Insider Power, Wage Discrimination and Fairness

Ernst Fehr; Georg Kirchsteiger

INSIDER POWER, WAGE DISCRIMINATION AND FAIRNESS*

Ernst Fehr and Georg Kirchsteiger

The exercise of insider power is frequently considered as a major cause of involuntary unemployment. We show that under standard assumptions – insiders are selfish and they need not fear the loss of their job – insider power does not cause unemployment but leads to the introduction of a market clearing two-tier wage system.

Yet, while insider power is a common phenomenon two-tier systems are rarely observed. To explain this fact we introduce interdependent preferences. We show that if entrants exhibit a preference for fairness the presence of insider power gives rise to an efficiency wage effect which may prevent the introduction of market clearing two-tier systems.

In many OECD-economies employees have the power to bargain collectively with the management over their wages. It is obvious that if wages are not determined by competitive market forces but by collective bargaining at the firm level they will only by chance coincide with the market clearing wage rate. Therefore, it seems rather likely that the exercise of insider power will in general lead to wages which generate unemployment. However, almost the whole literature which deals with insider power as a source of unemployment *assumes* the absence of two-tier wage systems. In a two-tier system incumbents get paid high wages while entrants[1] receive lower, possibly market clearing, wages.

This paper shows that under 'standard' assumptions, that is, powerful and selfish insiders bargain collectively over wages, both the firm and its incumbents are strictly better off when they implement a market clearing two-tier system. From this follows that a theory of unemployment which is based on the notion of insider power should not merely assume *but explain the absence of a market clearing discriminatory wage system.*

We know only of one model in which unemployment is caused by insider power although it does not rule out a two-tier system by assumption. In Lindbeck and Snower (1988) incumbents have an interest in restricting the employment of additional workers because their wages depend positively on the marginal product of labour which in turn decreases with employment. By harassing entrants insiders are capable of raising the reservation wages and, hence, of reducing the employment of entrants.[2]

The present model is not based on insiders' capabilities to harass entrants. It

---

[1] Throughout the paper the term entrant means workers who are newly employed in addition to or in place of incumbents.

[2] In Fehr (1990) it is argued, that if harassment is costly to the harasser, it is no longer a credible threat in the Lindbeck/Snower model. Moreover, Fehr proposes two discriminatory wage systems both of which remove the dependance of insider wages on the marginal product of labour and, thus, eliminate the incentive to restrictive employment. In their reply Lindbeck and Snower (1990) question the feasibility of these contracts.

relies instead on the notion of fairness (reciprocity) or equity which has been proved to be relevant in numerous experiments conducted by social psychologists (for a survey see Mowday (1991)). These experiments show that in situations in which experimental subjects feel themselves to be underpaid relative to the relevant reference agent, they respond with a reduction of effort. Recently, Fehr, Kirchsteiger and Riedl (FKR, 1992, 1993) have conducted a series of market experiments which confirmed the existence of important fairness (reciprocity) effects. The data of all of their experiments reveal a significant positive relationship between the effort and the relative income of workers which was measured as workers' income from trading divided by their firm's income from trading.

In the experiments conducted by FKR the natural reference agent for the workers were their trading partners, that is, the firm. In this paper we argue that in the context of a two-tier labour market a natural reference agent for entrants who have the same skills and who exhibit the same ascriptive characteristics (sex, race, etc.) as the insiders is the insider. As a consequence, entrants' conception of a fair wage is likely to depend positively on insider wages. Therefore, whenever employees have some discretion over their effort, a two-tier system is likely to weaken the firm's incentive system and will, thereby, cause a reduction of the effort of entrants because they feel themselves underpaid. This in turn provides the firm with an efficiency wage motive for setting entrant wages.

We show that if the effort-wage relationship of entrants is convex the firm will never introduce a two-tier system. Therefore, the enforcement of non-market clearing insider wages will also raise the wages of entrants above the market clearing level even if the firm is in principle not forced to pay entrants more than the market clearing wage. In case of a concave effort-wage relationship, some wage discrimination *may* be profitable. However, the wage differential will in general be smaller than in the absence of fairness effects and, hence, there may be equilibria with *non*-market clearing two-tier systems.

I. INSIDER POWER AND WAGE DISCRIMINATION

Consider a labour market with L identical workers and k identical firms. The reservation wage of workers is denoted by r. Without loss of generality we set $k = 1$. In each firm there are m insiders which bargain collectively with the management over their wage v. Insiders and entrants are only interested in their own wage incomes. Each employee provides one unit of effort. The wages of entrants are denoted by w, employment is denoted by n and the labour demand function by $n(\cdot)$. After the insider wage v has been fixed the firm has the right to determine employment n and the entrant wage w.

