notwithstanding a slight drop in significance<sup>11</sup>, the coefficient for budgetary sustainability increases from 0.64 to 0.92.

These results provide evidence of a substantial and statistically significant negative relation between government debt on the one hand and budgetary stabilisers on the other, suggesting that a high debt-to-GDP ratio has a deteriorating influence on budgetary stabilisers. The coefficients for government debt in the second and third row – 0.64 resp. 0.92 – indicate that a lower debt ratio of 10% GDP is associated with an increase of the stabilisation coefficient of 0.078. Belgium serves as a nice illustration of the potential relevance of budgetary prudence on the size of the budgetary stabilisers. The average Belgian debt amounts to almost 120% GDP (see table A2 in the appendix) over the relevant sample period, whereas the average EU debt to GDP ratio is slightly above 60% GDP. An increase of the budgetary stabiliser with 0.078 (average of 0.064 and 0.092) for every 10% GDP decline in debt implies that the budgetary stabiliser associated with a Belgian debt ratio of 60% GDP (instead of the actual 120% GDP) is 0.58 rather than the actual 0.11, controlling for the size of the government. Thus, the estimated relation between government debt and budgetary stabilisation suggests that the former almost fully account for the low degree of the budgetary stabiliser in Belgium.

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<sup>10</sup> For the countries in our sample, we found a positive, but insignificant, relation between openness and government size.

<sup>11</sup> Significance drops from 99.4% to 97.7% if Sweden is included in the equation.

**Table 3. Impact of government size, budgetary sustainability (debt), and openness on the degree of stabilisation**

	Government size	Budgetary sustainability	Openness	R <sup>2</sup> / R <sup>2</sup> -adj.	Remarks
(1)	1.80***	- 0.57**	- 0.20	0.53 / 0.43	Excl. Swd
(2)	1.75***	- 0.64***	-	0.52 / 0.47	Excl. Swd
(3)	2.29***	- 0.92**	-	0.48 / 0.43	Incl. Swd

*Note: Equations are estimated without a constant; explanatory variables are measured as percentage of GDP; the coefficients indicate the partial relation between the explanatory variables and the estimated stabilisers presented in column 3 of table 1; (\*), (\*\*), (\*\*\*) indicate significance at 90%, 95%, resp. 99% level of confidence; Swd is Sweden; see text for further explanation.*

Some closer check for robustness of the results is necessary, as the sample consists of only 13 (or even 12, if Sweden is excluded) observations. Table 4 presents the results of sensitivity analysis. First, the equations in row (2) and (3) in table 3 are repeated, including a constant. The resulting impact on the coefficients for government size and the debt ratio are shown in row (1) and (2) in table 4. The constant is insignificant in both specifications. Moreover, including a constant appears to have only a negligible influence on both the value and the significance of the debt coefficient<sup>12</sup>. Secondly, in row (3) and (4) in table 4, government income, instead of government expenditure, is used as a measure of government size. This leads to a decline in both the value (with 0.15 – 0.2) and the significance of the coefficient for budgetary sustainability. If Sweden is excluded, the level of significance drops from 99.5% to 98.5%. If Sweden is included, the decline is from 98.7% to 96%<sup>13</sup>.

<sup>12</sup> For one reason or another, including a constant leads to an insignificant coefficient for government size in the specification where Sweden is excluded from the sample.

<sup>13</sup> If the average of government income and expenditure as share of GDP is inserted, the value and the significance of the coefficients are almost exactly in the middle of the results presented for inserting government income and expenditure separately.

**Table 4. Sensitivity analysis – impact of government size, budgetary sustainability (debt), and openness on the degree of stabilisation**

	Government size	Budgetary sustainability	Openness	R <sup>2</sup> / R <sup>2</sup> -adj.	Remarks
(1)	1.13	- 0.62***	-	0.55 / 0.45	Excl. Swd
(2)	3.62**	- 0.91**	-	0.54 / 0.45	Incl. Swd
(3)	1.66***	- 0.48**	-	0.50 / 0.45	Excl. Swd; Gvmt income
(4)	2.18***	- 0.71**	-	0.48 / 0.43	Incl. Swd; Gvmt income

Notes: see table 3.

A more fundamental deviation from the benchmark specification is obtained by using an alternative measure for budgetary sustainability. Indeed, the results in table 5 are obtained by substituting the average debt ratio for the average budget balance over the relevant sample period. Naturally, in this case the hypothesis is that countries showing relatively large budget deficits over the period concerned will have *ceteris paribus* smaller stabilisation coefficients than countries with small deficits<sup>14</sup>.

If sustainability is defined in terms of the average budget balance, openness gains in significance, though the variable remains insignificant at the 95% level of confidence. Hence, before dropping openness, we run a regression including Sweden in the sample. As shown by eq. (2), this leads to a deterioration of the significance of the budget balance, which is in fact only narrowly significant at 90%. The coefficient for openness – besides being not significant in any of the two cases – appears to be quite sensitive with respect to whether or not Sweden is included in the sample. The coefficient almost doubles when

<sup>14</sup> None of the countries in our sample has an average budget surplus over the period concerned.

