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SURVEY OF THEORETICAL LITERATURE

2.1 Theory of Income Distribution: An Historical Perspective

The historical development of the theory of income distribution would help to understand clearly the actual questions which economists in the past have attempted to answer. It would also facilitate to form judgements as to how far their answers are correct and complete and hence as to the extent and nature of the work which need to be accomplished by the economists of the present generation.

Though the first glimmerings of a theory of distribution are found in the writings of Mercantalists and the Physiocrats, most theories in the body of economic literature that go by the name 'Income Distribution' have concerned mainly with distribution as between factors of production - the so called functional distribution. Distribution as between persons, the personal or size distribution, a problem of more direct and obvious interest to everybody was either left out of the text books altogether or treated so briefly as to suggest that it raised no questions. The approach, by and large, was determined

by the social and economic environment of the period. Agriculture being the dominant activity, a distinction was made between landlords and tenants that easily suggested a distinction between rent and wages. As the industrial system developed so did a class of industrial entrepreneurs, profit as a return to capital invested was identified. Only late in the nineteenth century the system was developed enough for the analysts to make the distinction between the pure return to capital (interest) and profits as the return to entrepreneurship.

Further as the landlords, capitalists and labourers the were/dominant social classes, it was considered important to distinguish among the shares in income of these groups in any theory of distribution. Thus there was equivalence between functional and personal distribution theories as the factors, land, labour and capital were conceived as corresponding to the three broad social groups. It was natural, then, to seek to explain distribution in terms of the characteristics of factors.

As the economy develops, the pure functional categories mentioned above cannot be identified clearly. The possibility of a single individual performing more than one function and, therefore, belonging to more than one
functional group needs to be recognised. As a result while some individuals derive their incomes exclusively from one source, many derive their's partly from work and partly from property, the relative weights of the two components depending on their ownership of the two types of productive resources. A theory of personal income distribution, cannot, thus, be complete unless it explains the factors determining distribution of ownership of productive resources among persons. Therefore, to understand the distribution of income among persons, it is necessary to study the distribution of income firstly between 'factors' and secondly within specific factor incomes.

Nevertheless, an attempt was made in Section 2.1 to trace the historical development of income distribution theory with particular emphasis on the neglect of the theory of personal income distribution. In Section 2.2 the available theories of personal income distribution were reviewed lamenting on the lack of more complete and satisfactory theories.

2.1.1 CLASSICALS

The classicals developed an ad hoc system of theory that had a different explanations for each of the factor incomes and involving a residual role to one or more
factors' share. For instance, the share of land is what is left over after labour-capital has been paid its marginal product, and the share of capital (profit) is that which is left after labour has been paid either its wages-fund-share (short-run) or the subsistence wage (long-run). In particular the theory assumed a fixed stock of land which must impose diminishing returns as additional 'doses' of labour-cum-capital are applied. The supply of labour available for employment by a given wages-fund can vary accidentally, but in the long-run, it is fixed by the principle that labour breeds to the level of subsistence.

2.1.1.1 Cantillon. Cantillon's "Essai sur la Nature du commerce" published in 1755 contained an intelligent discussion of the causes of differences in wages in different occupations. Cantillon appears to have been the first writer to take account of influences, other than actual rates of pay, which help to determine the comparative attractiveness of different occupations. He raised the question of rent but could not give satisfactory explanation.

2.1.1.2 Quesnay. The Tableau Economique of the Physiocrat Quesnay published in 1756 foreshadows subsequent
theories of distribution between factors of production. Quesnay held that national wealth circulates among three independent classes of people viz., cultivators, landowners and merchants and professionals. He conceived that agriculture was the only productive sector. Despite certain shortcomings, Quesnay is to appreciated for exposing for the first time the process of formation and distribution of national income.

2.1.1.3 Turgot. For the first time in the history of economic thought, Turgot in his "Reflexions Sur la Formation et al Distribution des Richesses" discussed the causes of inequality in the distribution as between individuals of landed property, dwelling upon the effects of inheritance and the way in which these vary with the size of individual families.

2.1.1.4 Adam Smith. From Adam Smith's 'Wealth of Nations', a three-fold classification of the factors of production—land, labour and capital was derived which had so prominent a place in the writings of later economists. Smith discussed the causes of variations of wages and profits in different employments of labour and stock though the reasoning was far from correct especially as regards profits.

3. Ibid.
4. Ibid.
Adam Smith had no real theory of distribution, instead, he dealt with factor prices as costs which added up into the costs of production, which is no theory of distribution at all. He held that just as the price of every particular commodity could be decomposed into wages, profits and rent, similarly that of all the commodities composing the total output also resolves into same three parts. This rather perfunctory treatment of 'distribution proper' is illogical because the analysis of the forces determining rate of wages, rate of profit and rent per acre does not by itself explain the determination of the factor shares in total national income.

2.1.1.5 Bentham. The English philosopher, economist and social reformer Bentham (1748-1832) discussed the conflict between the security of established expectations and equality and pleaded that in the case of conflict between the two the latter must yield. He further sketched a model of law of succession on intestacy taking into account the nature of relationship and other factors.