Insiders derive their power to bargain over the wage v from their ability to threaten to strike credibly and from the existence of replacement costs which renders the replacement of all insiders by cheap entrants unprofitable. We assume that at the reservation wage r aggregate labour demand $n(r)$ falls short of L (see Fig. 1). For convenience, we assume that insiders, although they do
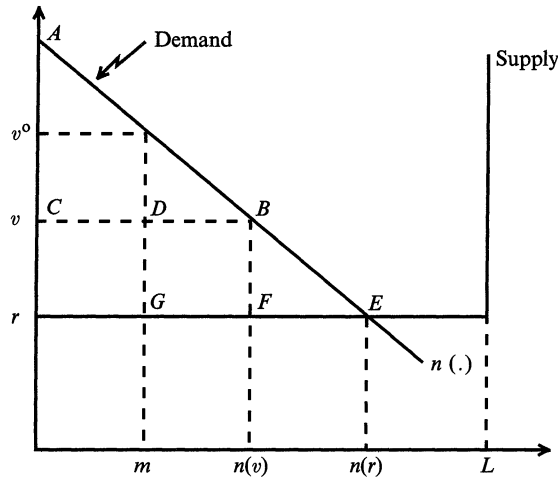
Fig. 1

have some power, are not powerful enough to enforce a wage which exceeds the marginal product of labour at m which is denoted by v^0. This means that for all wage levels which can be enforced by insiders, employment n will never be lower than m.[3] Insiders face, therefore, no layoff risk.

Now let us consider a situation in which the firm is (for some exogenous reason) constrained to pay all its workers the same wage, that is, $w = v$. Assume further that insiders and the firm agree upon a wage v which obeys $r < v < v^0$ (see Fig. 1). Employment is then given by $n(v)$ and profits are represented by the area ABC under the labour demand curve.

Next, we consider a situation in which the 'equal wage constraint' is removed. Then, instead of employing only $[n(v) - m]$ entrants at a wage of v it is possible to employ $[n(r) - m]$ entrants at a wage of r while insiders still may receive v. This arrangement increases profits by the area $DBFG$, which represents the wage savings for $[n(v) - m]$ entrants, plus the area BEF, which represents the increase due to the employment of $n(r) - n(v)$ additional entrants. With powerful insiders the firm is, however, not in a position to reap all the gains from this arrangement because insider wages depend in general positively on the total cake that is available. Insiders are, therefore, able to appropriate a part of the increased cake in the form of higher wages.[4] As a result, both the firm and its insiders gain from the implementation of a market clearing two-tier system.

The above analysis suggests that with powerful and purely egoistic incumbents we should observe multi-tier-systems. However, while the existence of insider power is a widespread phenomenon, wage discrimination between

[3] In Fehr and Kirchsteiger (1992) we derive the results of this section more rigorously. We consider an explicit non-cooperative bargaining process between a coalition of m insiders and the firm. We show that no result depends on the assumption that $v < v^0$. The paper is available on request.

[4] This proposition has been proved explicitly in Fehr and Kirchsteiger (1992). More specifically, we have shown that a market clearing two-tier system increases insider wages by $\alpha \%$ of the area BEF where α denotes the exponent for insiders in the asymmetric Nash-product.

homogeneous workers is rarely observed. We know of only one well documented exception: the US-airline industry. After deregulation of this industry two-tier wage systems became an established industry practice by 1986 (Walsh, 1988, p. 50). It seems that some of the mechanisms of the above model have been effective in this case. In particular, both the firm and incumbents benefited from the new system: 'Wage increases for incumbent workers were frequently negotiated simultaneously with two-tier wage structures'. To some extent the gains have been reaped by incumbents in the form of voluntary separation/ early retirement provisions which were 'frequently negotiated in conjunction with two-tier wage structures. Adopted to help trim the ranks of the more expensive A-scale workers, these arrangements entailed substantial outlays by carriers'. (Walsh, 1988, p. 57).

Although the example of the US-airline industry indicates that under certain circumstances the above model may be applicable the infrequent occurrence of overt wage discrimination suggests that our model is at least incomplete. On the other hand we want to emphasise at this point, however, that the basic ingredients of our model without discrimination are by now very common in the literature which deals with the effects of insider/union power on employment.[5] These models and their (implied) explanations of unemployment are, therefore, also incomplete because, although there is a strong incentive for wage discrimination, they do not explain its absence.

