

A NOTE ON THE KEYNESIAN UNEMPLOYMENT

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I. Introduction

It is a remarkable fact that Lord Keynes, while trying to rebut the classical self-adjusting mechanism of full employment of labor, started his *General Theory* with the full recognition of the classical doctrine of marginal productivity of labor, with a result that for the involuntary unemployment of labor to be reduced it would be necessary for workers to be in a state of "money illusion", so that an increase in the employment of labor is necessarily followed by a reduction in the level of real wages.

The object of this paper is to discuss whether a reduction in the involuntary unemployment of labor associated with an idle capacity of capital equipment is fully compatible with the constancy of real wages, and to show that if any unemployment exists under the classical marginal productivity curve of labor, it should be called unemployment of labor owing to a shortage of capital.

Throughout this paper, I shall disregard the 'frictional' unemployment owing to immobility of labor or technological rigidity of production, and confine myself to the analysis of the labor market as a whole.

II. Wage Determination in the Keynesian System

From a short-run point of view with organisation, equipment and technology given, the main argument of the Keynesian theory of employment runs as follows.

Y=national income in money terms

i=interest rate

I=investment in money terms

S=saving in money terms

w=money wage rate

M=a given volume of money

N=a volume of employed workers

p=the general price level.

First of all let us maintain Keyens' assumption of the rigidity of money wages and assume that w is fixed at \bar{w} . The simplified Keynesian theory of income determination is, thus, described by the following equations:¹

$$(1) \quad I_w(Y_w, i) = S_w(Y_w, i)$$

$$(2) \quad M_w = L_w(Y_w, i)$$

¹ L. R. Klein, *The Keynesian Revolution*, 1949, p. 204.

$$(3) \quad w = \bar{w}.$$

If M is given, Y , i and w are determined in terms of M by these three equations.

Secondly in order to reach from the theory of income determination to the theory of employment, Keynes introduces the employment function into his system.² The characteristic of this function is that the national income in terms of the wage rate, Y_w , has an unique (positive) correlation with the number of workers to be employed, namely

$$(4) \quad N = E(Y_w).$$

From this equation it immediately follows that the volume of employment is determined not by the wage bargaining between laborers and employers but by the level of national income or effective demand.

Finally as to the determination of real wages. As stated explicitly in *General Theory*, Keynes adopted the classical doctrine of marginal productivity principle in the sense that "in a given state of organisation, equipment and technology, the real wage earned a unit of labour has a unique (inverse) correlation with the volume of employment."³ Thus it follows

$$(5) \quad \frac{w}{p} = F(N).$$

Since the volume of employment, N , is already determined by (4) and the wage rate, w , by (3), this last equation is the equation to determine the general price level p (and thus the real wage rate). The causal chains of the Keynesian theory of employment thus run as follows:

$$Y_w \dots \rightarrow N \dots \rightarrow \frac{w}{p}.$$

Needless to say, the volume of actual employment thus determined does not necessarily coincide with the number of workers who are looking for jobs at a wage rate equal to that determined by (4), or even at a lower rate. If the supply exceeds the demand, there should be a number of workers who are 'involuntarily' unemployed. Such unemployment can be reduced only by promoting the level of effective demand, so that this can be called unemployment owing to a shortage of effective demand.⁵

Then a question arises. Is it not impossible that an increase in effective demand goes on without an increase in the general price level? So long as the level of money wages is rigidly maintained, Keynes would answer 'no', because an increase in effective demand involves a reduction of involuntary unemployment, so that an increase in the general price level is necessarily developed because of (4) and (5). This is an inevitable conclusion resulting from the reasonings of the Keynesian theory of employment.

However the situation will be modified if we take into consideration the problem of idle capacity of equipment. It is not sure whether Keynes intended to develop his theory of employment to cover circumstances associated with an idle capacity of equipment,

² J. M. Keynes, *The General Theory of Employment, Money and Interest*, 1936, Chapter 20.

³ J. M. Keynes, *General Theory*, p. 17.

⁴ On the contrary, the classical theory of employment will be shown as follows:

$$\frac{w}{p} \dots \rightarrow N \dots \rightarrow Y.$$

Since the general price level p is determined by the quantity theory of money, we can also determine the national product in real terms.

⁵ Remember that Keynes defines this type of unemployment in terms of "at less than the existing real wage". J. M. Keynes, *General Theory*, p. 289.

because the classical doctrine of the marginal productivity curve of labor to which Keynes gave his approval is generally associated with the 'normal capacity' of equipment.⁶ In the following, I shall try to show that if an idle capacity of equipment exists, the increase in effective demand is not necessarily followed by a reduction of real wage rates.

