The macroeconomics of social pacts

Acocella, Nicola; Di Bartolomeo, Giovanni; Tirelli, Patrizio

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Authors: Nicola Acocella, Giovanni Di Bartolomeo, Patrizio Tirelli

PII: S0167-2681(09)00130-9
DOI: doi:10.1016/j.jebo.2009.05.014
Reference: JEBO 2389

To appear in: *Journal of Economic Behavior & Organization*

Received date: 26-7-2007
Revised date: 27-4-2009
Accepted date: 1-5-2009

Please cite this article as: Acocella, N., Di Bartolomeo, G., Tirelli, P., The macroeconomics of social pacts, *Journal of Economic Behavior and Organization* (2008), doi:10.1016/j.jebo.2009.05.014

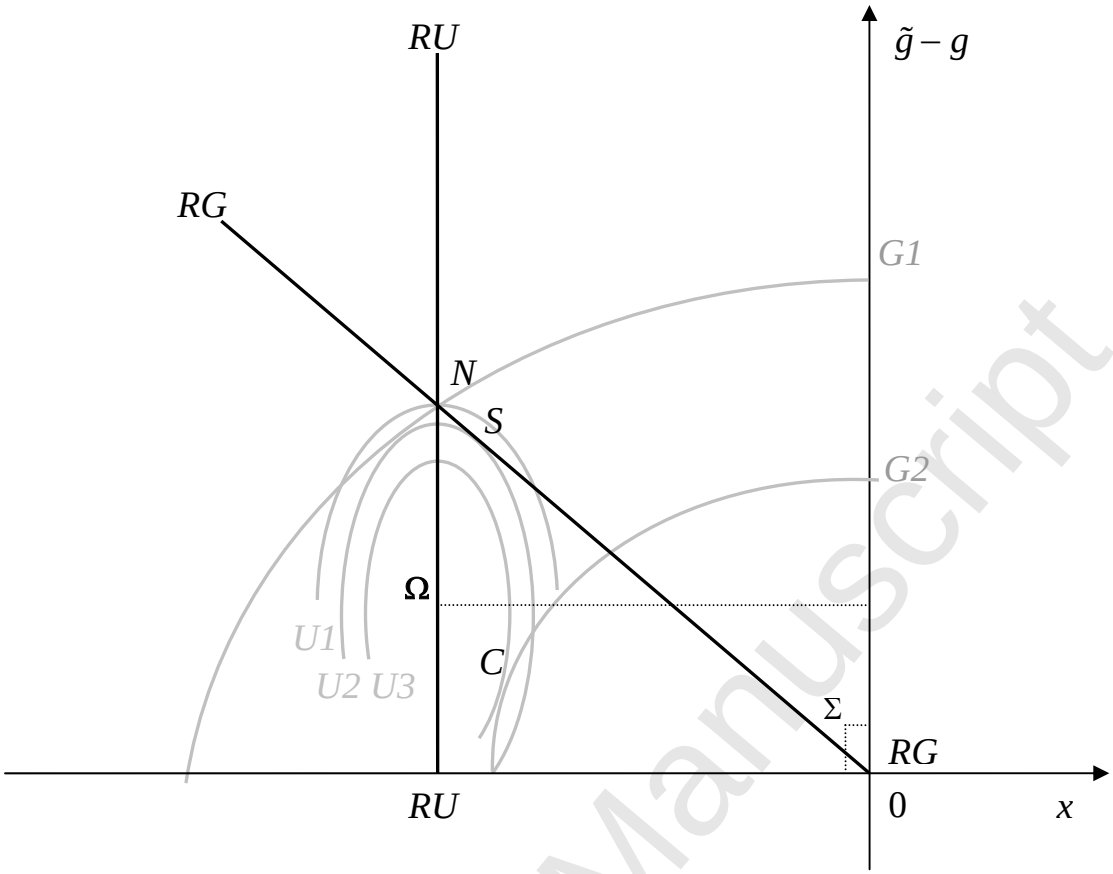

Figure 1

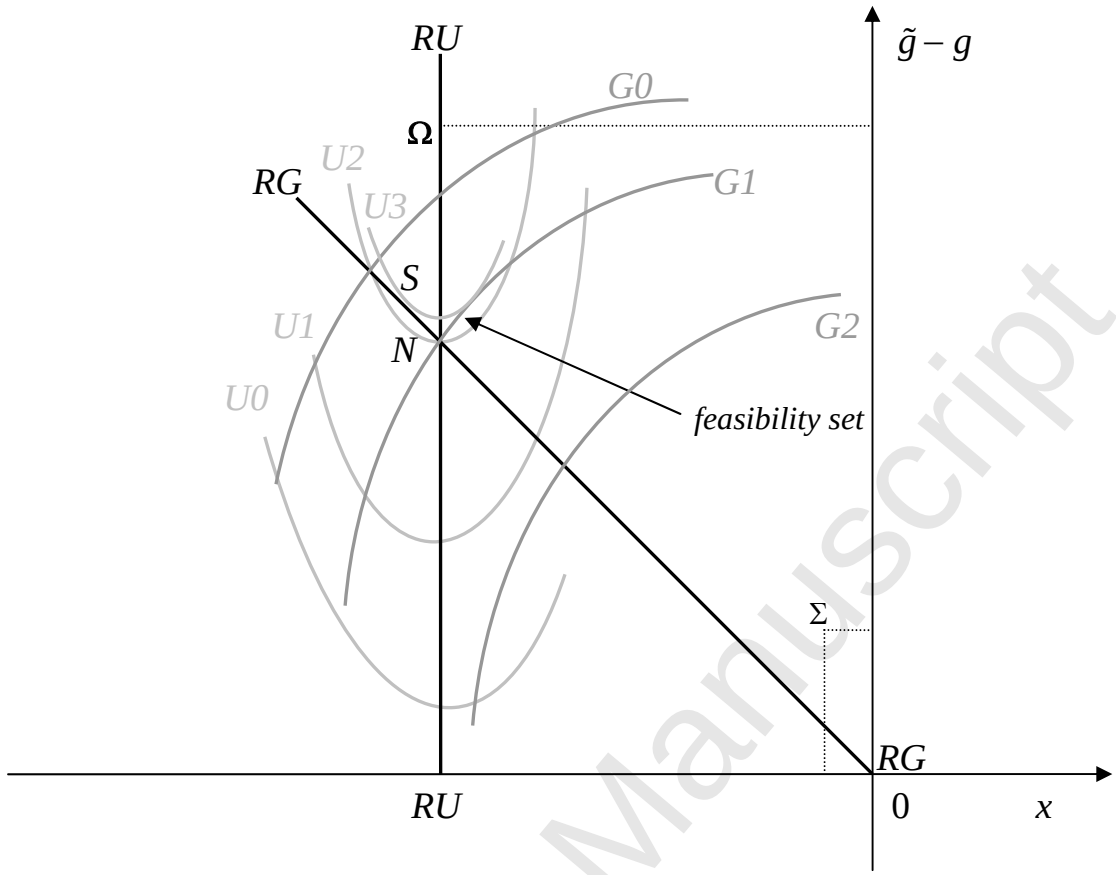

Figure 2

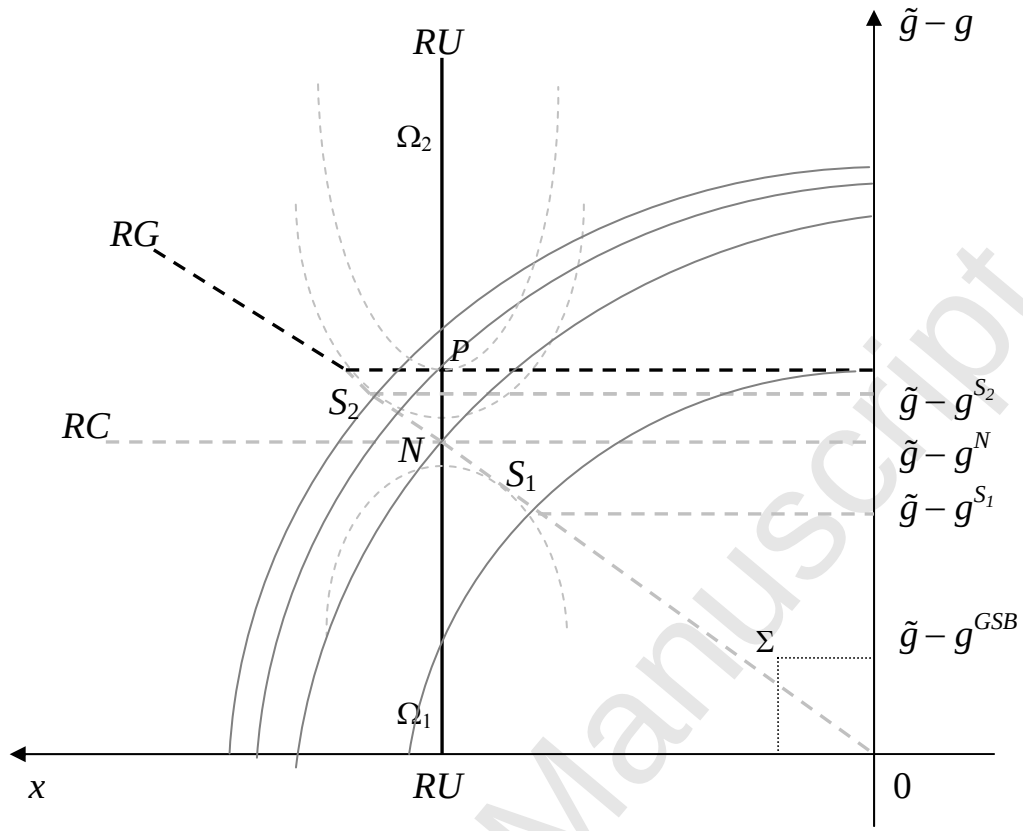

Figure 3

The macroeconomics of social pacts*

Nicola Acocella
University of Rome "La Sapienza"

Giovanni Di Bartolomeo
University of Teramo

Patrizio Tirelli
University of Milan-Bicocca

December, 2008

Abstract

In this paper we analyze macroeconomic interactions between trade unions, the central bank and the fiscal policymaker. We explicitly model unions' concern for public expenditure, paving the way for an analysis of the potential gains from cooperation between the fiscal policymaker and the unions, i.e. the so-called corporatist or social pacts that have characterized economic policies in a number of European countries in the last few decades. We also highlight the profoundly different incentives generated by institutional arrangements such as the Maastricht criteria and the Stability and Growth Pact. The former has unambiguously induced more efficient outcomes; the latter is likely to backfire!

Jel: E42, E58, E61, E62, E64, H30, J51, J58.
Keywords: Corporatism, trade unions, fiscal policy, monetary conservativeness, policy game.

*The authors are grateful to M. Capparucci and J. Visser for useful comments on earlier drafts. Nicola Acocella acknowledges financial support from the University of Rome "La Sapienza." Patrizio Tirelli acknowledges financial support from MIUR 60% and MIUR 40% 2004.

1 Introduction

In this paper we analyze macroeconomic interactions among trade unions, the central bank and the fiscal policymaker. We explicitly model trade unions' concern for public expenditure, paving the way for an analysis of the potential gains from cooperation between the fiscal policymaker and the trade unions, i.e. the so-called corporatist or social pacts that have characterized economic policies in a number of European countries in the last few decades. Following Burda (1997), we define corporatism as a set of rules of the game, i.e. institutional arrangements that involve negotiation, bargaining, collaboration, and accord between major economic groupings in a society, and especially between unions and governments. Thus corporatism provides the commitment technology necessary to enforce cooperative agreements between the trade unions and the fiscal policymaker.

In their golden age (the 1970s and early 1980s) social pacts sought to trade wage moderation for higher public expenditure (namely welfare expenditure) or lower inflation (namely after the oil shocks).[1] Earlier empirical studies pointed out that corporatist economies post better performance in terms of inflation and unemployment (Calmfors and Driffill, 1988) but higher levels of taxation. In recent decades there have been rather conspicuous changes in European industrial relations. Since 1987, when the first of five multi-annual pacts was stipulated in Ireland, there have been numerous formal or informal agreements of a corporatist nature in almost all European countries, with the major exceptions of Belgium and France. But the social pacts of the last fifteen years differ from earlier ones in at least one important respect, since they establish reductions – rather than increases – in public expenditure and government action to protect employment and labor rights (Regini, 1997; Visser, 2002). Some contributions (Streeck, 1998; Hancké and Rhodes, 2005) suggest that second-generation social pacts were induced by the need to meet the Maastricht criteria. Hancké and Rhodes (2005) also point out that social pacts disappeared after 1999.

