Chapter II: Interrelation Between the Level and Distribution of Income in the Post-war Models: The Missing Equation
In the previous chapter it was discussed how, the inadequate analytical understanding of the notion of effective demand and the role it might play in the determination of the level of income limited Classical theories from explaining satisfactorily the interrelation between the level and distribution of income. In this chapter we focus on models, which recognise the centrality of the notion of effective demand. It would be argued later in the chapter how these models suffer from the obverse problem of the classical theories, i.e. an ad hoc specification of how distribution is determined. It is simplest to start with models of income determination where the distribution of income is simply specified exogenously.

A: Models of Income Determination with Exogenous Distribution of Income

The origin and perhaps the clearest exposition of this class of models is to be found in Kalecki’s writing. Kalecki in his theory of distribution of income postulates a precise relationship between the degree of monopoly and the level of output. The central idea of Kalecki’s theory of income distribution is the mark-up price model, where the average (weighted) price \( \bar{p} \) for an industry is calculated as mark-up (k) over the average (weighted) of unit prime cost (\( \bar{u} \)) in the industry.

i.e., \( \bar{p} = k.\bar{u} \)  \hspace{1cm} (A.1)

Kalecki incorporates this mark-up price equation into his theory of distribution by noting that the ratio of aggregate proceeds of an industry to the aggregate prime costs of the industry is the mark-up k.
If \( \text{Agg. Prime Costs} = \text{Agg. Wage Cost (W)} + \text{Agg. Material Cost (M)} \)

then \( \text{Agg. Proceeds} = k (W + M) \) \hspace{1cm} (A.2)

subtracting \( (W+M) \) both sides, we have

Overheads + Profits = \((k-1)(W+M)\) \hspace{1cm} (A.3)

The relative share of wages in value added is

\[
\frac{w}{1} = \frac{1}{1 + (k-1)(1 + j)} \hspace{1cm} (A.4)
\]

where \( j = \frac{M}{W} \)

Hence the relative share of wages in value added becomes a function of the mark-up \((k)\) and the ratio of the material bill to the wage bill \((j)\). From Equation (A.4) we can see, that an increase in the degree of monopoly by increasing the mark-up, would reduce the share of wages in value added. The precise manner in which these micro effects of distribution feed into macro determination of economic activity is explained by expressing the wage and salary bill \((V)\) as a function of gross income (or product) of the private sector \((Y)\), such as

\[
V = a.Y + B \hspace{1cm} (A.5)
\]

where \( 1 \geq a \geq 0 \) and \( B \) is a positive constant.

Eq. (A.5) can be written as

\[
\frac{V}{Y} = a + \frac{B}{Y} \hspace{1cm} \text{or}
\]
\[ \frac{Y - P}{Y} = a + \frac{B}{Y} \]  \hspace{1cm} (A.6) \\

i.e., in the absence of taxes \( V = Y - P \), where \( P \) - profits

Eq.\( (A.6) \) implies \( Y = \frac{P + B}{1 - a} \).  \hspace{1cm} (A.7)

However in accordance with the theory of effective demand where expenditure determines income or output, capitalists' profits (\( P \)) are determined by their investment and consumption expenditures

i.e. \( P = CC + I \)  \hspace{1cm} (A.8)

But capitalist consumption depends itself on their income, i.e. profits earned.

Disregarding time lag we may write

\[ CC = A + q \cdot P \]  \hspace{1cm} (A.9)

\( A > 0, \quad 1 > q > 0 \)

where \( A \) and \( q \) denote an arbitrary positive constant and marginal propensity to consume out of profits respectively. The assumption \( A > 0 \) implies that capitalists have some minimum consumption irrespective of their income.

Substituting \( (A.9) \) in to \( (A.8) \) we have

\[ P = A + q \cdot P + I \]

Or \( P = (A + I)/(1 - q) \)  \hspace{1cm} (A.10)

Now substituting \( (A.10) \) in \( (A.7) \) we would get

\[ Y = (A + I)/ [(1 - q)(1 - a)] + B/(1 - a) \]  \hspace{1cm} (A.11)
Here $1/[(1-q)(1-a)]$ is the investment multiplier and it takes in to account the propensity to consume out of profits ($q$) and the relative share of wages ($a$). Kalecki explains the effect of distribution on economic activity by postulating an increase in the degree of monopoly. From equation (A.4), an increase in the degree of monopoly will reduce the share of wages in the value added which implies a fall in the coefficient $a$ in equation (A.6). Conversely, the relative share of profits must increase in response to the higher degree of monopoly. However, this need not imply that the total profits also increase because the total profits are determined by the level of investment and consumption expenditures [(see eqn. (A.8)].