2.1.1.6 **St. Simon.** St Simon (1760-1825) recognised existing laws of inheritance as a force strongly consolidating the present order. He favoured a distribution to each according to his work.\(^8\)

2.1.1.7 **Charles Fourier.** Fourier (1772-1837) suggested a fancy distribution under which a comfortable minimum income would be secured to every person including women and children more than five years old, and the residue would, then, be divided between labour, capital and talent in the ratio of 5:4:3.\(^9\)

2.1.1.8 **David Ricardo.** Ricardo's (1772-1823) theory of distribution constitutes the background to contemporary theory with respect to both distribution of income and the effects and motivations of economic growth. Ricardo was the first economist to apply vigorous abstraction and theoretical analysis. He considered that the political economy should rather be called an enquiry into the laws which determine the division of the produce of industry amongst the classes who concur in its formation. He defined rent as 'that portion of the produce of the earth which

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is paid to the landlords for the use of the original and indestructible powers of the soil.' He argued that the rent of a given field was measured by the surplus of its produce over that obtainable with the same capital and labour from the poorest land in cultivation. It did not enter into the cost of production.

His theory that wages are based upon a 'natural price of labour' which varies with what later writers have called 'conventional necessaries' is unsatisfactory and his assumption that size of the population tends to adjust itself to changes in this 'natural price' cannot be entertained in the light of modern experience.

His theory of profit is interesting as it contains a glimmer of later marginal theories of value. An increase in the variable input capital-and-labour with a fixed supply of land subjects to diminishing returns which imply a declining average and marginal products. If wages are treated as costs of producing output, rent and profits together constitute surplus. Profits depend upon the difference between the product of 'labour' at the 'margin' of cultivation and the 'subsistence' of that labour. Rent as the surplus produce of 'intramarginal' land is in all cases a portion of the profits previously obtained

on the land. It is never a new creation of value but always a part of a revenue already created. Rent, therefore, can increase only at the expense of profits'.

Ricardo's proposition on long-term shifts in distributive shares do not seem to have lent themselves to unequivocal interpretation. Barkai's interpretation of Ricardian view on long term shifts in distributive shares sharply contrast with the commonly held view. He wrote that in a growing economy ... The shares of both labourers and capitalists would fall whilst the share of the landlords would rise'. Ricardo asserted exactly to the contrary about the wages share in terms of value of output. He wrote that the same cause which raises rent, namely, the increasing difficulty of providing an additional quantity of food with the same proportional quantity of labour, will also raise wages; and therefore if money be an unvarying value, both rent and wages will have a tendency to raise with the progress of wealth and population'.

2.1.1.9 J.S. Mill. Mill (1848-1871) in his "Principles of Political Economics" had done much work to clear up

the causes of differences of earnings in different employ-
ments. Supporting the wages-fund theory Mill wrote

'Wages depend, then on the proportion between
the number of the labouring population and
the capital or other funds devoted to the
purchase of labour, and cannot under the rule
of competition be affected by anything else'.

Since wages fund is fixed, Mill suggested that workers
should limit their family size. However, later, he abandoned
the doctrine of the wages-fund.

To Mill, rent was the effect of a natural monopoly.
He supported Ricardian theory of rent. He emphasised that
improved means of communication tended to lower the exist-
ing rent.

Mill thought that profit was the net income resulting
from the investment of capital as compensation for capita-
lists' risk, devotion to time, labour assiduity, skill
and abstinence. His insistence that it is necessary 'to
make' the proper distinction between the laws of the pro-
duction of wealth, which are real laws of nature and the
modes of its distribution, which, subject to certain condi-
tions, depend on human institution, though, would imply

15. J.S. Mill, Principles of Political Economy, Newyork,
D. Appleton & Company, inc., 1909 (Reprint, 1961),
pp.349-50.
an unwarranted dichotomy between production and distribution, contains an important and much neglected truth.  

Mill was the only classical economist who discussed the role of inherited wealth which was as good as anything which had since been written upon the subject.

... The inequalities of property which arise from unequal industry, frugality, perseverance, talents and to a certain extent even opportunities are inseparable from the principle of private property, and if we accept the principle we must bear with these consequences of it; but I see nothing objectionable in fixing a limit to what anyone may acquire by the mere favour of theirs, without any exercise of his faculties....

Regarding unearned increment of land values he observes

'... in the ordinary progress of society many persons who own land 'grow richer', as it were in their sleep, without working, risking or economising'.

Therefore he advocated a tax upon such spontaneous increase in the value of land and sees no objection in principle to the rate of such a tax reaching a hundred per cent.

