

Lindbeck, Assar; Snower, Dennis J.

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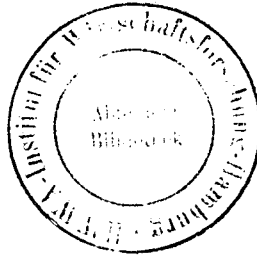
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LONG TERM UNEMPLOYMENT AND MACROECONOMIC POLICY

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Institute for International Economic Studies
S-106 91 Stockholm
Sweden

LONG TERM UNEMPLOYMENT AND MACROECONOMIC POLICY

by Assar Lindbeck and Dennis J. Snower*

*Institute for International Economic Studies, University of Stockholm, Sweden, and Birkbeck College, University of London and CEPR, respectively.

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This paper bears a simple double message: when incumbent workers have some power in wage determination, then (i) there may be no natural rate of unemployment, and (ii) both supply-side and demand side policies may have lasting effects on the unemployment rate. However, our analysis implies that demand-side policies in the product market may be much less reliable, and operate through more complex channels, than the traditional Keynesians envisaged.

To study the consequences of demand management policies for the labor market, we need to explore the transmission of product demand shocks to the labor market. Without denying the practical importance of sluggish wages and prices in this transmission process over the short run, we here set out to examine the effectiveness of macroeconomic policies when wages and prices are flexible, in the sense that agents set them freely in response to policy changes. In this context, as we shall see, there are transmission mechanisms which permit both pro- and counter-cyclical movements of real wages.

We assume that pricing, production and employment decisions are made by imperfectly competitive firms (taking wages as given), and that nominal wages are set by workers (who take the effect of wages on employment into account). (The substance of our argument would remain unchanged if nominal wages were determined through negotiations between firms and workers.) The firms' decisions yield a relation between the real wage and aggregate labor demand - the "labor demand relation", for short. The wage negotiators' only target variables are assumed to be the real wage and employment, and thus the wage negotiations in effect determine a point on the labor demand relation (i.e. a real wage and a level of employment).

As we have no quarrel with transmission mechanisms by way of changes in the real wage (i.e. movements along the labor demand relation), we concentrate here on the ways in which macroeconomic policies may affect wages and employment through shifts in the labor demand relation. We proceed in two steps. First (in Section 1), we inquire how such policies change the relation between real wages and labor

demand. Second (in Section 2), given a change in this relation, we examine how wages, employment and unemployment are determined.

1. Transmission of Macroeconomic Policies to the Labor Market

We represent a firm's demand function by

$$(1) \quad P = P(Q, A), \quad P_1 < 0, \quad P_2 > 0,$$

where P is the price, Q is product demand, and A is a shift parameter, which may be varied through demand management policies. Moreover, let the firm's production function be

$$(2) \quad Q = f(L), \quad f_1 > 0, \quad f_{11} < 0.$$

where L is labor.

Suppose that each firm, when maximizing its profit subject to its product demand function and production function, takes the nominal wage (W) as given, so that the real marginal value product of labor is equal to the real wage:

$$(3) \quad b \cdot f_1 = W/P$$

where $b = (1 - (1/\epsilon))$ and ϵ is the price elasticity of the firm's product demand function.

Assuming (merely for simplicity) that there is a fixed number (M) of identical firms in the economy and that their product demand functions are independent of one another, the aggregate labor demand relation is

$$(4) \quad N = M \cdot L = M \cdot L \left(\frac{W}{b \cdot P} \right), \quad L = (f_1)^{-1} \text{ and } L' < 0.$$

This simple condition tells us that, under the imperfectly competitive conditions outlined above, demand management policies can shift the aggregate labor demand relation (equation (4)) only if such policies are able to change one or more of the following three variables: (a) the number of firms in the economy (M), (b) the marginal product of labor (f_1), or (c) the price elasticity of product demand ($\epsilon = 1/(1-b)$).

It should be noted that the labor demand relation does not depend directly on the shift parameter (A) of the product demand functions. Thus, a policy which

merely shifts the product demand functions (without affecting any of the variables above) leaves the aggregate labor demand relation unchanged.

