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STATISTICS OF THE DISTRIBUTION OF PERSONAL INCOME

(Report by the Secretary-General)

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I. INTRODUCTION

1. The Statistical Commission has discussed the subject of statistics of the distribution of personal income on a number of previous occasions. The most recent report to the Commission on the subject was originally drafted in 1955 and presented to the Commission at its ninth session in 1956. It was subsequently revised and circulated for comments, taking into account the suggestions made by the Commission at its ninth session and later developments in national practices. The revised version (E/CN.3/L.42) was presented to the Commission at its tenth session in 1958 together with a supplementary memorandum (E/CN.3/233) summarizing the comments received from countries.

2. The general view taken by the Commission in the course of these discussions was that the time had not yet arrived for the promulgation of international standards in this field. Considerable work remained to be done at the international level on the evaluation of different concepts and classifications and on the assessment of alternative methods of data collection. The Commission recommended that, in present circumstances, countries should make special efforts to provide a full description of the concepts and methods employed in their studies in this field as a guide to the comparability of their estimates. At the same time, it requested the Secretary-General to gather further information on national practices and problems as a basis for preparing detailed recommendations on the subject.

Purpose of the paper

3. In accordance with the request of the Commission, the present paper carries forward the review of national practices and problems initiated in the earlier report mentioned above (E/CN.3/L.42). It takes into account both the comments of countries on this report, as summarized in document F/CN.3/233, and the developments which have taken place in national work in the field in more recent years. It differs from the earlier report in laying stress on the conceptual, rather than the practical, aspects of the subject and in providing a fuller discussion of the broad objectives of contemporary studies, both private and official. The primary purpose is once again to furnish a basis for the discussion of appropriate international action on such issues as (i) the provision of guidance

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to countries wishing to introduce national programmes of work in this field, and (ii) the development of a suitable framework for the purposes of reporting internationally comparable estimates.

4. A discussion of income distribution statistics at the present time may also aid the current effort to develop new and more comprehensive standards in the field of national accounting. A number of tentative proposals for the inclusion of information on income distribution within the general national accounting framework are put forward in the report of the recent expert group on the subject and these proposals might be carefully examined in the context of the present paper. As part of the over-all system, the group gave consideration to the sub-division of the household income and outlay and capital accounts according to the socio-economic status of the head of household or the size of household income and also to the inclusion of related classifications of total and disposable household income.

Organization of the paper

5. Following a brief discussion of the scope of the field in Part II of the paper, the major objectives of income distribution work are examined in Part III. This is followed by an extended discussion in Part IV of the basic concepts, classifications and forms of presentation commonly employed. Part V deals in some detail with the principal sources of basic information, their advantages and disadvantages. Part VI gives a summary appraisal of current work at the national level. The paper concludes with a proposal for future work by the Secretariat.

5a. The discussion proceeds at a fairly general level and no attempt is made to examine systematically the details of practices in specific countries. To offset this limitation, a bibliography of selected official sources of information has been appended to the paper and references to these sources made where appropriate. The bibliography also includes a number of private studies on income distribution, largely of an empirical nature.

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II. DEFINITION OF THE FIELD

6. The scope of the present field may be usefully defined by reference to the broad framework provided by the conventional national accounting system. If this is identified with the current United Nations system of national accounts (SNA), it may be said as a first approximation that the field is concerned with the analysis of the flow of income into the household sector of the system. Such a definition, however, requires a number of qualifications.

7. In the first place, the field is concerned with the character of the distribution of income within the household sector, rather than with the character of the income accruing to the sector as a whole. Distributions of total income by type of income or by industrial origin, such as already appear in present systems are consequently of incidental relevance only. Distributions of this kind, in respect of income accruing to households, appear as marginal totals in tabulations where the individual components of the distribution are cross-classified according to specific characteristics of the recipient unit.

8. This qualification leaves a wide range of possible tabulations not covered in the present system of national accounts. Among these may be mentioned the analysis of total household income by size of household income and by such characteristics of the households as (i) number of dependents or earners, (ii) age, sex, industry, occupation or employment status of the head of household, and (iii) location of the household in terms of region or degree of urbanization. Similar tabulations may be drawn up to describe the nature of the initial distribution of the total income of the sector among individuals. In both systems, the possibility exists of introducing cross-classifications in terms of the character or source of the income received.

9. A second qualification arises from the frequent divergence of the basic income concept used in general-purpose income distribution statistics from the national accounting concept used in the present SNA. As a measure of total income in income distribution statistics, the national accounting concept may be narrowed to exclude all imputed income such as food and fuel produced and consumed on farms or broadened to include, for example, the value of all benefits received in kind from general government. Generally, however, it may be said that the value of

the national accounting concept as a measure of "economic" income is well recognized and that departures from this concept reflect either the existence of statistical limitations or the special objectives of the inquiry.

10. It has also to be noted in this connexion that the concept of "disposable" income is normally given equal attention in general-purpose income distribution statistics. This concept is not directly used in the present system of national accounts, but may be readily derived from the household account of the system by deducting all outgoing transfers, such as direct taxes, from the gross receipts recorded on the credit side of the account. It is identically equal to consumption expenditure plus saving.