17. Quoted in Ibid., p.66.
18. Ibid.
2.1.1.10 F. Bastiat and H.C. Carey. Bastiat (1801-1850) and Carey (1793-1873), the classical traditionists propounded a question, which few of their successors have attempted to answer namely: What are the effects of economic progress upon the absolute and relative shares of the various factors of production? In proportion to the increase of capital, the absolute shares of the total product falling to the capitalist is augmented, and his relative share is diminished, while on the contrary the labourer's share is increased both absolutely and relatively. 19

2.1.1.11 Karl Marx. As regards distribution, Marx's (1818-1883) three chief doctrines were his iron law of wages, his theory of surplus value and his law of concentration of capital. He held that labourers created the whole value of the product, but received only the starvation wages. All the residue of the product was surplus value which was stolen from labourers by the capitalists who own the means of production. Every increase in labourer's efficiency, every improvement in the means of production, every new discovery of natural resources only increased surplus value. Therefore, the economic progress, while

19. Ibid., p.75.
leaving the conditions of the labourer as miserable as ever, added continually to the aggregate surplus value, that is to say to the aggregate income of the capitalist class.20

2.1.2 NEO-CLASSICALS

One of the major achievements of neo-classical economists (Walras, Jevons, Marshall) or Marginalists is the application of Ricardo's diminishing marginal productivity to the determination of the rewards to all factors. They used it to derive the per unit rates of reward of the variable factors in contrast to Ricardo for whom it served as a device to eliminate the share of the fixed factor. The marginal school derived value from utility rather than from labour (as in Ricardian economics) and sought to justify the rewards of all factors by showing that they all contribute to production. With the emergence of marginal school, the analysis of per unit rates of reward became a focal point of distribution theory and the study of the dynamics of distribution shares suffered a temporary eclipse.

Taking clue from Bentham's concept of decreasing happiness, the marginalist school could make out one of

the cornerstones of economic theory - the so called 'law of diminishing marginal utility'. It is argued that the law has clear equalitarian implications as with a given volume of production, total economic welfare could be increased with more equal distribution. Another implication of the law from the point of view of economic welfare was the extreme wastefulness of welfare due to existence of large inequalities of income.²¹

2.1.2.1 Alfred Marshall. Marshall's work marked the culmination of the system developed by Jevons (1835-1882), Menger (1840-1921) and Walras (1834-1910) in the 1870s and 1880s. Marshall regarded rent as the demand - or price - determined income of a factor of production in fixed supply and called attention to the fact that each of the specific factor used in production process might be in fixed supply temporarily, for a shorter or longer period, so that their incomes constitute a quasi-rent. Marshall clearly recognised the difference between profits and interest, and treated interest as the return on money capital and profit as the return on an amalgam of money capital routine administrative labour input and a special productive service called 'Management'. Marshall regarded the rewards of these factors including labour as marginal net products of the three chief factors of production.²²

Regarding inequality of incomes he pointed out that statistics indicated that middle class incomes were increasing faster than those of rich and concluded that the social and economic forces at work were changing the distribution of wealth for the better, that they were persistent and increasing in strength and that their influence was for the greater part cumulative.\(^\text{23}\)

2.1.2.2 J.B. Clark. Prof. J.B. Clark (1847-1938) was the narrowest traditional in his view on distribution. He wrote

The Science of distribution should tell us primarily, not what any man personally gets as a total income and how well off he is compared with other men, but in what way the wages of his labour, the interest on his capital and the return for his entrepreneur's function are fixed. In technical terms that is saying that distribution is primarily functional and not personal. When these are determined, a particular man's income depends on the amount and kind of work that he performs, the amount of capital that he furnishes, and the extent and kind of co-ordination that he does.\(^\text{24}\)

2.1.2.3 A.C. Pigou (1877-1959). Prof. A.C. Pigou regarded distribution as personal and not functional.

However he identified the income of poor classes with the receipts of the factor labour. After examining the marginal conditions for maximising production, he passed on to distribution particularly to various proposals for the improvement of distribution by the transfer of resources from richer to the poor classes. He suggested a 'National Minimum' of economic well-being, below which the fortunes of no citizen should be allowed to fall even though, the resulting production would be less than it would otherwise had been.

2.1.3 SUBSEQUENT DEVELOPMENTS

2.1.3.1 Adding up problem. The marginal productivity theory of distribution developed by Neo-classicals was a step forward from the explanation of distribution in terms of the supply characteristics of factors towards putting it in the context of the general theory of prices. But in the transition the problem of consistency bothered the economists in 1930s. The debate centred around the question if factors of production were paid according to their marginal productivity, would payments more than exhaust, just exhaust, or less than exhaust the product? Wicksteed provided the answer in terms of the assumption of linear homogeneous production function or constant
returns to scale. Contemporary economic theory establishes the exact exhaustion of the product by marginal productivity payments to factors, much more simply by the use of Euler's Theorem. 25

2.1.3.2 Constancy of functional shares. Like Pareto's alleged constancy of income inequality over the years, the Bowley-Douglas investigations paved the way for the belief that the share of national income accruing to labour or rather its inverse capital has shown a remarkable constancy. Keynes referred to this constancy as 'a bit of a miracle'. 26 Schumpeter thought it a 'mystery' 27 and

