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Effective demand, employment and capital utilisation in the short run

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1. Introduction

The present paper deals with the problem of effective demand in terms of a simple Hicksian model (cf. Hicks, 1965, ch. XII). Two aspects of capital utilisation are distinguished. On the one hand, there is the microeconomic problem of choice among alternative systems of operation of plant and equipment, that is, different modes of utilisation of capital. On the other hand, there is the macroeconomic problem of what proportion of the capital stock in existence will actually be used, given the level of aggregate effective demand. The model is constructed in such a way that the two aspects can be strictly kept apart. The purpose of the exercise is to contribute to a clarification of the many-faceted notion of capital utilisation in the theory of effective demand.

Unless otherwise stated, the argument of the present paper will be developed in terms of the following simplifying assumptions. The 'Keynesian hypothesis' (Kaldor, 1955–6, p. 95), according to which investment is independent of saving, will be represented by an exogenously given volume of net investment. There will be no saving out of wages and no consumption out of profits. There are constant returns to scale throughout the economy. Plant and equipment which is utilised depreciates at a given rate that depends on the sectoral system of operation in use. In contradistinction, that part of the capital stock which, owing to a lack of effective demand, is idle, is assumed not to decay, i.e. to preserve its productive capacity. Technological change will be set aside. Most importantly, perhaps, we shall rule out any short-run disproportions between the composition of aggregate demand and the sectoral composition of productive capacity. This is effectuated in terms of the 'Walrasian' assumption that both capital and labour are perfectly mobile between the two sectors. By this token attention is focused on the macroeconomic problem of effective demand as the factor limiting output as a whole and employment. The introduction of short-run sectoral capacity constraints due to the non-shiftability of capital and an insufficiently mobile labour force would only blur the picture: it would give rise to the well-known structural inflexibilities commonly referred to in 'orthodox' attempts to explain short-run failures of 'factor markets' to clear. However, since in the present paper we are not concerned with this kind of 'imperfectionist' explanation we shall leave these inflexibilities entirely out of consideration. The argument developed in this paper could

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thus be read as follows: even if circumstances are highly favourable to the full employment of both factors there remains the problem of effective demand. Finally, with Keynes, vintage 1939, the real wage rate will be treated as an independent variable.[1]

The structure of the paper is as follows. Section 2 presents the basic model and discusses the problem of the choice of the cost-minimising system of operation of fixed capital. Section 3 deals with the 'Keynesian hypothesis' and the multiplier. Section 4 investigates the constraints on potential output due to given amounts of capital and labour in the short run. Section 5 discusses the problem of effective demand in the short period and analyses the relationship between autonomous investment demand and income distribution. Section 6 summarises the argument and draws some conclusions.

2. Production and distribution

The economy is taken to consist of two sectors, a consumer good and an investment or capital good sector. The capital good is used in both sectors. The only primary input of production is homogenous labour. The producers in each sector can choose between two different methods of producing the respective commodity. However, in contrast to the conventional analysis of the choice of technique problem, as it is to be found in the recent controversy in the theory of capital, I shall assume that the choice concerns one among two alternative systems of operation of plant and equipment. The alternatives will be called single and double-shift system, or, short, S and D-system, respectively.[2] While the paper concentrates on the special, though important, case of shift work, the range of applicability of the general argument contained therein is wider than it may seem at first sight. Indeed, the argument could be generalised to cover both discrete variations in the extensive and intensive dimension of capital utilisation, that is, changes in the number of time units within a given time period during which the capital stock is actually operated, and changes in the intensity of operation per unit of active time (for example, the speed with which machinery is run). The general argument of the present paper would not be substantially affected if more than two technical alternatives of operating plant and equipment in each sector were allowed for.[3]

The alternative systems are characterised by different sectoral labour, capital and depreciation coefficients. Accordingly, there are four alternative techniques available to produce the consumption and the capital good (see Table 1).

