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Trade Unions and Corporate Social Responsibility

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Abstract:

Trade unions distort a profit-maximising firm's input choice. The nature of the resulting inefficiency depends on whether there is wage or efficient bargaining. Moreover, trade unions redistribute income and thereby affect welfare. If firms also pursue Corporate Social Responsibility (CSR) objectives, input choices are distorted already in the absence of collective bargaining. Adopting a positive perspective, we show that CSR objectives which foster economic activity have ambiguous wage and employment consequences in case of wage negotiations and raise employment if there is efficient bargaining. Importantly from a normative vantage point, such CSR objectives make a welfare-enhancing role of trade unions more likely in the presence of wage negotiations, whereas the reverse may be true in case of efficient bargaining.

Keywords: Corporate Social Responsibility, Efficient Bargaining, Trade Unions, Wage Bargaining, Welfare

JEL: D 60, J 51, L 31, M 14

1. Introduction

Corporate Social Responsibility (CSR) activities have become "mainstream" (The Economist 2008). According to a KPMG (2017) survey, most large firms and more than 90 percent of the 250 globally leading firms report on corporate responsibility. These widespread CSR activities are not only an indicator of the almost universal acceptance of such responsibility. They also reflect the fact that CSR is an encompassing concept, which includes a variety of activities, as two commonly cited definitions clarify. The European Commission (2011, p. 6) states that CSR is "the responsibility of enterprises for their impacts on society. Respect for applicable legislation, and for collective agreements between social partners, is a prerequisite for meeting that responsibility." The World Business Council for Sustainable Development (2000, p. 8) asserts that CSR "is the continuing commitment by business to contribute to economic development while improving the quality of life of the workforce and their families as well as of the community and society at large." These characterisations also clarify the relevance of employees. Hence, the question of whether CSR activities can alter the behaviour of (potential) employees in order to enhance the firm's payoff has been debated intensely (Kitzmueller and Shimshack 2012).

The relevant contributions usually assume a competitive setting. In most countries, though, the functioning of the labour market is strongly affected by regulations and institutions. They include restrictions on working time, minimum wages, employment protection legislation, payroll taxes, unemployment insurance schemes, co-determination and collective bargaining (Boeri and van Ours 2013, European Commission 2015, OECD 1998, 2013, 2015, 2017). The importance of such specific labour market features and the interaction with CSR has not found much attention, yet. In this paper, we focus on one particular labour market institution, namely trade unions. In many OECD and European Union member states, wages and working conditions for an overwhelming fraction of the workforce are determined by collective bargaining (Visser, 2019). Moreover, the likelihood of collective bargaining is highest in large firms (Tijdens and van Klaveren 2007, OECD 2017, p. 139), which are also most likely to report on and undertake CSR activities. In consequence, we investigate the impact of CSR on the behaviour of trade unions and, particularly, on collective bargaining outcomes.

One means to integrate CSR into formal analyses of firm behaviour, is to interpret such concerns as alteration in the firm's objective. If such change takes place, also the firm's behaviour and the outcome of collective bargaining will be affected. Therefore, CSR activities will alter labour costs and the profitability of pursuing such objectives. This consequence of

CSR has been widely disregarded.¹ Similarly, the effects of trade unions have generally been looked at for profit-maximising firms, while CSR aspects have not been considered.

Accordingly, the question arises if the wage, employment and welfare effects of collective bargaining and resulting policy advice are altered if a firm's objective features CSR concerns. Therefore, in the present contribution we assume that a firm, which also incorporates the payoff from CSR activities, bargains with a firm-specific trade union over wages or, alternatively, wages and employment. Since the firm has market power, its CSR payoff increases in output. In addition, the employees' payoff figures in the firm's objective directly.

For such a set-up we, first, undertake a positive analysis and enquire how CSR activities affect bargaining outcomes. We clarify that more pronounced CSR objectives increase the firm's and the union's gain from an agreement. Because the Nash-bargaining solution shares the payoff gains and since it is uncertain whether the firm or the trade union benefits by more, the wage and employment variation resulting from CSR can generally not be determined in the case of wage bargaining. If the firm and trade union bargain over wages and employment, a more pronounced CSR output objective raises the efficient level of employment, while the employee objective has no such impact. As the union already participates in the firm's higher payoff owing to the rise in employment, the wage change due to the output objective will be ambiguous. This is not the case for the employee objective, such that the Nash-solution requires a higher wage. Using these findings, the profit effects of CSR may well be negative on account of the increase in labour costs resulting from collective negotiations. If this is the case, firms negotiating wages and, possibly, employment and working conditions with a trade union may be less inclined to adopt CSR objectives than firms without collective bargaining.

Second, we adopt a normative perspective and analyse the welfare consequences of trade unions. We show that the effects which occur for a profit-maximising firm, may no longer arise if it pursues CSR objectives. On the one hand, collective bargaining distorts input choices. On the other hand, CSR activities result in a deviation from the first-best and the two distortions can neutralise each other. Accordingly, our analysis represents a further example of the feature that "it is not true that a situation in which more, but not all, of the optimum conditions are fulfilled is necessarily (...) superior to a situation in which fewer are fulfilled" (Lipsey and Lancaster, 1956, p. 12). More specifically, output is, *ceteris paribus*, too low in the absence of CSR activities due to the firm's market power. In the case of wage bargaining, the existence of trade unions aggravates this negative output effect. In a framework with

¹ This neglect is nicely captured by Jackson et al. (2018, p. 5) in their introduction to the Symposium of the British Journal of Industrial Relations on Corporate Social Responsibility and Labour Standards. They state that "(i)t is striking that employees and trade unions play almost no role in the business literature on CSR."

efficient bargaining, collective negotiations tend to compensate the output market distortion. If the firm pursues an activity-enhancing CSR objective, output in the absence of collective bargaining may be too high, as the CSR effect dominates the consequences of market power. In case of wage bargaining, therefore, the output reduction due to collective bargaining is less likely to lower production to below the optimal level than in the absence of a CSR objective. In case of efficient bargaining, however, output is more likely to rise to above the optimal amount. In addition to their effects on output, trade unions redistribute income. This will raise welfare if the workers' marginal utility from wages is higher than the profit effect of a wage increase. Combining the output and distributionary impact, we can show that trade unions are more likely to enhance welfare in the presence of CSR objectives than in their absence if there is wage bargaining. The reverse is true in case of efficient bargaining.

Our findings have far-reaching implications. The welfare effects of trade unions crucially depend on the extent of CSR activities and how corporate responsibility affects the firm's objective function. Therefore, policies or regulations either supporting or restricting unions may have different consequences, depending on firms' CSR policies. Conversely, the welfare impact of CSR can vary with the manner in which wages and employment are determined. This implies that Milton Friedman's (2002, p. 133) famous claim that "there is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits ..." need not hold in the presence of trade unions, even if CSR activities as such reduce profits. Additionally, we show that a firm's payoff from CSR depends on the characteristics of the input market and not only, as mostly analysed thus far, those of the output market. Since the intensity of labour market regulations and the strength, for example, of trade unions vary across countries (European Commission 2015, OECD 2017), the effects of CSR activities will also be different. Moreover, our findings suggest that the optimal nature and intensity of CSR activities are influenced by the features of the labour market.

