Towards a Hierarchical Approach to Trade Union Behaviour

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ABSTRACT

The main starting point of this paper is the idea that trade unions do not only care about real wage level but also about a reference or aspiration wage level. After citing a number of empirical works, the paper argues that the attainment of the reference wage is a priority for the union. This implies that there is a hierarchical character in union objectives. A two-step union utility function is suggested in order to capture the change in priority once the prime objective (the reference wage level) was reached. The analysis is conducted in an efficient bargain framework, and shows that employment-wage combinations come into the picture only when the reference wage is reached. In a unionized economy, this implies that substantial increases in employment will take place only after the union reference wage has been met.

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I .Introduction

The idea that trade unions pay considerable attention to the "appropriate" or "fair" level of wage has started to receive increasing attention. One can trace the origins of this idea to Keynes who suggested that relative wage considerations matter (Keynes,1973,pp.13,14). Subsequent versions of the concept can be detected in Duesenberry's (1949) work which implies that wage settlements are interdependent. Modern versions of the same idea can be found in Gylfason and Lindbeck (1984; 1986) who suggest that unions set an aspiration wage which is connected to the rest of the industry's wage or to the average national wage. The work of Frank (1984) about aspiration wage can be seen in the same context. Similarly, the fair wage hypothesis of Akerlof and Yellen (1990) can also be placed in the same framework.

The gist of the above approaches is that unions have an aspiration wage level or reference wage (w*) which can be linked to the previous period wage, to the industry's level or to a perception of a fair wage. In particular, the union might see the attainment of w* as its primary concern. This implies that the other goals of the union (mainly employment) acquire higher significance once w* has been reached. Thus, there is a type of priority or hierarchy which characterizes union objectives (goals are hierarchical). With this in mind, one can maintain that the reference wage (w*) plays a principal role in the union's utility function. One can offer a number of empirical indications that support this type of union behaviour.

Given the above, this paper starts with a discussion of the empirical evidence supporting the role of the aspiration wage. Consequently, the

paper suggests a simple example of a union utility function which incorporates the aspiration wage and the idea that it is the primary concern of the union until it is reached. Finally, the implications of the adoption of such a union utility in an efficient bargain framework are examined.

II Empirical Indications

As was pointed out, the issue of the reference wage is not new. Apart from the fact that it can be found in early theoretical works, several recent papers on union behaviour have employed this concept. For instance, in the works of Hamermesh (1975), Oswald (1986), Summers (1988), Gylfason and Lindbeck (1984) and Akerlof and Yellen (1990) one can find the idea that workers do not only care about real wage level but also about relative wages. There is also a substantial number of empirical papers which support this view. Eckstein and Wilson (1962) found that "key groups" industries in US manufacturing determine to a large extent wage changes in "non-key groups" industries. Similarly, wage changes in Swedish non-manufacturing sector were found to be influenced by changes in the manufacturing sector (Jakobsson and Lindbeck, 1971). In addition, Flanagan (1976) found strong indications of wage interdependence in US Manufacturing. More recently the work of Holmlund and Skedinger (1990) concerning the Swedish experience, implies that outside or reference wages are quite important for wage setting at the local level. In the same spirit, recent empirical evidence indicates that the idea of fair wage (connected to the national or industry's level) is crucial in union negotiations in the US (Jacoby and Mitchell,1990).

All of the above point to the empirical relevance of the reference wage. This implies that w* should be included in the standard formulations of union utility functions. Given this, one can also argue that the attainment of the reference wage is a priority for the union. More specifically, the union will put much effort in reaching the reference wage first before systematically attempting to reach its other goals. As Flanagan, Moene and Wallerstein (1993) suggest, there is evidence that the union will be very concerned to reach a wage level compatible with wages agreed in national wage bargaining agreements. In support of this view, Oswald (1992) found that union leaders pay substantial attention to reference income. This suggests that the union utility function should express the strong preference for reaching w*. In support of the empirical indications, the strong preference towards reaching the reference wage can be theoretically justified in terms of the union leaders. more specifically, Swint and Nelson (1978, 1980) suggest that union leaders are interested in "providing some level of members benefits first". Clearly, the attainment of w* can be essential for the survival or the reelection of the union leaders (for a discussion see Mayhew and Turnbull (1989). Furthermore, the concept of unions setting a wage target might be much more empirically relevant in a centralized bargaining framework where a leading nationally-based industrial union negotiates with a representative group of employers (see Calmfors and Driffill, 1988 and also Hart and Moutos,1991)

