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Wage bargaining under an employment target

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Abstract

This short paper introduces an employment target for trade unions in a model of strategic wage bargaining à la Lippi (2003). It shows that the first best equilibrium can be replicated if and only if the employment target is higher than the competitive level.

Keywords: wage bargaining, employment target, targeting rule, inflationary bias.

JEL classification: E64, J51

1. Introduction

A well-established approach to reduce the problems arising from discretion in monetary policy suggests restricting policy flexibility by means of a targeting rule (Svensson (1997) and Walsh (1998)). With an explicit inflation target the central bank has a lower incentive to unleash unexpected monetary expansions, thereby mitigating the inflationary bias in the economy. Analogously, one might think of rules that restrict the flexibility of wage policy as a means for attenuating the adverse consequences of monopoly distortions in labour markets. Clearly, union leaders are ultimately appointed by their members and any restriction to wage policy should be accepted by them in the first place. A reasonable restriction is the announcement of an employment target. The notion that unions trade-off employment with other objectives has a long tradition in studies of wage bargaining (see Oswald (1982) and Booth (2002) for extensive surveys). Most contributions explore the trade-off between real wages and unemployment in a setup with linear-quadratic preferences (from Gylfason and Lindbeck (1994) to Cukierman and Lippi (2001), Soskice and Iversen (2000) and Acocella et al. (2009), among many others). In this paper, I depart from these works by considering the role of an explicit employment target in a general equilibrium framework.¹ I will first derive the unions' strategy under a flexible employment targeting rule and then explore the conditions under which this rule is able to replicate the first best equilibrium.

The main finding of the paper is that an explicit employment target is in general unable to restore the competitive equilibrium and the more so the higher monopoly distortions in labour markets. The reason is that unions trade-off the employment target with their other objectives. In

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¹ A non-exhaustive list of contributions that analyse the general equilibrium implications of strategic wage bargaining comprises Cavallari (2001, 2012), Lippi (2003), Coricelli et al. (2006) and Cuciniello (2011).

equilibrium, they will equate the cost of missing the target with the marginal benefit of increasing wages (which is higher the lower the elasticity of labour demand). Only an employment target well above the competitive level can raise the marginal cost of target misses up to the point of inducing unions to demand the competitive wage. Such an over-restricting target, however, may not meet the unions' participation constraint.

2. The model

The structure of the economy draws on Lippi (2003). The private sector is populated by a representative competitive firm and a continuum of workers of unit mass. The firm produces a single consumption good using all labour types. Workers supply labour, receive dividends from the firm and consume. They are organized in $n \geq 1$ trade unions, each of size $1/n$, who bargain nominal wages on behalf of their members. The public sector comprises a central bank.

2.1 The firm

The representative firm produces output, Y , according to the CES technology:

$$(1) \quad Y = \left[\int_0^1 L_j^{\frac{\phi-1}{\phi}} dj \right]^{\frac{\alpha\phi}{\phi-1}}$$

where L_j is labour supplied by worker j , $\phi > 1$ the elasticity of substitution among different types of labour and $\alpha \in (0,1)$ is a return to scale parameter. Profit maximization implies the following demand for each labour type j :

$$(2) \quad L_j = \left(\frac{W_j}{W} \right)^{-\phi} Y^{\frac{1}{\alpha}}$$

where W_j is the nominal wage of worker j and W the nominal aggregate wage. In a symmetric equilibrium the above expression can be written as:

$$(3) \quad L_j = \left(\frac{W_j}{W} \right)^{-\phi} \left(\frac{W}{\alpha P} \right)^{\frac{-1}{1-\alpha}}$$

where P is the price level.

