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ABSTRACT

Demand- and Supply-Side Policies and Unemployment: Policy Implications of the Insider-Outsider Approach

The paper analyses a variety of government policies that can stimulate employment when unemployment is generated through the conflicting of interest between insiders and outsiders. It also provides guidelines for identifying policies that may be ineffective. We show how supply-side policies can stimulate employment by raising worker productivity or reducing labour costs. Our analysis indicates that when wages and prices are flexible, product demand policies have no significant effect on employment unless these policies stimulate labour productivity, the entry of firms, capital utilization or investment.

JEL classification: 023, 026, 131, 821, 831, 832
Keywords: government policy, unemployment, wage formation, employment, insider-outsider conflict

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NON-TECHNICAL SUMMARY

This paper investigates the effectiveness of demand- and supply-side policies on employment and unemployment in a labour market characterized by insider-outsider conflict. The 'insiders' are the experienced incumbent employees whose positions are protected by labour turnover costs. The 'outsiders' are workers who have no such protection. The insiders have market power in the process of wage determination. This power arises ultimately from labour turnover costs that fall on firms, i.e. that make it expensive for firms to fire the insiders and hire other workers in their place. The insiders use their market power to pursue their own interests, rather than those of the outsiders.

In our analysis wage and employment decisions are assumed to be made in the following sequence: first the nominal wage is set, given perfect information about the firms' employment responses; then the firms set product prices and decide how many insiders and new recruits to hire, taking the nominal wage as given. In this context, labour market activity can be characterized in terms of two curves: (i) an aggregate labour demand relation, which shows how aggregate labour demand is related to the real wage (measured on the vertical axis) as a result of firms' profit-maximizing employment decisions, and (ii) a wage setting function, which shows the outcome of the wage bargain (in real wage terms) for any given level of aggregate employment. The intersection of these curves yields the equilibrium level of employment and real wage. Unemployment is simply the difference between labour supply (at the equilibrium real wage) and equilibrium employment.

The distinctive 'insider-outsider' features of our analysis are incorporated mainly in the wage setting function. The labour demand relation differs from the conventional one under imperfect competition in that it explicitly takes into account the labour turnover costs facing the firm (here the marginal revenue product of labour *net of turnover costs* under wage agreement is set equal to the nominal wage). It is the wage setting function that represents the exercise of insider power in wage bargaining. In the absence of such power the wage setting function would coincide with the labour supply function, and thus the real wage would fall to its market-clearing level at the intersection of the labour supply function and the aggregate labour demand relation, and unemployment would disappear.

The existence of the labour turnover costs falling on the firms implies that the aggregate labour demand relation will contain a vertical segment (an 'area of employment inaction') within which changes in the real wage do not affect the demand for labour. The position of this vertical segment depends solely on the magnitude of the firms' insider workforces, which is historically given and cannot be influenced by current policy measures. By implication, employment is not

responsive to policy within a particular wage corridor (whose size is equal to the magnitude of the labour turnover costs). Policy measures are effective only outside this corridor. If the labour market equilibrium falls within the area of employment inaction, then small policy shocks (i.e. shocks which do not move the equilibrium point outside the area of inaction) have no effect on employment, whereas large policy shocks do have such an effect.

Since the firms are party to the wage bargains, the wage setting function contains a vertical segment as well. This means that real wages 'jump' or rise discontinuously once employment passes a particular critical level. This phenomenon also has straightforward policy implications.

The supply-side policies that we consider include a variety of measures designed to make workers more profitable and to create greater equality of opportunity in the labour market: reductions in payroll taxes, reduction in legislated severance payments, government investment in industrial infrastructure, legislation to reduce union power, retraining schemes, reduction of barriers to entry of new firms, measures to open the economy to foreign competition, and tax incentives for profit-sharing. Our analysis provides guidelines for identifying the conditions under which these policies are likely to be effective.

In general, supply-side policies may stimulate employment by making all workers more productive, by reducing the market power of insiders, and by enfranchising the outsiders. Some of these policies, however, reduce the labour income of the current insiders and may therefore induce insider resistance in the form of rent-creating activities that limit the overall employment gains. This specific problem is generally not shared by demand-side policies which improve the employment prospects of the outsiders without making the current insiders worse-off. Demand-side policies, however, face other difficulties.

The demand-side policies that we consider are the traditional Keynesian fiscal polices, for example, government expenditures in the product and labour markets, taxes and transfer payments. We inquire whether there are transmission mechanisms whereby variations in aggregate product demand affect employment even when wages and prices are set flexibly under conditions of imperfect competition.

Our analysis therefore suggests that when wages and prices are perfectly flexible and insiders wield power in the labour market, then demand-side policies in the product market are unlikely to have a pronounced effect on employment unless these policies stimulate labour productivity, the entry of firms, capital utilization, or investment. In particular, analysis suggests three potentially important channels of transmission, each of which has noteworthy policy implications and has a weaker impact on employment under insider-outsider conditions than under market-clearing conditions:

- a *short-run* channel, whereby changes in product demand affect the level of capital utilization which, in turn, affects the marginal product of labour. This channel is open whenever excess capital capacity exists; it does not depend on the level of unemployment. By implication, an increase in government product demand may lead to an increase in employment at constant or rising real wages when there is excess capital capacity, but not once full capacity utilization has been reached.

- In the *medium run*, there is a channel involving the entry (and exit) of firms. In order for this channel to be operative, it is important that the demand-side policy be supported by the relevant supply-side policy, viz. the removal of barriers to the entry of firms. There is also a medium-run channel whereby a rise in product demand stimulates net investment, and this channel is operative only when the rate of capital utilization is sufficiently high.

- The *long-run* channel involves the build-up or run-down of industrial infrastructure. Here, the policy operates simultaneously on the demand side (via changes in government spending) and the supply side (via changes in the economy's production possibility frontier). Our analysis implies that demand-side policies with such supply-side effects may have a much larger impact on employment than policies (such as changes in transfer payments or government consumption) which do not affect labour productivity. We show that supply-side policies may enhance the effectiveness of demand management policies regarding employment. In this sense, the demand- and supply-side policies can be complementary.

1. Introduction

This paper examines what a government can do to stimulate employment in an economy where unemployment arises out of a conflict of interest between insiders and outsiders. For this purpose, we construct a simple insider-outsider model in which nominal wages are the outcome of bargaining between firms and their insiders. This model extends the scope of previous insider-outsider models (e.g. Blanchard and Summers (1986), Lindbeck and Snower (1984, 1988, 1989a), in which nominal wages are assumed to be set unilaterally by the insiders. In this context we seek to identify channels whereby macroeconomic policies can influence employment and unemployment and to assess the effectiveness of demand- and supply-side policies in this regard.

The paper may also be seen as a link in a chain of research projects exploring the implications of labor turnover costs and insider market power for labor market activity. In a static context, some of our previous work (e.g. Lindbeck and Snower (1984), (1987a) and (1989a)) has examined the simultaneous operation of three causal effects:

(i) how "lumpy" labor turnover costs (i.e. costs that remain finitely large as labor turnover rates approach zero) affect firms' employment decisions, at predetermined wages,

(ii) how these costs generate market power for the insiders, and

(iii) how insider market power affects wages and employment.

These effects have also been analyzed individually, but not in unison, within dynamic settings. In particular, Blanchard and Summers (1986), Gottfries and Horn (1986), and others have investigated the effect of insider power on employment (relationship (iii)) presupposing that insiders have market power. Bentolila and Bertola (1988), Bertola (1989) and (informally) Lindbeck and Snower (1989a, ch.11, sec.1,2) examine the effect of labor turnover costs on employment (relationship

(1)) in the absence of insider power. This paper explores the comparative static effects of government policies under the influence of all three effects.