III **Analysis in an Efficient Bargain Framework**

Having in mind our previous discussion concerning union objectives and satisfactory wage target, we can construct a two step union utility function (see also Drakopoulos 1994). This type of function seems to be the most appropriate structure in order to portray the shift of emphasis on objectives. (For uses and justification of the two-step function in a union framework see Oswald 1986; Carruth and Oswald 1987; Jones and McKenna 1989 and Drakopoulos and Skatun 1992). For simplicity, the union is assumed to have two objectives, wages and employment. In particular, the wage level is the primary objective up to a given level w*. The setting of w* can be related to a perception of the appropriate wage or even to "fair" wage level. (For a discussion of this issue see Oswald 1986, Summers, 1988 and Akerlof and Yellen, 1990). When the union achieves that wage level (w*) then it turns its attention to the secondary objective which is employment. For simplicity and in order to concentrate on the hierarchical formulation, we assume that the outside opportunity is zero, that union members are identical and that membership is unrestricted. We also make the additional assumption that we have an interior solution which means that membership is always higher than employment. The union utility function is given as follows:

$$U = \begin{cases} [w + h(N)]N & \text{for } w \leq w^* \quad (1) \\ w^*N + [N + z(w)]N & \text{for } w > w^* \quad (2) \end{cases}$$

where $h'(N) > 0$, $h''(N) < 0$, $z'(w) > 0$, $z''(w) < 0$ (3)

The structure of the utility function implies that the union has a strong preference towards wages until wages reach w*. After this level, the union

switches to employment as the main objective. As implied by (3), the functions h(N) and z(w) are concave. Specific functional forms can be:

$h(N) = N^{1/2}$ or $h(N) = \ln N$

The same holds true for z(w).

Given the above the union indifference curve can be found

$$\left.\frac{dw}{dN}\right|_{dU=0} = \frac{-w - h(N) - Nh'(N)}{N} < 0 \qquad (4)$$

$$\frac{-w^* - 2N - z(w)}{Nz'(w)} < 0 \qquad (5)$$

It is clear that the resulting indifference curve will have a kink at w*. We can see the effect more clearly by taking the specific functional form $h(N) = N^{1/2}$ and $z(w) = w^{1/2}$

$$\left.\frac{dw}{dN}\right|_{dU=0} = \frac{-w - 3/2N^{1/2}}{N} < 0$$

$$\frac{-w^* - 2N - w^{1/2}}{N\ 1/2w^{-1/2}} < 0$$

After checking for convexity, we can also see that in the region close to w* we have:

$$\frac{dw}{dN}\ \text{lim}\ w \to w^{*-} \quad > \quad \frac{dw}{dN}\ \text{lim}\ w \to w^{*+}$$

The above indifference curve is shown in figure1:

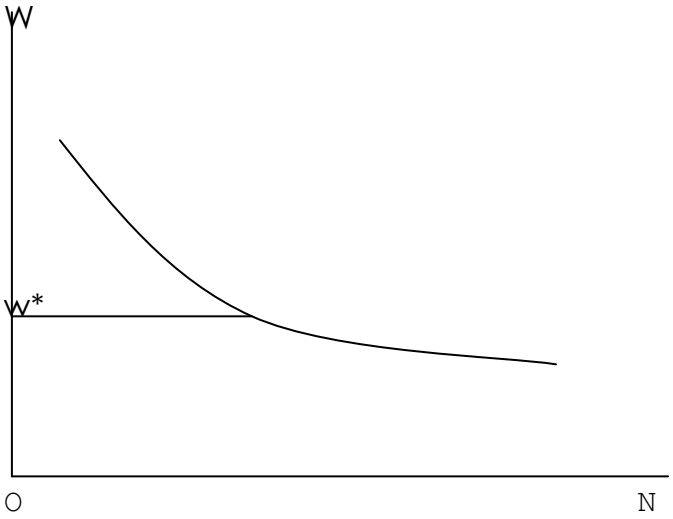

Figure 1

In an efficient bargain framework, there is one union which negotiates over employment and wages with one employer. The two parts together fix a Pareto optimal bargain. The outcome of the bargain results in an efficient wage-employment combination (McDonald and Solow,1981). The implication here is that the union maximizes its utility function subject to a given profit constraint which is usually written as:.

$$\pi = pf(N) - wN \qquad (6)$$

where π is profit, p is product price and f(N) is a strictly concave production function. The problem of the union when $w \leq w^*$ is the following:

$$\max_{w,N} \; U = [w + h(N)]N$$

s.t

$$pf(N) - wN \geq \pi$$

The solution of this problem gives us the contract curve for $w \leq w^*$ which is:

$$pf'(N) + h(N) + Nh'(N) = 0 \qquad (7)$$

The slope of the contract curve can be found by differentiation of the above and it is equal to infinity. This implies that the contract curve is a straight line at some level N_1. When the wage is below the target level, the union will concentrate on wage only.