11. Finally, it has to be noted that the household sector of the present SNA includes a number of institutional elements which are not normally considered relevant to the study of personal income distribution. The most obvious examples of such elements are (i) private non-profit institutions serving households, and (ii) life insurance and pension funds.^{1/} Some additional restrictions which are frequently imposed on the scope of the sector are indicated later.

III. OBJECTIVES OF INCOME DISTRIBUTION STUDIES

12. Though the purposes for which income distribution statistics are compiled are not always explicit in national studies, the basic objectives of these studies are usually evident from the general design of the inquiries. Three general types of inquiry may be distinguished: (i) inquiries directed essentially to measuring the distribution of economic welfare among the population; (ii) inquiries directed to establishing relationships between the distribution of income among the population and the pattern of productive activity, and (iii) inquiries directed to establishing relationships between the distribution of income among the population and the pattern of expenditure and saving.

13. Specialized inquiries directed to assessing the influence of specific factors on the distribution of income cover a wide field. The most important inquiries of this type are those relating to the impact of fiscal and other government

^{1/} The exclusion from the household sector of life insurance and pension funds is envisaged in the revised SNA.

policies designed to modify the initial income distribution. Other inquiries coming under this heading include those intended to measure the effect on the income distribution of such factors as economic growth and cyclical fluctuations in economic activity. The converse type of inquiry, namely, the assessment of the influence of the distribution of income on economic activity in general, or on selected aspects of economic activity, is also important. In the following paragraphs, the various objectives are examined in more detail.

The distribution of welfare

14. The most common, and probably the most important, objective of contemporary inquiries into income distribution is the measurement of the distribution of economic welfare among the population. A need for measurements of this type has developed simultaneously with the expansion of government activity directed towards the redistribution of income. The current importance of the question is readily gauged from the substantial changes in the income distribution which are now effected by government intervention in most countries through progressive income taxation and other devices.

15. While the main objective in such inquiries is to measure the distribution of "real" income, that is, disposable income in terms of its purchasing power, considerable interest is usually attached to establishing the relationship between initial and disposable income and to assessing the impact of specific redistributive factors on the final result. A frequent example of a partial analysis of this nature is the compilation of size-distributions of income before and after tax.^{2/}

16. The uses of such distributions are manifold. One of the more obvious is to measure the effectiveness of government intervention by comparing the final distribution with the hypothetical optimum. A more specific use is the assessment of the extent and degree of poverty within the population and of the magnitude of the effort required for its elimination. Similar uses may arise from interest in the elimination of regional or urban/rural income differentials.

^{2/} Examples of relatively detailed analyses of the impact of government on the income distribution will be found in Ref. 48 and Ref. 67 (Appendix).

Income distribution and productive activity

17. The second major area of analysis traces the links between the distribution of income and the pattern of productive activity and remuneration. Among the more detailed objectives of inquiries of this nature, the assessment of the impact on the income distribution of changes in the industrial structure and resources and in the occupational structure may be mentioned. Studies of the general effects of changes in the level of activity, either through continuing economic growth or in terms of cyclical fluctuations, may also be included here.

18. This area of analysis may be linked with the previous one by relating the income received by the household to the productive activity of the members of the household and meshing the respective classifications. In conjunction with the more detailed distributions of individual earnings based on the analysis of productive activity, tabulations of this kind provide the raw material for measuring the influence of such factors as inter-industry wage differentials on the over-all distribution of income among households.

Income distribution, spending and saving

19. This area of inquiry appears as a natural extension of the study of the over-all relationship between aggregate income and expenditure assumed in national accounting work. The essential objective is to relate the pattern of spending and saving in the economy to the distribution of income by dividing the population into groups which are relatively homogeneous in their income and expenditure behaviour. In this way, more accurate models of the operation of the economy can be constructed which will take into account changes in the pattern of spending and saving induced by changes in the distribution of income. A simple development of this kind is the introduction of differing consumption functions for urban and rural populations or for different socio-economic groups of the population.

20. More detailed relationships of this type involve the determination of the demand for specific goods and services in terms of both the level and the distribution of income. Market analyses, based on functional relationships of this nature, form currently one of the principal uses of general-purpose income distribution statistics.

Income distribution and macro-economic models

21. Within the framework of static or dynamic macro-economic models, production/income and income/expenditure relationships of the type mentioned above can be used to determine the impact of specific patterns of income distribution on the system as a whole, or alternatively to determine whether specific patterns of income distribution are compatible with other goals set for the economy. Conversely, the dependence of the income distribution on the parameters and functional relationships governing the system as a whole can be defined and the effects on the over-all distribution of changes in specific parameters investigated.

IV. CONCEPTS, CLASSIFICATIONS AND FORMS OF PRESENTATION

22. Differences in the conceptual design of inquiries into the distribution of personal income appear to stem as much from statistical considerations as from the abstract choice of appropriate concepts. At this point, the more detailed practical constraints which may operate in specific situations are ignored and the discussion of concepts based on the range of possibilities which are normally open to the investigator.