We revisit the case for corporatist agreements in a model where labor markets are unionized, the government controls the fiscal stance, and an independent central bank sets monetary policy. We can then analyze the scope for a political exchange between public expenditure and wage setting choices, showing that corporatism may generate quite different macroeconomic outcomes from the traditional exchange between wage restraint and high public expenditure. In fact our model can easily encompass both first

[1] Unionized labor markets and a pervasive welfare system have long been the hallmark of European corporatist economies (Organisation for Economic Cooperation and Development, 1997; Traxler and Kittel, 2000; Rhodes, 2001; van Poeck and Borghijs, 2001).

and second-generation corporatist agreements.

Our approach stands in sharp contrast with some contributions where the importance of institutional arrangements in shaping macroeconomic outcomes is a key ingredient, but the focus is restricted to unilateral institutional constraints on policymakers. Typically, central bank conservatism and institutional constraints on fiscal discretion are deemed to generate lower output distortions and inflation (see, for instance, Beetsma and Bovenberg, 1998; Beetsma and Uhlig, 1999). These results are obtained neglecting strategic interactions between non-atomistic wage setters and policymakers. In this paper we reconsider the issue and show that trade unions differentially react to institutional arrangements such as the Maastricht criteria and the Stability and Growth Pact, SGP henceforth. To the extent that unions saw benefits from joining EMU, the conditionality of the Maastricht criteria favored agreements that disciplined wage claims and public expenditures, whereas the unilateral fiscal *commitment* implied by the SGP apparently wipes off incentives for virtuous social pacts and is likely to have adverse effects on wage setting behavior.

The paper is organized as follows. In section 2 we present our model. In section 3 we derive the non-cooperative solution. In section 4 we compare the outcomes of cooperative and non-cooperative regimes and derive a number of propositions on the desirable effects of social pacts. In section 5 we explain the shifts from first to second-generation social pacts, with particular emphasis on the potential role of the Maastricht Treaty. Section 6 highlights the dangers of unilateral fiscal retrenchments such as the SGP. Section 7 concludes.

2 The model

We extend an otherwise standard Barro and Gordon model to account for monetary-fiscal policy interactions and for policy-endogenous real wage setting. Thus our approach is different from the one adopted in dynamic New Keynesian models, where both policymakers and wage setters maximize the utility of a representative agent. The rationale for this choice is twofold. On the one hand, we follow a string of contributions that treat labour unions as "institutions" whose choices are driven by political economy considerations that are difficult to include in a simple macromodel (Oswald, 1982; Saint-Paul, 2000; for an extensive survey, see Cukierman, 2004).[2] On the other

[2]It should be noted, however, that in our setting the policymakers optimize quadratic objective functions. These may be thought of as second-order approximation to a representative agent utility function.

hand, the rich dynamic structure of New Keynesian models makes them unsuitable for the analysis of strategic interactions between policymakers and wage setters. In fact, this whole strand of literature has little to say about long-term inflation – typically assumed to be zero despite overwhelming evidence of the contrary (Schmitt-Grohé and Uribe, 2005: 52).

