CHAPTER SEVEN

MACROECONOMIC THEORIES OF PROFIT
Despite the fact that eminent classical economists like Ricardo and Marx had devoted much of their attention to a study of macro-distribution of social income, the rise of Marginalism shifted the focus of attention to micro-distribution. No serious attempt at studying the macro-distribution of income was made after Karl Marx. John Bates Clark evinced great interest in the subject but the tools of analysis with which he worked were not suited to it. It was Lord Keynes who powerfully redirected economics towards aggregative analysis. We have already studied what Keynes himself has to offer by way of macro-analysis of profits and income distribution. It took some time for his followers to pick up the threads and weave them into a complete fabric. The main macro-theories of distribution to be studied below emerged after a decade of controversy had firmly established the authority of Keynesian economics. Studies in macro-distribution were also encouraged by the growth theories of Harrod and Domar which related the distribution of income to the rate of growth via the rates of savings and investment. The only exception is the theory developed by Michal Kalecki which, in essence, had been presented as early as 1935.  

In view of the recent origin of these theories (which incidentally, have yet to find their way into the textbook

discussion on Profits and Income Distribution), it is worth while to ask the following questions at the very outset:

(1) What is meant by a macro-economic theory of Profit? and (2) What is the need and usefulness of such a theory?

It can be shown that the macro-economic theory of profit is a meaningful one; that it is needed for bringing economic theory nearer reality and thus handle many problems which a micro-economic theory fails to deal with. A fully developed macro- theory of profit will fill a widely felt gap in economic theory and effectively help in formulating certain policy decisions.

Macro-economics deal with such economic aggregates and averages as National Income, Output, and Employment; the General Price Level; the Rate of Interest, etc. It studies the nature, interrelationship and behaviour of these variables. It seeks to explain their determination, changes in their magnitudes, and their relationship with other economic variables.

By aggregate profits we mean the sum total of all profits (positive and negative) accruing in an economy over a specified period of time. Being an economic aggregate of great importance it is a proper subject of study in macro-economics.
By a macro-theory of profit we mean the theory which seeks to answer the following questions:

1. What is the nature and source of aggregate profits?

2. What determines the actual volume of aggregate profits in an economy?

3. How do aggregate profits behave in response to changes in other economic variables, and what is the course they follow in a growing economy?

In addition the macro-theory of profit may profitably probe into the following problems.

4. What is the relationship between aggregate profits and the rate of profit in the economy?

5. What determines the share, as distinguished from the volume, of profits in National Income, and how is this share related to the wage share?

6. How does the extent of competition (or monopoly) in the market affect the level of aggregate profits and their ratio to total income.

The mere enumeration of these significant questions gives us a fairly clear idea of the need and usefulness of a macro-economic theory of profit. To be more clear we can note the following points.

A macro-economic theory of profits is needed because it will be an illuminating study giving us an insight into the composition of National Income which is the most important economic aggregate. Profits being a part of the total income, its study can usefully supplement the study of the whole. Likewise, a theory of aggregate profits is needed to
supplement the theories of the other economic aggregates with whom it is closely related, viz., Savings, Consumption, Investment, Price level, Employment, etc.

Secondly, as it would be evident from subsequent discussion, the theory of income distribution is a twin of the theory of income determination, and cannot be separated from it. The same factors play a decisive role both in the determination of income and its distribution. Forces changing the one alter the other. A study of the one without any reference to the other will therefore remain incomplete.

Thirdly, the volume of aggregate profits, its ratio to total income, and the rate of profit are significantly related to the rate of economic growth. Profits are the main source of the investible funds needed to finance development, and growth is the chief factor causing the volume of profits to increase. A macro-theory of profit is, therefore, a necessary complement to the theory of growth.

Since the very early days economists have taken great interest in the study of relative shares of wages and profits in the total income of society. For some time past it has been held that the relative share of wages in income has been constant over time. Statistical material in support of this
thesis has been reinforced by theoretical arguments but controversy continues unabated. A macro-dynamic analysis of distribution is needed to examine this issue.

Fifthly, profits being the income of a more or less distinct social class, a better understanding of the factors increasing or decreasing this income and determining its course over time will be useful for policy makers. Most of the modern states profess to pursue egalitarian policies, hence a clear understanding of the determinants of profits and its response to various fiscal and monetary measures is necessary for judicious policy making.

Lastly, one of the main reasons why a macro-economic theory of profit is needed is the failure of the received micro-economic theory to deal with a number of important problems. It cannot trace the various effects of a change in the general price level and the general wage level, as the demand and supply curves cannot be aggregated for the economy as a whole. It conceives of the demand for the product to be independent of the factor prices (factorial incomes). This is not valid in a discussion of total income of the factors as changes in factor earnings affect effective demand and thereby the value-product functions. (In other words, the marginal value-productivity of a factor is a function of the reward of that factor).
Such are the reasons which have resulted in a number of attempts at the formulation of a macro-theory of profit in the last two decades. These theories are based on the familiar Keynesian saving-investment analysis of the consumption function and the autonomous investment. Some of them go further to incorporate the productivity of labour and/or the extent of competition in the market. The course of aggregate profits overtime is studied in the context of the theory of growth. In what follows we shall briefly discuss the main contributions in this field i.e., those of Nicholas Kaldor, Michal Kalecki, J.E. Boulding, Sidney Weintraub and Joan Robinson, in that order (which incidentally is not chronological). References to others who have participated in the discussion on the subject like L.L. Pasinetti, F.H. Hahn and Anatol Murad will be made where called for.

All these theories are based on a very simplified model. The total income of society is divided into two parts. Profits (including salaries, interest and rent) and wages. Though some theorists latter separate rentiers' income into an independent category, it is generally maintained that the separation of rent and interest from aggregate profits does not pose any difficult problem in view of the contractual nature of these incomes. The same is true of salaries.
Assuming a state of full employment, and therefore a given level of income and output, Kaldor starts with the following equations:

1.1 \[ Y = W + P \] total income is identical with the sum of total profits and total wages

1.2 \[ S = S + S \]

\[ w + p \] total savings are the sum of savings out of wages and savings out of profits.

1.3 \[ I = S \] a behaviour equation expressing the equality of total autonomous investment with total savings.

Taking the level of autonomous investment to be given and assuming simple proportionate savings functions \( S_w = s_w \) and \( S_p = s_p \), he obtains:

\[ I = s_p + s_w = s_p + s_w(Y - P) = (s_p - s_w)P + s_wY \]

or \( P(s_p - s_w) = I - s_wY \)

or \( P = \frac{1}{s_p - s_w} \cdot I - \frac{s_w}{s_p - s_w} \cdot Y \)

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Hence the ratio of profits to income

\[ \frac{P}{Y} = \frac{I}{Y} - \frac{s_w}{s_p - s_w} \]

and given the stock of capital \( K \),

\[ \frac{P}{K} = \frac{1}{s_p - s_w} \left( \frac{I}{K} - \frac{s_w}{s_p - s_w} \right) \]

Thus, given the wage earners’ and the capitalists’ propensities to save, the share of profits in income depends simply on the ratio of investment to output\(^1\) (equation 1.4). From equation 1.5 it follows that the rate of profit per unit of capital depends on the rate of accumulation (\( I/K \)) and the income-capital ratio (\( Y/K \)).

The model operates only if the two savings propensities differ and the marginal propensity to save from profits exceeds that from wages, i.e., \( s_p \neq s_w \) and \( s_p > s_w \).

As an interesting case it may be noted that if wage earners save nothing out of their income, i.e., \( s_w = 0 \), then

\[ \frac{P}{Y} = \frac{I}{Y} - \frac{s_w}{s_p - s_w} \]

\[ \frac{P}{K} = \frac{1}{s_p - s_w} \left( \frac{I}{K} - \frac{s_w}{s_p - s_w} \right) \]

\[^1\] Ibid., Essays on Value and Distribution, p. 229.
In this case the profit share depends on the capitalists' propensities to save and invest. The less they save and the more they invest, the more their profits shall be. In case the propensity to save out of wages is positive, the more the wage earners save the less the profit share is.

