# INCOME DISTRIBUTION STATISTICS IN LATIN AMERICA AND THEIR RELIABILITY

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This paper is addressed to the question of how far income distribution statistics currently available in Latin America can be relied upon, either to assess the degree of inequality in the national distribution of income or to undertake comparisons between countries or over time. It gives a summary account of research carried out on Latin American data.

The sources available in Latin America for estimating income distributions are discussed. Concentrating the attention on household surveys conducted in various Latin American countries, an inventory of such surveys and their characteristics is offered, along with a detailed exposition of survey methods and income concepts used for estimating household income. Methods used for assessing the representativeness of samples are summarily reviewed. The case for comparing income data from household surveys and population censuses with national accounts estimates is put forward, along with the procedures and assumptions used for carrying out such comparisons. The relative discrepancy between the two sources is taken as indicative of the degree of underestimation of each type of income in each survey. An analysis of such discrepancies across the set of surveys considered gives clues on possible underestimation biases in measuring each type of income and total household income in different types of survey and in population censuses.

Differential effects on comparability of survey results call for appropriate methods of adjusting income distribution estimates to account for the missing incomes. A method for carrying out such an adjustment is applied to income distributions from a selected number of Latin American surveys. The results obtained provide an indication of how much difference it makes to use unadjusted or adjusted data to assess income concentration or to carry out comparisons over time or space.

## I. INTRODUCTION

When faced with a variety of sources providing data on incomes, the national accountant aiming at estimating the distribution of income among households or the economist wishing to analyze the determinants or consequences of such distribution should first ask themselves—as at times, they do—how far can these data sources be relied upon, alone or in combination with other sources, to depict the national size distribution of income. This concern became paramount when we started to measure and analyze the distribution of income in Latin American countries and motivated, as a necessary preliminary step, the systematic consideration of available sources in a way as to provide insights about their reliability for these purposes. In a first "screening" process, attention was focused on

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household surveys and—to a lesser extent—on population censuses, leaving out the consideration of other sources, the analysis of which is intricate enough at the national level, let alone in a region-wide exercise such as the one proposed.

A more or less standard procedure was devised for scrutinizing, from the standpoint of the user, available household surveys providing income data. To be faithful to this particular standpoint involves the adoption of criteria that appear utterly heuristic *vis à vis* the host of technical literature on survey techniques. When faced with the challenge of making use of whatever data is available, it is already impossible to influence survey design and there is only room for *post hoc* assessment of (or, more precisely, getting some insights about) eventual biases. Most of the specialized literature on surveys deals with what to do to obtain the desired income measurements and how to do it. The would-be user is confronted with the problem of how to use the results of whatever has been done—whether income measurement has been one of the main purposes of the survey or not—or even how to select between non-comparable measurements.

These questions call for an inventory and classification of existing household surveys, as well as the development of procedures for systematically scrutinizing their characteristics, the survey methods used for measuring income, possible sources of bias and whatever evidence there exists throwing light on the eventual direction and magnitude of such biases. Rigorous *post hoc* assessment of reliability being so difficult, there is a need for some standard procedure that allows raising warnings and drawing caveats on the relative reliability of income data from different household surveys. The present paper is the story of such a search.

## II. Sources Available in Latin America for Estimating the Distribution of Income

There are five broad groups of sources of information on the distribution of income among recipient units: income-tax records, social security records, economic censuses and surveys of economic establishments, population censuses and household surveys. A comparative analysis of the characteristics of each of these sources in Latin America has been made elsewhere.[1] Here it will be enough to note only the basic limitations of each of them for the estimation of income distribution.

### (a) *Tax Records*

Even in countries with a properly enforced and widespread income tax system, its records are, at best, an unwieldy source for estimating income distribution. Firstly, they typically cover only a subset of income recipients: those above the non-taxable minima. Secondly, the definition of income for taxing purposes is essentially legal, taxable income resulting from a multiplicity of tax exemptions and deductions. Thirdly, although the individual recipient is the reporting unit, tax provisions may allow for joint reporting of some members of the family. These peculiarities make income tax records unsuitable for use as the sole source

[1]CEPAL (1971).

for estimating the aggregate income distribution. But it also becomes very difficult to combine their data with that from other sources, since careful and costly matching procedures (Budd, 1971) are required.

In Latin America, pervasive tax evasion severely restricts the coverage of income and of income recipients in tax records[2] and the reliability of the income data they provide. Evasion hinders even the assessment of the actual number of higher-income recipients, while under-reporting may affect the shape of the distribution of reporting taxpayers in a way which is very difficult to assess without a detailed editing of tax reports.[3] These problems render difficult the use of tax statistics for the estimation of aggregate income distribution. Even in *ad hoc* patchwork estimates, such as those carried out by CONADE (1967) and McLure (1968), their combination with data available from other sources requires very questionable and arbitrary assumptions.

(b) *Social Security Records*

Social security records are an unquestionably useful source of income data in those Latin American countries where social insurance schemes have a wide enough coverage.[4] In the first place, they may provide detailed information on the distribution of the various types of pensions, and even perhaps on the redistributive effects of the other social security schemes, where they exist. But they also are, in the second place, a source of particular potential value for obtaining data on the distribution of non-agricultural wages and salaries. Reports by firms to the social security system on employees' earnings and contributions due normally have the job as the statistical unit but, insofar as the employees' income consists of their remuneration for a single job, social security statistics may turn out to be an independent source of considerable value for estimating the size distribution of wages and salaries. A few of the income distribution estimates carried out in the region have made good use of this type of social security data.[5] Moreover, the possibility of relating the occupational characteristics of the employees to the information about the establishment may prove very useful for the analysis of wages and salaries originating in the production process. However, social security records typically do not provide information about the household.

[2]A fiscal study for Argentina carried out with 1959 tax data (CONADE, 1967) found that self-employed and property income recipients reporting taxable income amounted to 30.7 percent of the total, reported income being only 22 percent of the total estimated for these types of income. At the same time, evasion of taxes on employees' remunerations that should have been deducted at the source was estimated at about 50 percent. In a fiscal study carried out for Colombia (Musgrove, 1969), data from tax records for 1964 used for the estimation of income distribution covered 18.4 percent of the employees and little over 50 percent of their incomes, as well as only 4.5 percent of the estimated recipients of entrepreneurial and property incomes and 14.6 percent of such incomes.

[3]See, for instance, CONADE (1967).

[4]Among the Latin American countries in which the social security system has attained a wider coverage, in Chile 90 percent of employees are covered, in Argentina 70 percent, in Peru 64 percent and in Mexico 44 percent (Mesa-Lago, 1977).

[5]The income distribution estimates for Argentina in 1953, 1959 and 1961 (CONADE-CEPAL, 1965) based the estimates of the distribution of wages and salaries on this source. The estimate by Urrutia and Sandoval (1970) for Colombia in 1964 included a distribution of urban employees from a household survey that the authors validated against the one resulting from social security records.

The usefulness of social security records may be impaired in most Latin American countries by the actual coverage of the system and by evasion which, although not as widespread as tax evasion, tends to leave out of the statistics both low-wage earners and workers in small establishments. Nevertheless, they are somewhat easier to use in patchwork estimates than tax records, since the limits of their coverage can usually be ascertained with somewhat more precision. The main obstacle preventing the use of social security data for income distribution estimation and analysis is still the all too frequent lack of systematization of the records for easy and flexible retrieval of the data.

(c) *Establishment Statistics*

Income distribution statistics could be obtained also from economic censuses and surveys of establishments, both in agriculture and in various industries. Appropriately processed, data on establishments by size of profits could provide a reasonable approximation to the distribution of entrepreneurial incomes in the particular industry, which are not otherwise easily measurable. Because of their direct link with estimates of incomes originating in the respective production sectors, these data fit well into national accounts aggregates and are not so difficult to combine with other data from other sources.[6] Nevertheless, agriculture and industrial activities are usually the only sectors surveyed, and such establishment statistics frequently have less than total coverage of the production units in the sector, leaving out significant proportions of small units and own account workers. Finally, these enquiries give almost no information about the characteristics of the entrepreneurs, and none about their households.

