

# On the Relationship between Effective Demand and Income Distribution in a Kaleckian Framework \*

## 1. Introduction

1.1 The purpose of this paper is to take up some issues raised by Kalecki in his posthumously published article "Class struggle and distribution of national income".<sup>1</sup>

In that essay Kalecki tried to link his work on oligopolistic pricing as the chief determinant of the distribution of income, with the role that trade unions might have in increasing the level of employment and output by lowering the degree of monopoly.

The above should be viewed, in our opinion, as an attempt to adapt his famous "Political aspects of full employment", written in 1943, to contemporary industrial relations.<sup>2</sup>

In fact in the 1943 essay trade unions play a completely passive role, being able to push for higher wages only around the top of the boom, whereas in his last essay they retain the power to struggle for wage increases under conditions of effective demand unemployment and excess capacity, the latter being determined by the oligopolistic feature of the market structure.

The theoretical framework of "Class struggle and distribution of national income", is based on the criticism of the view that when wages rise *ceteris paribus*, the level of profits falls. As will be seen in section 2, by using Marx's schemes of reproduction, Kalecki was able to prove that, in a given short period, a part of the wage bill

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<sup>1</sup> KALECKI (1971, reprinted 1971).

<sup>2</sup> KALECKI (1943, reprinted 1971).

is positively related to the level of profits in the consumption goods sector and through the latter, to the level of aggregate profits.

1.2 In this paper we shall follow Kalecki's methodology and thus work on the basis of a two-sector Marxian model. This approach is also useful from a didactic point of view, because it shows how investment leads savings rather than the other way round. In fact, with given prices, an increase in the surplus (savings) in the consumption goods sector must correspond to a rise in employment, hence in output, in the capital goods sector, in order for the additional consumption goods to be sold. If the investment in the capital goods sector has not changed, the additional surplus in the consumption goods sector will pile up in inventories. This points to the specificity of production, namely that output is not formed by a multi-purpose commodity both investible and consumable.<sup>3</sup>

1.3 In this context we shall assume fixed coefficients of production because, as it has been put recently by Professor Löwe:

"Obstruction of resource shifts, bottlenecks in production, inelasticity of supply owing to the *longue durée* of capital formation and even more to the large costs of sunken capital, these and most other impediments to smooth expansion are the effect of the *large size and the technical specificity of inputs*. Consequently 'fixed coefficients of production' dominate the adjustment process..."<sup>4</sup>

Moreover, we shall assume balanced idle resources, so that theoretically full utilisation of capital equipment can be attained simultaneously in both sectors.

This approach will enable us to show that, even under the most favourable short-run technological conditions, bottlenecks may arise depending on the price/cost relation and on the level of inventories in the way described by Hicks<sup>5</sup> (section 4). This will deeply affect the range of validity Kalecki assigned to trade union pressure to achieve higher employment levels through wage increases. The full assessment of the introduction of inventories into Kalecki's framework will require a preliminary critical analysis of the supply functions

<sup>3</sup> PASINETTI (1974), BAHADURY (1976).

<sup>4</sup> A. LOWE (1976), p. 9.

<sup>5</sup> HICKS (1974).

postulated in most of his earlier works on oligopolistic pricing. This will be carried out in section 3.

Finally, in section 5 we shall introduce capital accumulation into the picture, arguing that in the longer run inventories play a much reduced role, the central issue being the allocation of capital equipment in the capital goods and consumption goods sectors, in which case Kalecki's earlier approach has again general validity.

## 2. The Short Period Kaleckian Model and Adjustments in the Distribution of National Income

2.1 The use of Marx's departmental scheme by Kalecki requires some clarifying remarks before we proceed any further.

In Marx the surplus of consumption goods sold to capitalists and workers in the capital goods sector is exchanged with an equal value of capital equipment. This is because Marx assumed investment to be always at the level required to maintain the moving equilibrium, so that the problem of effective demand does not arise.

This causation breaks down in Kalecki and Keynes. The existence of unused capacity, always postulated in their models, implies that the level of activity in each sector can increase without augmenting the level of capital stock. In their short period framework, capital equipment is supposed not to change. Therefore the only type of investment that matters is replacement investment, since it prevents the amount of capital stock from shrinking.

In this way any increase in real investment beyond replacement is, in the short period, relevant only to the extent to which it increases the level of employment in the capital goods sector, causing in turn an expansion of both output and employment in the consumption goods sector. It does not necessarily follow that the amount of capital goods sold to the consumption goods sector should also increase. This will rather depend on the existing degree of capacity utilisation.

As pointed out by Professor Meade, in a Keynesian situation, it is possible to think of capital goods being taken off the market (once produced) by means of Government expenditure.<sup>6</sup>

<sup>6</sup> J. E. MEADE (1961) ch. 7.

Investment thus determines only the output of consumption goods. Indeed Kalecki made use of a multiplier showing the expansion of the latter sector only.

2.2 With these qualifications in mind we can now illustrate the essence of Kalecki's construction as set forth in the essay mentioned above.

On the basis of a modified Marxian scheme we have the following equilibrium equation:

(1) Capitalists' and workers' consumption demand in sector 1 = Total output in sector 2 - workers' and capitalists' consumption in sector 2 = Savings in sector 2  
where the notations 1 and 2 stand for capital goods and consumption goods sector respectively.

