A Note on Efficiency Wages and Work Life Balance

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Shigeru Watanabe*

ABSTRACT: A purpose of this note is to analyze the relationship between efficiency wages and work life balance. The profit is maximized with respect to both wage rate and labor time of the employed worker. If the worker is employed at the wage rate, labor time chosen by the firm will not always be equal to the labor time which is desirable to the worker at that wage rate. The efficiency of the worker is assumed to depend not only on the wage rate but also on the difference between the working time chosen by the firm and the working time desirable for the worker at that wage rate when the work life balance is taken into consideration.

Three cases are examined; (i) the first case where labor time chosen by the firm happens to be equal to that demanded by the worker at that wage rate, (ii) the second case where the former labor time is longer than the latter labor time, (iii) the third case where the latter labor time is longer than the former labor time.

Following main results have been derived. In the first case, the ordinal Sollow condition ie, the elasticity of the efficiency of the worker with respect to the wage rate is equal to 1, will hold. On the other hand in the second case, the elasticity becomes lower than 1 and in the third case the elasticity becomes higher than 1.

If it is simply assumed that the employed full-time worker considers that the working time chosen by the firm is too long at the wage rate, the elasticity will be less than 1.

On the other hand, if the employed worker is part-time worker and considers that the working time is too short, the elasticity will be higher than 1.

Hence, if the elasticity of the efficiency of the worker with respect to the wage rate is a decreasing function of the wage rate, the wage rate of the part-time worker will be lower than that of the full-time worker.

Key Words: Efficiency Wages, Work Life Balance, Sollw Condition.

* Professor at the University of Osaka Prefecture, College of Economics, 1-1, Gakuencho, Nakaku, Sakai-City, Osaka 599-8531, Japan

1   Introduction

The relationship between the efficiency wage and the product liability was analyzed in Watanabe（1997）. And the relationship between the efficiency wage and the attitude value was analyzed in Watanabe and Hiroi（2010）. Further, the relationship between the efficiency wage and O.J.T. was analyzed in Watanabe, Kubota and Kou（2010）.

A purpose of this note is to analyze the relationship between efficiency wages and work life balance. The profit is maximized with respect to both wage rate and labor time of the employed worker. If the worker is employed at the wage rate, labor time chosen by the firm will not always be equal to the labor time which is desirable to the worker at that wage rate. The efficiency of the worker is assumed to depend not only on the wage rate but also on the difference between the working time chosen by the firm and the working time desirable for the worker at that wage rate when the work life balance is taken into consideration.

In the next section a simple model of the efficiency wages and the work life balance will be examined. In the last section concluding remarks will be given.

2   A Simple Model

The profit of the firm is denoted by（1）.

$$\pi = pQ\left(e\left(w, (m-n(w))^2\right)m\right) - wm, \tag{1}$$

where p, Q, e, w and m are price, output level, efficiency, wage rate, and working time chosen by the firm, and n is the working time desired by the worker depending on the wage rate, and $\dfrac{\partial e}{\partial w} > 0$, $\dfrac{\partial e}{\partial z} < 0$, where $z = (m-n(w))^2$, are assumed.

Maximizing（1）with respect to wage rate and the work time yields the following first order conditions（2）and（3）.

Second order conditions are assumed to be satisfied.

$$\frac{\partial \pi}{\partial w} = pQ'\left\{\frac{\partial e}{\partial w} + \frac{\partial e}{\partial z}2(m-n(w))(-1)n'(w)\right\}m - m = 0, \tag{2}$$

where $n'(w) \equiv \dfrac{dn}{dw} > 0$ is assumed.

$$\frac{\partial \pi}{\partial m} = pQ' \left\{ \frac{\partial e}{\partial z} 2(m - n(w))m + e \right\} - w = 0. \tag{3}$$

From equations (2) and (3) the following relations can straightforwardly be obtained.

$$\eta \equiv \frac{w}{e} \frac{\partial e}{\partial w} \lessgtr 1, \tag{4}$$

according as

$$m \lessgtr n(w).$$

Therefore, the following three cases are examined; (i) the first case where labor time chosen by the firm happens to be equal to that demanded by the worker at that wage rate, (ii) the second case where the former labor time is longer than the latter labor time, (iii) the third case where the latter labor time is longer than the former labor time.

Following main results have been derived. In the first case, the ordinal Sollow condition i.e. the elasticity of the efficiency of the worker with respect to the wage rate is equal to 1, will hold. On the other hand in the second case, the elasticity becomes lower than 1 and in the third case the elasticity becomes higher than 1.

If it is simply assumed that the employed full-time worker considers that the working time chosen by the firm is too long at the wage rate, the elasticity will be less than 1.

On the other hand, if the employed worker is part-time worker and considers that the working time is too short, the elasticity will be higher than 1.

Hence, if the elasticity of the efficiency of the worker with respect to the wage rate is a decreasing function of the wage rate, the wage rate of the part-time worker will be lower than that of the full-time worker.

3　Concluding Remarks

A purpose of this note is to analyze the relationship between efficiency wages and work life balance. The profit is maximized with respect to both wage rate and labor time of the employed worker. When the worker is employed at that wage rate, labor time chosen by the firm will not always be equal to the labor time which is desirable to the worker at that wage rate even if the worker will prefer being employed to unemployment. The efficiency of the worker is assumed to depend not only on the wage rate but also on the difference

between the working time chosen by the firm and the working time desirable for the worker at that wage rate when the work life balance is taken into consideration.

Three cases are examined; (i) the first case where labor time chosen by the firm happens to be equal to that demanded by the worker at that wage rate, (ii) the second case where the former labor time is longer than the latter labor time, (iii) the third case where the latter labor time is longer than the former labor time.

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Notes

1   See Solow (1979), Blanchard, O.J., and S. Fisher (1989) and Watanabe (1996a) Chang and Ching (1996) Watanabe (1996 b).

2   See Alingham and Sandmo (1972), Peacock and Show (1982), and Watanabe (1986, 1987, 1989,) for tax evasion.

3   See K. Yamaguchi (2009) for work life balance.

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