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A THEORY OF EFFICIENCY WAGE WITH COMMUNITY-BASED INCOME SHARING

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Abstract

This paper uses efficiency wage theory and the existence of community based sharing to hypothesize that labor markets in developing countries have multiple equilibria—the same economy can be stuck at different levels of unemployment with different levels of wages. The result is constrained to poor economies where wage productivity models seem to be applicable and income sharing among the poor is prevalent. We establish a mutual reinforcement of income sharing and unemployment. That more unemployment leads to more income sharing is a logical extension of evidence and the fact that more sharing increases unemployment rates is established theoretically in our model. As a corollary, we show that within the same society, two different racial groups, that may be innately identical, can have different levels of unemployment and wages in equilibrium.

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1 Introduction

This paper revisits a theoretical literature of the eighties concerning unemployment in developing countries. Starting with the seminal work of Leibenstein (1957, 1958), there was a period of enormous research activity which tried to explain wage rigidity and unemployment in poor economies, where a higher wage meant better nutrition and greater labor productivity[1]. This literature was very influential; it triggered other explanations of involuntary unemployment, which relied on the idea of an 'efficiency' wage as epitomized in the paper by Shapiro and Stiglitz (1984), related the economics research to clinical evidence on nutrition and productivity (Osmani, 1990; Dasgupta and Ray, 1990) and entered textbooks of development economics as accepted wisdom (Ray, 1998).

While this literature successfully explained wage rigidity and unemployment in developing countries, it overlooked the possibility of a multiple-equilibrium result, which can have important policy implications. In this earlier literature a labor market in an economy typically had one equilibrium, which may be one of full employment or one in which there is involuntary unemployment. If, for instance, an economy had involuntary unemployment, then to shift the economy to full-employment or higher employment would require continuous policy intervention, whether it be a legislative measure or one involving taxes and employment subsidies.

This result changes sharply once we introduce a realistic and seemingly innocuous assumption into the above models. In much of the Leibensteinian efficiency wage models it is presumed that each worker consumes her entire wage. In reality this is

[1] See, for instance, Mazumdar, 1959; Mirrlees, 1975; Rodgers, 1975; Stiglitz, 1976; Bliss and Stern, 1978; Agarwala, 1979; Dasgupta and Ray, 1986, 1987; Guha, 1989.

of course not true. A laborer would typically consume only a fraction of her wage—even if it were close to 1. In itself, this would make no difference to the existing efficiency wage models, cited in footnote 1. But suppose we assume, realistically, that the fraction that a person consumes depends on certain features of the economy, such as the level of unemployment.--For instance, if unemployment increases, each worker will consume a smaller fraction of her wage, since she would typically be sharing her income with others in her community or family or caste-group, who are now unemployed. This modification paves the way for a new set of results. The same economy could now have several equilibria involving different levels of unemployment, including possibly an equilibrium with no unemployment. The standard efficiency wage model is good at explaining why economies have open unemployment with rigid wages, but it is ill-suited to explain why the same economy can over short periods of time move from one level of unemployment to another, with no visible adjustment processes at work.

This of course makes it possible to think of policy interventions, which entail a one-time government action to deflect the economy from one equilibrium to another. More surprisingly, it is now possible for an economy to have one equilibrium in which wages are low and unemployment high and another where wages are high with no unemployment, which has important implications for minimum-wage policy.

The model also sheds light on an inadequately understood feature of labor markets, namely the prevalence of divergent unemployment rates among groups or communities that are visibly different. Some of the most striking evidence on this comes from South Africa, where the unemployment rates across different racial groups can be widely disparate (Casale, Muller and Posel, 2004; Leibrandt, van der Berg and Bhorat

(2003). Our model helps us understand how such differences can be sustained and links these differences to other features of the economy and the racial groups and yields testable propositions.

The next section presents some of the evidence that motivates this paper, in particular, the importance and legitimacy of the claim that people in poor countries share resources. Section 3 presents our basic theoretical model of efficiency wage with multiple equilibria in the labor market. The paradoxical result concerning minimum wage legislation follows in section 4. Section 5 concludes the paper by commenting on some policy implications.

2 The Empirical Setting

The mushrooming literature on efficiency wages was a response to the widely documented but poorly-understood phenomenon of open unemployment and wage rigidity. This literature explained why wages may not decline in the face of unemployment. But this literature implies that for each economy there is only one level of unemployment that can be an equilibrium. In reality, countries seem to settle into different levels of unemployment for certain stretches of time. In the US, during 1991 and 1992, the unemployment rate was almost 7.1%, but during the two years, 1999 and 2000, it held steady at 3.8%. It has risen back, again, since then.

Similarly, in societies where the labor market happens to be fragmented, one often finds large differences in the unemployment rates. In South Africa, the Labor Force Survey of 2003 reports an unemployment rate of 10% for Whites and 50% for Africans (Casale, Muller and Posel, 2004). The model we develop below directly addresses the

subject of different resting points as far as the rate of unemployment is concerned. In case the sharing of income with the unemployed that occurs happens within racial groups, one can see why different groups may settle at different equilibria. In the case of South Africa, we know that not only do the Whites have a lower unemployment, but they earn a higher wage. While wage statistics are difficult to find, one can get a sense of this from the fact that, in 2003, the monthly real income of Africans was 1,484 rands, while for Whites it was 6,372 rands. Can this be explained by the model?