The most crucial assumption underlying Kaldor's theory is that the $\frac{I}{Y}$ ratio is independent of the savings functions, i.e., the ratio of investment to output is not influenced by changes in the propensities to save of the capitalists and the workers. Kaldor regards this as a basic Keynesian assumption which is also realistic to make.

Kaldor mentions four limits within which his model operates:

1 - Real wages cannot fall below a certain subsistence minimum.

2 - Profit rate cannot fall below the risk premium.

3 - The rate of profit will have to be higher than the risk premium by a margin depending upon the imperfection of competition and elements of monopoly in the market.

1. Ibid., p. 233.
Capital-output ratio must be assumed not to be influenced by the rate of profit.

Subject to these constraints, the theory applies in the long run only, due to the downward inflexibility of the wage level and the rate of profit in the short run.

Kaldor then proceeds to relate his theory of profit to the theory of growth. Following Harrod, the determinants of the investment-output ratio are described in terms of the rate of growth of actual capacity (G) and the capital-output ratio (v).

\[ I = Gv \]

for Harrod's second equation \( I/X = s \) he substitutes his equation (1.4) above,

\[ I = (a_p - a_v) P + a_v \]

and concludes that 'the warranted and natural rates of growth are not independent of one another; if profit margins are flexible, the former will adjust itself to the latter through a consequential change in \( P \).'

Kaldor's model is extremely simple. The fundamental proposition embodied in his theory finds a place in all

1. Ibid., p. 232.
macro-theories of profit: The capitalists' behaviour regarding savings and investment play a determining role with respect to their aggregate profits.

But this simplicity has been achieved at a great cost and the bargain can hardly be regarded as profitable. A theory of distribution which takes the level of income as given is seriously handicapped as the same set of forces determines both the level of income and its distribution.

Though purporting to be a long run theory, it completely ignores the supply side and conducts the entire analysis in terms of the imposition of a given aggregate demand. Then Kaldor's identity $E = p + w$ is an extremal identity. But total wages are a function of the level of employment and the stock of capital (given technological conditions). The rate of profit on capital determines the price level which, via its influence on consumption, affects the level of income. This rate itself is determined by the rate of accumulation (I/X) and the capital output ratio and the propensities to save (vide equation 1.5 above).

It has been contended that Kaldor is able to exclude productivity only because he takes the level of income to be given, and the proposition that wages equal marginal productivity must be incorporated in the macro-distribution
theory to give the supply phenomenon its due. But Kaldor's rejection of the productivity theory is well considered and well founded. In an imperfectly competitive economy, as by and large all the real world economies are, marginal productivity merely provides a boundary condition. The price of labour cannot be greater than its marginal product, but there is no reason to suppose that it could not be less. As such, marginal productivity does not play any role in determining the wage rates as long as they fall within this boundary. Then in all economies, productivity of labour is itself determined by the level of employment and the existing stock of capital, given the technique of production and the degree of utilisation of the existing capacity.

All the existing capacity, as indicated by K, is not always fully utilized. And when it is not, the price policies of the firm play a role in determining the rate of profit per unit of capital. As shall be seen in the subsequent discussion, it is in such a situation that the degree of monopoly has to be taken into consideration. As Joan Robinson has remarked, 'The proposition that the share of profit in income is a function of the ratio of investment to income is perfectly correct, but capacity and the degree of monopoly have to be


brought in to determine what income it is that profits are a share of and investment is a ratio to. ¹

The assumption of a stable and linear consumption function, i.e., of simple proportionate saving propensities, $s_w$ and $s_p$, also becomes less plausible if we treat the levels of income and employment as variables. The price level is likely to change with changes in employment and output, and the savings propensities can hardly remain stable in these conditions.

Some of these shortcomings could be removed by including certain other variables, along with the functional equations governing their behaviour, in Kaldor's model. To be more specific we need introduce into the model a production function relating the level of income to the level of employment (assuming the stock of capital to be given) and a modified profit maximisation principle stating that the rate of wages is less than or equal to the marginal productivity of labour. It would still leave open, however, the problem of the determination of price level and of excess capacity leading to the degree of monopoly.

For treating the price level as a variable we have to bring into the system the supply of money, the demand for money and the rate of interest. Kaldor's own treatment of the price level lies in assuming that there is a mechanism in the system by which the level of prices with respect to money wages (i.e., profit margins) is determined by demand, rising with a rise in investment and falling with a fall in investment, so that the system is stable at full employment.\(^1\) This explains why his model excludes the degree of monopoly, for this assumption implies that the existing capacity is fully utilised, leaving no freedom for firms to determine prices. The prices are determined by the interaction between a variable effective demand and a technologically determined supply. But once the full employment assumption is dropped such an assumption about the behaviour of prices cannot be made and the degree of monopoly must be taken into consideration.

Besides critical comments, attempts have also been made to improve upon Kaldor's model. R.M. Davis seeks to add some qualifying clauses to Kaldor's conclusion that wage

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earners can increase their share by saving less. The qualifications are in the nature of refinements and do not affect the conclusion as such which is also supported by the more mathematical model of Davis.

A more strongly suggested correction comes from L.L. Pasinetti. In view of the fact that workers also save and their past savings would be made available for investment only on payment of interest, which would mean a part of profits going to wage earners, he reconstructs Kaldor's model by introducing into it the rate of interest. He makes the theory of the rate of interest a prerequisite to the theory of profit. But in reformulating Kaldor's theory he proceeds on the assumption that in the long run equilibrium model the rate of interest equals the rate of profit. He makes the point that the distribution of income between profits and wages must be distinguished from the distribution of income between capitalists and workers. Pasinetti claims that a study of the latter is not possible unless Kaldor's model is corrected along the lines suggested by him.

1. Ibid., pp. 319-20.
Pasinetti's reformulation of Kaldor need not be reproduced here in its entirety. The following brief summary should suffice.

Total profit, $P = P_c + P_w$, i.e., profit share of capitalists plus the profit share of the workers.

Workers savings $S_w = s_w (W + P_w)$, $s_w$ being workers' propensity to save.

capitalists' savings $S_c = s_c P_c$, $s_c$ being capitalists' propensity to save.

The equilibrium condition is $I = s_w (W + P_w) + s_c P_c$

or $I = s_w Y + (s_c - s_w) P_c$,

from which we obtain

$$\frac{P_c}{Y} = \frac{1}{s_c - s_w} \cdot \frac{I}{Y} - \frac{s_w}{s_c - s_w} \quad (1.6)$$

and

$$\frac{P_w}{K} = \frac{1}{s_c - s_w} \cdot \frac{I}{K} - \frac{s_w}{s_c - s_w} \cdot \frac{Y}{K} \quad (1.7)$$

which may now be compared with Kaldor's equations (1.4) and (1.5) to note that the latter gives us not the determination of total profits but of the capitalists' share of it only.

As

$$\frac{P}{Y} = \frac{P_c}{Y} + \frac{P_w}{Y} \quad (1.8)$$

and

$$\frac{P}{K} = \frac{P_c}{K} + \frac{P_w}{K} \quad (1.9)$$

and workers share of profit ($P_w$) equals the interest they
obtain on the capital \((K_W)\) owned by them, we obtain

\[
P = \frac{1}{s_c - s_w} \cdot \frac{I}{K} - \frac{s_w}{s_c - s_w} \cdot \frac{Y}{K} + \frac{rK_W}{K} \tag{1.10}
\]

\(r\) being the rate of interest.

