

THE PRICE POLICY OF FIRMS, THE LEVEL OF EMPLOYMENT AND DISTRIBUTION OF INCOME IN THE SHORT RUN*

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In any given situation, with given productive capacity in existence, a higher rate of investment brings about a higher level of total gross income (through a higher level of employment of labour and utilization of plant) and a higher share of gross profit in gross income (by pushing up prices relatively to money-wage rates). Thus, within reason, investment generates the saving that it requires. (Robinson [16, p. 177]).

In this statement Joan Robinson summarizes the elements of what has come to constitute the Neo-Keynesian theory of the level of employment and distribution of income in the short run in capitalist economies. Specifically, in this theory, the level of investment determines simultaneously both the level of output and the distribution of income between profits and wages. In regard to determination of prices, the theory recognizes that markets may not be competitive in the short-period sense, that is, in the sense that prices are set equal to marginal costs and vary with the level of demand.¹ Instead, it may be assumed that firms pursue a policy of setting prices at a level given by a mark-up on prime costs. As to what determines this mark-up the theory is less definite and a number of alternative formulations have been put forward.

Of particular interest for present purposes is a very simple model that can be used to illustrate the essential ideas involved in this theory.² The model is attractive, for its simplicity, and pedagogically useful. It also enables us to examine the implications of alternative assumptions regarding the price policy of firms.

I

The following relations characterize the model. The first is a function relating total output to employment of labor or what Joan Robinson calls the "short-period utilization function" (which should be distinguished from the so-called "production function").³ It is assumed that employment consists of a fixed amount of "indirect" labour L_0 which is required for operating equipment as long as output is positive and an amount of "direct" labor L_1 which varies with the level of output. Output per unit of direct labor is constant for all ranges of output up to full capacity.⁴ Thus

$$Y = \frac{L_1}{b} \quad (1)$$

$$L = L_0 + L_1 \quad (2)$$

* Comments and criticisms of A. Asimakopulos, J. Burbidge and G. C. Harcourt are gratefully acknowledged, without implicating them in the results.

¹ Competition in this sense is distinguishable from competition in the long-run sense when the stock of capital is variable. In the latter case, competition means that capital is free to enter and leave different lines of production.

² The model has certain similarities to those of Asimakopulos [1], [2], and Harcourt [6, pp. 210-214].

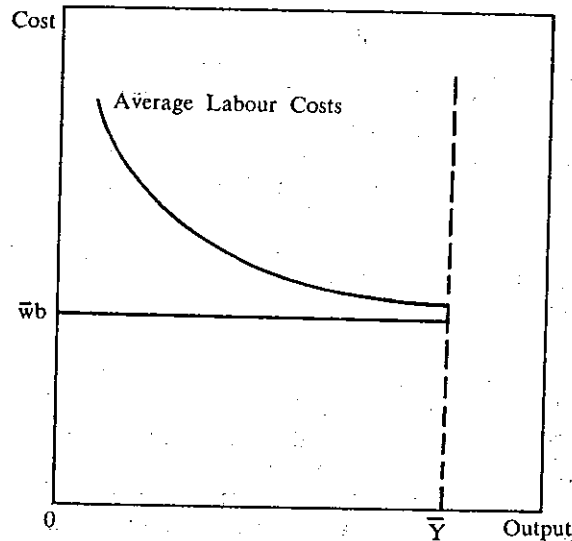
³ On this, see Robinson [16, p. 42].

⁴ This formulation is due to Asimakopulos [1], [2].

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where Y is aggregate output in real terms, L is total employment of labor and b is the direct-labor coefficient. Prime costs consist entirely of direct labor costs.⁵ The money-wage rate \bar{w} is taken as given in the short-period as a result of bargaining between workers and employers. At this wage rate, unit wage-costs vary with the level of output in accordance with (1) and (2). The cost curve of the "representative firm" may be drawn as in Figure 1.

FIGURE 1



National income in money terms is

$$pY = \Pi + \bar{w}(bY + L_0) \quad (3)$$

where Π is the level of money profits and p is the general price index. It is assumed that there are fixed saving propensities for profit and wage income, s_Π and s_w respectively, where $s_\Pi > s_w$. For saving-investment equilibrium we therefore have

$$p\bar{I} = s_\Pi\Pi + s_w\bar{w}(bY + L_0) \quad (4)$$

where, in the Keynesian manner, it is assumed that the level of real investment \bar{I} is given exogenously by decisions made in the past.

