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SIZE DISTRIBUTION OF INCOME—PROBABLE APPROACHES & THEIR LIMITATIONS

THE main purpose of this paper is to survey critically the probable approaches for the study of distribution of income according to size. For this, the study has been divided into three parts. First part deals with the varying objectives of undertaking such studies and their role in the case of developing economies. Second part surveys the various approaches for undertaking such studies. Third part suggests certain conclusions for obtaining meaningful results.

I

Till recently, the interest in the distribution of income according to size was primarily to study the relative inequalities in the distribution pattern of income. Such studies derived their inspirations from ethical reasoning that distribution of income should be as even as possible to enhance the economic welfare. But, there are a few who feel that distribution of income according to size can measure only one aspect of economic welfare i.e. potential or actual command over economic good.s[1] After the acceptance of Keynesian Theory, the size distribution of income has attracted attention for the light it can throw on the functioning of the economy regarding the level of employment, production and income. It has also been accepted as a good indicator of (i) the relationship between the size of income and savings; (ii) the impact of savings on the working of the economy; and (iii) the changes in the savings during business cycles.

The relationship between income and savings is of topical interest for developing economies faced with the task of economic development. Economic development requires funds which may either be procured from foreign countries or else raised from domestic savings. A recognition of the fact, that no country can rely, for indefinite period, on foreign assistance, brings into a sharp focus the role of domestic

saving in economic development. Tentatively, it appears that in developing economies it is the higher income groups which are capable of saving significant amounts on account of relative lower marginal propensity to consume. The lower income-groups, living almost at subsistence consumption level, are not likely to contribute anything, tangible towards domestic savings. This tentative observation has been corroborated by the "All India Rural Household Survey". 1962 published by the National Council of Applied Economic Research. The survey conducted by NCAER has revealed that as the size of the income rises the percentage saving — income ratio changes from — 5.1 per cent to +16.9 per cent. [2] It may be mentioned, that after conceptual and statistical adjustment the average propensity to save out of urban disposable income was 13.9 per cent, including consumer durable goods and 12.2 per cent excluding such goods.

This tentative idea would suggest that efforts should be made to encourage this upper strata of the society to contribute savings at rising levels by postponing progressive taxation and eliminating the disincentive effects it may have on willingness to work. At the same time, it is to be ensured that inequalities of income are kept within reasonable limits to avoid the adverse consequences these may have on the morale of the labour force. Also, *prima facie*, inequalities of income have a tendency to widen over a period of time and hence must be curbed at the earliest possible opportunity. However, this postulation has been contradicted by empirical surveys.[3] The study undertaken by Simon Kuznets has shown that inequalities narrowed down over a period of time in the case of U.S.A., England and Germany. But, it may be mentioned that narrowing of income inequality occurs in the later rather than the earlier phases of industrialisation and urbanisation. Also, stability and narrowing in income inequality is relatively recent and did not characterize the earlier stage of their economic growth. Indeed empirical studies would suggest widening inequality in the earlier phases of economic growth, especially in older countries where the emergence of new industrial system has shattering effects on the long established pre industrial economic and social institutions. This fact is particularly true in the case of lower income groups and the problem is aggravated by rapid decline in death rate and, at the same time, maintenance or even rise of birth rates. Further, there may also have been a preponderence, in the earlier periods, of factors favouring mainte-

nance or an increase in the shares of top income groups in so far as these may improve their position from newly coming up industries. It is of some relevance to point out the factors counteracting the savings, the prominent amongst these are: (*i*) legislative interference and political decisions relating to inheritance taxes and other explicit capital levies; (*ii*) demographic factors resulting in differential rates of increase between rich and the poor; (*iii*) rapid changes in technology which cause a fall in the assets in the older countries; and (*iv*) importance of service income even in the upper income brackets.

As a caution, it may be pointed out that there is no justification for assuming the repetitition of the experience of developed countries because in some of these countries consumption propensity of upper income groups is far higher.   Again, a given distribution of income is such a complex phenomenon which is affected by a number of factors and it is too presumptuous to assume all these variables as constant.