Interestingly, we will see later that the model suggests that an economy can have two equilibria: one in which there is no unemployment and wages are high and another in which there is unemployment and wages are low. While it is true that Whites in South Africa have unemployment, if we correct for the fact that the South African economy is a high-unemployment economy in general, the above numbers for Whites and Africans could be treated as a stylized empirical counterpart of this result.

So much for the implications of the model. Let us turn now to the one new axiom that we will combine with the standard efficiency wage theory. This axiom asserts that workers do not always consume everything they individually earn, but have mechanisms for sharing and supporting the unemployed and destitute among them. This can take the form of supporting family members who happen to be unemployed but also often have much larger reach, whereby people may support members of one's community or village who run into hard times.

There is, fortunately, plenty of evidence that there is altruistic-income sharing that goes on in poor societies. When one person in the household becomes unemployed, others chip in and contribute to that person's consumption. Since such sharing is not

confined to nuclear households, the possibility of an employer employing everybody with whom one worker shares his wage may not be a realistic assumption. This is so especially in poor economies where firms are small.

If sharing were confined to immediate family members, firms could, in principle, employ the whole unit and maintain that the wages they pay are entirely ploughed back into productivity from which that firm benefits. Even in this case, it is debatable whether employment of the whole family would be optimal from the firm's perspective. For one, the distribution of skill in a family may not match the skills required by the firm. Regardless, sharing has been documented to occur in much larger *communities*— villagers often have informal credit arrangements available to the unemployed and sharing among ethnic groups is evidenced by the increases in remittances during bad times.

The solidarity mechanisms that evolve in communities where resources are scarce were explicitly pointed out as early as the nineteen forties by Evans-Pritchard (1940). Anthropologists were the first to pursue an explanation of this phenomenon[2]. They attributed the existence of sharing to morals and ethics, or the existence of a common value system that entails the 'right to subsistence and the principle of reciprocity' (Scott, 1976; Popkin, 1979). They note the precarious nature of survival led to the formation of mechanisms by which individuals would share in order to insure against starvation. This is why evidence of solidarity mechanisms exists primarily in pre-industrial and Third World economies, and only emerges in developed countries during wartime or natural disasters (Fafchamps 1992).

[2] See Bardhan (1970) and Platteau and Abraham (1987) for a discussion of the importance of these anthropological findings for economics.

Economists have also found significant empirical evidence that sharing exists. Townsend (1994) notes that an optimal and fully insured arrangement for individual consumption within a village is determined *as if* all crop output were pooled and optimally redistributed among community members—this would be the case in which members of the village were sharing resources perfectly amongst themselves. This full insurance scheme means individual crop output would have no affect on individual consumption, which would therefore be entirely explained by aggregate output and individual fixed effects. Since he finds a significant co-movement between household consumption and village average consumption in three poor Indian villages, there is evidence that individuals in these communities are sharing in order to smooth income shocks. Townsend finds own income, sickness and unemployment do not significantly affect individual consumption, rather there is a remarkable ability to smooth consumption with informal credit markets and gifts[3].

3 A Model of Efficiency Wage with Sharing

Our aim is to develop a model of efficiency wage where a worker's nutrition and, therefore, effective labor depends positively on the wage the worker earns. This kind of labor market modeling for developing countries has a long intellectual tradition dating back to Leibenstein (1957) and also represented in the works of, for instance, Mirrlees (1975), Stiglitz (1976) and Dasgupta and Ray (1986, 1987). However, what was overlooked in this literature and has important implications for the model is that in all societies—and maybe especially so in poor countries—small communities, households

[3] For other support and evidence see Fafchamps and Lund (2001), Kochar (2000), and Ravallion and Dearden (1988).

and villages have informal systems of helping out those who are unemployed and destitute.

We introduce this complication by treating $\alpha \in (0,1]$ as the fraction of a person's own wage that he keeps for himself. For simplicity we assume that there is no savings in the economy. Hence, if a person's wage is w, her consumption is αw. This captures the idea that $(1-\alpha)w$ is what she contributes for the upkeep of those who are unemployed. Let us, for now, consider a homogeneous society and, for analytical convenience, assume that individuals contribute a part of their income into a general pool to help the unemployed. Then, if U denotes the unemployment rate in this society, it is natural to assume:

$$\alpha = \alpha(U), \tag{1}$$

where $\alpha(0) = 1$, $\alpha'(U) \leq 0$. In other words, as employment rises, the contribution to the common welfare fund rises and if there is no unemployment, no one contributes to the unemployment fund.

In modeling the labor market, we will assume that each agent—that is, each laborer and each employer—treats α as a parameter. Of course, it is their collective behavior that finally determines U and, through that, α. But it also seems reasonable to suppose that every individual will treat the national employment rate as beyond his influence. This is in keeping with the standard assumption in competitive models that each individual treats prices as given.

Let us now turn to the decision problem of the firm. Following the now-standard analysis (see Basu, 1997; Ray 1998) we assume that the number of efficiency units, h, produced by a worker depends on the worker's consumption, c. In particular,

$$h = h(c), \tag{2}$$

where $h(c) = 0$, for all $c < a$ (for some $a > 0$) and for all $c \geq a$, $h'(c) > 0$, $h''(c) < 0$. In addition $h(c)$ is bounded from above. Since $\alpha \in (0,1]$ is the fraction of a person's wage that he spends on his own consumption, if he is paid a wage of w, then $h = h(\alpha w)$.

