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## PRIVATISATION OR STATE OWNERSHIP WHEN LABOUR MARKET IS UNIONISED?

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### Abstract

This paper analyses the choice of the bargaining agenda in a public/private unionised monopoly, and investigates whether the traditional higher efficiency of the state ownership of a monopoly holds when the labour market is unionised. First, we find that both a private and public monopoly always adopts a Right-to-Manage agenda. Second, a public firm pays a higher wage. Third, we show that privatisation could ensure a higher social welfare. This rather unexpected result may emerge provided that the Government has a high evaluation of the workers' welfare, and the union is strong and/or wage aggressive. Therefore, our results suggest that privatisation 1) should be socially preferred depending only on the strength and wage aggressiveness of unions, and 2) rather paradoxically, is preferred when the Government is more careful about workers' welfare. Our results may have policy implications especially in the post-communist countries, where the debate on privatisation is ubiquitously high and, differently between various countries, Government and unions may oscillate between left- or right-wing, and strength or weakness, respectively.

**Keywords:** Public and private monopoly; Efficient Bargaining; Right-to-manage; Firm-union bargaining agenda

**JEL Classification:** H44, J51, L13

## **Introduction**

The presence of unions is a stylised fact in many industries and countries. Consequently, the selection of the bargaining agenda is a crucial theme in labour-management relations and negotiations, both in the public and private sector of the economy. On the other hand, another long-lasting feature of most economies, especially Continental, Mediterranean, and East European, as well as Asian, is the state ownership of large companies.

These subjects assume a significant importance in Europe, especially in Germany, which is the first European Country for the importance of state-owned assets (in terms of capital worth),<sup>1</sup> and in those European and Asian countries that have experienced/are experiencing a transition process from a former communistic/centrally planned state-oriented toward a more liberal/free market-driven economy. As a OECD (2010) policy briefing states, the scale and scope of state-owned enterprises (SOEs) in several Asian economies is quite relevant. The economic significance of SOEs varies significantly among countries. However, those companies still represent a major, if not predominant, part of the economy in some countries: for instance, SOEs generate around 30% of GDP and 15% of the total employment in China, and 38% of GDP and 25–30% of fiscal revenues in Vietnam. SOEs play a key role in many other large and/or vital Asian economies. In India and Thailand, SOEs approximately contribute 25% of the GDP, in Singapore – close to 15%, in Malaysia – nearly 15% of GDP and 5% of total employment. In such countries, the available data shows that the union density ranges from more than 60% in China to less than 20% in Singapore (Kuruvilla et al., 2002).

As regards Central and East Europe, according to a OECD (2014) report, countries such as Czech Republic, Estonia, Hungary, Lithuania, Latvia, Poland, and Slovenia, despite ambitious privatisation programmes undertaken in recent decades, still present several sectors of the economy characterised and dominated by the presence of large SOEs, most notably in the industries considered of ‘strategic importance’ such as coal and chemicals, transportation, and utilities (electricity and gas, and telecommunications). More precisely, Slovenia counts 39 SOEs with a 10% weight of employees over total dependent employment, Hungary – 371 SOEs and about 5%, Estonia – 53 SOEs with about 4.5%, Czech Republic counts 125 SOEs with a 4% rate over total dependent employment, while Latvia (74), Lithuania (137) and Poland (326) present employment rates less than 2%. Croatia shows even more remarkable figures, with 584 SOEs accounting for 68% of the national GDP (Hahm, 2013). On the other hand, in

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<sup>1</sup> This primacy is in part due to the heritage of state-owned enterprises by East Germany and to the public banking system managed at the provincial *Länder* level.

such countries, unions have a sufficient presence, comparable to that in the Continental Europe,<sup>2</sup> especially in the public sector. In such countries, a large wave of privatisation has been the rule in the post-communism decades.<sup>3</sup>

However, although privatisation appeared to be successful in providing revenues for governments, less success has been achieved with respect to the privatised firms' performances.<sup>4</sup> Given its empirical relevance, it is natural to question if, theoretically, either the privatisation or state ownership of firms are more suited for social welfare under the presence of the unions with a certain bargaining strength and the preferences more or less wage-oriented, on the one hand, and Governments more left- or right-wing oriented (in the sense of caring about workers' welfare), on the other hand.