(d) *Population Censuses*

Several population censuses carried out in Latin America during the seventies included questions on income.[7] As has been analysed in detail elsewhere (CEPAL, 1981), three of them (those of Costa Rica, Panama and Peru) restricted the investigation to the amount of wages and salaries received by employees and another (Venezuela) inquired about all types of monetary income but only among the economically active population. The other three censuses attempted to measure total personal incomes received in cash from all sources by each recipient member of the household, before deductions.

Generally, only one question was asked on the amount of total income. Although in most censuses instructions to interviewers regarding that question have been spelt out in some detail, indications were not in all cases given as to whether income in kind should be included or not.[8] Finally, census instructions did not explicitly prevent the reporting of the incomes of all recipients in practice

[6]In the CONADE-CEPAL (1965) estimates for Argentina, ample use was made of census data on establishments to obtain the distribution of entrepreneurial incomes. Berry and Padilla (1970) have imaginatively used census data to estimate the distribution of agricultural incomes in Colombia.

[7]Those taken in Brazil (in 1970), Colombia (in 1973), Costa Rica (in 1973), Mexico (in 1970), Panama (in 1970), Peru (in 1972) and Venezuela (in 1971).

[8]Only those of Brazil, Colombia and Venezuela included detailed instructions indicating how to deal with each type of income.

by only one respondent in the household, with the consequent underreporting biases.

These practices give rise to the suspicion that income measurements in population censuses may have been seriously affected by several kinds of response biases. Beyond the current underreporting of clearly defined incomes common to censuses and surveys, they are likely to elicit very diverse responses, with a tendency to omit incomes in kind and incomes that are supplementary to the main income source, as well as to report take-home incomes even when the question refers to gross income.

(e) *Household Surveys*

Household surveys should be the ideal source for estimating the size distribution of income and for analysing its characteristics from a welfare standpoint. The income concept may be made as appropriate—both for estimation purposes or for different analyses—as the type of survey permits. In addition, the possibility household surveys offer of investigating many characteristics of the households and of its members makes possible the creation of data bases that are suitable for multivariate analyses.

In the past, the many shortcomings of the relatively infrequent household surveys carried out in Latin America have inpeded their use for income distribution estimates, although some analyses have nevertheless taken place. With the progressive building up of survey capabilities in Latin American countries, household surveys have come to be regarded as rich reservoirs of data for the analysis of income distribution and also as a basic source for income distribution estimates. Moreover, household surveys may be better tailored for the measurement and analysis of welfare, and the data they provide can be more precisely controlled than those obtained from other sources.

However, many surveys are not of national coverage. Consequently, in order to get a fair picture of inequalities in the society as a whole, they must be complemented with data from other sources or with bold assumptions about the levels and distribution of income in the areas not covered by the surveys. Subnational coverage and scantiness of relatively sophisticated surveys both reflect limitations in survey-taking capabilities in the countries concerned which, in turn, might also affect the quality of the data gathered.

## III. Income Data from Household Surveys in Latin America

(a) *Household Surveys Measuring Income*

Table 1 summarizes the main household surveys of various types conducted in Latin American countries during the sixties and the seventies that investigated income according to different definitions and methods. They add up to forty eight *ad hoc* surveys and sixteen more or less recurrent survey programmes in nineteen countries. However, this impressive inventory overshadows the fact that many of the countries considered do not actually have permanent survey-taking capabilities and that only a few have attained such capabilities at the national level.

TABLE

HOUSEHOLD SURVEYS INVESTIGATING INCOME,

| Country | No. | Survey Denomination | Executing Agency |
|---|---|---|---|
| Argentina | 1 | Family budget survey | OADE/CONADE |
| | 2 | Food consumption survey | CONADE |
| | 3 | Family budget survey | INDEC/ECIEL |
| | 4 | Survey of expenditure on goods and services | INDEC |
| | 5 | Employment and unemployment survey, | INDEC |
| | | 5.1. Income supplement | |
| | 6 | Permanent household survey | INDEC |
| Bolivia | 1 | Permanent household survey | INE |
| Brazil | 1 | Family budget survey | IBRE |
| | | 1.1. Main cities | |
| | | 1.2. Main cities | |
| | | 1.3. Rural areas | |
| | 2 | Family budget survey | IBRE/ECIEL |
| | 3 | National study of family expenditures (ENDEF) | IBGE |
| | 4 | National household sample survey (PNAD) | IBGE |
| | 5 | National household sample survey (New PNAD) | IBGE |
| | | 5.1. Income survey | |
| Colombia | 1 | Family budget survey | CEDE/ECIEL |
| | 2 | Study on the distribution of basic services | CCD/World Bank |
| | 3 | National household survey | DANE |
| | | 3.1. Stage 2 | |
| | | 3.2. Stage 4 | |
| | | 3.3. Stage 6 | |
| Costa Rica | 1 | Household sample survey | DGEC |
| | 2 | Income and food consumption survey | IECES |
| | 3 | Family income and expenditure survey | DGEC |
| | 4 | National household survey | DGEC |
| | | 4.1. Income supplement | |
| Chile | 1 | National family budget survey | INE/ECIEL |
| | 2 | National household sample | INE |
| | | 2.1. Family income survey | |
| | | 2.2. Family income survey | |
| | 3 | Third family budget survey | INE |
| | 4 | National employment survey-Regionalized sample | INE |
| Cuba | 1 | Family budget survey | CEE |

| Year | Type of Survey[a] | Periodicity | Geographical Coverage | Sample Size (Households) |
|---|---|---|---|---|
| 1963 | YE | *Ad hoc* | Urban | 6,484 |
| 1965 | F | *Ad hoc* | Greater Buenos Aires | 2,022 |
| 1969/1970 | YE | *Ad hoc* | Greater Buenos Aires | 1,749 |
| 1970/1971 | YE | *Ad hoc* | Greater Buenos Aires | 7,200 |
| 1963/1973 | L | 3 a year | Greater Buenos Aires and 6 cities | 2,822[b] |
| 1970 | Y | *Ad hoc* | Greater Buenos Aires | 2,822 |
| Since 1972 | L | 3 a year | Greater Buenos Aires and 19 cities | 4,762[b] |
| Since 1977 | L | Yearly | La Paz, Cochabamba, Santa Cruz, Montero | *ca.* 1,200 |
| 1961/1962 | YE | *Ad hoc* | 8 main cities | 4,625 |
| 1962/1963 | YE | *Ad hoc* | 6 main cities | 2,700 |
| 1963/1964 | YE | *Ad hoc* | Rural (4 states) | 922 |
| | | | Rural (1 state) | 196 |
| 1967/1968 | YE | *Ad hoc* | Rio de Janeiro, Recife, Porto Alegre | 2,430 |
| 1974/1975 | F, YE | *Ad hoc* | National | 55,000 |
| Since 1967 | L to 1970 | Quarterly | National | *ca.* 24,000 |
| Since 1971/1973 | L | Yearly | National | *ca.* 80,000 |
| Since 1976 | L | Yearly | National | *ca.* 80,000 |
| 1972 | Y | *Ad hoc* | National | *ca.* 80,000 |
| 1967/1968 | YE | *Ad hoc* | 4 main cities | 2,949 |
| 1974 | S, Y | *Ad hoc* | National | 5,000 |
| 1970 to 1972 | L | 3 a year | National | 12,000; 6,371 |
| 1974 | L | Once a year | Urban | 18,915 |
| Since 1975 | L | Half-yearly | 7 main cities | 9,135; 7,000 |
| | L | Half-yearly | 4 main cities | *ca.* 6,000 |
| 1970 | YE | *Ad hoc* | 7 main cities | 3,560 |
| 1971 | YE | *Ad hoc* | National | 5,404 |
| 1972 | YE | *Ad hoc* | National | 2,474 |
| 1966/1967 | L | Yearly | National | 10,109 |
| 1967 to 1971 | L | Half-yearly | Urban | *ca.* 3,200 |
| 1971 | F, Y | *Ad hoc* | National | 2,965 |
| 1974 | YE | *Ad hoc* | Urban | *ca.* 3,000 |
| Since 1974 | L | 3 a year | National | *ca.* 6,000 |
| 1977 | Y | *Ad hoc* | National | *ca.* 6,000 |
| 1968/1969 | YE | *Ad hoc* | Greater Santiago | 3,378 |
| 1966 to 1972 | L | 3-4 a year | National | *ca.* 10,000 |
| 1968 | Y | *Ad hoc* | National | 10,450 |
| 1971 | Y | *Ad hoc* | National | 10,400 |
| 1977/1978 | YE | *Ad hoc* | Greater Santiago | 4,800 |
| Since 1975 | L | Yearly | National | 21,280 |
| Since 1977 | YE | Yearly | Urban | *ca.* 1,800 |