In dynamic equilibrium

\[
\frac{K_W}{K} = \frac{s_w}{s} = \frac{s_w(Y - P_c)}{I} = \frac{sw \cdot sc}{sc - sw} \cdot \frac{Y}{I} - \frac{sw}{sc - sw}
\]

Substituting this expression, and that of equation (1.7) into (1.9) above we obtain:

\[
P = \frac{1}{sc - sw} \cdot \frac{I}{K} - \frac{sw}{sc - sw} \cdot \frac{Y}{K} + r \left( \frac{sw \cdot sc}{sc - sw} - \frac{Y}{I} \cdot \frac{sw}{sc - sw} \right) \tag{1.11}
\]

By exactly the same procedure, expression (1.9) along with (1.6) above gives:

\[
P = \frac{1}{sc - sw} \cdot \frac{I}{Y} - \frac{sw}{sc - sw} + r \left( \frac{s_w}{sc - sw} \cdot \frac{K}{Y} - \frac{sw}{sc - sw} \cdot \frac{K}{Y} \right) \tag{1.12}
\]

Pasinetti stresses that Kaldor's equation (1.5) must be replaced by equation (1.11) above, and for his equation (1.4) we must substitute equation (1.12) above giving the distribution of income between profits and wages, and equation (1.6) giving the distribution of income between workers and capitalists. On the basis of his assumption that the rate of interest equals the rate of profit, he then substitutes \(P/K\) for \(r\) in equation (1.11) to obtain
\[
\frac{P}{I} \left( 1 - \frac{a_w I}{sc-wv} Y + \frac{sw}{sc-wv} \right) = \frac{1}{sc-wv} \frac{I - sw Y}{K} \left( 1 - \frac{sw Y}{sc-wv} Y \right) \quad (1.13)
\]

and
\[
\frac{P}{K} \cdot \frac{sc(Y-I_s)}{I} = \frac{I - sw Y}{K} \quad (1.14)
\]

whence, provided \( I - sw Y \neq 0 \)
\[
\frac{P}{K} = \frac{1}{sc} \cdot \frac{I}{Y} \quad (1.15)
\]

and by an analogous process equation (1.12) becomes
\[
\frac{P}{Y} = \frac{1}{P_c} \cdot \frac{I}{Y} \quad (1.16)^1
\]

whereupon he notes that these results 'have been reached without making any assumptions whatsoever on the propensities to save of the workers. This is the most striking result of our analysis. It means that, in the long run, workers' propensity to save, though influencing the distribution of income between capitalists and workers ..., ..., does not influence the distribution of income between profits and wages .... Nor does it have any influence whatsoever on the rate of profit ....'\(^2\)

The institutional assumption that profits are distributed in proportion to the capital owned implies that 'in the long run profits will turn out to be distributed in proportion to the amount of savings which have been contributed'. i.e.,\(^3\)
\[
\frac{P_w}{Y_w} = \frac{P_c}{S_c}
\]
It follows that \[
\frac{P_w}{m_w(W + P_w)} = \frac{P}{mP} = \frac{1}{s_0}\]
which can be written as \[sw(W + P_w) = s_0P_w\]

For any given \(s_0\) there is only one proportionality relation between profits and savings which can also make the ratio \[
\frac{P_s}{m_0} = \frac{P}{P_0}.
\]
The capitalists' propensity to save, \(s_0\), therefore, assumes a key role determining the ratio of profits to saving for all saving groups and consequently also the income distribution between profits and wages and the rate of interest for the whole system.¹

As regards the stability condition Pasinetti concludes that whereas in the short run it is necessary that \(s_0 > s_w\), in the long run the only necessary condition is \(s_0 > 0\).²

Pasinetti's reformulation is useful if a study of the distribution of income between profits and wages is to be distinguished from that between capitalists and workers. But in that case it may well be asked whether workers do not have different saving propensities for their income from interest and their wages. Furthermore, the introduction of the rate of interest into the analysis has been derived of much of its potentialities due to the assumption of its equality with the rate of profit.

¹. Ibid., p. 274.
². Ibid., p. 277.
Pasinetti shares all the shortcomings of Kaldor which arise from assuming full employment and a given level of income. Such a theory can at best be a short term theory in which the long term assumption about the rate of interest is rather incongruous. Pasinetti's reformulation also robs Kaldor's model of its simplicity without removing some of its more serious defects.

Kaldor's theory satisfies the criteria laid down by Anatol Murad,¹ an earlier contributor to the subject, for a macro-economic theory of profit. It envisages the same conditions for accrual of positive aggregate profits which Murad does. Kaldor's analysis also seems to be in sympathy with Murad's contention that the extent of competition in the market has nothing to do with the determination of aggregate profits; it affects its distribution among individual entrepreneurs only. Murad is right in so far as the volume of profit is concerned, but the ratio of profits to income is a different matter.

2 - MICHAL KALECKI

Stated in simple terms, Kalecki's theory tells us that assuming the wage earners' propensity to save to be zero, gross profits equal private investment plus capitalists'

consumption. This follows directly from the balance sheet of National Income. On income side National Income is the sum of gross Profits, Wages including Doles and Gross Government Investment. On the expenditure side the same equals the sum of total Gross Investment, Capitalist Consumption and Workers' Consumption. As workers' consumption equals the wages and doles they receive, and as private investment equals total gross investment minus government investment, it follows that gross profits equal private investment plus capitalists' consumption.

\[ P = I + C_p \quad (2.1) \]

If workers save part of their earnings, profits will be reduced by the same amount

\[ P = I + C_p - S_w \quad (2.2) \]

It also follows that increased savings on the part of the capitalists reduce their profits. The more they consume the larger their profits.

The magnitude of profits thus obtained is, however, subject to correction due to unexpected changes in the value of stocks. But Kalecki regards it a minor factor not calling for any modification of the theory.¹

It is interesting to note that Kaldor's equations (1.4) and (1.5) studied earlier can both be derived from Kalecki's equation (2.2) by slight rearrangement of terms.¹

This theory of the determination of aggregate profits is supplemented by Kalecki's earlier theory of relative shares which is based on the degree of monopoly concept. But before taking it up we should examine what Kalecki has to say regarding the long run theory of aggregate profits.

In framing long run propositions Kalecki takes the growth of the economy into consideration. The magnitudes of investment and capitalist consumption are measured in real terms and are arrived at by averaging them over a full cycle period. Thus the average net profit in the long run equals the average capitalist consumption plus the average net private investment in the same period.

\[ \bar{P} = \bar{C} + \bar{I} \]  

(2.3)

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1. For, \( P = I + C_p - S_w \) can be rewritten as

\[ P - C_p = I - S_w \quad \text{or} \quad S_p = I - S_w \quad \text{or} \quad S_p = \frac{1}{s_p - s_v} \cdot \bar{P} \]

Subtracting \( s_v \) from both sides we get

\[ P (s_p - s_v) = I - s_v (W + P) = I - s_W \quad \text{or} \quad \bar{P} = \frac{1}{s_p - s_v} \cdot \bar{I} - \frac{s_W}{s_p - s_v} \cdot \bar{Y} \]

which yields Kaldor's equations (1.4) and (1.5) on division by \( Y \) and \( K \) respectively.
Real capitalist consumption $C_t$ in a given year consists of a stable part $A$ and a part proportionate to the real profits $P_{t-o}$ of some time ago: $C_t = A + \lambda P_{t-o}$ where $\lambda$ is positive and less than one. $A$ is the result of habits acquired by capitalists during the long run development in the past. $\theta$ can be ignored as the time lag involved is relatively short. So that

$$\overline{C} = \overline{A} + \lambda \overline{P} \quad (2.4)$$

Combining (2.3) and (2.4) above we get

$$\overline{P} = \frac{\overline{A} + \theta \overline{I}}{\theta - \lambda} \quad (2.5)$$

Assuming $K_0$ to be the value of total capital equipment at current prices of investment at the beginning of this period, since $\overline{I}$ is the average net real investment in the period under consideration, at prices prevailing at the beginning of the period, the real capital at the end of the period is $K_0 + n\overline{I}$, where $n$ is the length of the period. So that the approximate average value of capital stock over the period will be, $\overline{K} = K_0 + \frac{n}{2} \overline{I} \quad (2.6)$

Kalecki then obtains the rate of profit per unit of capital by dividing $\overline{P}$ in equation (2.5) by $\overline{K}$ in equation (2.6). Thus the average rate of profit is a function of the ratio of the average investment $\overline{I}$ to the initial value of capital $K_0$, given the propensity to consume out of
profit \( \lambda \).