There are five unknowns to be determined: Y , L , p , Π , and only four equations. The model is therefore open with respect to one of the variables. It can be closed by introducing a specific hypothesis concerning determination of the price level. Accordingly, we distinguish below a number of possible cases and examine the solution of the model in each case.

Case 1

Suppose that prices are determined by a mark-up on variable costs and that the size of the mark-up is fixed at a given level, say $\bar{\phi}$, so that

$$p = \bar{\phi} \bar{w} b, \bar{\phi} > 1. \quad (5.1)$$

⁵ Raw material costs can be ignored on the usual assumption that production is fully integrated. ✕

* This case corresponds to that of Kalecki's "degree of monopoly" theory.⁶ The size of the mark-up reflects the degree of monopoly which is given in the short run.⁷ The higher the degree of monopoly the higher is the mark-up.

By substituting (5.1) into (3) and (4) and solving we get

$$Y = \frac{\bar{\phi} \bar{I} + (s_{\pi} - s_w) L_0 / b}{s_{\pi}(\bar{\phi} - 1) + s_w} \quad (6)$$

$$\frac{\Pi/p}{Y} = \frac{\bar{\phi} - 1 - L_0/b}{\bar{\phi}} \quad (7)$$

Thus, the equilibrium level of output (and real income) is determined by the level of real investment \bar{I} and by the level of employment of indirect labor L_0 .⁸ These factors operate through a multiplier effect which is related to the saving propensities (s_{π} , s_w) and to the degree of monopoly as reflected in the mark-up $\bar{\phi}$. The share of profits depends on the degree of monopoly and varies directly with the overall level of output (or, strictly, with the ratio of direct to indirect labor: bY/L_0). It can be seen from (6) that a higher level of investment raises the level of output and real income. At the higher level of output the share of profits is higher according to (7). This is because the profit margin is greater at the higher level of output due to lower unit labor-costs and constant prices.

Kalecki assumed that prime costs are constant over the entire range of output levels up to full capacity.⁹ This assumption can be accommodated in the present model by setting $L_0 = 0$. The results are modified accordingly. In particular, the share of profits is now uniquely determined by the degree of monopoly. The share of profits no longer depends on the level of output, and hence on the level of investment, but the level of profits does. Assuming in addition that $s_w = 0$, we find that the level of profits is uniquely related to the level of real investment and to the saving propensity for profit income:

$$\Pi/p = \bar{I}/s_{\pi}$$

which is a familiar and simple result in this framework.

Case 2

An alternative basis for determining the mark-up has been suggested by Joan Robinson [17, p. 260] in the following terms:

"... profit margins, in each market, settle at the level that yields the expected rate of profit ... at an average degree of utilization of plant (permitting super-normal profits in a seller's market and sub-normal profits in a buyer's market to be realized through changes in output at constant prices ...)."

⁶ See Kalecki [13]. A similar formula has been proposed by Weintraub [20] arguing on the basis of empirical constancy of the mark-up.

⁷ In Kalecki's conception, the degree of monopoly is related to long-run factors associated with the process of concentration of capital and displacement of competition by product differentiation and advertising. Apart from the influence of such long-run factors, Kalecki saw the degree of monopoly as also subject to change in the course of the business cycle: "... there is a tendency for the degree of monopoly to rise in the slump, a tendency which is reversed in the boom" [13, p. 18]. In an accompanying footnote he notes that "This is the basic tendency; however, in some instances the opposite process of cut-throat competition may develop in a depression."

⁸ Strictly speaking, the term L_0/b in (6) is the level of output that is produced by indirect labor when it is employed as direct labor.

⁹ He argued that "In fact unit prime costs fall somewhat in many instances as output increases. We abstract from this complication which is of no major importance" (Kalecki [13, p. 12, n. 2]).

Accordingly, let output corresponding to the "normal" level of utilization in the given short-period be Y^* . The price equation now becomes

$$p = \phi^* \bar{w} \left(b + \frac{L_0}{Y^*} \right), \phi^* > 1 \quad (5.2)$$

where ϕ^* is a parameter indicating the size of the mark-up on wage costs at the normal level of utilization such as to yield the normal rate of profit on capital.