II. FAIRNESS AND WAGE DISCRIMINATION

II.1. How Can We Explain the Absence of Wage Discrimination?

What are the reasons for the fact that two-tier wage systems are rarely observed in economies with insider power? One possibility is that insiders do not only care about their own welfare but also about the welfare of co-workers. Although altruistic insider preferences could explain the rarity of wage discrimination economists usually dislike this sort of explanation.[6] Almost all models of insider power are based on the assumption of non-altruistic insiders. If it were impossible to provide an explanation on the basis of the assumption of non-altruistic insider preferences all those theories which explain un-employment by the exercise of the power of non-altruistic insiders would be questionable. Because then one would have to take into account the altruism of insiders already at the point where one aims at the explanation of unemployment and not only at that stage of the analysis where one wants to rule out market clearing two-tier wage systems.

A more promising explanation relies on an intertemporal argument. The implementation of a two-tier system is likely to weaken the *future* bargaining position of highly paid incumbents. First of all it is quite probable that the workers paid a lower wage will not be very enthusiastically engaged in future collective actions. Since in a permanent two-tier system they receive only their

---

[5] See e.g. Carruth and Oswald (1989, chapter 7) or Layard et al. (1991, chapter 2).

[6] 'Few economists would want to take an axiom of unselfishness as the foundation stone upon which to construct a theory of trade union actions' (Carruth and Oswald 1987, p. 441).

reservation wage they have no active interest in participating in collective actions and if the firm offers them small benefits they are prepared to act as strike breakers. The employment of cheap workers is also likely to reduce the replacement costs because after some time they become acquainted with the idiosyncratic features of their jobs. Therefore, the losses which occur in case of the replacement of all insiders are likely to become lower and after some time they may have fallen sufficiently to curb the wage demands of the insiders.

Thus, there are reasons for selfish insiders to prevent the implementation of a two-tier wage system. The relevance of such reasons seems also to be confirmed by the experience of the US-airline industry.[7] Despite this we think that this explanation is still not the whole story because it relies only on the long term interests of powerful incumbents while – in the light of the analysis of Section I – firms still have a strong interest in the implementation of two-tier wage systems. If only incumbents were interested in 'equal pay for equal work' we would expect strong conflicts of interest between the two parties. Firms would consistently try to implement wage discrimination and, given the different degrees of insider power and the diversity of circumstances in reality, one would predict that sometimes firms will win the conflict and sometimes the union of incumbents successfully prevents discrimination. But in the reality of those economies in which insider power is prevalent there seem to be almost no overt conflicts about this issue and firms do not seem to be eager to introduce multi-tier systems. As a result multi-tier systems are almost non-existent. This points towards the need to explain why firms may not be interested in wage discrimination.

II.2. *Fairness and Equity Effects*

During the last decade an increasing number of (experimental) economists seemed to have recognised the potential impact of fairness considerations on economic transactions.[8] Kahneman, Knetsch and Thaler (KKT 1986a) derived norms of fairness from answers of interview partners to hypothetical questions. They conclude that each party of an economic transaction is entitled to the terms of a so-called reference transaction. A reference transaction may for example be determined by past exchanges of the trading partners or by the terms of trade one party concedes to a third party in a similar situation. In KKT (1986b) these authors also provide some experimental evidence that subjects are willing to forgo some money in order to enforce norms of fairness.

The concept of a reference transaction plays also a prominent role in Equity Theory. This theory has been developed by Adams (1963a, b) and has triggered an impressive amount of experimental research by social psychologists (see Mowday (1991) for a recent survey). According to this theory inequity

---

[7] 'B-scales may also prove useful to carriers in restraining future wage increases for A-scale workers.... In case of permanent two-tier plans, the pressures for elimination of the B-scale are apt to be especially severe, and unions are left with little choice but to make such changes a major focus of negotiations.... A focus on B-scale workers might explain the outcome of the negotiations between American and its pilots at the end of 1985, when, under a wage re-opener provision following a highly profitable year, bottom-tier pilots averaged 25% increases while A-scale workers received average rises of only 4% (Walsh, 1988, p. 60).