23. Controversy in design centres generally round the two concepts basic to this work, namely, the concept of income and the concept of the income recipient unit.

The income concept

24. It has already been noted that the concepts adopted for national accounting work provide a useful frame of reference for the discussion of income distribution statistics. In the following paragraphs the acceptability of the common national accounting income concept as the basic income concept for general-purpose income distribution statistics is reviewed and an attempt made to explain departures from this concept in terms of the special objectives attached to the inquiry.

25. The advantages inherent in using the national accounting income concept as the basis for general-purpose statistics of income distribution are largely self-evident. Compilations of this kind form a natural development of the over-all national accounting system in tracing and detailing the flow of income through the household sector, in relating this flow to its source in productive activity and to its use in

spending and saving. It clearly facilitates comprehension of the over-all functioning of the economy if this detailed body of related information can be readily articulated with the flows of the traditional system through the use of uniform concepts.

26. In the practice of countries with market economies, for example, there appears to be an increasing tendency to articulate work on income distribution with national accounting work in general and to make use of similar income concepts in both fields. This generally implies the increasing acceptability of the SNA income concept, or a close variant of it, as the basic income concept for general-purpose income distribution statistics. Where disagreement exists, the arguments against the use of the SNA concept for general-purpose income distribution statistics are frequently the same as those addressed against its use for national accounting purposes. Such arguments are usually directed to the inclusion or exclusion of marginal elements of total income rather than to any radical changes in general coverage or valuation.^{3/}

27. More important departures from the SNA income concept are frequently found when the inquiries are oriented towards specific objectives. For example, it is generally considered that for the purpose of analysing the distribution of economic welfare, the SNA income concept has to be modified substantially to give a better approximation to a "real" income concept. The principal adjustments which are made in practice are outlined in the following paragraphs.

28. Perhaps the most important of these adjustments concerns the scope and valuation of imputed income. In terms of scope, it is clear that the imputed income included in the standard concept does not reflect all benefits which accrue directly to the population and which may be considered pertinent to the distribution of welfare. The principal class of benefits of this kind is represented by specific benefits received from general government such as health and education services provided free of charge or at nominal cost. In the standard system, these benefits

^{3/} Apart from the slightly larger scope of imputations, the basic income concept used in income distribution inquiries in the centrally planned economies appears to be very close to the SNA concept. See, for example, the Hungarian and USSR inquiries described in Ref. 34 and Ref. 62 (Appendix).

are not shown as transfers to households but are treated simply as general government consumption expenditure.

29. An adjustment is also quite often made in connexion with the valuation of imputed income. For example, there is a tendency to value farmers' production for own consumption at urban retail prices rather than at producers' prices, as recommended, in order to maintain a uniform basis of valuation throughout the economy. A similar problem which arises in the case of general government benefits received in kind is, on the other hand, frequently resolved by the use of a realized cost valuation rather than a market-price valuation.

30. The "gross" income concept, which has been dealt with so far, may be further adjusted by the addition of transfer income in kind received from both private non-profit institutions and other households. Problems of scope and valuation again arise and have apparently contributed to the view that such transfers should normally be excluded.

31. It is obvious on reflection that economic welfare is approximated more closely by a "disposable" income concept, rather than by the "gross" income concept discussed above. Following the SNA concept of "disposable" income, this implies the deduction from "gross" income of all direct taxes paid and all other current transfers to general government and the rest of the world. By implication, deductions would also be made for all other current transfers made by households, including transfers which may be recognized within the household sector. The appropriateness of deducting voluntary as well as compulsory transfers in this context can, of course, be argued.

32. An additional refinement of the disposable income concept as a measure of real income is its standardization in terms of purchasing power. In national studies, this type of adjustment is frequently made to eliminate inter-temporal differences in prices; it is less frequently introduced to eliminate differences in purchasing power arising from differences in prices between regions, between urban and rural consumers and between low-income and high-income groups of the population.

33. As opposed to the broad concept of income relevant for welfare analysis, the basic income concept required for productivity analysis is clearly the income associated with the productive efforts of the recipient. While the SNA concept of "factor" income appears to be essentially adequate for this purpose, some

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departures from this concept arise in practice due to difference of view on scope and evaluation. Divergences of opinion may exist, for example, with regard to the extent to which imputations should be made for benefits in kind associated with work or the extent to which deductions should be made for associated costs. Questions of valuation are particularly important in the case of the earnings of farm workers and the income of farm operators.

34. For the analysis of spending and saving, the most relevant income concept may be that of disposable income expressed in real terms. In this case, however, the hypothesis can be empirically tested and alternative concepts of income which are found to provide more exact relationships used instead. For example, it may be found that the national accounting concept of entrepreneurial income does not provide such a good relationship as the bookkeeping concept based on a conventional valuation of fixed assets and inventories. Improved relationships between income and expenditure may also be obtained by the inclusion in the income concept of realized capital gains and losses or by the inclusion of specific elements of total income as separate variables in the system.