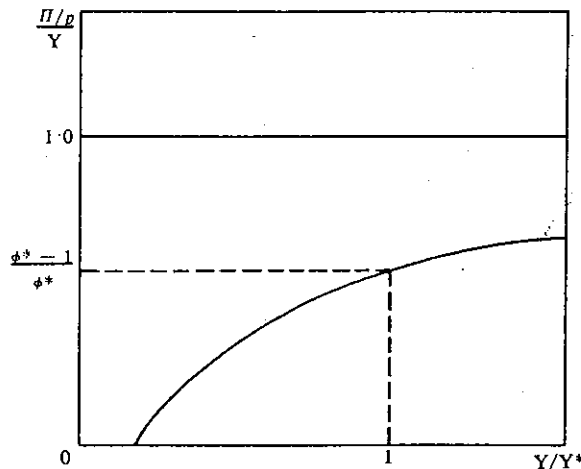
For the equilibrium solutions in this case we get

$$\frac{Y}{Y^*} = \frac{(1 + L_0/bY^*) \phi^* \bar{I}/Y^* - (s_\pi - s_w) L_0/bY^*}{(1 + L_0/bY^*) \phi^* s_\pi - (s_\pi - s_w)} \quad (8)$$

$$\frac{\Pi/p}{Y} = 1 - \frac{1 + (L_0/bY^*) Y^*/Y}{(1 + L_0/bY^*) \phi^*} \quad (9)$$

The equilibrium level of output relative to the normal level is determined by the ratio of investment to the normal level of output (\bar{I}/Y^*), by the saving propensities (s_π, s_w), by the level of the mark-up ϕ^* and by the ratio of indirect to direct labor at the normal level of utilization (L_0/bY^*). The equilibrium share of profits in income depends on the mark-up, on the ratio of indirect to direct labor and on the equilibrium level of

FIGURE 2



output relative to the normal level. The relation between the share of profits and the level of income is shown in Figure 2. The profit share is below normal when output is below the normal level ($Y < Y^*$) and above normal in the opposite case.

Case 3

Assume, now, that firms set prices at a level which varies with the level of planned investment (*cf.* Harcourt [6, p. 211]). The reason for this, it is argued, is that the level of the firms' investment plans reflects their confidence that a particular profit margin can be sustained. Investment plans thus serve as a proxy for the state of

(f) business confidence.¹⁰ Specifically, assume that the mark-up of price over variable costs is an increasing function of the level of investment.¹¹ Thus

$$p = \phi(I) \bar{w}b, \phi'(I) > 0. \quad (5.3)$$

Solving the system of equations, we now find that

$$Y = \frac{\phi(I)\bar{I} + (s_{\pi} - s_w)L_0/b}{s_{\pi}[\phi(I) - 1] + s_w} \quad (10)$$

$$\frac{\Pi/p}{Y} = \frac{\phi(I) - 1 - L_0/bY}{\phi(I)}. \quad (11)$$

The level of investment influences the outcome in this case through the mark-up policy of firms.

Consider the implications of a difference in the level of investment as between different equilibrium positions. Assuming for the sake of simplicity that $L_0 = 0$, we get from (10) by differentiation

$$\frac{dY}{dI} = \frac{\phi[s_{\pi}\phi - (s_{\pi} - s_w)(1 + \phi'I/\phi)]}{[s_{\pi}(\phi - 1) + s_w]^2} \begin{matrix} > \\ < \end{matrix} 0. \quad (12)$$

Thus, real income may be higher or lower when the level of investment is higher. This is the striking feature of this case: the investment multiplier may turn out to be negative! It is possible to show exactly under what conditions this result may arise and why.¹² From (12) we see that

$$\frac{dY}{dI} \begin{matrix} > \\ < \end{matrix} 0 \text{ according as } \frac{s_{\pi}}{s_{\pi} - s_w} \begin{matrix} \geq \\ < \end{matrix} \frac{1 + \phi'I/\phi}{\phi}.$$

Thus, the crucial determinants of whether income rises or falls with investment are the relative size of the saving propensities and the elasticity of the mark-up relative to the size of the mark-up. The reason for this becomes clear when we take account of the influence of the mark-up on the distribution of income and hence on the overall ratio of consumption to income. The consumption-income ratio (assuming $L_0 = 0$) is

$$c = (1 - s_w) \frac{1}{\phi} + (1 - s_{\pi}) \frac{\phi - 1}{\phi}. \quad (13)$$

Hence

$$\frac{dc}{d\phi} = - \frac{(s_{\pi} - s_w)}{\phi^2} < 0. \quad (14)$$

A rise in the mark-up lowers the consumption-income ratio. This reduces the positive multiplier effect that an increase in investment would have at a constant value of c . When the rise in the mark-up is large enough (the elasticity is high) the effect of the

¹⁰ Harcourt's point is that the mark-up policy of firms is influenced by the general state of business confidence. This same state of confidence likewise determines the firms' investment plans so that the level of investment can be used as a proxy in the price equation. No direct causal relationship between investment and price formulation at the micro level is implied.