Indeed, although the topics of unionised public firms, as well as the scope of bargaining have been separately explored in the literature, scarce attention has been paid to the unification of such issues. For instance, as regards the first issue, De Fraja (1993), Haskel and Szymanski (1993) and Bárcena-Ruiz and Garzón (2009) theoretically and empirically investigated whether the state-owned enterprises pay wages higher than the identical privately-owned firms, but only in a context of a given Right-to-Manage (RTM) labour market institution, and which are the long run effects of privatisation on wages and market equilibrium. With regard to the second issue, the bargaining agenda selection has been recently investigated by Bughin (1999), Buccella (2011), Fanti (2014, 2015), Fanti and Buccella (2015), and Buccella and Fanti (2015) in a private oligopoly context, and by Fanti and Buccella (2016a, b) in a private monopolistic firm with managerial delegation and/or consumption externalities.<sup>5</sup> However, none of them jointly considers the bargaining agenda selection, privatisation, and social welfare.

The present work firstly investigates which negotiation agendas (RTM vs. efficient bargaining, EB) a private or public monopoly prefers, and, secondly, whether and how

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<sup>2</sup> "...collective bargaining by unions in post-communist countries is to a similar extent protected by statutory rules, as it is the case in the west. This protection is strongest in the Mediterranean countries, and weakest in the Anglo-Saxon democracies. The level of protection of collective bargaining in the post-communist nations corresponds to that of the Continental nations" (Armingeon, 2006, p. 11).

<sup>3</sup> "The most impressive feature of privatization in the transition economies has been the speed and scale at which it occurred. The reforming governments of the late 1980s and early 1990s managed successfully to transfer the huge state owned sector into largely private hands in a time period of hardly more than a decade and to do so they had to use innovative privatization methods." (Estrin, 2007, p. 14).

<sup>4</sup> "The most serious problem for privatization as a policy has been in situations where it has been used while the legal and institutional environment is weak. In such cases, it rarely appears to have improved company performance." (Estrin, 2007, p. 15).

<sup>5</sup> Recently, Ishida and Matsushima (2009) and Andaluz (2011) have analysed the effects of wage regulation for civil servants employed in the public sector and which competition mode (Cournot or Bertrand) is a preferable in a mixed private-public duopoly when unions are present.

privatisation, in the presence of a prevailing bargaining agenda, may be preferred to the state ownership on the basis of a higher efficiency.

In accord with the common intuition, so far the established results state that private monopolies always prefer RTM, and that, under competitive labour markets, public monopolies always ensure a higher social welfare. In essence, this paper shows that both private and public monopoly adopt an RTM agenda, and that privatisation could ensure a higher social welfare, provided that the Government has a high evaluation of the workers' welfare, and unions are strong and/or wage-aggressive.

The structure of this article is the following. Section 2 presents the basic ingredients of the model. Section 3 analyses the union-firm bargaining problem in the context of a private monopoly, while Section 4 re-examines the subject in the presence of a public monopoly. Section 5 discusses the comparative statics of the two scenarios. Finally, concluding remarks and ideas for future research are in Section 6.

## 1. The model

Let us consider that there is only one firm in the market producing a good. The standard inverse demand function faced by the monopolist is given by

$$p = a - \beta q \quad (1)$$

where  $p$  and  $q$  are the price and quantity of goods, respectively.

Under the usual assumption of standard constant returns to labour, that is  $q = L$  where  $L$  is the employment, the monopolist's profit function is:

$$\pi = (a - \beta q)q - wq \quad (2)$$

where  $w$  is the per unit of output wage. We assume that the monopolistic firm is unionised.<sup>6</sup> We consider the two typical negotiation models of the trade-union economics (Booth, 1995): 1) the Right-to-Manage model (RTM) (e.g. Nickell and Andrews, 1983), in which wages are the outcome of negotiations between firms and unionised labour; however, once wages are set, the firms have the right to set the employment levels; and 2) the efficient bargaining model (EB) which prescribes that the union and the firm are bargaining over both wages and employment

<sup>6</sup> We assume that the members of the union are large enough to meet the firm's labour demand.