III. *Idle Capacity and Wage Rates*

From a short-run point of view, the marginal productivity curve of labor with capital equipment kept constant and maintained at 'normal capacity' is a downward sloping curve which correlates the real wages to the number of workers required to work the existing equipment at its normal capacity. The discussion of this curve is, however, so well developed that any further explanation is not needed here. The characteristic of this curve is that, under a state of given technology, it gradually moves upward as capital accumulation goes on, because when workers are equipped more intensively, both labor productivity and real wages are expected to rise.

Even under normal conditions, producers will in general keep some capital equipment in reserve for unseen changes in the demand for their products. This kind of 'expected' reserve of capacity is, however, one aspect of the rational behaviour of producers, and is perfectly compatible with the doctrine of marginal productivity principle. But an 'unexpected' or 'involuntary' accumulation of idle capacity is quite different in character, and this latter type of idle capacity is the problem with which we are going to be concerned.⁷

Let us define the degree of idle capacity as the ratio of idle to normal capacity. For instance, take the normal capacity as 100 and the actual one as 80, then the degree of idle capacity is 20%. It would be obvious, however, that the accumulation of idle capacity has a negative effect on the level of real wages, so that as the degree of idle capacity becomes larger, the number of workers to be employed at a given level of real wages becomes smaller. This is so because we may regard the largeness of idle capacity as the smallness of stock of capital. Indeed, we may expect that, other things remaining constant, the less the stock of capital, the lower the level of real wages.⁸

While this is not the place to discuss the determinants of the degree of idle capacity, it may be plausibly maintained that an increased in effective demand will lead to a decrease in the degree of idle capacity (if it exists), so that the level of real wages will be higher than it would be otherwise. If so, there should not be any certainty that an increase in effective demand is necessarily followed by a decrease in the level of real wages, or that as far as the money wage rate is held constant, an increase in effective demand results in an inflation of the general price level.

In Figure 1, the marginal productivity curve of labor with the stock of capital worked

⁶ "The lowest point in the curve of the average total unit cost is sometimes called the 'economical optimum', and the respective volume of output 'normal capacity' ". F. Machlup, *Inflation and Decreasing Cost of Production*, in *Economics of Inflation*, ed. by P. Mill and J. M. Chapman, 1935, p. 282. Let us define it in terms of the largest volume of output if the lowest point is not given by one point but many.

⁷ Under the monopolistic competition, producers may also restrict their production intendedly to under-capacity of output. Of course, we disregard this problem in this paper.

⁸ This does not imply that the problem of idle capacity is the same in its economic meaning as that of capital scarcity. On the contrary we may conceive of a situation in which idle capacity exists at the same time with capital scarcity.

at its normal capacity is denoted with $F(N)$. Let some degree of idle capacity now be given for any reason, so that $F(N)$ shifts to $G(N)$. If the volume of employment is determined at N_g , the level of real wages will be at A . Imagine again that for some reason there happens an increase in effective demand, so that the volume of employment increases

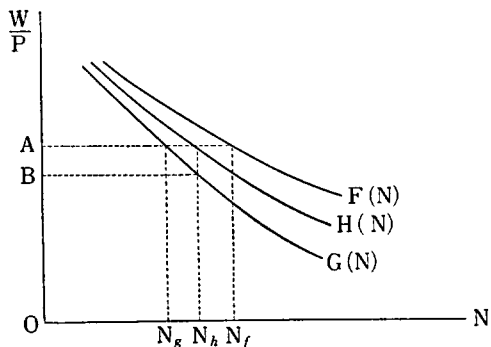


Figure 1

but so far as we have some degree of idle capacity, we can imagine, at least theoretically, such a situation that the volume of employment is increased up to M_f with the real wage kept at the level A .

There have been many discussions whether the money illusion on the side of workers is necessary for the Keynesian theory of employment. Keynes himself deemed it a necessary condition for the analysis of involuntary unemployment, for only his having recourse to the money illusion of the working class enabled him to find the means to reduce the men unemployed. But as stated above, we need not necessarily rely upon the 'psychology' of workers if both labor and the stock of capital are simultaneously unemployed.⁹

IV. Two Types of Unemployment

Keynes did not pay any attention the level to which the real wages could be lowered. It would be, however, most probable that, under a state of given technology and equipment, there exists a certain level of real wages below which workers reject to be reduced. If we would like, we may have recourse its explanation to such outside factors as a minimum wage law.¹⁰ Thus the potential supply curve of labor can be shown by a curve $SS'S'$ as denoted in Figure 2. The characteristic of this curve is that it spreads horizontally up to the point S' and from that point on, it becomes perfectly inelastic with regard to rises in the level of real wages.

Theoretically there cannot be involuntary unemployment as defined by Keynes at this minimum wage, because the money illusion on the part of workers is lacking there.