TABLE 1

| Country | No. | Survey Denomination | Executing Agency |
|---|---|---|---|
| Ecuador | 1 | Family budget survey | DEC/ECIEL |
| | 2 | Household survey | DEC |
| | 3 | Population and employment survey | INE |
| | 4 | Family budget survey | INE/BCE |
| Guatemala | 1 | Income and expenditure survey | USC/IIE |
| | 2 | National household survey on some characteristics of human resources | DGE |
| El Salvador | 1 | Demographic and labour force survey | DGEC |
| | 2 | National survey on labour force and demographic aspects | DGEC |
| | 3 | National family budget survey | DGEC |
| Honduras | 1 | Family income and expenditure survey | DGEC |
| Mexico | 1 | Family income and expenditure survey | Banco Mexico/CEIR |
| | 2 | Family income and expenditure study | Banco Mexico |
| | 3 | Income and expenditure survey | CENIET |
| | 4 | National income and expenditure survey | SPP |
| | 5 | Continuous employment survey | DGE |
| Nicaragua | 1 | Employment situation survey | OEEC |
| Panama | 1 | Special household survey on income | DEC |
| | 2 | Study on the living conditions of households | DEC |
| | 3 | Manpower survey | DEC |
| Paraguay | 1 | Manpower household sample survey | DGEC |
| Peru | 1 | Family budget survey | CISEPA/ECIEL |
| | 2 | National food consumption survey (ENCA) | CEM |
| | 3 | Household survey-manpower study | OTEMO |
| | 4 | Household survey-manpower study | OTEMO |
| | 5 | National multipurpose household survey (ENAPROM) | INE |
| Dominican Republic | 1 | Family budget study | ONE/BC |
| | 2 | First national family budget survey | ONE/BC |
| Uruguay | 1 | Family income and expenditure survey | University/ECIEL |
| | 2 | Employment and unemployment household survey | DGEC |
| Venezuela | 1 | Family income and expenditure surveys | |
| | | 1.1. Caracas | BCV/ECIEL |
| | | 1.2. Maracaibo | |
| | 2 | Housing market study (MERCAVI) | VANAP |
| | 3 | Household sample survey | DGECN |
| | 4 | Household sample survey | DGECN |
| | 5 | Family income and expenditure survey | BCV |

[a]D: Demographic survey. F: Food and nutrition survey. H: Housing survey. L: Labour survey.
[b]In Greater Buenos Aires only.

(*cont.*)

| Year | Type of Survey[a] | Periodicity | Geographical Coverage | Sample Size (Households) |
|---|---|---|---|---|
| 1967/1968 | YE | *Ad hoc* | Quito and Guayaquil | 1,969 |
| 1968 | L | Yearly | Urban | 3,000 |
| Since 1975 | L | Recurrent | Quito and Guayaquil | 6,000 |
| 1975/1976 | YE | *Ad hoc* | Urban | *ca.* 7,000 |
| 1969 | YE | *Ad hoc* | Urban | 2,800 |
| 1977 | L | *Ad hoc* | Guatemala Department | 1,799 |
| 1974 | D, L | *Ad hoc* | San Salvador | 1,191 |
| 1975 | D, L | *Ad hoc* | National | 6,450 |
| 1976/1977 | YE | *Ad hoc* | National | *ca.* 3,400 |
| 1967/1968 | YE | *Ad hoc* | National | 1,760 |
| 1963 | YE | *Ad hoc* | National | 4,650 |
| 1968 | YE | *Ad hoc* | National | 5,939 |
| 1975 | YE | *Ad hoc* | National | — |
| 1977 | YE | *Ad hoc* | National | 11,561 |
| Since 1973 | L | Quarterly | Urban | *ca.* 35,300 |
| 1973 to 1976 | L | Yearly | Managua and 7 cities | 6,200 |
| 1970 | Y | *Ad hoc* | National | 4,500 |
| 1972 | YE | *Ad hoc* | Panama City and Colon | 1,400 |
| 1963/1973 | L | Yearly | National | *ca.* 11,000 |
| 1974/1977 | L | 2 a year | National | *ca.* 10,000 |
| Since 1977 | L | Yearly | Panama City and Colon | *ca.* 4,000 |
| | L | Yearly | National | *ca.* 11,000 |
| Since 1976 | L | Yearly | Urban | *ca.* 3,000 |
| 1968/1969 | YE | *Ad hoc* | Lima | 1,357 |
| 1971/1972 | P, YE | *Ad hoc* | National | 7,700 |
| 1970/1971 | L | *Ad hoc* | National | *ca.* 5,000 |
| 1974 | L | *Ad hoc* | Urban | 5,000 |
| 1977/1978 | YE | *Ad hoc* | 13 main cities | *ca.* 7,600 |
| 1969 | YE | *Ad hoc* | Santo Domingo | 552 |
| 1976/1977 | YE | *Ad hoc* | National | 4,552 |
| 1967 | YE | *Ad hoc* | Montevideo | 1,135 |
| Since 1968 | L | Half-yearly | Montevideo | *ca.* 5,000 |
| 1966 | YE | *Ad hoc* | Caracas | 948 |
| 1967/1968 | YE | *Ad hoc* | Maracaibo | 1,173 |
| 1970 | H | *Ad hoc* | Urban | — |
| Since 1967 | L | Half-yearly | National | *ca.* 10,000 |
| 1968/1971 | L | Half-yearly | Caracas | *ca.* 5,600 |
| 1974/1975 | YE | *Ad hoc* | Caracas | *ca.* 2,400 |

S: Survey on basic services. Y: Income survey. YE: Income and expenditure survey.

TABLE

SURVEY METHODS USED FOR INVESTIGATING

| Country | No. | Survey Denomination | Year | Geographical Coverage[a] | Survey Period[b] |
|---|---|---|---|---|---|
| I. *Income and Expenditure Surveys* | | | | | |
| Argentina | 1 | Family budget survey | 1963 | U | 1½M |
| | 3 | Family budget survey | 1969/1970 | MA | 12M |
| | 4 | Survey of expenditure on goods and services | 1970/1971 | MA | 12M |
| Brazil | 1 | Family budget survey | | | |
| | | 1.1. Main cities | 1961/1962 | 8MC | 12M |
| | | 1.2. Main cities | 1962/1963 | 6MC | 12M |
| | | 1.3. Rural areas | 1963/1964 | R[d] | 4M |
| | 2 | Family budget survey | 1967/1968 | 3MC | 12M |
| | 3 | National study of family expenditures (ENDEF) | 1974/1975 | N | 12M |
| Colombia | 1 | Family budget survey | 1967/1968 | 4MC | 12M |
| | 3 | National household survey | | | |
| | | 3.1. Stage 2 | 1970 | 7MC | 1M |
| | | 3.2. Stage 4 | 1971 | N | 3M |
| | | 3.3. Stage 6 | 1972 | N | 2M |
| Costa Rica | 3 | Family income and expenditure | 1974 | U | 12M |
| Cuba | 1 | Family budget survey | Since 1977 | U | 12M |
| Chile | 1 | National family budget survey | 1968/1969 | MA | 12½M |
| | 3 | Third family budget survey | 1977/1978 | MA | 12M |
| Ecuador | 1 | Family budget survey | | | |
| | | 1.1. Quito | 1967/1968 | MA | 17M |
| | | 1.2. Guayaquil | 1967/1968 | 1MC | 17M |
| Guatemala | 1 | Income and expenditure survey | 1969 | U | 12M |
| El Salvador | 3 | National family budget survey | 1976/1977 | N | 12M |
| Honduras | 1 | Family budget income and expenditure survey | 1967/1968 | N | 12M |
| | 2 | Income, expenditure and food consumption survey | 1977/1978 | N | n.a. |
| Mexico | 1 | Family income and expenditure survey | 1963 | N | 7M |
| | 2 | Family income and expenditure survey | 1968 | N | 1W |
| | 3 | Income and expenditure survey | 1975 | N | 1W |
| | 4 | National income and expenditure survey | 1977 | N | 9W |