The standard supply function is defined as follows[3]

$$x = \pi - \pi^e - t - \tilde{x} \tag{1}$$

where output deviations from the competitive non-distortionary baseline level, x, are caused by an index of tax distortions, t, real wage distortions due to monopolistic unions, $\tilde{x}$,[4] and inflation surprises, $\pi - \pi^e$ (π^e defines inflation expectations).

In this economy there are three players: the government, a monopoly trade union, and the central bank.

The government's loss function is defined over inflation, output and public expenditure deviations from the target, $g - \tilde{g}$:

$$G = \frac{1}{2}\left\{\alpha_{\pi f}\pi^2 + x^2 + \alpha_{gf}\left(g - \tilde{g}\right)^2\right\} \tag{2}$$

As in Debelle and Fischer (1994), $\tilde{g}$ is interpreted as the optimal share of non-distortionary output to be spent on public goods if non-distortionary lump-sum taxes were available. In setting the public expenditures level, the government faces a balanced budget constraint:[5]

$$g = t \tag{3}$$

The trade union's loss function is

$$U = -\tilde{x}\beta_{\tilde{x}} + \frac{x^2}{2} + \frac{\beta_{gu}(g - \tilde{g})^2}{2} \tag{4}$$

The union's welfare increases with the real wage but falls with output distortions (see Lawler, 2000a, 2000b; Cukierman, 2004).[6] The assumption

[3]Equation (1) is akin to Alesina and Tabellini (1987) and Beetsma and Bovenberg (1998). For a derivation, see Appendix A.

[4]More precisely, $\widetilde{x}$ is the real wage mark-up over the competitive wage rate.

[5]For the sake of simplicity we abstract from both the seigniorage component of the budget and debt service payments.

[6]In the literature it is sometimes assumed that the union penalizes real wage deviations from an exogenous real wage target. This would cause minor changes in our results. See Acocella and Di Bartolomeo (2004) for a discussion on the different specifications of the union loss function.

that the trade union is concerned with expenditure deviations from the target is perhaps less straightforward and requires some discussion. In fact union members may be concerned with specific components of public expenditures, such as pension funds, unemployment benefits, health insurance for workers, social policies, and any government action in the area of income distribution. For simplicity, we can say that the union is interested in the level of total government expenditure. In addition, we assume that the monopolistic union sets the labor market distortion, i.e. a real-wage mark-up over the competitive rate. If we accept a social welfare perspective of the government's preferences, the loss functions (2) and (4) will differ insofar as the government takes the preferences of non-workers into account (as in Beetsma and Bovenberg, 1998).[7]

Monetary policy is delegated to an independent central bank (CB henceforth), which is interested in minimizing both the inflation rate and output deviations from a non-distortionary equilibrium.

$$V = \frac{1}{2}\left\{\alpha_{\pi m}\pi^2 + x^2\right\} \tag{5}$$

where $\alpha_{\pi m} > \alpha_{\pi f}$. We assume that the CB directly controls the inflation rate.

3 The non-cooperative solution

The timing of the game is as follows.[8] The union and the government simultaneously set labor ($\tilde{x}$) and tax (t) distortions. After that, the CB chooses monetary policy, i.e. sets inflation (π).[9] The model is solved by backward induction. In Appendix C we extend our results to the case where the government action follows the union wage-setting decision. A graphical characterization of the Stackelberg equilibrium is provided below (figures 1-3).

[7] For the sake of simplicity we assume that the public expenditure targets in equations (2) and (4) are identical. This assumption has only quantitative effects on our results (proof available upon request).

[8] In this class of models, the timing of the game is not univocally defined. We consider the two types of non-cooperative games (Nash and Stackelberg with the union leader) that are more commonly used (Alesina and Tabellini, 1987; Beetsma and Bovenberg, 2000, 2002; Beetsma and Uhlig, 1999; Debelle and Fischer, 1994; Dixit and Lambertini, 2001, 2003). New Keynesian models typically assume that the fiscal policymaker chooses his policy instrument taking wages and prices as given (Benigno and Woodford, 2003; Schmitt-Grohé and Uribe, 2007; Kirsanova and Wren-Lewis, 2007).

[9] As usual in this kind of models, setting money supply growth is equivalent to choosing inflation.

The CB's reaction function is easily derived by minimizing equation (5) subject to equation (2):

$$\pi = \frac{1}{1+\alpha_{\pi m}}\left\{\pi^e + t + \tilde{x}\right\} \tag{6}$$

Taking account of the balanced budget constraint (3) and of equations (1) and (6), the government first order condition is

$$\alpha_{\pi f}(\pi)\frac{\partial \pi}{\partial t} + x\left(\frac{\partial x}{\partial t} + \frac{\partial x}{\partial \pi}\frac{\partial \pi}{\partial t}\right) + \alpha_{gf}(g-\tilde{g}) = 0 \tag{7}$$

where $\frac{\partial x}{\partial t} + \frac{\partial x}{\partial \pi}\frac{\partial \pi}{\partial t} = -1 + \frac{1}{1+\alpha_{\pi m}}$.

When choosing the fiscal stance, the government anticipates the CB's reaction to its tax policy, such that inflation will increase following a rise in the tax rate. However, the government cannot internalize the simultaneous reaction of the trade union. Thus, as explained in Beetsma and Bovenberg (1998), taxes will be set *as if* the inflation response could partly offset output distortions, neglecting the wage-setting reaction to taxation.

Let us now turn to union's behavior. The log-deviation of the nominal wage from its competitive zero-inflation level is $w = \tilde{x} + \pi^e$ (for a derivation, see Appendix A). We assume that the trade union takes g as given and simultaneously chooses inflation expectations and the level of $\tilde{x}$, where the latter minimizes (4),[10] subject to (1) and (6). By imposing rational expectations $\pi^e = \pi$ (i.e. $\partial x/\partial \tilde{x} = -1$), we obtain the trade union first order condition:

$$-\beta_{\tilde{x}} - x \ = 0 \tag{8}$$

Corresponding Nash outcomes are:

$$x^N = -\beta_{\tilde{x}} \tag{9}$$

$$\tilde{x}^N = \beta_{\tilde{x}}\left[1 + \frac{1}{\alpha_{gf}}\left(\frac{\alpha_{\pi f} + \alpha_{\pi m}^2}{\alpha_{\pi m} + \alpha_{\pi m}^2}\right)\right] - \tilde{g} \tag{10}$$

$$\left(\tilde{g} - g^N\right) = \frac{\beta_{\tilde{x}}}{\alpha_{gf}}\left(\frac{\alpha_{\pi f} + \alpha_{\pi m}^2}{\alpha_{\pi m} + \alpha_{\pi m}^2}\right) \tag{11}$$

$$\pi^N = \frac{\beta_{\tilde{x}}}{\alpha_{\pi m}} \tag{12}$$

[10] This implies that the union bargains over the real wage. In the literature it is sometimes assumed that unions bargain over the nominal wage. This issue is not relevant here because, as Lippi (2002) shows, the two assumptions may have different implications only if the number of unions is greater than one.

