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Tax-benefits policies jointly run by the social partners:

Labour market implications of the Bipartite Sectoral Funds

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Abstract

This paper focuses on the employment effects of tax-benefit policies implemented by Bipartite Sectoral Funds (BSFs), institutions established by workers' unions and employers' organisations, and conducts a preliminary theoretical analysis of their implications for employment based on a model of wage bargaining which includes the basic elements of a tax-benefit policy and allows for the internalization of benefits. The intuition is that the peculiar institutional profile of BSFs may favour the internalization of social benefits by the unions. If this actually occurs, it can be expected that the costs of the benefits will be shared between the employers and the workers. However the exact institutional profile of the funds crucially affects the degree of internalization. It is argued that this may actually occur provided that the exchange between wage and benefits is actually feasible in the context of current industrial relations, the workers attach a sufficiently high value to the benefits, and BSFs are autonomous from government interference.

Keywords: *Bipartite sectoral funds; tax-benefit policy; internalization; labour taxation; social contributions.*

JEL codes: H22, I38, J52, J53

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1. Introduction

In recent decades social policies have run into difficulties because of major structural trends affecting European societies, including population ageing, increasing female participation in the labour market, and the widespread fear of employment instability. On the one hand, such changes prompt larger demand for social services and benefits; on the other, public budget constraints and the need to cut production costs in order to defend competitiveness in global markets make it more and more difficult to accommodate this demand. The Great Recession and the ensuing fiscal austerity exacerbated such difficulties.

In this context, public social expenditure is undergoing a considerable reshuffle and different patterns of change are under way (Carone et al. 2007). Reforms of social policies and their financing have been advocated in order to mitigate their alleged adverse effects on economic growth and employment (e.g. OECD 1994, Carone and Salomäki 2001). Not only the governments but also single or associated firms, as well as the unions and the employers' organisations play a role in the evolution of welfare policies, taking initiatives at national and local level (Tachibanaki 2003, Ebbinghaus 2010a, Ferrera and Maino 2014).

In particular, in European countries employers' organisations and workers' unions jointly manage a number of sectoral funds, a rather heterogeneous set of institutions whose importance varies greatly across countries and sectors. These bipartite sectoral funds (BSFs) can be defined as institutions established by workers' unions and employers' organisations on the basis of collective agreements, and managed by them through bipartite governance in order to provide social benefits to the workers and their families in a variety of areas, financed through contributions mostly paid by the employers. One of their distinguishing features is that seats on the governing boards are usually equally split between unions and employers' representatives.

Although they have been gaining some ground in the social policy field in recent years, we still lack comprehensive statistical information on them. A recent attempt to assess the incidence of

welfare programs jointly delivered by the social partners in selected manufacturing and services industries in a number of European countries reveals that substantial shares of workers are covered by them in the fields of healthcare, reconciliation between work and family and continuous training (Natali e Pavolini 2014). Furthermore, these programmes usually supplement rather than substitute public policies.

BSFs represent a major change in the governance structure of welfare systems and a possible departure from the traditional Bismarckian model towards more self-regulatory, collectively agreed arrangements (Ebbinghaus 2010a). In the ongoing debate on the retrenchment and recalibration of the welfare state, the "collectivization" of social risks is sometimes seen as a possible path to be pursued (Ferrera and Hemerijck 2003, Trampusch 2007, Yerkes and Tijdens 2010, Johnston et al. 2011). At the same time, welfare state reform concerns not only social policies but also employment and wage policies, owing to the interdependence between these areas, calling for a role of firms' and workers' organisations (Ebbinghaus and Hassel 2000, Bonoli 2003). The development of new roles for the social partners in the social policy arena may serve them also to counteract the decline of their power and to revitalize industrial relations (Ebbinghaus 2010b, Schelkle 2011).

This paper focuses on the employment effects of tax-benefit policies implemented by BSFs in the context of collective bargaining and conducts a preliminary theoretical analysis of its implications for the labour market. We contribute to the existing literature because there are no or only very sparse economic analyses that are specifically devoted to the topic of welfare benefits provided through collective institutions. Indeed, while sociologists and industrial relations scholars have proposed a number of analyses mostly focusing on their role in the evolution of welfare policy and industrial relations, we are interested in investigating the distinguishing effects the BSFs' tax-benefit policy on the labour market outcomes, especially on employment.

The main argument put forward here is that the peculiar institutional profile of BSFs may favour the internalization of the social benefits by the unions. If this actually occurs, it can be expected that the costs of the benefits will be shared between the employers and the workers.

By internalization of social benefits we mean that workers' unions value the benefits provided to the workers by BSFs and see that their availability and their amount are directly linked to the social contributions paid by the employers to the funds. As it will be argued below, the typical tax-benefit scheme managed by BSFs, and their peculiar governance, make possible this internalization effect. As a consequence of this, the unions allow a shift of part of the burden of the social contributions paid by the employers into the wage. This way, the impact of social policies on the labour costs and on employment is likely to be less severe when compared to a payroll tax paid to the government.