35. For more specialized objectives, the nature of the income concept is generally self-evident. For example, the concept of "taxable" income would seem the most appropriate concept for income distribution studies directed to assessing taxable capacity in the short run. For the long run, an income concept approximating the economic income concept used in national accounting would appear to be more advantageous.

The income recipient unit

36. National accounting systems in market economies provide little guidance for a discussion of the concept of the income recipient unit in income distribution statistics. In SNA for example, the household sector is virtually treated as a homogeneous unit and there are few suggestions on how it might be meaningfully divided. In the centrally-planned economies, the material product system (MPS) goes somewhat further, division of the population generally being made in terms of social groups.

37. In passing from the household sector of the present SNA to the sector pertinent to income distribution statistics, only two adjustments are, in

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principle, necessary. These are the exclusion of (i) private non-profit institutions serving households and (ii) life insurance and pension funds. In practice, further adjustments are frequently made to exclude the civilian population living together in institutions of various types and the part of the population serving in the armed forces.

38. The division of the residual population into income recipient units gives rise to a considerable number of problems, many of which are resolved in practice only in a conventional manner. A primary distinction is generally drawn between income recipient units based on the concept of the individual as consumer, on the one hand, and as earner of income, on the other. The first type of unit is appropriate for income distribution studies directed to the first and third of the basic objectives mentioned previously; the second type of unit is appropriate for studies directed to the second basic objective.

39. In his capacity as consumer, the principal relevant characteristic of the individual is the extent to which his income is pooled or shared with other persons to meet common needs. Thus, to the degree to which there is pooling of income of this kind, the family or household becomes the appropriate income recipient unit both for measuring the economic welfare of its members and for analysing the relationship between the distribution of income and the pattern of spending and saving.

40. In practice, the extent to which income is pooled among members of the population varies continuously and an element of convention must be introduced in the application of the criterion. The predominant view appears to be that the recipient unit should be defined for convenience in terms of either the family or the housekeeping concept of the household as utilized in population census and other household inquiries. The family, for example, is frequently defined, as two or more people related by blood, marriage or adoption who reside together and have common housekeeping arrangements. More comprehensive definitions may include in the income recipient unit unrelated individuals living in the same dwelling unit and sharing meals or dependent children living away from home. More restrictive definitions may include only the "conjugal" family in each dwelling unit, that is, husband and wife and dependent children. Suggestions concerning standard concepts in this area are available in the United Nations Principles and Recommendations for National Population Censuses and the recently-issued Handbook of Household Surveys.

41. The "fissile" character of the family or household as an income recipient unit poses a number of problems of comparability. Thus, changes in income distribution among families may be obscured by changes in the structure of the families themselves, possibly engendered by the changes in income distribution which it is hoped to measure. In such cases, meaningful conclusions can only be reached by comparing distributions for similarly-structured families or by standardizing recipient units in some other way.

42. Variations in family structure may be taken into account by placing the distribution on a per capita basis or, alternatively, on a "consumption unit" basis. In the latter procedure, children are counted as fractions of adult values, according to age, the precise weight being determined from empirical studies of household consumption. Frequently, alternative approaches of this nature are combined.

43. For the analysis of patterns of spending and saving, no important changes would seem to be necessary in the basic concept of the income recipient unit applicable to welfare studies. The objective in this case would be to divide the population covered into groups exhibiting more or less uniform patterns of income and expenditure behaviour. Reduction to a per capita basis would not appear to be relevant.

44. In studies directed to the analysis of the relationship between the income distribution and the pattern of productive activity, the basic income recipient unit is clearly the individual income recipient. There are, however, some situations where alternative concepts might be more relevant. For example in the case of entrepreneurial families such as peasant families, several or all members of the family may contribute to the family income and there may be little basis for the allocation of total income among them. In such cases, the family itself may be regarded as the appropriate income recipient unit.

Period of reference

45. The normal period over which income is measured in income distribution studies is the year and this would appear to be the most appropriate period for general purposes. A major advantage is that articulation with annual national accounting data is facilitated. A possible disadvantage is that the incidence of temporary business reverses or other misfortunes may affect the usefulness of the distribution as an indicator of income status.

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46. A point to be noted in this connexion is that distortion of the income distribution may result from transfers of income recipients in the course of the year into or out of the population covered. Thus, young people entering employment during the year will normally be credited with their part-year earnings rather than their annual rate of income. Such situations may be of importance in interpreting the over-all distribution.

Classifications

47. The flow of income to recipient units may be analysed according to the characteristics of the income itself or according to the characteristics of the recipient units. Frequently, simultaneous classification in both directions is attempted. In almost every case, however, the classification of recipient units by size of income received is given special prominence.

48. For income/expenditure and welfare studies, the characteristics of the income received do not appear to be of major relevance, except in the case of imputed income. Primary interest lies in analysing the division of income among the main socio-economic groups of the population and its distribution by size among income recipient units of similar structure, such as all units with the same number of members. Further pertinent detail is usually introduced by cross-classification in terms of the special characteristics of the head of the household. Where imputed income is important, a basic distinction is frequently drawn between farm households and others or between the urban and rural elements of the population.