The present analysis relates to various strands of the literature: First, there are a number of contributions looking at the labour market effects of CSR, usually focusing on employees but ignoring labour market institutions. The basic hypothesis is that employees derive utility from working in socially responsible firms. In consequence, they are willing to provide higher effort and/ or to accept lower wages (Brekke and Nyborg 2008). The empirical evidence, based on survey and register data, as well as field experiments is generally, but not unanimously consistent with this view.²

² See Bolvig (2005), Burbano (2016), Huber et al. (2017), Nyborg (2014), Nyborg and Zhang (2013), and Newman et al. (2016) who look at wages. Hedblom et al. (2019) consider application rates, Carnahan et al.

Second, the wage and employment effects of trade unions have been looked at, assuming the firm to pursue other objectives than profits. Falch (2004) analyses wage bargaining between a rent-maximising trade union and a firm for which he considers various objectives, inter alia, profits, profits plus consumer surplus, output and revenues. The comparison of bargained wages yields no consistent relation with regard to the different objectives. Gravelle (1984) compares a profit-maximising monopolist and a public-sector firm which maximises the utility of the sum of profits and consumer surplus. The firm bargains over wages and employment with a utilitarian trade union. Using general functional forms, Gravelle (1984) cannot establish the wage and employment effects of privatising the public-sector firm, modelled as a lower weight of the consumer surplus objective. Haskel and Szymanski (1993) compare outcomes in a wage-bargaining framework for a profit-maximising and a public-sector firm. The latter maximises a weighted sum of profits, consumer surplus and union utility. The trade union is a rent maximiser and product demand and the production function are specified explicitly. Haskel and Szymanski (1993) show that privatisation lowers wages on account of union utility being part of the public-sector firm's objective. Employment is higher in the public sector firm due to the consumer surplus component.³ Importantly, neither Gravelle (1984) nor Haskel and Szymanski (1993) consider welfare effects.

Third, collective bargaining in the public sector has been investigated. Some contributions consider cash limits (Leslie 1985, Holmlund 1997). Others focus on the degree of cooperation between trade unions (Holmlund 1993) or the timing of budgetary decisions relative to collective negotiations (Falch 2001). None of these analyses compares bargaining outcomes in the public sector with those arising in profit-maximising firms, thus providing a benchmark for our investigation.

Finally, the efficiency consequences of trade unions in the presence of other market imperfections have been looked at. The classic example is that of a monopsony in which a wage increase due to collective bargaining can raise employment and enhance efficiency

(2017) investigate turnover, and Koppel and Regner (2014) and Hedblom et al. (2019) analyse various measures of effort. List and Momeni (2020) find evidence that CSR raises misbehavior by employees. In one of the few contributions also scrutinizing a theoretical model, Becchetti et al. (2016) assume that CSR implies extra care for stakeholders' wellbeing. Stakeholders are employees and since they dislike employment variations in a world of output price variability, CSR is interpreted as a constraint of the firm to adjust employment.

³ See also Haskel and Szymanski (1992). Haskel and Sanchis (1995) extend the setting by Haskel and Szymanski (1993), as firm and union also bargain over workers' effort. De Fraja (1993) considers a simplified version of Haskel and Szymanski (1993) and analyses a monopolist which faces a linear demand function and uses a linear production technology. Monteiro et al. (2011) also incorporate efficiency wage considerations. Finally, Grönblom and Willner (2008) interpret privatisation as a simultaneous change in firm objectives and a move from monopoly to oligopoly.

(Viscusi 1980, Oswald 1982, Kaufman 2004, Manning 2004, Boeri and van Ours 2013, p. 89 ff). These contributions usually assume negotiations over wages.

In sum, the related questions of how CSR activities affect (1) collective bargaining outcomes and (2) alter the welfare consequences of trade unions have not been looked at. The remainder of the paper is structured as follows: In the next section we describe the model. Section 3 characterises optimal behaviour. In Section 4, we analyse how CSR objectives affect collective bargaining outcomes and payoff levels. We investigate the welfare effects of trade unions in Section 5, while Section 6 concludes.

2. Model

2.1 Setting

We consider a single firm, which uses labour as only input. It bargains with a firm-specific, utilitarian trade union over wages or, alternatively, wages and employment (Oswald 1982). Working time per employee is fixed. The output market is imperfectly competitive and a firm with a profit objective that paid the competitive wage would, hence, produce less than the efficient amount.⁴ We assume that the firm maximises a weighted sum of profits and two CSR objectives, which foster economic activity. The CSR activities mitigate the output market externality and incorporate the feature that employee utility is not maximal. These objectives may reflect preferences of firm owners or, alternatively, the (non-monetary) payoff from succumbing to the demands of political agents, pressure groups or consumers to behave in a certain manner. Hence, CSR concerns are exogenously given and their strength is independent of union bargaining power.⁵ Finally, CSR has no direct impact on the consumers' willingness to pay for the good produced by the firm, such that its price only varies with output.

2.2 Trade Union

The utilitarian trade union has M , $M > 0$, members, N of which are employed, earning the wage w . Those members who are not employed in the firm under consideration work in a perfectly competitive labour market where they earn the wage, \bar{w} . Utility of workers depends on their income only, implying that CSR has no direct beneficial impact, for example, by

⁴ In the concluding section, we briefly comment on a setting in which output is excessive since the firm does not have market power but causes an environmental damage which it does not fully take into account.

⁵ Two recent contributions provide evidence that the extent of CSR activities is related to the strength of unions (in the UK; Boodoo 2020) and of workforce representation on company boards (in Germany; Scholz and Vitols 2019).

enhancing work motivation. The utility function of each ex-ante identical member of the trade union is denoted by u and increases in income at a decreasing rate ($u' > 0 > u''$). Trade union utility, U , can be expressed as:

$$U = Nu(w) + (M - N)u(\bar{w}) \quad (1)$$

2.3 Firm

The production function $f(N)$ is increasing in employment, N , at a decreasing rate, $f' > 0 > f''$, for $N > 0$. Moreover, $f(0) = 0$ and $f'(0) \rightarrow \infty$. We assume the price of output to be unity in a competitive market and model the impact of the firm's market power in a general, but simplifying manner. In particular, we specify revenues as $f(N) - \rho(N) > 0$, $\rho(0) = 0 < \rho'$, $0 \leq \rho''$. This approach enables us to capture a crucial feature of market power, without specifying market structure in detail, namely that marginal revenues, $1 - d\rho(N)/df(N) = (d\rho(N)/dN)(dN/df(N)) = 1 - \rho'(N)/f'(N)$, fall short of the competitive price of unity. Because the firm incurs no other costs than wages, profits, π , are:

$$\pi = f(N) - \rho(N) - wN \quad (2)$$

The first CSR objective is, in line with other contributions, given by output (Willner 2013). The underlying idea is that the firm takes into account the interests of consumers, which benefit from a greater output level, given the oligopolistic structure of the output market. Inclusion of the output level into the firm's objective, Z , could also be interpreted as an indication of customer orientation, since this expression does not depend on output choices of other firms (Königstein and Müller 2001; Planer-Friedrich and Sahm 2018). Our results would qualitatively also hold if we incorporated a measure of consumer surplus into the firm's objective, as long as it rises in the firm's output, as our specification assumes.⁶ The second CSR objective reflects the idea that the firm is also concerned with its employees. While it is often argued that firms pursuing CSR objectives incorporate the employees' interests only partially or inadequately (e. g. Donaghey and Reinecke 2018) we, for simplicity, assume that the firm is concerned additionally with union utility. Both CSR objectives foster economic activity, that is, ceteris paribus increase employment and output. In the firm's objective, Z , we