II

Broadly speaking, there are two ways of measuring the size distribution of income: (*a*) based on income tax returns filed by assessees[4] and (*b*) from the sample surveys.   In the absence of reliability of information obtained from either of the above methods, a combination of the two methods is desirable in the case of India.   This method[5] is useful because distribution of income from survey or income tax returns does not completely account for aggregate income.   The studies of income size distribution, that are available for the decade before World War II, in U.S.A.— utilized the available income tax returns statistics to construct an upper tail of the distribution and then linked these estimates to inflated sample field survey data for the middle and low income ranges.   To mitigate the effects of incomplete coverage, three approaches can be adopted: (*a*) simple transformation of the given distribution-method that assumes either a constant Lorenz Curve or some specific change in the relative distribution based on a minimum of usable information; (*b*) the use of income tax data to supplement survey results, particularly to achieve more comprehensive reporting at higher income groups and (*c*) the segregation, separate adjustment and eventual combination of relevant component groups of report units which require and are-susceptible to separate treatment.   The

simple transformation is based on constant Lorenz curve and has been treated by Edward Ames [6] and David Durand. [7 & 8]

Simple transformations that assume a constant Lorenz Curve have the merit of simplicity. Here, the assumption implies that each income be multiplied by a constant, the problem is merely one of changing interval limits and interpolating for the desired original limits. In case of wide disparity, the original data should be adjusted in the first instance rather than presuming a constant Lorenz Curve. Since, the component sources of income such as wages and salaries, dividends and interests are subject to varying degrees of underreporting, correction for missing figure may affect different income levels unequally.

Source pattern transformation takes into account differences in the shares of the major types of income at the various levels of total income. This method adjusts relative distribution by assigning the missing income of each type in proportion to the reported amounts of each level of total income and has the merit that data on under-reported income in each major category are used separately instead of total under-reported income alone. Although this method assigns missing income from each source proportionately to the reported amounts, it changes the overall relative distribution by allowing explicitly for differences in reporting among the various income shares as well as in the amounts from each source at various levels of total income.

The method that incorporates income tax data implicitly assumes that the data can be adjusted adequately to effect necessary changes in income concept and the unit which is the major task in constructing the estimates. However, such an approach faces a number of problems the most significant of which is that of matching incomes of husbands and wives.

Method involving the segregation of earner groups is primarily to improve the assignment of missing income by proper segregation of the groups receiving it. Correct assignment to the composite of heterogeneous units in the entire family distribution is difficult even if distributions of missing income by type are known because knowledge of missing income of a particular kind or income recipients cannot be converted into procedures which make proper assignment possible.

David Rosenblatt [9] has explored fully the nature of source pattern transformation together with its assumptions. The approach utilizes the matrix algebra to represent the transformation in symbolic

form. Thus, the provisional multiples 'm'$_i$ for any 'i' th segment can be given by

$$
\begin{bmatrix} m_i \\ \underline{} \\ \overline{} \\ m_k \end{bmatrix} = \begin{bmatrix} a_{11} \ldots a_{1r} \\ \cdots \cdots \cdots \\ \cdots \cdots \cdots \\ a_{k1} \ldots a_{kr} \end{bmatrix} \begin{bmatrix} T'_1 / T_1 \\ \\ T'_r / T_r \end{bmatrix}
$$

where (aij) is the source pattern matrix of 'k' segments and 'r' sources, Ti the total amount of 'i' th source in the entire initial distribution, Ti, the corresponding amount of the source desired. The assumptions of this method are slightly more acceptable than those underlying the method that maintains the relative distribution of total income because this method assumes maintenance of the rank which is not valid.

In the absence of information on size distribution of income in India, one of the probable approaches can be to rely on income tax returns for persons drawing income higher than the exemption limit and for the rest of the population on field surveys. There is no denying the fact that information based on income tax returns as published by the Central Board of Revenue is subject to a number of limitations. Some people evade reporting completely by not filing returns; others understate their income, or overstate the legally permissible exemptions and deductions. Because the data are a bye-product of administration of a highly complex and changing tax law, it is difficult to know what types of receipts are exempt from tax or those which are not to be included for arriving at the total income. The Mahalnobis Committee Report [10] has recognised that there are serious difficulties in using the income tax statistics. Even in 1960-61, the proportion of income recipients in the tax paying groups was less than one per cent (only about 0.74) per cent of total number of income recipients.