49. For income/expenditure studies in particular, the subdivision of the household income and expenditure accounts used for national accounting purposes has a number of advantages as a framework for classification. An approach of this nature is already followed in the case of the material product system, and, as previously noted, is now being considered in connexion with the revision and extension of SNA. Subdivision in terms of broad socio-economic categories and income size groups are usually considered most relevant.^{4/}

50. For production/income studies, separate tabulations are generally given for the main types of income, the principal classifications in each case relating to characteristics of the individual earner associated with his level of earnings. These include age, sex, education, work experience, industrial attachment,

^{4/} An experimental subdivision of the household account is made for France in Ref. 15 (Appendix). /...

occupation and employment status. Such classifications normally appear as cross-classifications of the basic classification of income by size of income.

Forms of presentation

51. The over-all income distribution in terms of size of income is normally regarded as a combination of partial distributions for specific groups of the population. Thus, in the usual form of tabular presentation the classification of income by size is entered in the stub and the classification of income recipient unit in the box-head. The cells of the table may contain either the number of recipient units with the characteristics defined by its position or the total income received by these units.

52. A number of modifications are frequently made to this basic presentation to improve comparability. For example, the classification of income by absolute size may be replaced by a classification into intervals based on an even division of the total frequency. Quartile, quintile or decile classifications are commonly used for this purpose, with a more detailed classification occasionally introduced in the upper income levels. A further step in the same direction is to show the percentage distribution of total income within each column rather than the absolute distribution.

53. Where price changes are significant, inter-temporal comparisons may be improved by deflating income levels by appropriate price indices. This procedure is used, for example, in the United States work cited previously. A similar procedure, as already noted, may be introduced when there are significant differences in purchasing power between the incomes of specific groups of the population.

54. Graphical presentation is also widely used as a means of comparing size distributions. The most common types of presentation of this kind are the simple frequency distribution, the cumulative frequency distribution and the Lorenz curve. A major advantage is the relative ease with which interpolation, and to some extent extrapolation also, can be undertaken. Distributions in terms of percentiles, for example, can be readily obtained from the Lorenz curve.^{5/}

^{5/} The different types of graphical presentation are appraised in relation to United States data in Ref. 142 (Appendix).

Summary measures of distribution

55. Most of the conventional summary measures of central tendency and dispersion are used in connexion with income distributions. Distributions by size of income are normally skew and measures of central tendency such as the arithmetic mean, the median and the mode may differ substantially. All three are, therefore, commonly employed in reporting average income. The median has a special importance since it is closely related to the percentile classification of the income range. As measures of dispersion, the range, the mean deviation, the standard deviation and many others are found.

56. In addition to these conventional measures of dispersion, a number of specialized measures of inequality are widely used. The simpler measures of this type are based on the Lorenz curve and are defined in terms of the divergence of the curve from the line of complete equality indicated by the diagonal. The most common is the "coefficient of inequality" derived by relating the area between the curve and diagonal to the area of the whole triangle enclosed by the diagonal. A second measure, the "maximum equalization percentage", is defined in terms of the percentage of total income which has to be transferred from higher-income groups to lower-income groups to achieve full equality. This measure can also be derived from the Lorenz curve.

57. More sophisticated measures of inequality may be based on the parameters of functions fitted to the observed distribution. This procedure has the advantage of defining the more general characteristics of the distribution if the fit is good, though this is normally true over part of the total income range only. The principal theoretical distributions employed in this way are those of Pareto, Gini and Gibrat.

58. While the use of summary measures of inequality is convenient for the over-all comparison of distributions, there are some drawbacks associated with this procedure. Perhaps the most important is that, by their nature, they give no indication of the more detailed changes in the distribution. In this respect, analysis in terms of deciles or in terms of the Lorenz curve itself may add significantly to the conclusions reached.

V. SOURCES OF BASIC INFORMATION

59. There are three main sources of basic information on the distribution of personal income: (i) income-tax returns, (ii) sample surveys of households and (iii) population censuses. Of these, income-tax returns have been traditionally the most important and are still widely used. Sample surveys of households geared to the requirements of income-distribution analysis are of relatively recent introduction but have developed rapidly. Population censuses, though relatively important in many developing countries, are generally found as a secondary source in the developed countries.

60. The basic information on income distribution collected by these means is seldom entirely adequate. With the possible exception of household surveys, the collection of information on income distribution is normally a minor purpose of the inquiry. Frequently, household surveys include information on income levels primarily to check the accuracy of the expenditure reported. An increasing number of surveys, however, are specifically designed to provide information for income-distribution analysis; in a few, this is the major purpose.

61. Even where the collection of information for income-distribution analysis is an incidental purpose of the inquiry, there is a clear tendency to introduce modifications to improve the usefulness of the results. Thus, in income-tax questionnaires, categories may be altered or a number of additional questions inserted to produce more pertinent information. Similarly, the design of census of population inquiries may be modified to give greater prominence to the collection of income data, for example, by introducing supplementary inquiries on income on a sample basis.