If we now consider vertically integrated industries the only variable cost will be the wage cost. Hence we have:

(1.a) Total output - wage costs in each sector = Profits in each sector.

Let us combine equation (1.a) with equation (1) and we get:

(2) Profits in consumption goods sector = Aggregate capitalists' consumption + workers' consumption in capital goods sector.

Equation (2) will provide the guidelines for our analysis of the distribution of income, since it points at a fundamental feature of wages: the wage bill in the capital goods sector contributes to the level of profits in the consumption goods sector. Treating for the time being capitalists' consumption as completely autonomous, from (2) we have:

$$(2.a) P_2 = C_c + aW \quad \text{where } a = \frac{W_1}{W_1 + W_2};$$

$P_2$  = Profits in sector 2

$C_c$  = Capitalists' consumption

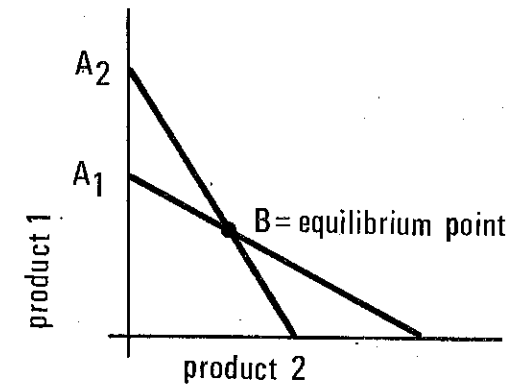
The linear relation (2.a) shows that the level of profits in the consumption goods sector will change in a given proportion to the wage bill. Thus the first effect of an increase in total wage bill will be a rise in  $P_2$  rather than a direct change in the distribution of income between profits and wages. Kalecki came to this conclusion, through

a slightly different formulation, in his essay "Class struggle and distribution of national income" by making some additional restrictive assumptions; namely that neither prices nor capitalists' spending on investment and consumption are likely to change immediately.

2.3 For our purposes, however, it is necessary to analyse the supply conditions in a more detailed way, in order to see whether the effect discussed by Kalecki will be in real or monetary terms and how it will affect the distribution of income.

Our assumption of balanced (idle) factor proportions can be represented by means of the following diagram:<sup>7</sup>

FIGURE 1



Point B represents full employment output without technological imbalances. In terms of our two-sector hypothesis, this means that full employment in the capital goods sector generates full employment in the consumption goods sector.

In our fixed coefficients framework with no bottlenecks, an increase in investment from an initial level  $I_0$  to  $I_F$ , (where  $I_F$  is the full capacity level of investment) will increase employment in sector one by an amount determined by the labour coefficients in that sector. This is because investment is by definition the output of capital

<sup>7</sup> M. FUKUOKA (1955), R. BHARADWAJ (1963).

goods industries.<sup>8</sup> The wage bill originating in sector one will thus give rise to a multiplier process in the consumption goods sector.

Since we assumed perfect proportionality in the degree of unused capacity, we can start from an arbitrary level of "below-capacity operation". In this case we can also assume that capitalists consume a given proportion of the value of the consumption goods output. The above assumption is in line with Kalecki's observation that capitalists can fix the level of their consumption quite independently from the price level, since it largely depends on past accumulated wealth.<sup>9</sup>

When investment is pushed up to capacity, *given the money wage*, all magnitudes will rise in the same proportion. It is thus possible to generalize eq. (2.a) into the multiplier formula for the consumption goods sector:

$$(3) p_2 X_2 = \frac{W_1}{a} + b p_2 X_2 \quad \text{where } X_2 \text{ is output of sector 2,}$$

$p_2$  is the price index of consumption goods and  $b$  is the proportion going to capitalists' consumption ( $0 < b < 1$ ),  $\frac{W_1}{a} = W$  from the relationship  $\frac{W_1}{W_1 + W_2} = a$ ,  $W_1$  is the wage bill in capital goods industries.

The multiplier is:

$$(3.a) p_2 X_2 = \frac{1}{(1-b)a} W_1$$

This expression enables us to see how the wage bill in the capital goods sector acts as autonomous expenditure in the consumption goods sector. If there is a proportional increase in  $W_1$  such that 'a' remains unchanged, output will increase as will profits,

<sup>8</sup> Calling  $X_1$  capital goods output,  $L_1$  and  $L_2$  the labour employed in each sector and  $h_1, h_2$  the product per unit of labour in each sector we have:

$\Delta I = \Delta X_1$ . Employment in the capital goods sector will expand by  $\frac{\Delta X_1}{h_1} = \Delta L_1$ . Therefore  $w \Delta L_1 = \Delta W_1$ , where  $w$  is the money wage rate. The increase in the wage bill in sector 1 will determine an expansion of employment in sector 2 by

$\frac{\Delta W_1}{h_2} = \Delta L_2$ , from which we get the formula of the multiplier. It must be noted that according to our assumption of balanced factor proportions all the ratios remain the same up to technological full employment.

<sup>9</sup> M. KALECKI (1954).

so that "no absolute shift from profits to wages occurs...".<sup>10</sup> The change will be confined only to the share of profits in sector 2 over total profits.