(or, more realistically, hours of work) (e.g. McDonald and Solow, 1981; Brown and Ashenfelter, 1986; Manning, 1987a, b).

The union has the following utility function:<sup>7</sup>

$$V = (w - w^\circ)^\theta L \quad (3)$$

where  $w^\circ$  is the reserve or competitive wage, and values of  $\theta = < (>) 1$  imply that the union is less (more) concerned about wages and more (less) concerned about jobs. A value of  $\theta = 1$  gives the rent-maximising case (i.e. the union seeks to maximise the total rent). Therefore, by recalling that  $q = L$ , (3) becomes:

$$V = (w - w^\circ)^\theta q.$$

The firm may be state-owned or private-owned. The social welfare is given by the weighted sum of consumers' surplus,  $CS$ , profit, and union's utility. Following De Fraja (1993), it will be assumed here that the analytical expression for the social welfare function is given by:

$$SW_{PUB} = CS + \pi + mV^\circ,$$

where  $V^\circ$  denotes the union's rent value.<sup>8</sup> The weight attached to the union's utility is assumed to be an exogenously given parameter defined as  $m \in (0, 1]$ , and better detailed in the next section.

Let us begin by illustrating the case of a private monopoly firm<sup>9</sup> under the cases of RTM and EB.<sup>10</sup>

## 2. Private Monopoly

### 2.1. RTM institution

At stage 2 solving the profit maximisation problem of monopolist firm, we get the following output function, for a given wage:

<sup>7</sup> This is a specific case of the Stone-Geary utility function which is the standard form used in the unionised industries literature (e.g. Pencavel, 1984, 1985; Dowrick, Spencer, 1994).

<sup>8</sup> This assumption is standard in the literature of unionised oligopolistic industries, where in the definition of social welfare the union's rent rather than the union's utility function is considered. For instance, in the words of Zhao (2001, p. 194), "Because union members are also final good consumers (...) we use union rents instead of union utility in the welfare function. This is a standard treatment in the literature, see Brander and Spencer (1988) and Mezzetti and Dinopoulos (1991)."

<sup>9</sup> In the rest of the paper, the subscript PRI (PUB) denotes the private monopoly (public monopoly, respectively).

<sup>10</sup> We note that the equilibrium outcomes of the Simultaneous EB are the same of those of the Sequential EB for both a private and public monopoly (the straightforward demonstration is omitted here for economy of space).

$$q(w) = \frac{a - w}{2\beta} \quad (4)$$

At stage 1 of the game, under Right-to-Manage, the monopolist – union bargaining unit selects  $w$ , to maximise the following generalized Nash product:

$$\underbrace{\max_{w, r.t. \ w}} N = (\pi)^{1-b} (V)^b = [(a - \beta q)q - wq]^{1-b} [(w - w^\circ)^\theta q]^b \quad (5)$$

where  $b$  represents the bargaining union's power.

After substitution of eq. (4) in (5), the maximisation with respect to  $w$  leads to the wage :

$$w_{PRI}^{RTM} = \frac{ab\theta + w^\circ(2-b)}{\varphi} \quad (6)$$

where  $\varphi = 2 - b(1 - \theta)$ .

By using (6) we obtain the equilibrium output:

$$q_{PRI}^{RTM} = \frac{(2-b)(a - w^\circ)}{2\beta\varphi} \quad (7)$$

By using (6) and (7) the other equilibrium outcomes are obtained:

$$\pi_{PRI}^{RTM} = \frac{(2-b)^2(a - w^\circ)^2}{4\beta\varphi^2} \quad (8)$$

$$V_{PRI}^{RTM} = \frac{(2-b)(a - w^\circ)(b\theta(a - w^\circ))^\theta}{2\beta\varphi^{(1+\theta)}} \quad (9.1)$$

$$V_{PRI}^{\circ RTM} = \frac{(2-b)(a - w^\circ)^2 b\theta}{2\beta\varphi^2} \quad (9.2)$$

$$CS_{PRI}^{RTM} = \frac{(2-b)^2(a - w^\circ)^2}{8\beta\varphi^2} \quad (10)$$

$$SW_{PRI}^{RTM} = \frac{[b(4\theta m - 3) + 6](2-b)(a - w^\circ)^2}{8\beta\varphi^2} \quad (11)$$