"Insiders" are taken to be experienced incumbent employees whose positions are protected by labor turnover costs. "Outsiders" are workers who have no such protection - they are either unemployed or hold jobs with little job security in the informal sector of the economy. We focus attention on the "formal sector", where employment is covered by job security legislation and where incumbent employees have the opportunity to exploit labor turnover costs by engaging in rent-creating activities. Both the job security legislation and the rent-creating activities generate labor turnover costs that fall on the firms, i.e. they make it costly for the firms to fire the incumbent employees and hire other workers in their place. In this setting incumbent workers are able to attain insiders status.

As the insider-outsider theory suggests, these labor turnover costs give the insiders market power, which they may use to pursue their own interests in wage negotiations. For simplicity, we assume that the insiders do not take the interests of the outsiders into account (but our qualitative conclusions could also be derived from the less extreme assumption that the insiders take their own interests more into account than those of the outsiders in the wage bargaining process). Since the outsiders have little (if any) market power themselves, they are "disenfranchized" in the wage determination process - although (as we shall see below) they do exert an indirect influence on this process.

Our model of the labor market assumes that wage and employment decisions are made in sequence: first each firm and its insiders bargain over nominal wages, given perfect information about the employment implications, then each firm makes its pricing and employment decisions, taking nominal wages as given. It is convenient to begin by considering the firm's decision problem (in Section 2) and then to describe the wage setting process (in Section 3). Section 4 incorporates this microeconomic behavior in an aggregative analysis of the labor market. Sections 5 and 6 examine the effectiveness of supply- and demand-side policies in this context. Finally, Section 7 concludes.

2. Employment and Pricing Decisions

Our model of the firms' employment and pricing decisions is quite conventional. It presupposes that, after the nominal wage bargain has been struck, each firm takes this wage as given in making its employment, production and pricing decisions.

We assume that there is a fixed number (M) of identical firms in the economy, all producing a homogeneous product.[1] The aggregate product demand function may be expressed as

$$(1) \quad P = A \cdot Q^{-(1/\eta)}, \qquad A, \eta > 0,$$

where P is the price of the product, Q is the aggregate product demand, $-\eta$ is the price elasticity of product demand, and A is a shift parameter of the product demand function. We assume that this parameter can be influenced by demand-side policies.

Each firm's total employment (n) comprises n_I insiders and n_E entrants:

$$(2) \quad n = n_I + n_E.$$

Let m be the stock of insiders which the firm has inheritted from the previous time period. This stock is historically given. It depends on last period's stock of insiders (m_{-1}), the quit rate (q), and the proportion of last period's entrants who become insiders in the current period (δ):[2]

$$(3) \quad m = (1-q) \cdot m_{-1} + \delta \cdot (1-q) \cdot [n_{-1} - m_{-1}].$$

Entrants are assumed to turn into insiders after one period of employment. Thus, the firm's insider employment cannot exceed its current insider stock: $n_I \leq m$.

Assuming - for simplicity - that insiders and entrants are equally productive,[3] we let the firm have the following production

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[1] The assumption of homogeneous products is made only for expositional simplicity. It is straightforward to extend our analysis to the case of differentiated products.

[2] The first right-hand term stands for the number of last period's insiders who have not quit. The second refers to either (a) the number of last period's entrants who have not quite (if $n_{-1} > m_{-1}$) or (b) the number of insiders who were fired in the last period and who would not have quite (if $n_{-1} < m_{-1}$). For simplicity, we assume that δ and q are constants.

[3] This is not an assumption of substance. Our conclusions would also

function[4]:

$$(4) \quad q = B \cdot n^{\alpha}, \qquad 0 < \alpha < 1,$$

where q is the quantity of output produced by the firm, and B and α are constants.

Since each firm is an imperfect competitor in the product market, its behavior depends on how it expects its rivals to respond to its decisions. We summarize these expectations by the conjecture function:

$$(5) \quad Q = b + v \cdot q,$$

where b and v are constants, and v specifies the expected response of aggregate output to a change in the firm's output. (In other words, when the firm changes its output by Δq, it expects its rivals to increase their output by $(v-1) \cdot \Delta q$.) This conjecture function allows us to consider the following special cases from the literature on bargaining games: (a) cartel behavior: v = M, so that the firms behave like joint profit maximizers, (b) Cournot behavior: v = 1, and (c) Bertrand behavior: v = 0, so that the firms behave like perfect competitors.

We assume that each firm takes the nominal wage, W, and the payroll tax, τ, as given when it makes its pricing and employment decisions.[5] For simplicity, we assume that once a nominal wage

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hold if we assumed insiders to be more productive than entrants, say, in a production function $q = B \cdot (\xi \cdot n_I + n_E)$ where ξ is a positive constant greater than unity.

[4]Cobb-Douglas form of the production function merely permits us, in the analysis that follows, to derive a particularly simple aggregate labor demand relation (equation (16)) and wage setting function (equation (14)). Our qualitative results would still hold if we made the more general assumption that q=f(n), were f'>0 and f"<0. By contrast, the product demand function (1) is given in terms of a more general functional form, in order to enable us to inquire (in Section 8), under what general conditions it is possible for demand management policies to affect labor market activity.

[5]All workers within a firm are assumed to receive the same nominal wage (W). This is not an assumption of substance; our only reason for making it is that it provides a simple channel whereby insider-induced wage increases lead to reductions in employment. To see this, suppose instead that the new entrants to the firm receive a wage which is independent of the insider wage. In that case, the firm's overall level of employment is such as to equate the entrants' marginal revenue product with their wage, and consequently this employment

agreement has been reached, the firm faces only one type of labor turnover cost: a firing cost, which may take the form of, say, legally mandated severance pay or the firm's expected cost of implementing agreed firing procedures. Let $\underline{F}$ be the magnitude of the firing cost per insider fired. The firm's total cost of firing is $F\cdot(m - n_I)$, where $F=\underline{F}$ for $m>n_I$, and $F=0$ for $n_I \geq m$. The real marginal firing cost, $\underline{f}=\underline{F}/P$ is assumed constant.

Given the nominal wage agreement W, the firm's decision-making problem is to maximize its profit subject to the constraints described above:

$$(6)\quad \text{Maximize } \pi = P\cdot q - W\cdot(1+\tau)\cdot n - F\cdot(m - n_I)$$

$$\text{subject to} \quad P = P(Q,A)$$

$$Q = b + v\cdot q$$

$$q = B\cdot n^{\alpha}.$$

$$n = n_I + n_E.$$

$$n_I \leq m,$$

where the firm's decision variables are q, P, n, n_I, and n_E.

The solution to this problem[6] may be expressed as a relation between the firm's total labor demand and the real wage, which we call the "labor demand relation", pictured in Figure 1. The three segments of this relation correspond to the following scenarios:

- The "Hiring Scenario":

Here the nominal wage is low enough to induce the firm to set its employment level above its initial insider workforce. Thus, some entrants are hired and no insiders are fired.[7] Consequently firing costs do not arise. The firm sets its total employment so that the marginal value product of labor is equal to the nominal labor costs:

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level cannot be affected by changes in the insider wage.

[6]For an algebraic solution to an analytically similar problem, see Lindbeck and Snower (1987b).

[7]On account of the firing cost, the firm never has an incentive to fire an insiders when it hires entrants.