2.2 Workers and unions

Workers derive utility from consumption, C , and dislike work effort, L :

$$(4) \quad U_j = \log C_j - \frac{\kappa}{2} (\log L_j)^2$$

They earn wage income and firms' profits, D_j , so that the budget constraint of a representative worker in real terms is²:

$$(5) \quad C_j = \frac{W_j}{P} L_j + D_j = \alpha^{\frac{1}{1-\alpha}} \left(\frac{W_j}{W} \right)^{1-\phi} \left(\frac{W}{P} \right)^{\frac{-\alpha}{1-\alpha}} + D_j$$

Workers are organized in n trade unions where each union i represents the workers that lie contiguously in the interval between any couple of unions $(i-1/n, i)$. In departing from Lippi (2003), I assume that unions have an explicit employment target in addition to being interested in the utility of their members:

$$(6) \quad V_i^U = n \int_{i-1/n}^i U_j - \frac{\lambda}{2} (\log L_j - \ell^*)^2 dj$$

where λ measures the weight of deviations of actual employment from the target ℓ^* . The notion that unions may trade-off employment with other objectives has a long tradition in studies of wage bargaining (see Oswald (1982) and Booth (2002)). The employment target in the objective function (6) captures the idea that each union in addition to the trade-off implicit in the utility function might be required to report on its success or failure in achieving the target. This is equivalent to assuming that target misses are punished by public censure or by some formal dismissal procedure. The rule is flexible in that it does not require to hit the target exactly. It implies a penalty proportional to the deviation from target.

2.3 The central bank

The central bank directly controls the inflation rate, π . As in Lippi (2003), her objective function is given by:

$$(7) \quad V^M = \int_0^1 U_j dj - \frac{\beta}{2} \pi^2$$

where the parameter $\beta > 0$ captures the degree of inflation aversion and the inflation target is normalized to zero.

² The real wage of a generic worker belonging to union i can be expressed as $\frac{W_i}{P} = \frac{1+w_i}{1+\pi}$ where w_i is the growth rate of union i 's nominal wage and π is the inflation rate. In the remainder, the following approximations will be used $\log \frac{W_i}{P} \cong w_i - \pi$ and similarly for the real aggregate wage $\log \frac{W}{P} \cong w - \pi$.

3. The wage bargain

The wage bargain involves a two-stage game. In the first stage, unions simultaneously and independently choose the nominal wage of their members given the behaviour of the other unions. In the second stage, once wages are set, the central bank chooses the inflation rate. The game is solved by backward induction.

3.1 The central bank reaction function

The central bank chooses inflation so as to maximise its objective function (7) taking as given the behaviour of wage-setters. The first order condition is:

$$(8) \quad \alpha - \kappa \int_0^1 \log L_j dj - \beta(1 - \alpha)\pi = 0$$

The expression above, together with labour demand (3) provides the reaction function that unions face when they set nominal wages. A typical union perceives that an increase in the wage of his members, w_i , will have the following consequences for inflation:

$$(9) \quad \frac{\partial \pi}{\partial w_i} \equiv s = \frac{\kappa}{n[\kappa + \beta(1 - \alpha)^2]}$$

3.2 The strategy of unions

The problem of a typical trade union amounts to choosing the rate of wage growth w_i so as to maximise the utility function (6) taking into account the monetary reaction function (8) and considering as given the wages set by all other unions. This yields the first order condition:

$$(10) \quad \alpha[1 - s - \varepsilon] + \kappa \log L_i \varepsilon + \varepsilon \lambda (\log L_i - \ell^*) = 0$$

$$\text{where } \varepsilon \equiv -\frac{\partial \log L_i}{\partial w_i} = \phi \frac{n-1}{n} + \frac{1}{1-\alpha} \left(\frac{1}{n} - s \right) > 0.$$

Unions have an incentive to demand a higher wage up to the point where the costs of reducing consumption (the first addend in (10) is negative) and the costs of missing the target (the third addend) exactly balance the benefits of increasing leisure (the second addend). Compared with the wage strategy in Lippi (2003), where $\lambda = 0$, unions clearly have a stronger incentive to moderate their wage claims. As will be apparent soon, the prospective of a penalty, by inducing less aggressive wage behaviour, leads to higher employment in equilibrium.