## 2.2. Efficient Bargaining institution

Under EB, the private monopolist-union bargaining unit maximises the following generalised Nash product:

$$\underbrace{\max}_{w, r.t. \ w, q} N = (\pi)^{1-b} (V)^b = [(a - \beta q)q - wq]^{1-b} [(w - w^\circ)^\theta q]^b \quad (12)$$

Hence, the private monopolist-union bargaining unit selects at the first stage simultaneously  $w$  and  $q$ . From the system of first-order conditions of the EB game between private monopolist and union, it is obtained:

$$q(w) = \frac{a - w^\circ}{\beta(2 - b)} \quad (13)$$

$$w(q) = \frac{w^\circ(1 - b) - b\theta(q\beta - a)}{1 - b(1 - \theta)} \quad (14)$$

$$q_{PRI}^{EB} = \frac{a - w^\circ}{\beta\varphi} \quad (15)$$

$$w_{PRI}^{EB} = w_{PRI}^{RTM} \quad (16)$$

By using eq. (15) and (16), the other equilibrium outcomes are:

$$\pi_{PRI}^{EB} = \frac{(a - w^\circ)^2(1 - b)}{\beta\varphi^2} \quad (17)$$

$$V_{PRI}^{EB} = \frac{(a - w^\circ)(b\theta(a - w^\circ))^\theta}{\beta\varphi^{1+\theta}} \quad (18.1)$$

$$V_{PRI}^{\circ EB} = \frac{b\theta(a - w^\circ)^2}{\beta\varphi^2} \quad (18.2)$$

$$CS_{PRI}^{EB} = \frac{(a - w^\circ)^2}{2\beta\varphi^2} \quad (19)$$

$$SW_{PRI}^{EB} = \frac{[3 - 2b(1 - \theta m)](a - w^\circ)^2}{2\beta\varphi^2} \quad (20)$$

### 3. Public Monopoly

Now we deal with a public monopoly firm. The Government instructs the management of the public firm to maximise the social welfare, where the weight on the union's utility is less than one, as seen in the previous section. There are two reasons why the weight on the union's utility is less than one. The first is eminently algebraic, and the second, namely, political.

As regards the former, it is easy to see that the public firm's union could limitlessly raise its wage, because the optimal output level of the public firm is independent of the wage,<sup>11</sup> while, as regards the latter, "there may be political reasons why an increase in union utility is not considered as positive an occurrence as an increase in the profit accruing to the Treasury or as a reduction in the price of the good" (De Fraja, 1993, p. 460).

In what follows, we investigate the cases of RTM and EB.

#### 3.1. RTM institution

At stage 2 solving the social welfare maximisation problem of a public monopoly firm, we get the following output function:

$$q(w) = \frac{a - w(1 - m) - mw^\circ}{\beta} \quad (21)$$

At the first stage of the game, under RTM, the public monopoly-union bargaining unit selects  $w$  to maximise the following generalized Nash product:

$$\begin{aligned} \max_{w, r.t. \ w} N_{PUB} &= (SW_{PUB})^{1-b} (V)^b = \\ &= \left[ (a - \beta q)q - wq + \frac{\beta q^2}{2} + m[(w - w^\circ)q] \right]^{1-b} \left[ (w - w^\circ)^\theta q \right]^b \end{aligned} \quad (22)$$

where  $b$  represents the bargaining union's power.