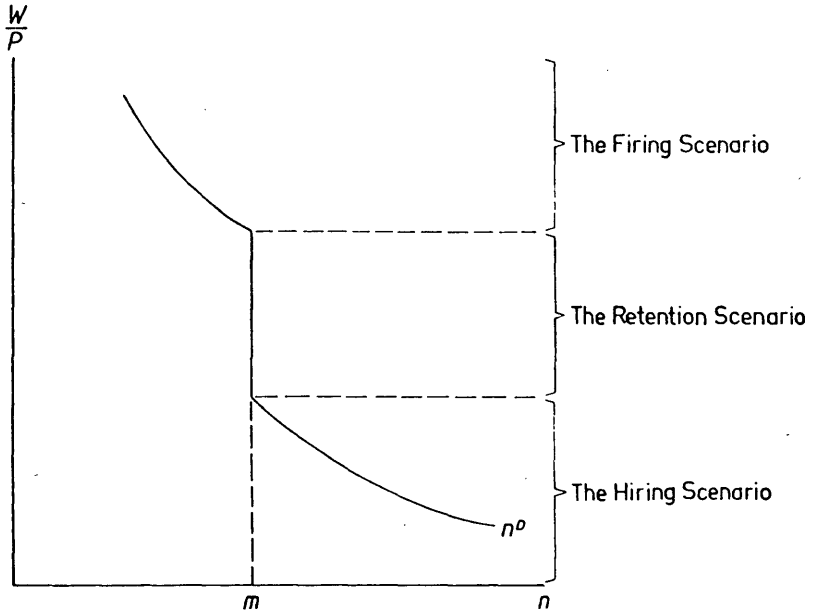

Figure 1: The Firm's Labor Demand Relation.

(7) $\alpha \cdot B \cdot (1-e) \cdot P \cdot (n^D)^{\alpha-1} = W \cdot (1+\tau)$, for $n^D > m$,

where n^D is the firm's profit-maximizing level of employment. The parameter e is Lerner's index of monopoly power (i.e., the price-cost margin):[8]

(8) $e = v/(\eta \cdot M)$,

where the conjectural variations coefficient (v), the elasticity of product demand (η), and the number of firms in the economy are assumed to be taken as exogenously given by the firm when it makes its pricing and employment decisions.

Condition (7) obviously implies the following labor demand relation[9] in the Hiring Scenario:

(9) $n^D = \left[\frac{W \cdot (1+\tau)}{P \cdot \alpha \cdot (1-e) \cdot B} \right]^{-1/(1-\alpha)}$, for $n^D > m$.

Since the Hiring Scenario occurs only when $n^D > m$, the nominal wage must then be less than a critical level:

(9a) $W < K_1$,

where the constant K_1 is

(9b) $K_1 = [1/(1+\tau)] \cdot m^{-(1-\alpha)} \cdot P[(b + v \cdot B \cdot m^{\alpha}), A] \cdot \alpha \cdot (1-e) \cdot B$,

by equations (4), (5), and (9).

- The "Firing Scenario":

Here the nominal wage is high enough to induce the firm to set its employment level beneath its initial insider workforce. Thus, no entrants are hired and some insiders are fired, at a firing cost of $\underline{F}$ per insider. By implication, total employment is set so that the nominal wage is equal to the sum of the marginal value product of labor and the marginal firing cost:

(10) $\alpha \cdot B \cdot (1-e) \cdot P \cdot (n^D)^{\alpha-1} + \underline{F} = W \cdot (1+\tau)$, for $n^D < m$.

This condition implies the following labor demand relation:

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[8] By the first order condition (7), the firm's marginal cost of production is

$$C = W/(\alpha \cdot B \cdot n^{\alpha-1}) = P \cdot (1-e).$$

Thus, the price-cost margin, (P-C)/P, is e.

[9] Note that equation (8) is not a labor demand curve in the perfectly competitive sense, since both n and P are endogenous to the firm.

$$(11)\quad n^D = \left[\frac{W\cdot(1+\tau) + \underline{F}}{P\cdot\alpha\cdot(1-e)\cdot B}\right]^{-1/(1-\alpha)}, \qquad \text{for } n^D < m.$$

Since the Firing Scenario occurs only when $n^D<m$, the nominal wage must exceed the following critical level:

$$(11a)\quad W > K_2,$$

where the constant K_2 is given by

$$(11b)\quad K_2 = [1/(1+\tau)]\cdot m^{-(1-\alpha)}\cdot P[(b + v\cdot B\cdot m^{\alpha}),A]\cdot\alpha\cdot(1-e)\cdot B + [\underline{F}/(1+\tau)],$$

by equations (4), (5) and (11).

- The "Retention Scenario":

Here the the nominal wage is such as to induce the firm to retain its initial insider workforce, but to hire no entrants.

$$(12)\quad n^D = m.$$

By equations (9b) and (11b), it is clear that this happens whenever the nominal wage falls into the following range:

$$(12a)\quad K_1 \leq W \leq K_2.$$

Equations (9) - (12a) will serve as our description of the firm's employment and pricing decisions. We now turn to the wage-setting process, where these decisions are taken into account.

3. Wage Determination

As noted, the nominal wage (W) is taken to be the outcome of a Nash bargain between each firm and its insiders. We proceed to describe the bargaining objectives of the firm and its insiders and then specify the bargaining problem.

a. The Firm's Objective

We let the firm's objective be the maximization of the "firm surplus", which is the difference between the profit earned under agreement in the wage negotiations (π) and under disagreement (π_o). As shown below, the firm's insiders have an incentive to engage in rent-creating activities when there is disagreement, but not when there is agreement. These rent-creating activities come in many guises. For instance, the insiders may work-to-rule, be uncooperative

in team production, engage in litigation, or go on strike.[10] For simplicity, this paper does not consider the employment effects of government policies operating via the influence of these policies on insiders' rent-seeking activities under disagreement. Accordingly, we make the assumption that when the insiders engage in these activities, the firm earns a constant fraction $1-\chi$ (where $0 \leq \chi < 1$), of its profit under agreement.[11] The parameter χ may be understood as a measure of the magnitude of insiders' rent-creating activities under disagreement.

Thus, the firm's surplus may be expressed in the following simple way:

$$(13a) \quad \phi = \pi - \pi_o = \chi \cdot \pi .$$

b. The Insiders' Objective

The insiders seek to maximize the "insider surplus", which is the difference between the real wage income that the insiders receive under agreement and their threat-point income.

The real wage relevant to the insiders is the *consumption* wage: (W/P_a), where P_a is the consumer price index. We assume that each individual firm exerts a negligible influence on the consumer price index, and thus P_a is exogenous to the insiders' decision making.

The insiders' real "threat-point wage" is denoted by w_o. For simplicity, we take w_o to be a constant, that depends on all the various determinants of the insiders' incomes in the case of disagreement in the wage negotiations: the magnitude of strike fund payments, the level of support forthcoming from family and friends during the dispute, the opportunity of finding temporary, informal work during the dispute, the reservation wage, and so on.[12]

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[10] For a discussion of these activities in the context of the insider-outsider theory, see Lindbeck and Snower (1984a, 1988a.)

[11] This is an assumption of substance. In general we would expect that one channel whereby demand- and supply-side policies may affect wages and employment is by influencing the magnitude of insiders' rent-creating activities. However, our assumption that χ is a constant implies that its value does not affect the outcome of the Nash bargain over the nominal wage.