Income-tax returns as a source of basic information

62. The assessment of personal income for the purpose of taxation would appear at first sight as the logical source of information on income distribution. It could be argued that the income concept should be the same as the one appropriate for welfare analysis, that the income recipient unit should be the consuming or spending unit and that the assessment should extend to the whole population.

63. In practice, these potential advantages are seldom realized and considerable departures occur from the optimal requirements of income-distribution statistics.

In many countries, for example, the population coverage is so restricted and the reliability of the reported information so poor that income-tax returns must be immediately disqualified as a useful source. At the other extreme, there are a few countries where the design of the tax questionnaire is adapted to the requirements of income-distribution statistics and the population coverage is relatively complete.

64. Possibly the most frequently-mentioned deficiency of income-tax data is inadequate coverage of the general population. Normally, the exemption limit set for filing returns excludes a substantial proportion of both total population and total personal income and this omission may be enlarged by incomplete reporting in taxable income levels. These gaps, although tending to diminish in importance, remain a serious problem, especially in the developing countries.

65. A second major weakness stems from tax evasion. While its extent is difficult to assess, except in cases where accurate complementary data are available from the related sources of income, it is generally considered to be of substantial importance in almost all countries. Since evasion is apparently more widely practised in reporting property income and entrepreneurial income than in reporting labour income, the pattern of income distribution is directly involved. Variations over time may be related to changes in tax laws as well as to changes in the socio-economic structure of the population and it may also be assumed that measures to counteract evasion are becoming progressively more effective.

66. A related disturbance of the income distribution arises from the use of certain procedures to minimize taxation. Such procedures vary from country to country and from time to time. They include legal devices such as (i) the averaging of income over a period of years, (ii) the shifting of entrepreneurial earnings from one year to another by varying capital expenditure or by adjusting inventory values and (iii) the use of the corporate form of organization. They also include such devices as (i) the charging of mixed personal and business expenditure as business expenses, (ii) the transfer of assets within families to minimize taxation on property income and (iii) the over-generous allocation of entrepreneurial income among participating members of business families.

67. Other statistical weaknesses include (i) the frequent absence in the returns of pertinent socio-economic information on the income recipient and (ii) the

extended delay which normally occurs in the preparation of final tabulations by the tax authorities. These are not basic problems: the first can be overcome largely by more effective inter-agency co-operation and the second may be reduced in importance by arranging for provisional sample tabulations to be made. Legal restrictions on the use of tax-return data may have to be modified for such purposes.

68. On the conceptual side, the usefulness of income-tax returns as a source of information on income distribution is linked directly to the legal framework surrounding the assessment of income. In most countries, this framework has developed organically through the years, changing to meet the exigencies of new situations while retaining a relatively stable central structure of principle. There may, thus, be short-term as well as long-term divergences from the optimal requirements of income-distribution statistics.

69. Problems with the income concept used in income-tax tabulations centre largely round such issues as the treatment of (i) imputed income, (ii) fixed assets and inventories, (iii) capital gains and losses, (iv) transactions of life insurance and pension funds and (v) current and capital transfers. Variations in the tax laws governing the treatment of these items are relatively frequent and are generally reflected in variations in the income concept governing the final tabulations. In a few cases possibly, adjustments may be made to maintain uniformity from year to year.

70. The assessment of imputed income forms a major source of difficulty due to variations in both the scope of taxable income of this nature and the basis of valuation. Two important examples are imputed rent of owner-occupied dwellings, where the valuation is frequently a historical one, and imputed income of farmers from food and fuel produced and consumed on farms, where the valuation must be largely arbitrary. In the second example, an effective check on the appropriateness of the reported value is clearly impracticable and under-valuation must normally be assumed.

71. The rules governing the valuation of fixed assets and inventories may have considerable influence on income distributions derived from income-tax data. These rules are subject to frequent change in most countries, largely with a view to influencing investment policies, and more often than not depart substantially

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from the replacement-cost principle of valuation recognized as of primary significance for national accounting work. The calculation of the imputed rent of owner-occupied dwellings as well as of all types of entrepreneurial income may be directly affected.

72. The treatment of capital gains and losses is another variable element in income distribution based on income-tax returns. Many countries include capital gains and losses of one kind or another in their concept of reported income even where special tax provisions apply. In a few countries, separate distributions for these items make adjustments possible.

73. Other important divergences from standard income concepts arise from rules governing the scope of allowable deductions, on the one hand, and of non-reportable elements of income, on the other. The first category covers principally such items as (i) business expenses and their equivalent, (ii) life insurance premiums and pension fund payments and (iii) contributions to social security. The second category covers mainly current transfers such as military pensions and all kinds of social security benefits.

74. The significance of these variations in the income concept for the preparation of income distributions depends on the basic design of the tabulations prepared by the tax authorities and the degree of supplementary detail provided. In some cases, alternative tabulations based on different income concepts may be made available or sufficient detail may be provided to allow reconstruction of the distributions to approximate more closely the desired income concept. The Canadian and United States tabulations are particularly flexible in this respect.

75. The nature of the income recipient unit used in the assessment of personal income for tax purposes also gives rise to problems in the compilation of income distributions. While the unit is normally the individual earner with income over a specified minimum, special provisions are frequently made for the filing of joint returns by married couples. In some countries, this may be introduced on an optional basis.