Based on this intuition, the following analysis suggests that BSFs may represent an institutional device able to cushion the adverse effects of payroll taxes. This result appears to be particularly important for the Continental European economies because the burden of welfare state financing is usually blamed for higher structural unemployment, especially in countries characterized by an intermediate sectoral level of collective bargaining (Daveri and Tabellini 2000). According to the results in the existing economic literature, only perfectly competitive labour markets or, conversely, corporatist economies are able to favour the internalization of benefits, while we argue that also BSFs make the internalization effect possible.

The idea that the distortionary effect of a tax depends on the link between the two sides of a social policy, the tax and the benefit, is not new for economists (Musgrave 1959, Stiglitz 1999, OECD 2007). However, this intuition has been specifically applied to the social policy schemes originated from collective agreements only by scholars from other disciplines. Dealing with the case of contributions-based schemes administered by bipartite bodies independently of the government budget, Morel and Palme (2012) point out that they cause a greater willingness to contribute since "contributors feel they have a stake in the system and that the money they pay in will come back to them in the form of a deferred wage and an earned social right". Similarly, Ebbinghaus (2010a) notes that when social partners assume a leading role in occupational social security schemes, they are able to internalize them into wage bargaining. In accordance with this view, we argue that a tax-

benefit policy managed by the social partners through BSFs and strictly tied to collective wage negotiations strengthens the link between contributions and benefits.

To date, no comparative measures of the diffusion of BSFs and their weight in terms of affiliated employers and workforce or the financial resources collected and spent are available (OECD 2007, Adema et al. 2011). The better, although very tentative, available approximation of the extent of this area of social policy is given by data on the *voluntary occupational welfare*, that is the social benefits provided by the employers according to collective agreements, signed at national, sectoral and enterprise level, or also unilaterally. Even though such data cannot be taken as an exact measurement of the diffusion of the bipartite schemes, they offer useful insights about the relative weight of social policies arising from labour relations and relying on private resources across countries (Adema and Einherand 1998, Seeleib-Kaiser and Fleckenstein 2009, Natali and Pavolini 2014).

Table 1 shows that, apart from the UK and the Netherlands, where employer-provided pensions related to collective agreements are particularly important, the weight of voluntary private social spending among European countries in the 2002-2009 period was substantial in a number of Continental and Nordic countries. In most countries the relative weight of voluntary private expenditure slightly increased over time. At the end of the period, its incidence was between 2% and 3% of GDP in France, Sweden, Denmark, Belgium, Ireland and Germany.

Table 1 about here

The next section introduces the notion of benefits internalization and briefly discusses its role in the light of the economic literature. The third section sets out a simple economic model showing how a typical BSF's tax-benefit policy may favour the sharing of the cost of social contributions and a lower impact on employment. The fourth section argues about the conditions required in order

to strengthen the internalization effect. The last section summarizes and points out possible critical drawbacks.

2.   The internalization of social benefits in the economic literature

Economic analysis has extensively dealt with the issue of the incidence of labour taxes. These may shift to net wages or, conversely, raise labour costs, depending on the institutional settings being considered. The internalization of social benefits is a key factor favouring the shift of a tax formally charged to the employers on to workers through a wage reduction.

Broadly speaking, the financing of benefits through social contributions formally charged to the employers raises the labour cost and, as a consequence, exerts a harmful effect on employment. The standard analysis, which applies to a perfectly competitive labour market, makes it clear that an increase in the non-wage labour costs reduces the labour demand and, consequently, cuts down both the net wage and the employment level. The same model predicts that labour taxes do not harm employment only in correspondence of a rigid labour supply.

However, these conclusions are meaningless for economies where wages are a matter of collective negotiations. Although at first sight, with wages fixed through collective bargaining, it can be presumed that an increase in a payroll tax causes a larger drop in employment, theoretical analyses show that the outcomes vary with the adopted model of wage bargaining (Goerke 1996, Koskela 2001). Moreover, following the reasoning of Calmfors and Driffil (1988), the degree of bargaining centralization may have substantial implications. The ability of the union to avoid a wage reduction after a payroll tax increase is lowest with highly decentralized bargaining, while it increases with the degree of centralization (Daveri and Tabellini 2000). As a consequence, the impact on employment is lower in highly decentralized economies whereas it becomes more severe in more centralized ones. Alesina and Perotti (1997), who consider an open economy characterized by monopolistic competition, show that an increase in a tax to be paid by the workers determines

lower employment because the union tries to shift the burden of it on to the firm. Even in their model, the unions are less able to achieve this goal when bargaining is highly decentralized[1].

In addition to these cases, both in a perfectly competitive or in a unionized labour market, under specific institutional circumstances the workers or their unions may internalize the value of the benefits. When benefits are internalized by the taxpayers, they will be more prone to bear their cost. Internalization occurs when the link between taxes and benefits is sufficiently strong and evident to the workers.

As mentioned before, the role of the link between labour taxation and social benefits has long been recognized by economic theory (Musgrave 1959). To begin with, in perfect competition, beyond the partial analysis which applies when the workers do not receive or do not appreciate the benefits financed through taxation, like in the case of a purely redistributive labour income tax, if the workers value positively the benefits, they internalize this value and the labour supply increases. As a result, the net wage absorbs a larger portion of the tax and the drop in employment is smaller. If the workers value the benefits as much as the value of the tax, the tax fully shifts into the net wage and the employment level stays unaffected (Gruber and Kruger 1990, Gruber 1997). Summers (1989) applies this reasoning to mandated benefits and argues that, thanks to internalization, they have a less distortionary effect than public provision financed through government taxation.