Output distortions are policy invariant (see eq. (9)): given the tax rate, the trade union will set the real wage distortion at a level such that (8) holds. As a consequence, labor and tax distortions are perfect substitutes: the output effect of a tax change is fully offset by a real wage adjustment in the opposite direction (see eq. (10)). We cannot rule out the case where the government chooses to subsidize production ($g^N < 0$). In this case the union neutralizes the effects of a subsidy by increasing labor distortions. The more the union is concerned with the real wage objective, the lower is the tax rate (eq. (11)). Our results stand in sharp contrast with those obtained in models where labor market distortions are exogenous. First of all, these models see subsidies as a remedy to labor market distortions (Alesina and Tabellini, 1987; Dixit and Lambertini, 2003). In fact, instead of raising production, our model shows that the expectation of a subsidy would trigger a real wage increase. Second, the expenditure bias identified in Beetsma and Bovenberg (1998) has no impact on output distortions, which are independent of fiscal policy.

4 The cooperative solution

The Nash equilibrium implies three sources of inefficiency related to the timing of the game and the existence of externalities. First, the government cannot internalize the impact of its actions on inflation expectations. Second, the government does not internalize the real wage reaction, such that in equilibrium $\frac{\partial x}{\partial t} = 0$. Third, the trade union neglects the adverse effects of its actions on the level of public expenditure.

As usual, cooperation is defined as the joint minimization of a convex combination of the difference between the two players' loss functions and their outside options, i.e. the generalized Nash product $\left(G - G^N\right)^{\phi}\left(U - U^N\right)^{(1-\phi)}$ with $\phi \in [0, 1]$. For our purposes, a graphical analysis is exhaustive.[11]

To begin with, it is useful to identify the two players' preferred combination of expenditure gap and output.[12] For the government, this is:

[11] It is worth noticing that a closed-form solution of the cooperative case cannot be derived. Only numerical simulations are possible. The reason is that the maximization of the Nash product leads to a high-order equation. The alternative would be to consider the maximization of a utilitarian function or a logarithmic transformation of the Nash product, but these transformations would be tricky in our context since they do not consider the problem of the feasibility of the cooperative solution (see Acocella and Di Bartolomeo 2007; and Acocella *et al.* 2009 for details).

[12] See Appendix B for a derivation. We focus on gaps to have an immediate intuition of the impact on the loss functions of the players.

$$\tilde{g} - g^{GSB} = \frac{\alpha_{\pi m}^2 \alpha_{gf}}{\alpha_{\pi f} + \alpha_{\pi m}^2 (1 + \alpha_{gf})} \tilde{g} \tag{13}$$

$$x^{GSB} = -\frac{\alpha_{gf} \alpha_{\pi m}^2}{\alpha_{\pi f} + \alpha_{\pi m}^2 (1 + \alpha_{gf})} \tag{14}$$

Conditions (13) and (14) imply that $\tilde{x} = 0$. Moreover, they are obtained by requiring the policymaker to take into account the adverse effect of taxes on inflation expectations.

The trade union's preferred combination of expenditure gap and output is:

$$\left(\tilde{g} - g^{USB}\right) = \frac{\beta_{\tilde{x}}}{\beta_{gu}} \tag{15}$$

$$x^{USB} = x^N = -\beta_{\tilde{x}} \tag{16}$$

g^{USB} is determined by the union desired trade-off between public expenditures and the real wage. Note that the Nash equilibrium leads to a level of output too low for the government, i.e. $x^{GSB} > x^N$, but we cannot say *a priori* what is the relative magnitude of $\left(\tilde{g} - g^{GSB}\right)$, $\left(\tilde{g} - g^{USB}\right)$, $\left(\tilde{g} - g^N\right)$.

For our analysis of social pacts, it is useful to distinguish the following cases:

$$\left(\tilde{g} - g^{USB}\right) < \left(\tilde{g} - g^N\right), \ i.e. \ g^N < g^{USB} \tag{17}$$

$$\left(\tilde{g} - g^N\right) < \left(\tilde{g} - g^{USB}\right), \ i.e. \ g^N > g^{USB} \tag{18}$$

irrespectively of the relative size of g^{GSB}.

Suppose condition (17) holds. Both the government and the union benefit from $\left(\tilde{g} - g^C\right) < \left(\tilde{g} - g^N\right)$, i.e. $g^N < g^C$, where superscript C identifies cooperative outcomes. In figure 1, the loci RG and RU identify the combinations of output distortions and expenditure gap that obtain along the two players' reaction functions, and points Σ, Ω define the outcomes[13] preferred by the government and by the trade union respectively (their second-best outcomes). Points N and S identify the Nash and Stackelberg equilibria. With regard to the Stackelberg equilibrium, it is worth noting that the union

[13]Note that point Σ must lie above the locus RG because in Σ the government internalizes the adverse effect of taxes on inflation expectations and chooses a lower level of public expenditure (see Appendix B for a discussion).

now internalizes the trade off between the real wage mark-up and public expenditure. Therefore its ability to commit to a real wage distortion leads to a better economic performance relative to the Nash equilibrium. Further benefits accrue from cooperation. In fact cooperative equilibria, e.g. point C in figure 1,[14] entail a reduction both in output distortions and the public expenditure gap. This, in turn, implies that the trade union is willing to discipline wage claims in order to benefit from an increase in expenditure.

Figure 1

Suppose condition (18) holds. Both the Stackelberg and the cooperative solutions are then substantially modified (see figure 2). With regard to the Stackelberg equilibrium, the union's ability to internalize the trade off between the real wage mark-up and public expenditure causes an increase in output distortions relative to the Nash equilibrium. This happens because the trade union is now less interested in public expenditures. By contrast, cooperation brings output distortions below the Nash equilibrium.

Figure 2

Summarizing, our model is consistent with both the old and the new forms of social pacts. Any cooperative agreement entails a reduction in output distortions and an increase in employment. If $\left(\tilde{g} - g^{USB}\right) < \left(\tilde{g} - g^{N}\right)$, the government will agree to reduce the public expenditure gap (i.e., it will raise public expenditure) in exchange for wage moderation as in the golden age social pacts. By contrast, if $\left(\tilde{g} - g^{USB}\right) > \left(\tilde{g} - g^{N}\right)$, the government agrees on a reduction in public expenditure, as all cooperative solutions must lie in the feasibility set indicated in figure 2.

5 Explaining the shift from first- to second-generation social pacts

According to our model, the observed shift to second-generation pacts is possible only if condition (18) holds, that is, if

$$\frac{\beta_{\tilde{x}}}{\beta_{gu}} > \frac{\beta_{\tilde{x}}}{\alpha_{gf}} \frac{\alpha_{\pi f} + \alpha_{\pi m}^2}{\alpha_{\pi m} + \alpha_{\pi m}^2} \tag{19}$$

[14] We take the Nash non-cooperative equilibrium as the players' outside option of the cooperative Nash solution in figure 1. When the union is the game leader with respect to the government, the feasibility set has to be computed by considering the Stackelberg solution as the outside option

In the light of eq. (19) we can discuss the potential role of some facts which might have influenced the evolution of social pacts.

- *Fall in union militancy.* There is evidence that union militancy began to fall in the 80s (see Visser, 2000), potentially disciplining wage claims and inducing the unions to accept a reduction in public expenditure. In our model parameter $\beta_{\tilde{x}}$ characterizes union militancy; hence from (19) it is clear that this would not change the nature of the political exchange between the unions and the policymaker.

- *Political change.* In many European countries right-wing governments came to power in the early Nineties (Swank, 2002). Furthermore, Piazza (2001) argues that the remaining left-wing governments became less radical, partly due to the generalized fall in union militancy. This could have reduced governments' concern for public expenditures and thus one of the terms of social pacts.[15] In our framework variations in α_{gf}[16] can capture the impact of the political cycle on the nature of social pacts. It is easy to see that a fall in α_{gf}, i.e. a political shift to the right, *per se* makes condition (19) less likely to obtain.