[8] For example: Akerlof (1982); Akerlof and Yellen (1988, 1990); Carruth and Oswald (1989, chapter 5); Layard *et al.* (1991, pp. 158–60).

exists for an agent A if the relation between perceived inputs and perceived outputs, I_A/O_A, is different from I_R/O_R of the relevant reference agent R. In the context of work relations the input is for example the (perceived) effort of a worker while the output is his wage whereas the relevant reference agent may be a close friend or the employer or other (not necessarily equally skilled) workers in the same or similar firms. Akerlof and Yellen (1990) for example, assume that workers of a particular skill compare themselves with more highly paid and better skilled workers.

An agent who perceives himself to be unfairly treated tries to restore equity by adjusting either his inputs or his outputs.[9] Since at the work place the output (wage) cannot be unilaterally changed by employees they are likely to respond mainly by input (effort) variations. In case of overpayment, i.e. when the effort/wage ratio, e/w, is lower than the ratio of the reference agent equity theory predicts that workers increase e whereas in the opposite case of underpayment they reduce e in order to remove the psychic tensions caused by inequity.

The experimental data are in general relatively favourable for the underpayment prediction of the theory while in situations of overpayment the evidence is mixed and somewhat inconclusive.[10] According to the experimental data, effort is an increasing function of the wage paid in an underpayment situation while for an overpayment situation wage increases do not affect effort or are at least negligible.

II.3. *Fairness Preferences*

In our view the concept of a reference transaction is particularly compelling in the context of two-tier wage systems which discriminate between identically skilled workers. It is quite natural that entrants with a lower wage feel themselves underpaid because they get less for the same work. Because of this unambiguous determination of the reference transaction equity theory seems to be particularly applicable to the problem of two-tier systems.

To apply equity theory more rigorously to our context it is useful to ask what sort of preferences and constraints may cause the relationship between effort and wages revealed in the above mentioned experiments. A necessary condition is that employees have some discretion over their effort. This means that effort is not a perfectly observable and verifiable variable because if it were no effort-enforcement problem exists. In addition the positive effort wage relationship in underpayment situations must not be due to pecuniary reward/penalty effects of wage variations because otherwise the theory is not distinguishable from other efficiency wage theories. If, for example, higher wages are associated with

---

[9] Adams considers in fact a number of additional inequity resolving methods. But almost all experiments have dealt with the variation of work effort.

[10] In a recent survey the author concludes: 'Research support for the theory appears to be strongest for predictions about underpayment inequity. Although there are fewer studies of underpayment than of overpayment, results of research on underpayment are relatively consistent and subject to fewer alternative explanations. There are both theoretical and empirical grounds for being cautious in generalising the results of research on overpayment inequality to employee behaviour in work organisations...Differences in productivity and satisfaction due to overpayment inequity are often in the predicted direction but fail to reach acceptable levels of statistical significance.' (Mowday, 1991, p. 120.)

a larger penalty for shirking because in case of a dismissal the employees' loss is larger, effort will in general be an increasing function of the wage, too (Fehr, 1984, 1986; Shapiro and Stiglitz, 1984). But fairness and equity considerations then only provide a distinct explanation of the effort–wage relationship if wage variations are not associated with a change in the pecuniary incentive structure. Fairness and equity effects must, therefore, be due to the impact of wages on the *voluntary* provision of effort. Or put differently: Wage variations cause variations in the marginal rate of substitution between income and effort. To be more specific we assume that the utility functions of entrants (u^e) and insiders (u^i) are given by

$$u^e = w + z(f^e, e^e),\qquad (1\,a)$$

and

$$u^i = v + z(f^i, e^i),\qquad (1\,b)$$

respectively. Entrants (insiders) perceive the fairness of their wage as f^e (f^i) whereas e^e (e^i) denotes the effort of entrants (insiders). The term $z(f^e, e^e)$ [$z(f^i, e^i)$] represents the entrants' [insiders'] utility from the fairness-effort bundle. z satisfies the following assumptions:

$$z_f > 0, \quad z_{ff} < 0, \quad z_{ee} < 0, \quad z_{ef} > 0.\qquad (2)$$

In addition we assume that entrants perceive the fairness of their wage according to

$$f^e = \begin{cases} 1 \\ w/v \quad \text{for} \\ 0 \end{cases} \begin{cases} w \geqslant v \\ w^o < w < v, \\ w \leqslant w^o \end{cases}\qquad (3\,a)$$

where w^o denotes the minimum wage below which perceived fairness is zero.[11] The perceived fairness of insider wages can be defined analogously by

$$f^i = \begin{cases} 1 \\ v/w \quad \text{for} \\ 0 \end{cases} \begin{cases} v \geqslant w \\ w^o < v < w. \\ v \leqslant w^o \end{cases}\qquad (3\,b)$$

