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EFFICIENCY WAGES VERSUS INSIDERS AND OUTSIDERS

Assar Lindbeck
and
Dennis Snower

Centre for Economic Policy Research
6 Duke of York Street, London SW1Y 6LA

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Centre for Economic Policy Research
6 Duke of York Street
London SW1Y 6LA

Tel: 01 930 2963

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Efficiency Wages Versus Insiders and Outsiders*

ABSTRACT

This paper compares two theories of involuntary unemployment: the efficiency-wage theory and the insider-outsider theory. We indicate that one of the central problems in providing microfoundations for the existence of involuntary unemployment is to explain why there is no underbidding, and we compare the two theories in this context.

JEL classification: 023, 026, 131, 821

Keywords: unemployment, efficiency wages, insiders and outsiders

Assar Lindbeck
Institute for International Economic Studies
University of Stockholm
S-106 91 Stockholm
Sweden

Tel: 010 468 163078/155886

Dennis Snower
Birkbeck College
University of London
7-15 Gresse Street
London W1P 1PA

Tel: 01 631 6408

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NON-TECHNICAL SUMMARY

Why do involuntarily unemployed workers not offer to work at a lower wage than their employed counterparts? Why do firms not accept or propose such wage offers? In order to provide a convincing explanation of persistent involuntary unemployment in market economies, it is necessary to show why workers and firms lack incentives for underbidding. This is one of most fundamental issues in the theory of involuntary unemployment.

This issue is of considerable practical significance for the formulation of macroeconomic policy: alternative theoretical explanations of the absence of underbidding have very different implications for the effectiveness of government policies in reducing unemployment.

This paper compares two theories of involuntary unemployment which address explicitly the issue of underbidding: the efficiency-wage theory and the insider-outsider theory. In the efficiency-wage theory, firms have imperfect information about the profitability of their employees and thus they use their wage offers as a screening device for employees' profitability: a higher wage raises not only the marginal labour cost (per unit of time), but also the marginal revenue product (net of training costs) of labour. It is this element which robs them of the incentive to accept underbidding. When wages are set at their profit-maximizing levels, aggregate labour demand may fall short of supply and involuntary employment may result.

In the insider-outsider theory, the source of the unemployment lies in the labour turnover costs incurred by firms and by the ability of the full-fledged emplyees ("insiders") to exercise influence over their wages, without taking full account of the interests of the fledgling employees ("entrants") or the unemployed workers ("outsiders"). The insiders' market power arises from the existence of turnover costs which allow them to raise their wage above the minimum level required to induce

workers to become entrants. These costs may originate in the costs to firms of hiring, training and firing workers, or through the cooperation of insiders with each other but not with outsiders, which may create a difference in productivity between insiders and outsiders. Firms have no incentive to hire outsiders or to accept underbidding. For this reason, aggregate labour supply may exceed aggregate labour demand. It is the rent-seeking activity of the insiders which robs the firms and the entrants of the incentive to engage in underbidding.

The efficiency-wage and insider-outsider theories of involuntary unemployment are built on quite different foundations. The first explains unemployment through firms' imperfect information about the productivities and the costs of their employees; the second does so through insiders' market power which is used to exploit labour turnover costs in the process of wage formation - and to some extent the turnover costs themselves can be manipulated by the insiders. In the efficiency-wage theories, union activity is generally implied to be unimportant in determining the level of unemployment; in the insider-outsider theory, it may augment unemployment by increasing labour turnover costs. In the efficiency-wage theory, the "involuntariness" of unemployment is traceable to a genuine information cost for firms. In the insider-outsider theory, the "involuntariness" is mirrored in the more limited employment opportunity set of outsiders relative to insiders - a limitation that may be accentuated by social norms and legislation. In particular, the harassment version of the insider-outsider theory may be useful in explaining why outsiders may feel inhibited from underbidding, and the hiring/firing cost version may provide an underpinning for the notion that "job security legislation" may be at least partially responsible for unemployment. When comparing the realism of the two theories, the vital issue that remains is whether firms' imperfect information or workers' market power is more important in providing microeconomic explanations for the existence of involuntary unemployment in market economies.

1. Introduction

This paper aims to evaluate two competing microeconomic foundations of involuntary unemployment: the efficiency-wage theory and the insider-outsider theory. These theories compete not by being mutually exclusive, but by identifying different microeconomic sources of involuntary unemployment.