What is more relevant to us, is that internalization may occur even in a unionized labour market. Even though the aforementioned analysis based on the Calmfors and Driffil intuition predicts that the effect of labour taxes on employment worsens with the degree of centralization, several authors have argued that the relationship between centralization and the size of employment loss is not monotonic but hump-shaped (Summers et al. 1993, Alesina and Perotti 1997). With a nationwide centralized wage bargaining like that characterizing the corporatist Scandinavian economies, the union internalizes the government budget as it recognizes that a tax increase will turn into higher social expenditure to the advantage of its members.

Along similar lines, Mares (2004) argues that a union may be willing to offer wage restraint in return for social benefits provided that it is able to internalize them. In her analysis the degree of internalization decreases with the level of decentralization of wage bargaining, as a highly decentralized bargaining implies a larger number of unions. With many small unions the link between taxes and benefits tends to vanish as the benefits received by the members of each union do not depend strictly on the taxes paid by their employers. For the same reason, internalization is more difficult when the share of outsiders (who are not union members but are targeted by government social policies) in the population becomes sizeable. Ooghe et al. (2003) consider the degree of "reciprocity" of taxes, which is higher where social policies are mostly insurance-based, as in the Bismarckian model. Their findings show that taxation tends to be less harmful for employment when "reciprocity" is greater, as it favours a wage reduction as well as a higher employment level.

To sum up, this theoretical literature suggests that the distortional effects of labour taxation vary according to the labour market institutional context. In particular, it is noteworthy that the internalization of benefits may play a substantial role in determining the effects of labour taxation but, in turn, the degree of internalization is fundamentally shaped by the industrial relations institutions.

As for the empirical evidence, the issue of the incidence of labour taxes and their impact on employment remains somewhat controversial. Daveri and Tabellini (2000) find evidence of wage resistance (a shift of taxes on to labour costs) causing a long-lasting effect of taxes on unemployment, especially in Continental European countries. Conversely, Nickell and Layard (1999) suggest that in the long run a sort of tax neutrality holds. Arpaia and Carone (2004) find that a limited impact of the tax wedge on labour costs can only be detected in the short term, while in the long run it tends to disappear. A similar result has been obtained from US data by Gruber and Krueger (1990), who show that employees bear a substantial - although not complete - portion of the cost of mandated benefits provided by employers in the form of lower net wages.

The hypothesis that highly-centralized or highly-decentralized bargaining systems allow a greater shift of the tax burden to wages is not supported by the results obtained by Arpaia and Carone (2004). Somewhat different results are reported by other studies (Garcia and Sala 2006, Kiander et al. 2004) which find that taxation exerts a larger effect on unemployment in European Continental countries. On the basis of a dataset distinguishing between compulsory and voluntary social contributions, Ooghe et al. (2003) also conclude that both kinds of contributions are largely shifted to wages, and rather interestingly, that the shift is greater for voluntary than for compulsory contributions. Azemar and Desbordes (2010) show that, in countries where bargaining is not highly coordinated, in the long run 55% of an increase in non-wage labour costs is shifted to the workers while the remaining 45% inflates the labour costs; on the contrary, in countries with a highly coordinated wage bargaining a tax increase is fully and immediately shifted to workers.

Finally, the meta-analysis run by Melguizo and González-Páramo (2012) shows that over the long term employees bear two-thirds of the tax burden in both Continental European and Anglo-Saxon economies, and nearly 90% in Nordic ones, while the shift is limited to less than 50% in the short term. Their results also suggest a difference between the Bismarckian and Beveridgean systems. In the former, where the link between social contributions and benefits is clearer, the measure of the shifting to the wage tends to be larger, although the difference is not statistically significant than in the latter, characterized by a more marked redistributive purpose.

3. Internalization and cost-sharing in a model of collective bargaining

To better clarify the main arguments of the paper, a simple economic model is provided showing how the outcomes of collective bargaining are affected by a tax-benefit policy managed by a BSF. As we argued above, our intuition is that the distinctive tax-benefit policy implemented by the BSFs may strengthen the link between contributions and benefits. Moreover the institutional architecture

of the BSFs makes this link clearer to the unions and favours the shift of the tax burden on to the wage.

To the extent that the sharing of the cost of the social contribution between the employers and the workers lessens the labour cost increase, the impact of the contribution on employment is lower than in the case of a payroll tax applied by the government.

The model builds mainly on Summers et al. (1993), Booth (1995), Hart and Moutos (1995), Goerke (1996) and Ooghe et al. (2003). Its set-up captures some of the main features of the European context, where wages are bargained through collective negotiations and the scope of negotiations between social partners extends beyond pay (Boeri et al. 2001, Ebbinghaus 2010b).