| Observation Intervals | Observation Period in Each Interval[c] | Recall Periods for Incomes[c] | | | | Recipients Investigated |
|---|---|---|---|---|---|---|
| | | Wages and Salaries | Entrepreneurial Incomes | Transfers | Property and Other Incomes | |
| 1 | M | M | M | M | M | All |
| 4 | M | Q | Q | Q | Q | All |
| 4 | M | M | M | M | M | All |
| 52 | W | D or M | Y | M | Y | All |
| 52 | W | D or M | Y | M | Y | All |
| 17 | W | D or M | Y | M | Y | All |
| 52 | W | M or Q | M or Q | M or Q | M or Q | All |
| 52 | W | M or Y | M or Y | M or Y | M or Y | All |
| 4 | M | M or Y | M or Y | M or Y | M or Y | All |
| 4 | W | 4M | 4M | 4M | 4M | All |
| 8 | W | Y | Y | Y | Y | All |
| 8 | W | Y | Y | Y | Y | All |
| 52 | W | M | M | M | M | All |
| 52 | W | M | M and Y | M | M | All |
| 4 | M | Q | Q | Q | Q | All |
| 52 | W | M | M | M | M | All |
| 4 | M | Y | Y | Y | Y | All |
| 4 | M | Q | Q | Q | Q | All |
| 52 | W | *Ad hoc* | *Ad hoc* | *Ad hoc* | *Ad hoc* | All |
| 4 | W | *Ad hoc* | *Ad hoc* | M | Y | All |
| 52 | W | *Ad hoc* | *Ad hoc* | *Ad hoc* | *Ad hoc* | All |
| n.a. | n.a. | Y | Y | Y | Y | All |
| 32 | W | Y | Y | Y | Y | All |
| 1 | W | M and Y | M and Y | M and Y | M and Y | All |
| 1 | W | 12M | M and Y | M and Y | M and Y | All |
| 9 | W | 6M | 6M | 6M | 6M | All |

TABLE 2

| Country | No. | Survey Denomination | Year | Geographical Coverage[a] | Survey Period[b] |
|---|---|---|---|---|---|
| Panama | 2 | Study of the living conditions of households | 1972 | 2MC | 4M |
| Peru | 1 | Family budget survey | 1968/1969 | MA | 12M |
| | 2 | National food consumption survey (ENCA) | 1971/1972 | N | 12M |
| Dominican Republic | 1 | Family budget study | 1969 | MA | 12M |
| | 2 | First national family budget survey | 1976/1977 | N | 12M |
| Uruguay | 1 | Family income and expenditure survey | 1967 | MA | 4W |
| Venezuela | 1 | Family income and expenditure survey | | | |
| | | 1.1. Caracas | 1966 | MA | 1M |
| | | 1.2. Maracaibo | 1967/1968 | 1MC | 10M |
| | 5 | Family income and expenditure survey | 1974/1975 | MA | 12M |
| II. *Income Surveys* | | | | | |
| Argentina | 5 | Employment and unemployment survey—income supplement | 1970 | MA | 1M |
| Brazil | | 5.1. Income survey | 1972 | N | 3M |
| | | | 1972 | N | 3M |
| Colombia | 2 | Study on the distribution of basic services | 1974 | N | 1M |
| Costa Rica | | 4.1. Income Supplement | 1977 | N | $2\frac{1}{2}$W |
| Chile | 2 | National household sample | | | |
| | | 2.1. Family income survey | 1968 | N | 3M |
| | | 2.2. Family income survey | 1971 | N | 6M |
| Panama | 1 | Special household survey on income | 1970 | N | M |
| III. *Labour Surveys* | | | | | |
| Argentina | 6 | Permanent household survey | Since 1972 | AM, 19MC | 1M (3 yearly) |
| Bolivia | 1 | Permanent household survey | Since 1977 | AM, 3MC | 6M (once yearly) |

(*cont.*)

| Observation Intervals | Observation Period in Each Interval[c] | Recall Periods for Incomes[c] | | | | Recipients Investigated |
|---|---|---|---|---|---|---|
| | | Wages and Salaries | Entrepreneurial Incomes | Transfers | Property and Other Incomes | |
| 4 | M | M | M | M | M | All |
| 4 | W | *Ad hoc* | M | M | M | All |
| 52 | W | M and Y | M and Y | M and Y | M and Y | All |
| 52 | W | M | M | M | M | All |
| 48 | W | M and Y | M and Y | M and Y | M and Y | All |
| 4 | W | M or Q | M or Q | M or Q | M or Q | All |
| 1 | M | *Ad hoc* | *Ad hoc* | *Ad hoc* | *Ad hoc* | All |
| 4 | W | M or Q | M or Q | M or Q | M or Q | All |
| 48 | W | M and Y | M and Y | M and Y | M and Y | All |
| 4 | W | M | M | M | M | All |
| 13 | W | M[e] | M[e] | M[e] | M[e] | All |
| 13 | W | M[e] | M[e] | M[e] | M[e] | All |
| n.a. | n.a. | M | M | M | M | All |
| 1 | $2\frac{1}{2}$W | *Ad hoc* | Y | *Ad hoc* | *Ad hoc* | All |
| 13 | W | 2M | 2M | 2M | 2M | All |
| 26 | W | 2M | 2M | 2M | 2M | All |
| 1 | M | W and M | W and M[e] | M | Y | All |
| 4 | W | M | M | M | M | All |
| 26 | W | M | — | — | — | Employed |

TABLE 2

| Country | No. | Survey Denomination | Year | Geographical Coverage[a] | Survey Period[b] |
|---|---|---|---|---|---|
| Brazil | 4 | National household sample survey (PNAD) | Since 1967 to 1970 | N | 3M (4 yearly) |
| | 5 | National household sample survey (New PNAD) | 1971/1973 | N | 1M (once yearly) |
| | | | Since 1976 | N | 1M (once yearly) |
| Colombia | 3 | National household survey | 1970 to 1972 | N | 2M (3 yearly) |
| | | | 1974 | U | 2M |
| | | | Since 1975 | 7MC | 1M (2 yearly) |
| | | | | 4MC | 1M (2 yearly) |
| Costa Rica | 1 | Household sample survey | 1966/1967 | N | 12M |
| | | | 1967 to 1971 | U | 12M (once yearly) |
| | 4 | National household survey | Since 1976 | N | $2\frac{1}{2}$W (3 yearly) |
| Chile | 4 | National employment survey regionalized sample | Since 1975 | N | 3M (once yearly) |
| Ecuador | 2 | Household survey | 1968 | U | 2M |
| | 3 | Population and employment survey | Since 1975 | 2MC | 5M |
| Guatemala | 2 | National household survey on some characteristics of human resources | 1977 | MA | 3W |
| El Salvador | 1 | Demographic and labour force survey | 1974 | MA | 2W |
| | | National survey on labour force and demographic aspects | 1975 | N | 3M |
| Mexico | 5 | Continuous employment survey | Since 1973 | U | 3M (4 yearly) |
| Nicaragua | 1 | Employment situation survey | 1973 to 1976 | MA, 7MC | 1M (once yearly) |
| Panama | 3 | Manpower survey | 1963 to 1973 | N | 12M |
| | | | Since 1974 | N | 1M |