In the efficiency-wage theory, the source is firms' imperfect information about the profitability of their employees. Under this condition, firms may have an incentive to use the wage as a screening device for employees' profitability, implying that an increase in the wage raises not only the marginal labor cost (per unit of time), but the marginal revenue product (net of training costs) of labor as well. Then when wages are set at their profit-maximizing levels, aggregate labor demand may fall short of aggregate labor supply.

In the insider-outsider theory, the source of the unemployment lies in (a) an explicit labor turnover cost and (b) the ability of the full-fledged employees ("insiders") to exercise influence over their wages, without taking full account of the interests of the fledgling employees ("entrants") or the unemployed workers ("outsiders"). The insiders' market power arises from the turnover cost, and this power may also be devoted to augmenting that cost. Due to this cost, the insiders are able to raise their wage above the minimal level required to induce workers to become entrants, but firms nevertheless have no incentive to hire outsiders. For this reason, aggregate labor supply may exceed aggregate labor demand.

Both theories deal with employees who capture economic rent from being employed but whose wages are not underbid by the involuntarily unemployed workers. However, in the efficiency wage theory, underbidding does not occur because lower wages don't appeal to the firms; whereas in the insider-outsider theory the insiders use their market power to prevent wages from falling. The

existence of involuntary unemployment is related to labor turnover costs in some versions of the efficiency wage theory and in all versions of the insider-outsider theory. However, in the former, the unemployment arises because firms set wages with a view to manipulating the turnover costs under imperfect information, whereas in the latter theory the turnover costs give insiders market power which permits them to drive wages above their market-clearing levels.

The two theories may be interpreted as alternative microfoundations for macroeconomic models of unemployment, where there is deficient demand for labor although the product market clears (viz. the boundary between the "Keynesian" and "Classical" regimes in the models of Barro and Grossman (1976), and Malinvaud (1977)). In particular, the theories provide explanations for why the labor market does not clear and these explanations do not rest on a failure of the product market to clear.

Broadly speaking, we define involuntary unemployment as a state in which there are workers without jobs, even though it is possible to find a wage, less than prevailing wages, which would induce them to work, provided that these workers could be employed under identical conditions of work as the incumbent workers. It is important to emphasize that this type of unemployment is quite distinct from the notion of suboptimal (inefficiently low) production and employment, relative to a hypothetical Walrasian equilibrium, in models with imperfect competition, as developed by Bennasy (1986) and Negishi (1977), or models with search activity of employees depending on that of employers and vice versa, as developed by Drazen (1986), related to the analysis of Diamond (1985).

To explain the existence of involuntary unemployment as defined in this paper, it is necessary to show why there is no underbidding. By "underbidding" we mean, quite generally, any wage agreement among the actual and potential parties to a labor contract, whereby unemployed workers are enabled to find jobs

at wages which make them less costly (to the firms) than the incumbent employees.

2. The Efficiency-wage Theory

As mentioned, the centerpiece of the efficiency-wage theory is that wage increases may raise a firm's profit by having

- a positive effect on the average productivity of its workforce and/or
- a negative effect on the average labor cost per time unit.

Let $Q=f(e \cdot L)$ be the firm's production function, where Q is output, L is the number of employees, e is the average labor productivity per employee and $f'>0$, $f''<0$. Furthermore, let W be the firm's wage offer and T its costs of training its employees. Then the effects above may be expressed as

$$(1) \quad e = e(W), \qquad e'>0 \ ;$$

$$T = T(W), \qquad T'<0 \ .^{1}$$

Various rationales for these effects have been proposed:

(a) In the "productivity differential models" (of Weiss (1980), Malcomson (1981)) the firm has imperfect information on the abilities of its employees and when its wage offer falls, the ablest workers quit.

(b) In the "shirking models" (of Calvo and Wellisz (1978), Shapiro and Stiglitz (1984), etc.), the firm cannot perfectly monitor whether its employees are shirking on the job, and the higher the firm's wage offer, the lower the average level of shirking.