Assume that in this economy, there are N workers and they supply their labor inelastically[4]. Also there are m identical firms, each endowed with the production function:

$$x = f(H), \qquad f' > 0, \; f'' < 0 \tag{3}$$

where H is the total amount of efficiency units of labor used by the firm and x is the output. Hence, if a firm pays a wage of w and employs n workers, its profit is given by

$$\pi(n, w) = f(nh(\alpha w)) - nw. \tag{4}$$

We take the price of the product to be 1.

The way we develop the model is as follows. We shall first treat α as fixed exogenously and describe a labor market equilibrium that we shall call an 'α-quasi-equilibrium'. Hence, for every $\alpha \in (0,1]$, there will be an α-quasi-equilibrium. We shall then look for the value of α that has a self-fulfilling property and use that α to define a (full) *competitive equilibrium* of the labor market.

Let us begin by working out each firm's unconstrained optimum. This is clearly given by the first-order conditions, $\frac{\partial \pi}{\partial w} = 0$ and $\frac{\partial \pi}{\partial n} = 0$. That is,

$$f'(nh(\alpha w))nh'(\alpha w)\alpha = n \tag{5}$$

[4] This assumption is purely for simplicity. An upward-sloping supply curve would leave our analysis unchanged.

$$f'(nh(\alpha w))h(\alpha w) = w \qquad (6)$$

(5) and (6) imply

$$\frac{h(\alpha w)}{w} = h'(\alpha w)\alpha\,. \qquad (7)$$

From (7), we get the ideal wage the firm would like to pay. This depends on α. Hence we will write this as $w(\alpha)$. This is illustrated in Figure 1.

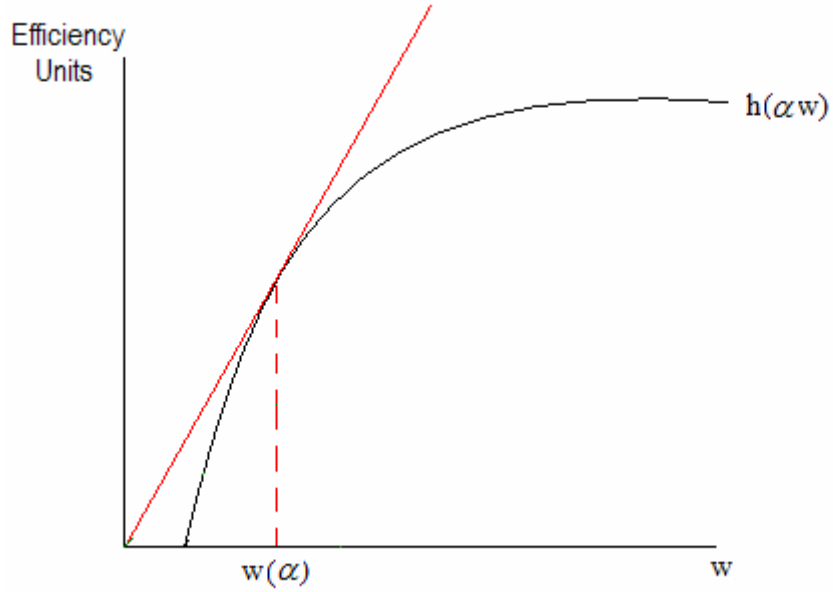

Figure 1

If we insert this in (6) and solve for n, we get $n(\alpha)$. Hence, the constrained solution of this firm's optimization is give by: $w(\alpha)$ and $n(\alpha)$. An *α-quasi-equilibrium* is basically a wage rate which is equal to $w(\alpha)$ and aggregate labor supply that exceeds aggregate labor demand or the wage such that demand for labor equals supply of labor and no firm can do better by raising the wage.

Hence, in case $mn(\alpha) \le N$, we have an α-quasi-equilibrium in which all firms pay a wage of $w(\alpha)$ and demand $n(\alpha)$ and there is open unemployment equal to

$N - mn(\alpha)$. If we had fixed $\alpha = 1$, then this α-quasi-equilibrium is exactly the equilibrium described by Leibenstein (1957), Mirrlees (1975) or Stiglitz (1976).

In case $mn(\alpha) > N$, then clearly firms paying a wage of $w(\alpha)$ and employing $n(\alpha)$ is not feasible. There will be excess demand for labor and this will drive the wage up. What will the wage be? To answer this, assume each firm takes the wage rate and exogenously fixed at w. With w and α as given, the number of workers a firm will demand is clearly given by equation (6). Write this solution as

$$n = \tilde{n}(\alpha, w). \tag{8}$$

The wage rate w^* is an α-quasi-equilibrium if $m\tilde{n}(\alpha, w^*) = N$.

Two alternative α-quasi-equilibria, for $\alpha = \alpha^0$ and α' are illustrated in Figure 2. In both these cases there is open unemployment in equilibrium.