Income in the tax statistics is derived only from non-agricultural sources though agricultural incomes are taxed in some states, detailed information relating to such assessments are not available. Because of tax evasion, the income tax statistics do not accurately reflect the incomes of non-salary earners; the margin of error here may be fairly wide. Substantial concealment of income assessable for tax would

affect not only shares of income but also the distribution among groups of the number of income recipients. There are also possibilities of legal manipulations in the manner in which income and wealth may be re-arranged and spread over time between members of family or wider-k'nship groups by means of gifts, transfers, one-man companies, family settlements, discretionary trusts etc., which tend to make it increasingly difficult to make clear distinction between income and wealth. Besi-des, one very serious defect of information published by the Central Board of Revenue is that data are given for cases of assessees comple-ted during the year. As such, these may include cases of the pre-vious years completed during the year and exclude those cases which are still pending: Stane y Lebergott[11] has very aptly pointed that "the distribution of persons filing tax returns has frequently been used for studying distribution of income. The two are related but only in a coarse and inconclusive fashion. For the tax population has not boundaries other than those set by multitudinous provisions of this year's tax law and the vigour of this year's tax administrator."

There are a number of factors which can affect the relationship of income and saving, prominent amongst these are :

(*i*) the expectation of income in future ;

(*ii*) the age of the head of the family ;

(*iii*) the occupation, (*iv*) the residence and the number of depen-dents. William Vickery[12] is of the opinion that after assigning some weights to the constituent members of the family, the total income can be divided by number of persons to provide per capita adjusted income. For example, an adult may be assigned weight equal to 1.00 while a baby upto one year 0.33; children in the age group of 1-5 years 0.25; 5-10 years 0.40; 10-15 years 0-66; 15-18 years 0.75 and so on. It may be mentioned that Kuznets[13] is of the opinion that such an ana-lysis extends the scope of study too far. In fact, there is no limit to the extent to which sophistication may be introduced, but one must realise the practical difficulties connected with such modifications.

Margret G. Reid [14] is of the view that non-money income should also be considered while studying the size distribution of income, like the amenities provided by the Government free of charge or subsidized rates. It is contended that such distribution will provide a more meaningful distribution pattern of individuals. As a matter of fact, such a distribution is bound to be more equitable because lower

income groups avail the opportunities, provided at subsidized rate, to a greater extent than the upper income groups. However, because of the subjective element involved in attaching money value to such services, it is desirable to leave them out.

The problem of excessive deductions being claimed can be tackled by considering the gross income rather than the net income as has been done by Kuznets[15]. The practical difficulty in the case of such an approach is that access to the income tax returns is not permitted because of confidential nature of the information.

For obtaining a size distribution of income for the entire economy, the distribution of farm income is to be incorporated. Here, a probable way out can be to multiply the distribution of landholdings according to the estimates of the crop yield. The resultant figure is to be further multiplied by the average price for the crop. Thus income from farming (exclusive of wages of agricultural labour and income from other heads of farming) will be given by

$$I_f = L_f. \ E_c. \ A_p$$

where If is income from farming, Lf stands for size of the farms, Ec estimates of the crop yield and AP, the average price of the crop. The resultant If can subsequently be arranged according to magnitude to yield size distribution of farm income. In this approach, information on landholdings according to size can be obtained from National Sample Survey's Volume numbers 10, 30, 36, 66 and 74 entitled 'Report on Land Holdings Rural Sector' issued by Central Statistical Organisation. Besides, we can support our information with agricultural statistics published by Directorate of Economics and Statistics relating to (i) classification of area reported according to various uses, (ii) area under different forms of irrigation, (iii) distribution of gross areas sown by different crops, (iv) net area sown etc. The estimates of the crops are published by the Directorate of Economics and Statistics in their annual publication 'Area and Outturn of Principal Crops in India'. The statistics on prices of agricultural commodities can be obtained from a number of agencies engaged in the collection of wholesale and other types of prices of agricultural commodities. These are (i) D E S Ag.; (ii) State agricultural departments and State Statistical Bureaus, (iii) Directorate of Manufacturing industries, (iv) Indian Labour Bureau and National Sample Survey.