(*cont.*)

| Observation Intervals | Observation Period in Each Interval[c] | Recall Periods for Incomes[c] | | | | Recipients Investigated |
|---|---|---|---|---|---|---|
| | | Wages and Salaries | Entrepreneurial Incomes | Transfers | Property and Other Incomes | |
| 13 | W | W | M | — | — | Employed[f] |
| 4 | W | W | M | — | — | All |
| 4 | W | W | M | M | M | All |
| 8 | W | *Ad hoc* | M | M | M | Active |
| 8 | W | *Ad hoc* | M | M | M | Active |
| 4 | W | *Ad hoc* | M | M | M | Active |
| 4 | W | *Ad hoc* | M | M | M | Active |
| 52 | W | W | M | — | — | Active[f] |
| 52 | W | W | M | — | — | Active |
| 1 | $2\frac{1}{2}$W | *Ad hoc* | — | — | — | Employees |
| 13 | W | M | M | — | — | Active |
| 8 | W | M | Y | — | — | Active |
| 22 | W | M | M | M | M | All |
| 3 | W | M | M | — | — | Employed |
| 2 | W | *Ad hoc* | *Ad hoc* | *Ad hoc* | *Ad hoc* | All |
| 13 | W | M | M | M | M | All |
| 13 | W | W | M | — | — | Active |
| 4 | W | *Ad hoc* | — | — | — | Employees |
| 52 | W | *Ad hoc* | — | — | — | Employees |
| 4 | W | *Ad hoc* | — | — | — | Employees |

| Country | No. | Survey Denomination | Year | Geographical Coverage[a] | Survey Period[b] |
|---|---|---|---|---|---|
| Paraguay | 1 | Manpower household sample | Since 1976 | U | 12M |
| Peru | 3 | Household survey—manpower study | 1970/1971 | N | 8M |
| | 4 | Household survey—manpower study | 1974 | U | 3M |
| Uruguay | 2 | Employment and unemployment household survey | Since 1968 | MA | 6M (twice yearly) |
| Venezuela | 3 | Household sample survey survey | 1967 to 1974 | N | 4M (3 yearly) |
| | | | Since 1975 | N | 6M (twice yearly) |
| | 4 | Household sample survey | 1968 to 1972 | MA | 6M |
| IV. *Other Types of Surveys* | | | | | |
| Costa Rica | 2 | Income and food consumption | 1971 | N | 3M |
| Venezuela | 2 | Housing market study (MERCAVI) | 1970 | U | 8M |

[a]N: national; U: urban; R: rural; MA: metropolitan area of the capital city; (n) MC: (number of) main cities.
[b](n) W: (number of) weeks; (n) M; (number of) months; n.a.: not available.
[c]D: day; W: week; M: month; Q: quarter; Y: year. *Ad hoc*: various (optional) recall periods were used.

Income and expenditure surveys have long been regarded as the main source for measuring household income and its distribution, since they provide the technical means (i) to investigate income received from all sources, in cash or in kind, by each member of the household, (ii) to impute or check income in kind through the corresponding consumption, (iii) to impute the rent of owner-occupied dwellings and (iv) to differentiate between current income and other financial flows. However, this type of survey is costly and highly demanding in terms of technical resources, which is why they have been conducted only occasionally in Latin American countries, or, at best, at intervals that vary between five and ten years. Furthermore, in most of these surveys coverage has been limited to the main metropolitan areas, as can be more easily seen in Table 2. Also, given the budgetary constraints and the complexities of investigating consumption expenditures in detail—which has been traditionally the main focus of

(*cont.*)

| Observation Intervals | Observation Period in Each Interval[c] | Recall Periods for Incomes[c] | | | | Recipients Investigated |
|---|---|---|---|---|---|---|
| | | Wages and Salaries | Entrepreneurial Incomes | Transfers | Property and Other Incomes | |
| 52 | W | *Ad hoc* | M | — | — | Employed not in agriculture |
| 34 | W | W and M | W and M | M and Y | M and Y | Active |
| 13 | W | W and M | W and M | M and Y | M and Y | All |
| 26 | W | *Ad hoc* | M | — | — | Employed |
| 17 | W | W or M | W or M | — | — | Active |
| 26 | W | W or M | W or M | — | — | Active |
| 26 | W | W or M | W or M | — | — | Active not in agriculture |
| 13 | W | M | M | M | M | All |
| 34 | W | *Ad hoc* | Y | M | M | All |

[d]5 states.
[e]Except agricultural producers for which the year was used.
[f]Self-employed not in agriculture and employees in all sectors.

these surveys—a minor proportion of survey resources is usually allocated to the investigation of income.

Perhaps those are the reasons for the relatively recent appearance in Latin America of specialized income surveys (Panama, 1970; Brazil, 1972) or of supplementary modules on income in some rounds of the recurrent labour surveys (Chile, 1968 and 1971; Argentina, 1970). Income surveys, if conducted systematically, may well constitute a solution for monitoring trends in the distribution of income between infrequent income and expenditure surveys, which can provide a wider data base on levels of living.

Nevertheless, income surveys are still complex and demanding, which may account for the fact that they are not carried out periodically in the few countries that have tried them.

Many Latin American countries have established permanent programmes of multipurpose household surveys, which are essentially labour surveys. These surveys usually investigate earnings among the active or the employed population;

as can be seen from Table 2, only a few of these recurrent labour surveys collect data on other types of income received by each person, thus making it possible to obtain an approximate measure of household incomes, nominally excluding income received by passive members of the household.

National coverage of survey results is crucial for obtaining an overall picture of the distribution of income. However, many Latin American countries have not yet attained national survey-taking capabilities, covering both urban and rural areas. Seven countries in the region carry out their recurrent labour surveys on a national (urban and rural) basis and, as is also apparent from Table 1, income and expenditure surveys of national coverage are even rarer. Possibly only Argentina, Brazil, Colombia, Mexico and Venezuela can be said to have developed capabilities for undertaking them. A few other countries have occasionally endeavoured to carry out one income and expenditure survey on a national scale, but can hardly be said to have permanent capabilities for doing so at will.

(b) *Survey Methods Used for Investigating Incomes*

As can be seen from Table 2, three broadly different survey methods have been applied in income and expenditure surveys. Some of them (mostly the ones carried out as part of the ECIEL Programme in the late sixties) covered a whole year partitioned in four observation intervals in which the corresponding sub-samples were observed during one month, but using quarterly recall periods for measuring income. Other surveys also covered a whole year, spreading the sample over the twelve months (or the fifty-two weeks) and using the month as a recall period. Both methods make possible the construction of annual records for measuring yearly income, allowing for the variation of income—including adjustments due to inflation—within the reference period. A third typical survey method has been the one-shot survey of the whole population, during one or two months, asking for income received either in the past month, in the last quarter or in the preceding year; in these latter instances, the measurements are expected to be biased by telescoping effects.

The few income surveys carried out in Latin America have been one-shot surveys characteristically using the last month as a recall period. Therefore, the corresponding measurements refer to the distribution of income in the particular month or quarter during which the survey was completed, subject to cyclical or seasonal variations.

Recurrent labour surveys characteristically inquire about weekly or monthly income during the previous period among sample units spread over a month of observation. When surveys of this type are carried out several times a year, it is possible to average out these measurements for certain months of the year, but such a procedure falls short of providing a measurement of yearly income.

As can also be seen from Table 2, income and expenditure surveys investigate income of all income recipients in the household, coming from all sources; only a few limited their inquiries to incomes in cash. Income surveys also cover all types of income—in cash or in kind—received from all recipients in the household.

On the other hand, most labour surveys ask only about earnings among the economically active or the employed, leaving out members of the household not

in the labour force, even though they might be receiving other types of income, or earning—as a secondary source—primary incomes;[9] only a few investigate all types of incomes among all income recipients, or even among the labour force.

(c) *The Concepts of Income in Different Types of Survey*

Surveys vary considerably in the amount of detail and the number of income questions. These differences are summarized in Table 3, by type of income. Most income and expenditure surveys have used between thirty and fifty income items, covering all types of income. A few of these surveys, of national coverage, investigated rural income by means of special models endeavouring to approximate total income and outlays of the farms and the value of earnings in kind: the ENDEF survey in Brazil and those carried out in Honduras and Mexico. At the other end of the spectrum, some urban income and expenditure surveys devoted little more than a dozen items to the investigation of all types of income.