[12] Note that the insiders' threat-point wage (w_o) is not necessarily

We assume that each firm has a seniority system (viz, an ordering whereby it fires employees), and that a proportion λ ($0 \leq \lambda \leq 1$) of the firm's most senior insiders are actually involved in the wage negotiation process. These senior insiders use their market power to maximize just their own surplus, rather than the surplus of other workers as well. We assume that they seek to drive their nominal wage as high as possible, subject to the constraint that none of them is fired. This constraint, which we call the "relative profitability constraint", specifies that the nominal wage must not exceed the sum of the outsiders' reservation wage (R) and the labor turnover cost (F):

$$(14) \quad W \leq R + F,$$

for otherwise the firm would have an incentive to replace its insiders by outsiders. Since the firm retains all its senior insiders, $\lambda \cdot m$, the surplus of the senior insiders is

$$(13b) \quad \omega = (W - w_o \cdot P_a) \cdot \lambda \cdot m,$$

where λ and m are exogenously given for each nominal wage negotiation and thus do not affect the outcome of this negotiation.

c. Wage Determination

The bargaining problem of the firm and its insiders is

$$(15) \quad \underset{W}{\text{Maximize}} \ \omega^a \cdot \phi^{1-a},$$

$$\text{subject to } W \leq R + F,$$

where ω is the insiders' objective in the negotiations, ϕ is the firm's objective, and "a" is a constant ($0 < a \leq 1$) that represents the bargaining strength of the insiders relative to that of the firm.

The first-order condition for an interior solution to the Nash bargaining problem (15) is

$$(16) \quad [(\partial\omega/\partial W) \cdot (W^*/\omega)] = - [(1-a)/a] \cdot [(\partial\phi/\partial W) \cdot (W^*/\phi)],$$

where W* is the nominal wage that emerges from the negotiation process. This condition simply states that the relative elasticities of the insiders' and firm's objectives with respect to the wage must

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equal to their reservation wage (w_r). In fact the threat-point wage must be greater than or equal to the reservation wage: $w_o \geq w_r$, for otherwise the insiders would quit the firm.

be equal to their relative bargaining strengths. Substituting the firm's objective (13) and the workers' objective (14) into (16), we obtain

$$(17a) \quad (1+\tau)\cdot[(W^*/P) - w_o\cdot(P_a/P)] = [a/(1-a)]\cdot\left[\frac{(\pi/P)}{n}\right].$$

which states that the difference between real labor remuneration (inclusive of payroll taxes) under agreement and disagreement is proportional to the real profit per employee (with the factor of proportionality being the ratio of the bargaining strengths).

We may now derive the microeconomic "wage setting function", which describes the negotiated wage at any given level of employment by the firm. In the Hiring and Retention Scenarios, the firm's real profit per employee is

$$(17b) \quad (\pi/P)/n = B\cdot n^{\alpha-1} - (W/P)\cdot(1+\tau).$$

Substituting equation (17b) into (17a), we obtain the following expression for the real product wage that is the outcome of the firm's price setting and the nominal wage negotiations between the firm and its insiders under the Hiring and Retention Scenarios:

$$(18a) \quad (W^*/P) = a\cdot\{[B/(1+\tau)]\cdot n^{-(1-\alpha)}\} + (1-a)\cdot\{w_o\cdot(P_a/P)\}.$$

Analogously, in the Firing Scenario the firm's real profit per employee is

$$(17c) \quad (\pi/P)/n = B\cdot n^{\alpha-1} - [(W/P)\cdot(1+\tau) + (F\cdot(m-n))/n].$$

Substituting (17c) into (17a), we find the following expression for the real product wage under the Firing Scenario:

$$(18b) \quad (W^*/P) = a\cdot[1/(1+\tau)]\cdot[B\cdot n^{-(1-\alpha)} - (F\cdot(m-n))/n] + (1-a)\cdot w_o\cdot(P_a/P).$$

Observe that, in all three scenarios, the above real product wage (for any given level of employment by the firm) is greater, the larger the insiders' bargaining strength (a), the real threat-point wage (w_o), the productivity coefficient B, and the payroll tax rate (τ). In addition, for the Firing Scenario, the above real wage is positively related to the magnitude of the firing cost per worker. Equations (18a) and (18b) comprise the microeconomic wage setting function.

Our model of real wage and employment determination at the microeconomic level of the firm is given by equations (9)-(12a) and (16a)-(18b). We now proceed to incorporate this analysis into a simple model of the aggregate labor market.

4. The Aggregate Labor Market

Recalling that there are a fixed number (M) of identical firms in the economy, the reduced form relation between aggregate labor demand (N^D) and the real wage (W/P) - which we call the "aggregate labor demand relation" - is

$$(19a)\quad N^D = M\cdot\left[\frac{W\cdot(1+\tau)}{P\cdot\alpha\cdot e\cdot B}\right]^{-1/(1-\alpha)} \qquad \text{in the Hiring Scenario,}$$

$$(19b)\quad N^D = M\cdot m \qquad \text{in the Retention Scenario, and}$$

$$(19c)\quad N^D = M\cdot\left[\frac{W\cdot(1+\tau)+F}{P\cdot\alpha\cdot e\cdot B}\right]^{-1/(1-\alpha)} \qquad \text{in the Firing Scenario.}$$

(by equations (9), (11), and (12)). This aggregate labor demand relation is pictured in Figures 2.

The labor supply function is assumed to be upward-sloping,[13] i.e. the reservation wage (w_r) is positively related to the level of employment. This supply curve is denoted by N^S in Figures 2.

Now turn to the wage setting function for the aggregate labor market. As the microeconomic wage setting function (equations (18a) and (18b)) shows, the negotiated wage (W*/P) depends positively on the threat-point wage, w_o. We now assume that the threat-point wage is positively related to the employment rate:[14]

$$(20)\quad w_o = w_o(N), \qquad w_o'>0.$$

This assumption seems plausible: The greater the employment rate, the greater the probability of finding a new job (and thus the greater the reservation wage), the greater the insiders' chances of finding

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[13]This assumption is not one of substance. Our analysis of unemployment is equally compatible with a downward-sloping aggregate labor supply curve. What is crucial to our policy results, in terms of Figures 2, is that employment be determined by the intersection of the wage setting curve and the aggregate labor demand relation. This is the case whenever the above intersection occurs to the left of the full-employment point (given by the intersection between the aggregate labor demand relation and the aggregate labor supply curve), so that there is unemployment.

[14]By implication, the wage setting function becomes upward sloping in real wage - employment space, as shown in Figures 2. This upward slope is not essential to our analysis. Our policy results could be derived under a flat wage setting function as well.

temporary employment or receiving support from family and friends during a breakdown in wage negotiations, and thus the greater the threat-point remuneration w_o.

The relation between the threat-point wage and the aggregate level of employment illustrates how labor market conditions external to the firm may influence the wage setting process when insiders have market power. In short, our description of the labor market is based on an "insider-outsider" model, not merely an "insider" model.

For simplicity, suppose that each firm hires a representative sample of the labor force, so that all firms face the same exogenous real threat-point labor remuneration, w_o. Figures 2a and 2b depict the Hiring and Retention Scenarios (respectively). Here, the aggregate wage setting function (represented by the WS curve in the figures) is

$$(21a) \quad (W^*/P) = a\cdot[B/(1+\tau)]\cdot[N/M]^{-(1-\alpha)} + (1-a)\cdot w_o(N)\cdot(P_a/P),$$

(by equations (18a) and (20)), and recalling that $n\cdot M = N$.

In the Hiring Scenario, this function crosses the bottom segment of the aggregate labor demand relation (19a), so that the equilibrium real wage is w_H^* and equilibrium employment level is N_H^*. The equilibrium level of unemployment[15] (u^*_H) is the difference between the aggregate labor force (s) and the equilibrium employment level: $u_H^* = s - N_H^*$.

In the Retention Scenario (portrayed in Figure 2b), the aggregate wage setting function crosses the vertical segment of the aggregate labor demand curve. The equilibrium real wage, employment, and unemployment levels are denoted by w_R^*, N_R^*, and u_R^*, respectively.