Kaldor's equation (1.5) also gives the same conclusion though his magnitudes are not averages for the whole period of a cycle as Kalecki's are. When \( s_w = 0 \) Kaldor's equation (1.5) becomes \( \frac{P}{W} = \frac{1}{s_p} - \frac{1}{K} \). Both Kalecki and Kaldor hold the view that given the propensity to save out of profits and wages, the rate of profit depends on the rate of accumulation.

As regards the ratio of aggregate profits to National Income, \( P/I \), and the relative shares of profits and wages, Kalecki has a different theory to offer. It depends, according to him, on the degree of monopoly in the economy.

The degree of monopoly of a firm is defined as the ratio of the difference between price and marginal cost to price. The degree of monopoly \( \mu = \frac{P - M}{P} \).

By a process of averaging he arrives at the degree of monopoly in an industry and the average degree of monopoly in the economy as a whole \( \bar{\mu} = \frac{P - M}{P} \).

1. M. Kalecki, op.cit., pp.261-263; also see Theory of Economic Dynamics, pp.53-56, for a similar formulation with some change of notations.

2. The concept is borrowed from A.F. Lerner who suggested the above as a measure of the 'index of the degree of monopoly power' in his article 'The Concept of Monopoly and the Measurement of Monopoly Power'. Review of Economic Studies June 1934. Kalecki's first article on the subject appeared in Econométrica, Vol.6, 1938 'The Determinants of the Distribution of Income'. 
It is also assumed that for the economy as a whole marginal costs equal average variable costs with a high degree of approximation. Then by an analysis of costs and prices and a process of summation for the entire economy Kalecki shows that just as the degree of monopoly of a firm measures the profit margin over sale of the firm, \( \mu \) measures the average rate of profit per unit of turnover in the economy.

If \( T \) is the gross turnover (\( T = \Sigma x_p \) where \( x \) stands for products, so that \( T \) equals gross national income plus the aggregate cost of marketable raw materials), \( E \) the aggregate entrepreneurial income, and \( O \) the aggregate overhead costs (interest plus salaries plus depreciation charges) so that \( E + O \) is gross capitalist income, the weighted average of the degree of monopoly in the economy,

\[
\bar{\mu} = \frac{E + O}{T}
\]

which shows that 'the relative shares of gross capitalist income and salaries in the aggregate turnover is, with great approximation, equal to the average degree of monopoly'.


In perfect competition price equals marginal cost hence \( \mu \) is zero which implies that profits, interest, salaries, depreciation etc., are zero, which is paradoxical. But the theory is not meant for that case as the assumptions on which it is based do not apply in competitive conditions.\(^1\) But perfectly competitive conditions are rarely found, hence the theory is realistic and applies both in the short run and the long run. Criticism of the above concept of degree of monopoly persuaded Kalecki to redefine it and modify his theory accordingly. Thus by 1943 the degree of monopoly had become 'the average percentage gross margin' reflecting 'not only the changes in the degree of market imperfection and oligopoly and the bottlenecks in available capacities but also changes in the rates of prime selling costs'.\(^2\) In the latest version\(^3\) the individual firm's price \( p \) is based on average prime costs \( u \) which are assumed constant over the relevant range of output, and the weighted average price of all firms in the industry \( \overline{p} \) so that \( p = mu + np \) where both \( m \) and \( n \) are positive coefficients and it is postulated that \( n < 1 \). 'The coefficients \( m \) and \( n \) characterizing the price fixing policy of the firm reflect what may be called the degree of monopoly of the firm's position'.\(^4\) Such an equation is obtained for each firm in the industry weighted by their respective outputs added together and divided by the output of the industry to obtain

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1. Ibid., p. 204.
4. Ibid., p. 13.
\[ p = \bar{m}u + \bar{n} \bar{p} \]

which yields \[ P = \frac{\bar{m}}{1 - \bar{n}} \bar{u} . \]

As \( \frac{\bar{m}}{1 - \bar{n}} \) is Kalecki's degree of monopoly, the above equation states that the ratio of average price in the industry \( (\bar{p}) \) to the average unit cost \( (\bar{u}) \) depends on the degree of monopoly. If the degree of monopoly rises, price increases relative to unit prime costs, i.e., the rate of profit per unit of output increases. Thus the above equation becomes the basis for Kalecki's reformulated degree of monopoly theory of relative shares. According to him, 'the ratio of average price to average prime cost is equal to the ratio of the aggregate proceeds of the industry to aggregate prime costs of industry'.\(^1\) Kalecki then proceeds to build a theory of the 'Distribution of National Income' on this basis. As the value added i.e., value of the national product less the cost of materials, is equal to the sum of wages overheads and profits, he obtains, denoting aggregate wages by \( W \), aggregate cost of raw materials by \( M \), and the ratio of aggregate proceeds to aggregate prime costs by \( K \): \[ \text{Overheads} + \text{Profits} = (K - 1)(W + M) \]

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The relative share of wages in the value added by industry is given by
\[ w = \frac{1}{1 + \frac{1}{k-1}(1+1)} \]. Denoting the ratio of aggregate cost of raw materials to the wage bill by \( j \) he concludes that
\[ w = \frac{1}{1 + \frac{1}{k-1}(j+1)} \].

'The relative share of wages in the value added is determined by the degree of monopoly and by the ratio of the materials bill to the wage bill' 2 A rise in the degree of monopoly or in the raw material prices in relation to unit wage costs causes a fall of the relative share of wages in the value added. Besides these two factors 'industrial composition' is also one of the determinants of the relative wage share, by which Kalecki means the composition of the value of the gross income of the private sector, which involves not only the volume but also the relative prices of the component products.

The degree of monopoly tends to increase in the long run, and thus to depress the relative share of wages in income.

1. As \( W + \text{overheads} + \text{profits} = W + (K-1)(W + M) \)
   
   or total value added \[ \frac{W}{W} = \frac{W + (K-1)(W + M)}{W} \]
   
   or wage share \[ w = \frac{W}{\text{value added}} = \frac{W}{W + (K-1)(W + M)} \]

2. Kalecki, op.cit., p.28.
3. Ibid., pp. 29-30.
But as no generalisations are possible about the industrial composition or the relation of raw material prices to unit wage costs, no a priori statement is possible as to the long run trend of relative share of wages in income.¹

Kalecki seeks to blend his aggregate profit theory with his theory of relative shares as follows:

'Since profits in a given short period are determined by capitalists' decisions as to their consumption and investment formed in the past, the factors determining the distribution of income will affect not real profits but the real wage and salary bill, and consequently the national output. If, for instance, the degree of market imperfection... increase and, as a result, so does the ratio of profits to wages, real profits do not change, but the real wage bill falls, first because of the fall in real wage rates and secondly because of the consequent reduction in the demand for wage goods, and thus output and employment in the wage good industries..... Percentage gross margins increase, but the national output falls so much that, as a result, the real total profits remain the same'.²

The same principle has been enunciated elsewhere also.³

Thus the aggregate profit(P) determined by capitalists' decisions to invest and consume is brought into conformity

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1. Ibid., pp. 30-31
with relative share of profit \(P/Y\) through adjustments in the level of output and the aggregate wages. An increase in the degree of monopoly increases the profit margins, but the aggregate profits remain the same, though they form a larger share of the now reduced total output. At the same time workers' share declines both in absolute and in relative terms. The above analysis, therefore, reveals that the degree of monopoly has no direct effect on aggregate profit \(P\), the rate of profit per unit of capital \(P/K\) or the ratio of profit to total income \(P/Y\). It only affects the last mentioned by affecting the total income \(Y\).