Let α_i (capital), β_i (labour) and δ_i (depreciation) be production coefficients in consumption good production, when system $i(i = \mathrm{S,D})$ is applied, and let a_j (capital), b_j (labour) and d_j (depreciation) be production coefficients in capital good production, when

[1] As is well known, Keynes in *The General Theory* adopted the traditional hypothesis that the marginal product of labour is inversely related to the amount of employment, which, in turn, paved the way to the acceptance of what he called the first 'classical' postulate, i.e., the real wage is equal to the marginal product of labour (cf. Keynes, 1973, Vol. VII, p. 5). In response to several critics, Keynes in his article 'Relative Movements of Real Wages and Output', published in 1939, retracted his previous opinion and argued: 'We should all agree that if we start from a level of output very greatly below capacity, so that even the most efficient plant and labour are only partially employed, marginal real cost may be expected to decline with increasing output, or, at the worst, remain constant' (*ibid.*, p. 405). An increase in employment would therefore be possible 'without seriously affecting real hourly wages' (*ibid.*, p. 401).

[2] The example of shift work in fact implies more than two alternatives for each sector. In the case of two shifts, for example, plant and equipment could be operated (i) exclusively during the first or 'day' shift, (ii) exclusively during the second or 'night' shift, and (iii) during both shifts. However, on the grounds given below, alternative (ii) will be excluded for economic reasons.

[3] For a more general discussion of the problem of capital utilisation within the framework of Sraffa's approach to the theory of value and distribution, see Kurz (1986, 1987A).

Table 1.

Technique	Consumer good sector	Capital good sector
I	S	S
II	D	S
III	S	D
IV	D	D

Note. S = single-shift system; D = double-shift system.

system $j(j = \text{S,D})$ is applied. As to the relationship between the given sectoral coefficients associated with different systems of operation of plant and equipment we shall assume the following:

$$\alpha_D < \alpha_S \text{ and } a_D < a_S, \tag{1}$$

$$\beta_D > \beta_S \text{ and } b_D > b_S, \tag{2}$$

$$\delta_D > \delta_S \text{ and } d_D > d_S. \tag{3}$$

(1) expresses the fact that the D-system displays lower capital-(potential) output ratios. In an extreme case the switch from the S to the D-system will be accompanied by a reduction of the capital coefficient to exactly one half of its former magnitude: by working plant and equipment twice as long each day as under the single-shift system the daily output will be doubled. However, as we know from the vast literature on capital utilisation and in particular on shift work, in general things are more complicated.[1] (2) implies that the average amount of labour needed per unit of output is generally larger under the D-system. This can be explained in terms of the observed lower labour productivity during late shifts.[2,3] (3) expresses the fact that the rate of depreciation, which is taken to be equal to the drop-out rate, is generally higher under the D-system. In an extreme case again, the depreciation rate would be exactly twice as large as under the S-system.

Taking a unit of the consumption good as *numéraire* and assuming wages to be paid at the end of the uniform production period, with free competition we have the following set of normal price equations

$$(r + \delta_i)p\alpha_i + w\beta_i = 1 \qquad (i = \text{S,D}) \tag{4}$$

[1] See especially the seminal study by Marris (1964) and the work by Betancourt and Clague (1981) and Winston (1983). See also Kurz (1987A) for a discussion of several aspects of the problem under consideration within the framework of the classical approach to the theory of value and distribution.

[2] See, for example, Oi (1981). While assumption (2) fits the case of shift work rather well, a rise in the degree of capital utilisation need not be accompanied by a fall in average labour productivity. With greater flexibility in the use of capital and labour power, rising degrees of capital utilisation will often, *at least up to a point*, be accompanied by an increase in average labour productivity. This can be explained in terms of the presence of 'supplementary' or 'overhead' workers, who may be seen to be employed more or less in proportion to the capital stock in existence rather than to the level of actual output (cf. Kurz, 1987B). In what follows we shall for simplicity set aside this phenomenon, whose relationship to 'Okuns's law' is close at hand.

[3] The higher average labour costs of the D-system could also be explained in terms of the wage premiums to be paid by firms to financially compensate workers for their work during unsocial hours (cf. Kurz, 1986).