25. Taking Cobb-Douglas production function $AL^\alpha K^\beta$, it should be proved that

$$X = L \frac{\partial X}{\partial L} + K \frac{\partial X}{\partial K}$$

Proof: Given $X = AL^\alpha K^\beta$

$$MP_L = \frac{\partial X}{\partial L} = A \alpha L^{\alpha-1} K^\beta = A \alpha \frac{L^\alpha}{L} K^\beta$$

$$= \frac{X}{L} \alpha \text{ given } AL^\alpha K^\beta = X$$

Similarly $MP_K = \frac{\partial X}{\partial K} = \frac{X}{K} \beta$

$$X = L \frac{X}{L} \alpha + K \frac{X}{K} \beta = (X \alpha + X\beta) = X(\alpha + \beta) \text{ Given } \alpha + \beta = 1$$

in linear homogeneous production function $X = X$ an exact identity.


to Joan Robinson 'a reproach to theoretical economics'.

Many empirical studies pertaining to different countries and for varying periods undertaken to support or challenge the belief in 'historical constancy', have brought out the various forces at work to determine the distributive shares.

2.1.3.3 Elasticity of substitution and factor shares. The leading contribution to the problem of the behaviour of factor shares in the marginal productivity theoretical framework is Hicks' analysis in terms of 'elasticity of substitution'. The basic to the whole argument is that 'an increase in the supply of any factor will increase its relative share (i.e., its proportion of a national dividend) if its elasticity of substitution' is greater than unity.

2.1.3.4 Distribution and growth. Using Keynesian tools in post-Harrodian growth models, distribution is shown to be determined by investment through the interaction of unequal savings propensities out of wages and profits. The rehabilitation of the classical macroeconomic approach through the choice of a strictly limited number

of dependent and independent variables and reinterpretation of the classical idea of a link between distribution of income on the one hand and capital accumulation and growth on the other are found in these growth models.30

2.1.4 CRITICAL SUMUP

However brief and sketchy the review may be, it clearly brings out the fact that the study of personal income distribution has been neglected in the history of economic thought. Even after two centuries of evolution of economic literature, distribution was still defined in the old narrow way and traditional discussions proceeded through treatise after treatise on familiar lines. The institution of inherited property was the only aspect figured in the discussions of economists especially by those who stood in between the roads of capitalism and socialism. Except the plodding statisticians, no leading economist of the time attempted to theorise the determinants of inequality in personal distribution.

Edwin Cannan expressed grief over the approach of economists over distribution theory. He writes

The two greatest ends of economic inquiry seem to me to be the furnishing of general answers to the two questions, first, why whole communities are rich or poor, and secondly, why inside each community some individuals and families are above, and others below the average in wealth ... Is there anything in this to excite surprise, if we reflect for a moment on the inadequacy of the answer furnished by the theory of distribution, as at present taught, to the questions in which the ordinary person is interested?  

Similar shock was expressed by Sydney Chapman who wrote

The economics of distribution is concerned primarily not with incomes, but with the earnings of the several factors of production. The economics of distribution is not concerned primarily to show, how, by laws of inheritance or otherwise, it is made easier or more difficult to be born wealthy. It is concerned primarily to show why a man's income from his accumulated wealth, whatever its form, is what it is.  

Prof. Irwing Fisher (1912) in his Elementary Principles of Economics laments 'no other problem has so great a human interest as this, and yet scarcely any other problem has received so little scientific study'.

As recently as 1975 A.B. Atkinson closed his book with the comment,

'... far too little is known about this central subject. This is an indictment of economics, but it is also a challenge'.

The economic theory has not even provided a satisfactory theoretical bridge connecting the functional distribution with personal distribution.

2.2 Theories of Personal Income Distribution

As was noted in the previous section, A.B. Atkinson expressed grief over the infant status of the theories of personal income distribution - The central subject

and it was an indictment of economics. The indictment does not mean that no distribution theories exist. As a matter of fact, a number of partial and piecemeal theories have been developed in the past hundred years. It only signifies that none of the existing theories is regarded as satisfactory and that they defy general consensus. The lack of unanimity of views among economists even on general economic issues is a well documented fact and it is futile to expect agreement on such a topic as the theories of income inequality which has been the source of ideological wars and political revolutions. Nevertheless the available theories of personal income distribution were surveyed under five headings (1) Stochastic theories, (ii) Ability based theories, (iii) Human capital theories (iv) Inheritance theory and (v) More complete theories.