Maximising eq. (22) with respect to  $w$ , after substitution of eq. (21) in (22), we obtain the wage:

$$w_{PUB}^{RTM} = \frac{ab\theta - w^\circ \{b[m(\theta - 1) + 1] - 2(1 - m)\}}{(1 - m)\phi} \quad (23)$$

<sup>11</sup> Alternatively,  $m$  can be fixed equal to one but then, in order to solve this problem, the bargaining choices have to face a budget constraint with respect to the level of profit of the public firm (e.g., Choi, 2012).



By using (23), we obtain the equilibrium output:

$$q_{PUB}^{RTM} = \frac{(2-b)(a-w^\circ)}{\beta\varphi} \quad (24)$$

By using eq. (23) and (24), the other equilibrium outcomes are:

$$\pi_{PUB}^{RTM} = \frac{bm\theta(2-b)(a-w^\circ)^2}{(m-1)\beta\varphi^2} \quad (25)$$

$$V_{PUB}^{RTM} = \frac{(2-b)(a-w^\circ)(b\theta(a-w^\circ))^\theta}{\beta(1-m)^\theta\varphi^{(1+\theta)}} \quad (25.1)$$

$$V_{PUB}^{\circ RTM} = \frac{(2-b)(a-w^\circ)^2 b\theta}{(1-m)\beta\varphi^2} \quad (25.2)$$

$$CS_{PUB}^{RTM} = \frac{(2-b)^2(a-w^\circ)^2}{2\beta\varphi^2} \quad (26)$$

$$SW_{PUB}^{RTM} = \frac{(2-b)^2(a-w^\circ)^2}{2\beta\varphi^2} \quad (27)$$

### 3.2. Efficient Bargaining institution

Under EB, the public monopoly-union bargaining unit maximises the following generalised Nash product:

$$\max_{w, q} N_{PUB} = (SW_{PUB})^{1-b} (V)^b = \left[ (a-\beta q)q - wq + \frac{\beta q^2}{2} + m[(w-w^\circ)q] \right]^{1-b} \left[ (w-w^\circ)^\theta q \right]^b \quad (28)$$

Hence, the public monopolist-union bargaining unit selects at the first stage simultaneously  $w$  and  $q$ . From the system of first-order conditions of the EB game, the following system is obtained:

$$q(w)_{PUB}^{EB} = \frac{2(a-w(1-m)-mw^\circ)}{\beta(2-w)} \quad (29)$$

$$w(q)_{PUB}^{EB} = \frac{b\theta(2a-q\beta) - 2w^\circ\{b[m(\theta-1)+1] - (1-m)\}}{2(1-m)(\varphi-1)} \quad (30)$$

$$q_{PUB}^{EB} = \frac{2(a - w^\circ)}{\beta\phi} \quad (31)$$

$$w_{PUB}^{EB} = w_{PUB}^{RTM} \quad (32)$$

By using eq. (31) and (32), the other equilibrium output are obtained:

$$\pi_{PUB}^{EB} = \frac{2b(m(\theta - 1) + 1)(a - w^\circ)^2}{(m - 1)\beta\phi^2} \quad (33)$$

$$V_{PUB}^{EB} = \frac{2(a - w^\circ)(b\theta(a - w^\circ))^\theta}{\beta(1 - m)^\theta\phi^{(1+\theta)}} \quad (34.1)$$

$$V_{PUB}^{\circ EB} = \frac{2(a - w^\circ)^2 b\theta}{(1 - m)\beta\phi^2} \quad (34.2)$$

$$CS_{PUB}^{EB} = \frac{2(a - w^\circ)^2}{\beta\phi^2} \quad (35)$$

$$SW_{PUB}^{EB} = \frac{2(1 - b)(a - w^\circ)^2}{\beta\phi^2} \quad (36)$$

#### 4. Comparison of equilibrium results

In this section, exploiting the equilibrium outcomes for both alternative bargaining agendas and types of firm's ownership, we investigate the choice of agenda and its corresponding effects on welfare. First, we show the choice between the two bargaining agendas, and compare whether and how wages, quantities, profits, union's utility, and social welfare differ. Second, we compare private and public outcomes.

