Andrew Blackwell

B.A. Philosophy & Economics, 3[d] Year
19F Westbourne Terrace
London W2 3UN

Class C

Efficiency Wage Theory

Quoted References:

- G.J. Borjas, *Labour Economics* (McGraw Hill, 1996)
- S. Polachek and W.S. Siebert, *The Economics of Earnings* (Cambridge University Press, 1993)
- D.I. Levine, "Can wage increases pay for themselves? Tests with a production function", *Economic Journal,* September 1992
- C.M. Campbell and K.S. Kamlani, "The reasons for wage rigidity: evidence from a survey of firms.", *Quarterly Journal of Economics* August 1997
- J. Agell and P. Lundborg, "Theories of pay and unemployment: survey evidence from Swedish manufacturing firms", *Scandinavian Journal of Economics* June 1995

Total length of essay: **1948 words**

Introduction

In recent years, much economic theory and research has looked at the phenomena of wage rigidity and involuntary unemployment[1], and within the domain of labour economics much attention has been devoted to the phenomenon of inter-industry wage differentials.

Many theories have sprung up to explain these phenomena, and one of these, Efficiency Wage Theory, has attempted to shed light on all three of them.

In short, Efficiency Wage Theory states that the productivity of workers depends positively on their wages, and elucidates certain mechanisms that explain this dependence.

In this essay I would like to briefly describe the Efficiency Wage Theory and the models that constitute it. Then I shall go on to explain what implications the theory has for the clearance (or non-clearance) of labour markets. Subsequently I will look at the empirical research that has been undertaken in this field, pointing out certain methodological problems on the way. To conclude I will argue that Efficiency Wage Theory has strong backing, but that it is not sufficient to as a monocausal explanation for the above phenomena, and that other models can still serve as strong complements in explaining contemporary labour market setups.

Efficiency Wage Theory

Model and Sub-models

The efficiency wage model asserts that the productivity of workers in firms is positively correlated with the wages they receive. The model has different explanations as to why this is the case. These explanations in turn can be seen as sub-models to the efficiency wage model[2]:

- *Shirking Model*[3]: If workers receive a higher wage, the cost of losing their job becomes higher, and this acts as an incentive for workers not to shirk and risk being fired.
- *Gift-Exchange Model*[4]: A higher wage is seen by workers as a gift from the firm, and workers will want to return this gift in the form of higher effort.
- *Fair Wage-effort Model*[5]: If workers were paid a wage below what they perceived as fair, they would not apply as much effort as when they got a "fair" wage.
- *Adverse Selection Model*[6]: A wage which is above the labour-market equilibrium wage will draw more workers to the gates of the firm, thus allowing the firm to choose better workers from a bigger pool.

---

[1]Agell & Lundborg 1995:295
[2]Campbell & Kamlani 1997:760
[3]attributed to Shapiro and Stiglitz 1984
[4]Akerlof 1982, 1984
[5]Akerlof 1990; Campbell and Kamlani don't actually consider this to be part of the efficiency wage model, but I will include it, since it also correlates higher wages with efficiency and could logically be likened to the gift-exchange model (ie instead of a higher wage being perceived as a gift, a lower wage would be seen as an unfairness, which in effect is explaining the same phenomenon from two different psychological viewpoints).

- *Turnover Model*[7]: If workers are paid a higher wage than they would get at other firms, they are less inclined to quit their jobs, thus decreasing the firm's turnover. The firm thus saves itself the costs of hiring and training new workers.

Implications of the Model

Seen from a point of view of the firm, paying a wage higher than the economy-equilibrium level is only worthwile if the marginal productivity of workers is actually higher than the marginal cost of increasing the wage. This is exactly the case with (or rather the definition of) efficiency wages: at the efficient wage level, marginal productivity is exactly equal to marginal cost, but at a level which is higher than the equilibrium wage-level of the economy.

The fact that the efficient wage level is higher than the equilibrium wage level means that more workers are willing to work than at the equilibrium wage level: queues form at the factory gates. This obviously creates *involuntary unemployment*, since - in addition to the increased number of people looking for jobs - firms now don't want to employ as many workers as with the equilibrium wage level. For firms there is a trade-off between the employment level and the level of wages they pay: firms *ration jobs* in order to have marginal productivity equal to marginal cost.

In the words of Polachek and Siebert: "A queue of workers at the factory gate will not pull wages down. The queue is necessary for the employed to be motivated to work" (1993:263) and "Firms in a sense need - or at least make use of - unemployment" (1993:261).

A factor that might affect this mechanism are unemployment benefits: if these are high enough, workers might be equal between being employed and unemployed, and this will in turn diminish the queues at the gates.

Empirical Evidence

Problems of methodology / alternative models

The two main problems that arise when testing the Efficiency Wage Model for its application in the real world are the following:

- Many factors that play a big part as variables in the models are *nonobservable*. It is impossible to measure abstract notions like fairness, gratitude etc. and nigh-impossible to measure more real notions like asymmetry of information and effort[8].
- Many observations are predicted by other models than the efficiency wage model, and even within the model, many phenomena can be explained by more than one sub-model.

---

[6]Weiss 1980, 1990
[7]Stiglitz 1974
[8]Agell & Lundborg 1995:296

There is no simple solution to the first problem, but an important implication of it is that the empirical studies I will use relating to the theory are of two largely differing methodological natures:

1. The observations of Agell & Lundborg (1995) and Campbell and Kamlani 1997 are based on *Surveys* of a cross-sample of firms in specific economies: managers were asked to fill in questionnaires and to assign absolute numbers to propositions relating to their wage-setting behaviour. Thus the results were based on subjective observations (in some sense gut-feelings of) managers. This at least allows some insight into the way unmeasurable variables may be weighted[9]

2. David Levine (1992) uses a production function similar to a Cobb-Douglas function, including factors such as shocks to production functions, firm-specific productivity factors etc. and through a regression analysis tries to pinpoint certain observable trends in wage-settings.