This, we believe, is the gist of the short-period theory of income distribution developed by Michal Kalecki, from which he derived a set of conclusions about the relationship between wages and prices which are very close to the ones embedded in Hicks's<sup>11</sup> "wage theorem", as we shall see later.

2.4 In outlining his theory Kalecki made two assumptions: that of perfect competition and that of oligopolistic pricing.

The first case involves full capacity utilisation, so that eq. (3) becomes a truism: any increase in  $W_1 = aW$  will be reflected in a price rise. The shift in profits from sector 1 to sector 2 will be only temporary because the increased profitability in the consumption goods sector cannot be matched by a corresponding increase in the supply of capital goods from sector 1. Hence the only result will be a rise in prices of capital goods.<sup>12</sup>

In the oligopolistic case, according to Kalecki, unused capacity is the norm and eq. (3) is no longer a truism, since the additional consumption demand stemming from an expansion of the wage bill can be met in real terms.

2.5 At this point, however, it is necessary to make a sharp distinction between an increase in the wage bill resulting from stepping up production in the capital goods sector (following for instance government expenditure) and that resulting from a rise in the unit money wage rate.

The first type of expansion in consumption demand is the one represented by eq. (3.a) and should not raise any major misgivings. If no imbalances exist and the economy is at an underemployment equilibrium, investment rises and no change in the product per unit of labour will take place. In addition, the ratio of the unit money wage to the product per unit of labour will remain unaltered. Output can thus expand till the point of maximum capacity.

<sup>10</sup> M. KALECKI (1971) "Class struggle..." *cit.*

<sup>11</sup> J. R. HICKS (1974) *cit.* ch. 3.

<sup>12</sup> It must be noted that this is true only if we assume that the proportion between the two sectors does not change.

In terms of our multiplier relation for the consumption goods sector we have:

$$(4) p_2 X_2 = \frac{w}{(1-b)} (L_1 + L_2) \text{ where } L_1 + L_2 \text{ is total employment in each sector.}$$

Hence:

$$(4.a) p_2 \Delta X_2 = \frac{w}{1-b} \Delta L$$

Price stability is, in this context, assured by the fact that, for a given  $w$  and  $b$ ,  $\Delta L / \Delta X_2 = L/X_2$ , i.e. there is no change in the proportion of employed labour to consumption goods output.

### 3. Some Critical Observations on Kalecki's Supply Functions and Oligopoly Prices

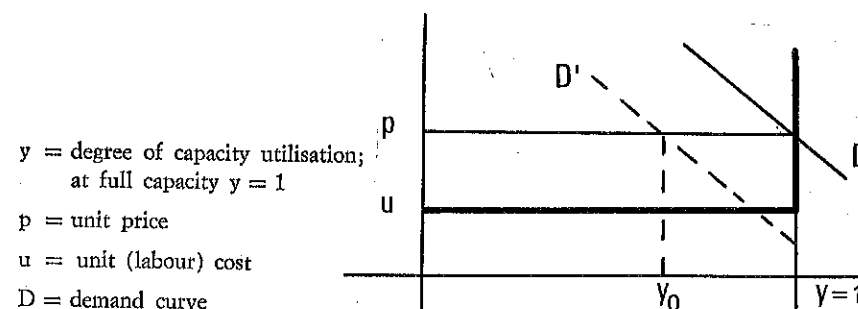
3.1 The above reasoning has been usually presented in the form of an L-shaped variable cost curve, flat over the range of below-capacity output, then becoming perfectly inelastic. Since prices are set above the variable cost curve, the ensuing difference has been called by Kalecki the "degree of monopoly" in a given industry. If the purpose is to define the profit-cost relation the procedure is not questionable.<sup>13</sup> But if the goal is to explain how oligopoly prices are related to elastic supply function of L type, then the method turns into circular reasoning. L-shaped functions are assumed in order to get oligopoly prices; then the latter are brought in to explain why below full capacity output exists.

The diagram showing that type of cost curve is nothing but the equivalent on the output side of what fig. 1 is on the factor side, as can be seen in fig. 2.

According to fig. 1, if there is perfect balance in the existing (idle) factors, technological full employment can be reached at point B. Likewise fig. 2 shows that if the actual level of activity corresponds to a degree of capacity utilisation equal to  $y_0$ , full capacity output

<sup>13</sup> Kalecki's equation of the "degree of monopoly" is:  $(p-u)/u$  where  $p$  is the unit price and  $u$  is the unit prime cost. Hence  $p-u$  is equal to profits per unit of output. The above formula therefore shows the profit-cost relation. It should be clear that  $(p-u)/u > 0$  otherwise  $p/u$  will be equal to 1.

FIGURE 2



and employment can be reached without any change in prices, involving an expenditure multiplier of the type expressed in (3.a) and an employment multiplier equivalent to the one shown by formula (4). Yet fig. 2 does not explain why the level of activity is at the under-employment equilibrium point  $y_0$ ; nor can it be ascribed to monopolistic pricing since output can be increased without any change in the price-cost relation; it is therefore merely an assumption.