⁶ Contributions in which the CSR objective equals an exogenously or endogenously determined fraction of consumer surplus or welfare include Goering (2008, 2014), Kopel and Brand (2012), Kopel et al. (2014), Lambertini and Tampieri (2015), Lambertini et al. (2016), Planer-Friedrich and Sahm (2020), and Goerke (2019).

normalise the weight of profits to unity and assume that the weights of the CSR objectives equal α , $\alpha \geq 0$, and β , $0 \leq \beta < 1$.⁷ Hence, Z can be expressed as:

$$\begin{aligned} Z &= \pi(w, N) + \alpha f(N) + \beta U(w, N) \\ &= (1 + \alpha)f(N) - wN - \rho(N) + \beta[Nu(w) + (M - N)u(\bar{w})] \end{aligned} \quad (3)$$

The specification of Z makes it possible that the firm's payoff is positive while the level of profits is not. The subsequent analysis assumes interior solutions.⁸

2.4 Social Planner

In the specification of welfare, W , we follow other contributions on CSR, which define W as a function of the payoffs of all agents under consideration, excluding potential externalities due, for example, to market power. However, there is no 'double counting' because of a firm's CSR objective (see, inter alia, Goering 2008, Kopel and Brand 2012, and Lambertini and Tampieri 2015). Accordingly, welfare, W , is defined as the sum of union utility and the value of production, less resulting labour costs.

$$W = f(N) - wN + Nu(w) + (M - N)u(\bar{w}) \quad (4)$$

The utilitarian formulation implies that welfare also depends on the distribution of income because the marginal utility from income is one for the firm and $u'(w)$ for employees. The social planner has a sufficient number of instruments to obtain the first-best situation. In such outcome, the marginal utility from income is unity. In addition, the wage, w , the exogenously given competitive wage, \bar{w} , and marginal revenues from production coincide (see Appendix A.1 for a derivation).

3. Market Outcome

3.1 Foundations

The firm and the trade union negotiate over the wage (sub-section 3.2) or the wage and employment (sub-section 3.3). The outcomes are determined by the asymmetric Nash-bargaining solution. The indicator of the firm's (union's) bargaining power is denoted by γ ($1 -$

⁷ Alternatively, the weight of profits could be $(1 - \alpha - \beta)$, such that the overall weight of all three items in the firm's objective sums to one. While effects of a greater relevance of the output objective would not be qualitatively altered, as its rise increases the firm's payoff (given $f(N) > \pi$), the impact of a greater importance of the employee objective could depend on the difference between profits and union utility. This issue can be avoided by normalizing the weight of profits to unity, as it is done in equation (3).

⁸ Below, we briefly comment on the impact of a binding profit constraint for our main results.

γ), $0 \leq \gamma < 1$.⁹ In case of no agreement, employment, output, and profits are zero ($N = f(0) = \rho(0) = \pi = 0$), and all union members obtain the competitive wage, \bar{w} . Therefore, the firm's gain from bargaining, \tilde{Z} , is:

$$\tilde{Z} = Z - (0 + \alpha f(0) + \beta M u(\bar{w})) = f(N) - wN - \rho(N) + \alpha f(N) + \beta N[u(w) - u(\bar{w})] \quad (5)$$

The trade union's gain from bargaining, \tilde{U} , equals:

$$\tilde{U} = U - M u(\bar{w}) = N[u(w) - u(\bar{w})] \quad (6)$$

Accordingly, the asymmetric Nash-product is:

$$\begin{aligned} NP &= \tilde{Z}^\gamma \tilde{U}^{1-\gamma} \\ &= [f(N)(1 + \alpha) - wN - \rho(N) + \beta N[u(w) - u(\bar{w})]]^\gamma [N[u(w) - u(\bar{w})]]^{1-\gamma} \quad (7) \end{aligned}$$

3.2 Right-to-manage Framework

3.2.1 Labour Demand

If the firm unilaterally determines employment, the first-order condition for a maximum of the firm's objective, Z , is given by:

$$\frac{\partial Z}{\partial N} = (1 + \alpha)f'(N) - w - \rho'(N) + \beta[u(w) - u(\bar{w})] = 0 \quad (8)$$

The CSR objectives imply that $f'(N) - \rho'(N)$ falls short of the wage, w , that is, an extra employee raises labour costs by more than revenues. The slope of the labour demand curve is

$$\frac{\partial N}{\partial w} = N_w = \frac{1 - \beta u'(w)}{(1 + \alpha)f''(N) - \rho''(N)}, \quad (9)$$

where the denominator is negative by the second-order condition. We assume that the (inverse) labour demand curve is downward-sloping in the wage-employment space ($1 > \beta u'(w)$). Otherwise, the firm's payoff would increase in wages. Moreover, CSR raises the slope of the (inverse) labour demand curve, at a given wage-employment combination.¹⁰

3.2.2 Wage Bargaining

Maximisation of the Nash-product (7) with respect to the wage, w , subject to (9), yields:

⁹ Since our focus is on an increase in the union's bargaining power, for simplicity γ is the same for negotiations about wages and employment, on the one hand, and about wages only on the other hand.

¹⁰ Landsberger and Subotnik (1976) analyse the behaviour of a monopolist which maximises a utility function that increases in revenues and profits. Our finding mirrors their prediction that the revenue objective makes the input demand function steeper (see also Haskel and Szymanski (1993)).

$$\frac{dNP}{dw}|_{N=N(w)} = \gamma \tilde{Z}^{\gamma-1} \tilde{U}^{1-\gamma} \left(\frac{\partial \tilde{Z}}{\partial w} + \frac{\partial \tilde{Z}}{\partial N} N_w \right) + (1-\gamma) \tilde{Z}^\gamma \tilde{U}^{-\gamma} \frac{d\tilde{U}}{dw} = 0 \quad (10)$$

Using $\partial \tilde{Z} / \partial w = \partial Z / \partial w$ from (5) and the firm's first-order condition (8), we obtain $B = 0$, where B is given by:

$$B := \gamma \tilde{U} \frac{\partial \tilde{Z}}{\partial w} + (1-\gamma) \tilde{Z} \frac{d\tilde{U}}{dw} = -\gamma N \tilde{U} (1 - \beta u'(w)) + (1-\gamma) \tilde{Z} (N_w (u(w) - u(\bar{w})) + Nu'(w)) = 0 \quad (11)$$

The wage equals \bar{w} if the trade union has no bargaining power ($\gamma = 1$). This is because \bar{w} is the lowest wage feasible, given that all individuals can obtain work in the competitive sector. We assume that the second-order condition holds, such that $dB/dw = \partial B/\partial w + (\partial B/\partial N)N_w < 0$. Because $dB/d\gamma < 0$ from (11), the wage declines with the firm's bargaining power, γ .