76. Use of the individual earner as income unit implies that tabulations based directly on these returns are of relevance primarily to the analysis of production/income relationships. This has generally been the focus of studies based on this

source despite the difficulties associated with joint returns and the frequent lack of information on pertinent socio-economic characteristics of the income recipient.

77. The existence of joint returns creates a special set of problems since it is rarely possible to obtain a breakdown of these returns to show the respective earnings of husband and wife. In some countries, where the filing of joint returns is optional, an approximation to this result may be obtained by the use of relationships between the earnings of husband and wife derived from the separate returns filed under this rule.

78. There is generally even greater difficulty in deriving distributions of family or household income. From most tabulations of tax authorities, it is impossible without supplementary information to derive such distributions because of the existence of multi-earner families or households and the separate assessment of their members. Normally, the information on membership which would make possible the combination of incomes on a family or household basis is not included in the separate returns. In some countries, such as the Netherlands and Sweden, the population censuses has been used as a sampling frame for this purpose.

Household surveys as a source of basic information

79. The development of sample surveys of households as a means of collecting information on income distribution has been relatively rapid in recent years. This expansion is largely explained by the convenience and flexibility of the surveys as a general source of information on household structure and activity. It has unquestionably been accelerated by improvements in general sampling techniques and their application to this field of inquiry.

80. The wide array of pertinent data which can be obtained at relatively low cost by sample surveys makes possible the compilation of income distributions according to a range of alternative concepts. Thus, information can be obtained on the income of individual family or household members and combined according to various concepts of the recipient unit. Alternative concepts of income can be introduced in similar fashion. General socio-economic information about the income recipient can be gathered simply and cheaply and the inquiry readily adapted to specific purposes.

81. In practice, sample surveys of households are usually designed to serve a number of purposes, not always totally compatible with one another. Frequently,

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the object of collecting information on income distribution is a secondary one and little effort is made to tailor the concepts and coverage to suit. Budget studies directed to the preparation of consumer price indexes normally fall into this category. On the other hand, the comparability of the information on household income and expenditure obtained in this way more than compensate for the conceptual inadequacies of these inquiries for income distribution studies.

82. Many of the problems of measuring income discussed above in connexion with the use of income-tax returns as a basic source are also present in the case of household surveys. Thus, under-statement of income is at least as prevalent as in the case of reporting for income-tax purposes and special techniques are frequently employed to improve estimates for specific types of income. Entrepreneurial and property income are found to be particularly liable to under-statement in this context.

83. In general, the more elaborate the analysis contemplated, the larger the sample must be to keep sampling errors within accepted limits. The high-income groups, for example, which are of special interest for income-distribution studies, are often inadequately represented and supplementary inquiries may be necessary to confirm tentative findings based on the over-all sample.^{6/}

Population censuses as a source of basic information

84. Though the number of countries including questions on income in their population censuses has increased in recent years, the relative importance of the population census as a source of information on income distribution has tended to decline. The particular disadvantages of the census for the collection of income data are the large number of respondents, the broad scope of the questionnaire, and the difficulty encountered in interpreting the income concept without special assistance.^{7/} The principal advantages of this source are its universal coverage and the direct link provided with a rich array of demographic information on the income recipient. These advantages compensate to some extent for the inevitable roughness of the estimates of income reported.

^{6/} A particularly valuable discussion of some major national household surveys will be found in Ref. 2 (Appendix).

^{7/} The use of simple income concepts or the restriction of the income reported to specific types of income such as wages and salaries may improve the quality of the response considerably.

85. In some countries, sampling procedures have been introduced in connexion with the census in an effort to improve the quality of the response. Thus, in the United States, a special schedule for the collection of information on income is distributed at the time of the decennial census to one household in five.^{8/} A similar procedure, involving a 10 per cent sample of households, has been used in Ceylon and South Africa.

Other sources of basic information

86. Income-distribution statistics may also be compiled on the basis of information supplied by the related sources of income. In this case, the income distribution is normally limited to specific types of income and the coverage to specific groups of the population. The income recipient unit is normally the individual earner.

87. The distributions compiled by the Federal Republic of Germany from wage-tax statistics may be mentioned as an example of the use of this type of source.^{9/} Other examples are distributions compiled from industrial census returns, pay-as-you-earn tax records, social security tax records, and regular or ad hoc inquiries into earnings in specific industries. In general, this type of source is primarily of interest for the study of production/income relationships.

Use of combined sources

88. The use of combined sources of information in preparing general-purpose statistics of income distribution appears as a logical development of practice in this field. While each of the main sources has marked weaknesses when used independently, in combination these sources reinforce one another and contribute to a more accurate and useful result.

89. An important example of the use of combined sources is the work undertaken by the Office of Business Economics in the United States. Basically, this represents a combination of information from income-tax returns and sample field

^{8/} An appraisal of the results of the United States inquiries will be found in Ref.77 and Ref. 137 (Appendix).