The fact that output and employment may settle at a level corresponding to  $y_0$  is indeed related to price inelasticities, though not because production is deliberately held below full capacity, but rather because a given and rigid price/wage cost relation may prevent the allocation of capital goods between the two sectors in the proportion required to maintain full employment over time, as we shall see in section 5.

Therefore in Kalecki's earlier short-period framework unused capacity becomes a totally passive element and should be treated as an assumption. The problem in interpreting Kalecki's approach arises from this very fact, which implies a dual meaning of the "degree of monopoly": on one hand he used it as a definition of the numerical ratio of unit prices over unit prime (labour) costs<sup>14</sup> which can be, under certain assumptions, fully consistent with an L-shaped supply function. On the other hand he used the term "degree of monopoly" with reference to a non-competitive market structure resulting in under-utilisation of resources.

<sup>14</sup>  $p/u - 1 > 0$ ; we can also write  $p/u - 1 = n$  where  $n > 0$  therefore  $p/u = 1 + n$ , where  $n$  is the markup on prime costs.

The latter interpretation turns the concept of unused capacity into a dynamic one, since in real terms a different price-cost relation must correspond to every different level of demand. It therefore does not strictly follow from the type of supply functions previously discussed and postulated in most of Kalecki's writings.<sup>15</sup>

It is now possible to understand the meaning of an increase in the wage bill resulting from a general rise in unit money wages as opposed to that resulting from the expansion of activity levels in sector 1. In the former case the degree of unused capacity becomes, even in the short period, a strategic and no longer passive factor.

3.2 When dealing with oligopolistic conditions in his "Class struggle and distribution of national income" Kalecki introduced the hypothesis of a "spectacular" and uniform increase in money wages with capitalists' consumption, investment and prices in the capital goods sector remaining unaltered. He ascribed this process to two factors: to the oligopolists' fear of competitors, which means they cannot adjust their prices *ad libitum*, and even more important to the ability of trade unions to keep wages up with prices "since they know that firms can 'afford' to pay them",<sup>16</sup> thereby reducing the degree of monopoly in the capital goods sector.

As we have seen before, an expansion of the level of activity in the investment goods sector generates a multiplier effect in sector two on the basis of eqs. (3.a) and (4), with an unchanged ratio between the product per unit of labour and money wages. An expansion of the wage bill due to a general wage raise will result in a decline of the ratio between unit product and unit labour costs. Indeed, a proportional wage increase means that the surge of labour costs in the consumption goods sector will be matched by an equal flow of profits to consumption goods industries from the new wage bill in the capital goods sector, on the basis of eq. (2). Thus there will be a change in the sectoral composition of profits. Yet this situation can be achieved only by a price increase in consumption goods, and not by expanding their output in real terms, this price increase is identical to what would happen in case of perfect competition. If the additional demand for consumption has to be met in real terms with stable prices, output and employment should grow at the same

<sup>15</sup> M. KALECKI (1939), (1954).

<sup>16</sup> M. KALECKI (1971) *cit.*

rate. The newly employed workers will be paid at the higher money wage. Therefore the share of wages in sector two over total wage bill will increase, causing a shift in the distribution of income from profits to wages.<sup>17</sup>

In this context Kalecki assigned to the trade unions the specific role of lowering the degree of monopoly, especially in sector two, thus fostering the level of employment and output, and reducing the amount of spare capacity.

The distribution of income becomes therefore an endogenous as well as an exogenous variable. The endogenous component is determined by the ability of the consumption goods sector to meet the additional demand in real terms, whereas the exogenous one is governed by the interplay between trade-union pressure and the minimum level of unused capacity that oligopolists deem necessary to maintain.

3.3 Kalecki's new formulation of the employment multiplier is indeed very stimulating because it is based on a varying distribution of income, itself a function of the desired level of excess capacity. This approach implies a sharp departure from his early works based on supply functions of an L type, in which the distribution of income as well as the degree of capacity utilisation are given parameters, as we have already seen.

The implications are, in our opinion, far reaching. In the first place the very notion of a balanced factor proportion with idle

<sup>17</sup> To clear away all the doubts about the inverse relationship between the share of wages in the consumption goods sector and the share of the wage bill in sector one over the total wage bill a simple proof is given below. From eq. (2.a) we have  $W_1 = aW$  hence  $W_2 = (1-a)W$ . Then we have:

$$(I) \frac{W_2}{p_2 X_2} = \frac{(1-a)W}{p_2 X_2} = q. \text{ Moreover from eq. (3.a) we have: (II) } W_1 = p_2 X_2 (1-b) a$$

while capitalists' consumption is: (III)  $b p_2 X_2$ . Rearranging the above terms and recalling that total consumption goods output is  $p_2 X_2 = W_1 + W_2 + b p_2 X_2$ , we have by substituting from I, II, III and solving for  $W_2$ :

$$W_2 = p_2 q X_2 = p_2 X_2 - (1-b) a p_2 X_2 - b p_2 X_2;$$

dividing both sides by  $p_2 X_2$  we get:  $q = 1 - (1-b)a - b$ . Since the capitalists' share of total consumption  $b$  is assumed to be constant we can differentiate  $q$  only with respect to  $a$ , which gives:  $dq = bda - da$ ;  $dq/da = b - 1 < 0$ .