3.3 The macroeconomic outcome

In a symmetric equilibrium with $\log L_i = \log L$ for all unions, the strategy (10) yields:

$$(11) \quad \log L = \frac{1}{\kappa + \lambda} \left[\lambda \ell^* + \alpha \left(1 - \frac{1}{\eta} \right) \right]$$

$$\text{with } \eta \equiv \frac{\varepsilon}{1-s} > 1. \quad ^3$$

Note that equilibrium employment will in general depart from the competitive level $\log L = \alpha / \kappa$, unless the employment target is well above the competitive standard. It is easy to show that $\log L = \alpha / \kappa$, whenever:

$$(12) \quad \ell^* = \frac{\alpha}{\kappa} \left(1 + \frac{\kappa}{\lambda \eta} \right)$$

An over-restricting target as (12) is required as a consequence of the fact that unions trade-off the employment target with their other objectives. They equalize the marginal benefit of increasing wages above the competitive level to the marginal cost of missing the employment target. The target will be higher the lower the weight of employment relative to these other goals (small λ) and the lower the elasticity of labour demand (small η). In both cases, in fact, the marginal benefit of increasing wages is large. Unions will demand the competitive wage only insofar as the marginal cost of missing the employment target exactly compensates the benefits of demanding a higher wage.

The finding that an over-restricting target is essential for eliminating monopoly distortions was first stressed by Svensson (1997) in the context of an inflation target for the central bank. Yet, while a central bank might have a mandatory requirement to pursue an over-restricting inflation target it is not clear why a union might want to consider such a target in the first place. A possible justification draws on the implicit premise that unions' members (or unions' leaders) care about those who might be disadvantaged by a sub-optimal employment level. Laboratory experiments, however, do not seem to support this view: unions' preferences appear to be characterized by selfish behaviour (Kocher et al. 2012).

Finally, using equilibrium employment into the central bank's reaction function gives the equilibrium level of inflation:

³ It is worth stressing that the variable η represents the elasticity of labour demand with respect to a change in the real

$$\text{wage, i.e. } \eta \equiv - \frac{\partial \log L_i}{\partial \log(W_i / P)} = - \underbrace{\frac{\partial \log L_i}{\partial w_i}}_{\varepsilon} \underbrace{\frac{\partial w_i}{\partial \log(W_i / P)}}_{(1-s)^{-1}}.$$

$$(13) \quad \pi = \frac{\alpha(\lambda + \kappa\eta) - \lambda\kappa\eta\ell^*}{\beta(1 - \alpha)\eta}$$

where it appears that an inflationary (or deflationary) bias may realize. Clearly, the bias vanishes if and only if unions target the over-restrictive employment level (12). For any target lower than (12), employment is below the competitive standard and equilibrium inflation is higher than optimal for the well-known reasons of time-inconsistency in monetary policy stressed by Barro and Gordon (1983) and Kydland and Prescott (1977). The target effectively moderates wage claims, thereby attenuating the adverse consequences of monopoly distortions, although not as much as necessary. Employment will still be too low and the central bank will still have an incentive to reduce real wages through an unexpected burst in inflation. With an extremely high target, on the contrary, wage moderation turns excessive. This in turn leads to a deflationary bias in the economy.

4. Concluding remarks

Drawing on a model of strategic wage bargaining à la Lippi (2003), this paper investigated the macroeconomic consequences of an employment target for unions. The main idea is that an explicit target may help to reduce the problems arising from monopoly distortions in labour markets as much as an inflation target helps to attenuate the problems of time-inconsistency in monetary policy (see Svensson (1997)). Unions may announce an explicit employment target in the attempt to enhance the transparency of their policies. The target can also be interpreted as capturing a climate of accord among social parties in the tradition of “social pacts” and corporatism (see Visser (2002)). The employment target may reflect a classical bi-partite agreement between unions and entrepreneurs.

The presence of the employment target has a disciplining effect on wage behaviour. However, this is in general not sufficient for restoring the first best equilibrium. I show that unions will demand the competitive wage if and only if the employment target is well above the competitive standard. The reason is that unions trade-off the cost of missing the target with their other objectives up to the point where the marginal benefit of increasing wages equates the marginal costs of deviating from the target. They have an incentive to set wages at the competitive level only when the employment target is extremely high. Moreover, the optimal target is higher the lower the weight attached to it relative to other objectives of the union and the higher monopoly distortions in the economy. Such an over-restricting target may not meet the union’s participation constraint.

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