^{9/} Ref. 24 (Appendix).

surveys of family income. The income-tax data provide the main elements of the estimates of income while the survey data are used (i) to estimate types of income not covered at all, or not covered adequately, by the tax returns, and (ii) to provide the information on family structure required to convert the tax data to a family-unit basis. The derived income totals for various types of income are checked and adjusted by reference to the corresponding elements of the personal income series in the national accounts.

90. Other examples of this procedure are found in Western Europe. In Belgium and the Federal Republic of Germany, for example, separate distributions based on income-tax returns and wage-tax records have been combined to provide size distributions with relatively broad coverage. In Denmark and the Netherlands, incomplete size distributions based on income-tax data have been supplemented by estimates for the lower end of the distribution derived from sample surveys.

VI. SUMMARY APPRAISAL OF CURRENT WORK

91. Official work on the compilation of statistics of the over-all income distribution is at an early stage of development in most countries. Very few have a regular programme of work in this field in which general-purpose income distribution statistics are developed systematically, either within the framework of the national accounting system or in a form closely articulated with that system. This relatively weak development reflects in large part the practical difficulties of the work, particularly the many problems involved in gathering reliable information on the income of recipient units such as families or households.

92. If the list of private and official studies of income distribution included as an Appendix to this paper is examined, some interesting conclusions emerge about the geographical distribution of contemporary activity in this field. Apart from India and Mexico, the under-developed countries are poorly represented. Of the developed countries with market economies, the United States appears to hold a lead in activity, followed by the United Kingdom and the Federal Republic of Germany. The USSR and Hungary appear to be the most active among countries with centrally-planned economies.

93. These studies span a wide range of purposes. The dominant purpose still seems to be the traditional one of making welfare comparisons, with particular stress now on assessing the influence of government action on the initial income distribution. The investigation of income/expenditure and income/saving relationships appears as a second major objective, reflecting in large part continuing interest in the empirical testing and development of macro-economic models. A third major objective is the analysis of the relationship between income distribution and the structure and organization of production, including the examination of the influence on the income distribution of such factors as market imperfections.

94. The concepts of income and income recipient unit used in contemporary studies follow largely the lines indicated previously. Frequently, however, important compromises are made so that the available data can be used without time-consuming adjustment. Thus, "taxable" income may be directly employed as the basic income concept on the assumption that the use of an "economic" income concept would not significantly alter the conclusions reached. Similarly, the population covered may be restricted to those filing tax returns on the assumption that such returns reflect accurately the upper ranges of the income distribution. Limitations in coverage of this nature are found very generally.^{10/}

95. Official methodology appears to be moving towards the development of comprehensive general-purpose statistics of income distribution based either on special inquiries or on a careful synthesis of available information. Considerable efforts are being made in many countries to broaden the coverage of the population and to ensure both the conceptual adequacy and the statistical accuracy of the income measurement. These efforts are usually associated with a desire to link the general design of the inquiry with the existing national accounting framework.

96. That there is much room for the improvement of official work in this field was demonstrated by a survey undertaken some years ago by the secretariat of the Economic Commission for Europe. This survey, which was restricted to the

^{10/} Household surveys in India have concentrated on estimating the distribution of expenditure rather than of income, including distribution by size-classes and socio-economic groups. See, for example, Ref. 36 (Appendix).

countries of Western Europe, was intended to ascertain whether adequate statistics were available for a comparative study of changes in income distribution in these countries, particularly in income distribution by size. Only five countries were found to provide satisfactory information.

97. The principal deficiencies noted were the inadequate population coverage and frequent lack of comparability over time of the available distributions, in some cases compiled from different sources. Distributions based on income-tax data were rejected in almost all cases because of poor coverage and substantial variations from country to country in the basic income concept. Adjustments to improve comparability in such cases were normally impossible.

98. The results of a survey of this nature might be different today. Due to the development of regular programmes of work in this field, there would certainly be an improvement in the inter-temporal comparability of the information for recent years. Regional action in the field of household surveys may also have contributed to increase comparability of concepts and coverage from country to country.

VIII. PROPOSAL FOR ACTION BY THE STATISTICAL COMMISSION

99. The preceding discussion points to the need for preparing a well-defined programme of work in income distribution statistics to furnish guide-lines for the diverse efforts now being made at the national level. Such a programme acquires a measure of urgency at the present time in view of the work that has been undertaken on the review of the systems of national accounts and balances. The Statistical Commission may, therefore, wish to request the Secretary-General:

(1) To prepare a detailed comparative analysis of national problems and practices in this field as a basis for the development of related international standards;

(2) To develop, in consultation with national statistical offices and interested regional bodies, and within the national accounting framework, international guide-lines for concepts, definitions, classifications and tabulations of income distribution statistics;

(3) To report progress on this work to the Commission at its next session.

APPENDIX

BIBLIOGRAPHY ON INCOME DISTRIBUTION STATISTICS

General Note. This bibliography is intended to cover the principal studies and reports published in the field of income distribution and related statistics in the last fifteen years. References to tabulations of income data prepared by tax authorities and to population censuses containing income data are generally excluded.

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