$$(r + d_j)pa_j + wb_j = p \qquad (j = \text{S,D}) \tag{5}$$

for the consumption and investment good sector, respectively, where r is the normal rate of profit, w the real wage rate and p the price of the capital good.[1] Equations (4) and (5) define four wages-curves, one for each technique,

$$w = \frac{x_j - a_j r}{\beta_i + y_{ij} + m_{ij} r} \qquad (i = \text{S,D}; j = \text{S,D}) \tag{6}$$

where

$$x_j = 1 - d_j a_j, \tag{i}$$

$$y_{ij} = \alpha_i b_j(\delta_i - d_j) + d_j m_{ij} \tag{ii}$$

and

$$m_{ij} = \alpha_i b_j - a_j \beta_i. \tag{iii}$$

The maximum wage rates and maximum rates of profit associated with the different techniques are given by

$$W_{ij} = \frac{x_j}{\beta_i + y_{ij}} \qquad (i = \text{S,D}; j = \text{S,D}) \tag{7}$$

and

$$R_j = \frac{x_j}{a_j} = \frac{1}{a_j} - d_j. \qquad (i = \text{S,D}; j = \text{S,D}) \tag{8}$$

As is well known, the shape of each wage-curve depends on whether $m_{ij} \gtrless 0$. Figure 1 displays a particular constellation which, in what follows, will be used for illustrative purposes. While the wage-curves belonging to techniques I, III and IV are all convex to the origin, the wage curve belonging to technique II is concave: compared to technique I, the switch in the consumer good sector to the D-system reverses the ordering of the sectoral capital-labour ratios ($m_{SS} > 0$; $m_{DS} < 0$). The heavy line represents the economy's wage-frontier. The criterion of cost-minimisation implies that technique I dominates at $W_{SS} \geqslant w > w_1$, technique II at $w_1 > w > w_0$, and technique IV at $w_0 > w > 0$; technique III is inferior and will not be adopted. The example shows that the system of operation of plant and equipment adopted by cost-minimising entrepreneurs cannot generally be considered to be independent of the distribution of income and relative prices.[2]

In what follows, the cost-minimising system of capital utilisation will be taken as the norm with which actual utilisation will be compared. Clearly, without a well-defined norm of this or a similar kind it would be impossible to talk of an 'under-' or 'overutilisation' of the capital stock and hence to identify the impact of effective demand on the performance

[1] Since, as we shall see below, it cannot generally be presumed that the capital stock in existence at a given moment of time will be fully utilised, we will have to distinguish between the normal rate of profit, r, and what is sometimes called the 'realised' rate of profit, π (see, for example, Robinson, 1962, p. 29).

[2] It deserves to be mentioned that during the recent controversies in the theory of capital only one particular aspect of the problem of capital utilisation was dealt with: the choice of the economic lifetime of a durable capital good, i.e., the problem of the optimal truncation period. It was thus implicitly assumed that the optimal mode of utilisation of plant and equipment is exogenously given. It comes as no surprise that with this aspect of capital utilisation treated endogenously we may encounter variants of the reswitching and the reverse capital deepening phenomena. (Fig. 1, for example, displays capital reversing.)

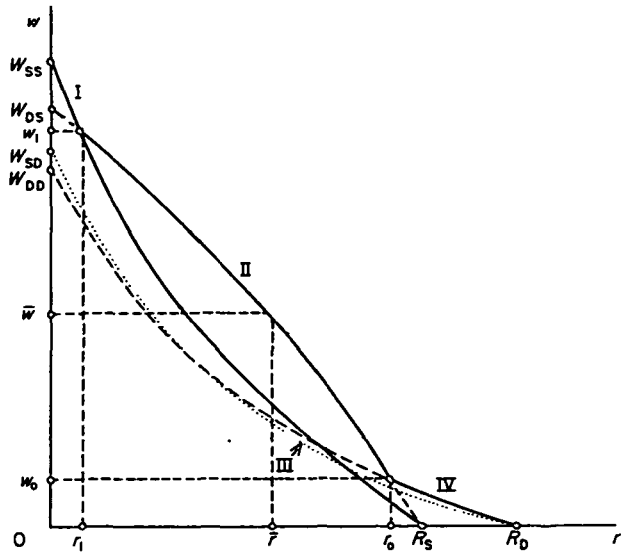

Fig. 1.

of the economic system in terms of deviations of actual output (or its growth) from normal output (or its growth).

Before we turn to the 'Keynesian hypothesis' and the multiplier in the present framework, the duality of the wage-curve and the consumption-curve associated with a given technique should be noted. The latter relates the level of consumption output per worker, c, with the rate of net capital accumulation or rate of growth, g, in steady-state capital theory. On the premise that all wages are consumed and all profits saved, w will be equal to c. We shall make use of this property in Section 4.