Of the three variables above, the demand elasticity is probably not a reliable and systematic channel for the transmission of policy shocks from the product to the labor market. There do not appear to be compelling reasons to believe that this elasticity rises (falls) systematically whenever product demand rises (falls).

As for the other two channels of transmission, expansionary demand management policy may

- (a) create incentives for the entry of new firms (which in turn raises the demand for labor associated with any given real wage)
- (b) raise the marginal product of labor - either directly, for instance by government policies which augment the industrial infrastructure of the economy, or indirectly, when the policy leads to a rise in the use of factors which are complementary to labor or to a fall in the use of substitutes for labor.

The latter, indirect effect on the marginal product of labor may have a significant role to play when there is excess capital capacity and the product demand stimulus raises firms' rate of capital utilization. In that event, workers are simply recalled to operate unmanned machines and re-establish existing assembly lines. The point is that the plant and equipment which is brought into use in the course of cyclical upswings is usually complementary to labor, and this means that the rise in the capital utilization rate may be expected to raise the marginal product of labor.

In short, under flexible wages and prices set by imperfectly competitive agents, our analysis leads us to identify one short-run, one medium-run and one long-run channel whereby these shocks may shift the aggregate labor demand relation. The short-run channel involves a change in the rate of capital utilization; the medium-run channel operates through the entry and exit of firms; and the long-run channel works via the build-up and run-down of industrial

infrastructure. (For a detailed analysis of these channels, see Lindbeck and Snower (1987c).)

What are the policy implications of these lines of thought? First, the short-run transmission mechanism, involving changes in the rate of capital capacity utilization, is operative only as long as there is excess capital capacity - regardless of the rate of unemployment. Thus, demand management policies may be able to raise employment at constant (or even rising) real wages when there is excess capacity, but unable to do so at full capacity utilization. Second, the removal of barriers to the entry of firms may be an important ingredient in making demand management policy effective. Third, changes in government expenditure on industrial infrastructure may have a much larger impact on the labor market, at least in a long-run perspective, than have spending changes on goods which are not complementary to labor (as in the case of tax reductions, increased transfer payments, or greater government purchases of consumer goods).

2. The Labor Market

Having examined the effect of demand-management policies on the relation between the real wage and aggregate labor demand, we now turn to the determination of a wage-employment point on this relation and to the associated level of unemployment.

In particular, we show that if incumbent workers have some market power in the negotiations over nominal wages, then policy-induced shifts in the aggregate labor demand relation may give rise to persistent changes in the level of unemployment. In this context, there is no natural rate of unemployment, as commonly envisaged by natural rate theories. In other words, when wage-price expectations are correct, unemployment is not necessarily at a unique rate, determined exclusively by the tastes, technologies, and endowments of the agents in the economy.

Since we wish to focus our attention on how the exercise of market power by incumbent workers may be responsible for persistent effects of macroeconomic policies on unemployment, we begin by considering the source of incumbent market power. In line with the insider-outsider theory (see, for example, Lindbeck and Snower (1987a)), we identify labor turnover costs as the source. These costs may take a wide variety of forms, e.g. costs of hiring and firing, costs arising out of differences in cooperation and harassment activities among incumbents and new entrants, and costs due to the effect of labor turnover on work effort. These costs give the incumbent workers ("insiders") the ability to hurt their employers when there is a breakdown in wage negotiations, i.e. the turnover costs provide threat points in the wage negotiation process. When the insiders have market power, their employers cannot entirely pass the turnover costs onto them in the form of correspondingly lower wages.

Consequently, the insiders are able to negotiate their wages without fully taking account of the interests of the unemployed workers ("outsiders") and the newly hired workers ("entrants"). However, after an outsider is hired, he is assumed to remain an entrant only for a limited span of time, which is sufficient for the entrant wage contract to expire and for the worker to become associated with the insiders' labor turnover costs. At the end of this time span, the entrant turns into an insider.