2.2.1 STOCHASTIC THEORIES

Stochastic theory, one of the oldest theories of distribution relies for the skewed shape of income distribution solely on chance, luck and random occurrences. The theory is based on the statistical law of probability. The origin of this theory can be traced back to D. McAlister who derived lognormal distribution from a multiplicative

law of errors. Robert Gibrat, a forerunner of the 'central limit theorem' formulated the 'stochastic theory' in a systematic manner. He noted that the product of a large number of independent random variables tends towards the lognormal distribution which has positive skewness as displayed by the data. This multiplicative central limit theorem leads naturally to the following simple Markov model which Gibrat called as 'the law of proportional effect'. Denoting income in time 't' as $Y_t$ and income in time $t-1$ as $Y_{t-1}$

$$Y_t = Y_{t-1} U_t$$

(1)

where $U_t$ is a random variable which is independent of $Y_{t-1}$. Hence income in time 't' depends on $Y_{t-1}$ and the random influence $U_t$. Over a long period of time

$$Y_t = Y_0 U_0 U_1 U_2 \cdots U_{t-1} = Y_0 + \sum_{j=1}^{t} U_j$$

(2)

The multiplicative central limit theorem implies that as 't' gets large, the distribution of $Y_t$ tends towards the lognormal. Stochastic theories do not deny that in the initial period the level of income may be determined by ability and skill, but as 't' gets large,

\( \gamma_0 \) becomes less important, and the distribution of \( Y \) approached that of \( U_{t-\gamma} \), i.e.,

\[
Y_t \sim N(U, \sigma^2, t)
\]

One troubling feature of this model is that since 't' enters multiplicatively, the variance of \( \log(Y_t) \) is steadily increasing which is never likely to be observed in practice. Michal Kalecki\(^38\) has modified the simple Gibrat model by introducing a negative correlation between \( Y_t \) and \( U_t \) which is just sufficient to prevent the log variance of \( Y_t \) from growing. Economically, this means that the probability that income will rise by a given percentage is lower for the rich than for the poor. Milton Friedman\(^39\) confirmed this view later. According to him individuals who have had a high transitory component (included in \( U \)) in the past are likely to have a lower one now, thus yielding a negative serial correlation.

David G. Champernowne,\(^40\) Robert S.G. Rutherford,\(^41\) and John Aitchison and James Brown\(^42\) explained the stability of the distribution in terms of a birth and death

process according to which senior persons with growing dispersion of income retire and are replaced by young entrants with predominantly low and relatively uniform incomes. Rutherford's 'birth-death' model is a step in the direction of greater realism and its advantage is that it offers an alternative to Kalecki's method for insuring that the log variance of income does not grow overtime.

In the place of comparative-static approach of these models, Shorrock's 43 suggests dynamic models, which incorporate real time and economic theory as well as random processes and, thus, can explain real-life situations as consequences of non-equilibrium time dependent processes. Suggesting a second order Markov model, the random events of the stochastic theory are now defined as transitory component of permanent income hypothesis. A statistical implication of this result is that the assumption of the non-autocorrelation of random errors of the Markov model has to be relaxed which weakens the foundation of the stochastic models.

Employing NBER - Thorndike longitudinal survey, Taubman's 44 results suggest that computed errors display

heteroskedasticity, whereas the model assumes homoskedastic errors.

In recent years instead of treating systematic and observable variables explicitly and specifying statistical properties of unobservable variables, a two-step estimation method of first computing unexplained residuals from naive models of the Markov type and then trying to explain the residuals as suggested by Shorrocks is attempted which is both conceptually and statistically weak and adds no analytical value as can be gained from one step model.

The old stochastic theory of distribution is apparently in disrepute. The recent attempts to keep the stochastic theory alive are reminiscent of Lakatosian "degenerate research programs" in which ad hoc auxiliary hypotheses are added to a theory to accommodate new facts.45

2.2.2 THE ABILITY THEORY

The ability theory is one of the oldest theories of personal income distribution. The origin of this theory can be traced back to John E. Cairne's doctrine of "non-competing groups", created by social, legal, inherited,

ability and other barriers to labour mobility. It was believed that abilities (mental and physical) were distributed normally just as various physical traits such as weights and heights. Naturally it was expected that incomes which depend on ability were also distributed normally. The shattering blow to this belief came from Pareto's empirical findings according to which incomes were distributed not normally but log-normally and the skewness to the right had a flat tail meaning substantial unequal distribution. Since then economists have been engaged in reconciling and explaining the discrepancy between the distribution of abilities and income and their research is the source of many theories.

A.C. Pigou, in his monumental 'The Economics of Welfare' pointed out two reasons why the income distribution might be skewed despite the normal distribution of abilities. Firstly part of income is attributable to skewed distribution of inherited wealth and the consequent opportunities for increasing one's earnings. Secondly, the overall distribution of earnings might be skewed because it is an amalgam of the distribution within "non-competing" sub-groups of the population.

46. V. Pareto, 'La legge della domanda', Giornale degli Economisti, 12, 1895, pp.59-68.
Piérou's conjecture was later confirmed by several investigators like Herman P. Miller, Hans Staehle, Jacob Mincer and Becker. However, Jacob Mincer and Becker replaced innate ability by acquired human capital as the source of competency.

A number of writers like C.H. Boissevain, J.B.S. Haldane, Andrew D. Roy, Benott Mandelbrot held that different components of ability though distributed normally

and independently enter the workers' productivity multiplicatively (which process yields a lognormal distribution) rather than additively (which process yields a normal distribution). It can, therefore, be generalised that any extraneous characteristics that interact with ability multiplicatively produce lognormal distribution.