Finally, we assume that the marginal utility of effort is always negative if fairness is at its minimum level and positive over an initial range if f is positive:

$$z_e = \begin{cases} < 0 \quad \text{for all } e > 0 \quad \text{if} \quad f = 0 \\ > 0 \quad \text{for some } e > 0 \quad \text{if} \quad f > 0 \end{cases}.\qquad (4)$$

Assumption (4) together with $z_{ef} > 0$ captures the idea that the less unfair workers perceive their wage the more they are willing to provide effort voluntarily.

[11] Notice that in reality it may not be only the relation of w and v which affects the perceived fairness of w. For example, wage differentials between skilled and unskilled workers may be regarded as unfairly high by the unskilled (Akerlof and Yellen, 1990); or wages may be regarded as unfairly low relative to the firm's profit (FKR, 1992, 1993). In our analytical derivation we abstract from these effects to present our point as clearly as possible.

As already mentioned fairness and equity considerations are a distinct source of effort variations if they are different from penalty effects. Therefore, let us assume that individual effort is completely unobservable such that workers have to fear no penalty at all. Then, for given wages w and v, entrants choose e^e to satisfy

$$\delta u^e / \delta e^e = z_e(f^e, e^e) = 0, \tag{5}$$

while the first order condition for insiders is given by $z_e(f^i, e^i) = 0$. These conditions give us e^e and e^i as a function of f^e and f^i, respectively. With respect to e^e assumptions (1)–(4) lead to

$$e^e = e^e(f^e) \quad e^e(w \leqslant w^0) = 0, \quad e^e(w^0 < w < v) > 0, \quad e^e(w \geqslant v) = e(1),$$
$$\delta e^e / \delta w = (\delta e^e / \delta f^e)\,(\delta f^e / \delta w) = 0 \quad \text{for} \quad w \leqslant w^0 \quad \text{and} \quad w \geqslant v,$$
$$\delta e^e / \delta w = (\delta e^e / \delta f^e)\,(\delta f^e / \delta w) > 0 \quad \text{for} \quad w^0 < w < v. \tag{6}$$

By exchanging the roles played by w and v in (6), the properties of the $e^i(f^i)$-function are derived. In Fig. 2 we illustrate entrants' effort–wage relationship
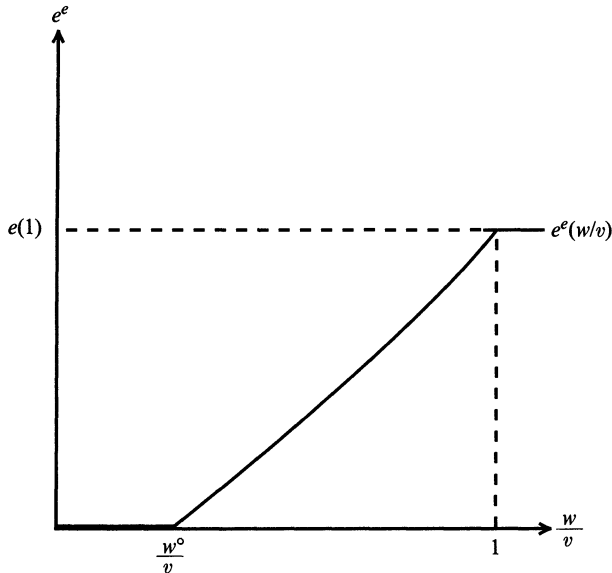

Fig. 2

(for given reference wages v). It represents the essence of the experimental data mentioned in the previous section. Maximum effort occurs at $w \geqslant v$ and is denoted by $e(1)$. Notice that at $w/v = 1$ the function exhibits a kink because f^e remains constant for all $w > v$.

The importance of reciprocity or fairness effects like those derived in this section and the implied existence of a positive relationship between effort and wages has recently been confirmed by the results of a series of 8 market experiments (FKR, 1992, 1993). These experiments had two stages: At the first stage a one-sided oral auction with firms as wage makers took place. At this

stage firms and workers[12] were matched (more or less randomly) and the wage was determined. At the second stage workers had to choose their effort levels. Stage 1 and stage 2 together constituted one round and each experimental session lasted 8–12 rounds. Workers and firms were located in separate rooms.