3.3 Efficient Bargaining

Bargaining over wages and employment results in two first-order conditions:

$$\begin{aligned} \frac{\partial NP}{\partial w} &= \gamma \tilde{Z}^{\gamma-1} \tilde{U}^{1-\gamma} \frac{\partial \tilde{Z}}{\partial w} + (1-\gamma) \tilde{Z}^\gamma \tilde{U}^{-\gamma} \frac{\partial \tilde{U}}{\partial w} \\ &= \tilde{Z}^{\gamma-1} \tilde{U}^{-\gamma} [-\gamma N^2 (u(w) - u(\bar{w})) (1 - \beta u'(w)) + (1-\gamma) \tilde{Z} N u'(w)] = 0 \end{aligned} \quad (12)$$

$$\frac{\partial NP}{\partial N} = \gamma \tilde{Z}^{\gamma-1} \tilde{U}^{1-\gamma} \frac{\partial \tilde{Z}}{\partial N} + (1-\gamma) \tilde{Z}^\gamma \tilde{U}^{-\gamma} \frac{\partial \tilde{U}}{\partial N} = 0 \quad (13)$$

Because the firm's gain from bargaining must be positive ($\tilde{Z} > 0$), equation (12) can only hold, if $1 - \beta u'(w) > 0$. Furthermore, from (12) and (13) we can derive the set of efficient wage and employment combinations, i.e., the contract curve. It can only hold if $C = 0$ (see Appendix A.2), where

$$C := u(w) - u(\bar{w}) + u'(w) [f'(N)(1 + \alpha) - w - \rho'(N)] = 0. \quad (14)$$

As it is true for a profit-maximising firm, the contract curve, C , is positively sloped in the wage-employment space for $w > \bar{w}$, given a strictly concave utility function ($u''(w) < 0$).¹¹

In order to derive the so-called power locus (McDonald and Solow 1981, Creedy and McDonald 1991), we combine equation (12) with the contract curve condition (14).

$$A := w - \beta [u(w) - u(\bar{w})] - \frac{f(N)(1 + \alpha) - \rho(N)}{(1-\gamma)^{-1}N} - \gamma (f'(N)(1 + \alpha) - \rho'(N)) = 0 \quad (15)$$

¹¹ See Appendix A.2. We briefly comment on the case of a vertical contract curve at the end of Section 5.2.

The power locus is negatively sloped in the wage-employment space for $\pi \geq 0$ (see Appendix A.2).

Greater firm bargaining power reduces the wage as defined by the power locus, for a given level of employment, because a rise in γ shifts the power locus downwards in the wage-employment-space ($\partial A/\partial \gamma > 0$). Since the contract curve is unaffected by a variation in γ , greater firm (trade union) bargaining power will reduce (raise) wages and employment in an efficient bargaining setting ($dN/d\gamma|_{EB}, dw/d\gamma|_{EB} < 0$; cf. Nickell and Andrews 1983).

4. Corporate Social Responsibility and Optimal Choices

In this section we consider the wage, employment and payoff effects of CSR activities. As indicated above, we distinguish wage negotiations and efficient bargaining.

4.1 Wage Bargaining

The derivative of (8) with respect to α shows that a greater importance of the CSR output objective will raise the firm's gain from expanding employment.¹² Moreover, for $w > \bar{w}$, the same is true if the CSR employee objective becomes more pronounced (Haskel and Szymanski 1993, Bastos et al. 2014). We can summarise these findings in:

Result 1

A greater importance of CSR objectives raises labour demand, for a given wage.

Proof: Follows from the above. ■

The impact of the CSR output objective on the bargained wage is determined by:

$$\begin{aligned} \frac{dB}{d\alpha} &= \underbrace{\frac{\partial B}{\partial \alpha}}_{\geq 0} + \frac{\partial B}{\partial N} \underbrace{\frac{\partial N}{\partial \alpha}}_{> 0} \\ &= \underbrace{(1 - \gamma)f(N)}_{(1)} \frac{d\tilde{U}}{dw} + \underbrace{2\gamma N(u(w) - u(\bar{w}))(1 - \beta u'(w))}_{(2)} \frac{f'(N)}{(1 + \alpha)f''(N) - \rho''(N)} \end{aligned}$$

¹² The same outward shift of the inverse labour demand function occurs if the firm maximises the utility from profits and consumer surplus (Gravelle 1984, De Fraja 1993) or a weighted sum of profits, consumer surplus, and union utility (Bastos et al. 2014) and consumer surplus becomes more important in the firm's objective.

$$- (1 - \gamma) \tilde{Z} \underbrace{\left(\frac{\partial N_w}{\partial N} (u(w) - u(\bar{w})) + u'(w) \right)}_{(3)} \frac{f'(N)}{(1 + \alpha)f''(N) - \rho''(N)} \quad (16)$$

This derivative is basically ambiguous. First, the firm's payoff rises for a given level of employment. This effect, captured by (1) in equation (16), requires the union's payoff to go up as well and, hence, contributes to an expansion of the wage. Second, labour demand increases. This effect (2) in equation (16) raises the union's payoff and does not affect the firm's because the latter chooses employment optimally. On its own, this impact necessitates a fall in the wage, unless the union unilaterally determines the remuneration level (such that $d\tilde{U}/dw = 0$). Finally, the union's gain from a higher wage changes because the position and slope of the labour demand curve are altered (cf. (3) in equation (16)). The resulting wage change is uncertain. If the (inverse) labour demand curve does not become flatter in the wage-employment space, the third alteration implies a rise in the wage. The sum of all effects can be determined for the special case of a monopoly union. In such a setting ($\gamma = 0$, $d\tilde{U}/dw = 0$), the costs of a wage increase will surely decline if the slope of the inverse labour demand curve does not fall. A monopoly trade union will then raise the wage. For lower levels of bargaining power, the wage effect of the output objective is uncertain. Accordingly, we can summarise our findings in:

Result 2

A greater importance of CSR objectives will induce a monopoly union to raise the wage if the (inverse) labour demand curve does not become flatter in the wage-employment space.

Proof: Follows from the above. ■

Turning to employment, a rise in α raises labour demand for a given wage. However, either the wage change cannot be determined or the wage increase which can be established for a monopoly union setting lowers labour demand. Since the direct impact and the wage induced labour demand effect potentially are of the opposite direction and depend on different components of the firm's payoff, they cannot be compared quantitatively, and the employment change is ambiguous.