(c) In the "search models" (of Snower (1985)), the firm has imperfect information on whether its employees are engaged in on-the-job search, and by

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[1] In addition, e and T may also depend on other variables (such as the wage offered by other firms and the level of unemployment) but, for simplicity, we ignore these here.

raising the wage offer, the firm reduces the expected returns from search and thereby increases the average productivity of its workforce.

(d) In the "turnover models" (of Stiglitz (1985) and Calvo (1979)), the firm cannot directly observe its employees' propensity to quit, and by raising the wage offer, the firm reduces the quit propensity and thereby lowers its costs of having to train new employees.

A particularly simple way[2] of formalizing the firm's wage and employment decisions in this analytical context is:

$$(2) \quad \underset{W,\lambda}{\text{Maximize}} \ \pi = P \cdot f(\lambda) - (\lambda/e) \cdot [W+T]$$

where $\lambda = e \cdot L$ is the firm's workforce in efficiency units and P is the exogenously given price of its product. The first-order conditions for an interior optimum may be expressed as

$$(3a) \quad \partial\pi/\partial W = -\lambda \cdot [\partial\phi/\partial W] = 0$$

$$(3b) \quad \partial\pi/\partial\lambda = P \cdot f'(\lambda) - \phi = 0 \ ,$$

where $\phi = (W+T)/e$ may be called the "efficiency labor cost". By condition (3a) (illustrated in Figure 1a), which implies $\partial\phi/\partial W=0$ and assuming $\partial^2\phi/\partial W^2>0$, the wage ($W^*$) is set so that the efficiency labor cost is minimized. By condition (3b) (illustrated in Figure 1b), the level of employment in efficiency units (λ^*) is such that the marginal value product of labor (in efficiency units) is equal to the efficiency labor cost.

Suppose that the economy contains a fixed number (F) of identical firms. Then the aggregate level of labor demand is $N_D = F \cdot (\lambda^*/e(W^*))$ as illustrated in Figure 1c. Furthermore, suppose that the aggregate labor supply is positively related to (or independent of) the real wage: $N_S = N_S(W/P)$, $N_S' \geq 0$, as illustrated

[2] We are deeply indebted to Ben Lockwood to whom the basic idea underlying this simple formulation is due.

in Figure 1d (for a given price). At the prevailing wage W^*, the aggregate labor supply may exceed the aggregate labor demand and the difference is the level of unemployment: $u^*=N^*_S-N^*_D$.

The unemployment above may be involuntary by our definition, namely unemployed workers receive no jobs even though there exists a wage, an effort level, and a training cost at which they would prefer employment to unemployment and at which their efficiency labor cost is less than that of the current employees. However, the unemployed workers cannot precommit themselves to such an effort level (e) and such a training cost (T) borne by the firm, because the firms cannot monitor e and T directly and the workers would be unwilling or unable to keep such a commitment of their own accord.

3. The Insider-Outsider Theory

The crux of the insider-outsider theory, as suggested in the introduction, is that an "insider" in a firm faces more favorable conditions of work than an "entrant" (*ceteris paribus*). The reason is that insiders can exploit and manipulate labor turnover costs for the purpose of raising their wage rates.

Various sources of these costs have been suggested. For example:

(a) Hiring, training and firing activities (see Lindbeck and Snower (1984a) and Solow (1985): It is frequently the case that workers become entrants only after advertising, screening and negotiation costs have been incurred; entrants may turn into insiders only after the absorption of training expenses; and the dismissal of insiders may require severance payments and the implementation of costly firing procedures.

(b) Cooperation and harassment activities (see Lindbeck and Snower (1985)): To boost their wage claims and prevent underbidding, insiders may choose to "cooperate" with each other (individually or by collective action) in the process of production but not to cooperate with undesired entrants, thereby

creating an insider-entrant productivity differential. For the same reasons, insiders may "harass" entrants but not each other (i.e. have worse personal relations with entrants than with each other), thereby raising the entrants' disutility of work above their own.

(c) Effort response to labor turnover (see Lindbeck and Snower (1984b): As in the efficiency wage theory, firms are assumed to monitor work effort imperfectly; yet unlike this theory, they affect effort via direct control of their labor turnover rate, rather than via the wage. In practice it is quite common that the higher a worker's current effort input, the lower his chances of dismissal (or the higher his chances of promotion) and thus the more likely he is to receive an insider wage in the future. Furthermore, when a firm raises its long-run rate of labor turnover, it reduces the worker's future reward for current effort. It is for this reason that effort may be inversely related to the labor turnover rate.

