

Reply to referee 2

I would like to thank the referee for the attention that he has paid to the reading of my paper, and for his comments. Here are my answers to his comments.

First, I thank the referee for mentioning the survey by Beetsma and Giuliodori (2010). I have read and I have mentioned this interesting analysis in the new version of my paper, as well as another paper dealing with the subject of cooperation between heterogeneous countries: Neck *et al.* (2005). Beetsma and Giuliodori (2010) provide a large survey of recent research on the macroeconomic costs and benefits of the EMU in many fields. Regarding the subject of my paper, they assume that when the monetary authority can't commit, fiscal policies are too expansionary; budgetary constraints and/or limits on public debt levels are then necessary. In this framework, budgetary cooperation can avoid too expansive budgetary policies due to a free riding problem in a monetary union, if the governments internalize the externalities of their policies and the price stability goal of the central bank. However, when the fiscal authorities are leaders in their game with the common central bank, coordination reinforces their strategic position and this may undermine fiscal discipline and put the central bank under pressure to relax its policy. The consequences of budgetary cooperation on welfare are thus ambiguous in the economic literature, depending on the strategic position of the governments. However, this survey doesn't mention the question of the structural heterogeneity between the member countries of a monetary union, which is the main contribution of my paper.

Relevance of the approach

I must agree with the fact that my model is not well suited to deal with the problem of the current European debt crisis. Public debts are not considered in this model, neither the importance of anticipations on financial markets to increase government bond spreads on these debts. The aim of this paper was limited to the study of the advantage or not of budgetary cooperation for the stabilization of demand or supply shocks in the framework of a structurally heterogeneous monetary union in 'normal times'. The current European debt crisis is very different, because it is not only a problem of 'disturbances', it is also a matter of confidence. Financial markets have doubts about the sustainability of the public debts of some European countries. Therefore, whereas government bond spreads had become quite negligible before 2007, they reached unsustainable levels for some EMU member countries with the current crisis. There are huge financial (and not only real and trade) linkages between the European countries, which can explain the importance of the phenomenon of contagion on the financial markets, and confidence has been given a new power. I am currently working on new papers dealing with the problem of the European debt crisis or with the possibility of Eurobonds. However, these fundamental questions were not the subject of the current paper.

Framework of analysis

- On the website of *Economics E-Journal*, 'data set, additional material', I have detailed the derivation of all my theoretical results. With complex analytical equations, it is possible to derive how the aggregate fiscal policy stance within a group is translated into each country's own fiscal policy stance. Indeed, we obtain:

$$g_{h,t(p)} = f[d_{h,t(p)}, g_t, d_t, \bar{g}_t, \bar{d}_t, s_{h,t(p)}, s_t, \bar{s}_t, \pi_{h,t-1(p)}, \pi_{t-1}, \bar{\pi}_{t-1}, y_{h,t-1(p)}, y_{t-1}, \bar{y}_{t-1}, i_{t-1}, y^*, g^*]$$

However, these equations are so complex analytically that I have mention in footnote 2 that the theoretical derivations of my results are only available upon request, and are not mentioned in the paper.

- In my paper, there is no link between structural heterogeneity between the countries and the asymmetry between the shocks affecting these countries. In equations (1) or

(2), countries in the group (p) are structurally homogeneous, but the country (h) is affected by specific demand and supply shocks ($d_{h,t(p)}$ and $s_{h,t(p)}$), which can differ from those affecting the other member countries of the group (p). That's precisely because the member countries of a same group can be affected by differentiated shocks that the analytical resolution of my model is quite complex.

- The results of my model are very detailed regarding the quantitative boundaries of the efficiency of budgetary cooperation. For example, in section 5.1 for symmetric and in section 5.2 for asymmetric demand shocks, and in section 6.2 for asymmetric supply shocks, I mention the values of the fiscal multipliers (η) and of the sensitivities of the exports to foreign economic activity (τ) for which independent budgetary policies, partial budgetary cooperation or full budgetary cooperation provide a better stabilization of economic activity levels. The boundaries of my normative conclusions are precisely quantified: they correspond to the letters A to L mentioned in the paper, and these theoretical values are precisely quantified with the calibration of the parameters of my model mentioned in footnote 4.

The contribution of my paper is precisely to provide detailed and quantitative boundaries, related to the structural characteristics of a group of countries in a monetary union, for the efficiency of a partial budgetary cooperation within this group, according to the nature of the shocks (symmetric or asymmetric, supply or demand).