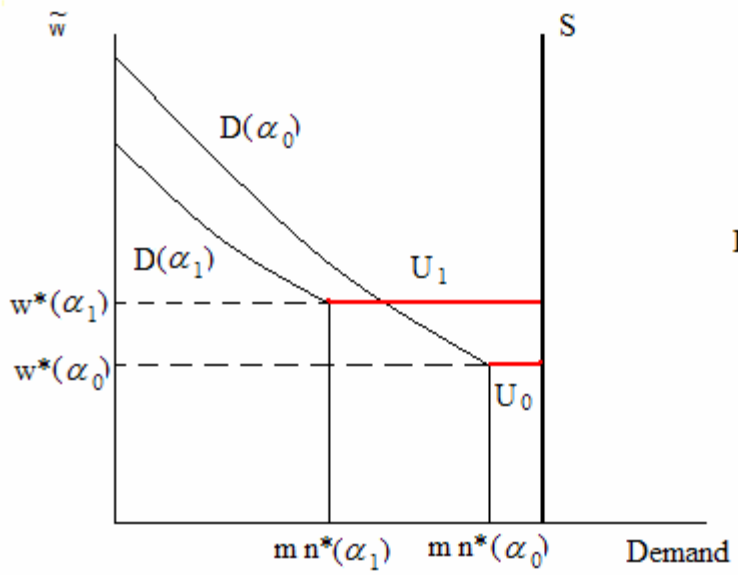

Figure 2

A (full) *competitive equilibrium* is now easy to define. Informally speaking, it is given by an α^* such that the α*-quasi-equilibrium 'corroborates' the α^*.

It is easy to see that given any α, in the α-quasi-equilibrium there will be a certain unemployment rate. Suppose there is open unemployment in the α-quasi-equilibrium and the unemployment rate, U, is given by

$$U(\alpha) = \frac{N - mn(\alpha)}{N}. \tag{9}$$

α^* and U^* constitute a *competitive equilibrium* if $U^* = U(\alpha^*)$ and $\alpha^* = \alpha(U^*)$. This is essentially a rational-expectations equilibrium. If all firms assume α to be α^* and this in turn gives rise to U that corroborates the α^*, then we have a competitive equilibrium.

The values of α, n, w and U that occur in a competitive equilibrium will be denoted by α^*, n^*, w^* and U^*.

We will show that this model can have multiple competitive equilibria with different wages and levels of unemployment.

To see this, it is important for us to establish an initial result.

Lemma 1: As α increases, $n(\alpha)$ will increase.

Proof: From the representative firm's profit maximizing first order conditions, (5) and (6) we know

$$\alpha w h'(\alpha w) = h(\alpha w), \tag{10}$$

which is, essentially, (7) rearranged. Since α and w only appear as αw in (10), it follows that $\alpha w(\alpha)$ is constant. Let us write this as

$$\alpha w(\alpha) = k, \tag{11}$$

It follows that $w'(\alpha) < 0$. Substituting (11) into (5) we get $f'(nh(k))h'(k)\alpha = 1$ or

$$f'(nh(k)) = \frac{1}{h'(k)\alpha} \tag{12}$$

Since k is a constant, as α increases $f'(nh(k))$ must fall. Given $f'' < 0$, it follows that n must increase.

Lemma 1 in conjunction with (9) implies, as α increases $U(\alpha)$ will fall. Hence, $U(\alpha)$ and $\alpha(U)$, as defined in, both have negative slopes. Therefore, it is entirely possible that they intersect more than once and the economy has multiple competitive equilibria. Figure 3 illustrates a possible case.

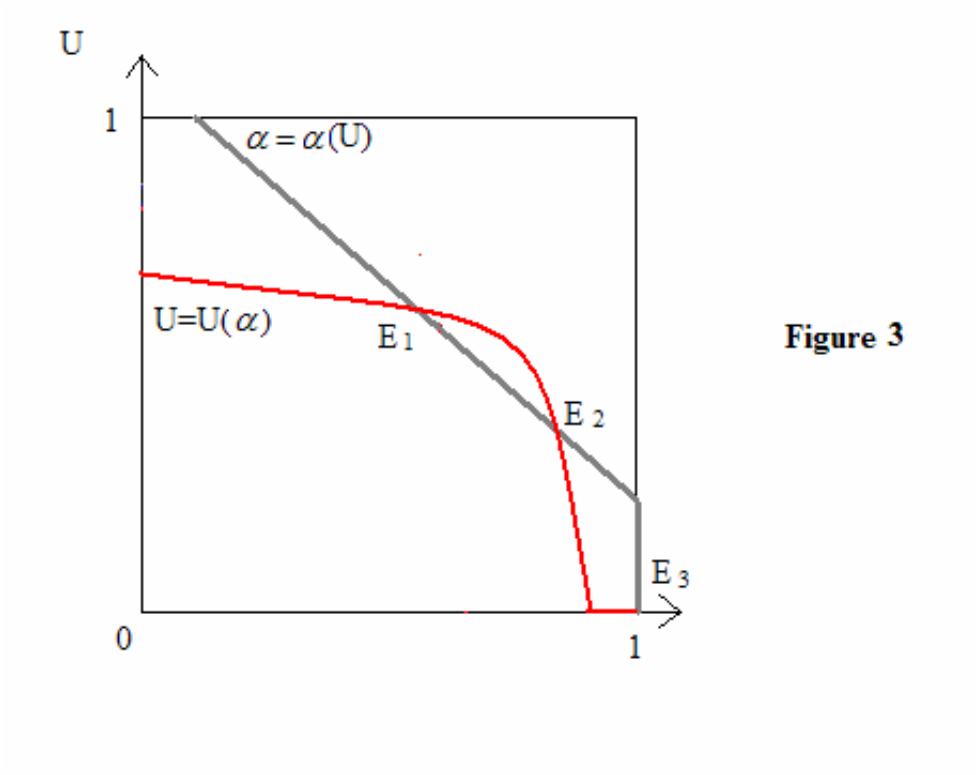

Figure 3

The economy illustrated in Figure 3 has three possible equilibria, E_1, E_2 and E_3. Unemployment is highest at E_1 and zero at E_3.

