

Ansgar Belke and Daniel Gros

# Is Fiscal Policy Coordination Needed in a Common Currency Area?

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**Ansgar Belke and Daniel Gros\***

## **Is Fiscal Policy Coordination Needed in a Common Currency Area?**

Abstract

It is widely assumed that a common currency makes it desirable to have also a common fiscal policy. However, if fiscal policy is a source of shocks, independent national fiscal policies are generally preferable because they allow for risk diversification.

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## 1. Introduction

It is widely assumed that a common currency makes it desirable to have also a common fiscal policy (and some go even so far as saying as the euro needs to be backed up by a political union).<sup>1</sup> However, this is not a foregone conclusion if one accepts that fiscal policy can also be a source of shocks. There are a variety of reasons why fiscal policy could be destabilizing: policy makers do not have full control over the outcome, at times the effect of a certain measure (e.g. a tax reform) is quite different from what is anticipated; or the economic forecasts underlying fiscal policy might turn out to be wrong. In the following it is thus assumed that fiscal policy represents a source of shocks. The key question then is whether a higher correlation of these shocks (presumably because of tighter cooperation) is desirable. The simple answer is that in general it might be better to have independent national fiscal policies that are not coordinated because this leads to risk diversification: the variance of a sum of shocks falls with the covariance among the individual components.

## 2. The model

The key idea is illustrated in the following simplified model of a two-country monetary union:

$$y_t = -\alpha i_t^e + \beta y_t^* \quad (1)$$

$$y_t^* = -\alpha i_t^e + \beta y_t \quad (2)$$

$$m_t^e = \phi y_t + (1-\phi)y_t^* - \delta^{-1} i_t^e \quad (3)$$

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<sup>1</sup> For a survey on the first issue see, for instance, de Grauwe (2005, pp. 220 ff.), and Gandolfo (2001, pp. 344 ff.). For an introduction into the second aspect see Gros and Thygesen (1998, pp. 545 ff.).

where, as usual,  $y_t$  stands for income,  $ff_t$  stands for a fiscal policy demand shock. A starred variable, as usual, refers to the foreign country (or the rest of the monetary union). The parameters  $\beta$  and  $\beta^*$  designate the marginal propensities to import from the partner country.

The money supply,  $m_t$ , and the interest rate,  $i_t$ , have the superscript e (euro area) because in a common currency area there is only one interest rate and one monetary policy.

Equations (1) and (2) represent conventional IS curves.  $\delta$  stands for the inverse of the interest elasticity of money demand.  $\phi$  and  $(1-\phi)$  are the weights of the two countries in the overall EMU-wide money demand (presumably related to their economic weights).

Complete centralization of fiscal policies, for instance, does two things. One is that the discretionary part of fiscal policies is fully and *positively* correlated (e.g. the central government decides to raise taxes for the union as a whole). However, the centralized budget also has an important built-in stabilizer (an endogenous component), i.e. it allows for automatic transfers from the region experiencing good economic times to the region experiencing bad economic times. This is the well-known built-in insurance mechanism against asymmetric shocks provided by a central budget. This means that a centralized budget also makes it possible that the implicit regional budget deficits (surpluses) get *negatively* correlated. This tends to reduce the variance of output. Our model does allow for this effect to play a role. It has two components in the fiscal policy shocks, one which is discretionary (here meant to be an error in the fiscal policy stance) and one which is dependent on the income levels of the two regions.

For this purpose, we assume here that  $ff_t$  consists partially of a pure fiscal shock ( $f_t$ ) and an automatic stabiliser equal to  $\gamma y_t$ , where  $\gamma$  represents the elasticity of the budget (deficit) to growth (this parameter is assumed for simplicity to be equal in both countries).