3.1. *Firm's profits and union's utility*

Let us consider the firms operating in a given sector of the economy where unions and employers have established a BSF managing a tax-benefit scheme. The tax (corresponding to a social contribution) is assumed to be proportional to the wage and formally charged to the employer. This tax does not flow into the public budget but is earmarked for the benefits provided to the employees of the affiliated firms by the BSF. For sake of simplicity payroll and labour taxes and benefits established by the government are omitted, and the unemployment subsidy is not taxed.

The aggregate tax revenue in the sector amounts to wtN, where $N = \sum_j n_j$ with n_j representing the employment in the j-th firm. The sum of money spent to provide the social benefits to the "insider" employees (those belonging to the firms of the sector) amounts to γwtN which is assumed to be lower than the tax revenue ($0 \leq \gamma \leq 1$). The remaining part of tax revenue is equal to $K = (1 - \gamma)wtN$ which corresponds to the administration cost incurred by the BSF and to money that BSF, for whatever reason, may spend on benefits to "outsiders" (employees in other sectors or people out of the workforce). Thus the BSF budget constraint is given by $wtN = \gamma wtN + K$.

Moreover, the monetary value that the workers attach to the benefits is equal to $sN = \varphi\gamma wtN$, with $0 \leq \varphi \leq 1$, meaning that the value of the benefits entering the utility function of the workers does not necessarily corresponds to the cost of them. In the following we assume that the employees in the sector are homogeneous and get the same per-worker benefit s. For sake of simplicity we may write $\delta \equiv \varphi\gamma$, so that the per-worker benefit is now $s = \delta wt$. According to our assumptions, δ is comprised between zero and 1: at one extreme, $\delta = 0$ if $\gamma = 0$, meaning that all the resources are absorbed by the term K, or $\varphi = 0$, if the workers do not appreciate at all the benefits; at the other extreme, $\delta = 1$, if $\gamma = 1$ and $\varphi = 1$, in case there are no costs and no redistribution to outsiders and the workers attach to the benefits their full value (equal to their cost).

The coefficient δ plays a prominent role in the model as it measures how large can be the internalisation of the benefits by the union. Its value does not depend exclusively on the amount of

social expenditure in favour of the employees but also on the quality of the benefits as perceived by the workers and on institutional features affecting the strength of the link between the social contribution paid by the employers and the benefits.

Moreover, we assume that some of the benefits entering the utility function of the workers may affect also the firms profits. In particular we consider their productivity-enhancing effect. This is a realistic assumption in the context of private collectively agreed tax-benefit policies. A short list of benefits affecting both the workers' welfare and labour productivity includes support to workplace training and innovations adoption which foster the employees' involvement as well as their skills, services helping the reconciliation between work and family duties which may reduce absenteeism and workforce turnover, programs aimed at improving health and safety at work. All these measures increase skills, effort and productivity. The sum of money financing them is assumed to be aN, which is fixed by the BSF as a part of its social expenditure so that $aN \leq \gamma wtN$. Then a corresponds to the given value of the per-worker labour productivity-augmenting benefit.

As the tax has to be formally paid by the employer, it enters the profit function Π of the representative firm as in the following equation

$$\Pi = A(a)y(n) - w(1 + t)n \qquad (1)$$

where $y(n)$ (with $y'(n) > 0$ and $y''(n) < 0$) represents the production function, n measures employment and t the tax rate. The term $A(a)$ (with $A'(a) > 0$ and $A''(a) < 0$) represents the effect of the productivity-enhancing benefit a.

Each firm in the sector produces the same identical good, the price of which is assumed to be exogenously fixed in the international market and normalized to 1. This assumption rules out the possibility that the tax is forward-shifted to the consumers via a price increase.

The labour force amounts to a given quantity l. When employed, the worker receives the net wage w plus the social benefit, whose value is equal to s, provided by the BSF. If the worker does not find a job, he/she may obtain the unemployment subsidy b provided by the government. Neither the wage nor the unemployment subsidy is taxed. We can therefore write the risk-neutral union's utility function as

$$U = [w + s]n + (l - n)b.$$

The term K can be given different meanings. It may represent the costs of administration of the tax-benefit policy. In this case it measures how efficient the BSF is in running the policy. It might also reflect the redistributive bias of the BSF. In this view, K includes also the amount of resources targeted to outsiders rather than regular employees of affiliated firms. Indeed, in some cases the government may force the BSF to target specific groups of recipients, like unemployed or others. More in general, it measures the amount of the tax revenue which have been distorted away from the affiliated employers and their employees.

Substituting the per-worker benefit s by δwt the worker's total compensation is $w(1 + \delta t)$ and the utility function may be written as

$$U = [w(1 + \delta t) - b]n + lb. \qquad (2)$$

According to the theoretical predictions reviewed in the previous section, it should be expected that, apart the extreme cases of a perfectly competitive labour market or of national-level bargaining, in the general case of a government tax funding the public budget, δ tends to be low. Conversely, in the case we are considering of the tax collected by a BSF with the purpose of delivering benefits to the employees in the same sector, internalization is easier so that δ is expected to be *ceteris paribus* higher. The actual value of the coefficient depends on the conditions discussed

in section 4. In short, we consider the coefficient δ as a measure of the degree of internalization, as it measures to what extent the benefits may be internalized by the workers[2].