A greater importance of the CSR employee objective, i.e. a rise in β , has qualitatively the same effects as a higher relevance of the output objective (see Appendix A.3). This is the case because both objectives raise the union's and the firm's gain from an agreement.¹³

4.2 Efficient Bargaining

The derivatives of the power locus (15) are:

$$A_{\alpha} = -\left[(1 - \gamma) \frac{f(N)}{N} + \gamma f'(N)\right] < 0 \quad (17)$$

$$A_{\beta} = -[u(w) - u(\bar{w})] < 0 \quad \text{if } w > \bar{w} \quad (18)$$

Since $A_w > 0$, a rise in α or β is only compatible with $A = 0$ for a given level of employment if wages rise. Put differently, as $A_N > 0$, higher values of α and β necessitate higher employment, for a given wage. Therefore, CSR activities shift the power locus upwards in the wage-employment space. The intuition is as follows: The power locus describes how the gain from an agreement is shared between trade union and firm. Since the firm's gain from more employment increases with CSR objectives, the firm can agree to a greater share of the total gain being obtained by the trade union.

The contract curve is independent of the weight β because incorporating the CSR employee objective effectively represents a positive affine transformation of the trade union's payoff, to which the Nash solution is invariant (Mas-Colell et al. 1995, Chap. 22E). A more pronounced output objective shifts the contract curve downward, as $C_w > 0$. If the firm's gain from more employment rises, it is efficient to increase employment at a given wage.

$$C_{\alpha} = u'(w)f'(N) > 0 \quad (19)$$

Combining the effects on the power locus and the contract curve indicates that the CSR employee objective increases employment and wages. Furthermore, the upward shift of the power locus due to a greater importance of the output objective, combined with a downward shift of the contract curve indicates that employment surely rises.¹⁴ The wage effect is:

¹³ Assuming iso-elastic product demand, a Cobb-Douglas production function (or linear demand and production functions), and a linear union utility function, Haskel and Szymanski (1992, 1993) show that wages are unaffected by a consumer surplus objective and rise with a greater importance of the employee objective, as specified in equation (3) (see also Monteiro et al. 2011), while employment rises in the former case and remains constant in the latter. Moreover, given the particular specifications employed by Haskel and Szymanski (1992), profits of a firm which also pursues these additional objectives are negative. In De Fraja (1993), bargained wages decline with the relevance of union utility in the firm's objective, while the wage effect of consumer surplus and the employment consequences are ambiguous.

¹⁴ Gravelle (1984) shows that the effect of a consumer surplus objective on the position of the power locus is ambiguous while the contract curve shifts downward, as it is the case for the output objective.

$$\begin{aligned} \frac{dw}{d\alpha|_{EB}} &= \frac{A_\alpha C_N - C_\alpha A_N}{C_w A_N - A_w C_N} \\ &= \frac{u'(w)(1 + \alpha)(\gamma - 1)}{\underbrace{N(C_w A_N - A_w C_N)}_{>0}} \left[\frac{f''(N) - \rho''(N)}{f(N)^{-1}} - f'(N) \left(f'(N) - \rho'(N) - \frac{f(N) - \rho(N)}{N} \right) \right] \quad (20) \end{aligned}$$

For a Cobb-Douglas-production function and $\rho(N) = N^\theta$, the term in square brackets in (20) is zero for $\theta = 1$, such that wages remain constant. If $\theta > 1$, wages will decline. In sum, we have:

Result 3

Assume an efficient bargaining framework. A greater importance of the employee CSR objective will raise the bargained wage and employment. A greater importance of the output CSR objective will not alter (reduce) the bargained wage if the production function is Cobb-Douglas and $\rho(N) = N$ ($\rho(N) = N^\theta$, $\theta > 1$), and increase employment.

Proof: Using $\rho'(N) = \theta N^{\theta-1}$, Result 3 follows from the above. ■

4.3 Payoff Consequences of CSR

In order to analyse whether collective bargaining affects the desirability of CSR from a firm's and a trade union's point of view, we consider the change in profits and the union's utility.

The profit impact of the output objective is given by:

$$\frac{d\pi}{d\alpha} = \frac{\partial\pi}{\partial N} \frac{dN}{d\alpha} - N \frac{dw}{d\alpha} \quad (21)$$

The effect of a greater importance of the employee objective is defined analogously. The employment effect, i.e., the first summand in (21), will be zero in a wage bargaining setting because the firm chooses employment optimally. Moreover, we know that an increase in the importance of either of the CSR objectives will raise employment in an efficient bargaining context ($dN/d\alpha|_{EB}$, $dN/d\beta|_{EB} > 0$, Result 3). Since employment exceeds the profit-maximising level if there is efficient bargaining ($\partial\pi/\partial N < 0$), the rise in employment lowers profits.

Accordingly, a positive (non-negative) wage change resulting from a greater importance of CSR activities suffices to reduce profits in a wage (efficient) bargaining context on account of the impact of CSR on collective bargaining outcomes. This will surely be the case for the employee objective, as $dw/d\beta|_{EB} > 0$.

Results 2 and 3 establish cases in which CSR concerns can result in higher bargained wages. Such outcome will surely arise for the employee objective in an efficient bargaining setting.

Hence, the findings suggest a negative profit impact of CSR concerns on account of their impact on collective bargaining. Therefore, it may be conjectured that firms will, *ceteris paribus*, be more hesitant to pursue CSR objectives if there is collective bargaining than if such negotiations are absent. Put differently, the weaker trade unions are, the more intensively firms may pursue CSR activities. Obviously, a CSR may also raise productivity, for a given wage. Such effect will, *ceteris paribus*, raise profits. Unless productivity consequences substantially weaken or reverse the collective bargaining effect, the above tentative conclusion will continue to hold if such additional effects are incorporated.¹⁵

The change in union utility owing to the output objective in the presence of wage bargaining is determined by:

$$\frac{dU}{d\alpha|_{WB}} = \frac{\partial U}{\partial N} \frac{\partial N}{\partial \alpha} + \underbrace{\left\{ \frac{\partial U}{\partial N} N_w + \frac{\partial U}{\partial w} \right\}}_{=d\bar{u}/dw} \frac{dw}{d\alpha|_{WB}}, \quad (22)$$

where $\partial N/\partial \alpha > 0$ captures the change in labour demand for a given wage, $\partial U/\partial N = u(w) - u(\bar{w}) > 0$ and $\partial U/\partial w = N(w)u'(w) > 0$. The term in curly brackets in (22) is positive unless the trade union sets the wage (cf. equation (11)). Since labour demand rises with CSR objectives ($\partial N/\partial \alpha, \partial N/\partial \beta > 0$; cf. Result 1), a sufficient condition for union utility to increase owing to the firm's CSR objectives is that wages do not fall ($dw/d\alpha|_{WB}, dw/d\beta|_{WB} \geq 0$).