Modifying the firm's marginal productivity condition (3) to include the employment of both insiders and entrants, we obtain

$$(5) \quad b \cdot f_i(L_I, L_E) = W_i/P, \quad i = I, E$$

where W_I and W_E are the nominal wages of insiders and entrants respectively, and f_I and f_E are their marginal products adjusted for the relevant labor turnover costs. For instance, f_I could be the insiders' marginal product plus their marginal firing cost and f_E could be the entrants' marginal product minus their marginal hiring cost.

The labor demand relations for insiders and entrants are illustrated by the

downward sloping curves in Figure 1. In particular, let K be the firm's incumbent workforce and suppose that the insider wage is set so that the firm never has the incentive to replace incumbents by entrants. Thus the insider demand relation is

$$P \cdot b \cdot f_I(L_I, 0) = W_I \text{ and the entrant demand relation is}$$

$$P \cdot b \cdot f_E(K, L_E) = W_E \text{ for } L > K.$$

Turning to wage determination, our analysis requires that the insider wage be the outcome of negotiations between each firm and its insiders (who may bargain collectively or individually) and that the insiders have some market power in these negotiations. Yet, merely for expositional simplicity, we assume that the insiders have complete market power in the determination of the nominal insider wage and that each insider sets his wage "individualistically" (taking the wages and employment of the other insiders as exogenously given) so that each insider views himself as the marginal employer in his firm.

Then the nominal insider wage W_I will be set as high as possible, subject to the constraint that the insider does not become unprofitable to the firm ($W_I \leq P \cdot b \cdot f_I(K, L_E)$) and that the insider is at least as profitable as the marginal entrant ($W_I \leq W_E + C$), where C is the nominal cost of replacing an insider by an entrant. (This cost enters the specification of the functions f_I and f_E). In short,

$$(6a) \quad W_I/P = \min[b \cdot f_I(K, L_E), (W_E/P) + C].$$

Assuming that the outsiders are perfect competitors for jobs, the entrant's real wage (W_E/P) is equal to the outsiders' real reservation wage (R), which is taken to be an exogenous constant:

$$(6b) \quad W_E/P = R.$$

Combining the employment equation (5) with the wage equations (6a) and (6b) yields the locus of microeconomic equilibrium points, given by the equilibrium insider wage associated with any incumbent workforce, as illustrated by the thick segment in Figure 1.

Observe that if the incumbent workforce (K) is less than a critical value \underline{K}

(in Figure 1), then the insider wage is set equal to the cost of replacing an insider by an entrant ($W_E + C$). Here the incumbent workforce is sufficiently small so that entrants are profitable to the firm ($f_E(K) > W_E$) and thus each insider must ensure that he is at least as profitable as the marginal entrant. At the resulting insider wage ($W_I = W_E + C$), all the incumbents are retained and some entrants are hired.

Yet if the incumbent workforce is larger than that above, lying in the range, $\underline{K} \leq K \leq \bar{K}$ (in Figure 1), then the insider wage is set equal to the marginal product (adjusted for firing costs) of the incumbent workforce. In this case, the incumbent workforce is sufficiently large so that entrants are not profitable to the firm ($f_E(K,0) < W_E$) and consequently insiders can set their wage without reference to their replacement cost. At that wage ($W_I = f_I(K,0)$), all the incumbents are retained and no entrants are hired. Note that the firm's workforce cannot exceed \bar{K} for, at any higher employment level, the entrant wage (W_E) would exceed the marginal product (adjusted for turnover costs) of all workers.

Moving from the micro- to the macroeconomic level, we take the horizontal sum of each firm's equilibrium locus ABC (in Figure 1) and thereby obtain the labor market equilibrium locus DEF (in Figure 2). Suppose now that the aggregate incumbent workforce is K_1 (in Figure 2); then the equilibrium insider wage is W_1^* . (The corresponding equilibrium point is denoted by e_1 in the figure). At this wage, all incumbents are retained and no entrants are hired. Given the labor supply curve (LS) drawn in the figure, U workers remain unemployed.

3. Persistence of Policy Effects in the Labor Market

Let us now examine the effects of supply-side and demand-side macroeconomic policy shocks on the labor market above. We illustrate supply-side shocks (affecting the marginal product of labor) as shifts in the labor market equilibrium locus in Figure 2.