To quote Kalecki

“...The level of income or product will decline to a point at which the higher relative share of profits yields the same absolute level of profits” (Kalecki, 1954, p.253).

Investment therefore determines the level of total profits, which in turn determines the level of total output to a proportion that depends upon the given degree of monopoly (see eqn. (A.11)). This is the core of Kalecki’s theory of distribution. He does not have a theory of what determines the mark-up. As mentioned earlier, for him the degree of monopoly is determined by a set of institutional factors, and is given exogenously to the system.¹ An increase in the given degree of monopoly reduces output to the extent where this reduction

¹ See Kalecki’s essay on “Class Struggle and the Distribution of National Income” in Kalecki, M (1971).
offsets the rise in the share of profits leaving the level of total profits, which are
determined by capitalists’ expenditures (see eqn. A.8), unaltered. It is clear from
the above analysis that an increase in the degree of monopoly does not alter the
distribution of income among capitalists and workers. Kalecki’s theory is often
misleadingly termed as the ‘Monopoly Theory of Distribution’. However, if one
dwells deeper into his model one sees that the degree of monopoly does not
influence the distribution of income in so far as total profit is unaltered for a given
level of investment! Viewed this way, Kalecki’s theory poses exactly the opposite
problem of the classical theories. For instance, Marx argued that at a given level
of total surplus (or total income) changes in distribution of income occurs through
changes in the rate of exploitation affecting relative surplus value. In Kalecki’s
model the problem is inverted, i.e. at a given degree of monopoly determining
mark-up, which corresponds to the rate of surplus product rather than surplus
value, changes in distribution occurs through changes in the level of output. The
novelty of Kalecki’s theory was to show that the level of output ultimately
depends on the capitalist’s expenditures (see equation (A.8)). The problem,
however, is the common intersection between Kalecki and Classical economists,
i.e. both worked out in a somewhat one-sided manner the interrelation between
income distribution and the level of output. The Classical economists viz.,
Ricardo and Marx fix the level of output in determining the distribution of income
between classes (see Ch.1). Kalecki, on the other hand, fixes the distribution more
or less exogenously by taking the degree of monopoly as given, to determine the
level of income.
The post-war period witnessed a spurt of models inspired by the Kaleckian formulation. They tried to solve the problem of interrelation between income distribution and the level of output. One set of authors tried to solve this problem by considering the mark-up as a function of elasticity of demand, trade union power, advertising etc. In other words they tried to solve the problem of interrelation by providing an additional theory of the determination of the mark-up. In this class of models the adverse effect of distribution, due to higher profit share or mark-up, on the level of output is shown mainly through a reduction in the consumption demand. However the other component of aggregate demand in a closed economy namely investment, plays no role in their analysis. In essence, it is under-consumptionist logic.

Steindl (1952) provided a theory of investment, where the degree of utilisation of capacity plays a vital role in determining the level of investment. He tries to overcome the disadvantages of exclusive under-consumptionist logic in explaining the interrelation between the distribution of income and the level of output. However, in his argument, lower capacity utilization puts a drag on the level of investment primarily because of the structure of the manufacturing industry. In his model he considers two types of industries. One is competitive in nature where the profit margin is flexible and excess capacity is driven out by the competitive price-cutting by firms. The other industry is monopolistic in nature

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3 In an economy without any economic activity by government and closed to foreign trade, private final expenditure on consumption and on investment are the two main components of aggregate demand. The under-consumptionist logic, for expanding the aggregate output, emphasises the importance of stimulating high private consumption through a policy of high (real) wages. See Domar, E.D (1947, pp.34-55).
where cost differentials exist between firms, consequently the profit margin is less flexible than in the competitive industries. On this industrial structure, Steindl builds up his case for stagnation in the economy as a whole by arguing that the structure of manufacturing, especially US manufacturing in the period under consideration, was evolving more and more towards a monopolistic form. So the fall in the level of output in his analysis is due to the presence of surplus capacity, brought about by the tendency towards concentration, which depresses investment at constant profit margin. In other words, since the profit margin is maintained by the evolving structure of industries, the fall in output is not directly due to any adverse distributional effect. Hence Steindl’s model, getting out of the under-consumptionist mould by bringing investment into consideration and emphasising the evolving nature of the industrial structure as an essential feature of the analytical model, analyse partly the problem of interrelation between distribution of income and the level of output. However, Steindl’s model is closely allied to Kalecki’s, in so far as the industrial structure and its evolution, analogous to Kalecki’s degree of monopoly, is largely extraneous to the macroeconomic analysis of aggregate demand. It affects aggregate demand through its impact on the level of investment, whereas in Kalecki’s model it is the degree of monopoly.