3. The Keynesian hypothesis and multiplier

It is commonly held that in short-period analysis the independence of decisions to invest from those to save can be adequately represented by an exogenously given level of real net investment demand, i.e.

$$I = \bar{I}. \tag{9}$$

On the assumption that entrepreneurs' short-period expectations are always fulfilled (cf. Keynes, 1973, Vol. XIV, p. 181), planned net investment and total savings are equal. Savings in turn equal total profits. Hence we have

$$Ip = S = P = r(\alpha_i C + a_j Q)p, \qquad (i = \text{S,D}; j = \text{S,D}) \tag{10}$$

where C is consumption good output and Q capital good output. In the present model Q is equal to gross investment, i.e. the sum of net investment and depreciation due to the actual utilisation of capital,

$$Q = I + \delta_i \alpha_i C + d_j a_j Q. \qquad (i = \text{S,D}; j = \text{S,D}) \tag{11}$$

Solving (11) for Q and making use of (i) we get

$$Q = \frac{1}{x_j}(I + \delta_i a_i C). \qquad (i = \text{S,D}; j = \text{S,D}) \tag{12}$$

Consumption demand is equal to total wages, i.e.

$$C = W = w(\beta_i C + b_j Q). \qquad (i = \text{S,D}; j = \text{S,D}) \tag{13}$$

Solving for C and taking into account (12), (i) and (ii) gives

$$C = \frac{wb_j}{x_j - w(\beta_i + y_{ij})} I. \qquad (i = \text{S,D}; j = \text{S,D}) \tag{14}$$

Equation (14) contains the consumption multiplier, i.e. it gives the 'secondary' consumption demand triggered off by the 'primary' investment demand. The two components of aggregate demand bear a close relationship to what Kahn in his seminal contribution to the theory of the multiplier called 'primary' and 'secondary' employment (cf. Kahn, 1931). Total employment L is equal to the sum of sectoral employments, i.e., $\beta_i C$ and $b_j Q$. Taking into account (12) and (13) we get the following expression for the employment multiplier[1]

$$L = \frac{b_j}{x_j - w(\beta_i + y_{ij})} I. \qquad (i = \text{S,D}; j = \text{S,D}) \tag{15}$$

In the short period '[w]e take as given the existing skill and quantity of available labour, the existing quality and quantity of available equipment, the existing technique' (Keynes, 1973, Vol. VII, p. 245). Clearly, in the short period the available quantities of labour, $\bar{L}$, and capital, $\bar{K}$, need not be fully employed. The principle of effective demand suggests in fact that in general it cannot be presumed that aggregate demand is sufficient to utilise all productive resources in existence at normal level. The implication of this is that the realised rate of profit, π, which relates actual profits to total capital available, is generally different from the normal rate of profit, r, associated with a given level of the normal real wage rate, w. The discrepancy between the two is larger, the larger is the discrepancy between aggregate effective demand and productive capacity. In the present model the determination of the realised rate of profit is extremely simple. Because of (10) we have

$$\pi = \frac{P}{\bar{K}p} = \frac{I}{\bar{K}} = g, \tag{16}$$

that is, the realised rate of profit is equal to the ratio of total autonomous net investment to the existing capital stock; it is accordingly equal to the rate of net capital accumulation realised in the period under consideration.[2]

[1] For a more general treatment of the multiplier in terms of a linear model of the production of commodities by means of commodites, see Kurz (1985).

[2] Equation (16) is of course nothing but a particular version of the widow's cruse. It bears a close resemblance to the famous Cambridge equation in the case in which the saving propensity out of profits is unity. However, in contradistinction to (16) the Cambridge equation refers to the relationship between the normal rate of profit and the full employment—full capacity steady-state rate of accumulation.

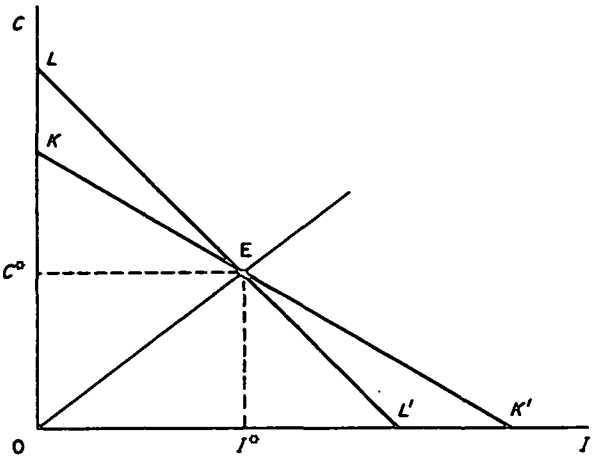

Fig. 2.