In the case of efficient bargaining we have:

$$\frac{dU}{d\alpha|_{EB}} = \frac{\partial U}{\partial N} \frac{dN}{d\alpha|_{EB}} + \frac{\partial U}{\partial w} \frac{dw}{d\alpha|_{EB}}, \quad (23)$$

where $dN/d\alpha|_{EB}$ describes the adjustment in the bargained employment level. Employment will rise with the firm's CSR objectives ($dN/d\alpha|_{EB}, dN/d\beta|_{EB} > 0$; Result 3). Moreover, a greater importance of the employee CSR objective will raise the wage, whereas the wage consequences of the output objective are ambiguous (cf. Result 3). Hence, the employee objective raises union utility in the presence of efficient bargaining.

The effects of a greater importance of the employee objective are defined in analogy to (22) and (23). In sum, the findings for the change in the trade union's payoff basically mirror those for profits. If trade unions are strong enough to raise wages, they will actually benefit from

¹⁵ Boodoo's (2020) findings for the UK are partly consistent with this interpretation. He observes a u-shaped correlation between union density and non-employee-oriented CSR scores and a positive one for the employee-oriented indicator.

the change in the firm's objective, independently of the scope of bargaining. The firm, however, is likely to incur a reduction in its payoff.

5. Welfare Effects of Trade Unions

We next analyse how trade unions affect welfare, W . Initially, we consider their impact in the absence of CSR, to subsequently isolate the consequences of CSR activities.

5.1 Wage Bargaining

The derivative of W with respect to the firm's bargaining power, γ , taking into account that wages decline with γ and labour demand falls with the wage, but is independent of the indicator of bargaining power, γ , is found to be:

$$\begin{aligned} \frac{dW}{d\gamma}_{|WB} &= \left(\frac{\partial W}{\partial N} N_w + \frac{\partial W}{\partial w} \right) \frac{dw}{d\gamma}_{|WB} \\ &= (f'(N) - w + u(w) - u(\bar{w})) N_w \frac{dw}{d\gamma}_{|WB} - N(1 - u'(w)) \frac{dw}{d\gamma}_{|WB} \end{aligned} \quad (24)$$

Using labour demand (8), equation (24) can be simplified:

$$\begin{aligned} \frac{dW}{d\gamma}_{|WB} &= (-\alpha f'(N) - \beta[u(w) - u(\bar{w})]) N_w \frac{dw}{d\gamma}_{|WB} \\ &\quad + (N_w(u(w) - u(\bar{w}) + \rho'(N)) - N(1 - u'(w))) \frac{dw}{d\gamma}_{|WB} \end{aligned} \quad (25)$$

We have:

Result 4

An increase in the trade union's bargaining power will lower welfare in a right-to-manage framework with a profit-maximising firm ($\alpha, \beta = 0$) if $1 - u'(w) \geq 0$.

Proof: Setting $\alpha = \beta = 0$, the change in W is given by the second line of (25). Since the wage declines with γ , $dW/d\gamma|_{WB} > 0$ for $1 - u'(w) \geq 0$. ■

Greater union bargaining power is tantamount to a decline in γ . This raises the bargained wage. The resulting employment reduction is detrimental to welfare because, first, some of the employees who earn the union wage instead of \bar{w} will no longer obtain this utility gain. Moreover, the firm produces too small an amount ($\rho'(N) > 0$), such that the reduction in

output further strengthens this negative effect.¹⁶ Lastly, $1 - u'(w) > 0$ implies that individuals earn too much, relative to the optimal situation. If that is the case, a redistribution of income towards employees by further raising the wage will lower welfare. If the employees' income is insufficient, $1 - u'(w) < 0$, the distributional impact of greater union bargaining power and its allocative consequences will have the opposite direction.

The next result considers a setting in which the firm pursues both CSR objectives ($\alpha, \beta > 0$).

Result 5

The condition which ensures that greater bargaining power by the trade union decreases welfare in a right-to-manage setting if the firm maximises profits is not sufficient to guarantee a decline if the firm also pursues CSR objectives.

Proof: Assume $1 - u'(w) \geq 0$. This restriction does not ensure $dW/d\gamma|_{WB} > 0$ for $\alpha, \beta > 0$. ■

The intuition for the stricter condition is as follows: Both CSR objectives induce the firm to expand output. Thus, an output reduction due to greater union bargaining power will be less likely to decrease it to below the optimal level, relative to a setting in which these output-enhancing incentives do not exist.

Our next finding relates to the direction of the welfare change, which results from an adjustment in wages and in employment. Since the employment variation of greater union bargaining power is ambiguous (see sub-section 4.1), we subsequently focus on the effect due to the wage adjustment. In order to do so, we presume that the CSR output objective effectively neutralises the market imperfection.

Result 6

Assume that the weight of the CSR output objective is such that the firm's and the social planner's objectives coincide in this respect. An increase in the trade union's bargaining power will reduce welfare in a right-to-manage framework if $1 - u'(w) \geq 0$ holds and will raise welfare if the marginal utility of income for employees is sufficiently high.

¹⁶ While market power of the firm reinforces the negative welfare impact of trade unions, it is not essential. Accordingly, Result 4 also holds in a framework in which CSR has no immediate positive welfare impact on its own. This will not be true if the firm faces a binding profit constraint, $\pi = k \geq 0$. In this case, a higher wage will alter labour demand according to $dN/dw = N/(f'(N) - w - p'(N))$. Hence, a substitution using (8) is not feasible in (24) and the welfare impact of trade unions is independent of CSR objectives.

Proof: Assume $\alpha = \rho'(N)/f'(N)$ at the optimal employment level $N = f^{-1}(\bar{w})$ (cf. Appendix A.1). Substitution in (25) yields:

$$\left. \frac{dW}{d\gamma} \right|_{\alpha f'(N) = \rho'(N)}^{WB} = (N_w(u(w) - u(\bar{w}))(1 - \beta) - N(1 - u'(w))) \frac{dw}{d\gamma|_{WB}} \quad (26)$$

Since, $dw/d\gamma|_{WB} < 0$, a fall in γ will lower welfare if $1 - u'(w) \geq 0$. However, if $1 - u'(w) < N_w(u(w) - u(\bar{w}))(1 - \beta)/N < 0$, the expression in brackets in (26) will be positive. ■

If the firm internalises the positive output externality, employment will nonetheless be inefficiently low because it does not fully take into account the employees' interests. If higher wages have detrimental distributional effects, greater union bargaining power will surely reduce welfare. However, if the marginal utility from wages is sufficiently high, the distributional impact of higher wages may outweigh the negative allocative consequences due to the decline in employment. The greater the weight of the CSR employee objective, β , is, the more likely that the distributional effect dominates.

Contrasting Results 4, 5 and 6 clarifies that $1 - u'(w) \geq 0$ is a sufficient condition for welfare to decline with greater bargaining power of trade unions if the firm maximises profits. The greater the importance of the CSR objectives, the less stringent the condition for a positive welfare effect of trade union becomes. Therefore, it can be argued that CSR objectives make a welfare-enhancing role of trade unions more likely in the case of wage negotiations. Put differently, the welfare consequences of trade unions are crucially dependent on the existence and strength of CSR considerations in the firm's objective.