Lydall argues that 'cognitive ability' is normally distributed. There are other abilities particularly the D-factor (where D stands for drive, dynamism, doggedness or determination) which may be even more important for success than I.Q.\(^56\)

He constructed a managerial hierarchy model. 'If managerial hierarchies are built on the principle that each manager supervises directly the same number of people in the next rank below him, and if his earnings bear a constant proportion to the aggregate earnings of those whom he supervises directly, the distribution of earnings of managers will conform to the Pareto law'.\(^57\)

There are several variants of Lydall's hierarchy model, such as the internal labour market model of


\(^{57}\) Ibid., p.28.
Peter B. Doeringer and Michael J. Piore,\textsuperscript{58} the sorting uncertainty model of Paul Taubman,\textsuperscript{59} the job competition model of Lester Thurow.\textsuperscript{60}

Jan Tinbergen has set forth an alternative job selection model. He defines a job by a vector of attributes $S = (s_1, s_2, \ldots, s_n)$ where 'n' may be a very large number. Similarly each individual can be identified by the vector of attributes he possesses, $\xi = (\xi_1, \xi_2, \ldots, \xi_n)$. In selecting a job each worker faces two sets of givens. First he knows his own vector of characteristic $\xi$ and second he is confronted by a given wage structure $W = W(S)$ which describes how rates of pay vary with job characteristics 'S'. Aggregating these over all individuals yields an aggregate labour supply function $L[S; W(S)]$. Similarly summing over all firms yields the market labour demand function $D[S; W(S)]$. Short-run wage determination is done where $L$ equals $D$ at each point $S : L[S; W(S)] = D[S; W(S)]$.

Except in trivially simple cases, this model is far too complex to solve for the functional form of income.


\textsuperscript{59} P. Taubman (1975), \textit{Op.cit.}

distribution. The first interesting property of this model is that if education serves to bring the distribution of $E$'s closer to the distribution of $S$'s, it equalises the income distribution. Second the model makes it clear that an equal income distribution does not require that every person have the same $E$ vector, but only that the frequency distributions of $E$ and $S$ be identical. 61

Taken as a group, these models have much more to offer to the economists seeking an understanding of the income distribution mechanism than the stochastic models. If wages are multiplicative function of various workers' characteristics, then the distribution of wage rate is positively skewed even if characteristics are distributed symmetrically and independently. The job selection model of Mandelbrot pointed out in a very direct way how rational choice by individual decision-makers helps to determine the shape of the distribution.

However, these models are too simplistic in their assumptions and mechanic in their approach to throw useful light on the earnings and functional form of income distribution. A great many scholars are skeptical of the direct

role of ability in earnings; many doubt the importance even of its indirect effects through education, training and so on.

2.2.3 HUMAN CAPITAL THEORY

Though the genesis of human capital theory can be traced back to the writings of Adam Smith only in 1950s it started to develop when Schultz, Denison, Griliches and following them many others used the human capital framework to analyse the sources of productivity and growth. Becker\textsuperscript{62} and Mincer\textsuperscript{63} focused on the general theory and the earnings distribution theory of human capital.

In its simplest form, the human capital approach seeks the lifetime income maximisation. Investment in oneself is the result of rational optimising decisions

\textsuperscript{62} G.S. Becker (1962), \textit{Op.cit.}


(by individuals or parents) made on the basis of estimates of the probable present value of alternative lifetime income streams discounted at an appropriate rate. Thus 'economic man' occupies central place in the theory.

Investment on human capital includes that on human migration, human health, schooling, on-the-job training, job search, information evaluation, pre-school investment in the nurture of children and so on. However, education has turned out to be the 'hard-core' of human capital theory though other components mentioned above also remain important. It has been suggested that education interacts with entrepreneurship and drive. Moreover, schooling is an easily manipulatable policy instrument.

Assuming investment is confined to formal schooling, the model looks outwardly like the first-order Markov model. Denoting investment cost by C, earnings by X and constant rate of return on such investment by 'r' and logarithm of X by its lower case

$$X_t = X_{t-1} e^{rC_{t-1}} + V_t$$  \hspace{1cm} (4)

$$X_t - X_{t-1} + rC_{t-1} = X_0 + r \sum_{j=1}^{t-1} C_{t-j} + V_t$$  \hspace{1cm} (5)

which when V (the random error term) is ignored is similar to the stochastic equation of (2) noted in page No.78.
Unlike $\Sigma u$ in equation 2 which is unsystematic and non-measurable random error term, $\Sigma C$ in equation (5) is a measurable, systematic and identifiable variable. Mincer concluded that 'together a half of the total inequality of observed earnings can be attributed to the distribution of schooling and post-school investment'. 64

The human capital model is capable of explaining earning distributions within and between sexes and other categories of labour, over age categories and across occupations and regions. 65

Schooling and experience are positively correlated with mean earnings and its variance. There is a positive correlation between means and variances of the earnings distribution in age and schooling sub-groups. These relations contribute to positive skewness in the aggregate


earnings distribution. People with higher ability, invest more in themselves, do so at young ages and earn higher rates of return on their human capital—a multiplicative relationship that generates skewed distribution.