The distinction between "insiders" and "entrants" rests on such labor turnover costs (and not merely on seniority). The insider-outsider theory presumes not only that these costs exist, but also that the insiders may influence them and that firms cannot entirely pass them on to their employees in the form of wage reductions. The main reason is that the insiders have market power (as individuals or collectively, although we will not consider the latter possibility here). Thus, an insider receives a higher wage than an entrant (***ceteris paribus***), but since the firm bears some of the labor turnover costs, it may nevertheless have no incentive to replace the insider by the entrant. (Insofar as the entrant has market power as well, the wage which he receives will exceed his reservation wage.) In this context, the insider-outsider theory provides a rationale for unionization, since unions may help insiders to raise the firm's labor turnover costs (see Lindbeck and Snower (1984a, 1986)).

For simplicity, it may be convenient to conceive of outsiders, entrants and insiders as homogenous groups. When an outsider is hired, he becomes an entrant. The replacement of an entrant is associated with no (or "low") turnover costs. After passing through an "initiation period" at the firm, the entrant turns into an insider, whose replacement would require "high" turnover costs.

Let L_I and L_E be the number of insiders and entrants, respectively, employed by a particular firm. W_I and W_E are their respective wages. The firm's production function is $Q=f(L_I+L_E)$, where $f'>0$, $f''<0$. The "incumbent workforce" is m (i.e. the number of insiders carried forward from the previous time period). Then, $L_I \leq m$. The firm's cost of dismissing insiders (say, from the sources (a)-(c) above) is $C_I(m-L_I)$, with the following properties: $C_I(0)=0$ and, for $L_I<m$, $C_I'>0$ and $\lim_{L_I \to m} C_I' = \tilde{c}_I$,where $\tilde{c}_I$ is a positive constant. (In other words the dismissal costs are finitely large for all L_I less than m.). Finally, the firm's cost of acquiring entrants (say, from sources (a)-(c) above) is $C_E(L_E)$, with the following properties : $C_E(0)=0$ and, for $L_E>0$, $C_E'>0$ and $\lim_{L_E \to 0} C_E' = \tilde{c}_E$, where $\tilde{c}_E$ is a positive constant.(In other words, the labor acquisition costs are finitely large for all positive L_E.)

To fix ideas, we suppose that entrants receive the reservation wage ($W_E=R$) and that the insider wage (W_I) is determined by a bargaining process between the firm and its insiders. In particular, let insiders bargain "individualistically" (i.e. each insider assumes the wage and employment of all other insiders to be exogenously given) and let them have "complete market power" (i.e. each insider sets his wage as high as possible consistent with his continued employment).[3] By implication, the insider wage is $W_I = \min[(f'(m) + \tilde{c}_I), (W_E+\tilde{c}_I+\tilde{c}_E)]$, i.e.

[3] This strong assumption is a convenient simplification but is not necessary for the subsequent analysis. It would be sufficient to assume that the insiders receive some part of the rent generated by the turnover costs and that the greater these costs, the greater are their wages.

the insider wage is the smaller of the insider marginal product (net of firing costs) and the sum of the entrant wage and the marginal turnover costs.

With W_E, W_I, and m exogenously given to the firm, the employment decision may be expressed as the solution to the following profit-maximization problem:

$$(4) \quad \underset{L_I, L_E}{\text{Maximize}} \ \pi = P \cdot f(L_I + L_E) - W_I \cdot L_I - W_E \cdot L_E - C_I(m - L_I) - C_E(L_E).$$

Let the optimal solution be (L_I^*, L_E^*). Then supposing that $L_I^* > 0$, the first-order conditions are

$$(5a) \quad \partial\pi/\partial L_I = P \cdot f' - W_I + C_I' \geq 0, \quad (\partial\pi/\partial L_I^*) \cdot (m - L_I^*) = 0 \ ;$$

$$(5b) \quad \partial\pi/\partial L_E = P \cdot f' - W_E - C_E' \leq 0, \quad (\partial\pi/\partial L_E^*) \cdot L_E^* = 0 \ .$$

Combining (5a) and (5b) we obtain

$$(6) \quad W_I - W_E \leq C_I' + C_E' \ .$$

These conditions are illustrated in Figure 2a, where the equilibrium locus of (W_I, L) points is given by the boldface curve. While equations (5a) and (5b) define the demand functions for insiders and entrants, respectively, equation (6) tells us that the insider wage cannot exceed the entrant wage by more than the sum of the marginal hiring and firing costs of labor.