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4 This notion of flexible/inflexible profit margin is very similar to Hick’s idea of ‘fix price’ and ‘flex price’. For Hicks, the existence of stocks (or surplus capacity in case of Steindl) has a great deal to do with the possibility of keeping prices fixed or inflexible profit margins. In case of excess demand it is the stock changes (quantity) substitute for price changes. See Hicks (1965, p.79). Also see Kalecki’s essay on ‘Costs and Prices’, in Kalecki (1971), where he defines two kinds of prices operating in the economy viz., cost determined (fix) and demand determined (flex) prices.

5 Steindl (1976) argues that the surplus capacity exits, in his model, due to insufficient aggregate demand.
determined exogenously that affects the level of aggregate demand through consumption.

Another set of models, which try to resolve this problem of interrelation between distribution of income and the level of output took their inspiration directly from Keynes’s Treatise rather than the General Theory. Among them, Kaldor’s formulation is perhaps most well known. His formulation is interesting in so far as it relies explicitly on the principle of effective demand operating through the multiplier mechanism to derive a theory of distribution between profits and wages. At the same time his model is radically different from Kalecki’s and other models worked out within the Kaleckian framework, Kaldor relies on a flexible price-wage mechanism to explain the distribution process, instead of relying on the exogenously determined degree of monopoly, which specifies an inflexible price-wage configuration. Nevertheless, the model does not specify how the level, as opposed to the distribution of income, is determined. Kaldor’s model deserves discussion in some detail as one of the most important contributions in the class of Keynesian models characterized by endogenous distribution.

B: Model with Endogenous Distribution with Exogenous Level of Income

Almost obverse to Kalecki’s theory of distribution are Keynesian theories of distribution initiated by Kaldor (1955-56), and later extended by several economists of Keynesian persuasion. Kaldor referring to Keynes’s Treatise on Money, calls his theory a Keynesian theory of distribution since, “it can be shown

\[^6\] Starting from Kaldor’s article on the theories of distribution, See Kaldor (1955-56).
to be an application of specifically Keynesian apparatus of thought” (1956, p.94).

In other words, it relies on the same theory of effective demand operating through the multiplier mechanism to derive a theory of distribution between profits and wages.\(^7\) We present a simple model to recapture Kaldor’s result and review the model for the purpose of our subsequent analysis.

Following relations characterize the model:

Nation Income in money terms is given by

\[ pY = \pi + W \] \hspace{2cm} (B.1)

where \( \pi \) is the level of money profits

\( W \) is the level of money wages

Here \( W = wL \) \hspace{2cm} (B.2)

where \( w \) is the money wage rate

\( L \) is the total labour employed

we assume that \( L \) bears a proportional relation with output

\[ L = bY \] \hspace{2cm} (B.3)

where, \( b \) is the labour–output coefficient which is given.

Incorporating these assumptions in (B.1) we have

\(^7\) Keynes in his Treatise envisages an economy to pass through three stages during the process of expansion. In Stage one, there is a rise in prices (of capital goods or of consumer goods) without any change in output or in employment. In Stage two, the real activity happens i.e., expansion of employment and output and in Stage three both prices and wages rise. But the peculiarity of the treatment in the Treatise is the extreme concentration on what is called as Stage one. In Hicks’ words “it is stage one alone that is closely analysed and it is stage one alone to which the ‘Fundamental equations’ essentially refer” (Hicks, 1967,p.192). At the background of Kaldor’s 1955 article lie these fundamental equations of Treatise.
\[ pY = \pi + w.b.Y \quad (B.4) \]

we assume fixed saving propensities for both profit and wage income, \( s_\pi \) and \( s_w \) respectively, where \( 1 \geq s_\pi > s_w \geq 0 \)

Saving-Investment equality becomes

\[ pI = s_\pi \pi + s_w w.b.Y \quad (B.5) \]

Kaldor might have been inspired by Kalecki’s concept of cost-determined prices rather than Keynes’ approach to the problem in the General Theory.\(^8\)

i.e., \[ p = m.b.w \quad (B.6) \]

where \( m \) is the percentage mark-up.