Human capital model is superior to earlier theories in many respects. If an individual's demand for human capital, as noted above, is related to his 'ability' the human capital model, at least formally, replace the ability based models. Capital market imperfections, interaction of inherited wealth can vary well be accommodated into the model. Though the model cannot predict a functional form of income distribution it does predict skewness and certain relationship among distribution of ability, training and earnings.66 Unlike other models, the human capital model lends itself readily to empirical implementation and theoretical generalisation. For instance, T.W. Schultz estimated that in developed countries the ratio of the rate of increase of human capital to that of non-human capital exceeds unity. Naturally, no income distribution can claim to be complete without taking the dynamic nature of human capital into full account.

However, the theory is criticised on many counts. First, the discounted-value maximisation behaviour is too farfetched and uniform discount rate assumed is unrealistic.

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Second the theory studies human capital as a source of earnings but scarcely analyses the direct and indirect effects of such factors as opportunities family environment, school resources, institutional factors, luck and informal education. Third it is a partial and piecemeal theory concerning until recently with supply. The best known supply-demand model by Becker treats determinants of supply and demand as exogenous. Even though property ownership is believed to have significant effects on earnings and property income is distributed more unequally than earnings, the supply demand model does concern only with earnings neglecting property ownership.

In spite of these limitations, the human capital theory has brought about a revolution in economic thought. As a theory and methodology it remains unscathed from multidirectional attacks. It does have potentiality to engulf other within itself.

2.2.4 THE INHERITANCE THEORY

The theories discussed so far addressed primarily to earned income. Compared with the distribution of income from work, the distribution of income from property is almost neglected, perhaps, for two reasons. (1) Attempts are made to theorise income from work to react that not
only income from property but also income from work is unequally distributed. (2) Income from work constitutes anywhere between one half to two-thirds of total personal income in most of the developed countries and explanation of the major part will go a long way in explaining the distribution of total income. Income from property is more unequally distributed than income from work. The former, however, cannot be explained without explaining the distribution of property itself.

The distribution and composition of assets are primarily a function of size of assets. The huge wealth allows to choose a more balanced asset portfolio which results in a higher average yield. For this reason that while distribution of wealth is more skewed than distribution of income, distribution of income from wealth is more skewed than the distribution of wealth. Variations in amount of wealth owned come mainly through (i) inheritance and (ii) accumulation. How important is the role of inheritance is a matter of fact and has to be investigated thoroughly. If inherited wealth does contribute significantly to inequality in distribution of wealth as shown in Atkinson's study for U.K. the amount of inheritance and mode of transmission will all become important.

Meade defined inheritance as "fortunes" which consists of four major endowments viz., genetic make-up, parental nurture and training, social contracts and inherited property itself. Incomes, savings and capital accumulation are affected by mutual interaction effects of these endowments and additional positive and negative feedbacks related to these endowments. Meade writes

First ... there are some apparently built-in tendencies for the rich to sustain their riches and the poor their poverty which one would expect to help in explaining the persistent continuation of the large inequalities in income and wealth which we actually observed in society.

Second ... the intertwining of the many positive feedback loops (in the path analysis model) namely that the various endowments passed from parents to child are likely to become highly correlated with each other ... there will be a strong tendency in society for good or bad fortune to be handed on to the next generation in associated parcels of genes, income, property and social contacts.

According to Random-walk model of Thuow, most large fortunes are built-up not by a patient process of earning and investing but by instantaneous fortunes due to chance or luck. Once fortunes are created in the random walk, they are subject to a kind of 'ratchet effect' in that they are husbanded and managed by diversification etc. to earn at least the market rate of return, thereby result in highly skewed distribution. Capital gains seem to have played major role in creating large fortunes in U.S. and U.K.

A simulation by Blinder based on stylized values of the parameters of his model, suggests that inherited wealth accounts for no more than two per cent of the overall index of inequalities.

In Tinbergen's model, property income is ignored on the assumption that inequality in income is due to inequality in labour income and hence he argued that

72. Ibid., Chap.6.
exploitation by human capital is more important today than by exploitation by capital in the old sense.75

In short, although the share of property income has declined with growth, it is still a significant component of personal income and property income is in general more unequally distributed than earnings. Material wealth seems likely to interact multiplicatively with other pertinent characteristics such as education and acquired abilities. In spite of this, the overall effect of inheritance on income inequalities does not seem to have been vigorously estimated. Inheritance factors rightly deserve a place in any generalised theory of distribution.

2.2.5 MORE COMPLETE THEORIES

Most of the theories discussed in this section are partial and piecemeal despite claims of generality. Everyone recognised the need for endogenizing several of the variables so far treated as exogenous or left altogether. Of late a few studies appeared on the scene which combine two or more of existing piecemeal theories of personal income distribution in single systematic model. Well known among them are general models of Becker, Griliches and Stiglitz and lesser known models of dual economics.