In order to be able to say whether aggregate effective demand falls short of, or exceeds, the output produced from normal utilisation of the existing productive resources, it is first necessary to ascertain the production possibilities implied by given amounts of these resources and given technical conditions of production.

4. Available resources and productive capacity

The levels of consumption and investment good output, C and Q, are subject to two constraints. On the one hand total employment cannot exceed the existing work force,[1] i.e.

$$\bar{L} \geqslant \beta_i C + b_j Q. \qquad (i = \text{S,D}; j = \text{S,D}) \tag{17}$$

On the other hand the capital stock needed cannot be larger than the capital stock in existence, i.e.

$$\bar{K} \geqslant \alpha_i C + a_j Q. \qquad (i = \text{S,D}; j = \text{S,D}) \tag{18}$$

Taking into account (12), the labour and capital constraints can also be formulated in terms of C and I:

$$\bar{L} \geqslant \frac{\beta_i x_j + \delta_i \alpha_i b_j}{x_j} C + \frac{b_j}{x_j} I \qquad (i = \text{S,D}; j = \text{S,D}) \tag{19}$$

$$\bar{K} \geqslant \frac{\alpha_i x_j + \delta_i \alpha_i a_j}{x_j} C + \frac{a_j}{x_j} I. \qquad (i = \text{S,D}; j = \text{S,D}) \tag{20}$$

This is illustrated in the net output diagram of Fig. 2, where LL' is the labour constraint and KK' the capital constraint. In the case depicted it is assumed that the proportion of the existing capital stock to the existing work force, $k = \bar{K}/\bar{L}$, lies between the assumedly larger capital–labour ratio in the consumer good sector and the (lower) capital–labour ratio in the

[1] The following argument would not be substantially affected by assuming the supply of labour to depend on the real wage rate.

investment good sector. Hence there exist strictly positive levels of outputs, I^* and C^*, such that both factors will be fully employed.[1]

Figure 2 makes it clear that for both factors to be fully used, two conditions must simultaneously be fulfilled. First, autonomous investment must be equal to I^*; if it is smaller (larger) there can at best be full employment with regard to capital (labour), but not however with regard to labour (capital). Second, the real wage rate must happen to be at a level w^* at which the straight line given by the equation of the consumption multiplier (14) passes through E; if the real wage rate is smaller (larger) the slope of the multiplier line is flatter (steeper) and there can again be full employment with regard to one of the factors only. (It goes without saying that for a sensible solution to exist the wage rate must be smaller than the maximum wage rate compatible with the technique under consideration.)

On the premises of the present model in which both the real wage rate and investment demand are treated as independent variables, i.e., given from outside the system, the former partly as a result of past conflicts over income distribution and the latter as an expression of entrepreneurs' expectations concerning long-term profitability of business, it comes as no surprise that it is only by chance that both factors will simultaneously be fully used.

In fact, it is even doubtful that a feasible constellation of w and I exists, at which both 'factor markets' clear. In the trivial case where k is smaller than the smallest or larger than the largest of all sectoral capital–labour ratios, it is immediately evident that such a constellation does not exist. However, there is a more interesting case to be discussed: the wage rate which, together with an appropriate volume of investment, would bring about the full employment of both factors could perhaps accomplish this task only with a technique, which at that very wage rate will not be chosen.

In order to settle the question we shall first form expressions for the excess supply of labour, Δ_L, and the excess supply of capital, Δ_K. From (19) together with (14) or directly via (15) we get

$$\Delta_L = \bar{L} - \frac{b_j}{x_j - w(\beta_i + y_{ij})} I \qquad (i = \text{S,D}; j = \text{S,D}) \tag{21}$$

and from (20) together with (14)

$$\Delta_K = \bar{K} - \frac{a_j + m_{ij}w}{x_j - w(\beta_i + y_{ij})} I. \qquad (i = \text{S,D}; j = \text{S,D}) \tag{22}$$

Setting $\Delta_L = 0$ gives an expression of all feasible combinations of w and I, at which there is full employment of labour. Correspondingly, for $\Delta_K = 0$ we get an expression relating the two independent variables such that the entire capital stock will be put to use. Performing some manipulations yields in the first case

$$w = \frac{1}{\beta_i + y_{ij}}(x_j - b_j kg), \qquad (i = \text{S,D}; j = \text{S,D}) \tag{23}$$

where $g = I/\bar{K}$ is the rate of capital accumulation in the period under consideration. In the second case we eventually get an expression which, because of the special assumption that all profits are saved, is identical to the consumption-curve (cf. Section 2), i.e.