The same point establishes the superiority of Kalecki's analysis over those models which take the level of income as given, for Kalecki's theory treats total output as a variable in the system and makes the degree of imperfection in the market one of its decisive determinants. It succeeds in bringing a micro-economic phenomenon into play in the determination of major macroeconomic categories.

But, as Kalecki has clearly specified, the application of the degree of monopoly theory is limited to the case when there is excess capacity in the industry.¹ Firms choose in this situation a price policy so as to maximise their profits.

¹. Ibid., pp. 11-12.
profit margins determine the average level of prices and the volume of output and employment and, therefore, the wages bill. The greater the degree of imperfection in the market the higher the degree of this freedom and the more the influence of the firms' policy on these variables. There is no such freedom for the firms when production is at full capacity. In that situation the available equipment determines the level of output and prices are set at a level which equates aggregate demand to the given aggregate supply.

Kalecki's first definition of the degree of monopoly had been criticised on the ground that it is not legitimate to obtain an average degree of monopoly for the economy as a whole on the basis of the individual firms' degree of monopoly as no valid methods of averaging are available. His later formulations are, to some extent, less amenable to this charge but they are far from being precise. They still beg the significant question: How to define an industry in monopolistic competition. Moreover, defining the degree of monopoly as the ratio of aggregate proceeds to aggregate prime costs reduces it to a tautological explanation of class shares.

Accepting the view that the share of wages in National Income had a tendency to remain constant over time, Kalecki sought to explain it by arguing that the degree of monopoly did not undergo violent changes. This proposition has been criticised, among others, by Keynes who questioned Kalecki's assumption of constant marginal costs.\(^1\) Then having shown that a change in the degree of monopoly caused the level of output and employment to change, it was necessary to enquire how the degree of monopoly itself would respond to a change in the level of output and employment caused by changes in their macroeconomic determinants: Investment and Consumption. This Kalecki fails to do as he regards the degree of monopoly to be more or less constant over time. But this amounts to a failure in completing the link between the macro-theory of distribution and the degree of monopoly theory of relative shares (which is essentially microeconomic in nature).

3. KENNETH E. BOULDING

Boulding's macroeconomic theory of distribution is

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Income consists essentially of the gross additions of value to the total stock of capital which reflect itself in gross additions to net worth. The economy is divided into two camps, business(b) and households (h), while income is divided broadly into two categories, wages(W) and non-wages(V). The determination of National Income and its distribution in wages and non-wages is affected by the interplay of a number of factors which are:

\[ \begin{align*}
N_b, & \text{ the stock of money held by businessmen; } \\
N_h, & \text{ the stock of money held by households; } \\
K_h, & \text{ debts of household to business; } \\
K_h', & \text{debts of business to households; } \\
K_b, & \text{ debts of business to business; } \\
Q_b, & \text{ the stock of goods held by business; } \\
Q_h, & \text{ the stock of goods held by households; } \\
D, & \text{ dividend distribution by business; } \\
C, & \text{ household consumption; }
\end{align*} \]

and, the rates of change of these variables.

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Balance sheet statements yield the following results on combination and rearrangement.

Indicating business net worth by $G_b$ (and household net worth by $G_h$) aggregate profits equal changes in business net worth plus the interest and dividend distributed by the firms.

$$V = dG_b + D$$  \hspace{1cm} (3.1)

'The more business distributes in interest and dividends the more will be returned to it in profits to distribute'.

In the above identity, business net worth

$$G_b = M_b + Q_b + (K_h - K'_h)$$  \hspace{1cm} (3.2)

Differentiating the above we have the following expression for changes in business net worth or business savings (or dissavings)

$$dG_b = dM_b + dQ_b + dK_h - dK'_h$$  \hspace{1cm} (3.3)

As $dG_b$ represents the part of total profits $V$ which has not been distributed, substituting its value in (3.1) we have:

$$V = dQ_b + dM_b + dK_b + dK_h - dK'_h + D$$  \hspace{1cm} (3.4)

This identity, which itself is based on identities (3.1) and (3.3) above is the essence of Boulding's theory.

1. Ibid., p. 250.
2. Ibid., Preface, p. 2.
He arrives at a similar identity for wages by first developing an identity for changes in household savings \( d_{h} \), assuming the total stock of money to be constant \( dM = dM_{b} + dM_{h} = 0 \), and regarding changes in household net worth as the sum of wages and dividend earned plus changes in business net worth less household consumption. The identity for wages finally arrived at is as follows:

\[
W = C_{h} + dQ_{h} - (dM_{b} + dK_{h} - dK'_{h} + D) \quad (3.5)
\]

The item \( dM_{b} + dK_{h} - dK'_{h} + D \) appears in both equations (3.4) and (3.5). It may be called the 'transfer item' (to be designated by \( T \)). The equations for wages and for gross profits are now brought together and it is shown that between them they exhaust the total product

\[
W = C_{h} + dQ_{h} - T \quad (3.6,A)
\]

\[
V = dQ_{b} + T \quad (3.6,B)
\]

Total net product \( P_{n} = W + V = C_{h} + dQ_{h} + dQ_{b} \) (3.7)

In the final identities \( dQ_{b} \), or change in the value of assets held by business, is the same as net business investment, \( C_{h} \) is the same as total consumption in the economy as all consumption is done by households, and

1. Ibid., pp. 250-51.
the change in asset holding by households, refers to the assets which households acquired from businessmen but did not consume. Boulding calls \((C_h + dQ_h)\) household absorption\(^1\) while in the conventional (Keynesian) terminology it would be termed consumption. Thus in familiar terms the three equations \((3.7)\), \((3.6, A)\) and \((3.6, B)\) may be rewritten as

\[
\begin{align*}
Y &= W + P = C + T \\
P &= I + T \\
W &= C - T
\end{align*}
\]

Boulding himself states much the same when he says that the equation \((3.6)\) above shows that 'the distribution of the product between wages and profits is determined by two elements: the composition of the product absorption on the one hand as between business investment and household absorption, and a transfer factor which we add to business absorption to get the total of profits, and subtract from the total of household absorption to get the total of wages'.\(^2\)

The novel element in Boulding's theory, therefore, lies in his transfer factor, whose items he has analysed\(^3\).

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1. Ibid., p. 252.
2. Ibid., p. 252.
3. Ibid., pp. 252-258.
of these four items: relative liquidity preference of business and households which determines \( (dM_p) \), credit policy of firms \( (dK_h) \), households purchase of business securities \( (dK'_h) \) and the dividend distribution policy of the firms, is highly significant. Boulding's analysis of these factors serves to underline their importance in determining the distribution of income between wages and profits. It is, however, noted that 'all these effects are likely to be more important, the shorter the time we take, as the longer the period, the smaller the balance of payments item is likely to be relative to the other three'.

Critics have pointed out that the items of the transfer factor are not independent of one another, and the same is true of the items on the right hand side of identities (6.1) and (6.3) above. Balance sheet accounting procedures indicate that whenever there is an increase in an asset, there must be either an offsetting increase in a liability or a decrease in another asset or an increase in net worth. On this and similar grounds Johnston declared that 'it can be shown that Professor Boulding's conclusions would hold good only under a most extreme and unrealistic set of circumstances'. But the important question is

1. Ibid., p. 256.
whether the alleged inter-dependence between various items is so important as cannot be ignored.

Boulding then proceeds to construct models of distribution on the basis of the above analysis, adding certain simplifying assumptions. Of the two he describes, the more realistic one makes consumption a function of national income and investment a function of aggregate profits.

The first model is constructed on the assumption that the greater the proportion of output which goes to wages and the less to gross profits, the greater will be the volume of household absorption and the less will be the volume of business absorption. The models are explained diagramatically of the various conclusions, some of them highly qualified, a few may be noted, postponing a detailed study for the final version mentioned below.