Becker's supply-demand model relies upon twin analytical techniques of economic theory, viz., an optimizing behaviour and the determination of equilibrium. The model incorporates various forces determining the distribution, the shapes and elasticities of supply and demand curves of human investment. The positive correlation between supply and demand schedules is aptly brought out as one of the crucial sources of earnings inequalities. The model offers reinterpretation of several piecemeal theories. The elegant methodology and rich analytical techniques employed by the model were the sources of several extensions namely Ghez and Becker, Heckman, Blinder, Blinder and Weiss, and Ryder et al. The model, however, is not comprehensive as claimed and treats determinants of supply and demand sides as exogenous and ignores inherited human wealth.


Among the most comprehensive of the existing synthetic models that do not use human capital approach, is that by Stiglitz\(^82\) who integrates the distribution of income among factors with that among individuals. By dividing income into its major sources, viz., wages and profits, Stiglitz examined the distributional impact of non-linear saving functions, heterogeneity of labour skills, material capital inheritance policies, variable reproduction rates of various income classes, tax policies and nature of stochastic elements in the accumulation process. But Stiglitz ignores human capital and does not analyse why and how labour productivity becomes heterogeneous. He does not analyse intergenerational patterns of transmission of wealth and ignores public distribution.

The above models find relevance in developed countries and in general cases. Some models have recently been formulated for dualistic developing economies. These include models of Montek Ahluwalia and Hollis B. Chenery,\(^83\) and Charles Frank and Richard Webb.\(^84\) The dualistic models


provide additional insights into the changing fortunes of different labour groups in the process of development. For example workers in rural and urban informal sectors may suffer losses when their counterparts in modern sector reap gains either due to a rise in the modern sector wage rate or a fall in the cost of capital of that sector. These Keynesian type models, however, do not go beyond functional income distribution.

The computable model of Sahota and Rocca\(^\text{85}\) integrates the human capital theory of distribution with the inherited fortunes theory and the public income distribution theory, in a supply-demand framework, with endogenous human-capital and material-capital accumulation and in an inter-regional and dualistic context. It, however, abstracts from the Stiglitz-Meade marital selection and other population dynamics, even though these are considered more crucial in developing countries. Since it is a model formulated within the constraint of data, native abilities, on-the-job-training and life-cycle variable are not analysed.

2.2.6 CRITICAL SUM UP

Theorizing on personal income distribution has recently been kindled and the great debate of 1970s is

in full swing. Major contribution to the debate has come from the human capital approach to distribution. The theory, however, ignored pre-school human investment during which three-fourths of the development of cognitive abilities occur. The necessity of extending the human capital model of distribution has recently been recognised.

Ability theory - one of the oldest theories of personal income distribution still remains to be a strong competitor of human capital theory. The general equilibrium theorists recognise the need for endogenizing the abilities based on nature (such as genetic factors) and nurture (including cognitive abilities, drive and motivation).

The important contribution of stochastic theory is that its demonstration that even if all individuals start with equal income and wealth, chance occurrences along, will generate income inequalities of the type of pareto distribution. Of late, Shorrocks explains chance occurrences in terms of economic forces.

The inheritance theorists like Tawkey and Meade put inherited endowments which are the major sources of income at the centre of distribution just as human capitalists regard human capital as the main determinant of inequalities and regard all other factors as of secondary importance.
A full-fledged and satisfactory theory of distribution of income would require endogenizing all the relevant variables for the analysis of distribution of labour income and property income besides combining the two distributions. The parameters of such a theory must include, inter alia, determinants of the relative sizes of these two types of income which is a task of the theory of functional distribution. A theory of size distribution of income cannot, thus, be divorced from a theory of functional distribution.

Friedman comments on the absence of a satisfactory theory of personal distribution of income. Lack of a theoretical bridge connecting the functional distribution of income with the personal distribution is a major gap in modern economic theory. Future development of a more satisfactory theory of personal income distribution, may be expected, to come from the 'more complete theories' discussed in Section 2.2.5.

CHAPTER - III

EMPIRICAL EVIDENCE ON INCOME DISTRIBUTION

3.1 Studies Relating to Trends in and Extent of Inequality: Developed and Developing Countries
   3.1.1 Trends in Inequality
   3.1.2 Extent of Inequality

3.2 Studies Relating to Extent and Trends in Inequality in India
   3.2.1 Studies Based on NSSO Consumer Expenditure
   3.2.2 Studies Based on NCAER Income Data
   3.2.3 Synthetic Studies
   3.2.4 Trends in Inequality: The Problem of Price Changes

3.3 Studies Relating to Extent and Trends in Inequality in Andhra Pradesh
   3.3.1 Extent of Inequality
   3.3.2 Trends in Inequality

3.4 Studies Relating to Sources of Inequalities
   3.4.1 Studies in Abroad
      3.4.1.1 Studies within Human Capital Framework
      3.4.1.2 Studies within a more general Framework
   3.4.2 Studies in India
      3.4.2.1 Studies within Human Capital Framework
      3.4.2.2 Studies within a more general Framework