The derivative of  $q$  (the share of wages in sector 2) with respect to  $a$  (the proportion of total wage bill going to workers in the capital goods sector) is thus negative, therefore as  $a$  increases  $q$  decreases, i.e. the distribution of income in the consumption goods sector shifts to profits. Likewise a decline in  $a$  will cause the distribution of income in sector two to shift in favour of wages.

resources is upset, moreover Keynes's concept of monetary illusion is here reversed: oligopoly prices follow upward movements in money wages, in a way formally similar to that described by Hicks.

Yet in order to spell out these implications clearly we should, following Hicks once again, take into account the role of inventories, because it is via changes in the latter that the connection between movements in output, income distribution and prices comes into play in the short period.

Kalecki, by clinging to the level of unused capacity as the sole condition for the working of his employment/income distribution multiplier, failed to see the strategic role of inventories.

#### 4. The Role of Inventories in a Modified Kaleckian Short Period Framework

4.1 In his "Crisis in Keynesian Economics" Hicks pointedly argued that Keynes' omission of changes in inventories makes the working of the multiplier rather vague. According to Hicks, who used a two-sector model similar to ours but not vertically integrated, the higher the level of inventories the weaker the multiplier effect caused by a rise of investment in capital-goods industries. On the other hand, the lower their level the stronger the danger of inflationary strains, or even of a decline in the level of employment if resources are to be transferred from one branch of the industry to another. We can immediately see that, in contrast to Kalecki's theory, the existence of spare capacity (and balanced idle resources) is not the only condition for the working of the multiplier but has to be tied to the existing level of inventories. Bearing in mind this very important contribution by Professor Hicks we shall now modify somewhat Kalecki's argument by linking money wages and prices to inventories and the latter to excess capacity.

4.2 We shall assume, as usual, the simplest case of L-shaped supply functions with no factor bottlenecks. Moreover, inventories will appear only in the consumption goods sector, because of Kalecki's assumption that capital goods are produced on orders made some time ago, and consequently orders and output of machines move at the

same lagged pace.<sup>18</sup> In this context the condition for price stability can be easily derived from equations (3.a) and (4).

$$(5) p_2 X_2(1-b) = wL_1 + wL_2 = wL$$

Dividing both sides by  $L_2$  we have:

$$(5.a) p_2 \frac{X_2}{L_2}(1-b) = w \frac{L}{L_2}$$

The ratio  $X_2/L_2$  defines the product per unit of labour in the consumption goods sector whereas  $L/L_2$  is the ratio of total labour employed over employment in sector 2. We shall call them  $h_2$  and  $z$  respectively. Substituting and solving for the unit price  $p_2$  we get:

$$(6) p_2 = \frac{wz}{h_2(1-b)} \quad \text{where} \quad \begin{array}{l} w > 1 \\ z > 1 \\ h_2 > 1 \\ b < 1 \end{array}$$

Eq. (6) holds good only if the level of inventories remains unchanged. If this is the case an increase in the unit wage rate or in the numerical value  $z = \frac{L}{L_2}$  or in both will raise consumption

goods prices. In particular, the increase in prices with respect to wages will always be positive, as can be seen by differentiating eq. (6). The above conclusion is independent from the degree of unused capacity, because the equilibrium condition is expressed in terms of output flow per unit of labour.

The picture will change, however, if we introduce variations in the level of inventories because eqs. (5) and (5.a) can now be expressed in terms of inequalities.

4.3 We have then two basic cases. Assume that the flow of consumption goods, given the price level  $p_2$ , capitalists' consumption coefficient  $b$  and the productivity of labour  $h_2$ , exceeds wage earners' consumption demand. Thus a steady accumulation of inventories will take place. Under these conditions an expansion of the level of activity in the capital goods sector will generate an employment

<sup>18</sup> M. KALECKI (1933).

and multiplier effect in the consumption goods sector but only to the extent to which capitalists want to enlarge the share of inventories over current production. If on the other hand the share of inventories remains constant, given the coefficients of production and the price/wage relation, the employment multiplier in the consumption goods sector will be reduced in a proportion equal to the difference between the absolute increase in the wage bill of sector one and the negative change in the level of inventories divided by the productivity of labour in sector 2.<sup>19</sup> We can call the above situation a deflationary recovery because the higher level of activity in sector one is accompanied by an inventory accumulation in the consumption goods sector. Excess capacity is relevant, in this context, only in that it allows for larger investment and higher employment without altering the structural relations between the two sectors. Yet the rate at which employment grows crucially depends on the level of inventories, and so will price stability.

Suppose that the accumulation of inventories is deemed undesired. In order to have the maximum employment multiplier determined by  $\frac{\Delta W_1}{h_2}$ , it is desirable to raise the money wage.

