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<td>Author(s)</td>
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<td>Editor(s)</td>
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<tr>
<td>Citation</td>
<td>大阪府立大学経済研究 Tottori Prefectural University Faculty of Economics</td>
</tr>
<tr>
<td>Issue Date</td>
<td>2010-06-18</td>
</tr>
<tr>
<td>URL</td>
<td><a href="http://repository.osakafu-u.ac.jp/dspace/">http://repository.osakafu-u.ac.jp/dspace/</a></td>
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A Note on Efficiency Wages and Frankl’s Attitude Value of Workers with Disabilities*

Shigeru Watanabe**
Masato Hiroi***

ABSTRACT: A purpose of this note is to analyze a relationship between efficiency wages and employment of workers with disabilities who are assumed to have attitude value of Frankl, V. The efficiency of workers without disabilities is assumed to depend not only on their wage rate but also on the attitude value of the workers with disabilities.

Main result of this note is that the elasticity of the efficiency of the workers with disabilities with respect to the wage rate is larger than 1. Hence, if the elasticity is assumed to be a decreasing function of the wage rate, the result obtained from the analysis of this note will implicate that the policy for raising the wage rate of the workers with the disabilities is required.

[Jun., 2010]

Key Words: efficiency wages, workers with disabilities, attitude value of Frankl, V.

1. Introduction

A purpose of this note is to analyze a relationship between efficiency wages and employment of workers with disabilities who are assumed to have attitude value of Frankl, V. The efficiency of workers without disabilities is assumed to depend not only on their wage rate but also on the attitude value of the workers with disabilities.

In order to focus on the employment and wage rate of the workers with disabilities, it is assumed that the employment and wage rate of the workers without disabilities are given. Following main result has been derived; the Solow-condition concerning efficiency wages that the elasticity of the effort or efficiency function with respect to the wage rate is one does not hold but the elasticity becomes larger than one in this model.

* Thanks to Damien Bazin, T. Sada.
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In the next section a simple model will be shown. Concluding remarks will be given in the last section.

2. A Simple Model

The efficiency $e_2$ of the workers without disabilities is assumed to depend on the wage rate $w_2$ and the attitude value of the workers with disabilities, which is assumed to depend on the employment $l_1$ of the workers with disabilities. It is assumed that the larger the employment of the workers with disabilities the higher the attitude value of the workers with disabilities. The efficiency $e_1$ of the workers with disabilities is assumed to depend on the wage rate $w_1$. To focus on the employment and the wage rate of the workers with disabilities the wage rate and the employment of workers without disabilities are assumed to be given. Hence the efficiency of the workers without disabilities will depend only on the attitude value of the workers with disabilities, which is assumed to depend on the employment of the workers with disabilities.

Therefore the profit $\pi$ will be denoted by the following equation (1).

$$\pi = p \left( \log e_1(l_1) l_1 + \log e_2(l_1, w_1) \tilde{I}_2 - w_1 l_1 - \tilde{w}_2 \tilde{I}_2 \right),$$

where $p$ is the price level and the production function is specified as above for simplicity.

Maximizing $\pi$ with respect to $l_1$ and $w_1$ yields the following first order conditions.

$$\frac{\partial \pi}{\partial l_1} = p \left( \frac{1}{l_1} + \frac{\partial e_2}{\partial l_1} \right) - w_1 = 0, \quad (2)$$

$$\frac{\partial \pi}{\partial w_1} = p \frac{de_2}{dw_1} - l_1 = 0. \quad (3)$$

Second order conditions are assumed to be satisfied.

From the conditions (2) and (3) the following relation can straightforwardly be derived;
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\[
\frac{de_1}{dw_1} \left( \frac{\partial e_2}{\partial l_1} \right) = 1. \quad (4)
\]

From (4) the elasticity of the efficiency of the workers with disabilities with respect to their wage rate is derived to be larger than 1 as denoted by following (5).

\[
\eta = w_1 \frac{de_1}{dw_1} = 1 + \frac{de_1}{e_1} \frac{\partial e_2}{e_2} > 1,
\]

where \( \frac{de_1}{dw_1} > 0 \) from efficiency wages and \( \frac{\partial e_2}{\partial l_1} > 0 \) from attitude value of the workers with disabilities.

From (5) if the attitude value of the workers with disabilities is not taken into consideration the elasticity is reduced to 1.

If the elasticity is assumed to be a decreasing function of the wage rate, the result obtained from the analysis of this note will implicate that the policy for raising the wage rate of the workers with the disabilities is required.

3. Concluding Remarks

We have analyzed a relationship between efficiency wages and employment of workers with disabilities who are assumed to have attitude value of Frankl, V. The efficiency of workers without disabilities is assumed to depend not only on their wage rate but also on the attitude value of the workers with disabilities.

Main result of this note is that the elasticity of the efficiency of the workers with disabilities with respect to their wage rate is larger than 1. Hence, if the elasticity is assumed to be a decreasing function of the wage rate, the result obtained from the analysis of this note will implicate that the policy for raising the wage rate of the workers with the disabilities is required.
NOTES
1. See Blanchard and Fischer (1989), Laszlo (2004), and Watanabe (1996a, 1996b) for the efficiency wages.
2. See Frankl (1952) for the attitude value.

REFERENCES