According to the first model a rise in the consumption function will always shift distribution towards wages, and a rise in the investment function will shift it towards profits. This is the conclusion Kaldor reached later on the basis of similar assumption and indeed Kalecki had stated the

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1. Ibid., pp. 258-69.
2. Ibid., p. 258.
3. Ibid., p. 263.
same earlier. The second model makes consumption independent of the distribution of income. In this case the effect of an increase in the transfer factor will be to increase profits and reduce wages, profits increasing by more than the increase in the transfer factor.\(^1\) Furthermore 'a shift in distribution towards profits or away from wages always increases output (unless, of course, capacity has been reached). An increase in transfer factor may occur due to one or more of the following: increased dividend distribution to rentiers, relative increase in entrepreneur's liquidity preference, increase in the credit extended to households by firms, and repayment of loans taken by the firms from households. In effect it amounts to an increase in payments by businessmen to rentiers. This conclusion is also similar to that of Kalecki mentioned above.

A later version of Boulding's macro-distribution theory\(^2\) makes both consumption and investment functions of wages and profits. These two behaviour equations along with two identities concerning the composition and distribution of the national income are\(^3\)

\(^1\) Ibid., p. 267.


\(^3\) Ibid., A Reconstruction, p. 477.
The system is incomplete as it has four equations but five unknowns, so that it needs another equation to make it an equilibrium system. Boulding has no simple solution for the problem that thus arises. He examines both the 'classical' and the 'marginal productivity' solutions but rejects them as unconvincing. The classical wage fund theory provided the required fifth equation \( W = k \cdot S \) wherein \( S \) is the total stock of capital which can be taken as given in the short run, and \( k \) is a known fraction. The marginal productivity theory instead postulates \( W = F_w(L) \) where \( L \) is the total labour force and is assumed given.

At this stage Boulding takes recourse to his earlier balance sheet analysis whose equation (3.4) above is capable of becoming the equation missing here. In deference to a criticism by Turvey\(^1\) Boulding prefers to write that equation as

\[
V = I_n + D + dK_b + dK_b
\]  

(3.12)

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1. Ibid., p. 478.
In this equation \( I_n = I - dK_b \) (writing \( I \) for \( dQ_b \)) and stands for internally financed investment.

But the new equation brings four more unknowns into the system: \( dM_b \), \( dK_b \), \( D \) and \( I_n \), and necessitates four more behaviour equations. Boulding finds that each of these variables corresponds to a specific area of decision. Hence it is not impossible to find suitable equations relating them to their determinants. Also, 'we can treat them simply as exogenous variables in the model or they can be regarded as functions of some of the other variables of the system.'

He then proceeds briefly to examine the possibilities of doing so. It must however be admitted that any number of assumptions are possible leading to any number of conclusions. He, nevertheless, concludes that \( dM_b \) and \( dK_b \) can be neglected in the long run, as 'businessmen can neither accumulate money nor expand consumers' credit for ever.' Also in the final equilibrium \( I_n = dM_b = dK_b = 0 \), so that \( V = D \). Hence the ultimate long run tendency of distribution depends on the nature of the dividend function. 'The existence of contractual distributions in interest and rent will prevent the disappearance of non-wages altogether, but unless there is some

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1. Ibid., p. 479.
2. Ibid., p. 480.
level of profits at which total business distributions equal profits with positive dividends (i.e., a level at which there is no attempted net business savings,) dividends will disappear.1

Thus we find that even though Boulding's analysis does not lead to a simple conclusion regarding the determinants of aggregate profits, aggregate wages, National Income and the relative shares, it has the virtue of giving a more complete system including such important variables as dividend distribution policy and liquidity preference; something which the models of Kaldor and Kalecki fail to achieve. Moreover, it visualises simultaneous determination of the level of income and its distribution, as a truly macroeconomic theory should, for a theory of income distribution which takes the level of income as given is by nature unsatisfactory. Then by suggesting alternative models Boulding has underlined the fact that the assumption of separate saving propensities(or consumption functions) for wage earners and capitalists is not at all necessary for a study of macro-distribution. Indeed too much emphasis on these propensities obscures the role of the other active forces involved, sometime excluding them altogether(as in Kaldor's model). Boulding's theory also succeeds in

1. Ibid., p. 480.
distinguishing between the interest, rent and salaries part of profit from the remaining part (the unimputed residue, to borrow the old terminology) and showing that while the latter may be zero in the long run the former assures aggregate profits of permanence.

Some critics have wrongly inferred that because Boulding adopts the balance sheet approach he must have regarded the level of income as given and constant. But Boulding's models of distribution as also his later article clearly treat the level of income and employment as a variable, and specifically discuss the effect of changes in the various factors, and the consequent distribution pattern, on the level of income and employment. 2

4. SIDNEY WEINTRAUB

Weintraub sets out with the specific purpose of integrating the theory of income distribution with the

2. K.K. Boulding: A Reconstruction, pp. 243; 266; 267 and 481.
theory of income determination. Discarding the shorter but misleading route of reliance on savings - investment equality and distinct saving propensities, he adopts the aggregate demand - aggregate supply approach to determination of employment and output, bringing in the marginal productivit principle, the degree of monopoly concept and the contractual nature of factor hire as factors influencing the distribution of income. He also emphasises the element of uncertainty involved in business decisions to explain business profits. Price level is treated as variable and a theory of interest is made part of the system. Weintraub has thus attempted a fusion of the accepted microeconomic bases of distribution with the macroeconomic determinants of income and its distribution. But in doing so he has unavoidably increased the number of variables which has rendered the construction of a neat and simple model almost impossible.

According to Weintraub the level of employment, the level of sales proceeds (i.e., National Income defined as anticipated gross product), the nature of fixed contracts, the money wage level, the amount of fixed capital, the productivity of labour, and the degree of monopoly power all have some influence on and govern the profit level.¹

Given the amount of fixed capital and the nature of contracts, the level of employment and output are determined by aggregate demand and aggregate supply. The equilibrium between aggregate demand and aggregate supply entails a volume of employment at which the expected sum of sales proceeds is exactly equal to the outlay coming from consuming and investing groups.¹

Aggregate demand is the sum of demand for consumption goods and the demand for investment goods.

\[ D = D_c + D_i \]

Demand for consumption goods depends on personal income \( Y_d \) and the wealth or asset holding of the individuals, \( A \).

\[ D_c = CY_d + \lambda A \]

where \( C \) is the average propensity to consume out of personal income and \( \lambda \) is the dissaving coefficient. The personal income \( Y_d \) equals the money wage rate \( (w) \) times the number of men employed \( (N) \), plus the fixed payments to rentiers \( (F) \), plus dividends received \( (kR) \), plus transfer payments \( (T_t) \) less direct taxes \( (T_n) \)

\[ Y_d = wN + F + kR + (T_t - T_n) \]

\( R \) is total profits including salaries, interest payments.

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¹ Ibid., p. 44.
and indirect taxes and depreciation allowance and \( k \) the proportion distributed as dividends.

The demand for investment goods \( D_i \) is a function of the rate of profit and the volume of output, given the capital output ratio. It can be treated as an increasing function of the level of employment \((N)\), though much would depend on anticipation, monetary policy and interest rate phenomena.

Aggregate supply or the total expected sales proceeds \( Z \) depends on the wage rate and the level of employment, the expected profits and the contractually fixed payments.

\[ Z = wN + F + R \]

The aggregate supply schedule is constructed on the basis of the particular supply schedules of the individual industries which themselves rest on factor prices and productivity data in the component firms. The total employment \( N \), accompanying the proceeds \( Z \), is determined through productivity relations. Each output volume entails a precise volume of employment determined by the factor productivities and ruling factor prices. The volume of fixed payments \( F \) is assumed to be invariant in the short run. The rate of wages depends on the marginal productivity of labour and the rate of profit depends, among other factors,
on the degree of monopoly.