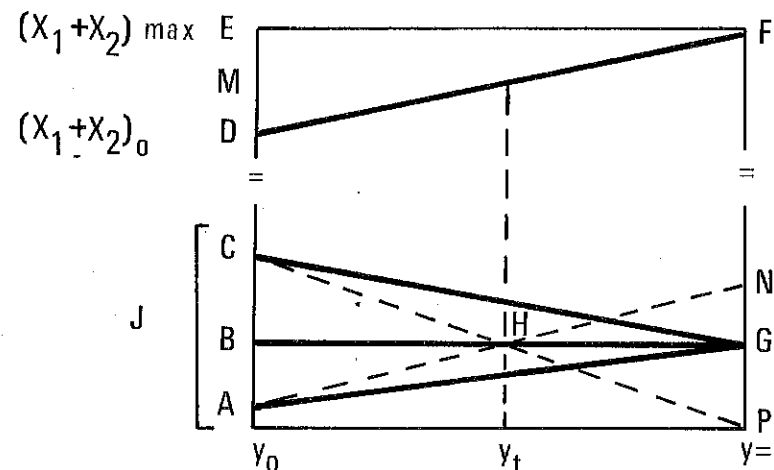
On the basis of Kalecki's theorem, this will be reflected in a change in the composition of profits.

The second case occurs when the price/wage cost relation is such that consumption demand exceeds the current flow of output. With a low level of inventories an inflationary situation will arise independently from the margin of idle capacity. If, on the other hand, this level is deemed too high, the increase in employment takes place along with a decline in inventories. The latter however should hit

<sup>19</sup> Recalling the definitions given in footnote 8, we can write:  $\Delta I = \Delta X_1 = h_1 \Delta L_1$  from which we obtain  $w \Delta L_1 = \Delta W_1$ . With a constant level of inventories the effect of  $\Delta W_1$  on the level of employment in the consumption goods sector will be identical to that shown in footnote 8:  $\frac{\Delta W_1}{h_2} = \Delta L_2$ . In the case of excess inventories however we have  $\frac{\Delta W_1 - \Delta J}{h_2} = \Delta L_2^* < \Delta L_2$  provided  $|\Delta W_1 - \Delta J| > 0$ : where J is inventories. It must be noted that, since we assume fixed coefficients, whenever the ratio  $\frac{\Delta W_1 - \Delta J}{h_2} < 1$  the increase in employment in the consumption goods sector will be always 1. This is because fixed coefficients imply indivisible labour and equipment.

the desired level more or less around the point of full capacity, at which the burden of adjustment will fall on prices. If the desired level is reached sooner the inflationary strains will come up again.

4.4 The whole discussion can be shown in fig. (3).



Points A, B, C define three different levels of inventories J. Below the desired level (A), at the desired level (B) and above it (C).

For the sake of simplicity, we assumed that the desired level is a given magnitude, but the argument also holds if we consider inventories to be proportionate to output. Finally, points D, M, E define the possible levels of aggregate output  $X_1 + X_2$ , corresponding to the degree of capacity utilisation  $y_0, y_t, y = 1$ .

Starting from a level of activity D corresponding to a degree of capacity utilisation  $y_0$  the maximum employment multiplier effect

$\frac{\Delta W_1}{h_2}$  will be maintained along with price stability insofar as the

level of inventories C converges to G. That is, the price/wage relation can be in an excess demand equilibrium, provided the desired level of inventories is reached at the point of maximum capacity, at which prices must adjust on the basis of eq. (6). Alternatively, following Kalecki, unions can press for even higher wages, so that inventories fall along the line CP at the end of which prices should adjust. The result will be that at the level of activity



$E = (X_1 + X_2)$  max corresponding to  $y = 1$ , the level of consumption will be higher because of the larger decline in inventories. This means that the share of profits  $P_2$  over total profits will be higher than otherwise. A shift in the distribution of income from profits to wages would occur also if capitalists' consumption were to rise less than proportionately, with inventories still falling along the CP line.

The situation is entirely different if we start from position A with too low inventories and with a deficit demand price/wage relation. As before, deficit demand and price equilibrium will be assured with inventory accumulation along the AG line. When point G is reached, prices must fall and the distribution of income will shift in favour of wages. This shift will be determined by the larger share of wages in the consumption goods sector and by the relation between the latter and total output. Assume, however, that the price/wage relation is such that *ceteris paribus* inventories grow at a rate given by the AN line. Up to point H (arbitrarily chosen), the employment multiplier will operate in full swing, beyond it consumption demand will be met partly by excess inventories and partly by current production. The expansion of employment will thus slow down according to formula  $\frac{\Delta W_1 - \Delta J}{h_2} = \Delta L_2^*$ . Consider now what would happen

if the level of activity in the capital goods sector continued to increase up to full capacity, wages and prices in that sector being given. The expansion of the wage bill in sector one would not call forth a proportional increase in the wage bill of the consumption goods sector because of excess inventories. As a consequence the  $W_1/W$  ratio will rise, and as we know from our previous discussion, the higher the  $W_1/W$  ratio the higher the share of profits in sector two; and since the price/wage relation in the capital goods sector has not changed, the overall share of profits is now higher. The introduction of inventories has thus led us to reverse Kalecki's reasoning, and to show, without altering his basic assumptions, that a rise in the wage bill may be accompanied by a higher profit share in a given short period.