As shown i Figure 2a, if the firm has an incumbent workforce of $\hat{m}$, the insider wage is $\hat{W}_I$, all incumbents are employed ($L_I^* = \hat{m}$), and the firm does not find it profitable to hire any entrants ($L_E^* = 0$, by condition (5b)). Moreover, for an economy with F identical firms, aggregate labor demand then is $\hat{N}_D = F \cdot (L_L + L_E)$ (illustrated in Figure 1b). Let the number of workers in the economy be $N_S (> \hat{N}_D)$. Then the level of unemployment is $u = N_S - \hat{N}_D$. In short, the activity of insiders depresses entrants' marginal product (net of hiring and firing costs) relative to their reservation wage. Given this activity, there may, in equilibrium, be no wage for entrants greater than their reservation wage

at which they would be more profitable than the insiders. This is illustrated in Figure 2a, where the reservation wage (W_E=R) is greater than entrants' net marginal product at employment $\hat{m}$ (given by curve (5b)).

This unemployment is involuntary in the sense that the outsiders are willing to work for a wage which would make them more profitable than the insiders, if only they had the opportunity to work at identical conditions. (We say that two workers face "identical conditions of work" when they confront the same production technologies and have the same legal and social status, so that the only difference between them - as providers of labor - can lie in their respective levels of skill and effort.) However, this opportunity may be denied to them on account of the incumbents' reactions whenever the outsiders attempt to enter the workforce: they may face a wide variety of adverse conditions, e.g less cooperation and more harassment from insiders, effort-related turnover costs (as mentioned above) and "dispensable" hiring, training, and firing costs, viz. those costs which are not intrinsically important to the process of production such as severance pay.

As shown, the outsider and the firm may be unable to find a wage which induces both the outsider to work and the firm to employ him, given the insiders' activities which, in effect, discriminate against outsiders. But, even though time-contracts thus may give rise to involuntary unemployment is it not possible for the firm or the outsiders to make side-payments to the insiders, in order to give them an incentive to abstain from these activities? For example, such side-payments may take the form of profit-sharing or wage bonuses per entrant hired. But even though such arrangements may benefit the insiders, they may be unwilling to accept them because the insiders may fear that the admittance of low wage workers into the firm will give the employer an incentive to fire the insiders in the future. Besides, profit-sharing may be difficult for the insiders to monitor and may impose more risk on the insiders than they may

be willing to accept at the new insider wage (see Lindbeck and Snower (1985)). In this manner, risk-bearing, non-enforceability of contracts which are not subgame perfect, and difficulties in observing or verifying variables such as profits may be effective obstacles to eliminate involuntary unemployment through underbidding by way of side-payments to the insiders.

4. Concluding Remarks

The efficiency-wage and insider-outsider theories of involuntary unemployment are built on quite different foundations. The former explain unemployment through firms' imperfect information about the productivities and about costs of their employees; the latter do so through insiders' market power which is used to exploit labor turnover costs in the process of wage formation - and to some extent the turnover costs themselves can be manipulated by the insiders. In the efficiency wage theories, union activity is generally implied to be unimportant in determining the level of unemployment; in the insider-outsider theory, it may augment unemployment by amplifying labor turnover costs. In the efficiency wage theory, the "involuntariness" of unemployment is traceable to a genuine information cost for firms. In the insider-outsider theory, the "involuntariness" is mirrored in the more limited employment opportunity set of outsiders relative to insiders - a limitation that may be accentuated by social norms and legislation. In particular, the harassment version of the insider-outsider theory may be useful in explaining why outsiders may feel inhibited from underbidding, and the hiring/firing cost version may provide an underpinning for the notion that "job security legislation" may be at least partially responsible for unemployment. When comparing the realism of the two theories, the vital issue that remains is whether firms' imperfect information or workers' market power is more important in providing microeconomic

foundations for the existence and persistence of involuntary unemployment in market economies.

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