Finally, in the Firing Scenario the aggregate wage setting function is

$$(21b) \quad (W^*/P) = a\cdot[1/(1+\tau)]\cdot\{B\cdot(N/M)^{-(1-\alpha)} - F\cdot[(m\cdot N/M) - 1]\} + (1-a)\cdot w_o(N)\cdot(P_a/P)$$

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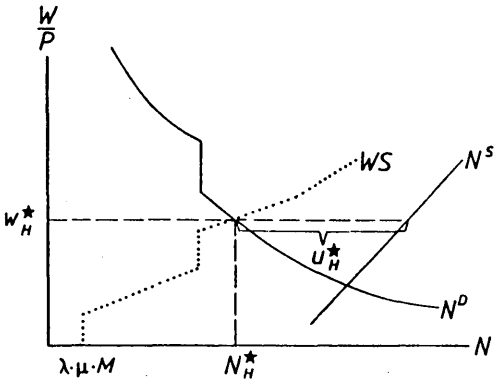
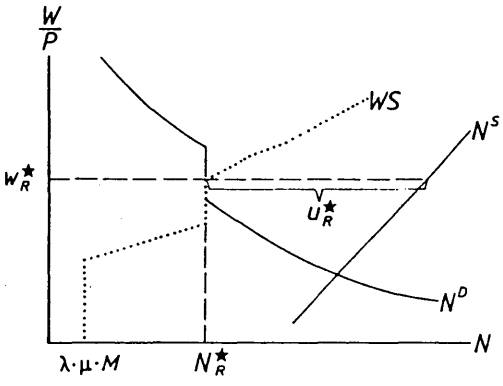
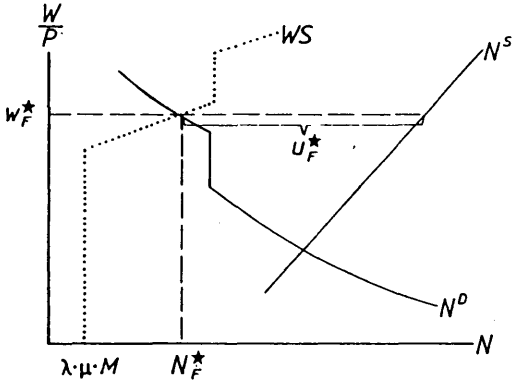
[15] Provided that the equilibrium real wage, w_H^*, exceeds the reservation wage, R - as illustrated in Figures 2 - this unemployment is involuntary in the sense that the unemployed workers are without jobs even though they would be willing to work for less than the negotiated wage.



a. The Hiring Scenario



b. The Retention Scenario



c. The Firing Scenario

Figures 2: The Aggregate Labor Market.

by Equation (18b) and (20). In Figure 2c the WS curve crosses the top segment of the aggregate labor demand relation (N^d). The equilibrium levels of the real wage, employment, and unemployment are denoted by w_F^*, N_F^*, and u_F^*, respectively.

By the second-order conditions for an interior optimum of the Nash bargain over the wage, $[d(W/P)/dN]|_{WS} > [d(W/P)/dN]|_N{}^D$, i.e. the slope of the wage setting function must be greater than the corresponding slope of the aggregate labor demand function. In fact, for the policy analysis which follows, we will assume that the wage setting function is upward-sloping.

By equations (18)-(21), it is easy to show how the level of unemployment depends on the insiders' bargaining power (given by the parameter "a"). The lower their bargaining power, the lower the wage setting function (by (18) and (19)) and consequently the greater the equilibrium level of employment.[16]

Observe that, in contrast to some highly simplified insider-outsider models, our model does not imply that a positive quit rate among insiders necessarily leads to a progressive decline of firms' insider work forces with the passage of time. This is so because insiders do not set their wages unilaterally, but rather participate in wage negotiations with firms, which exert downward pressure on wages.[17]

In the context of the aggregate labor market described above, we now inquire how government policies can affect labor market activity.

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[16] In the extreme case where insiders have no bargaining power at all (a=0), the negotiated real product wage is equal to the the real threat-point wage: $(W^*/P) = w_o \cdot (P_a/P)$.

[17] Of course other reasons are conceivable as well. Insider may have an incentive to set wages sufficiently low to permit the entry of new employees when there are increasing returns to labor, when insiders an entrants are engaged in complementary production activities, or when insiders cannot predict the precise position of the labor demand curve when wages are set. (See Begg (1988), Blanchard and Summers (1986) and Lindbeck and Snower (1987a).) Furthermore, Lindbeck and Snower (1984, 1987a, 1988) argue that the insiders' wage cannot rise above the sum of the entrants' wage and the relevant labor turnover costs, for otherwise the firm would have an incentive to replace insiders by entrants.

5. Supply-side Policies

It is convenient to group the supply-side policies under the following three headings:

i. policies designed to make all workers - insiders, entrants, and outsiders alike - more profitable to the firms, to be called "employment-promoting policies",

ii. policies which reduce the insiders' market power, which we call "power-reducing policies", and

iii. policies designed to enfranchise outsiders in the process of wage negotiations, to be called "enfranchising policies".

Although these policies may ultimately have similar influences on some labor activities,[18] their proximate effects are different. The immediate impact of the employment promoting policies is to raise the productivity or reduce the labor costs associated with all workers. (In doing so, outsiders may become "enfranchised", but that is only a by-product of these policies.) The power-reducing policies' proximate effect is to give the insiders less economic rent to exploit - though indirectly the employment of outsiders may indeed be stimulated. The immediate impact of the enfranchising policies is to make outsiders more profitable to the firms and thereby give more workers insider status. (In the process, the market power of the previous incumbents may - but need not - fall.)

Before describing the effects of each of these policies on employment and the real wage, a few general - and obvious - remarks about policy effectiveness will help set the scene. First, as noted, the analysis above indicates that whenever a firm faces labor turnover costs even under agreement in the wage bargain (e.g. the firing cost in our model), then its labor demand relation will contain a vertical segment. The position of this vertical segment depends solely on the magnitude of the firm's insider workforce, which is historically given and cannot be influenced by current policy measures. By implication, employment is not responsive to policy within a particular wage corridor (whose size is equal to the magnitude of the above labor turnover costs). It is only possible for policy measures to be

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[18] For example, they may all be capable of stimulating employment, and policies (ii) and (iii) both diminish the inequality of market power between insiders and outsiders.

effective outside this corridor. By implication, the ability of these measures to stimulate employment in an economy with heterogeneous firms must depend on the number of firms operating under the Retention Scenario relative to the number operating under the Hiring and Firing Scenarios.

Second, since a firm faces a different set of costs when it hires entrants than when it fires insiders, it may be expected to respond differently to economic policies under the Hiring and Firing Scenarios. This difference arises not only because the firm's labor demand relation is different under these two scenarios, but also because the firm - being a party to the wage negotiations - exerts a different influence on wage determination when it is hiring than when it is firing.

Third, it is important to emphasize that the distinctive "insider-outsider" features of our analysis are incorporated mainly in the wage setting function. Clearly, the labor supply function is not affected by the exercise of insider power. The labor demand relation differs from the conventional one under imperfect competition in that it explicitly takes into account the labor turnover costs facing the firm (here the marginal revenue product of labor *net of turnover costs under wage agreement* is set equal the nominal wage). However, it is the wage setting function that represents the exercise of insider power in wage bargaining. In the absence of such power, the wage setting function would coincide with the labor supply function, and thus the real wage would fall to its market-clearing level (at the intersection of the labor supply function N^S and the aggregate labor demand relation N^D in Figures 2), and unemployment would disappear.