5.2 Efficient Bargaining

Using equation (14), the welfare impact of a trade union in an efficient bargaining framework can be expressed as:

$$\begin{aligned} \left. \frac{dW}{d\gamma} \right|_{EB} &= \frac{\partial W}{\partial N} \frac{dN}{d\gamma|_{EB}} + \frac{\partial W}{\partial w} \frac{dw}{d\gamma|_{EB}} \\ &= (f'(N) - w + u(w) - u(\bar{w})) \frac{dN}{d\gamma|_{EB}} - N(1 - u'(w)) \frac{dw}{d\gamma|_{EB}} \\ &= \left(\rho'(N) - \alpha f'(N) - \frac{u(w) - u(\bar{w})}{u'(w)} (1 - u'(w)) \right) \frac{dN}{d\gamma|_{EB}} - N(1 - u'(w)) \frac{dw}{d\gamma|_{EB}} \quad (27) \end{aligned}$$

Our first finding relates to a setting in which the CSR output objective plays no role ($\alpha = 0$).

Result 7

A sufficient condition for welfare to rise with the trade union's bargaining power in an efficient bargaining framework in which the firm maximises profits or a weighted sum of profits and the CSR employee objective, such that $\alpha = 0$ applies, is $1 - u'(w) \leq 0$.

Proof: Setting $\alpha = 0$ in (27) and taking into account $dw/d\gamma|_{EB}, dN/d\gamma|_{EB} < 0$ shows that the derivative will be negative for $1 - u'(w) \leq 0$. ■

The wage rises with union bargaining power. If marginal utility of income exceeds unity, higher wages will have a positive distributional welfare impact. Furthermore, the firm produces too small an amount in a competitive labour market due to its market power. Given a positively-sloped contract curve and the absence of a CSR output objective, employment and production in the efficient bargaining setting are higher than in the absence of collective negotiations. This mitigates or perhaps more than compensates the negative welfare because of the output market imperfection ($\rho'(N) > 0$). The second line of equation (27) clarifies that the net impact of union bargaining power is potentially ambiguous. However, making use of the definition of the contract curve (14), the counteracting influences, namely too little output due to $\rho(N)$ and excessive production due to efficient bargaining, can be compared. If the marginal utility of income is greater than unity, the output enhancing effect will never dominate. This also clarifies that output market power of the firm makes a positive welfare effect of trade unions more likely, but is not essential. Consequently, greater union bargaining power unambiguously raises welfare if $1 - u'(w) \leq 0$.¹⁷

Comparing Results 4 and 7 indicates that the welfare effects of trade unions in the absence of CSR objectives tend to depend on the scope of bargaining. This is the case because output is higher in an efficient bargaining setting. Moreover, the profit-maximising output level is too low ($\rho'(N) > 0$). Wage bargaining aggravates this effect, while efficient negotiations mitigate it, given the positively sloped contract curve. Furthermore, it is independent of the weight of the CSR employee objective. Hence, the efficiency consequences due to efficient bargaining are independent of the magnitude of β , while this is not the case if wages are negotiated.

We next consider a setting in which the firm pursues a CSR output objective, i.e. $\alpha > 0$. In this case, we can establish:

¹⁷ If the firm faced a binding profit constraint, CSR considerations would be without effect. The reason is as follows: The contract curve is independent of bargaining power. Moreover, the wage is determined by the profit constraint, $\pi = f(N) - wN = k$, and not the power locus. Hence, trade union power does not affect the efficient bargain in the presence of a binding profit constraint.

Result 8

The condition which ensures that greater bargaining power by the trade union raises welfare in an efficient bargaining setting if the firm has no CSR output objective is not sufficient to guarantee an increase in welfare in the presence of such component in the firm's objective.

Proof: The restriction $1 - u'(w) \leq 0$, which guarantees that (27) is negative for $\alpha = 0$ does not ensure that this is the case for $\alpha > 0$. ■

The CSR output objective implies that the firm produces a greater amount than in the absence of such objective. Therefore, the condition ensuring that an increase in union bargaining power which, in turn, results in more output, actually raises welfare is stricter than in the absence of the CSR output objective.

Finally, we consider the case of an optimal weight of the CSR output objective again.

Result 9

Assume that the weight of the CSR output objective is such that the firm's and the social planner's objectives coincide in this respect. An increase in the trade union's bargaining power in an efficient bargaining framework will raise (reduce) welfare if $1 - u'(w) < (>) 0$.

Proof: Setting $\alpha = \rho'(N)/f'(N)$ in (27), where N is the optimal employment level defined by $N = f^{-1}(\bar{w})$ (cf. Appendix A.1), we obtain:

$$\frac{dW}{dy} \Big|_{\alpha f'(N) = \rho'(N)}^{EB} = -(1 - u'(w)) \underbrace{\left[\frac{u(w) - u(\bar{w})}{u'(w)} \frac{dN}{dy} \Big|_{EB} + N \frac{dw}{dy} \Big|_{EB} \right]}_{<0} \quad (28) \blacksquare$$

If the weight of the CSR output objective internalises the output market distortion, bargaining over employment induces an optimal outcome from an allocative perspective. Hence, raising trade union bargaining power has no impact on welfare via the efficiency properties of the bargaining outcome. However, the increase in the wage will have positive welfare consequences if the marginal utility from wage income is greater than that of profits.

A comparison of Results 6 and 9 indicates that if the CSR objective internalises the output market distortion, the welfare effects of trade unions are largely, though not entirely, independent of the scope of bargaining. This contrasts with a setting in which the firm maximises profits (cf. Results 4 and 7). This difference arises because the welfare consequences of trade unions in the absence of CSR considerations depend on their allocative

and distributional impact, whereas only the latter aspect is decisive in (the special) case of their presence considered in Results 6 and 9.

Results 7 to 9 have been derived assuming a positively-sloped contract curve. If the utility function of union-members is linear, the contract curve will be vertical (see equation (A.6) in Appendix A.2) and the outcome will be strongly efficient (Layard and Nickell 1990). In this case, a change in bargaining power will not alter employment. The welfare effects of trade unions will solely depend on the distributional consequences of the wage change.¹⁸

Additionally, a comparison of Results 7 and 9 indicates that $1 - u'(w) < 0$ is a sufficient condition for welfare to rise with union bargaining power in an efficient bargaining setting in the absence of a CSR output objective. The greater the importance of the CSR output objective, the more stringent the condition for a welfare-enhancing role of trade union becomes. In case of full internalisation of the output externality, $1 - u'(w) < 0$ constitutes a necessary condition. Therefore, it can be argued that in the presence of efficient bargaining a CSR output objective makes a welfare-enhancing role of trade unions less likely.

6. Conclusions

In many economies the functioning of the labour market is strongly affected by institutions. In this paper we focus on trade unions. We analyse the interaction of Corporate Social Responsibility (CSR) elements in the firm's objective and collective bargaining. When doing so we differentiate between wage negotiations and efficient bargains. Moreover, CSR consists of two elements: The firm values output and employee utility, in addition to profits.