Let us define the following differentials (where  $x$  is a generic variable assuming the meaning of the subscript  $i$ ):  $\Delta x_{i,j} = x_{i,j}^{RTM} - x_{i,j}^{EB}$ ,  $i = \pi, V, q, SW$ ;  $j = PRI, PUB$ .

##### 4.1. Private Monopoly

**Remark.** *Wages are the same under RTM and EB, the profit is always higher under RTM, while the union's utility, consumer's surplus, and social welfare are always higher under EB. Consequently, the private monopoly always chooses the RTM arrangement. Proof:*

$$\Delta\pi_{PRI} > 0, \Delta V_{PRI} < 0, \Delta q_{PRI} < 0, \Delta SW_{PRI} < 0.$$

These findings are in line with the common sense.

## 4.2. Public Monopoly

**Result 1.** *Wages are the same under RTM and EB; although the profit is always negative, the profit under RTM is always significantly higher than that under EB, and this profit differential in favour of RTM is increasing with increasing union's power. As in the case of the private monopoly, the union's utility and consumer's surplus are always higher under EB. Proof:*  $\Delta\pi_{PUB} > 0, \Delta V_{PUB} < 0, \Delta q_{PUB} < 0$ .

Thus, Result 1 states that, in line with the intuition, the public monopoly incurs large profit losses when it bargains also on employment, especially when both the union's utility is highly evaluated in the social welfare function and union's power is large.

**Result 2.** *SW is always higher under the RTM arrangement. Proof:*  $\Delta SW_{PUB} > 0$ .

*Corollary 1.* The public monopolist always chooses RTM as a private firm although it is interested also to consumer's and union's welfares which are higher under EB.

The intuition behind Results 1–2 and Corollary 1 is as follows. In comparison with the RTM agenda, the EB has a large negative impact on profits which more than offsets the positive effect on the union and consumer's welfare. Consequently, a public monopoly selects the bargaining agenda as a private firm, despite the fact that in its objective the union utility may have, at the limit, the same weight of the profit. Thus, we may conclude that, both the private and public monopoly end up with the choice of the RTM bargaining agenda. Moreover, the following observation holds:

*Corollary 2.* There is a conflicting view between Government, on the one side, and workers and consumers on the other side, as regards the preferred bargaining agenda.

## 4.3. Comparison between private and public monopoly

We have shown above that a monopolist chooses the same agenda irrespective of whether the firm is public or private. However, we question if, under the chosen RTM bargaining agenda, state ownership ensures the highest social welfare, as the conventional wisdom believes, or a privatisation could be welfare-improving.

Surprisingly, we find that the private monopoly may be more efficient than the public one under the circumstances depending only on the union's features and Government's political orientation.

Let us define the following differentials (where  $x$  is a generic variable assuming the meaning of the subscript  $i$ ):  $\Delta x_i = x_{i,PRI}^{RTM} - x_{i,PUB}^{RTM}$ ,  $i = V, q, SW$ .

**Result 3.** *The wage in the private monopoly firm is always lower than that in the public monopoly firm. Proof:*  $\Delta w = -\frac{b\theta(a-w^o)}{(1-m)\varphi} < 0$ .

In particular, it is easy to see that higher values both of the union's power and Government's concern for workers' welfare tend to enlarge the wage differential. By contrast, the higher the degree of wage aggressiveness the lower the wage differential. This means that the two measures of the degree of 'unionisation' – i.e. bargaining strength and wage-orientation – work in opposite directions with respect to private and public wages.

Result 3 is in line with the popular perception as well as with some evidence available indicating that wages are indeed higher in state-owned than in private firms, especially in imperfectly competitive markets, as quoted also by De Fraja (1993), Foster et al. (1984), and, for the case of Austria, Schneider and Bartel (1989). Therefore, this result also shows that high wages in public firms may not be simply due "to 'excessive' trade union power in public firms, to unwillingness/inability of managers and of the government to resist union pressure, or to some analogous, non-economic factor" (De Fraja, 1993, p. 458), but this is the clear-cut result of the rational behaviour of a public management instructed by the Government to maximise social welfare.<sup>12</sup>