A general feature, common to most income and expenditure surveys, is the explicit assessment of imputed property income consisting of rents of owner-occupied dwellings. Similarly, most income and expenditure surveys take advantage of the possibility of inquiring about deductions to gross income as explicit items, either supplementing the income questions or including them among the outlays of the household; only a few surveys inquire about each type of income net of deductions. Incomes in kind are ordinarily investigated in detail by type of income; nonetheless, several family budget surveys have restricted their inquiries to monetary income. Another common feature of these surveys is that the receipts of domestic servants are excluded; their earnings in cash are implicitly treated as part of intra-household distribution.

Income surveys typically use a lower degree of detail than income and expenditure surveys in their income questions: between six and eighteen items for all types of income. This actually involves in the main lesser detail in the investigation of income in kind and of property and other income. In some instances income is recorded net of deductions and in other instances inquiries refer to gross income, but these surveys do not specifically inquire about deductions.

Labour surveys that include income questions devote only a few items to recording them, usually limiting the inquiries to wages and salaries and entrepreneurial incomes and typically referring to incomes net of deductions.

Notwithstanding this considerable variety of approaches to the measurement of incomes, none of them—not even income and expenditure surveys—approximate aggregate income concepts recommended by the UN (1977) guidelines.[10] This is not surprising, since those guidelines were developed as a complementary system tied to the national accounts that rather ambitiously assumed the feasibility of combining data from different sources and of designing the collection of data according to the requirements of the system.

[9]Those labour surveys that were designed according to the Atlantida model do not even investigate agricultural income. See: U.S. Bureau of the Census (1967).

[10]The only exception being the Special Household Survey on Income carried out in Panama for 1970.

TABLE

INCOMES INVESTIGATED

| Country | No. | Survey Denomination | Year | Coverage[a] | Total No. of Items |
|---|---|---|---|---|---|
| I. *Income and Expenditure Surveys* | | | | | |
| Argentina | 1 | Family budget survey | 1963 | U | 4 |
| | 3 | Family budget survey | 1969/1970 | MA | 35 |
| Brazil | 1 | Family budget surveys | 1961/1964 | 13MC&5S | 26 |
| | 2 | Family budget survey | 1967/1968 | 3MC | 50 |
| | 3 | National study of family expenditure (ENDEF) | 1974/1975 | N | |
| | | —Agricultural incomes | | | 27[h] |
| | | —Non-agricultural incomes | | | |
| Colombia | 1 | Family budget survey | 1967/1968 | 4MC | 34 |
| | 3 | National household survey | | | |
| | | 3.1. Stage 2 | 1970 | 7MC | 43 |
| | | 3.2. Stage 4 | 1971 | N | 47 |
| | | 3.3. Stage 6 | 1972 | N | 47 |
| Costa Rica | 3 | Family income and expenditure | 1974 | U | 22 |
| Cuba | 1 | Family budget survey | Since 1977 | U | |
| | | —Agricultural incomes | | | 30 |
| | | —Non-agricultural incomes | | | |
| Chile | 1 | National family budget survey | 1968/1969 | MA | 10 |
| | 3 | Third family budget surveys | 1977/1978 | MA | 33 |
| Ecuador | 4 | Family budget survey | 1975/1976 | U | 34 |
| Guatemala | 1 | Income and expenditure | 1969 | U | 14 |
| El Salvador | 3 | National family budget survey | 1976/1977 | N | 13 |
| Honduras | 1 | Family income and expenditure survey | 1967/1968 | N | |
| | | —Agricultural incomes | | | |
| | | —Non-agricultural incomes | | | 21[i] |
| | 2 | Income expenditure and food consumption survey | 1977/1978 | N | |
| | | —Agricultural incomes | | | 43[i] |
| | | —Non-agricultural in-incomes | | | |

3

IN EACH SURVEY

| Types of Income Investigated (Number of Items) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Wages and Salaries | | Entrepreneurial | | | Property Incomes | | | | |
| In Cash | In Kind | In Cash | In Kind | Transfers | In Cash | Imputed[b] | Others | Incomes in Kind[b] | Deductions[c] |
| 1 | — | 1 | 1 | [d] | [d] | — | [d] | — | N |
| 4 | | 3 | 2 | 7 | 6 | | 5 | | E(5) |
| 5 | 5[e] | 1 | — | 3 | 9 | — | 1 | — | 2[f] |
| 7 | [g] | 2 | 2 | 1 | 8 | — | 8 | 21 | E(8) |
| 1 | 10 | [n] | — | — | — | — | — | E | G |
| 9 | [g] | 4 | [g] | — | — | — | — | — | — |
| 4 | [g] | 3 | [g] | 1 | 4 | [g] | 6 | 7 | 9 |
| 9 | 4 | 6 | 2 | 4 | 6 | 2 | 7 | — | 3 |
| 9 | 4 | 5 | 2 | 4 | 8 | 2 | 5 | — | 8 |
| 9 | 4 | 5 | 2 | 4 | 8 | 2 | 5 | — | 8 |
| 4 | — | 4 | — | 1 | 3 | — | 4 | — | 6 |
| — | [g] | 7[j] | — | — | — | — | — | — | — |
| 4 | [g] | 2 | — | 4 | 1 | — | 12 | E | — |
| 1 | [g] | 1 | [g] | 1 | 1 | 1 | 1 | 1 | 3 |
| 6 | 1 | 3 | 2 | 4 | 6 | E | 7 | — | 4 |
| 10 | 4 | 4 | 3 | 5 | 8 | E | — | — | N |
| 4 | [g] | 3 | [g] | 2 | 2 | — | 2 | — | N |
| 2 | 2 | 2 | 2 | 1 | 1 | 1 | 1 | 1 | — |
| 1 | — | — | — | — | 2 | — | 2 | — | — |
| 5 | — | 4[i] | — | 1 | 2 | E | 4 | — | E(4) |
| 4 | [g] | — | — | — | 2 | — | 2 | — | 4 |
| — | — | 5[i] | — | 2 | — | 1 | 6 | 7 | 4 |

TABLE

INCOMES INVESTIGATED

| Country | No. | Survey Denomination | Year | Coverage[a] | Total No. of Items |
|---|---|---|---|---|---|
| Mexico | 1 | Family income and expenditure survey<br>—Agricultural incomes<br>—Non-agricultural incomes | 1963 | N | 11[h] |
| | 2 | Family income and expenditure study<br>—Agricultural incomes<br>—Non-agricultural incomes | 1968 | N | 20[h] |
| | 3 | Income and expenditure survey<br>—Agricultural incomes<br>—Non-agricultural incomes | 1975 | N | 19[h] |
| | 4 | National income and expenditure survey | 1977 | N | 21 |
| Panama | 2 | Study on the living conditions of households | 1972 | 2MC | 13 |
| Peru | 1 | Family budget survey | 1968/1969 | MA | 42 |
| | 2 | National food consumption survey (ENCA)<br>—Agricultural incomes<br>—Non-agricultural invomes | 1971/1972 | N | 38[h] |
| Dominican Republic | 1 | Family budget study | 1969 | MA | 16 |
| | 2 | First national budget survey | 1976/1977 | N | 27 |
| Uruguay | 1 | Family income and expenditure survey | 1967 | MA | 16 |
| Venezuela | 5 | Family income and expenditure survey | 1974/1975 | 1MC | 36 |
| II. *Income Surveys* | | | | | |
| Argentina | | 5.1. Income supplement | 1970 | MA | 13 |
| Brazil | | 5.1. Income survey | 1972 | N | 18 |
| Colombia | 2 | Study on the distribution of basic services | 1974 | N | 6 |
| Costa Rica | | 4.1. Income supplement | 1977 | N | 23 |

3 (*cont.*)