For our purposes here, the crucial features of these experiments were (i) that firms and workers were newly matched after each round and firms had no possibility to punish a worker who chose a low effort, (ii) that subjects did not know the identity of their trading partners so that nobody could punish or reward the past actions of a specific subject and nobody could develop a reputation. (iii) Workers' effort costs were strictly increasing in the effort level. (iv) The effort choice of workers was only revealed to their (unknown) trading partner. Because of (i), (ii) and (iii) workers had *a pecuniary reason* to exert only the exogenously given minimum effort e^{min}. Because of (iv) group pressure could not evolve. (v) In each round a firm could hire at most one worker so that *at the effort stage* there was a *bilateral relation between the firms and 'its' worker*. (vi) Firms and workers knew the gains which were reaped by their trading partner (in a given round).

Despite the absence of any pecuniary incentive to provide effort above e^{min}, workers chose frequently $e > e^{min}$. Moreover, in *all experimental sessions* there was a statistically *significant positive relationship between effort and wages*.

Because of the more or less random nature of the matching procedure and because of (v) and (vi) above the natural reference agent for the worker in a given round was 'his' firm. The effort behaviour can, therefore, be explained by the concept of the perceived fairness of the wage offer in relation to the income of the firm with whom the worker was matched and the positive effort–wage relationship can be interpreted as an experimental confirmation of the behavioural importance of the concept of a reference agent.

In the context of two-tier systems a natural reference agent for entrants who are paid a low wage is likely to be the insider. Therefore, given this plausible change in the reference agent, the results of the experiments of FKR can be taken as evidence in favour of the model developed in this section. At this point it is worthwhile to stress that for our explanation of the absence of market clearing two-tier systems in the next section it is not necessary that insiders are the *only* reference agents for entrants. Our explanation is based on the assumption that insiders are *a* reference agent for entrants.

III. THE DETERMINATION OF ENTRANTS' WAGES

In this section we apply the results of the previous section to our model of wage discrimination from Section I. This requires the specification of several assumptions in more detail. Insiders and entrants now exhibit interdependent preferences as specified above. Output q is an increasing and strictly concave function of total effort E: $q = q(E)$. If there are m insiders each of whom provides effort e^i and $(n-m)$ entrants each of whom provides e^e, E is given by

---

[12] The participants in these experiments were students. The term 'workers' ('firms') refers to those participants who played the role of workers (firms) in the experiment.

$E = e^i m + e^e \ (n-m).$[13] The sequence of actions is as follows. First, insiders bargain with the firm over their wage v. Then at the second stage, when v is already given, the firm determines employment n and entrants' wages w. At the third stage, insiders and entrants choose their effort for given levels of w and v according to $e^i(f^i)$ and $e^e(f^e)$ as derived in the previous section.

In the following we assume that, at the first stage, insiders enforce a wage v above their reservation wage. The firm's maximisation problem at the second stage is then given by

$$\max_{n,w} \Pi = q[e^i(f^i) \, m + e^e(f^e) \ (n-m)] - vm - w(n-m). \qquad (7)$$

The first order condition for n yields

$$q'[E] \, e^e(f^e) = w. \qquad (8)$$

Since $e^e(f^e)$ is not differentiable with respect to w at $w = v$, we have to distinguish between an interior solution and a corner solution $w = v$. In the first case a two-tier system will result, in the second case insiders and entrants will be treated equally. At an interior solution the derivative of Π with respect to w is zero which yields:

$$q'[E] \left[\frac{\delta e^i}{\delta f^i} \frac{\delta f^i}{\delta w} m + \frac{\delta e^e}{\delta f^e} \frac{\delta f^e}{\delta w} (n-m) \right] = (n-m).$$

According to our discussion in Section II.3, for $w > v$, e^i is decreasing in w whereas $\delta f^e / \delta w = 0$. Therefore, the return of an increase in w, which is given by the left hand side of the above expression, is always negative and it is profitable to reduce w. By decreasing w the firm does not affect e^e while e^i increases because insiders are treated more fairly. It is thus never profitable to pay entrants more than insiders. For $w < v$, however, $\delta f^i / \delta w = 0$ whereas e^e is increasing in w. The returns of a wage increase are, therefore, positive and at an interior solution we have

$$q'[E] \, (\delta e^e / \delta f^e) / v = 1. \qquad (9)$$

Substituting (9) and $\delta f^i / \delta w = 0$ into (8) results in a condition which is analogous to the famous Solow-condition, namely