Defining  $ff_i = f_i - \theta y_i$  and  $ff_i^* = f_i^* - \theta y_i^*$  allows us to rewrite equations (1) and (2) as follows:

$$y_i = -\alpha i_i^e + f_i - y_i + \beta y_i^* \text{ or } y_i = (1 + \theta)^{-1} [-\alpha i_i^e + f_i + \beta y_i^*] \quad (1a)$$

$$y_i^* = -\alpha i_i^e + f_i^* - y_i^* + \beta^* y_i \text{ or } y_i^* = (1 + \theta)^{-1} [-\alpha i_i^e + f_i^* + \beta^* y_i] \quad (2a)$$

It is apparent from these two equations that in the presence of automatic stabilisers ( $\theta > 0$ ) any shock to demand will have a smaller impact on output because its direct impact will automatically be reduced by  $(1 + \theta)^{-1}$ .

What are the ‘spillover’ effects of demand shocks (e.g. fiscal policy) in this simplified environment? This can be found by solving the model for income in both countries.

Using equation (3) in equation (2a) yields:

$$y_i^* [1 + \theta + \alpha \delta (1 - \phi)] = (\beta^* - \alpha \delta \phi) y_i + \alpha \delta m_i^e + f_i^* \quad (4)$$

Using equation (3) in equation (1a) yields, *mutatis mutandis*, a similar equation for the home country. The solution for home income is then:

$$y_i [1 + \theta + \alpha \delta \phi] = (\beta - \alpha \delta (1 - \phi)) y_i^* + \alpha \delta m_i^e + f_i \quad (5)$$

Substituting out foreign income yields a more complicated expression which contains only  $y_i$ :

$$y_i [1 + \theta + \alpha \delta \phi] = \alpha \delta m_i^e + f_i + [\beta - \alpha \delta (1 - \phi)] [1 + \theta + \alpha \delta (1 - \phi)]^{-1} [(\beta^* - \alpha \delta \phi) y_i + \alpha \delta m_i^e + f_i^*] \quad (6)$$

This can be solved to yield:



$$y_t = \frac{\left\{ [1 + \theta + \alpha\delta(1-\phi)]f_t + [\beta - \alpha\delta(1-\phi)]f_t^* + (1 + \beta + \theta)\alpha\delta m_t^e \right\}}{\{(1 + \theta)^2 - \beta\beta^* + (1 + \beta + \theta)\alpha\delta\phi + (1 + \beta^* + \theta)\alpha\delta(1-\phi)\}}$$

Or somewhat simplified:

$$y_t = \frac{\left\{ [1 + \theta + \alpha\delta(1-\phi)]f_t + [\beta - \alpha\delta(1-\phi)]f_t^* + (1 + \beta + \theta)\alpha\delta m_t^e \right\}}{\Delta} \quad (7)$$

This equation implies that the effect of a positive demand shock abroad on the home country's income could be either negative or positive depending on the sign of the expression in square brackets that multiplies  $f_t^*$ . Given that the denominator of this expression  $\Delta$  is positive, the spillover effects are positive only if the direct demand effect,  $\beta$ , is larger than the interest-rate effect,  $\alpha\delta(1-\phi)$ . If these two effects are equal, there is no spillover. The relative strength of the interest-rate effect depends on the size of the foreign country (or rest of EMU),  $(1-\phi)$ , multiplied by the product of the inverse of the interest elasticity of money demand ( $\delta$ ) and the elasticity of final demand with respect to the interest rate ( $\alpha$ ).

The existence of automatic stabilisers ( $>0$ ) does not affect the sign of the spillover effect because  $\Delta$  is positive and growing in . However, the magnitude of the spillovers is affected by automatic stabilisers: an increase in the strength of automatic stabilisers (rise in ) weakens the spillover effect.

Does the sign of the spillover effect depend on country size? For a country that is only a small part of EMU ( $\phi$  small),  $\beta$  (the marginal propensity to import from the rest of the EMU) is likely to be large. This implies that the two parameters whose difference determines the sign of the spillover effect ( and  $(1-\phi)$ ) should vary in the same direction with changes in country size. Hence there is no simple presumption that the spillover

effect changes sign with country size. However, there are in reality large differences even among EU-15 member countries (and even more among the new members) in terms of their trade integration with the euro zone. Hence, the probability that the spillover effects are positive should be higher for countries that for reason of geography (or specialization in particular products) trade more with the euro zone, i.e. have a higher  $\beta$  (e.g. Belgium versus Greece). The absolute value of the spillover effect is also influenced by the multiplier in the denominator, which is always positive since  $\beta, \beta^* < 1$ , and which is increasing or decreasing in  $\beta$  depending on the size of the spillover effect.