Sweden is included. Therefore, we tend to reject that a statistically significant relation exists between openness and budgetary stabilisation. Nevertheless, dropping openness leads to a substantial decline in (adjusted)  $R^2$ , as is shown by eq.'s (3) and (4) in table 5. The average value for the budget coefficient is about 5.25. This implies that an average budget deficit that is higher by 1% GDP is associated in our cross-country sample with a decline in the stabilisation coefficient of about 0.0525. Again, a better intuition of this quantitative effect is obtained by an illustration. Table A2 of the appendix shows that the average budget deficit (relative to GDP) for the Netherlands amounts to 3.7% GDP over the relevant sample period. If the Netherlands had shown a balanced budget over the relevant sample period, we would expect a Dutch stabilisation coefficient of 0.78 instead of the estimated 0.59.

Moreover, the significance of the budget deficit as an explanatory variable for the degree of stabilisation is less robust than the significance of the debt ratio. If Sweden is included in the sample, the level of significance drops to 94%, below the 95% level of confidence. Finally, if government expenditure is replaced by government income as a measure of government size, the variable for the budget balance narrowly drops below the 90% level of confidence.

**Table 5. Impact of government size, budgetary sustainability (budget balance), and openness on the degree of stabilisation**

	Government size	Budgetary sustainability	Openness	$R^2 / R^2$ -adj.	Remarks
(1)	1.68***	3.62**	- 0.66*	0.51 / 0.40	Excl. Swd
(2)	2.28***	5.20*	- 1.11*	0.56 / 0.47	Incl. Swd
(3)	1.23***	4.14**	-	0.29 / 0.22	Excl. Swd
(4)	1.59***	6.51*	-	0.39 / 0.33	Incl. Swd

*Note: Equations are estimated without a constant; explanatory variables are all measured as percentage of GDP; a budget deficit (surplus) is defined negatively (positively); the coefficients indicate the partial relation between the explanatory variables on the actual cumulative stabilisation coefficients displayed in column 3 of table 1; (\*), (\*\*), (\*\*\*) indicate significance at 90%, 95%, resp. 99% level of confidence; Swd is Sweden; see text for further explanation.*

Though the results show that the budget balance has the expected sign and is generally statistically significant, the partial relation with budgetary stabilisation is clearly less robust than the partial relation between government debt and budgetary stabilisation. This seems to confirm our hypothesis that the average debt (as a share of GDP) over a certain period of time is from a theoretical point of view a better indicator for degree of budgetary sustainability during that period than the average budget balance.

## **5 Concluding remarks**

The need for having rules on budgetary sustainability in EMU is generally accepted by now. This paper investigates whether such rules may be at the cost of limiting budgetary stabilisers at the national level. Such a potential trade-off between rules on budgetary stability and the desired budgetary flexibility for stabilisation purposes is an important issue when it comes to assessing the question as to whether -- and if so: how -- budgetary stabilisation should be subject to close policy co-ordination. This paper argues that there is no convincing economic rationale to favour such a policy co-ordination. First, with respect to the efficacy of budgetary stabilisation, this paper argues that commonly used arguments in favour of centralised stabilisation such as policy spillovers, Ricardian equivalence effects and mobility of tax bases are either empirically less relevant or theoretically flawed. Second, the empirical estimates presented in this paper suggest that the degree of intertemporal budgetary stabilisation in EU countries is at least as large as the degree of interregional stabilisation built-in into the US federal budget.

This leaves open the possibility that such policy co-ordination is desirable because countries have not sufficient policy room for budgetary stabilisation, be it automatic or discretionary, due to the rules on budgetary sustainability laid down in the Stability and Growth Pact. This paper contributes to this discussion, by arguing that a sustainable budgetary position is a prerequisite for budgetary stabilisation. Along this line of reasoning, it follows that budgetary sustainability and budgetary stabilisation strengthen rather than hinder each other. Consequently, by providing countries an incentive for pursuing prudent budgetary policy, the budgetary rules enshrined in the Stability and

Growth Pact may be considered beneficial, rather than irrelevant or even harmful, from a stabilisation point of view. The main contribution of this paper is that it presents empirical evidence showing a substantial and statistically highly significant partial relation between government debt as a measure of budgetary sustainability and the actual degree of stabilisation. Depending upon the exact specification, the data indicate that an increase in the debt-GDP ratio of 10% is associated with a drop in stabilisation of about 0.075 – 0.08 at an average stabilisation coefficient of about 0.5. We also find suggestive evidence showing a negative relation between (average) budget deficits and budgetary stabilisation, though these results are less robust than the estimates using the debt-ratio as a measure of budgetary sustainability. We conclude that no trade-off exists between budgetary sustainability and budgetary stabilisation. On the contrary, budgetary stabilisation requires a sustainable budgetary position implying that, in this case, rules and flexibility may go hand in hand.