[1] As will become clear below, such a constellation need not exist with respect to each single technique.

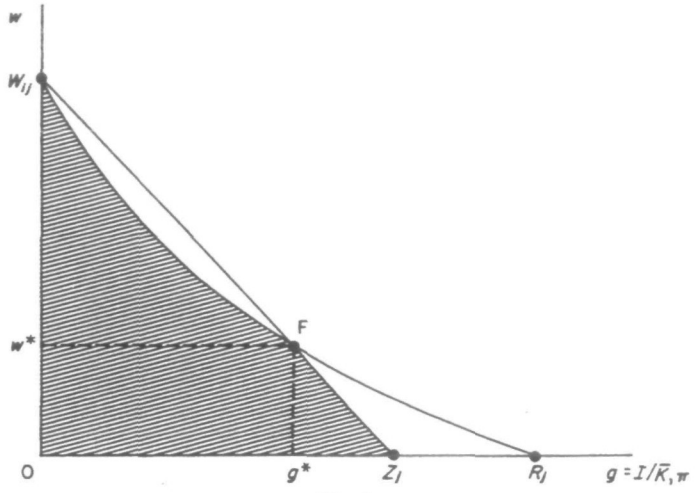

Fig. 3.

$$w = \frac{x_j - a_j g}{\beta_i + y_{ij} + m_{ij} g} \qquad (i = \text{S,D}; j = \text{S,D}) \tag{24}$$

Equations (23) and (24) are illustrated in Fig. 3. Both curves intersect the w-axis at $W_{ij} = x_j/(\beta_i + y_{ij})$; the labour constraint intersects the g-axis at $Z_j = x_j/b_j k$, the capital constraint at R_j. The particular example depicted is assumed to be the same as in Fig. 2. Hence the point of intersection F of the two curves in Fig. 3 corresponds to E in Fig. 2 and gives the values of w and g, i.e. w^* and $g^* = I^*/\bar{K}$, at which both labour and capital will be fully employed.

Clearly, in the region to the left of each curve there is an excess supply of the respective factor ($\Delta_L > 0$ and $\Delta_K > 0$, respectively), whereas in the region to the right excess demand prevails ($\Delta_L < 0$; $\Delta_K < 0$). The two curves divide the positive orthant into four zones characterised by different constellations concerning the signs of factor specific excess supplies. Obviously, the feasible combinations of w and g are those in the shaded area, boundaries included.

After these preparatory considerations in terms of a single technique, we now have to take into account that there exist several technical alternatives. For illustrative purposes we make use of the case depicted in Fig. 1. Figure 4(a) shows the whole set (23), given k, Fig. 4(b) the whole set (24); because of the duality property the latter curves may also represent the set (6) (with r in the place of g). The heavy lines give the factor constraints relevant for the economy as a whole; they reflect the fact that cost minimisation involves switches between techniques as the real wage rate is hypothetically varied from its maximum value to zero.

Figure 4 also shows the points of intersection of the constraints specific to the different techniques, given the factor proportion k. In the case illustrated there are two such intersections only with strictly positive levels of w and g, i.e. F and G. At F (G) full employment of labour and capital would obtain if technique I (III) were to be adopted. However, neither F nor G has a chance to be realised: G has to be ruled out on the grounds that over the whole range of feasible levels of the real wage rate the associated technique III is inferior; and F will not be realised since at the corresponding level of the real wage