The effect of the demand shocks in equation (7) is implicitly based on the assumption that the Union-wide money supply is held constant. This would correspond to money supply targeting by the ECB along the lines of that of the Bundesbank. If the ECB targeted interest rates, the spillover effect would of course be positive, since there would be no offsetting impact from higher rates. However, in this latter case there would be pressure on prices to rise throughout the euro area. Thus, it is likely that the ECB will increase interest rates if fiscal policy becomes expansionary even if it does not have a formal money supply target (only a reference value).

### 3. Spillover effects and the desirability of fiscal policy coordination

In this simplified model one can now calculate how the variability of home country output is affected by the variance of the home and foreign demand shock, as well as their covariance.

For simplicity it is assumed that both shocks are distributed normally with standard deviation  $\sigma$  (and  $\sigma^*$ ) and covariance  $covariance(f, f^*)$ .

The variance of domestic output is then given by:

$$\begin{aligned} variance(y_t) = \Delta^{-2} & \left\{ [1 + \theta + \alpha\delta(1-\phi)]^2 \sigma^2 + [\beta - \alpha\delta(1-\phi)]^2 \sigma^{*2} \right. \\ & \left. + 2[1 + \theta + \alpha\delta(1-\phi)][\beta - \alpha\delta(1-\phi)] cov\ variance(f, f^*) \right\} \end{aligned} \quad (8)$$

Assuming that the two countries have the same likelihood to make errors in their fiscal policy, the two standard deviations should be equal. The key element in this expression is then the sign and size of the covariance and the product which pre-multiplies this covariance, i.e.  $[1 + \theta + \alpha\delta(1-\phi)][\beta - \alpha\delta(1-\phi)]$ . If the spillover effects of demand shocks are positive, i.e. if the second expression in square brackets is positive, a high (positive) covariance between foreign and domestic shocks will mean a high variance of domestic output. It follows that (in a common monetary area) the variance of income increases with the degree of correlation of fiscal shocks. Again, the existence of automatic stabilisers will not affect the sign of the crucial term, but only its size. If the sign of the spillover effects changes, this conclusion would also change. If spillover effects of demand shocks are negative, a low variance of domestic output would be the result. Whether more coordination of fiscal policy is desirable thus depends crucially on the spillover effects fiscal policy has. For instance, some calculations of the welfare gains

from international policy coordination among the G3 show that the gains from policy coordination are ambiguous.<sup>2</sup> We would argue that the cross-country spillovers among member countries under EMU should in general be more likely to be positive given the high (and increasing) degree of intra-EMU trade. However, this cannot be taken for granted.

De Haan, Eijffinger and Waller (2005), for instance, have discussed the issue of centralization or decentralization including the risks of decentralization and the diverging business cycles and, hence, negative spillover effects, in EMU quite extensively.<sup>3</sup> Their main conclusion is that there is still quite some evidence which suggests that, within the euro area, countries diverge in terms of their business cycles. There is also only mixed evidence that further integration will lead to more synchronization of business cycles. This is especially valid with an eye on Eastern EMU enlargement. However, potential policy conclusions are conditional on the correlation between home and foreign demand shocks (and possibly supply shocks) and, hence, on the degree of business cycle synchronization. Seen on the whole, thus, there remains considerable uncertainty about one key element that would be necessary for fiscal policy coordination, namely the sign and size of the spillover effects.

It is difficult to decide whether in reality there is too much or too little fiscal policy coordination, or synchronization in the euro area so far because too little data are available. Table 1 below shows the variability (standard deviation) and the correlation coefficients of the national cyclically adjusted deficits (which should correspond to the

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<sup>2</sup> As an early source, see Frankel and Rockett (1988) on coordination between the US and the rest of the world.