As \( Z = PQ \), the total output multiplied by the average price level, we have

\[
w = \frac{dQ}{dN} \quad \text{and} \quad \frac{W}{P} = \frac{dQ}{dN}
\]

i.e., real wages equal the marginal productivity of labour
And as \( F \), the fixed payments, are invariant in the short run.

\[
\frac{AZ}{\Delta N} = w + \frac{dR}{dN} \quad \text{so that} \quad \frac{dR}{dN} > 0 \quad \text{which is the profit maximisation hypothesis.}
\]

Thus we can trace the course of wages and profits with the changing level of National Income along with the changing volume of employment. It can be shown that the rate of change of slope of the Z function will determine the changes in the relative wage share\(^1\).

Furthermore, as \( \frac{dQ}{dN} \) is the marginal productivity of labour and \( \frac{Q}{N} \) is the average productivity of labour, i.e., \( \frac{dQ}{dN} = M = w \) and \( \frac{Q}{N} = A \), we get

\[
\frac{dQ/dN}{Q/N} = \frac{w}{F/N} = \frac{wN}{FQ} = \frac{\text{aggregate wages}}{\text{National Income}} = \frac{M}{A}
\]

which 'conveys the important theorem that the income share

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\(^1\) Ibid., p. 49 also see p. 29.
of labour \( \frac{w}{p/q} \), depends on the ratio of the marginal to the average product of labour.\(^1\)

It also follows that the share of profits, defined as all income other than wages, must equal \( 1 - \frac{m}{w} \)
(as \( w + p = z \) or \( \frac{w}{z} + \frac{p}{z} = 1 \) or \( \frac{p}{z} = 1 - \frac{w}{z} = 1 - \frac{m}{w} \)).

Weintraub then proceeds to show that with imperfections in the market, the ratio of profits to income will also depend on the degree of monopoly power, defined as the reciprocal of the elasticity of demand.\(^2\) He points out, however, that it is not possible to conclude that an increase in the degree of monopoly always lowers the relative wage share, as Kalecki does.

Weintraub's analysis leans heavily to the aggregate supply side,\(^3\) to the neglect of a thorough study of aggregate demand. This is most evident in relation to the investment demand function whose role in the system he has somewhat 'de-emphasised

1. Ibid., p. 51.
2. Ibid., pp. 65-67.
Assuming profit maximisation in the short run, \( mr = mc \), the degree of monopoly
\[
\mu = \frac{p}{p-mc} = \frac{p}{p-mr} = \frac{p}{mc} ,
\]
as the elasticity of demand can be defined as \( \frac{p}{p-mr} \)
In the absence of any clear analysis of the composition of aggregate demand, the active role in the distribution process passes over to the supply phenomena such as productivity and monopoly power.

Weintraub has severely criticised Kaldor for neglecting the role of productivity in the determination of the wage rate, but his own introduction of this phenomenon can be justified only on the basis of his assumption that pure competition prevails. Even if we ignore the problem of measuring the productivity of labour in a system with changing profit rate and changing price level, the proposition that wages equal marginal productivity is not true under imperfect competition. The wisdom of assuming pure competition in a realistic model of distribution is highly doubtful. The objection becomes more weighty when the degree of monopoly is also made a determinant of the system. Does Weintraub want to stipulate that a monopolistic employer must perform yield to labour the full value of its marginal product; or its marginal revenue product, for that matter? In the light of his own very able criticism of the marginal productivity theory of distribution he can hardly do so. What, then, is the meaning of laying down that productivity governs labour hire if it only sets a boundary condition, as Kaldor has shown?

1. Weintraub, op.cit., p. 106.
Analysing the aggregate supply function, Weintraub observes that entrepreneurial initiative lies mainly in introducing innovations which would raise the $N - Z$ level. Labour saving inventions, in particular, lift $Z$ relative to $W$, to the relative detriment of labour at each level of employment. Entrepreneurs generally improve their real positions with rising $Z - W$ levels. But in so far as the average propensity to save grows with increase in employment, the ultimate income development will be checked and aggregate and relative profits will be restrained. Larger investment outlays enlarge profits directly, while greater dividend distributions do so indirectly through the return flow of increased consumption expenditure.

Due to changing anticipations and innovations the economy is forever in the grip of autonomous demand-cost changes and lagging adaptations. Agreements regarding factor hire being based on imperfect foresight a profit trail results from the final disposition of the product. In the macro-economic model described above these elements mainly exercise their effect on the aggregate supply function. Thus he has restored to uncertainty its key position in profit theory which most of the other macro-theories fail to do.

1. Ibid., p. 193.
2. Ibid., p. 33.
3. Ibid., p. 93.
4. Ibid., p. 94.
In this context Weintraub lays great emphasis on the contractual mode of factor hire. Contracts usually provide for a rigid temporal payment plan, regardless of economic changes. A change in economic conditions from the expectation on which the contracts were based will establish some deviation between imputed values and contractual earnings and it is this discrepancy which creates profits — and losses. It is mainly this fact which accounts for the persistence of profit share in income distribution.

Weintraub also distinguishes between the determination of profits and their sharing out by individual entrepreneurs. The latter involves some transfer aspects.

Though our brief summary of Weintraub's theory leaves out a detailed consideration of some of the variables influencing aggregate supply, aggregate demand and their various components, it should suffice to give a fairly clear idea of the complexity as well as the comprehensiveness of his system. If one gets a feeling of meeting many loose ends, it is probably because there are too many of them to join.

1. Ibid., pp. 192-94.
5. JOAN ROBINSON

One of the chief contributors to the macroeconomic theory of distribution is Mrs. Joan Robinson whose *The Accumulation of Capital* appeared in 1956. The analysis presented there has been made simpler in *Essays in the Theory of Economic Growth* (1962) and the theory of distribution has been more clearly stated in an essay.¹

Profit theory or the distribution of income is not the primary concern of *The Accumulation of Capital*. It is a comprehensive study of accumulation and growth carried on at various levels of abstraction. The theory of distribution that emerges, on the assumption of a fully employed labour force, a certain degree of mechanisation and/or technical progress can be stated as follows: Total output being given, the distribution of income depends solely on the composition of aggregate demand. The relative shares of workers and capitalists in total income depend on the proportional allocation of labour in the consumption sector and the investment sector. It is assumed that workers consume their entire income. Profits therefore are equal to net investment

plus rentier expenditure'. 1

Her 'analysis of the components of aggregate demand leads to the conclusion that the relative shares depend essentially on three sets of conditions: (a) investment decision which are partly determined by the anxiety of the entrepreneur to accumulate, partly by the physical conditions of production and technical progress, and partly by the real wage rate which may affect the degree of mechanisation or stimulate biased innovations; (b) decisions on the distribution of profits via dividends and contractual obligations which will depend on a complex of liquidity desires, and (c) consumption decisions'. 2

As the argument proceeds further, other assumptions are also relaxed. Land which was excluded from the model in the first instance does not complicate matters when introduced. Rent payments mainly affect the level of real wages since 'expenditure out of rent income keeps prices, relative to money wages, higher than they would be if rents were lower, so that entrepreneurs as a whole receive back (as receipts from the sale of commodities) a large part of

what they pay in rent'. 1 Interest is treated as a transfer payment not necessitating any modification of the above conclusions.

In the final analysis distribution of income and determination of the rate of profit and the levels of rent and wages is effected simultaneously by a number of forces in a complicated manner: 'The level of rent and wages and the rate of profit are not determined by the marginal products of land, labour and investment. All these are determined together in a complicated way by the spectrum of technical possibilities, the supply of land and labour available to the economy as a whole and the amount of accumulation that has already taken place, and by the level of effective demand for commodities and the rate of investment'. 2

Robinson's later writings on the subject do not involve any departure from the theory outlined in The Accumulation of Capital; instead they have gained in clarity and are, therefore, more amenable to the type of study we are making. In what follows we shall study her contribution in the light of these later works.