4.5 It is now possible to assess better the range of validity of Kalecki's approach. Bearing in mind the previous discussion on the difference between a change in the wage bill induced by a higher

level of investment, and that determined by higher unit money wages, we can make the following remarks:

(a) The crux of Kalecki's argument rests on the assertion that a "spectacular" increase in money wages will in the first place lower the degree of monopoly in the capital goods sector and shift the sectoral composition of profits to the consumption goods sector. If, however, in the latter excess capacity exists, an employment multiplier effect will take place. The wage bill in sector two will expand more than proportionately causing a fall in the  $W_1/W$  ratio. To the higher level of income and employment there will thus correspond a lower degree of monopoly and profit share. Clearly, following the above analysis, this situation can arise only if a positive accumulation of inventories is under way in the consumption goods sector. That is, the price

equilibrium relation (6)  $p_2 = \frac{wz}{h_2(1-b)}$  becomes  $p_2 > \frac{wz}{h_2(1-b)}$  (6.a).

In terms of the example shown in fig. 3, this means that when inventories reach the desired level (point H) employment will grow more slowly. In order to bring inequality (6.a) back to equilibrium the unit wage rate should increase as well. The main implication is that the share of wages at full capacity  $y = 1$  with inventories taking any value between G and P will be higher than at any rate of capacity utilisation below  $y$  (in our case  $y_1$ ) thus satisfying Kalecki's conclusion.

(b) In the case of a constant or declining level of inventories, Kalecki's argument does not hold. In particular when  $p_2 < \frac{wz}{h_2(1-b)}$

a steady depletion of inventories is possible provided this level will still be positive when full capacity is reached [Line CP in fig. 3]. At that point, however, prices must increase, lowering the share of wages. From the above, we can make the following observation. That is, if we now consider an open economy, under the simplifying assumption that the balance of trade is in equilibrium up to full capacity, the higher price level is likely to call forth a larger amount of imports. The problem of effective demand will immediately make its appearance in the consumption goods sector. Hence output and employment will decline, under conditions of a simultaneous inflation

and balance of trade deficit. The pressure for a higher wage share will thus be reflected in larger imports and lower employment levels.

(c) It is easy to see that the role of unused capacity is different whether we refer to point (a) or (b). In the former, it takes a dynamic aspect, since it depends on the interaction between trade union pressure and oligopolistic pricing. In short, it rests on the set of considerations on the basis of which capitalists are willing to yield to wage pressures. In the latter, the existence of unused capacity per se does not determine the achievement of short-run full employment, as the crucial factor is the relation between the price/wage cost ratio and the level of inventories.

(d) The above analysis shows that postulating balanced factor endowments is not a sufficient condition for the working of Keynesian policies, up to full employment. It must be remembered that it is on this implicit assumption that many short-run macro-economic models, which neglect supply and income distribution conditions, have been built. By following closely Kalecki's methodology, we have tried to show that even under the most favourable technological assumptions the achievement of short-run full employment is strictly linked to the relation between oligopolistic pricing, the level of inventories and trade union activity. Indeed, a distinguishing feature of Kalecki's approach is that it constantly stressed the role of "distribution factors" in framing full employment policies, rather than relying on a suitably flexible monetary and fiscal system.<sup>20</sup>

## 5. The Effects of a Given and Rigid Distribution of Income under Conditions of Capital Accumulation

5.1 Our evaluation of Kalecki's work will, however, be incomplete if we avoid the contradiction within the supply function. In fact, to spell out the implications of the later version of his distribution theory it was necessary to drop the assumption common also to Kaldor of an L-shaped supply function flat over the range of output up to full capacity (see fig. 2). We noted that this type of

<sup>20</sup> M. KALECKI (1944, 1945).

approach has very little explanatory power in the short period, since the composition of output and the distribution of income do not change in the relevant range. Thus, it only describes a situation of under-utilisation of resources with balanced factor proportions in which the price level is assumed to be already in equilibrium with inventories at the desired level.

This approach however does retain explanatory power the moment we introduce changes in the level of capital equipment into the picture, as soon as we look at the long run as a chain of short period situations.

To put the argument into proper perspective, it is worth quoting Kalecki's definition of a developed capitalist economy: "Such an economy possesses a capital equipment which more or less matches the existing labour force (...) provided that its resources are fully used".<sup>21</sup> On this basis, we can say that when short-run full employment is achieved the rate at which capital equipment grows tends to exceed the natural supply of labour. The above corresponds to Domar's analysis, in which full capacity and full employment are assumed to coincide, and Kaldor's "two stage" theory according to which the mature phase is reached when capital stock is more than sufficient to provide employment for the existing labour force.<sup>22</sup>

5.2 We shall now consider the following intermediate situation: Let us assume that when short-run full utilisation of capital equipment is achieved, for some time, the newly produced equipment is less than sufficient for the employment of the additional (natural) supply of labour, but increases at a higher rate than the latter. Furthermore, short-run full capacity is reached on the basis of the equilibrium conditions implicit in fig. 2.

The maximum amount of labour to be employed is determined by the reciprocal of the average capital labour ratio:

$$\frac{K}{L} = m ; \quad L = \frac{1}{m} K .$$

The maximum amount of capital goods output is determined by output coefficients in the capital goods sector. Full capacity output of capital equipment will be thus net of replacement:  $eK = \Delta K$ . We

<sup>21</sup> M. KALECKI (1965).