- *Central Bank commitment to low inflation.* There is a widespread consensus (e.g. Clarida *et al.*, 1998) that in the 80s Central Banks adopted a more conservative stance. In our model, the monetary policy reaction to fiscal and labour market distortions affects the fiscal policymaker decision to levy distortionary taxes. As discussed in section 3, this is the Beetsma and Bovenberg effect, captured by changes in $\alpha_{\pi m}$. From condition (19), it is easy to see that an increase in conservatism can reduce $\left(\tilde{g} - g^N\right)$ only if $\alpha_{\pi m} < \alpha_{\pi f} + \sqrt{\alpha_{\pi f}^2 + \alpha_{\pi f}}$.[17]

- *Maastricht criteria.* Second-generation social pacts became more numerous in the early 1990s, after stipulation of the Maastricht Treaty, when admission to EMU was made conditional to fulfilment of certain prerequisites entailing monetary policy independence, inflation control

[15] See also Alvarez *et al.* (1991), Baccaro and Lim (2007) and Hamann and Kelly (2007).

[16] Alternatively, we might assume that the government is characterized by a relatively lower public expenditure target. The results would be qualitatively identical.

[17] The non linear effect of a change in $\alpha_{\pi m}$ is explained as follows. On the one hand, according to the Beetsma and Bovenberg effect, the government anticipates an accommodating monetary response on output. Therefore an increase in conservatism disciplines expenditures. On the other hand, the accommodating monetary policy response has an adverse effect on inflation. Therefore an increase in conservatism lowers the inflation costs of higher public expenditures.

and fiscal discipline (Fajertag and Pochet, 2000; Hancké and Rhodes, 2005). It is widely acknowledged that the Treaty enhanced the low-inflation commitment of many European central banks and disciplined governments. A similar conclusion should hold for wage-setting behavior, to the extent that unions members saw benefits from EMU.[18] Assuming that this was indeed the case, in the following we investigate whether trade union attitude towards EMU membership can explain second-generation social pacts.

In our framework the role of the Maastricht criteria is mimicked by adding linear penalties in inflation and public expenditure[19] to (2), (4):

$$G = \frac{1}{2}\left\{\alpha_{\pi f}\pi^2 + x^2 + \alpha_{gf}\left(g - \tilde{g}\right)^2\right\} + \alpha_{\pi}^{EU}\pi + \alpha_{gu}^{EU}g \tag{20}$$

$$U = -\tilde{x}\beta_{\tilde{x}} + \frac{x^2}{2} + \frac{\beta_{gu}(g-\tilde{g})^2}{2} + \beta_{EU}^{\pi}\pi + \beta_{gu}^{EU}g \tag{21}$$

We thus consider additional costs associated to the variables relevant for the criteria achievement as an indirect indicator of the cost of not joining the EMU. The rationale for such penalties is intuitive for the government. Our key assumption is then that also unions perceive benefits from joining EMU: equation (21) captures the idea that unions internalize the link between wage setting behavior, fulfillment of the Maastricht criteria and, thus, the chances of accession to EMU.[20]

Solving the model for the Nash equilibrium yields:

$$x^{NMA} = x^N + \frac{\beta_{\pi}^{EU}}{\alpha_{\pi m}} \tag{22}$$

$$\tilde{x}^{NMA} = \tilde{x}^N - \left(1 + \frac{\alpha_{\pi f} + \alpha_{\pi m}^2}{\alpha_{gf}\left(\alpha_{\pi m} + \alpha_{\pi m}^2\right)}\right)\frac{\beta_{\pi}^{EU}}{\alpha_{\pi m}} + \frac{\alpha_{\pi}^{EU}}{\alpha_{gf}\left(1 + \alpha_{\pi m}\right)} + \frac{\alpha_{gu}^{EU}}{\alpha_{gf}} \tag{23}$$

[18] Consider for instance the welfare gains outlined in the Cecchini report (see Cecchini, 1988). For an alternative justification see Whyman (2002).

[19] The Maastricht criteria required public deficit control. To the extent that this put pressure for a reduction in public spending, in our static framework it seems appropriate to assume that this raised the cost of attaining a certain level of public expenditure. Buti (2006) shows that "several countries combined discretionary cuts in spending with a reduction in tax revenue, thus reducing the overall size of the public sector" (Buti, 2006: 7).

[20] The union inflation aversion is a debated issue, since it is considered as an *ad hoc* assumption by many authors (e.g. Soskice and Iversen, 2000). It is worth noting that here the union does not care about inflation *per se*: unions only care about inflation in so far as low inflation raises the chances of joining EMU.

$$\tilde{g} - g^{NMA} = \left(\tilde{g} - g^{N}\right) + \frac{1}{\alpha_{gf}}\left(\frac{\alpha_{\pi}^{EU}}{1+\alpha_{\pi m}} + \alpha_{gu}^{EU} - \frac{\beta_{\pi}^{EU}}{\alpha_{\pi m}}\frac{\alpha_{\pi f}+\alpha_{\pi m}^{2}}{\alpha_{\pi m}+\alpha_{\pi m}^{2}}\right) \quad (24)$$

$$\pi^{NMA} = \pi^{N} - \frac{\beta_{\pi}^{EU}}{\alpha_{\pi m}^{2}} \quad (25)$$

Relative to pre-Maastricht Nash equilibria, output distortions and inflation unambiguously fall. Trade union's concern for EMU membership is crucial to support this outcome: $x^{NMA} = x^{N}$ and $\pi^{NMA} = \pi^{N}$ when $\beta_{\pi}^{EU} = 0$.[21] By contrast, the Maastricht criteria have an ambiguous impact on the public expenditure gap (equation 24). On the one hand, the fiscal stance is tighter because the policymaker sees more costs from increases in inflation and public expenditures. On the other hand, trade unions are induced to choose a lower level of output distortions for any level of public expenditures (see equation (22)), and greater wage discipline leaves room for a looser fiscal policy.

The post-Maastricht trade union's preferred combination of output and expenditure gap is given by (22) and by:

$$\left(\tilde{g} - g^{USBMA}\right) = \left(\tilde{g} - g^{USB}\right) + \frac{\beta_{gu}^{EU}}{\beta_{gu}} \quad (26)$$

This implies that, relative to pre-Maastricht cooperative agreements, cooperation unambiguously entails a reduction in output distortions, whereas the effect on public expenditure is uncertain. Cooperative agreements would take the form of second-generation pacts only if $\left(\tilde{g} - g^{USBMA}\right) > \tilde{g} - g^{NMA}$. This, in turn, requires that

$$\frac{\beta_{gu}^{EU}}{\beta_{gu}} + \frac{1}{\alpha_{gf}}\left(\frac{\beta_{\pi}^{EU}}{\alpha_{\pi m}}\frac{\alpha_{\pi f}+\alpha_{\pi m}^{2}}{\alpha_{\pi m}+\alpha_{\pi m}^{2}} - \frac{\alpha_{\pi}^{EU}}{1+\alpha_{\pi m}} - \alpha_{gu}^{EU}\right) > -\left[\left(\tilde{g} - g^{USB}\right) - \left(\tilde{g} - g^{N}\right)\right] \quad (27)$$

where it is obviously assumed that (17) holds, i.e. $\left[\left(\tilde{g} - g^{USB}\right) - \left(\tilde{g} - g^{N}\right)\right] < 0$.