She makes a distinction between two circumstances, one when production is going on at full capacity and the

2. Ibid., p. 311.
other when excess capacity exists. In the latter situation
certain factors play a decisive role in determining the level
of income and its distribution whereas they do not do so in
the first situation. These factors are the price policy of
the firms and the bargaining position of labour in the
market, thus involving the degree of monopoly or the
extent of competition in the economy.

When output is at full capacity the ratio of investment
to output along with the propensities to consume of the
workers and the capitalists' propensity to distribute
profits determine the level of income, aggregate profits,
total wages, and the ratio of profits and wages to total
income — given the stock of capital, and the capital
output ratio (the technique of production). Output in this
situation is ultimately determined by the existing capacity
of production. 'The stream of money demand encounters a flow
of output limited by capacity, and prices are set at a level
which equates aggregate demand to aggregate supply'.

Total wages are fixed by employment at capacity (as the two determine
labour's productivity), total profits are fixed by investment
and rentier consumption (assuming workers to be consuming
all that they get). Average level of profit margins (profit
over costs) equals $P/W$. Rentier consumption depends on

capitalists' propensity to distribute profits and the propensity to consume of the rentiers (i.e., capitalists and other recipients of dividends).

Thus the degree of monopoly does not enter into the picture in this situation. Nor is any role assigned to the productivity of labour, it being fixed by the 'brute fact of productive capacity'. Robinson's analysis of this situation agrees with that of Kaldor who had exactly this situation before him. The one significant difference is, however, Robinson's emphasis on dividend policy of the firms as a determinant of rentier consumption, because 'the balancing item which equates the value of net investment to net savings is the undistributed profits of the firms'.

But the above situation is an extreme one and under-capacity working of industrial plants is the normal condition in imperfect competition. In this situation the level of utilization of plants depends partly on the price policy of the firms concerned and the degree of monopoly has to be brought into the question of the determination of margins. Profit margins, and therefore the price level is determined by the degree of monopoly, 'which results from the interaction of price policy of firms and the bargaining position in the labour market'. Total wages depend on employment at the

1. Ibid., p. 147.
2. Ibid., p. 147.
3. Ibid., p. 152, also see p. 150.
corresponding level of utilization of capacity. Total money wages and the price level determine workers' demand for consumption goods (given their propensity to consume). This along with the capitalists' and rentiers' consumption and capitalist investment determines the level of income. 'With a given rate of investment going on, the level of employment and the output of commodities is lower the higher is the level of profit margins, for a given flow of money-wages provides purchasing power for less commodities when prices are higher, and a given global profit is recovered from a smaller output when profit per unit of output is greater'.

The reaction of rentier consumption to higher prices is important as profit would be larger or smaller depending on whether they spend at a higher or a lower total rate.

These conclusions are highly reminiscent of Kalecki's, whom Robinson endorses with reference to the above situation, though agreement in details of the analysis is not possible. She then removes a serious confusion and reconciles the macro-theories of Kaldor and Kalecki by pointing out that 'the share of profit in income is determined by the ratio of investment to income, but the amount of income associated with a given rate of investment is influenced by the amount

1. Ibid., p. 148.
of capacity in existence and the degree of monopoly'.

The difference between the roles assigned to degree of monopoly by Robinson and Kalecki are obvious and Robinson's treatment is not exposed to the type of criticism which Kalecki's treatment has met.

Robinson does not make productivity a determinant of wages in her system for, 'according to the imperfect competition theory wages are normally less than marginal products ...' and as Kaldor maintains, productivity at best defines the upper limit beyond which wages cannot go. Moreover, productivity of labour is itself determined by the other variables of the system.

In both the situations the condition for equilibrium is that savings must equal investment, which is the independent variable. In the short run this equality is brought about by adjustments in the level of income and the level of utilization of the existing capacity. In the long run, given the technical conditions which determine the capital-output ratio, investment is in a definite proportion to the stock of capital. For

1. Ibid., p. 149.
equilibrium, therefore, the volume of savings must be such that the savings — capital ratio \((S/K)\) is equal to the ratio which investment bears to capital \((I/K)\), the rate of accumulation). This equality is brought about by adjustments in both the level of income and its distribution. For, given the propensity to consume of capitalists and workers, savings out of a given income will be more, the larger is the share of profits in income. The adjustments take place through changes in the price level which in turn, depends on the rate of profit.\(^1\) Whatever the ratio of that investment to the value of the stock of capital may be, the level of prices must be such as to make the distribution of income such that net saving per unit of value of capital is equal to it. Thus, given the propensity to save from each type of income (the thriftiness condition) the rate of profit is determined by the rate of accumulation of capital.\(^2\)

The existing state of the science of economics does not permit any generalisation about the long term behaviour of the rate of accumulation \((I/K)\). She, therefore, does not close the system and leaves the question what determines the rate of accumulation, unanswered.\(^3\) As a matter of fact the

1. Ibid., p. 10.
2. Ibid., pp. 11-12.
3. Ibid., pp. 13-16.
relationship between the rate of profit and the rate of accumulation is double-sided; the latter determining the former and in turn being influenced by it. The final outcome depends upon the particular conditions assumed in the growth model.¹

Joan Robinson's work may be rightly looked upon as incorporating the essential aspects of Kaldor and Kalecki theories, putting each in its proper place, in a genuinely Keynesian framework. The system as finally emerging in the hands of Robinson visualises simultaneous determination of the level of income and its distribution, assigns to degree of monopoly its proper role in the relevant situation, emphasises the role of dividend distribution policy and rentiers' consumption, and distinguishes between the short run and the long run. All this is done while preserving the decisive role for investment decisions and the thriftiness condition and postulating savings-investment equality in the Keynesian tradition. Comparing the list of the variables involved, the system may not be as comprehensive as that of Weintraub, but it does achieve the purpose of integrating the theory of income determination with the theory of income distribution in its own manner. The simplicity with which this achievement is made may well be contrasted with the complexity of Weintraub's more comprehensive system. Then it

¹. Ibid., see p 37 and subsequent discussion.
is also couched in terms much more familiar than those which Boulding has chosen and excludes only the lesser important ones of Boulding's variables. If Robinson's model appears to be open at one end, it does not mean that it is not possible to close it; only she would rather not commit herself to any of the alternatives available.

CONCLUSION

What is the upshot of a decade of model building in macro-distribution? The Kalecki - Kaldor - Robinson approach is simpler and yields the main conclusions by emphasising the chief determinants of the system, but the role of the lesser important variables is neglected. It is also biased in favour of aggregate demand on whose composition lies the main burden of distribution to the neglect of aggregate supply which is undoubtedly of greater importance so far as determination of the income to be distributed is concerned. In trying to restore the balance, Weintraub has certainly tilted it too far, by underemphasising the role of investment and paying more attention to aggregate supply to the neglect of the composition of aggregate demand. Then his supply biased model envisages a role for marginal productivity which ignores the realities of an imperfectly competitive system.
Because of the managability of their variables, Kaldor and Robinson have found it possible to proceed further to study the growth of the economy, relating distribution of income to the exigencies of growth. This has not been possible for Weintraub because of the more rigid assumptions and the complex interrelationships of the numerous variables.

Boulding's work is highly enlightening, but because of its unconventional approach it is not directly comparable with either of the two theories mentioned above. Shorn of its peculiar terminology and rewritten in familiar terms, it is nearer the Kaldor - Robinson model than the Weintraubian system, because of its emphasis on investment and consumption demand.

The 'transfer factor' is, after all, a useful device to make more precise what Robinson has emphasised in her own manner — effects on consumption demand, and through it on the volume of profits, of a transfer of income from entrepreneurs to rentiers. It should also be possible to incorporate the liquidity preference function into Kaldor - Robinson model in the context of a variable price system.

Thus, we can visualise a more comprehensive model assimilating the essentials in Kalecki and Boulding,
Kaldorian in structure and Robinsonian in scope, which will compare favourably with the Weintraubian system whose distinct identity will serve as a pointer to an alternative approach which may under certain assumptions be found more suitable for dealing with certain problems.