IN EACH SURVEY

| Types of Income Investigated (Number of Items) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Wages and Salaries | | Entrepreneurial | | | Property Incomes | | | | |
| In Cash | In Kind | In Cash | In Kind | Transfers | In Cash | Imputed[b] | Others | Incomes in Kind[b] | Deductions[c] |
| 3 | 1 | — | — | 1 | 2 | 1 | 1 | — | N |
| — | — | 1[h] | 1 | — | — | — | — | — | N |
| 6 | — | — | — | 3 | 5 | E | — | — | G |
| — | — | 1[h] | 1 | — | 3 | — | 1 | — | G |
| 4 | 1 | — | — | 1 | 5 | E | 2 | — | E(4) |
| — | — | 1[h] | 2 | — | 3 | — | — | — | — |
| 3 | 1 | 5 | — | 2 | 5 | — | 5 | — | N |
| 1 | — | 2 | 1 | — | 2 | — | 4 | — | 3 |
| 7 | 1 | 1 | 1 | 8 | 6 | 1 | 12 | — | 5 |
| 5 | [g] | 9[h] | [g] | 1 | 1 | E | 2 | E | N |
| — | — | 10[h] | — | — | — | — | — | — | N |
| 6 | [g] | 3 | [g] | 1 | 2 | E | 4 | E | G&N |
| 7 | [g] | 7 | [g] | 1 | 7 | E | 2 | E | G&N |
| —— 6 —— | | —— 6 —— | | 2 | 2 | — | — | — | G |
| 10 | 1 | 2 | 2 | 2 | 5 | 1 | 7 | 1 | 5[f] |
| 1 | [g] | 1 | [g] | 1 | 1 | — | 1 | 8[k] | N |
| 8 | 1[l] | 3 | 1[l] | 1 | 3 | — | — | 1 | G |
| 1 | 1 | 1 | 1 | 1 | — | — | 1 | — | N |
| 3 | 2[n] | 6 | 2[o] | 5 | 3 | — | 2 | — | G |

TABLE

INCOMES INVESTIGATED

| Country | No. | Survey Denomination | Year | Coverage[a] | Total No. of Items |
|---|---|---|---|---|---|
| Chile | 2 | National household sample survey | | | |
| | | 2.1. Family income survey | 1968 | N | 8 |
| | | 2.2. Family income survey | 1971 | N | 8 |
| Panama | 1 | Special household survey on income | 1970 | N | 13 |
| III. *Labour Surveys* | | | | | |
| Argentina | 6 | Permanent household survey | Since 1972 | MA&19MC | 5 |
| Bolivia | 1 | Permanent household survey | Since 1977 | 4MC | 4 |
| Brazil | 4 | National household sample survey (PNAD) | From 1967 to 1970 | N | 5 |
| | 5 | National household sample survey (New PNAD) | 1971/1973 | N | 4 |
| | | | Since 1976 | N | 17 |
| Colombia | 3 | National household survey | 1970 to 1972 | N | 4 |
| | | | 1974 | U | 4 |
| | | | Since 1975 | 7MC-4MC | 4 |
| Costa Rica | 1 | Household sample survey | 1966/1967 | N | 5 |
| | | | 1967/1971 | U | 5 |
| | 4 | National household survey | Since 1974 | N | 14 |
| Chile | 4 | National employment survey—Regionalized sample | Since 1975 | N | 4 |
| Ecuador | 2 | National household sample 2.1. | 1968 | U | 3 |
| | 3 | Population and employment survey | Since 1975 | U | 10 |
| Guatemala | 2 | National household survey on some characteristics of human resources | 1977 | MA | 4 |
| El Salvador | 1 | Demographic and labour force survey | 1974 | MA | 8 |
| | 2 | National survey on labour force and demographic aspects | 1975 | N | 7 |

3 (*cont.*)

IN EACH SURVEY

| Types of Income Investigated (Number of Items) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Wages and Salaries | | Entrepreneurial | | | Property Incomes | | | | |
| In Cash | In Kind | In Cash | In Kind | Transfers | In Cash | Imputed[b] | Others | Incomes in Kind[b] | Deductions[c] |
| 1 | 1 | 1 | 1 | 1 | —— 2 —— | | 1 | — | G |
| 1 | 1 | 1 | 1 | 1 | —— 2 —— | | 1 | — | G |
| 2 | 2 | 3 | 2 | 1 | 1 | 1 | 1 | — | G |
| 1 | — | 1 | — | 1 | 1 | — | 1 | — | N |
| 2 | — | 2 | — | — | — | — | — | — | G |
| 2 | 1[k] | 2[m] | — | — | — | — | — | — | G |
| 1 | 1[k] | 1 | — | [d] | [d] | — | [d] | — | N |
| 4 | 2 | 4 | 2 | 1 | 2 | — | 2 | — | N |
| 1 | 1 | 1 | — | —— 1 —— | | — | — | — | N |
| 1 | 1 | 1 | — | —— 1 —— | | — | — | — | N |
| 1 | 1 | 1 | — | —— 1 —— | | — | — | — | N |
| 2 | 1[k] | 2[m] | — | — | — | — | — | — | G |
| 2 | 1[k] | 2[m] | — | — | — | — | — | — | G |
| 1 | 1 | 1 | 1 | 3 | 3 | — | 4 | — | G |
| 2 | — | 2 | — | — | — | — | — | — | N |
| —— 1 —— | | —— 1 —— | | — | — | — | 1 | — | G |
| 2 | 1 | 2 | 1 | 1 | 2 | — | 1 | — | G |
| 1 | 1[k] | 1 | — | — | — | — | 1 | — | N |
| 1 | 1[k] | 1 | 2[k] | 1 | 1 | — | 2 | — | N |
| 1 | 1 | 1 | — | 1 | 1 | — | 2 | — | N |

TABLE

INCOMES INVESTIGATED

| Country | No. | Survey Denomination | Year | Coverage[a] | Total No. of Items |
|---|---|---|---|---|---|
| Mexico | 5 | Continuous employment survey | Since 1973 | U | 6 |
| Nicaragua | 1 | Employment situation survey | 1973/1976 | MA-7MC | 2 |
| Panama | 3 | Manpower survey | Since 1963 | N | 1 |
| Paraguay | 1 | Manpower household sample survey | Since 1976 | U | 5 |
| Peru | 3 | Household survey—manpower study | 1970/1971 | U | 35 |
| | 4 | Household survey—manpower study | 1974 | N | 18 |
| Uruguay | 2 | Employment and unemployment household survey | Since 1968 | MA | 7 |
| Venezuela | 3 | Household sample survey | Since 1967 | N | 4 |
| | 4 | Household sample survey | 1968/1971 | MA | 4 |
| IV. *Other Types of Surveys* | | | | | |
| Costa Rica | 2 | Income and food consumption | 1971 | N | 11 |
| Venezuela | 2 | Housing market study (MERCAVI) | 1970 | U | 3 |

[a]N: national; U: urban; MA: metropolitan area for the capital city; (n)MC: (number of) main cities; (n)S: (number of) states.
[b]E: investigated among expenditures.
[c]N: income concepts were investigated net of deductions.
G: income concepts were investigated gross of deductions and no attempt was made to record these.
E(n): income concepts were investigated gross of deductions and these were included among expenditures (number of items devoted to the investigation of deductions).
[d]Investigated jointly by means of one question.
[e]For wages and salaries in the agricultural sector only.
[f]For wages and salaries only.

Reconciliation of survey concepts with those of national accounts becomes particularly troublesome for entrepreneurial incomes. The common practice in household surveys of inquiring about entrepreneurial incomes or income from own-account work in a rather summary manner—although, in some cases, with some detail regarding alternative sources—tends to elicit responses that refer to

3 (*cont.*)

IN EACH SURVEY

| Types of Income Investigated (Number of Items) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Wages and Salaries | | Entrepreneurial | | | Property Incomes | | | | |
| In Cash | In Kind | In Cash | In Kind | Transfers | In Cash | Imputed[b] | Others | Incomes in Kind[b] | Deductions[c] |
| 2 | 1[k] | 2 | 1[k] | — | — | — | — | — | G |
| 1 | 1[k] | — | — | — | — | — | — | — | N |
| 1 | — | — | — | — | — | — | — | — | N |
| 3 | 1 | 1 | — | — | — | — | — | — | N |
| 4 | — | 3 | 20[l] | 1 | 2 | — | 4 | — | N |
| 5 | 1[k] | 4 | 1[k] | 2 | 4 | — | 1 | — | N |
| 2 | 1[k] | 3 | 1[k] | — | — | — | — | — | N |
| 1 | 1[k] | 1 | 1[k] | — | — | — | — | — | N |
| 1 | 1[k] | 1 | 1[k] | — | — | — | — | — | N |
| 2 | 1 | 2 | 1 | 1 | 1 | — | 2 | — | 1 |
| 1 | — | 1 | — | — | — | — | 1 | — | N |

[g]Included among the incomes in kind of the household.
[h]A special questionnaire has been used for sales and outlays.
[i]A special questionnaire has been used for output (sold or consumed) and outlays of the agricultural households.
[j]A special question for farmers' incomes.
[k]Inquiries about the reception of goods and services, without imputing value.
[l]Only for agricultural producers.
[m]Only for non-agricultural incomes.
[n]For remuneration in kind of all employees and production for own consumption of agricultural employees, detailed information is requested.
[o]Detailed information is requested.

withdrawals from the personal business rather than to its accrued gross—or even net—entrepreneurial income. Likewise, those surveys that inquire about income before taxes and other deductions may miss their target as far as responses tend to refer to net or even take-home incomes and there are no explicit questions about deductions that may help to correct this type of bias.