When the wage exceeds the target level w*, then the union maximizes the function: $U = w^*N + [N + z(w)]N$ subject to the same profit constraint. The contract curve in this case is:

$$pf'(N)z'(w) + w^* + 2N + z(w) - wz'(w) = 0 \qquad (8)$$

By differentiation we can find the slope of the contract curve which is :

$$\frac{dw}{dN} = \frac{-pf''(N)z'(w) - 2}{pf'(N)z''(w) - wz''(w)} \qquad (9)$$

The sign of the above is positive provided that:

$$-pf''(N)z'(w) > -2 \qquad (10)$$

A positive sign implies a positive sloped contract curve above w*. In case that

$$-pf''(N)z'(w) \leq -2 \qquad (11)$$

then the contract curve will be horizontal because the wage level cannot fall beyond w*. By combining equation (9) with equation (7) we can draw two possible contract curves:

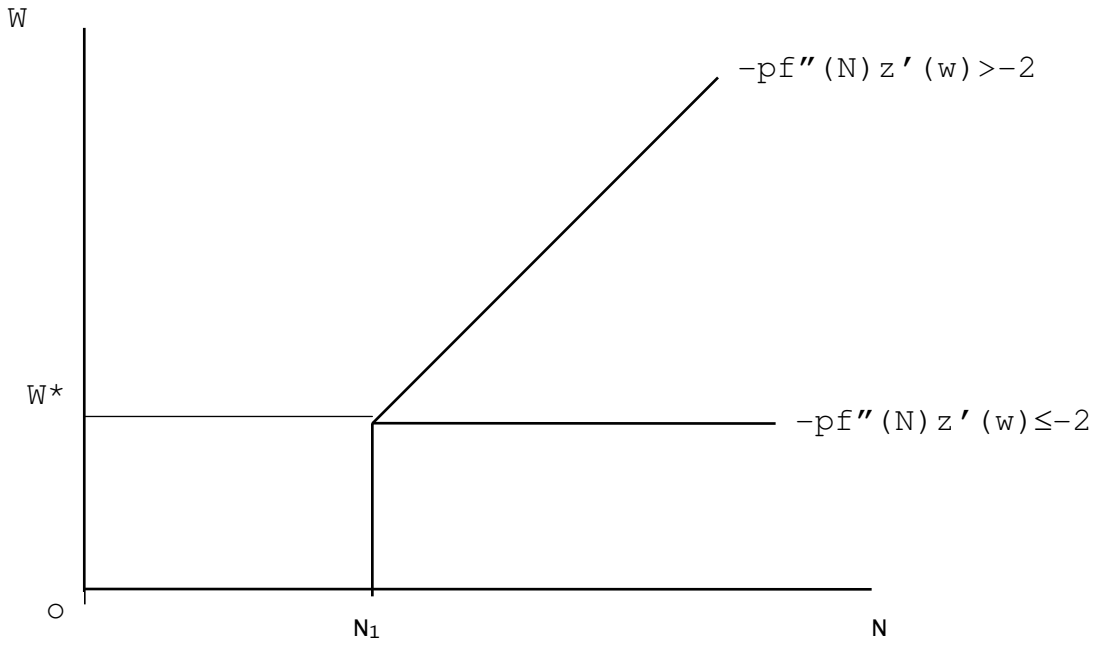

Figure 2: Two possible contract curves

The employment level is constant up to wage level w*. However, the slope of the contract curve changes when the wage exceeds the target. Assuming relation (10) holds, increases in profit level are taken as increases in both wages and employment. A close look at relation (10) reveals that in order for (10) to be true, the marginal productivity of labour should be falling rapidly (assuming z'(w) is constant). Thus wage increases are efficient. However, when relation (11) holds, the marginal productivity of labour is falling at a slow rate, and thus increases in profits are taken as employment only.

It is also interesting to see the case when pf''(N) is constant but z'(w) is changing. In this case, relation (10) implies that the marginal utility of wage is high, and therefore an increase in the wage is efficient. If relation (11) holds then the marginal utility of wage is low and thus the contract curve is flat.

The important idea here is that employment acquires importance after w*. This can also be seen if we differentiate (8) with respect to p, holding employment constant:

$$\frac{\partial w}{\partial p} = \frac{-f'(N)z'(w)}{z''(w)[pf'(N) - w]} < 0 \qquad (12)$$

The result implies that the contract curve shifts to the right when there is an increase in p. The negotiated level of employment is higher at any wage.

IV Conclusion

The main starting point of this paper was the idea that trade unions do not only care about real wage level but also about a reference or aspiration wage level. The reference wage can be connected to the previous period wage or to the industry's level. The paper argued that the attainment of the reference wage is a priority for the union. This implies that there is a hierarchical character in union objectives. Consequently, the paper cited a substantial number of empirical works which provide strong indications about the importance of the reference wage. The theoretical implication of these points was that a particular type of union utility function is needed. In particular, a two-step union utility function was suggested in order to capture the change in priority once the prime objective (the reference wage level) was reached. After deriving the union indifference curves, the next step was to examine some implications for the economic analysis of the trade union in an efficient bargain framework. One of the important points

was that employment-wage combinations come into the picture only when the target wage was reached. Assuming a unionized economy, this implies that substantial increases in employment will take place only after the union reference wage has been met.

In general, it is hoped that the paper will provide a stimulus for further research into the consequences of adopting ideas like the union reference wage.

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