<sup>3</sup> See de Haan, Eijffinger and Waller (2005), Chapter 5.

variable  $f$  in our model) with that of the euro area. For the calculation of the correlation coefficients, we excluded the country under consideration from the euro area average. We differentiate between two periods – a pre-EMU period ranging from 1985 to 1997 and an EMU sample from 1998 to 2007. Data are from the AMECO data base (Cyclically adjusted net lending (+) or net borrowing (-) of general government: adjustment based on trend GDP excessive deficit procedure).

There is considerable variability in the data and little systematic difference between pre- and post EMU. Comparing the two periods, the average degree of variability decreases slightly from 1.15 to 0.77. But this is not statistically significant given the small sample size. Moreover, the average of the correlation coefficients is roughly constant: 28.08 and 26.76. There is a positive but weak correlation and if there is now some coordination in the fiscal policies it is not new as it was at nearly the same level already before. This suggests that since the start of EMU the discretionary part of fiscal policy has not been highly synchronized.

Table 1: Variability and co-variation of fiscal policy in the euro area (as measured by the cyclically adjusted deficit), 1985 to 1997 versus 1998 to 2007

	Std. dev. of discretionary fiscal policy		Correlation with euro area average	
	1985-1997	1998-2007	1985-1997	1998-2007
<i>Euro area 12</i>	1.09	0.76		
<i>Belgium</i>	1.08	0.81	54.25	-48.60
<i>Germany</i>	1.41	0.48	7.32	91.97
<i>Ireland</i>	1.10	0.77	-5.81	65.48
<i>Greece</i>	<i>n.a.</i>	0.76	<i>n.a.</i>	65.55
<i>Spain</i>	<i>n.a.</i>	0.80	<i>n.a.</i>	10.05
<i>France</i>	1.22	0.90	35.09	41.95
<i>Italy</i>	1.10	0.83	-2.63	42.09
<i>Luxembourg</i>	<i>n.a.</i>	0.78	<i>n.a.</i>	-4.48
<i>Netherlands</i>	1.11	0.76	45.58	72.09
<i>Austria</i>	1.11	0.81	40.05	-55.60
<i>Portugal</i>	1.09	0.78	71.24	24.00
<i>Finland</i>	1.11	0.78	10.83	16.62
<i>Average</i>	1.15	0.77	28.44	26.76

#### 4. Conclusions

The simple model used here just serves to illustrate a general idea, which should hold up in more sophisticated models as well. Our main result is that in general it might be better to have independent national fiscal policies that are not coordinated (or at least not correlated) under EMU, because this leads to risk diversification: the variance of a sum of shocks is lower the lower the covariance among the individual components. The argument that independent national fiscal policies are preferable because of risk diversification is not new and was already documented in the risk sharing literature by

Sørensen, Yosha, van Wincoop and many others.<sup>4</sup> However, our simple model supports this view from another new angle.

Our analytical results suggest that the calls for fiscal policy coordination that are often repeated might be misguided. More fiscal policy coordination is also likely to lead to more correlated fiscal policy shocks and this might increase actual output variability.

## References

Asdrubali, P., Sørensen, B.E., and O. Yosha, 1996, Channels of interstate risk-sharing: US 1963-1990, *Quarterly Journal of Economics*, vol.144, pp. 1081-1110.

De Grauwe, P., 2005, *Economics of monetary union*, 6th ed. (Oxford University Press, Oxford).

de Haan, J., Eijffinger, S.C.W. and S. Waller, 2005, *The European Central Bank*, The MIT Press.

Frankel, J. and K. Rockett, 1988, International macroeconomic policy coordination when policy makers do not agree on the true model, *American Economic Review* 78, 318-340.

Gandolfo, G., 2001, *International finance and open-economy macroeconomics* (Springer, Berlin-Heidelberg).

Gros, D. and N. Thygesen, 1998, *European monetary integration* (Addison Wesley Longman, New York).

Sørensen, B. and O. Yosha, 1998, International risk sharing and European monetary unification, *Journal of International Economics*, 45, pp. 211-238.

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<sup>4</sup> See, for instance, Asdrubali, Sørensen, and Yosha (1996) and Sørensen and Yosha (1998).