The l.h.s. of (27) identifies the differential impact that the Maastricht criteria have on $\left(\tilde{g} - g^{USBMA}\right)$ and $\tilde{g} - g^{NMA}$, confirming the intuition that second-generation pacts would have emerged only if the Maastricht criteria

[21] In the Nash equilibrium coefficient β_{gu}^{EU} in (21) is obviously irrelevant. It would play an important role when the trade union plays Stackelberg leader *vis à vis* the government. Results available upon request.

had a relatively strong impact on trade unions.[22] Note that if in equation (24) the expenditure gap falls, i.e. $\left(\frac{\beta_{\pi}^{EU}}{\alpha_{\pi m}}\frac{\alpha_{\pi f}+\alpha_{\pi m}^{2}}{\alpha_{\pi m}+\alpha_{\pi m}^{2}}-\frac{\alpha_{\pi}^{EU}}{1+\alpha_{\pi m}}-\alpha_{gu}^{EU}\right)>0$, then condition (27) is more likely to hold. This leads to an intriguing and perhaps surprising conjecture. Without cooperation, the Maastricht criteria might have failed to discipline fiscal policies even though both unions and fiscal policymakers recognized the importance of joining EMU. This, in turn, led to the emergence of social pacts aiming at public expenditure control.[23]

6 The danger of unilateral fiscal retrenchments: Could the SGP backfire?

Earlier contributions (see Sibert, 1999; Sibert and Sutherland, 2000) have pointed out that, while policymakers where unambiguously disciplined by the conditionality of the Maastricht Treaty, national fiscal policies would turn to a loose stance after EMU membership was obtained, unless additional constraints were imposed on the fiscal policymakers. Moreover, an extensive literature supports the view that institutional constraints on the fiscal stance improve macroeconomic performance,[24] providing a rationale for the Stability and Growth Pact. In these contributions trade unions' behavior is usually neglected or assumed to be exogenous. In this section we show that such an assumption is not innocuous.

In the following we maintain the single-country framework, even though the post-EMU process determining inflation is substantially different because monetary policy is decided by a union-wide central bank. The motivation here is twofold: i) fiscal commitment by definition implies that the policymaker choice is determined irrespective of central bank future actions; ii) inflation does not enter the trade unions objective function.[25]

[22] This conclusion is reinforced for countries where commitment to low inflation and fiscal discipline had already been established. For instance, when $\alpha_{\pi m}\rightarrow\infty$ condition (27) requires $\frac{\beta_{gu}^{EU}}{\beta_{gu}}>\frac{\alpha_{gu}^{EU}}{\alpha_{gf}}$.

[23] Notice that the model as such is not equipped to show whether post-Maastricht social pacts in fact became more likely. Preliminary empirical evidence shows that this was indeed the case in countries that eventually joined EMU (Colombo *et al.*, 2008).

[24] See, among others, Chari and Kehoe (1997), Beetsma and Bovenberg (1998, 2000, 2002), Beetsma and Uhlig (1999), Dixit (2001), Dixit and Lambertini (2001), and Governatori and Eijffinger (2004).

[25] Alternatively, we could have followed other contributions to the literature, where trade unions are inflation averse and the common central bank is characterized by an objective function which is quadratic in the common inflation rate and in a weighted average of national outputs. It would be easy to show that these extensions would not modify our

Our analysis is based on the presumption that Maastricht criteria and the SGP have a profoundly different influence on the trade union incentives. As discussed in section 5, the former leave room for wage setting decisions to affect outcomes – EMU membership – of interest to trade unions. By contrast, the latter are unilateral decisions undertaken by governments, who promise to adopt a certain fiscal stance independently from wage-setting behavior. Furthermore, the recent history of EMU fiscal policies shows that the costs of breaching the SGP rules are mainly reputational and therefore fall entirely on the fiscal policymakers. We therefore assume that the unions objective function (4) is not affected by fiscal pre-commitment.

The SGP defines deficit ceilings. As pointed out in section 5 it seems plausible that deficit control ultimately translates into lower expenditures. In the following we maintain the assumption that administrative restrictions on the fiscal stance are bound to limit the level of public expenditures. In our model this is equivalent to establishing a floor G for the government's reaction function, such that $\tilde{g} - g \geq G$.[26] Consider a Nash equilibrium (eq. (9)). It is easy to see that setting $G > \tilde{g} - g^N$ would trigger a real wage increase, leaving output distortions unaffected.[27] Therefore fiscal constraints always reduce welfare.

A more complex picture emerges if one considers the case where unions act as a leader *vis à vis* the fiscal policymaker (figure 3).

Figure 3

First, consider the case of an S_1-type equilibrium characterized by $\tilde{g} - g^{S_1}$. It is easy to see that any $G < \tilde{g} - g^{S_1}$ would not bind. By contrast, for any $G > \tilde{g} - g^{S_1}$ the constraint is binding but counterproductive. Second, consider an S_2-type equilibrium. The floor is only binding for any $G > \tilde{g} - g^{S_2}$, where output distortions fall to the Nash equilibrium level. This happens because the union no longer anticipates the trade off between wage distortion and public expenditure gap. However, a commitment to *raise* expenditures would exert an identical disciplining effect on the union, but with a lower expenditure gap! In fact, the optimal constraint is a *ceiling* on the public expenditure gap, such that $G^{ceil} = \max\{0, \tilde{g} - \beta_{\tilde{x}}\}$.[28]

conclusions about the effects of unilateral fiscal pre-commitment.

[26] Alternatively, we might assume that, as in section 5, not fulfilling the SGP requirement affects the fiscal policymaker's objective function. Our results would not be affected, because the crucial assumption is the differential impact of the two schemes on the unions objective function.

[27] As an example, consider point P in figure 3.

[28] It would be straightforward to show that this result obtains minimizing the Government loss function subject to the constraints $x = -\beta_{\tilde{x}}$ and $\tilde{x} \geq 0$.

7 Concluding remarks

The impact of endogenous wage setting on macroeconomic performance cannot be neglected in European countries. We have shown that cooperation between the unions and the governments can improve economic performance and the positions of the parties. The first key to our results lies in the consideration that unions may be interested in the level of public expenditure, in addition to the traditional objectives, i.e. the real wage rate and employment. The second key lies in our re-examination of corporatism as a feasible set of institutional arrangements designed to internalize certain negative macroeconomic externalities. The third key is the characterization of the government budget as a two-faced Janus, i.e. its double role of providing public expenditure valuable for union members and extracting distortionary taxes. The fourth key is the emphasis on the profoundly different incentives generated by institutional arrangements such as the Maastricht criteria, on the one hand, and the Stability and Growth Pact, on the other. This latter result is entirely due to our endogeneization of the wage setting process.

Our analysis has significant implications for the current debate on institutional reforms in Europe. Discussion of the reform of the Stability and Growth Pact fails to consider its impact on labor market performance. Our paper suggests that when the interdependence between fiscal policy and the labor market is considered, any strategy of unilaterally placing a cap on public expenditure is doomed to be counterproductive. In one case a commitment to raise expenditures would even be preferable to a restrictive ceiling! By contrast, corporatist institutions should be regarded as valuable tools in enhancing macroeconomic performance, in line with the Lisbon Strategy approach, which emphasizes the role of social partnership.

Some authors see the commitment to fiscal restraint as a catalyst for labor market reforms that should reduce the power of unions. In this vein, the complete liberalization of the labor market would be a complementary solution to the Stability and Growth Pact. However, the risks should be clear. On the one hand, the Calmfors and Driffill's hump-shape curve suggests that corporatist agreements are likely to dominate partial labor market liberalization. On the other hand, complete deregulation may be politically unfeasible.

Regarding future developments of this article, there are at least two interesting possible lines of research. First, the impact of globalization on the social pact through the open economy channel, which ambiguously affects the incentive for social pacts; in particular, we expect international fiscal and wage externalities to have opposite effects on the incentives to cooperate, as part of the cost of implementing the pact is put on the rest of the

world. Second, we have investigated the effects of public expenditure on social pact, but it will be interesting to consider the role of specific components of it and of other fiscal instruments; we expect, in fact, that consideration of the effects on the labor market of different specific components of public expenditure or alternative fiscal instruments could provide new important insights. However, these would be beyond the scope of our current research.