⁹ "Further reflection, however, revealed that Keynes's book assumed not only that labour is unlimited in supply, but also, and more fundamentally, that land and capital are unlimited in supply...". W.A. Lewis, "Economic Development with unlimited Supplies of Labour", *The Manchester School of Economic and Social Studies*, 1954, May, p. 139-140.

¹⁰ W. Leontief, *Postulate: Keynes' General Theory*, in *The New Economics*, ed. by S. Harris, 1952, p. 236.

from N_g to N_h . Keynes would say that the real wage should go down from A to B . But if $G(N)$ moves to $H(N)$ owing to the reduction in the degree of idle capacity (this is most probably the case because we can expect that an increase in effective demand will lead to a reduction in the degree of idle capacity, if any), the level of real wages thus resulting might be still at A as the figures shows us (or at least higher than B).

It is true in most cases that an increase in effective demand is generally associated with an increase in the general price level.

If we decide to regard the existing real wage as given, there is no place for the Keynesian type of unemployment to exist. But this would set us within too narrow a limit. Rather, for the sake of quantitative qualification, it would be more convenient and useful to say that there is a *Keynesian unemployment* if there are men unemployed who could be employed by promoting the level of effective demand *at the existing real wage*. In terms of Figure 2, this is denoted by AB at the real wage OT, and by CD at the real wage OS.

How then should we think about the unemployment DE at the wage rate OS (or BE at the wage rate OT)? Here again if we decide to regard the existing real wage as given, this is not unemployment owing to a shortage of effective demand, but unemployment owing to a shortage of capital. Suppose that the real wage has been reduced to the minimum point OS. If there is an idle capacity of equipment, the Keynesian unemployment CD will be reduced by increasing effective demand (therefore reducing the degree of idle capacity). But the unemployment DE cannot be eliminated by means of the policy of effective demand alone. The accumulation of capital too must play a part.

Let us say that there is a *Marxian unemployment* in the sense that there are men unemployed who could be employed by the accumulation of capital *at the existing real wage*. In Figure 2, this is denoted by BE at the wage rate OT, and by DE at the wage rate OS.¹¹

In short, our conclusion may be summed up as follows. Let N stand for the number of workers available at the existing real wage, L for the actual employment, and M for the amount of employment required to work the existing stock of capital at its normal capacity. Then, apart from frictional unemployment of labor, we have the following relationship:¹²

$$\begin{aligned} \text{Total unemployment } (N-L) &= \text{Marxian unemployment } (N-M) \\ &+ \text{Keynesian unemployment } (M-L). \end{aligned}$$

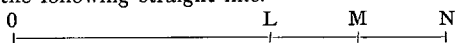
It is then clear that if any unemployment exists under the classical marginal productivity curve of labor *per se*, it is the Marxian unemployment owing to a shortage of capital.

V. Concluding Remarks

One may ask whether any investment is possible even under the circumstances accompanied by some positive degree of idle capacity, or more fundamentally, whether a

¹¹ Perhaps the Marxian economists would not accept this definition because for obvious reasons the labor theory of value is not compatible with the marginal productivity principle of labor.

¹² This will be shown by the following straight line.



See J. Robinson, *The Rate of Interest and Other Essays*, 1953, p. 110-111, footnote 2. But this reference does not imply that Mrs. Robinson will accept our definition.

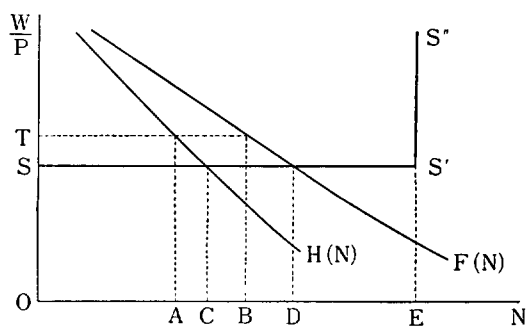


Figure 2

Keynesian temporary equilibrium condition is stable in such a situation. These are questions which are beyond the scope of this paper.

But it would be worth while noticing that in countries poorly equipped relatively to population such that their effective demand depends largely on the export of commodities, the problem of employment is not only the Marxian but also Keynesian unemployment, because export of commodities is one of the most unstable items in effective demand.¹³ From a long-run point of view, the stock of capital is scarce, and from a short-run point of view, capital equipment is sometimes under-utilized (by cyclical fluctuations in economic activity depending upon external factors). Workers must suffer from both unemployments. I am strongly impressed by the fact that this is a more or less common feature in many under-developed countries at the present day, but this is again a problem beyond the scope of the present paper.

¹³ United Nations: *Instability in Export Market of Under-Developed Countries*, 1952.