**Result 4.** *Both consumer's welfare and unions' utility are higher under public monopoly. Proof:*

$$\Delta CS = -\frac{3(a-w^o)^2(2-b)^2}{8\beta\varphi^2} < 0,$$

$$\Delta V = -\frac{(a-w^o)(2-b)}{2\beta\varphi} \left\{ 2 \left[ \frac{b\theta(a-w^o)}{(1-m)\varphi} \right]^\theta - \left[ \frac{b\theta(a-w^o)}{\varphi} \right]^\theta \right\} < 0.$$

**Result 5.** *The private monopoly is more efficient than the public one when  $b$ ,  $m$ , and  $\theta$  are sufficiently high. On the other hand, both reserve wage and slope of the inverse demand function do not matter. Proof:*

$$\Delta SW = -\frac{(a-w^o)^2(2-b)[2-b(4m\theta+1)]}{8\beta\varphi^2} > 0 \Leftrightarrow b > \frac{2}{1+4m\theta}.$$

<sup>12</sup> By passing, we note that the wage paid by a public monopolist may be lower or higher than that a private monopolist would pay for various reasons thoroughly analysed by De Fraja (1983, p. 461). Moreover, while De Fraja (1993) examined the effect of privatization on the wages, recently Ishida and Matsushima (2009) focused, in a mixed duopoly context, primarily on welfare consequences of the wage regulation and wage bargaining.

It is easy to observe that Result 5 is due to the presence of union. In fact, in the absence of unionisation, the established result (e.g. De Fraja, Del Bono, 1989) that social welfare is always higher under public monopoly holds true.

Result 5 clearly states that a private monopoly may be more efficient. This means that privatisation is welfare-enhancing. More interestingly, this occurs when the union is strong and/or wage aggressive, and the workers' welfare is highly taken into account by the Government. Paradoxically, in the presence of a sizable 'unionisation', a workers-oriented (i.e. a left-wing) Government should privatise the industry.

## **Conclusions**

Motivated by the relevance of the issue of privatisation especially in post-communist countries, the present paper has investigated whether and how the presence of labour union-firm relations matters for the relative efficiency of private or public ownership of firms. In particular, the paper has concentrated the attention, in the context of a public/private unionised monopoly, on the impact of different bargaining agendas, namely RTM and EB, on profits and the overall social welfare.

The key results of the paper are as follows. First, in the presence of unionisation, both the private and public monopoly finds profitable to adopt a RTM negotiation agenda. Second, the public firm pays a higher wage; however, higher values of the union's power and Government's concern for workers' welfare tend to increase the wage differential between the public and private monopoly, while a higher degree of wage aggressiveness lowers it. Thus, the two measures of the degree of 'unionisation' of the model – i.e. the union bargaining power and wage orientation – work in opposite directions with respect to the wage paid by the private and public monopoly.

Third, privatisation could guarantee a social welfare higher than state ownership. This rather unanticipated result may arise provided that 1) the Government has a high evaluation of the workers' welfare; and 2) the labour union is strong and/or wage aggressive. As a consequence, our findings seems to suggest that privatisation 1) should be socially preferred depending exclusively on the bargaining power and wage aggressiveness of the labour union; and 2) rather paradoxically, is preferred when the Government takes highly into consideration the workers' welfare. These results can have deep policy implications especially in the post-communist countries in which the debate on privatisation and its effectiveness is pervasive, and Government and unions may oscillate between left or right wing, and strength or weakness, respectively.

To keep the model tractable, some simplifying assumptions have been adopted. For example, specific functional forms define the demand schedule and the union utility. Moreover, the analysis focuses only on output choices in the presence of homogenous goods in the product market. Thus, the results of the paper are far from being exhaustive. An immediate research step would be to extend the model toward a mixed duopoly with quantity and price competition in the presence of differentiated products.<sup>13</sup> Moreover, the robustness of the current findings can be checked in a wider than the current game-theoretic set up in which also managerial delegation, capacity choices, R&D investments, and consumption externalities are considered.

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<sup>13</sup> Mixed duopolies, but without unions and products differentiation, have been early studied by De Fraja and Del Bono (1987, 1990).

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