Thus, to gain an intuitive understanding of how the exercise of insider power influences the effectiveness of government policies, it is useful to compare our policy results with the corresponding ones under market-clearing conditions (as given by the intersection of the labor demand relation and the labor supply curve). Since the salient features of our wage bargaining model are embodied in the position rather than the slope of the wage setting function, it is desirable to abstract from the way in which this slope influences the impact of government policies. We do so by considering only marginal policy changes and assuming that the slope of the labor supply curve at the market-clearing point is equal to the slope of the wage setting function at the insider-outsider equilibrium. In this context, policies which merely shift the aggregate labor demand relation have

the same qualitative effects on the real wage and employment in both the insider-outsider and the market-clearing frameworks. By contrast, policies which shift the wage setting function but not the labor supply curve have different qualitative effects in the two frameworks. Here the distinctive insider-outsider features of our analysis have a special role to play in determining the effectiveness of economic policy.

Finally, as we have seen in the previous section, the aggregate wage-setting curve may be upward- or downward-sloping, but its slope is always of greater magnitude than that of the aggregate labor demand curve; whereas the slope of the aggregate labor demand curve is unambiguously negative. Thus, for both the Hiring and the Firing Scenarios, policies whose influence is attributable to the distinctive insider-outsider features of our analysis - in the sense that they lead to a shift of the aggregate wage setting function - invariably move the real wage and employment in opposite directions. In particular, an upward shift of the wage setting curve leads to a rise in the real wage and a fall in employment, whereas a downward shift of this curve has the opposite effects.

On the other hand, policies whose effectiveness does not depend on insider power - those which shift the labor demand curve but leave the wage setting curve unchanged - have an ambiguous effect on the real wage, since the slope of the wage setting function is ambiguous. This ambiguity is of no particular concern to us here, since only the policies which operate through insider-outsider channels are the focus of attention in this paper. To fix ideas in the policy analysis below, we will assume that the wage setting function is upward-sloping (so that an upward shift of the labor demand curve leads to a rise in the real wage).[19]

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[19]Observe that, even in the absence of the assumption that the wage setting curve is upward-sloping, the employment effects of these policies is unambiguous, since the slope of the wage setting curve is of greater magnitude than that of the labor demand curve. (Thus an upward shift of the labor demand curve invariably leads to a rise in employment, and obversely for a downward shift.

a. Employment-Promoting Policies

In the context of the model above, we will examine the effects of three employment-promoting policies: government investment in industrial infrastructure, reductions in payroll taxes (falling proportionately on all employees), and measures to open the economy to foreign competition.[20]

Government infrastructure investment gives rise to an increased availability of particular government goods and services to the private production sector, such as roads, railways, harbors, sewage systems, and police services. Let us assume that, in response, the marginal product of all workers rises proportionately. We portray this by a rise in the shift parameter B of the firms' production functions (in equation (4)).

As result both the aggregate wage setting curve and the aggregate labor demand curve shift upwards. Consequently the real wage rises,[21] whereas the change in employment is ambiguous.

Observe that government infrastructure investment has a more powerful impact on real wages and a weaker impact on employment in our insider-outsider context than under the analogous market-clearing conditions. The reason is that this policy raises the wage setting curve in our model, whereas it leaves the labor supply curve unchanged.

A *fall in the payroll tax rate* may be portrayed by a fall in the parameter τ. As result, the aggregate labor demand relation shifts upwards in all three scenarios, since the policy reduces the marginal cost of labor. The wage setting function shifts upwards as well in these scenarios, since the policy raises the firm's profit surplus. By implication, a fall in the payroll tax rate raises the real wage, but the change in aggregate employment is ambiguous.

Thus we can see that a fall in the payroll tax rate provides a stronger stimulus to the real wage and a weaker stimulus to employment

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[20]Since our model is not one of economy-wide general equilibrium, we will ignore how these various policies are financed.

[22]In all our policy exercises we assume that the ratio of consumer to producer prices remains unchanged, and thus - in the absence of a change in the payroll tax - the consumption wage and the production wage in our model always move in the same direction.

[22]Under the Retention Scenario, clearly, there is only a fall in the real wage.

under the insider-outsider conditions above than under market-clearing conditions. When the labor market clears, the aggregate labor demand relations shifts upwards along an unchanged labor supply curve, and thus the employment level and the real wage both rise. By contrast, under insider-outsider conditions we have seen that the wage setting function shifts upwards as well as the aggregate labor demand relation, and the rise in the wage setting function boosts the wage and dampens employment.

Measures to *open the economy to foreign competition* - such as reductions in tariffs and in administrative restrictions on import flows - generally may be expected to raise the price elasticity of product demand. Thus, we depict this policy by a rise in η. As result, the index of monopoly power in the product market (e, defined in equation (8)) falls.

This decrease in firms' market power leaves the wage setting function unchanged in all three scenarios. However, the policy does shift the aggregate labor demand function upwards (in Figures 2), since the fall in monopoly power stimulates employment by raising the marginal value product of labor (as shown in equation (7)). Consequently, there is a rise in employment and the real wage. Thus policy measures to open the economy to foreign competition have the same qualitative effects in our insider-outsider framework as in the corresponding market-clearing framework.

b. Power-Reducing Policies

There is a wide variety of policies which serve to reduce the market power of insiders, ranging from legal restrictions on strikes and picketing to relaxing job-security legislation (e.g. laws to reduce severance pay or to simplify firing procedures). In the context of our model, these policies may be portrayed in terms of (i) a fall in the "a", measuring the relative bargaining strength of the insiders, and (ii) a fall in the real firing cost per insider, $\underline{f}$.

A fall in "a" means that insiders are able to capture a smaller share of the total available economic rent from employment. Thus the wage setting function shifts downwards (*ceteris paribus*) in all three scenarios. The aggregate labor demand relation remains unaffected. Consequently, there is a rise in aggregate employment and a fall in

the real wage under the Hiring and Firing Scenarios.[23]

A fall in the real firing cost $\underline{f}$ leads to a downward shift of the segment of the aggregate labor demand relation which pertains to the Firing Scenario (*ceteris paribus*). The reason is that, in this scenario, the real wage is equal to the sum of the real marginal value product of the initial insider workforce and the real firing cost per insider, $\underline{f}$. In addition, the wage setting function in the Firing Scenario shifts downwards (for, the smaller the real firing cost, the greater the firm's profit surplus). By implication, the real wage falls in this scenario, but the change in employment is ambiguous. By contrast, the policy has no effect on the real wage and the level of employment in the Hiring and Retention Scenarios.[24]

It is important to note, however, that the power-reducing policies are not Pareto-improving: they generally lead to the employment of outsiders at the expense of reducing the insiders' labor income. Consequently, the implementation of these policies is likely to encounter all the various difficulties, political and social, that are commonly associated with the loss of market power by privileged interest groups and with conflicts over the distribution of income.

This could be a serious obstacle to implementing these policies. Since the insiders stand to lose, they may be expected to resist these policies by engaging in more rent-creating activities - ranging from harassment of workers who seek to gain jobs through underbidding, to the withdrawal of cooperation from such workers in the process to production, to staging strikes and work-to-rule actions, to litigation over firing procedures. In particular, power-reducing policies may give the insiders incentives to engage in rent-seeking activities by making these activities more effective by generating an income effect. For reasons lying outside our particular analytical framework, an expansion of such activities may raise insiders' bargaining strength (a) or the real firing cost ($\underline{f}$), so as to shift the wage setting

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[23]Under the Retention Scenario, clearly, there is only a fall in the real wage.