¹¹ Harcourt, *op. cit.*, examines a case where the level of prices is proportional to the level of real investment.

¹² This result was demonstrated by Harcourt, *op. cit.*, who showed that it hinges upon the relative magnitudes of the change in the money value of investment and the change in saving associated with the change in real investment.

reduction in c dominates and income falls.¹³ The higher the propensity to save out of profits relative to that for wage income the greater is the reduction in c from a rise in the mark-up.

Since in this case total profits and the share of profits increase with the level of investment, we may say that "investment generates the saving that it requires." But increased investment does not necessarily generate increased income and employment.

Case 4

Suppose finally that the size of the mark-up is left as an unknown. We now write

$$p = \phi \bar{w}b, \quad \phi > 1 \quad (5.4)$$

where ϕ is a variable to be determined by the model. This gives us an extra equation and an extra variable so that there is still one degree of freedom. The model can be closed by setting the level of output at the level appropriate either to the capacity of existing plant and equipment or to full employment of the available labor force, whichever is less. By solving the system of equations on the assumption that $Y = \bar{Y}$, we get

$$\frac{\Pi/p}{\bar{Y}} = \frac{I/\bar{Y} - s_w}{s_\pi - s_w} \quad (15)$$

$$\phi = \frac{1 + L_0/b\bar{Y}}{1 - \Pi/p\bar{Y}} = \frac{(s_\pi - s_w)(1 + L_0/b\bar{Y})}{s_\pi - I/\bar{Y}} \quad (16)$$

The equilibrium share of profits and level of the mark-up are determined by the saving propensities and the investment-income ratio. The mark-up is determined also by the ratio of direct and indirect labor employed. It can be seen that both the share of profits and the mark-up vary directly with the share of investment in income. For the profit share and mark-up to be positive it is required that $s_\pi > I/\bar{Y} > s_w$.

This case corresponds to the situation in Kaldor's model [10] where the economy is assumed to operate at full employment and the rate of investment is exogenously determined. The distribution of income is explained by the rate of investment (strictly, by the ratio of investment to full-employment output) and the saving propensities. But there is no explanation of why full employment is a necessary feature of equilibrium. This is the aspect of Kaldor's model which has been a puzzle to many people.¹⁴ One may note also that, in so far as the size of the mark-up is a variable to be deter-

¹³ Are there plausible reasons to expect the elasticity of the mark-up to be either great or small relative to the existing level of the mark-up? It is when output is considerably below capacity and investment has fallen to a low level that profit margins are likely to be low relative to what is considered to be the "normal" level. This could be due, for instance, to heightened competition for markets which brings about a rash of price cutting. Each firm, in that situation, may be reluctant to increase sharply its mark-up along with its investment due to fear of reaction from rivals. The elasticity of the mark-up is therefore likely to be low when the mark-up is already low. An opposite effect may arise, however, from what Kalecki calls "the factor of protection of profits." Specifically, "... there may arise a tacit agreement among the firms of an industry to 'protect' profits, and consequently to increase prices in relation to unit prime costs ... The factor of 'protection' of profits is especially apt to appear during periods of depression" (Kalecki [13, p. 17]). When output is close to normal capacity profit margins are likely to be close to their normal level and a slight change in the mark-up will restore the normal level. The elasticity of the mark-up is then likely to be low relative to the existing level of the mark-up. This reasoning would suggest that, on balance, the elasticity of the mark-up is likely to be low. If so, the perverse case of a negative investment multiplier could be ruled out. NB

¹⁴ See Harcourt [6, p. 210]. On this, see also Robinson [17] and Kaldor [12]. NB

mined by the conditions of the model, it is required that firms pursue a very special kind of price policy: namely, that they set prices in accordance with the requirement of full employment equilibrium.¹⁵ Alternatively, this case could be viewed as an accidental or knife-edge one where the level of (exogenous) investment plans of firms and the size of the mark-up, determined as in any of the other three cases or even by the interaction of demand and supply in competitive markets, happened to be such that the total demand forthcoming at the associated distribution of income is just sufficient to absorb full employment output. In the short period, this would be a rare and fortuitous occurrence such that any variation in investment from the level consistent with full employment would be associated with unemployment or inflation.¹⁶

Actually, the sort of price policy involved in Case 4 would seem more relevant to a planned economy than to a capitalist economy. Indeed, the role of this principle of pricing in a socialist economy was pointed out quite early by Dobb [3, p. 716].