3.2. Bargaining over wage and employment

Firms and unions are assumed to bargain over both wage and employment according to the efficient contracts model. If the parties fail to reach an agreement the firm makes zero profits while each workforce member gets the subsidy b. Then $\bar{\Pi} = 0$ and $\bar{U} = lb$ are respectively the disagreement outcomes for the two parties. In the efficient contracts framework they have to maximise the Nash product, hence they face the following problem

$$max_{w,n} \ (U - \bar{U})^\beta (\Pi - \bar{\Pi})^{1-\beta} \qquad (3)$$

where β denotes the union's relative strength. From the first order conditions[3] we get

$$\beta[A(a)y(n) - w(1 + t)n](1 + \delta t) - (1 - \beta)(1 + t)[w(1 + \delta t) - b]n = 0 \qquad (4)$$

$$\beta[A(a)y(n) - w(1 + t)n] + (1 - \beta)[A(a)y'(n) - w(1 + t)]n = 0. \qquad (5)$$

Simple manipulations of (4) and (5) yield the equation of the contract curve (CC)

$$A(a)y'(n) = \frac{1+t}{1+\delta t} b \qquad (6)$$

that is the locus of pairs *(w,n)* corresponding to all possible outcomes of the efficient bargaining. Indeed, equation (6) can also be derived from the tangency of firm's isoprofits curves and the union

indifference curves. Indeed, the marginal rates of substitution (MRS) between n and w for the parties are equal along the CC. As known, under the assumption of the union's risk-neutrality, the CC is vertical, meaning that the employment is independent from the wage level (Booth 1995).

In order to identify the exact equilibrium point along the CC also the so called rent division curve (RDC) has to be derived from equation (4). This curve corresponds to

$$w = \beta \frac{1}{1+t} \frac{A(a)y(n)}{n} + (1-\beta)\frac{1}{1+\delta t} b. \qquad (7)$$

According to (7) the bargained wage, depending on the relative bargaining power of the parties, lies somewhere between $\frac{1}{1+t}\frac{A(a)y(n)}{n}$, the maximum wage that the firm may pay without incurring negative profits, and $\frac{1}{1+\delta t}b$, the minimum wage that the firm has to pay in order to retain the worker. This curve is downward sloped as results from

$$\frac{dw}{dn} = \beta A(a)\frac{y'(n)-y(n)/n}{(1+t)n}<0 \qquad (8)$$

(the negative sign follows from the fact that $y'(n) < y(n)/n$ under the assumption $y''(n) < 0$). From (6) and (7) the equilibrium wage is

$$w^* = \frac{A(a)}{1+t}\left[\beta \frac{y(n)}{n} + (1-\beta)y'(n)\right] \qquad (9)$$

Where the term between square brackets is the weighted average of the mean and the marginal labour product (Booth 1995). Then the equilibrium outcome of bargaining is given by point A in Figure 1, corresponding to the intersection of the two curves CC and RDC.

3.3. *Comparative statics*

We may now predict how employment and wage are affected by changes in the exogenous factors. Following Goerke (1996) we single out the shifts of the CC and the RDC in order to detect the effects behind net changes in the equilibrium values. To this end we firstly take the derivative of the CC curve with respect to *t*. By the implicit function theorem we find

$$\frac{dn}{dt} = \frac{1-\delta}{(1+\delta t)^2 A(a) y''(n)} b < 0 \qquad (10)$$

meaning that a rise in the tax rate causes the employment level to shrink (as long as $\delta<1$), pushing the CC leftwards as shown by Figure 1. If $\delta=1$ the employment does not fall after a tax rate increase. To grasp the intuition behind this result it is worth considering that the parties bargain on employment and wage to reach a Pareto-efficient outcome. After a tax increase the value of *n* in terms of *w* for the employer is higher in absolute value than for the union and the only way to restore the equality of the MRS is through a reduction of employment.

Moreover, a higher coefficient δ cushions the negative impact of a rise in the tax rate on employment as shown by

$$\frac{\partial (dn/dt)}{\partial \delta} = \frac{-[(1+\delta t)^2 A(a) y''(n)] - 2(1-\delta)(1+\delta t) A(a) y''(n) t}{[(1+\delta t)^2 A(a) y''(n)]^2} b > 0.$$

To analyse the effects on the bargained wage we must now turn to the RDC. By taking its derivative with respect to *t*, the effect of an increase in the tax rate, holding the employment level fixed, is found to be equal to

$$\frac{dw}{dt} = -\beta \frac{1}{(1+t)^2} \frac{A(a) y(n)}{n} - (1-\beta) \frac{\delta}{(1+\delta t)^2} b < 0 \qquad (11)$$

As a consequence, if *t* rises the wage along the RDC lowers for each given employment quantity. Then, on combining the shifts of the two curves, it must be concluded that the new intersection of the two curves is at lower employment while, unfortunately, the sign of the change in the equilibrium wage remains uncertain. In the end, the sign of the net effect of a change in *t* on the equilibrium wage depends on the extent to which the tax rate rise affects employment. If the employment fall is not too large, the wage diminishes[4].

PROPOSITION 1: an increase in the tax rate causes (i) the employment level to shrink (as long as δ<1), and (ii) the wage to fall (provided that the elasticity of employment to tax is not too large).