Lemma 1 has an important implication about the relation between different possible competitive equilibria of an economy. If unemployment is positive in each of the possible equilibria, then the lower unemployment will invariably be associated with a lower wage. If however one of the equilibria involves full-employment (i.e. zero unemployment) this can be associated with a higher wage than the other equilibria as we will presently demonstrate.

Our model can also help us understand another widely-observed phenomenon, namely that unemployment rates often differ between ethnic groups within the same country[5]. This could happen if each sharing community is entirely a subset of one ethnic group and if each person's ethnic identity is easy to observe as would happen with the Blacks and Whites in South Africa, for instance. In one group, characterized by a high rate of unemployment, workers will have a greater propensity to share their income rather than to consume it themselves. This fact will lead them to be relatively less productive compared to workers from a community with a rather low rate of unemployment and little need for income sharing. Firms will prefer to hire those from the community with a low rate of unemployment thereby corroborating the fact of low unemployment.

Hence, two geographically neighboring communities could find themselves in vastly different labor market equilibria with different race specific employment rates.

[5] Barring some non-generic exception, what the theory would suggest is that one group has zero unemployment while the other has positive unemployment.

4 A Paradoxical Result with Implications for Minimum Wage Legislation

The intriguing question that we raised earlier is: Is it possible for a country to have two equilibria one with full employment and high wage and another with large unemployment and a lower wage? The answer to this question turns out to be yes, and this section is devoted to proving this. This has very interesting implications for minimum wage policy and in understanding labor market schisms within a society, such as South Africa's. We comment on these at the end of the section and in the next section. Our first task is to demonstrate that the answer to the above question is yes. We do this by constructing an example. As one works through the example it will be obvious enough that it is not a non-generic special case but one illustration from a class of parameters where this pathology can occur.

Consider an economy with 120 laborers who supply their labor inelastically, as long as wage is non-negative. Hence N = 120. The economy has 10 identical firms, each endowed with the following production function

$$x = f(H) = \frac{5}{2}H - \frac{1}{36}H^2,$$

where, as before, H is the total amount of efficiency units employed by the firm. It follows that the marginal production function is give by:

$$f'(H) = \frac{5}{2} - \frac{H}{18}. \qquad (13)$$

Let the labor efficiency function (that is (2) above) be given by:

$$h(c)=\begin{cases} 0 & if \quad c<\frac{1}{2} \\ -1+2c & if \quad \frac{1}{2}\le c<1. \\ \frac{1}{2}+\frac{c}{2} & if \quad c\ge 1 \end{cases} \tag{14}$$

This is illustrated in Figure 4 by the line ABC.

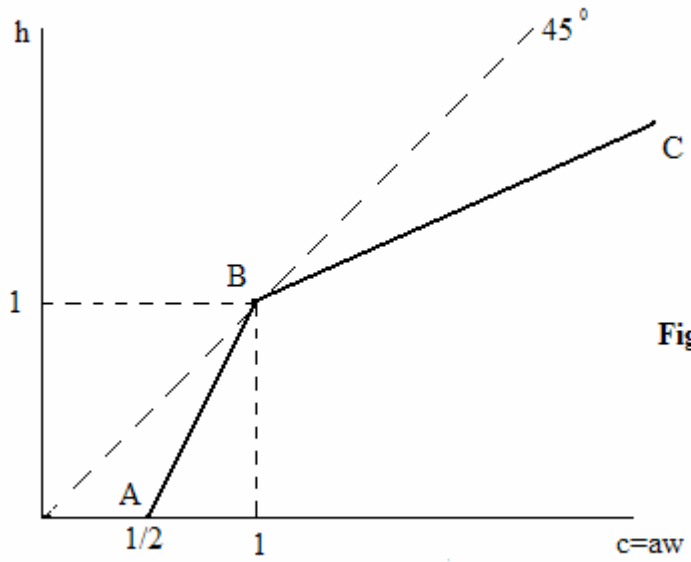

Figure 4

As currently described, h is unbounded. We can rectify this by setting an upper bound on this and still have the result unchanged.

Being non-differentiable (a harmless assumption made for algebraic convenience) we cannot determine the employer's optimal c by differentiating the h-function but it is obvious from inspection that the cost of efficiency units of labor is minimized at $c=1$. Hence, the employer, faced with an α, would ideally set

$$w=\frac{1}{\alpha}. \tag{15}$$

Hence, the efficiency wage is given by this formula.

Given α and w, if we want to find out the number of laborers demanded by a firm, we can use (6) above. Adapting this, by using (13) we get

$$\frac{5}{2} - \frac{nh(\alpha w)}{18} = \frac{w}{h(\alpha w)}. \qquad (16)$$

Consider a special case where $\alpha = \frac{1}{2}$. Then $w = 2$ and $h(\alpha w) = 1$. Hence we can solve (16) and get $n = 9$.

Since there are 10 firms, the aggregate demand for labor would be 90 and the unemployment rate is (120 - 90)/120 = 1/4 or 25%.