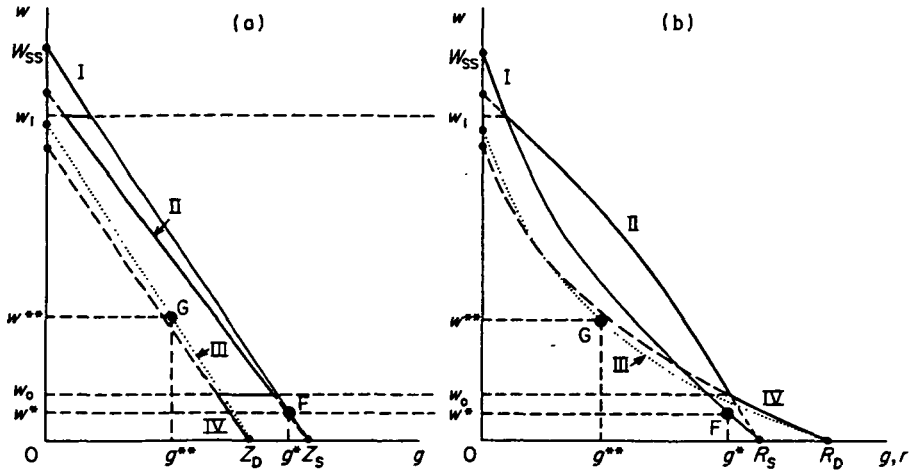

Fig. 4.

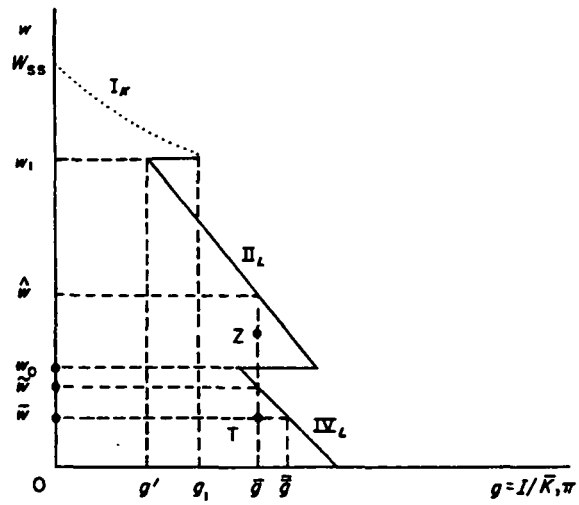

Fig. 5.

rate technique I is dominated by all other techniques. Hence the opinion entertained by some economists that in any given situation there exists 'the' equilibrium real wage rate which, together with an appropriate level of autonomous demand, will clear both 'factor markets', cannot generally be sustained.

Let us now turn to the problem of effective demand in the short period.

5. Effective demand in the short period

In Fig. 4 the constraints on productive capacity in terms of feasible combinations of w and g have been illustrated separately for labour and capital. What is of interest, however, is which of the two constraints is relevant at alternative levels of the real wage rate. Figure 5 shows the relevant constraint for the economy as a whole, which is the 'inner' envelope of the two factor specific constraints. It consists of the dotted line on which the existing

capital stock is fully utilised using technique I, and the unbroken zig-zag line on which the existing work force is fully employed using techniques II or IV, respectively.

The conventional version of the principle of effective demand implies that aggregate demand will generally fall short of the output produced from full utilisation of the existing capital stock and full employment of labour. Hence, at a real wage $\bar{w}$ and an autonomously determined level of investment $\bar{I}$, and thus a rate of accumulation $g = \bar{I}/\bar{K}$, both labour and capital will be underutilised. The rate of unemployment, e, is defined as

$$e = \frac{\Delta_L}{L}. \tag{25}$$

It is obtained by inserting $\bar{w}$ and $\bar{I}$ in equation (21) and by specifying $i,j = \mathrm{D}$. Let the degree of capital utilisation, u, be defined as

$$u = \frac{\bar{K} - \Delta_K}{\bar{K}} = 1 - \frac{\Delta_K}{\bar{K}}. \tag{26}$$

It can be ascertained in a similar way via equation (22).

An important property of the present model is that it allows us to distinguish between two different aspects of capital utilisation which, in the real world, seem often to be insolubly intertwined: on the one hand there is the aspect of the manner in which those parts of the existing capital stock that are actually used will be operated, i.e. whether the S or D-system will be adopted; on the other hand there is the aspect of which proportion of the entire capital stock will be brought into use.