Figure 1 displays how the equilibrium moves from A to a point like B, with a lower employment level, as a result of a tax increase.

Figure 1 about here

A similar exercise can be performed to analyze the effects of an increase in the coefficient *δ*. Then, the implicit function rule applied to the CC equation yields

$$\frac{dn}{d\delta} = -\frac{(1+t)t}{(1+\delta t)^2 A(a) y''(n)} b > 0. \qquad (12)$$

According to (12) employment increases with *δ* and the CC curve shifts to the right. The explanation for this finding is that larger benefit internalization, as measured by coefficient *δ*, prompts the union to substitute the wage with the higher benefit: a higher valuation of the benefit

increases the relative value of employment for the union and, as a consequence, the union is willing to accept a lower net wage in order to gain more employment.

On the other hand, the wage decreases for each given employment level when the internalization coefficient increases, as revealed by the derivative of (7) with respect to δ holding n fixed

$$\frac{dw}{d\delta} = -(1-\beta)\frac{t}{(1+\delta t)^2}b < 0. \qquad (13)$$

Equation (13) shows that the RDC shifts downwards after an increase in δ. The intuition in this case is that a rise in δ, increasing the value of the benefit received by the worker, lowers the minimum net wage necessary for the firm to retain the worker, given the subsidy b.

Then higher employment and a lower wage result from the combination of the rightward move of the CC and the downward shift of the RDC (in Figure 1 the equilibrium moves towards point C).

PROPOSITION 2: a higher degree of internalization causes (i) the employment level to rise and (ii) the wage to fall for each given tax rate.

Finally, we may ask which are the implications for the labour market equilibrium of a rise in the value of the per-worker productivity-enhancing benefit a. A reallocation of the BSF resources in favour of the benefits pursuing a productivity increase, it is likely to affect the outcomes of the next bargaining round. By following the same approach applied above, we may derive the derivatives of n and w with respect to a. From the CC, through the implicit function rule, we obtain

$$\frac{dn}{da} = -\frac{A'(a)y'(n)}{A(a)y''(n)} > 0 \qquad (14)$$

where the positive sign follows from the assumption of concavity of $y(n)$. According to this result, we should expect a higher employment level if resources are reallocated by the BSF towards measures improving skills and effort (the CC shifts rightwards).

Equally, an increase in a exerts an upward pressure on the RDC, as revealed by

$$\frac{dw}{da} = \beta \frac{1}{1+t} \frac{A'(a)y(n)}{n} > 0 \qquad (15)$$

following the fact that a higher value of a increases the highest wage that the firm may pay without incurring in negative profits. Then a higher *a* is associated to a higher *w* for each employment level (the RDC shifts upwards). As a consequence, an increase in a could move the equilibrium towards "north-east" in Figure 1, with more employment and a higher wage. However, taking into account that the RDC curve has a negative slope, the final effect on the equilibrium wage cannot be predicted a priori. Moreover, as it results from the derivative of (8) with respect to *a*, the RDC curve becomes steeper as *a* increases. What these results make clear is that a shift of the BSF expenditure towards productivity-enhancing measures represents an employment-friendly policy option.

To sum up the main results, Propositions 1 and 2 state that an increase in the tax rate pushes the equilibrium further away from the case with no tax, negatively affecting employment and (likely) reducing the net wage but, on the other hand, a larger internalization of the benefits by the workers reduces the distortional effect of the tax on the employment level and prompts the union to share the costs of the benefits as the burden of the tax that the employer is formally charged with partially (or fully, with *δ=1*) shifts into the wage.

These results suggest that if a tax-benefit policy managed by social partners through a BFS allows a high degree of internalization, as argued in the previous section, then it might be less harmful to employment than a social policy financed through a payroll tax levied by the government.

Moreover, the cost-sharing resulting from bargaining may be seen as an economic rationale for the bipartite governance of the BSFs. From this perspective, the sharing of decision-making power between the social partners ensues from the sharing of the financial burden.

4. Conditions required for the internalization effect

The internalization effect and the sharing of the cost of the social policy between employers and workers can actually occur only under specific conditions. Referring to the model above, these conditions are necessary to ensure that the coefficient δ takes a large value. Actually, according to the above results the employment level in the model is positively affected also by the term a. However, for each given value of a, internalization crucially depends on the following conditions.

Firstly, the exchange between wage and benefits has to be feasible in the context of the current industrial relations. To this end it is required that collective negotiations extend beyond wage bargaining, covering also the main elements of the tax-benefit policy, in particular the amount of the contributions to be paid. This implies that the parties involved in the wage bargaining must be the same as those who sign the collective agreements concerning the tax-benefit policy. In particular, the wage and the policy elements must be negotiated at the same (company, sectoral, territorial) level.

Secondly, in order to have a high degree of internalization δ, it is necessary that the workers attach a positive and sufficiently high value to the benefits (corresponding to a high φ). This can only be the case if the BSF achieves a proper level of efficiency and effectiveness. Efficiency, in particular, implies that only a small portion of the tax revenues collected by the BSF is absorbed by the costs of administration of the programmes (causing a low K and a high δ). In addition to that, effectiveness means that the delivered benefits actually match the demands of the workers and their

families. Moreover, the quality of the benefits and services provided by the BSF must compare favourably with those offered by other agencies or the ones that can be purchased on the market.