Appendix A – Derivation of output equation

The representative price-taking firm maximizes its net profit:

$$P\left(1-\tau\right)Y - WL \tag{A1}$$

where $Y = L^a$ is the production function, P and W respectively define the price and wage levels, and τ is the sales-tax rate.

The standard first order condition is:

$$P\left(1-\tau\right)\alpha L^{a-1} = W \tag{A2}$$

The next step is the definition of the nominal wage rate which obtains in a unionized labour market:

$$W = W^C\left(1+\mu^U\right)P^e \tag{A3}$$

where W^C is the exogenous real wage that would obtained in a competitive labour market, $\left(1+\mu^U\right)$ defines the real wage mark-up over the competitive rate, P^e is the expected price level.[29] Taking logs, we get

$$y = \frac{a}{1-a}\left[p - t - w^c - \tilde{x} - p^e\right] + \frac{a}{1-a}\ln a \tag{A4}$$

where $\tilde{x} = \ln\left(1+\mu^U\right)$, $t = -\ln\left(1-\tau\right)$. Defining $\bar{y} = \frac{a}{1-a}\left(-w^c + \ln a\right)$ as the non-distorted real output, and normalizing at 1 the previous period price level, we can rewrite the above equation as:

$$x = \left(\pi - \pi^e - \tilde{x} - t\right) \tag{A5}$$

where $x = \left(\frac{a}{1-a}\right)^{-1}\left(y - \bar{y}\right)$

To derive the government balanced budget equation (3) start from

[29] In this class of models wages are pre-determined w.r.t. prices; thus nominal wages are set conditionally to the price level expectation.

$$\tau Y = GEXP \tag{A6}$$

where $GEXP$ defines the level of government expenditures. Straightforward manipulations show that

$$(1-\tau) = \left(1 - \frac{GEXP}{Y}\right) \tag{A7}$$

Hence, setting $g = -\ln\left(1 - \frac{GEXP}{Y}\right)$, equation (3) obtains.

Appendix B – Figure outcomes

In this appendix we derive the iso-losses and reaction functions depicted in the figures (i.e. in the space $(x, g - \tilde{g})$).

The union's iso-loss curves are directly obtained from equation (4) by using (1), (3) and the rational expectations constraint:

$$U \;=\; \beta_{\tilde{x}}\,(x+g) + \;\frac{x^2}{2}\; + \frac{\beta_{gu}(g \;-\; \widetilde{g})^2}{2}$$

The government's iso-loss is:

$$G(x, g-\tilde{g}) = \frac{1}{2}\left\{\left(\frac{\alpha_{\pi f}}{\alpha_{\pi m}^2} + 1\right) x^2 + \alpha_{gf}\,(g-\tilde{g})^2\right\}$$

and its reaction function is:

$$\tilde{g} - g = -\frac{\alpha_{\pi f} + \alpha_{\pi m}^2}{(1+\alpha_{\pi m})\,\alpha_{\pi m}\alpha_{gf}}x$$

since $\frac{\partial x}{\partial g} = \frac{\partial \pi}{\partial t} - 1 = \frac{1}{1+\alpha_{\pi m}} - 1 = -\frac{\alpha_{\pi m}}{1+\alpha_{\pi m}}$.

The union's preferred combination of output and expenditure gap is:

$$\Omega = \left\{-\beta_{\tilde{x}}, \frac{\beta_{\tilde{x}}}{\beta_{gu}}\right\}$$

Similarly for the government we obtain:

$$\bar{\Sigma} = \{0, \tilde{g}\}$$

which is however unfeasible since it implies $\tilde{x} = -\tilde{g}$. By considering the additional constraint $\tilde{x} \geq 0$ (i.e.$\tilde{g} - g > x + \tilde{g}$), the government's preferred combination of outcomes and expenditure gap is:

$$\Sigma = \left\{-\frac{\alpha_{gf}\alpha_{\pi m}^2}{\alpha_{\pi f} + \alpha_{\pi m}^2\,(1+\alpha_{gf})}\tilde{g}, \frac{\alpha_{\pi m}^2\alpha_{gf}}{\alpha_{\pi f} + \alpha_{\pi m}^2\,(1+\alpha_{gf})}\tilde{g}\right\}$$

implying a labor distortion equal to zero ($\tilde{x} = 0$). It is easy to verify that Σ lays above the government's reaction function. This happens for reasons discussed in the text.

Appendix C – Stackelberg solution

The non-cooperative Stackelberg solution is derived as follows. From (1), (6), (7) we obtain the fiscal policymaker's reaction function

$$t = \frac{\alpha_{gf}\left(1+\alpha_{\pi m}\right)^2 \tilde{g} - \left(\alpha_{\pi f} + a_{\pi m}^2\right)\left(\tilde{x} + \pi^e\right)}{\alpha_{\pi m}^2 + a_{\pi f} + \left(1+\alpha_{\pi m}\right)^2 \alpha_{gf}}$$

Imposing rational expectations, it is then straightforward to show that the trade union's loss function (4) is minimized by

$$\tilde{x} = \frac{\left[\alpha_{\pi f} + \alpha_{\pi m}^2 + \alpha_{gf}\alpha_{\pi m}\left(1+\alpha_{\pi m}\right)\right]\left[\alpha_{\pi f} + \alpha_{\pi m}^2 + \alpha_{gf}\left(1+\alpha_{\pi m}\right)^2\right]}{\alpha_{\pi m}^2\alpha_{gf}^2\left(1+\alpha_{\pi m}\right)^2 + \beta_{gu}\left(\alpha_{\pi m}^2 + \alpha_{\pi f}\right)^2}\beta_{\tilde{x}} - \tilde{g}$$

The corresponding equilibrium outcomes (point S in the figures) are:[30]

$$\begin{aligned}
t &= \tilde{g} - \frac{\left(\alpha_{\pi f} + \alpha_{\pi m}^2\right)\left[\alpha_{\pi f} + \alpha_{\pi m}^2 + \alpha_{gf}\left(1+\alpha_{\pi m}\right)^2\right]}{\alpha_{\pi m}\alpha_{gf}^2\left(1+\alpha_{\pi m}\right)^3 + \beta_{gu}\left(\alpha_{\pi m}^2 + \alpha_{\pi f}\right)^2}\beta_{\tilde{x}} \\
\pi &= \frac{\left(1+\alpha_{\pi m}\right)\left[\left(1+\alpha_{\pi m}\right)^2\alpha_{gf} + \alpha_{\pi m}^2 + \alpha_{\pi f}\right]\alpha_{gf}}{\alpha_{\pi m}\alpha_{gf}^2\left(1+\alpha_{\pi m}\right)^3 + \beta_{gu}\left(\alpha_{\pi m}^2 + \alpha_{\pi f}\right)^2}\beta_{\tilde{x}} \\
x &= -\frac{\left(1+\alpha_{\pi m}\right)\left[\left(1+\alpha_{\pi m}\right)^2\alpha_{gf} + \alpha_{\pi m}^2 + \alpha_{\pi f}\right]\alpha_{\pi m}\alpha_{gf}}{\alpha_{\pi m}\alpha_{gf}^2\left(1+\alpha_{\pi m}\right)^3 + \beta_{gu}\left(\alpha_{\pi m}^2 + \alpha_{\pi f}\right)^2}\beta_{\tilde{x}}
\end{aligned}$$

References

Acocella, N., Di Bartolomeo, G., 2004. Non-neutrality of monetary policy in policy games. European Journal of Political Economy 20, 695-707.

Acocella, N., Di Bartolomeo, G., 2007. Is corporatism feasible? Metroeconomica 58, 340-359.

[30] It is worth noting that the output distortion associated with the Nash equilibrium is smaller than that associated with the Stackelberg solution if $\frac{\beta_{gu}}{\alpha_{gf}} < \frac{\alpha_{\pi m}^2 + \alpha_{\pi m}}{\alpha_{\pi m}^2 + \alpha_{\pi f}}$. Thus central bank's preferences affect output distortions. In a companion paper we analyze the optimal degree of conservativeness under Nash and Stackelberg equilibria.