$$\sigma_{ef}(f^e) \equiv (\delta e^e / \delta f^e) f^e / e^e = 1. \qquad (10)$$

The firm chooses the wage for entrants such that the elasticity of effort with respect to perceived fairness equals one. This is also the condition for the maximisation of e^e per unit of w which of course has to be met in a profit maximum. If the effort function $e^e(f^e)$ is convex in the interval $[(w^0/v), 1]$ (see Fig. 2) the maximisation of e^e/w cannot occur below v. In this case we have a corner solution because $\sigma_{ef}(f^e)$ exceeds 1 for $w < v$ while for $w > v$ it is zero. Thus profits are maximised when

$$w = v, \quad f^e = 1, \quad e^e = e(1) \qquad (11)$$

[13] Thus we assume that an entrant's effort unit is a perfect substitute for an insider's effort unit. This assumption seems very natural because we deal with an equally skilled work force. Yet, it can be shown that our results do not depend on this assumption. (A formal proof is available from the authors on request.)

holds. Equations (10) and (6) – in the two-tier case – or (11) determine the profit maximising levels of e^e and f^e. The choice of these variables is not affected by v and n. The wages of entrants depend, however, directly on v but not on n. For given v, w is completely determined by the profit maximising level of f^e: $w = f^e v$. This implies that as long as insiders have enough power to enforce a wage v above their reservation wage there is no reason why the wage of the entrants, w, is at the market clearing level.

This is most easily seen in the case of a convex effort function because then wage discrimination is unprofitable and both insiders and entrants chose $e(1)$. Therefore, insiders and entrants have the same reservation wage and those who remain unemployed are worse off than the employed. In case of a two-tier system the situation is a little bit more complicated because due to $f^e < 1$ the utility of the fairness–effort bundle z is lower for entrants than for insiders. The reservation wage of entrants is, therefore, above the reservation wage of insiders. But since w is still rigidly tied to v, via $w = f^e v$, non market clearing wages for insiders may well imply non market clearing wages for entrants, too.[14]

IV. CONCLUDING REMARKS

In this paper we have shown that insider power alone is not sufficient for the explanation of unemployment. If there are powerful insiders both the firm and its incumbents gain by the introduction of a market clearing two-tier system. Yet, under the plausible assumption that the insider wage constitutes a fair reference wage for entrants an efficiency wage effect arises. The lower the entrant wage relative to the insider wage the lower will be the effort of entrants. It is shown that in case of a convex effort–wage relationship a two-tier system will be unprofitable. If the relationship is concave (in the relevant range) wage discrimination may be profitable to a certain extent. The resulting wage differential will, however, be in general smaller than the wage differential which arises in the absence of fairness effects. Our analysis therefore provides a rationale for the absence or smallness of wage discrimination among identically skilled workers within the same firm and, hence, for involuntary unemployment. We do not wish to claim, however, that our argument can be applied without modification to a non-homogeneous work force or to members of different social groups. While wage discrimination on the basis of, for example, sex and race is not that infrequent in industrialised economies it is much less frequently observed among members of the same social group. In view of our analysis one reason for this may be that the behaviourally relevant reference agent for, e.g. a black woman, is probably not the better paid black or white man but another black women with the same pay.

The efficiency wage relation which arises in our model is due to the joint effect of insider power and fairness preferences. If either of the two is absent the labour market clears. The analysis has been carried out under the simplifying assumption that workers face no pecuniary penalties when choosing a low effort

[14] For a formal analysis see Fehr and Kirchsteiger (1992).

level. Yet, in general, firms are able to devise incentive systems which provide workers with pecuniary effort incentives. As long as there is, however, a positive probability that low effort levels will not be detected by firms the basic mechanism which may render market clearing two-tier systems unprofitable remains intact: Unfair wage differentials give rise to an increase in the marginal disutility of effort which induces those who receive lower wages to reduce their effort. Of course, as the literature on efficiency wages (e.g. Bowles, 1985; Fehr, 1984, 1986; Shapiro and Stiglitz, 1984; Stoft, 1982) has shown unemployment may arise independently of insider power if workers are imperfectly monitored. But as our analysis indicates the existence of insider power is likely to cause additional efficiency wage effects.