## APPENDIX

Table A1. Detailed results of the regression analysis in section 3

Country	c	$\beta_1$	$\beta_2$	$\beta_1 + \beta_2$	Wald	$\beta_3$	$\beta_4$	Dummy	$R^2$ / $R^2$ -adj	DW	Br-Go	Period	Obs
Austria	-	0.15 (1.18)	0.34 (2.85)	0.49	0.03	-	-	-	0.29 / 0.26	2.23	0.56	'75-'98	23
Belgium	-	0.61 (3.20)	-0.50 (2.59)	0.11	0.00	-	-	'93: 0.9 (1.86)	0.55 / 0.49	1.60	0.73	'78-'98	19
Denmark	-	0.29 (1.41)	0.33 (1.91)	0.62	0.08	-	-	-	0.46 / 0.40	1.56	0.59	'89-'98	10
Finland	-	0.56 (3.37)	0.24 (1.48)	0.80	0.01	-0.19 (1.97)	0.16 (1.45)	-	0.79 / 0.75	2.44	0.26	'80-'98	19
France	-1.06 (3.27)	0.35 (2.70)	0.13 (1.00)	0.48	0.03	-0.56 (3.64)	-	'92: -1.5 (2.77)	0.60 / 0.52	1.68	0.40	'75-'98	24
Germany	-1.1 (3.47)	0.25 (3.77)	-	0.25	-	-0.47 (4.48)	-	-	0.70 / 0.66	1.60	Na	'76-'98	20
Ireland	1.43 (2.91)	0.15 (1.01)	-	0.15	-	-	-	'90: -1.0 (1.49)	0.17 / 0.05	1.80	0.83	'82-'98	17
Italy	-5.67 (2.86)	0.41 (2.78)	-	0.41	-	-0.55 (2.93)	-	'96: 4.4 (3.88)	0.61 / 0.55	2.15	0.57	'75-'98	24
Neth.	-1.8 (3.47)	0.36 (2.45)	0.23 (1.56)	0.59	0.03	-0.37 (3.17)	-	91: 1.1 (2.78)	0.54 / 0.45	2.44	0.22	'75-'98	24
Portugal	-3.75 (3.95)	0.22 (1.74)	0.19 (1.56)	0.41	0.05	-0.64 (4.39)	-	'92: 1.5 (2.17)	0.62 / 0.53	2.51	Na	'75-'98	22
Spain	-1.88 (2.86)	0.41 (2.57)	-	0.41	-	-0.34 (2.42)	-	'96: 1.9 (3.29)	0.65 / 0.58	2.32	0.25	'80-'98	19
Sweden	-	1.63 (5.58)	-	1.63	-	-	-	'96: 3.1 (2.83)	0.75 / 0.73	2.22	0.60	'84-'98	15
UK	-	0.31 (2.12)	0.26 (1.78)	0.57	0.00	-	-	'96: 1.7 (2.68)	0.59 / 0.55	1.80	0.71	'79-'98	20

Note: Data used are from OECD Economic Outlook 65, June 1999; *t*-values are between parenthesis, Wald gives the probability of joint significance of  $\beta_1$  and  $\beta_2$ ; Br-Go gives the probability of serial correlation using a Breusch-Godfrey serial correlation LM test (1 lag), under the null that no serial correlation exists.

**Table A2. Data for government size, budgetary sustainability and openness as used in eq. (2), section 4**

Country	Stabiliser	Gvmt expenditure	Gvmt income	Debt %GDP	Budget %GDP	Openness
Austria	0.49	49.2	46.2	50.2	-3.04	41
Belgium	0.11	56.8	49.7	119.5	-7.02	65
Denmark	0.62	57.8	56.5	69.5	-1.28	35
Finland	0.80	44.6	46.8	25.3	2.15	27
France	0.48	50.1	47.4	43.2	-2.69	25
Germany	0.25	47.6	45.1	43.1	-2.52	25
Ireland	0.15	43.0	38.2	94.0	-4.76	61
Italy	0.41	49.0	39.5	89.6	-9.55	18
Netherlands.	0.59	54.2	50.5	65.1	-3.69	49
Portugal	0.41	39.0	33.8	51.6	-5.19	33
Spain	0.41	41.0	36.6	52.5	-4.51	24
Sweden	1.63	61.2	59.3	57.6	-1.93	28
UK	0.57	42.7	39.6	53.5	-3.19	25
Average	0.52	49.0	45.3	62.7	-3.6	35

*Openness is defined as  $\frac{1}{2}(\text{export} + \text{import})/\text{GDP}$ ; data are from OECD Economic Outlook 65.*

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