Consider now the case where $\alpha = 1$. It is easy to verify that if firms were free to pay the efficiency wage, aggregate labor demand (270) would exceed labor supply. Hence in equilibrium firms will be forced to pay a wage above the efficiency wage. One can further check that if with $\alpha = 1$, wage was fixed for each firm at 2, each firm's demand for labor would be 14. Hence aggregate demand for labor would be $140 > N$. Hence the market clearing wage will exceed 2.

The numbers just derived are illustrated in Figure 5, where the vertical axis represents the reservation wage faced by each firm (i.e. each firm is free to give a wage equal to or exceeding the point represented on the vertical axis) and the horizontal axis represents aggregate labor supply and demand.

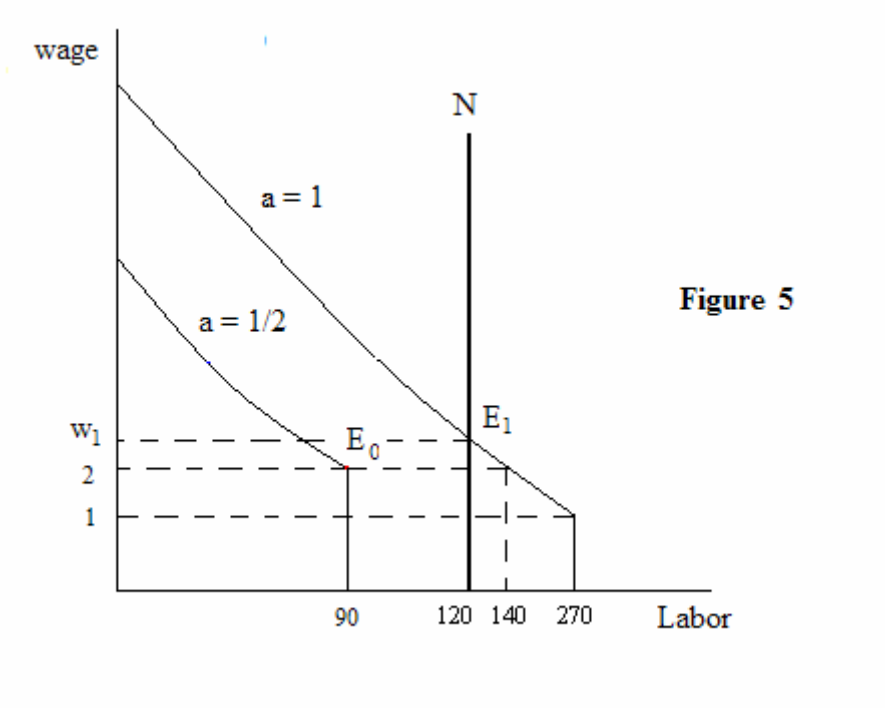

Figure 5

Hence, if α were $1/2$, equilibrium would be depicted by the point E_0 and if α were 1, equilibrium would be depicted by the point E_1. These are, of course, α-quasi-equilibria. To see what α will prevail in the general competitive equilibrium we need to know what the economy's α-function (i.e. (1), above) is like. Assume this is given by

$$\alpha = \alpha(U) = mid\left\{1,\ \frac{1}{20}\left(\frac{1}{4U}+9\right),\ 0\right\} \tag{17}$$

where U is the unemployment rate and $mid\{a,\ b,\ c\}$ is the middle largest number among a, b and c. So if aggregate demand for labor is D, $U = \frac{N-D}{N}$.

The next figure depicts this in the (U,α)-space as in Figure 1.

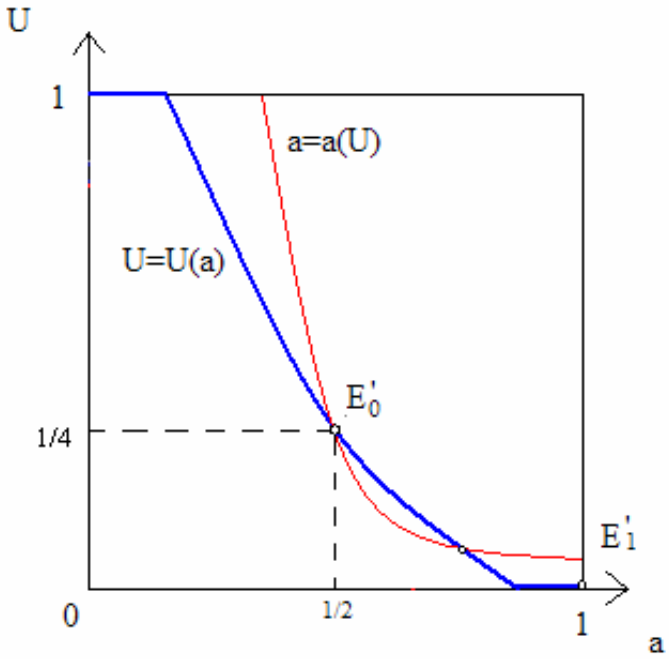

Figure 6

Given the economy described is this example, we can work out the unemployment rate that will occur given each value of α. We can describe this as $U(\alpha)$. We already know that $U\left(\frac{1}{2}\right)=\frac{1}{4}$ and $U(1)=0$.

Since $\alpha\left(\frac{1}{4}\right)=\frac{1}{2}$ and $\alpha(0)=1$, we have a competitive equilibrium where $\alpha=\frac{1}{2}$, $U=\frac{1}{4}$ and $w=2$ and another competitive equilibrium where $\alpha=1$, $U=0$ and $w>2$. This establishes the result we set out to prove.