III

The preceding analysis brings out the crucial role of the price policy of firms in a theory of employment and distribution. We have examined various alternative ways of conceiving of that policy and their implications within the framework of the Neo-Keynesian theory. The state of present empirical knowledge and of the existing theory of pricing behavior of firms provides us with little or no basis on which to choose between these alternatives (cf. Shubik [19]). The other side of the coin is the behavior of workers as it affects the money-wage rate and other relations in the system and we have not gone into this. Relatively little attention has been paid to this side of the matter in the context of the Neo-Keynesian theory.¹⁷

The contribution of Keynes' analysis was to show that unemployment and excess capacity were the rule rather than the exception in capitalist economies where the total amount of investment is the aggregated outcome of individual plans. But Keynes clung to "the fundamental postulate" of the "classical" theory of employment, which was that perfectly competitive pricing prevailed such as to establish equality of the real wage rate and the marginal product of labor.¹⁸ It was Kalecki who pointed out that not only are unemployment and excess capacity the normal case under capitalism but also, in that situation, prices and profit margins are governed by the monopoly position of firms. His "degree of monopoly" theory was developed to explain this situation. The Neo-Keynesian theory combines Keynes' contribution with that of Kalecki.¹⁹ The case corresponding to what we have called "Kaldor's model" stands in between as a special sort of hybrid in which all the possibilities of competitive pricing, monopoly pricing, autonomous investment decisions and full employment could be present at the same time because all of these happened by accident to be consistent.

¹⁵ See Harcourt [4] for an examination of this aspect of Kaldor's model.

¹⁶ Kaldor [8, pp. 99-100], [9, p. 622] explicitly recognizes that his model may not work in an arbitrarily given short period. He argues that it is applicable to a state of steady full-employment growth ("periods in which the rate of growth of capital and income is normal" [9, p. 594]). In Joan Robinson's terminology, this would be the "mythical" condition of "a golden age."

¹⁷ A number of ideas on this are examined by Rothschild [18], Harcourt [5] and Harris [7]. Kaldor [11] discusses some of the forces governing money-wages. Kalecki [14] considers the effects of trade union action on distribution and employment operating through the size of the mark-up.

¹⁸ See Keynes [15, p. 17].

¹⁹ The contribution of Dobb [3] must also be counted among these. As a matter of historical interest it is worth pointing out that the significance of the mark-up principle and its relation to the rate of investment was independently discovered by Dobb. This was called to my attention some time

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ago in correspondence with Dobb. I have his permission to quote the following passage: "Actually I propounded this two years before the article (Dobb [3]) that you quote: namely, in my *Political Economy and Capitalism* of 1937 [pp. 326-7, 1937 edition; pp. 323-4, 1940 edition]. This was certainly before anything of Kalecki's had appeared in English (if my memory serves me correctly): his *Essays in the Theory of Business Fluctuations* appearing in 1939 (and the Foreword to it being dated 'Cambridge, June 1938'). I feel fairly sure that it was also before I ever met Kalecki: my memory is that Kalecki came to Cambridge in 1938 or at the earliest in the summer or autumn of 1937 (and the Preface to the first edition of my own book is dated 'July 1937'; so that I must have finished writing it at latest in the first half of that year). On the other hand, in *Polish Kalecki's* notion that 'gross profits' are equal to capitalists' consumption plus gross accumulation appeared as early as 1933 in his Polish booklet, *An Essay on the Business Cycle* (see the Foreword to his *Studies in the Theory of Business Cycles*, 1933-9, (Basil Blackwell, 1966)). So I venture to think that it was a case of spontaneous and independent double-invention, at an interval of roughly four years. But priority in date undoubtedly goes to Kalecki . . . This question of dating also raises the question of whether the notion can properly be called 'Neo-Keynesian' except by analogy" (letter dated December 28, 1967).