[24]This last result is an artifact of the static setting of our model. Whenever firms face the possibility that currently hired employees may have to be fired in the future (say, on account of adverse swings in product demand), a fall in firing costs tends to have the same effect on wages and employment as it does in the Firing Scenario. (See, for example, Lindbeck and Snower (1989b).)

function upwards.

In short, although policies that reduce the legal protection associated with insiders' jobs may have direct effects that stimulate employment, they may also have indirect effects on rent-creating activities that pull in the opposite direction. This deficiency is not restricted just to power-reducing policies. It is shared by any policy that reduces the insiders' labor income. For example, we have argued that the employment-promoting policy of opening the economy to foreign competition may also reduce the wages received by the insiders and thus are equally prone to stimulate insiders' rent-creating activities.

c. Enfranchising Policies

The primary purpose of the enfranchising policies is to give the outsiders a better chance of gaining employment and thereby become "enfranchized" in the wage negotiation process. These policies can take many forms. We consider a few prominent examples.

The labor market effects of *vocational training programs* - provided or subsidized by the government - may be usefully compared with those of government infrastructure investment (discussed above). Whereas the infrastructure investment may be expected to raise both the productivity of the current employees and the potential productivity of the outsiders, the vocational training programs are aimed expressly at the latter. Obviously, the impact of such programs depends on the degree to which workers' skills are general, rather than firm-specific. The greater the relative importance of general skills, the more outsiders may be enfranchized through the programs.

A formal analysis of these programs requires us to consider a broader class of production functions than that contained in our simple model above - in particular, functions in which the productivities of insiders and entrants can vary independently of one another. For production functions in which output depends on the sum of insiders' and entrants labor in efficiency units, it is straightforward to show - although, for brevity, we do not do so here - that vocational training programs which raise the entrants' marginal product have the same qualitative effects on the real wage and employment as government infrastructure investment that raises the marginal product of labor.

Profit-sharing schemes, whereby employees receive part of their

remuneration as a share of profits, are also straightforward to analyze in the context of the model above. In particular, let us assume that each employee's pay is the sum of (i) a time-rate "base" wage and (ii) a "profit-sharing component" which is the product of the firm's profit and a constant profit-sharing coefficient. Furthermore we assume that the profit-sharing coefficient is predetermined in the wage-employment determination process and may be influenced, directly or indirectly, by the government, while the base wage is the outcome of negotiations between each firm and its insiders (along the lines outlined above). Then it can be shown (although, once again, we do not do so here) that the greater the profit-sharing coefficient, the lower the negotiated base wage and the greater the level of employment. In other words, the greater the profit-sharing component of the employees' pay, the lower the marginal cost of labor (given by the base wage), and the greater the number of outsiders that firms are induced to hire. Once these outsiders become insiders, they gain power in future wage negotiations and use this power to retain their jobs by agreeing to comparatively low base wages. In this sense, our analysis supports Weitzman's contention that profit-sharing schemes promote employment and reduce unemployment (e.g. Weitzman (1987)).

These schemes may, however, encounter the same problems as the power-reducing policies: unless the profit-sharing component of labor remuneration is sufficiently large, the schemes will not be Pareto-improving and consequently they may promote rent-creating activity by the insiders. Yet that is not all. If the profit-sharing component is large enough to avoid this outcome, the scheme may cease to be profitable to the firms. Of course, firms may attempt to avoid this possibility through wage contracts which give the new entrants a permanently lower profit-sharing component than the current insiders. However, such two-tier wage systems may be unacceptable to the current insiders since they tend to be time-inconsistent: the firms will generally have an incentive to replace the senior workers by junior workers once the latter have acquired the requisite skills.

Furthermore, profit-sharing schemes *are* costly to implement. They may give workers the incentive to bear the costs of monitoring managers' profit accounting practices. Managers, for their part, may well wish to avoid a remuneration system that subjects them such monitoring. In addition, the profit-sharing schemes impose risk on employees, since the receipt of profit is uncertain and insurance against profit fluctuations is unavailable. To compensate workers for

the cost of such risk, firms may have to hand over a substantial share of their profit. All these problems, however, should not obscure the genuine possibility that the above-mentioned benefits of these schemes may in fact outweigh all the relevant costs.

Government policies to *reduce barriers to the entry of new firms* may be an effective way to enfranchise outsiders, because new firms generally start out without insiders and therefore may be in a good position to create new jobs. These policies may consist of the dismantling of government regulations concerning the creation of new firms, increasing competition among financial institutions with a view to reducing credit restrictions on new firms, changing the tax system (e.g. profit, income, capital gain, and wealth taxes) to put new firms at less of a disadvantage vis-a-vis established firms, and instituting measures to reduce the occupational, industrial, and geographic coverage of union wage agreements.

These policies have two reinforcing effects on employment in the context of our model:
(a) the direct effect of a rise in the number of firms in the economy is to shift the aggregate labor demand relation rightwards, thereby generating more employment at any real wage and
(b) an indirect effect may reduce firms' market power in the product market (represented by the coefficient e), thereby shifting the aggregate labor demand curve even further to the right under the Hiring and Firing Scenarios and shifting the wage-setting function downwards.

Finally, *job sharing schemes* deserve mention as an enfranchising policy. The aim of these schemes is to give insider status to a larger number of workers. These workers may then be expected to negotiate their future wages with a view to protecting their job security. In other words, the workers who gain employment through these schemes may have an incentive to keep wages sufficiently low to maintaining that employment. Thus, whereas the initial institution of job sharing may require legislative coercion, this arrangement may be perpetuated by decentralized wage bargaining. For brevity, we will not analyze these schemes formally here. Suffice it to say that job sharing schemes have a chance of being effective only if they do not substantially increase firms' hourly labor costs and only if they do not induce incumbents to engage in significant rent-creating activity.

In sum, supply-side policies may stimulate employment by making

all workers more productive, by reducing the market power of insiders, and by enfranchising the outsiders. However, some of these policies reduce the labor income of the current insiders and may therefore induce insider resistance in the form of rent-creating activities, which limit the overall employment gains. This specific problem is generally not shared by demand-side policies which improve the employment prospects of the outsiders without making the current insiders worse off. However, the demand-side policies - as noted below - are associated with other difficulties.

6. Demand-Side Policies

Demand management policies which are designed to influence employment may be divided into two broad groups: (i) variations in government employment and (ii) government policies that affect aggregate spending in the product market.

The first type of policy is of substantial practical importance, but it does not need much attention here, since its effects are quite straightforward in the context of our model. A rise in government employment shifts the aggregate labor demand relation outwards, and thereby leads to a rise in employment and the real wage. Note that this policy does not affect the position of the wage setting curve and thus the impact on the real wage and employment are the same under market-clearing and insider-outsider conditions.

The second type of policy is concerned exclusively with the transmission of policy impulses from the product to the labor market. In the Keynesian literature, this transmission depends on the assumption of either sluggish nominal wages, or sluggish prices, or both.

We do not dispute that the Keynesian channels of policy transmission from the product to the labor market may operate under the various circumstances under which wages and prices may be expected to be sluggish (e.g. government price fixing or long-term wage contracting). Yet it is nevertheless worth asking if there are transmission mechanisms whereby variations in aggregate product demand affect employment even when wages and prices are set flexibly under conditions of imperfect competition. The model above is designed to handle this question, since it contains imperfectly competitive price and wage setters and since prices and wages are assumed to respond immediately to government policies.

The demand management policies in the product market may be represented quite generally by the parameter A in the aggregate product demand function (1). (The parameter may, for example, stand for government expenditures, transfers, or taxes.) To fix ideas, suppose that this parameter rises, while the market power parameter e, the payroll tax rate τ, and the parameters of the production function (B and α) remain unchanged. Clearly, a rise in parameter A can influence the equilibrium real wage and employment level in our model only if it shifts either the aggregate labor demand function or the wage setting function, or both.