The first main result is that the impact of CSR objectives on collective bargaining outcomes depends on the scope of negotiations. In the case of wage bargaining, the wage and employment variation can only be determined for special cases. If the firm and trade union bargain over wages and employment, CSR activities will raise employment. Furthermore, the wage will rise with the employee CSR objective, whereas the wage change owing to a greater importance of the output component is ambiguous. Moreover, we find no theoretical evidence that CSR raises profits. Instead, we can identify cases in which CSR reduces profits and raises union utility on account of the resulting change in bargaining outcomes.

¹⁸ Since the Nash-solution requires cardinal preferences, the absolute magnitude of utility, $u(w)$, has economic significance, such that distributional considerations can affect welfare.

Our second set of findings concerns the welfare effects of trade unions in the presence of CSR objectives. These consequences are due to the change in output and the income distribution. We show that that trade unions are more likely to have a positive welfare effect in the presence of CSR objectives than in their absence if there is wage bargaining. The reverse is true in case of efficient bargaining.

Our analysis has been based on a number of restrictive assumptions. Therefore, the question arises if the results summarised above will also apply for alternative set-ups. In our framework the only, homogeneous factor of production is labour. If, instead, firms could substitute one type of labour for another with different productivity or costs or if there were a second factor of production, such as capital, firms may adjust CSR activities differently in response to collective bargaining than derived above. Additionally, we have considered firm-specific trade unions whereas in many countries collective bargaining takes place at a less decentralised or even national level (Visser 2019). Moreover, as indicated in the introduction, there are a number of institutions, regulations and laws which affect labour market outcomes. They may also alter the effect of a firm's CSR activities, of trade unions, and of their interaction. Finally, we have selected a well-accepted but specific manner of modelling CSR. In particular, the analysis has been based on the assumption that CSR is tantamount to adding a component to the firm's objective. The definitions of CSR at the beginning have indicated that CSR has many facets. CSR may not only relate to output, consumer surplus and employee utility, but can also incorporate other aspects. Assume, for example, that the firm produces a product which harms the environment and does not fully incorporate these environmental effects. In this case, the profit-maximising output level will be excessive and a reduction of employment due to collective wage negotiations will mitigate this distortion. More generally, findings relating to the CSR output objective will be reversed if output in the absence of collective bargaining exceeds the optimal level.

In addition to analysing the comprehensive validity of the theoretical predictions it may be worthwhile to look at the effects of CSR activities on union behaviour empirically. According findings can also help to resolve the theoretical ambiguities with regard to the wage and employment consequences of CSR activities.

The multitude of open questions clarifies that the consequences of a firm's CSR activities in the presence of trade unions and, more generally, in an imperfectly competitive labour market are a largely uncharted territory. It deserves further exploration.

7. References

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8. Appendix

A.1 Social Optimum

The social planner can determine wages, w , employment, N , and a lump-sum tax, T , paid by the firm which is redistributed in equal amounts, T/M , to all employees. Hence, W is:

$$W(T, w, N) = f(N) - wN - T + Nu(w + T/M) + (M - N)u(\bar{w} + T/M) \quad (\text{A. 1})$$

The first-order conditions for a maximum read:

$$\frac{\partial W}{\partial T} = -1 + \frac{N}{M}u'\left(w + \frac{T}{M}\right) + \frac{M - N}{M}u'\left(\bar{w} + \frac{T}{M}\right) = 0 \quad (\text{A. 2})$$

$$\frac{\partial W}{\partial w} = -N + Nu'\left(w + \frac{T}{M}\right) = 0 \quad (\text{A. 3})$$

$$\frac{\partial W}{\partial N} = f'(N) - w + u\left(w + \frac{T}{M}\right) - u\left(\bar{w} + \frac{T}{M}\right) = 0 \quad (\text{A. 4})$$

We assume that second-order conditions are fulfilled. (A.3) implies that the marginal utility from income for employees in the firm under consideration must equal the marginal utility from income for firms, i.e. be unity. Substituting (A.3) into (A.2) clarifies that also the marginal utility from income for people not working in the firm must be unity. This will only be feasible if for $w = \bar{w}$. (A.4) then shows that $f'(N) = w = \bar{w}$.

A.2 Characteristics of the Efficient Bargaining Solution

The division of the first line of equation (12) and (13) yields:

$$\frac{-N(1 - \beta u'(w))}{f'(N)(1 + \alpha) - w - \rho'(N) + \beta(u(w) - u(\bar{w}))} = \frac{Nu'(w)}{u(w) - u(\bar{w})} \quad (\text{A. 5})$$

Equation (A.5) defines the set of efficient wage and employment combinations, i.e., the contract curve. This equality can only hold if $C = 0$ (defined in equation (14) in the main text).

The slope of the contract curve results from total differentiation of C .

$$\frac{dw}{dN}_{|CC} = -\frac{C_N}{C_w} = -\frac{u'(w)[f''(N)(1 + \alpha) - \rho''(N)]}{u''(w)[f'(N)(1 + \alpha) - w - \rho'(N)]} > 0 \quad \text{if } w > \bar{w} \quad (\text{A. 6})$$

The slope of the power locus (PL) is obtained from total differentiation of (15) and given by:

$$\begin{aligned} \frac{dw}{dN}_{|PL} &= -\frac{A_N}{A_w} \\ &= \frac{\gamma - 1}{N^2} \frac{[f(N)(1 + \alpha) - \rho(N) - N(f'(N)(1 + \alpha) - \rho'(N))]}{1 - \beta u'(w)} \end{aligned}$$

$$+\gamma \underbrace{\frac{f''(N)(1 + \alpha) - \rho''(N)}{1 - \beta u'(w)}}_{(-)} < 0 \quad (\text{A. 7})$$

The numerator of the first fraction in (A.7) will surely be negative if profits, π , are non-negative, as $\pi = f(N) - wN - \rho(N) < f(N)(1 + \alpha) - wN - \rho(N) < f(N)(1 + \alpha) - (f'(N)(1 + \alpha) - \rho'(N))N$, since $f'(N)(1 + \alpha) - \rho'(N) < w$ holds. Hence, the power locus is negatively sloped in the wage-employment space for $\pi \geq 0$.

A.3 Effects of More Pronounced CSR Employee Objective in a Wage Bargaining Framework

$$\begin{aligned} \frac{dB}{d\beta} &= \underbrace{\frac{\partial B}{\partial \beta}}_{>0} + \underbrace{\frac{\partial B}{\partial N} \frac{\partial N}{\partial \beta}}_{\geq 0} \\ &= \gamma N^2 (u(w) - u(\bar{w})) u'(w) + (1 - \gamma) N [u(w) - u(\bar{w})] (N_w (u(w) - u(\bar{w})) + N u'(w)) \\ &\quad + 2\gamma N (1 - \beta u'(w)) \frac{(u(w) - u(\bar{w}))^2}{(1 + \alpha) f''(N) - \rho''(N)} \\ &\quad - \left((1 - \gamma) \tilde{Z} \left(\frac{\partial N_w}{\partial N} (u(w) - u(\bar{w})) + u'(w) \right) \right) \frac{u(w) - u(\bar{w})}{(1 + \alpha) f''(N) - \rho''(N)} \quad (\text{A. 8}) \end{aligned}$$