This result opens up the possibility of unconventional policy interventions. Consider the economy described in this example and suppose it is at the equilibrium described by $E_0^{'}$ in Figure 6. This corresponds to the point E_0 in Figure 5. So wage is at

2 and unemployment is at 30. Now suppose government imposes a statutory minimum wage, $w_{\min}$, where $2 < w_{\min} \leq w_1$, where w_1 is described in the figure.

This immediately means that the economy can no longer be at E_0 and the equilibrium goes to E_1, where not only is wage higher (as would happen given any binding minimum wage law) but unemployment is lower. So a minimum wage law can lower unemployment[6]. A similar result is known from standard textbook models where the labor market is monopolistic or oligopolistic. What is interesting about our paper is that this happens in a competitive model.

The result established in this section also helps us understand a real-world phenomenon mentioned above, where two ethnic groups exhibit very different labor market outcomes, more than can be explained in terms of differences in human capital or preference for leisure. In South Africa, observers have been baffled by the fact that despite apartheid being abolished the unemployment rate is so much higher for Blacks than for Whites. Moreover, as discussed above, all evidence suggests that despite this, Whites command a higher average wage than Blacks. The question arises about why an employer does not replace his high-wage White workforce with Blacks, who will accept a lower wage and increase profits.

This is such an important and widespread phenomenon that there will no doubt be many different explanations of it. But our model points to an interesting possibility. Suppose the sharing of wages occur *within* racial group. That is, each group or community within which people support and insure one another consists of a subset of a single race. This does not seem to be an unrealistic assumption. Assume also, for

[6] It is worth cautioning that a minimum wage law can bring new equilibria into existence as, for instance, in Basu (2000)

simplicity, that firms are sector-specific. For instance, there is an exogenously given number of firms in Soweto and these employ only Blacks. And the firms in Sandton employ only Whites. Now, if Blacks and Whites have different sharing norms (that is, given the same unemployment rate, $\alpha_W \neq \alpha_B$) then the two groups could settle into different rates of unemployment and wages. What is even more interesting is that, even if both groups are identical in every way, including their sharing norms, they can, in equilibrium, have different unemployment rates and wages.

This analysis makes use of the assumption that firms are sector-specific, that is, there is an exogenously given set of firms that operate where Blacks live and another exogenously given set of firms where Whites live. If firms are free to move from one sector to another then the analysis gets more complicated. Market schism would still occur but one of the groups (say Whites) would have full employment whereas the other could have large unemployment. In addition, as we have just shown, wages could be lower in the sector that has large unemployment, pretty much in keeping with the experience of South Africa.

5 Policy Implications and Comments

We have shown that there can be multiple equilibria in a labor market if firms act according to the standard efficiency wage theory and laborers share part of their income with the unemployed members of their community. The equilibria differ in their levels of unemployment and income sharing—an equilibrium with high unemployment will be supported by a high level of sharing which reinforces high unemployment and an

equilibrium with low or no unemployment will yield a small amount of income sharing and reinforce low unemployment.

This brings us to the question: How can an economy move from the high to the low unemployment equilibrium? One possible remedy for high unemployment is an unemployment subsidy. If the government were to announce an unemployment subsidy to all the unemployed persons, then income sharing in the economy would decrease. Laborers, who would now be consuming a larger portion of their own wages, will become more valuable in the production process. Firms would thereby increase their employment of labor and hire from the pool of unemployed. This would decrease the unemployment rate in the community, so the actual subsidy that the government would have to dole out would not be as large as it would have appeared when the subsidy was first announced. Moreover, it is possible that in response to the intervention the economy moves to a situation which was an equilibrium (with lower unemployment) of the original economy. If this happens, then the subsidy can be removed and we could still have the economy remain at the low unemployment equilibrium.

Likewise, one can use a minimum wage law not for perennially holding up the wages but to deflect the economy to a pre-existing equilibrium, akin to what was derived in Basu (2000) in the context of child labor. Basically, unlike more conventional labor market interventions, the model we have creates the scope for interventions which can be a one-time measure to deflect the economy from one equilibrium to another, more-desirable equilibrium.

What is particularly interesting is that a zero-unemployment equilibrium could have a higher market wage for labor than the high-unemployment equilibrium. If short-

term government intervention is effective in shifting the economy from high unemployment to zero unemployment, the reduction in income sharing brought about by this could increase the demand for labor so much that it exceeds the supply of labor and the new outcome is sustained as an equilibrium, with no further government intervention needed. Firms are compelled by natural market forces to operate according to the reservation wage, which is above the efficiency wage, and so end up paying higher wages *and* employing more. This contradicts the notion that, in a competitive labor market, a legislative intervention that raises wages does so only by increasing unemployment.

REFERENCES

Agarwala, Narmal (1979). "On Leibenstein's Theory of Disguised Unemployment." *Indian Economic Review*, vol. 14.

Alexander, Jennifer and Paul Alexander (1982). "Shared Poverty as Ideology: Agrarian Relationships in Colonial Java." *Man, New Series*, vol. 17.

Bardhan, Pranab (1970). "On the Minimum Level of Living and the Rural Poor." *Indian Economic Review.*

Basu, Kaushik (1997). *Analytical Development Economics: The Less Developed Economy Revisited.* Cambridge, MA: The MIT Press 1997.