Such an approach suffers from a number of limitations as it excludes a number of other sources of income which ought to be covered while considering the total farm income. These other sources include agricultural and horticultural services on a fee or contract basis such as harvesting, baling and threshing, husking and shelling; pest destroying, spraying, pruning, picking, rental incomes from farm building and farm machinery, interest and wages of hired agricultural labour. Prof. Ashok Rudra [16] is of the view that such a distribution is not significantly different from the originl size distribution of landholdings as the entire distribution is multiplied by a constant multiplier.

The other data, which in some studies have been combined with the income tax data, are the National Sample Survey data relating to consumer expenditure. However, these relate only to the distribution of total consumption expenditure into certain brackets and do not provide information on incomes as such. The NCAER has carried out sample surveys both in the urban and the rural sectors for obtaining information *inter alia* with regard to distribution of income. Such data are available for only one year. Indian Statistical Institute, Calcutta, has given the distribution according to expenditure rather than income, realising the obvious difficulties of estimating the total income.[17]

The validity of the survey results depends on the extent to which the sample is representative of the population under study. These surveys confront serious difficulties in a country like India where education is still not wide spread and which retains diverse languages, community and classes. Again, in India, information relating to upper income groups may not be adequately included even in a fairly large size sample because of difficulty experienced in obtaining information relating to income or expenditure. Also, very poor people, who do not have any home, are excluded from the sample and this distorts the picture obtained from survey data.

III

To sum up, size distribution of income will provide meaningful results only if: (*a*) the units, for which incomes are recorded and grouped, should be family expenditure units, properly adjusted for the num-

ber of persons in each ;

(b) the distribution should be complete so as to cover all the units ;

(c) to segregate those units whose main income earners are still learning or retired because they are not associated with full-time, full-fledged participation in economic activity ;

(d) income should be defined just like National Income i.e. received by individuals, including income in kind, before and after a direct taxes excluding capital gains;

(e) the units should be grouped by secular levels of income, free of cyclical and transient fluctuation ; and

(f) the study should be for sufficiently large number of years, at least for two generations which connect the income of a generation to its immediate descendents.

REFERENCES

[1] Hazel Kurk "The Distribution As A Measure of Economic Welfare", American Economic Review, 1950. The author in the mentioned paper is of the view that equivalence even in the earnings of the recipient units does not mean equivalence in the man-hours of work. Nor do such distributions show differences in the permanence of the incomes, or in the rights, priorities, or priveleges concurrently acquired, rights regarding tenure, seniority, old age or sickness benefits.

[2] The relevant results of the survey can be given in this form :

Size of Income	Per centage Saving Income Ratio
upto Rs. 360	—5.1
361— 480	—7.7
601— 720	—2·8
721— 900	+0·2
901—1200	+0·5
1201—1800	+3·5
1801—2400	+6·7
2401—3600	+9·6
3601—4800	+10·5
4801—7200	+19·8
Above 7200	+16·9

[3] Simon Kuznets "Economic Growth and Income Inequality"— American Economic Review—March 1955.

[4] This method has been employed by Frank A. Hanne, Joseph A. Pechman & Sidney M. Lerner in "Analysis of Wisconsin Income" published by National Bureau of Economic Research, U.S.A.— Studies volume IX; and Simon Kuznets, "Share of Upper Income Groups in Income and Savings", published by NBER, U.S.A.

[5] Maurice Liebanbery and Hyman Kaitz "An Income Size Distribution from Income Tax and Survey Data, 1944, NBER, U.S.A.—volume XIII

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[12] William Vickery "Resource Distribution Pattern and Classification of Families"—NBER, Vol. X.

[13] Simon Kuznets— Comment on the Paper by William Vickery (12).

[14] Margret G. Reid "Distribution of Non-Money Income" NBER, Volume XIII

[15] Simon Kuznets "Share of Upper Income Groups in Income and Savings" NBER

[16] Prof. Rudra, Visiting Professor to the University of Delhi, expressed his opinion while I had the opportunity of discussing this study with him.

[17] "Studies on Consumer Behaviour" published under the auspicies of Indian Statistical Institute, Calcutta.