Acocella, N., Di Bartolomeo, G., Pauwels, W., 2009. Is there any scope for corporatism in macroeconomic policies? Empirica, forthcoming.

Alesina, A., Tabellini, G., 1987. Rules and discretion with noncoordinated monetary and fiscal policies. Economic Inquiry 25, 619-630.

Alvarez, R.M., Garrett, G., Lange, P., 1991. Government partisanship, labor organization, and macroeconomic performance. American Political Science Review 85, 539-556.

Baccaro, L., Lim, S.H., 2007. Social pacts as coalitions of the weak and moderate: Ireland, Italy and South Korea in comparative perspective. European Journal of Industrial Relations 13, 27-46.

Beetsma, R.M.W.J., Bovenberg, A.L., 1998. Monetary union without fiscal coordination may discipline policymakers. Journal of International Economics 45, 239-258.

Beetsma, R.M.W.J., Bovenberg, A.L., 2000. Designing fiscal and monetary institutions for a European Monetary Union. Public Choice 102, 247-269.

Beetsma, R.M.W.J., Bovenberg, A.L., 2002. Strategic debt accumulation in a heterogeneous monetary union. European Journal of Political Economy 19, 1-15.

Beetsma, R.M.W.J., Uhlig, H., 1999. An analysis of the Stability and Growth Pact. The Economic Journal 109, 546-571.

Benigno, P., Woodford, M., 2003. Optimal monetary and fiscal policy: A linear-quadratic approach. NBER Working Paper No. 9905.

Buti, M., 2006. Will the new Stability and Growth Pact succeed? An economic and political perspective. European Economy, Economic Papers, No 241.

Burda, M.C., 1997. Corporatism, labor unions and the safety set. European Economic Review 41, 635-646.

Calmfors, L., Driffill, J., 1988. Bargaining structure, corporatism and macroeconomic performance. Economic Policy 6, 14-61.

Cecchini, P., 1988. The European Challenge 1992. The Benefits of a Single Market. Aldershot: Wildwood House.

Chari, V.V., Kehoe, P.J., 1997. On the need for fiscal constraints in a monetary union. Working Paper No. 589. Federal Reserve Bank of Minneapolis.

Clarida, R.H., Gali, J., Gertler, M., 1998. Monetary policy rules in practice: Some international evidence. European Economics Review 42, 1033-1068.

Colombo, E., Tirelli, P., Visser, J., 2008. Explaining social pacts: Economic fundamentals, union's strength, institutional constraints. University of Milan Bicocca. mimeo.

Cukierman, A., 2004. Monetary institutions, monetary union and unionized labor markets – Some recent developments. In Beetsma, R., Favero, C., Missale, A., Muscatelli, V.A., Natale, P., Tirelli, P. (Eds.). Monetary Policy, Fiscal Policies and Labour Markets: Key Aspects of Macroeconomic Policymaking in EMU. Cambridge: Cambridge University Press, 299-326.

Debelle, G., Fischer, S., 1994. How independent should a central bank be? In Furher J. (Ed.). Goals, Guidelines, and Constraints Facing Monetary Policymakers, Conference Series No. 38. Boston: Federal Reserve Bank of Boston, 195-225.

Dixit, A., 2001. Monetary-fiscal policy interactions and commitment versus discretion in a monetary union. European Economic Review 45, 977-987.

Dixit, A., Lambertini, L., 2001. Games of monetary and fiscal interactions in the EMU. European Economic Review 45, 589-613.

Dixit, A., Lambertini, L., 2003. Interactions of commitment and discretion in monetary and fiscal policy. American Economic Review 93, 1522-1542.

Fajertag, G., Pochet, P., 2000. A new era for social pacts in Europe. In G. Fajertag, Pochet P. (Eds.), Social Pacts in Europe - New Dynamics. Brussels. ETUI, 9-25.

Governatori, M., Eijffinger, S., 2004. Fiscal and monetary interaction: The role of asymmetries of the Stability and Growth Pact in EMU. CEPR Discussion Papers No 4647.

Hamann, K., Kelly, J., 2007. Party politics and the reemergence of social pacts in Western Europe. Comparative Political Studies 40, 971-994.

Hancké, B., Rhodes M., 2005. EMU and labor market institutions in Europe: The rise and fall of national social pacts. Work and Occupations 32, 196-228.

Kirsanova, T., S, Wren-Lewis, 2007. Optimal fiscal feedback on debt in an economy with nominal rigidities. Working Paper No. 26, Federal Reserve Bank of Atlanta.

Lawler, P., 2000a. Centralised wage setting, inflation contracts, and the optimal choice of central banker. Economic Journal 110, 559-575.

Lawler, P., 2000b. Union wage setting and exchange rate policy. Economica 67, 91-100.

Lippi, F., 2002. Revisiting the case for a populist central banker. European Economic Review 46, 601-612.

Organisation for Economic Cooperation and Development, 1997. Economic performance and structure of collective bargaining. Employment Outlook. Paris: Organisation for Economic Cooperation and Development, 63-92.

Oswald, A.J., 1982. The microeconomic theory of the trade union. Economic Journal, 92, 576-595.

Piazza, J., 2001. De-linking labor. Labour unions and social democratic parties under globalization. Party Politics 7, 413-435.

Regini, M., 1997. Still engaging in corporatism? Recent Italian experience in a comparative perspective. European Journal of Industrial Relations 3, 259-278.

Rhodes, M., 2001. The political economy of social pacts: 'Competitive corporatism' and European welfare reform. In Pierson, P. (Ed.). The New Politics of the Welfare State. Oxford: Oxford University Press, 165-194.

Saint-Paul, G., 2000. The Political Economy of Labour Market Institutions. Oxford: Oxford University Press.

Sibert, A., 1999. Monetary integration and economic reform. Economic Journal 109, 78-92.

Sibert, A., Sutherland, S., 2000. Monetary union and labor market reform. Journal of International Economics 51, 421-436.

Schmitt-Grohé, S., Uribe, M., 2005. Optimal in‡ation stabilization in a medium-scale macroeconomic model, NBER Working Paper No. 11854. Published in M. Gertler and K. Rogoff (Eds.). NBER Macroeconomics Annual. Cambridge. The MIT Press, 2006, 383-425.

Schmitt-Grohé, S., Uribe, M., 2007. Optimal simple and implementable monetary and fiscal rules. Journal of Monetary Economics 54, 1702-1725.

Soskice, D., Iversen, T., 2000. The nonneutrality of monetary policy with large price or wage setters. Quarterly Journal of Economics 115, 265-284.

Streeck, W., 1998. The internationalization of industrial relations in Europe: Prospects and problems. Politics & Society 26, 429-459.

Swank, D., 2002. Global Capital, Political Institutions, and Policy Change in Developed Welfare States. New York: Cambridge University Press.

Traxler, F., Kittel, B., 2000. The bargaining system and performance: A comparison of 18 OECD countries. Comparative Political Studies 33, 1154-1190.

van Poeck, A., Borghijs, A., 2001. EMU and labour markets reform: Needs, incentives and realisations. The World Economy 24, 1327-1352.

Visser, J., 2000. From Keynesianism to the third way: Labour relations and social policy in Western Europe. Economic and Industrial Democracy 21, 421-456.

Visser, J., 2002. Unions, wage bargaining and co-ordination in European labour markets. In Pochet, P. (Ed.). Wage Policy in the Eurozone. Brussels: P.I.E. Peter Lang, 39-77.

Whyman, P., 2002. British trade unions and economic and monetary union. Industrial Relations 41, 467-476.