The second problem is indeed more problematic, especially when applied to policy-decisions. I shall return to this in the conclusion, but I will try to point out some alternative models, when they might apply to certain observations.

Analysis of empirical studies

In this section I shall analyse to what extent the three abovementioned empirical studies support the efficiency wage theory. I shall do this in two steps: first I will look at some general observations linking higher wages to higher efficiency, then I shall analyse the sub-models and test their relevance to the general observations.

General Observations

Most of the *general* observations stem from the study by David Levine (1992). This is the case since the methodological nature of Levine's study does not allow us to probe deeper into the explanations for why efficiency wages are chosen, since most of the variables are unmeasurable.

Levine found a definite positive relation between changing the relative wages and changes in total factor productivity. He noted that raising wages leads to higher productivity than simply employing an equivalent amount of additional labour, which strongly seems to support the efficiency wage model. ¨

Furthermore he notes that changes in relative wages are not *transitory reactions* to changes in productivity. He also notes that the inter-industry wage differentials are not only due to differentials in skills, working-conditions or high benefits, which further points towards the efficiency wage model.

---

[9]Agell & Lundborg 1995:296. "While the results of any single interview study should be treated with suspicion, even a skeptic ought to pay some attention if several surveys point in the same direction."

Campbell and Kamlani note, however, that managers believe that the expected effect of wages on effort would be strongly *asymmetric:* ie if wages went up by 10%, they would expect efforts to go up less than 10%, but that if wages went down by 10%, they would expect efforts to go down by *more* than 10%.

They also note that theories involving the effect of *wages on quits* (Adverse-selection and Turnover-models) are better at describing rigidity of *white-collar wages,* whereas theories involving the effect of *wages on effort* (Shirking- and Gift-Exchange-models) are better explanations for the rigidity of *blue-collar-wages.*

Sub-models scrutinised

The studies of Agell & Lundborg and of Campbell & Kamlani allow us to be more precise in determining which explanations of the efficiency wage theory are more likely than others. I shall go through them one by one:

a) Shirking Model

Even though George Borjas mentions a study of *one* large manufacturing firm in the United States, which indicated that "fewer workers [were] ~~dimissed~~ dismissed for disciplinary reasons when the firm [paid] a higher wage", all the surveys point out that firms are very reluctant to fire shirking workers. Agell & Lundborg note that 70% of firms would *never* fire a worker caught shirking.

Polachek and Siebert note, however, that promotion/demotion act as larger incentives/deterrents not to shirk than actually being fired.

b) Gift-Exchange Model

Agell & Lundborg assert that "work effort hinges on much more than firms' ability to enforce harsh economic penalties", and indeed most respondents in Campbell and Kamlani's study think that Akerlöf's gift-exchange model is more apt at describing the psychological relationship between workers and managers than Stiglitz's shirking-model.

Moreover, Campbell's and Kamlani's respondents, put more weight on the

c) Fair Wage-Effort hypothesis.

According to C-K, *wage cuts* are worse for worker morale than *generally low wages,* since the former is perceived as less of an unfairness by workers than the latter. In addition, they note that managers don't reward 20% higher productivity with 20% higher wages, since this also would increase the (falsely) 'perceived unfairness'.

Agell and Lundborg corroborate the observation, that firms attach some importance to fairness aspects.

d) Adverse Selection Model

The most important motivator in setting wages for Campbell's and Kamlani's managers is adverse selection.

In their case adverse selection is important in its application to *quits*: ie an efficiency wage is set in order to keep good workers with the firm, as opposed to having a larger pool of good workers queueing at the gates, which would support adverse selection in its application to *hires*.

Agell and Lundborg also note that although their sample firms often received offers of underbidding, they would in 93% of the cases refuse them outright, since this was strictly against their wage policy. This could give ample support to adverse selection, but in this case other models would serve as equally legitimate explanations: the Contract Model would explain the high degree of unionisation of the sample firms as a deterrent for firms to do dubious labour-deals, and the Insider-Outsider Model would explain that managers seek to avoid trouble between established workers with strong ties to unions and their underbidding counterparts at the workplace.

e) Turnover Model

Both Campbell-Kamlani and Agell-Lundborg confirm that managers tend to retain workers with firm-specific human capital during times of recession in order to avoid hiring and training costs. Agell-Lundborg also point out that this is especially the case with *white-collar* workers.

Conclusion

The empirical studies seem to give reasonable support to the Efficiency Wage Theory, but they also point out other factors as being important determinants for wage-rigidity and its relation to involuntary unemployment. According to Agell & Lundborg, ability to pay and strong unionisation are equally important in the reasoning of managers' wage-settings. Levine also notes that the wage-productivity relation is weakes for companies with high unionisation, which "mitigates a rent-sharing hypothesis".

On top of that, we have the problem of various sub-models serving as joint explanations for the relationship between wages and productivity. This factor already indicates that the Efficiency Wage Theory, through being polycausal in itself, cannot take the role of a monocausal explanation for this relationship.

This has important implications for policy-makers: some weight must obviously be given to the Efficiency Wage theory in explaining why the labour market does not clear, as it would do in a competitive system, but what weight must be given to it, and its respective sub-models, is an extremely difficult question, since most variables are unobservable.