The last, and probably least obvious, condition concerns the autonomy of the BSFs from government interference. The observation of real experiences of voluntary occupational welfare schemes in various European countries suggests that the relationships with the government are a primary feature characterizing the social policies established by social partners. Not surprisingly, these relationships vary greatly according to the industry and national context. In particular, they are primarily shaped by the long-established patterns of the industrial relations and the broad welfare system. On one extreme, BSFs may be completely autonomous, while, on the other extreme, they may be subject to bold government interference up to the point of becoming tripartite rather than bipartite bodies.

What matters, in particular, is the degree of autonomy of the social partners from government interference in making strategic decisions (Ebbinghaus 2010a,b, Ferrera and Maino 2014). With full autonomy, in the "pure" model of bipartite policy, the union and employers' representatives sitting on the Board of the institution can be regarded as the only decision-makers relative to the management of the tax-benefit policy. In particular, they make choices on the collection and allocation of financial resources, the provision of benefits, and the selection of recipients following the guidelines laid down by social partners in collective agreements.

At the same time, the autonomy is usually more easily preserved when financing accrues to BSFs solely from the contributions paid by affiliated employers and/or workers, while it tends to be weaker if the government also pays in funds from the public budget. Indeed, financial contributions by the government tend to go hand-in-hand with its involvement in the administration of funds (Manow 2010).

Finally, autonomy has to do with the selection of recipients of the benefits. If BSFs are fully autonomous only workers and employers who contribute to the fund, or have contributed to it in the recent past, are selected as eligible. On the contrary, when governments interfere in their policy

making, or assign public money to the funds, they put pressure to include also categories from outside this group. The redistributive bias of government policies tends to reduce coefficient γ as it implies an enlargement of the audience of the beneficiaries beyond the boundaries of the social partners' constituency.

It is worth noting that this distinction tends to reflect the divide between insiders and outsiders as usually defined in labour market analyses. Indeed, those affiliated to or covered by BSFs are more likely to be insiders, namely employees with a permanent contract and a minimum amount of seniority in the formal sector and falling within industries and categories covered by powerful unions. Conversely, short-term employees, those employed in the smallest businesses, the unemployed, and other workers with a weak attachment to the labour market and interrupted work histories are much less likely to receive benefits from a "pure" BSF.

The selection of recipients is relevant because redistribution hampers the internalization of benefits by the workers. In the case of a tax-benefit program with a bold redistributive purpose, as it is normal for government policies, a positive externality arises whose value corresponds to the portion of the tax revenues financing the benefits targeted on groups of recipients that do not coincide with the group of taxpayers. In this case the workers would tend to resist the tax burden rather than accommodating it.

To sum up, on one hand the BSF may be close to its "pure" model, when it enjoys large autonomy from government, does not receive resources from the public budget, and devotes most of its expenditure to its contributing members. On the other hand, it becomes "spurious" – more tripartite –when the government interferes by limiting the decision-making power of the social partners, or by appointing its own representatives to the Board. This is more likely to occur when the social partners are weak in the industry, or the BSF is unable to collect sufficient financial resources and the government supports it from public money.

A noteworthy example of a "pure" bipartite fund is *Trygghetsrådet* (TRR), one of the most important Swedish *Job Security Councils* (Diedrich and Bergström 2006). This organization has an

intersectoral scope as it covers all white-collar workers in the private sector. A prominent mission of the TRR is to provide replacement services such as personalized coaching and unemployment benefits to displaced workers in the event of collective redundancies due to corporate restructuring or macroeconomic slumps. All benefits are financed from employers' contributions. A mutualistic principle applies to the allocation of resources among recipients and only insiders are entitled to benefit from its services and subsidies (Bergström 2009). Both wages and contributions to the TRR are negotiated as elements of the same bargaining process (Sebardt 2005).

Far from the "pure" model, a more spurious example of bipartite fund is the *Fonds paritaire de sécurisation des parcours professionnels* (FPSPP), an organisation that plays a key role in the French continuous training system (Mosley et al. 1998). Its funding does not come directly from employers, but from the sectoral paritarian organisations (OPCAs) charged with collecting the legally-established mandatory contributions from employers (CNFPTLV 2012). It also receives some additional funds from the European Social Fund.

This institution, firstly introduced by a national collective agreement, was created to tackle serious imbalances in the allocation of training between better-qualified and more disadvantaged groups of workers. It may be said that the FPSPP was set up with the pre-eminent purpose of redistributing training opportunities from insiders to outsiders (Méhaut 2005, CESE 2011). As a consequence, a large portion of the resources accruing to the FPSPP is devoted to job-seekers and other vulnerable groups. In addition, during the recent economic crisis, the government diverted large amounts of resources from the FPSPP to *Pole emploi*, the French public employment service. A permanent struggle is under way between social partners and the government regarding the allocation of the resources at the disposal of the Fund, with the former aiming to benefit contributing firms and workers, and the government being more interested in helping outsiders. Two representatives of the government sit on the Board of the FPSPP and may veto any proposal discussed by it. This veto has actually been exercised, so that one may conclude that the government can interfere heavily in the decision-making process.