Basu, Kaushik (1993). "Efficiency wage theory with monopolistic landlords." In Kaushik Basu, Mukul Majumdar, Tapan Mitra (eds.) *Capital, investment, and development: essays in memory of Sukhamoy Chakravarty.* Oxford: Blackwell.

Basu, Kaushik (2000). 'The Intriguing Relation between Adult Minimum Wage and Child Labour', *Economic Journal*, vol. 110.

Bliss, Christopher and Nicholas Stern (1978). "Productivity, wages and nutrition: 1. The theory; 2. Some observations." *Journal of Development Economic*, vol. 5.

Casale, Daniela, Collette Muller and Dorrit Posel (2004). "'Two Million Net New Jobs': A Reconsideration of the Rise in Employment in South Africa?" Mimeo: University of KiwaZulu-Natal.

Cashdan, Elizabeth A. (1985). "Coping with Risk: Reciprocity Among the Basarwa of Northern Botswana." *Man, New Series*, vol. 20.

Cox, Donald, Zekeriya Eser and Emmanuel Jimenez (1998). "Motives for Private Transfers Over the Life Cycle: An analytical framework and evidence for Peru." *Journal of Development Economics*, vol. 55.

Dasgupta, Partha and Debraj Ray (1986). "Inequality as a determinant of malnutrition and unemployment." *Economic Journal*, vol. 96.

Dasgupta, Partha and Debraj Ray (1987). "Inequality as a Determinant of Malnutrition and Unemployment, II. Policy." *Economic Journal*, vol. 97.

Dasgupta, Partha and Debraj Ray (1990). "Adapting to undernourishment: The biological evidence and its implications." In Jean Dreze and A. Sen (eds.), *The Political Economy of Hunger, vol. 1*. Oxford: Clarendon Press.

Evans-Pritchard, E. E. (1940). *The Nuer: A description of the Modes of Livelihood and Political Institutions of a Nilotic People*. Oxford: Clarendon Press.

Fafchamps, Marcel (1992). "Solidarity Networks in Preindustrial Societies: Rational Peasants with a Moral Economy." Mimeo: University of Chicago.

Fafchamps, Marcel and Susan Lund (2001). "Risk Sharing Networks in Rural Philippines." Mimeo: Oxford University.

Genicot, Garance (2004). "Malnutrition and Child Labor." Mimeo: Georgetown University.

Guha, Ashok (1989). "Consumption, efficiency and surplus labour." *Journal of Development Economics*, vol. 31.

Kent, Susan (1993). "Sharing in an Egalitarian Kalahari Comminity." *Man, New Series*, vol. 28.

Kochar, Anjini (2000). "Parental Benefits from Intergenerational Coresidence: Empirical Evidence from Rural Pakistan." *Journal of Political Economy*, vol. 108.

Leibenstein, Harvey (1957). "The Theory of Underemployment in Backward Economies." *Journal of Political Economy*, vol. 65.

Leibenstein, Harvey (1958). "Underemployment in Backward Economies: Some Additional Notes." *Journal of Political Economy*, vol. 66.

Leibrandt, Murray, Servaas van der Berg, and Haroon Bhorat (2003). 'Inroductiton', in Haroon Bhorat et. al. (eds.), *Fighting Poverty: Labour Markets and Inequality in South Africa*. Lansdowne, South Africa: UCT Press.

Mazumdar, Dipak (1959). " The Marginal Productivity Theory of Wages and Disguised Unemployment." *Review of Economic Studies*, vol. 26.

Mirrlees, James A. (1975). "Pure Theory of Underdeveloped Economies." In L. G. Reynolds (ed.), *Agriculture in Development Theory*. New Haven: Yale University Press.

Malinowski, Bronislaw (1920). "Kula; the Circulating Exchange of Valuables in the Archipelagoes of Eastern New Guinea." *Man*, vol. 20.

Osmani, S. R. (1990). "Nutrition and the Economics of food: Implications of some recent controversies." In Jean Dreze and A. Sen (eds.), *The Political Economy of Hunger, vol. 1*. Oxford: Clarendon Press.

Platteau, Jean-Philippe (1997). "Mutual Insurance as an Elusive Concept in Traditional Rural Communities." *Journal of Development Studies,* vol. 33.

Platteau, Jean-Philippe and Anita Abraham (1987). "An Inquiry into Quasi-Credit Contracts: The Role of Reciprocal Credit and Interlinked Deals in Small-scale Fishing Communities." *Journal of Development Studies*, vol. 23.

Ravallion, Martin, and Lorraine Dearden (1988). "Social Security in a 'Moral Economy': An Empirical Analysis for Java." *Review of Economics and Statistics,* vol. 70.

Ray, Debraj (1998). *Development Economics.* Princeton, NJ: Princeton University Press.

Rodgers, G. B. (1975). "Nutritionally base wage determination in the low-income market." *Oxford Economic Papers*, vol. 27.

Stats SA (2002, 2003). Labour force surveys (September 2001 and 2002), Statistical Release P0210, Statistics South Africa, Pretoria, March 2002 and 2003.

Stiglitz, Joseph E. (1976). "The efficiency wage hypothesis, surplus labour and the distribution of labour in LDCs." *Oxford Economic Papers,* vol. 28.

Stiglitz, Joseph E. (1984). "Price Rigidities and Market Structure." *American Economic Review*, vol. 74.

Townsend, Robert M. (1994). "Risk and Insurance in Village India." *Econometrica*, vol. 62.