<sup>22</sup> E. DOMAR (1946), N. KALDOR (1961).

have therefore, on the basis of our assumption:  $\Delta L > \frac{e}{m} K$ .

The total labour force will then be for some time larger than that which can be employed by existing machines:  $L_T > K(1+e) \frac{1}{m}$ ;

where  $L_T$  stands for the total labour force. However, we assumed that  $\frac{\Delta L}{\Delta t} < \frac{\Delta K}{\Delta t}$  i.e. capital equipment increases faster than labour. We can now draw the following diagram.

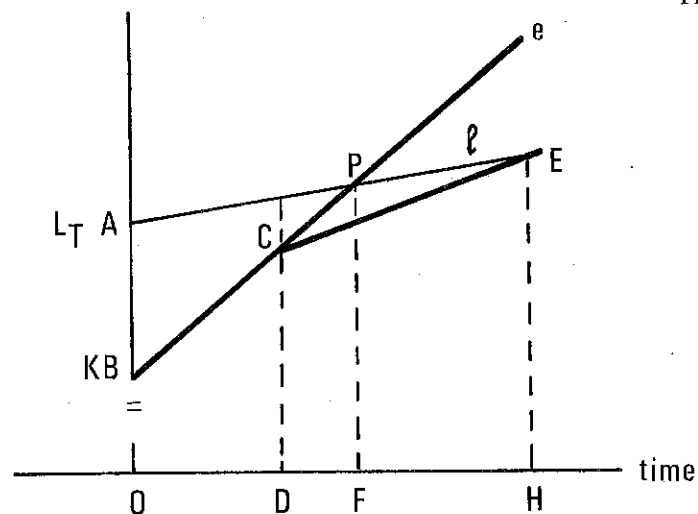


FIGURE 4

Point o corresponds to  $y=1$  in fig. 2 in which full capacity output with an amount of capital equipment  $K$ , commands an amount of employment  $\frac{1}{m} K < L_T$ ;  $e$  represents the rate of growth of capital equipment,  $l$  is the growth rate of the labour force.

Full utilisation of capital and labour will be reached at point P. Along the BP line, growth takes place under conditions similar to those underlying fig. 2; i.e., without any change in the distribution of income and in the sectoral composition of capital equipment. At point P, however, the situation will become unstable, because demand can no longer grow, whereas capital goods output still increases generating idle machines, investment will be cut, and the economy will plunge into a Keynesian recession.

It should be clear that the reason for the apparent bottleneck point P lies in the rigidity of the distribution of income. If the latter were to shift to wages at point C along the CE line the growth rate of capital equipment would smoothly approach the rate of growth of the labour force. A higher share of wages under conditions of growth implies an increase in the ratio between capital equipment allocated in the consumption goods sector and total capital stock, thereby reducing the share of investment over national income. In this way, changes in the level of employment and national income are not tied to those in investment but only to changes in productive capacity.<sup>23</sup>

In this context the level of inventories does not play the same role as it does in the short-run. Of course, the price equilibrium equation (6) also has to be maintained in the long-run; that is, inventories must eventually stabilize at an equilibrium level. However, the central issue here is not variations in the level of inventories, but the allocation of capital goods between the two sectors. The very fact that no shift in the income distribution occurs may generate a further Keynesian recession, even from the starting point of a short-run ideal underemployment equilibrium, such as the one assumed in L-shaped supply functions, where balanced factor and sector proportions and a given distribution of income assure the attainment of full capacity output. In this context, Kalecki's approach is valid, whereas in the short period it must be amended by taking into account Hicks' analysis of the role of inventories. The argument holds *a fortiori* if we assume a short period situation with imbalanced factor and sector proportions.

It must be said that some authors did come very close to Kalecki's line of thought. Domar, for instance, in describing a situation similar to the one arising at point P in fig. 4, explicitly stated that the junking of capital equipment by means of depreciation allowances is not altogether socially undesirable, as long as it prevents investment from being cut and hence employment from falling. Likewise Meade, in discussing the case of an increase in capital equipment that is larger than the supply of labour, mentioned the rise in the share of wages as being a prerequisite for achieving equilibrium, in this case.<sup>24</sup>

<sup>23</sup> M. KALECKI (1962, 1972).

<sup>24</sup> E. DOMAR (1946), J. E. MEADE (1961) *cit.*

Yet the merit of having stressed the link between a demand determined (Keynesian) economy and oligopolistic pricing, the latter being also a determinant of long-run conditions goes entirely to Kalecki: "The monopolistic and semi-monopolistic factors involved in fixing prices — deeply rooted in the capitalist system of all times — cannot be characterized as temporary short period rigidities but affect the relation of prices and wage costs both in the course of the business cycle and in the long run".<sup>25</sup>

As a final remark, we should add that the factors affecting the distribution of income and the price/wage cost relation are not entirely determined within the sphere of production. Possible disequilibria between borrower's and lender's risk do influence the pricing policies of firms;<sup>26</sup> and above all, as Sraffa correctly noted, the rate of profit may be exogenously determined by monetary factors independently of anything else.<sup>27</sup>

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<sup>25</sup> M. KALECKI (1970).

<sup>26</sup> M. KALECKI (1937), J. STEINDL (1945).

<sup>27</sup> P. SRAFFA (1960).

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