What is most interesting for the purposes of our analysis is that only autonomous BSFs allow the internalization of the benefits by the workers since their main features contribute to strengthen the link between contributions and benefits. Conversely, this effect is prevented in the opposite case as government interference, dependence on public resources and targeting outsiders weakens this link. Then, it must be concluded that the ability to internalize the benefits by the union and, consequently, the implications of the BSFs' tax-benefit policies for employment strictly depend on the exact institutional profile of the social policies established and managed by the social partners.

5. Conclusions

The analysis proposed has proved that a tax-benefit policy established by collective agreements and jointly managed by the social partners may have efficiency-enhancing implications in the labour market compared to a similar policy enforced by the government. The main argument put forward is that a tax-benefit policy managed through a BSF may favour a larger internalization of the benefits by the workers, making the union willing to share the cost of them by shifting part of the tax burden on to the wage. Consequently, the adverse impact on labour cost and employment is lessened. At the same time, cost sharing provides an economic rationale for the sharing of decision-making power as established by bipartite governance.

The paper shows how internalization may arise as an outcome of a standard model of wage bargaining including the basic elements of a tax-benefit policy. This result adds a novelty to the established knowledge in the economic literature as, according to it, internalization of the benefits in a unionized labour market may occur only when very large unions bargain on wage at a nation-wide level.

However the degree of internalization crucially depends on the institutional profile of the funds. It may actually occur if the exchange between wage and benefits is feasible in the context of current industrial relations, the workers attach a sufficiently high value to the benefits, and BSFs are autonomous from government interference.

Overall, our results suggest that the welfare arrangements introduced through collective agreements may offer a remedy alternative to the mere cutting of social expenditure while lessening the major adverse impact of the welfare state. Thus, they may play a role in providing benefits topping up public welfare policies according to sectoral conditions.

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Table 1. Private voluntary social expenditure as a percentage of GDP

	2002	2003	2004	2005	2006	2007	2008	2009	average 2002-09	change 2002-09
Netherlands	7,1	7,2	7,5	7,5	6,3	6,3	5,7	6,0	6,7	-1,1
United Kingdom	5,6	5,5	5,3	5,5	5,5	4,6	4,8	5,3	5,3	-0,3
France	2,5	2,5	2,5	2,7	2,6	2,6	2,6	2,8	2,6	0,3
Sweden	2,3	2,4	2,3	2,5	2,4	2,5	2,6	2,8	2,5	0,5
Denmark	2,2	2,3	2,4	2,4	2,3	2,3	2,5	2,7	2,4	0,5
Belgium	2,0	2,6	2,6	2,5	2,5	2,2	2,2	2,3	2,4	0,3
Germany	1,7	1,8	1,8	1,9	1,8	1,8	1,8	2,0	1,8	0,3
Ireland	1,3	1,5	1,4	1,4	1,5	1,5	1,6	2,2	1,6	0,9
Finland	1,2	1,2	1,2	1,1	1,1	1,1	1,1	1,2	1,2	0,0
Austria	1,1	1,1	1,1	1,0	1,0	1,1	1,1	1,2	1,1	0,1
Norway	0,9	1,0	0,8	0,8	0,8	0,8	0,7	0,8	0,8	-0,1
Italy	0,6	0,6	0,6	0,6	0,6	0,6	0,7	0,7	0,6	0,1
Spain	0,3	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,5	0,2

Source: OECD Social Expenditure Statistics

Figure 1. Labour market equilibrium

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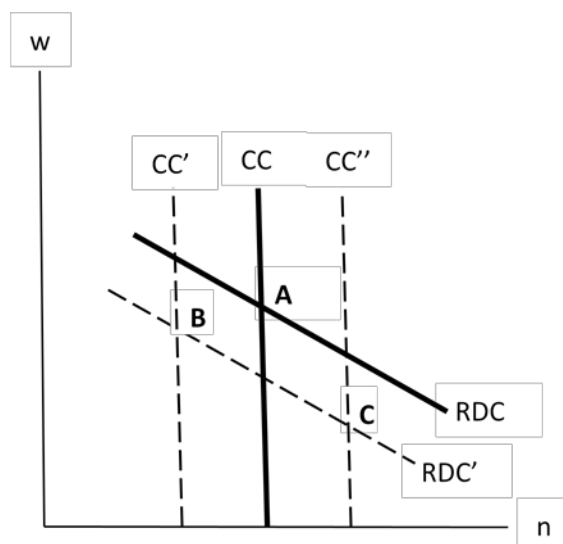
[1]As BSFs are mostly financed through proportional or lump-sum social contributions, the effect of tax progressivity is not considered here (OECD 2007, Koskela and Vilmunen 1996).

[2] Thus, it reminds the "encompassment" coefficient considered by Summers et al. (1993) and the "reciprocity" term in Ooghe et al. (2003).

[3] Second order conditions for a maximum are also satisfied.

[4] Ooghe et al. (2003) argue that the case of a negative effect of a change of t on w can be taken as more relevant as the required analytical condition for it is consistent with most used production functions.