University of Technology, Vienna

University of Vienna

REFERENCES

Adams, J. Stacy (1963a). 'Toward an understanding of inequity.' *Journal of Abnormal and Social Psychology*, vol. 67, pp. 422–36.
Adams, J. Stacy (1963b). 'Wage inequities, productivity and work quality.' *Industrial Relations*, vol. 3, pp. 9–16.
Adams, J. Stacy (1965). 'Inequity in social exchange.' In *Advances in Experimental Psychology* 2 (ed. Leonhard Berkowitz). New York: Academic Press, pp. 267–99.
Akerlof, George A. (1982). 'Labor contracts as partial gift exchange.' *Quarterly Journal of Economics*, vol. 97, pp. 543–69.
Akerlof, George A. and Yellen, Janet L. (1988). 'Fairness and unemployment.' *American Economic Review* (Papers and Proceedings), vol. 78, pp. 44–9.
Akerlof, George A. and Yellen, Janet L. (1990). 'The fair wage – effort hypothesis and unemployment.' *Quarterly Journal of Economics*, vol. 105, pp. 255–83.
Bowles, Samuel (1985). 'The production process in a competitive economy: Walrasian, Neo-Hobbesian, and Marxian models.' *American Economic Review*, vol. 75, no. 1, pp. 16–36.
Carruth, Alan A. and Oswald, Andrew J. (1987). 'On the union preferences and labour market models: insiders and outsiders.' ECONOMIC JOURNAL, vol. 97, no. 386, pp. 431–45.
Carruth, Alan A. and Oswald, Andrew J. (1989). *Pay Determination and Industrial Prosperity*. Oxford: Clarendon Press.
Fehr, E. (1984). 'Unfreiwillige Arbeitslosigkeit, Macht und asymmetrische Mobilitätskosten.' *Quartalhefte der Girozentrale*, Jahrgang 19, pp. 67–82.
Fehr, E. (1986). 'A theory of involuntary equilibrium unemployment.' *Journal of Institutional and Theoretical Economics*, vol. 142, no. 2, pp. 405–30.
Fehr, E. (1990). 'Cooperation, harassment, and involuntary unemployment: Comment.' *American Economic Review*, vol. 80, no. 3, pp. 624–30 and vol. 81, no. 1, p. 384.
Fehr, E. and Kirchsteiger, G. (1992). 'Insider power, wage discrimination and fairness.' Research Memorandum No. 298, Institute for Advanced Studies, Vienna.
Fehr, E., Kirchsteiger, G. and Riedl, A. (1992). 'Gift exchange in an experimental market,' Discussion Paper, University of Technology, Vienna.
Fehr, E., Kirchsteiger, G. and Riedl, A. (1993). 'Does fairness prevent market clearing? an experimental investigation.' *Quarterly Journal of Economics*, vol. 108, no. 2, pp. 437–59.
Kahneman, Daniel, Knetsch, Jack L. and Thaler, Richard (1986a). 'Fairness as a constraint on profit seeking: entitlements in the market.' *American Economic Review*, vol. 76, no. 4, pp. 728–41.
Kahneman, Daniel, Knetsch, Jack L. and Thaler, Richard (1986b). 'Fairness and the assumptions of economics.' In *Rational Choice – The Contrast between Economics and Psychology* (ed. R. M. Hogarth and M. W. Reder). Chicago: University of Chicago Press, pp. 101–16.
Layard, Richard, Nickell, Stephen and Jackman, Richard (1991). *Unemployment – Macroeconomic Performance and the Labour Market*. Oxford: Oxford University Press.
Lindbeck, Assar and Snower, Denis J. (1988). 'Cooperation, harassment, and involuntary unemployment: an insider–outsider approach.' *American Economic Review*, vol. 78, no. 1, pp. 167–88.

Lindbeck, Assar and Snower, Denis J. (1990). 'Cooperation, harassment, and involuntary unemployment: reply.' *American Economic Review*, vol. 80, no. 3, pp. 631–7.

Mowday, Richard T. (1991). 'Equity theory predictions of behavior in organizations.' In *Motivation and Work Behavior* (ed. R. M. Steers and L. W. Porter). New York: McGraw-Hill, pp. 111–30.

Shapiro, Carl and Stiglitz, Joseph E. (1984). 'Equilibrium unemployment as a worker discipline device.' *American Economic Review*, vol. 74, no. 3, 433–44.

Stoft, Steven (1982). 'Cheat threat theory: an explanation of involuntary unemployment.' (mimeo), Boston University.

Walsh, David J. (1988). 'Accounting for the proliferation of two-tier wage settlements in the U.S. airline industry, 1983–1986.' *Industrial and Labor Relations Review*, vol. 42, no. 1, pp. 50–62