But Kaldor deviates from Kalecki’s definition of the degree of monopoly being determined by institutional factors and assumes the mark-up to be a variable.

Now instead of giving specific functional form for the profit mark-up, Kaldor closes the system by setting the level of output at the level of appropriate either to the capacity of existing plant and equipment or full-employment of available labour force i.e., \( Y = Y_f \). This returns Kaldor’s model to the Classical separation between the level of output and distribution of income.

With \( Y = Y_f \) the model boils down to the following set of equations:

\[ pY_f = \pi + w.b.Y_f \]
\[ pI = s_\pi \pi + s_w w.p.Y_f \]
\[ p = m.b.w \]

\(^8\) Keynes in the General Theory, with the assumption of diminishing returns and perfect competition, works with a price equation such as \( p = \frac{f'}{f'(L)} \) (marginal cost).
Solving for mark-up, we have

\[ m = \frac{(s_{\pi} - s_{w})}{(s_{\pi} - \bar{I}/Y_f)} \]  \hspace{1cm} (B.7)

The share of profits then becomes, given  \( p = m\bar{b}w \)

\[ h = \frac{\pi}{p} = \frac{[\bar{I}/Y_f - s_{w}]}{[s_{\pi} - s_{w}]} \]  \hspace{1cm} (B.8)

From (B.7) and (B.8) we see that as the level of investment increases with given output at full-employment level, the share of profits increases by the multiplier times. The multiplier in this case is the difference between the saving propensities out of profit and wage income respectively. This argument can be seen by rearranging equation (B.8) as

i.e., \[ \bar{I} = [(s_{\pi} - s_{w})h + s_{w}]Y_f \]  \hspace{1cm} (B.9)

In Kaldor’s model, as investment rises, mark-up rises depressing the real wage owing to the price equation (B.6). Since the level of output is at the full-employment level, the whole adjustment takes place in terms of redistribution of income from wages to profits (by lowering the real wage). This redistribution is captured by the saving propensities, which shows the additional saving per unit of income redistributed from wages to profits

\[ [s_{\pi} - s_{w}] = (1 - s_{w}) - (1 - s_{\pi}) \]
\[ = c_w - c_{\pi} \]
where, \( c_r \) and \( c_w \) are per unit of consumption out of wages and profits respectively.

Rearranging (B.8) we can also see

\[
S = \left[ s_r h + s_w (1 - h) \right] Y_f \tag{B.10}
\]

From equations (B.9) and (B.10) it is clear that an increase in the level of investment, at the full employment level, generates its matching level of saving through a redistribution of income between wages and profits, at the full-employment level. This is the reason why Kaldor’s model and subsequent models have been labelled as Keynesian theories since savings is assumed to adjust passively to an increase in the level of investment. Nevertheless these models also differ fundamentally from the Keynesian scheme, in so far as changes in the distribution rather than level of income ensure the equality between saving and investment.

For attaining this equality between saving and investment in Kalecki’s theory, a higher level of investment has to bring about its matching level of saving through a higher level of output at a given degree of monopoly. This reappears in a different guise in Kaldor’s theory.

From equation (B.9)

\[
\bar{I} = [(s_r - s_w)h + s_w]Y
\]

In Kalecki the profit share (h) is given and output (Y) varies to bring about the saving/investment equality. In short, in Kalecki’s theory, changes in the level of income (output) at a given degree of monopoly ensure this equality. In contrast, in
Kaldor’s model, changes in the distribution (h) through changes in the real wage, at a given level of output (Y=Y1) ensures this equality. This highlights once more our basic proposition of this and the preceding chapter. Like the Classical models, the Post-War Keynesian and the Kaleckian models are also ‘one equation’ short. The interrelation between income distribution (h) and the level of output (Y) has been short-circuited in effect in both types of theories by assuming one (Y) or the other (h) to be exogenous.

It is our purpose in this study to explore this interrelation explicitly. In what follows we shall analyse this interrelation between income distribution and the level of output in a closed economy by specifying different models, including some characterized by increasing returns. Our framework is throughout Keynesian in so far as the output remains demand determined. For simplicity, we also assume a closed, laissez-faire economy in which aggregate demand is considered to be simply the sum of private consumption and private investment.