Our economy's wage-employment response to these shocks depends on (a) whether

the shock is observed before the wage decision is made, (b) whether insiders are able to exert some control over labor turnover costs, and (c) whether firing decisions are governed by a seniority system. These three conditions are important for the following reasons. First, it is obvious that the insider wage will respond to shocks only if the shocks are observed prior to the wage decision. If, on the contrary, the shocks are observed afterwards, then our model generates employment fluctuations at constant insider wages. Second, insiders' influence over turnover costs may give them the ability to prevent underbidding by laid-off workers. They may do so by refusing to cooperate with the underbidders (thereby reducing their productivity), by creating a hostile work environment for the underbidders (thereby raising their reservation wage), or by threatening to strike or work-to-rule. (See Lindbeck and Snower (1988).) Third, the existence of a seniority system permits the insiders to identify in advance the laid-off workers whose underbidding activities are to be thwarted.

Let us consider the effects of supply-side shocks. Suppose that these shocks are anticipated in the wage decisions, that insiders can influence labor turnover costs, and that a seniority system exists. Let the initial labor market equilibrium be given by Point e_1 in Figure 2 (where the incumbent workforce lies in the range $\underline{K} \leq K \leq \bar{K}$). Thereupon an unfavorable supply-side shock occurs, which shifts the labor market equilibrium locus from DEF to DE'F'. The insider wage may fail to fall in response to this shock, even though workers are laid off. The reason is that if the laid-off workers should try to regain their jobs by offering to work for a lower wage, the remaining insiders could prevent this from happening by manipulating the labor turnover costs (e.g. by harassing the underbidders.) Consequently, the labor market equilibrium moves from Point e_1 to e_2 .

Now suppose that, later on, a favorable supply-side shock occurs, shifting the labor market equilibrium locus back out to DEF. Now the insiders have the opportunity to raise their wage without fear of being displaced by other workers.

As result, the insider wage rises and employment remains unchanged. The labor market equilibrium moves from point e_2 to point E.

As we can see, when the incumbent workforce lies in the range $\underline{K} \leq K \leq \bar{K}$, favorable and unfavorable supply-side shocks do not have symmetric effects on wages and employment: the unfavorable shock reduces employment, but the favorable shock does not increase employment. (If we instead assume that both insiders and firms have power over the insider wage, then the unfavorable shock reduces employment merely by more than the favorable shock increases it). We call this phenomenon "asymmetric persistence" of supply-side policy effects.

Thus, a succession of downward and upward shifts of the equilibrium locus yields a wage-employment ratchet, characterised by an upward trend in wages and a downward trend in employment. This ratchet disappears once the insider wage reaches the level $W_E + C$. The reason is that the insiders cannot raise their wage above this level, for otherwise they would be replaced by outsiders. At $W_I = W_E + C$, upward and downward shifts of the equilibrium locus lead to variations in employment at constant real wages. (This is illustrated by the arrows between equilibrium points E' and E in Figure 2). Here, there is "symmetric persistence" of supply-side policy effects. (Another model of symmetric persistence is contained in Blanchard and Summers (1986), Gottfries and Horn (1987), and Lindbeck and Snower (1987b)).

Note that when there is no (explicit or implicit) seniority system or when insiders cannot influence turnover costs, then the insiders will be unwilling or unable to prevent underbidding from occurring. Consequently, favorable and unfavorable supply-side shocks lead to variations of the insider wage at constant employment.

Now turn to the effects of demand-side macroeconomic policies on the labor market, in the light of the discussion of the transmission mechanisms in Section 1. We consider the three demand-side transmission mechanisms of Section 1 in turn. First, some types of government investment in industrial infrastructure

will raise the marginal product of labor and thereby shift the labor market equilibrium locus outwards. Conversely, a run-down of infrastructure causes the locus to shift inwards. The resulting effects on wages, employment and unemployment are basically the same as the effects of the supply-side policies considered above.

Second, demand-side policies which lead to the entry of new firms serve to raise employment of entrant workers, who receive the reservation wage (provided that union agreements or government legislation do not prevent new firms from hiring labor at the reservation wage). After these workers turn into insiders, they receive the insider wage. (For instance, letting the firm in Figure 1 be a new firm, K entrants are hired at wage W_E , and once they achieve insider status, their wage becomes $W_I = W_E + C$.)