In the above it was argued that in general it cannot be presumed that there exists a combination of w and I at which both 'factor markets' clear. We may now ask: does there at least exist a combination of the two independent variables such that one market and preferably the labour market clears? Figure 5 shows that this is in fact the case. However, for a given g it is possible that several levels of w are compatible with full employment of labour. For $g = \bar{g}$, for example, there are three such 'equilibrium' wage rates: $\tilde{w}$, w_0 and $\hat{w}$. Hence, starting from T, an incomes policy which is exclusively directed at the attainment of full employment, would, *ceteris paribus*, have to raise the real wage rate to one of these levels, while starting from Z it would have to raise wages to $\hat{w}$ or reduce them to w_0 or $\tilde{w}$. Therefore, the widespread opinion that there is 'the' market-clearing wage rate cannot generally be sustained.

It is not even granted that for an arbitrarily given (positive) g there exists a level of wages compatible with full employment. For $g < g'$, for example, there is merely the possibility of full capital utilisation. Therefore, Keynes's suggestion to define full employment of labour as the situation when the capacity constraint is met, contains an euphemistic element: 'If I were to write again, I should indeed feel disposed to define full employment as being reached at the same moment at which the supply of output in general becomes inelastic' (Keynes, 1973, Vol. XIV, p. 71).

Figure 5 in addition illustrates the opinion entertained by Keynes, vintage 1939, that starting from a 'Keynesian' situation, such as T, characterised by idle labour and capital, an expansion of aggregate demand and output is not, within certain limits, tied to a reduction in real wages. Thus, autonomous demand could, for example, be increased from $\bar{I}$ to $\bar{\bar{I}}$ without necessitating a fall in real wages below the original level $\bar{w}$. Other things being equal, an increase in effective demand would simply be reflected in a higher degree

of capital utilisation and thus, with a constant profit margin per unit of sale, in an increase in the realised rate of profit.

So far the levels attached to what were taken to be two independent variables of the present model, that is, the real wage rate and real investment demand, have been chosen in such a way that they did not contradict the ruling capacity constraint. Clearly, whenever the latter is met at most one of the two variables may be regarded as exogenously given, while the other has to be assumed to adjust accordingly. *Prima facie* it appears to be plausible to assume that with the capital (labour) constraint becoming effective it is the wage rate (investment) rather than investment (the wage rate) which must bear the brunt of equilibrating aggregate demand and capacity output.[1]

6. Conclusion

This paper has illustrated, in terms of a simple two-sectoral model, the role of alternative systems of operation of plant and equipment, which can be conceived as alternative techniques, in the theory of effective demand. It has been argued that in order to be able to talk of an over- or underutilisation of capital one needs a norm with which actual utilisation is to be compared, that is, one needs a concept of 'normal utilisation'. With free competion such a norm is provided by the cost-minimising system of capital utilisation. It is shown that the latter cannot generally be determined independently of income distribution, i.e. the real wage rate. Furthermore, it is demonstrated that in the short run with given quantities of labour and capital there may exist combinations of the real wage rate and autonomous investment demand to guarantee full employment of both factors. However, these 'super equilibria' need not be feasible, since at the corresponding wage rates the techniques, which would bring about the full employment of both factors, may not be chosen because they are not cost-minimising (and thus profit-maximising). It is then shown that for a given level of investment demand there may exist multiple levels of the real wage rate compatible with full employment of labour. An implication of this is that the opinion entertained by many 'orthodox' economists that unemployment is due to a level of real wages that is 'too high', cannot generally be sustained. Some support is provided for Keynes' post-*General Theory* view that the short run is sometimes a 'cooperative game' in which both labour and capital can gain, labour in the form of higher employment at a constant real wage rate, capital in the form of a higher degree of utilisation and a higher profit rate.

While in the short period effective demand determines the degree of utilisation of the existing productive equipment, in the long period it determines the growth of equipment. It thus widens the margins within which fluctuations in aggregate demand translate into fluctuations in output as a whole and employment. The central message of Keynes' *General Theory* was that there is no reason to expect that these fluctuations will be around a full employment level of labour. However, in order to be able to explain the trend of employment over a series of booms and slumps we need a theory of effective demand in the long period, the core element of which would have to be an analysis of the factors affecting the rate of capital accumulation.

[1] As is well known, Kaldor in his famous 'neo-Keynesian' approach to the theory of income distribution assumed full employment. However, this assumption is difficult to reconcile with the further assumption of downward flexible real wages. As his critics have pointed out, a situation of full employment can hardly be supposed to favour a shift to profits if accumulation is speeded up; see, for example, Steindl (1979).

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