To see whether the rise in A shifts the labor demand function (in real wage - employment space), we inquire whether it affects the firm's profit-maximizing level of employment at any given real wage. In other words, we ask whether a rise in A alters the profit-maximizing employment level when the nominal wage (W, which is exogenous to the firm's decision making) rises proportionately to the price level (P, which is set by the firm). For this purpose, let us return to the firm's marginal conditions, in equations (7) and (10), according to which the profit-maximizing employment level brings the marginal revenue product of labor (plus the firing cost, in the Firing Scenario) into equality with the nominal wage (inclusive of the payroll tax). In this context, it is clear that an increase in A raises the demand price P (at any given level of output) and thereby raises the marginal revenue product of labor. If the nominal wage (W) rises proportionately to P, then the marginal cost of labor rises proportionately to the marginal revenue product of labor (as equations (7) and (10) show). By implication, the aggregate labor demand relation is not affected by the rise in A, provided that e, τ, B, and α all remain unchanged. This can be seen at a glance by observing that the parameter A does not appears neither in the aggregate labor demand relation, as given by (10a)-(10c).

Nor does the parameter A appear in the wage setting functions (18a) and (18b). In other words, demand management policies which shift the parameter A - without affecting the relative bargaining strength of the insiders vis-a-vis their firm (a), the threat-point wage (w_o), and the production function parameters (B and α) - have no effect on the wage setting function in real wage-employment space. The reason is that a proportional change in P and W leads to a proportional change in the bargaining objectives of the firms and their insiders and no change in the relative profitability constraint.

Thus it leaves the real wage that emerges from the bargaining process is unchanged as well.

We may conclude that a demand-side policy whose only impact effect is to change the demand parameter A - without simultaneously affecting the price elasticity of product demand, the number of firms in the economy, the marginal product of labor, the relative bargaining strength of the insiders vis-a-vis their firms, and the threat-point wage - has no effect on employment and the real wage in the context of our model.

This negative conclusion also have a positive side, namely, that demand management policies in the product market can influence the labor market in various ways, the following of which strike us as particularly important:

(i) *Entry of firms*: If a rise in government product demand creates incentives for the entry of new firms, then the aggregate labor demand relation shifts upwards (as we have discussed in connection with government policies to reduce barriers to the entry of new firms). If new, entering firms compete with the old ones in the product market, each firm's monopoly power in that market may fall, thereby leading to a further rightward shift of the labor demand relation. Moreover, a rise in the number of firms leads to an upward shift of the wage setting function.[25] Consequently, the real wage rises by more than it does under market-clearing conditions, whereas employment rises by less - and possibly even falls.

To see how a rise in product demand could lead to the entry of new firms, suppose that the nominal wage does not respond promptly to the policy whereas prices do (or, more generally, that nominal wages are more sluggish than prices). Then the policy leads to a rise in the product price and a fall in the real wage, and thereby raises the profit to be earned by each firm. This encourages the entry of new firms. Then, even if the real wage returns to its initial level, the aggregate demand for labor remains above its initial level (because

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[25]For any given level of aggregate employment, a rise in the number of firms is associated with a fall in employment (n) by the representative firm. By the microeconomic wage setting functions (18a) and (18b) a fall in the firm's employment level is associated with a rise in the real wage.

the number of firms, M, has increased and their market power, e, has fallen). For this reason the aggregate labor demand relation shifts to the right.[26] As noted above, however, the resulting stimulus to employment is at least partially offset by the upward shift of the wage setting curve.

(ii) *The marginal product of labor, B:* As we have seen, a rise in the shift parameter, B, of the production function shifts both the wage setting curve and the aggregate labor demand curve upwards (by equations (20a-c)). Consequently a demand-management policy operating through this channel of transmission has a stronger effect on the real wage and a weaker effect on employment under insider-outsider conditions than under market-clearing conditions.

There are two main ways in which expansionary demand management policy could raise the marginal product of labor: First (as noted in Section 5), it could do so directly, through government spending that increases the economy's industrial infrastructure. Second, the policy could have an indirect effect on the marginal product of labor by stimulating the use of factors which a complementary to labor (or discouraging the use of factors which are substitutes for labor).

The latter channel may have a particularly important practical role to play when the policy raises firms' rates of capital utilization under conditions of excess capital capacity. This is likely to happen when the economy is recovering from a recession and workers are recalled to man vacant machines and bring established assembly lines back into operation. The capital equipment that comes into use under these circumstances is generally complementary to labor. Once the capital utilization rate is sufficiently high, firms may have an incentive to engage in net investment. The resulting rise in the capital stock may further raise the marginal product of labor. (A formal analysis of this policy effect is given in Lindbeck and Snower (1987b) and lies beyond the scope of our model.)

Our discussion above suggests three potentially important channels

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[26] For a detailed analysis of this transmission mechanism, see Lindbeck and Snower (1987b).

of transmission, each of which has noteworthy policy implications and each of which has a weaker impact on employment under insider-outsider conditions than under market-clearing conditions:

- There is a *short-run* channel, whereby changes in product demand affect the level of capital utilization which, in turn, affects the marginal product of labor. This channel is open whenever excess capital capacity exists; it does not depend on the level of unemployment. By implication, an increase in government product demand may lead to an increase in employment at constant or rising real wages when there is excess capital capacity, but not once full capacity utilization has been reached.
- In the *medium run*, there is a channel involving the entry (and exit) of firms. In order for this channel to be operative, it is important that the demand-side policy be supported by the relevant supply-side policy, viz, the removal of barriers to the entry of firms. There is also a medium-run channel whereby a rise in product demand stimulates net investment, and this channel is operative only when the rate of capital utilization is sufficiently high.
- The *long run* channel involves the buildup or rundown of industrial infrastructure. Here, the policy operates simultaneously on the demand side (via changes in government spending) and the supply side (via changes in the economy's production possibility frontier). Our analysis implies that demand-side policies with such supply-side effects may have a much larger impact on employment than policies (such as changes in transfer payments or government consumption) which do not affect labor productivity.

7. Concluding Remarks

It is important to emphasize that our results have been derived within a static context. Although a dynamic analysis lies beyond the scope of this paper, the dynamic effects of the policies above may be just as important as the static ones. The main source of dynamics implicit in our model is that the initial insider workforce depends on past employment: the greater the number of entrants hired in the past, the greater the number of insiders firms inherit at present. This means that a supply- or demand-side policy which leads to a rise in current employment will raise the future insider workforce. Thus the aggregate labor demand relation shifts rightwards through time, thereby generating a rise in future employment and wages.

Elsewhere, it has been shown that these persistent effects of policies may be "symmetric" and/or "asymmetric". Under symmetric persistence, the future employment rise from a current expansionary policy is just as large as the future employment fall from a contractionary policy of equal magnitude; whereas under asymmetric persistence, contractionary policies have a stronger effect on future employment than expansionary policies do. (See, for example, Lindbeck and Snower (1987a, 1989a).) In countries with high unemployment and significant symmetric persistence, a particularly strong case could be made for expansionary demand-side policies and employment-promoting supply-side policies, since current policy shocks - even if they are transient - will raise employment in the future. Yet in countries with significant asymmetric persistence, such policies may not be very effective: whereas contractionary policies may reduce employment, the expansionary ones may do little to stimulate it. Under these circumstances, the power-reducing and enfranchising supply-side policies may be called for, in order to create greater equality of opportunity in the labor market and thereby make the other policies above effective. The study of these policy issues appears to be a promising area for future research.

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