Finally, consider demand-side policies which raise the marginal product of capital by increasing the rate of capital utilization. Assuming that the capital brought back into operation is complementary with labor, the insider and entrant labor demand curves (in contrast to those pictured in Figure 1) may be upward-sloping at cyclically low levels of capital capacity utilization and downward-sloping only at full capacity utilization. Accordingly, the labor market equilibrium locus (in contrast to that pictured in Figure 2) may have both upward- and downward-sloping portions. This means that the demand-side policies above can move the labor market equilibrium point along either an upward or a downward sloping labor market equilibrium locus. (See Lindbeck and Snower (1987c).

4. Concluding Remarks

Our analysis suggests that the entry and exit of firms may play an important long-term role in the transmission of product market shocks to the labor market. In this light, lower barriers to entry by firms in the US than in Western Europe may help explain why US employment recovered more rapidly from the recession of the late '70's and early '80's than European employment did.

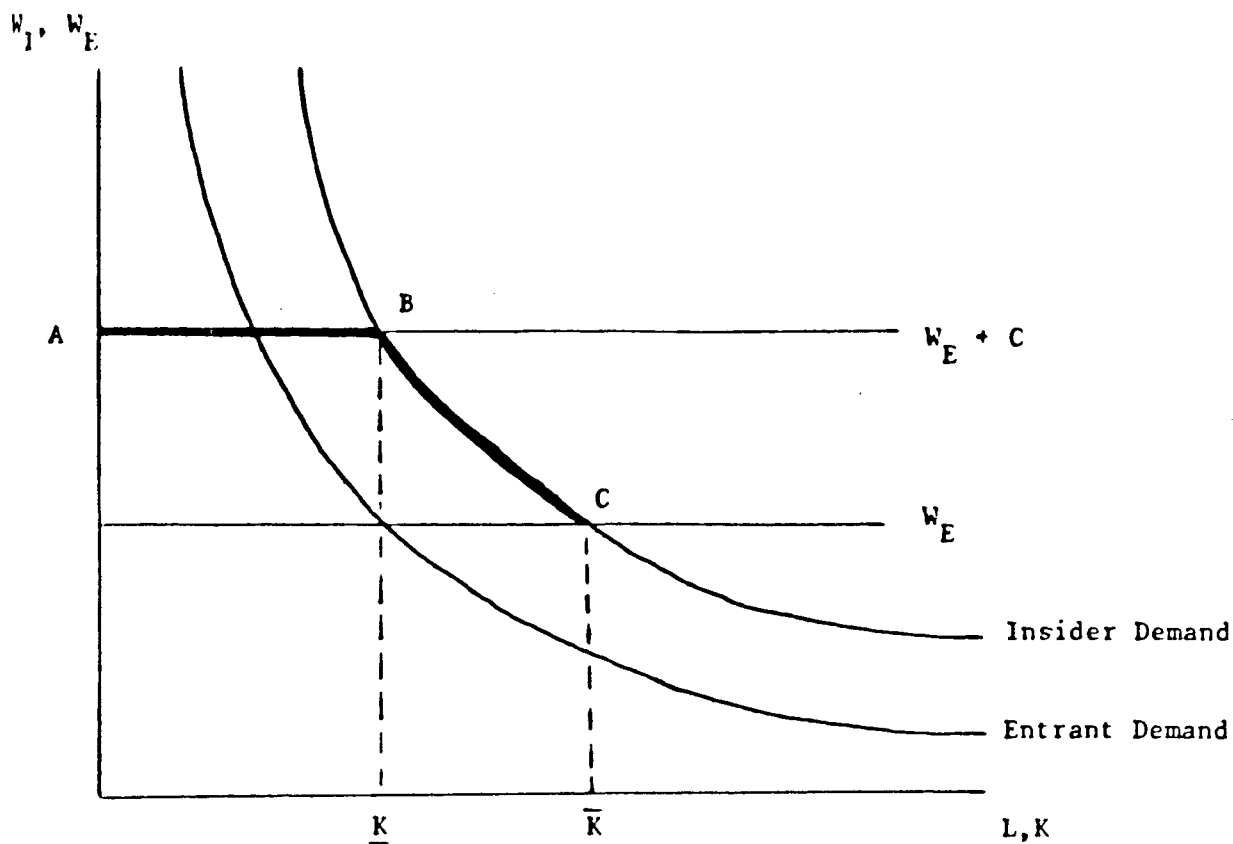


FIGURE 1: The Firm's Equilibria

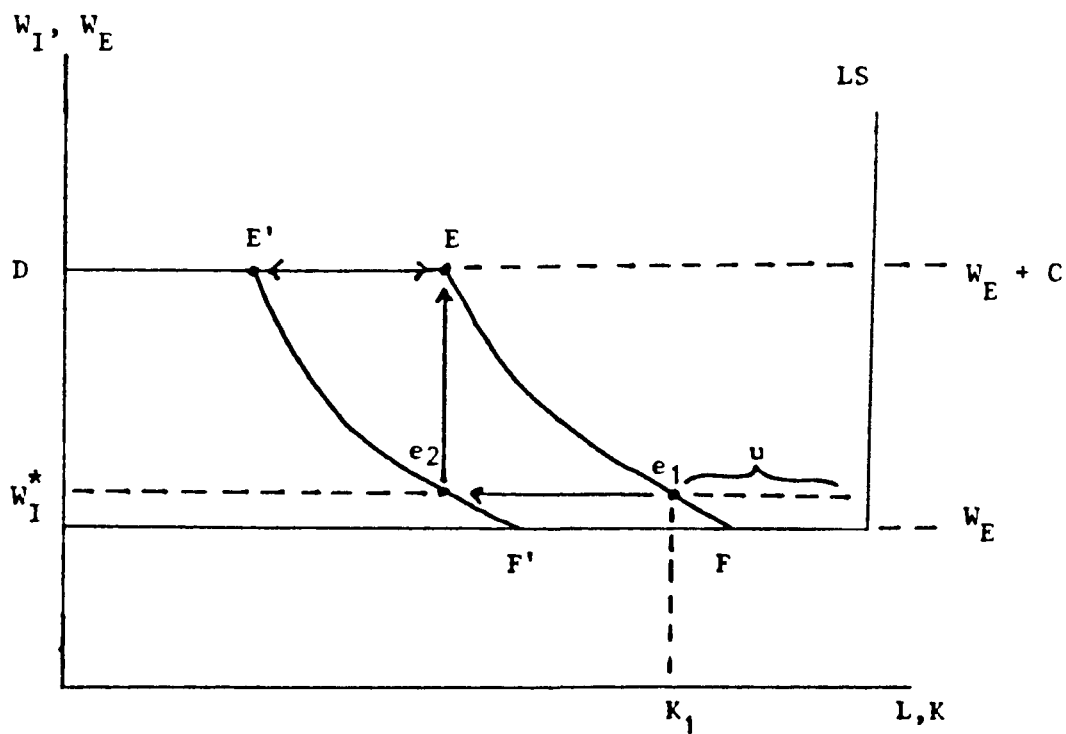


FIGURE 2: Labour Market Equilibria

We also argue that demand management policies which have "supply-side" effects on labor productivity - e.g. policies which stimulate the rate of capital utilisation or expenditures on industrial infrastructure (such as that undertaken by Western governments in the '50's) - may have a larger impact on employment than policies without such supply-side effects (such as the transfer payments which have commanded progressively larger portions of European government budgets in the postwar period).

Finally, our analysis suggests that aggregate supply shocks may affect the labor market more directly and speedily than most aggregate demand shocks do. In this light, it appears that the overall level of unemployment in Europe during the '50's and '60's may have been low partly on account of the steady stream of expansionary supply-side shocks (such as a falling real price of oil). By contrast, European unemployment may have been comparatively high since the mid-'70's because the contractionary supply-side influences (including the overshooting of product wages) may have been difficult to counteract through demand-management policies, particularly in the face of limited entry of firms and insufficient excess capital capacity.

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