(d) *Actual Coverage of Household Income Provided by Surveys*

As can readily be observed, in spite of the considerable number of surveys carried out in Latin America over two decades, only a small proportion of them provide measurements that at least nominally cover all incomes flowing to households in the national economy. Even leaving aside whether non-monetary incomes are omitted or not, and without considering the adequacy of the methods used for investigating incomes, only a third of the surveys reviewed provide complete income coverage of sorts, as far as they have national coverage and measure all types of monetary income accruing to all members of the households. Such surveys—half of them being income and expenditure surveys—are concentrated in ten of the countries of the Latin American region and most of them were carried out in the seventies.

## IV. Assessing the Representativeness of the Samples

Whoever makes use of household survey results for measuring and analysing income distribution cannot but feel concerned about the many theoretical and practical aspects of sample design that determine how closely the sample represents the population under study. This need is seldom satisfied thoroughly by the producers of the data in their descriptions of sample design and questions about such matters as the adequacy of the sampling frame; the rigour with which selection procedures were actually applied and the characteristics and treatment of non-response can only be put on a *bona fide* basis. However, some hints can be gathered on the representativeness of the samples by systematically looking at *post-hoc* evidence from the surveys.

(a) *Sampling Errors*

The samples reviewed were generally designed for attaining acceptable sampling errors in the estimation either of the rate of unemployment or of mean income or mean expenditure. But most of them were not designed taking into account the precision in estimating relevant class totals (such as the number with income higher than some amount) which would be pertinent for measuring the distribution of income.

But, consider. Class totals with a relative error of 10 percent (within a 0.95 confidence level), if the samples were obtained by single-stage random selection, would rarely amount to more than 5 percent of the population and more typically would represent less than 2 percent. On the other hand, samples for labour surveys are currently designed to obtain estimates of the rate of unemployment—usually less than 5 percent of the labour force—with a standard error of less than 1 percent and this rate is also a class total. Hence, some insight can be gained as regards the sampling error for other class totals of similar magnitude, such as shares of some income groups in total household income.[11]

[11]However, it must also be borne in mind that cluster sampling and rotation currently used generally involve higher errors as compared with those involved in single-stage random selection; this "design effect", which for the rate of unemployment may not even double errors calculated on the basis of random selection, might be considerably higher for class totals in the distribution according to income.

(b) *Non-response*

The proportion and distribution of non-response may affect the composition of the sample and hence its representativeness. Moreover, there are different kinds of non-response which may differ in their effects on sample composition for income distribution purposes.

Non-interviews do not significantly affect the representativeness of the sample. Although in urban areas they currently represent around 10 percent of the total sample, this kind of non-response may only introduce differences in the probability of selection when its distribution across segments is strongly uneven.

Non-response by sampled households may bias the sample as far as these households tend to have certain characteristics that could be related to their relative income position, the sources of their income or the type of household. Although these households are usually replaced by some random procedure, only rarely are their apparent characteristics investigated and analysed in order to ascertain whether their distribution according to those characteristics is actually at random. In some surveys this kind of non-response has been kept as low as 2 percent of the total sample, but in some other surveys that proportion has been as high as 10 or 15 percent, which would require an analysis of the kind just indicated.[12]

Another kind of non-response of particular consequence for the reliability of income measurements is partial non-response to income questions. In some surveys its proportion to the total number of questionnaires completed has been kept as low as 1 or 2 percent, by reinterviewing. In other cases income has been "edited" by imputations based on other characteristics of the household involved and little is known about their relative importance in the total sample. But many survey results either included this "unknown income" class—which may be as high as 10 percent—in the distribution by size of income or simply exclude it, which encourages us users to base our analyses solely on the distribution of "known" incomes, with little regard to the fact that non-response to income questions is presumably strongly associated with certain kinds of household which are not distributed at random according to income. In our exercise, at least one survey (the rural dominion in survey No. 3 of Peru) was rejected on the basis of a high non-response rate for income.

(c) *Validation of the Samples' Composition*

A means of assessing the representativeness of the sample for income distribution purposes is to compare its composition by different characteristics with that of the total population according to the nearest population census extrapolated to the year of the survey. Significant disagreement may indicate either a defective selection of the sample, an insufficient updating of the sampling frame, or the

[12]In the relatively few cases of recurrent labour surveys or income and expenditure surveys in which the sample structure includes a panel of repeatedly interviewed households, a statistical analysis of the differences between the distributions of the sample in successive rounds according to certain characteristics was undertaken to ascertain whether the attrition of the sample involved in the increase of non-response had been differential. See, for example, the analysis of sample bias in the surveys carried out for the ECIEL programme in Musgrove (1978).

effects of non-response and its treatment.[13] Be it as it may, these errors are very likely to bias the distribution of incomes measured by the survey.

Comparisons between the sex and age composition of the population in each sample and that of the total population according to the latest demographic estimate for the same year or to the corresponding census results—for samples of sub-national coverage—were carried out as a matter of course for each survey.

The occupational structure of the population in each sample was also compared with the corresponding results from the nearest population census. This allowed the detection of a number of instances in which biases in the composition of the samples might impair their use for income distribution purposes. In this way, it was found that farmers were underrepresented in some surveys (as in survey No. 4 in Brazil and in survey No. 3 in Venezuela) and overrepresented in some others (as in survey No. 2 in Mexico). Secondly, it was observed that there was a tendency for some samples to show a greater proportion of self-employed in services than the reference population. On the whole, however, most of the biases in the composition of the samples by socioeconomic group detected in this way by themselves would only lead to minor errors in the estimate of the overall income distribution, provided that they are not associated with strong systematic biases in the internal composition of the groups according to income-related characteristics.[14]

The composition of the samples of households by size of household was also currently compared, when feasible, with those from corresponding censuses. In most cases, however, this check proved inconclusive, due to the differences in the definitions of household used in the two sources.

## V. Comparing Data from Household Surveys and Population Censuses with National Accounts

### (a) *The Basic Rationale*

To compare household income totals obtained from household surveys with the corresponding magnitudes, similarly defined, in the national accounts is a double-purpose exercise, aiming both at assessing the reliability of the two sources in measuring incomes and at reconciling the two kinds of measurements in order to obtain realistic estimates of the distribution of income by size consistent with national accounts. Once the conceptual differences in incomes measured by both sources are somehow taken care of, significant discrepancies between comparable totals should, in principle, give rise to further examination of possible biases both in household survey measurements and in national accounts.

As both sets of estimates are bound to be used jointly for many analytical purposes, an indication of the inconsistencies between them and a quantification

[13]In addition to these factors, a minor proportion of the discrepancies may be due to differences in the population covered, since censuses include the population in institutions and surveys typically cover only private households.

[14]The reweighting of survey distributions by socio-economic groups using the census structure as a yardstick did not alter the average income of all income recipients by more than 4 percent, while the average income of all the self-employed was shifted by as much as 7 percent in some surveys.

of their discrepancies is in itself useful. This may, however, be of little consequence to most users if no attempt is made to ascertain which estimate is thought to be more reliable and whether income distributions obtained from household surveys are biased in any way that may significantly impair their use for measuring income inequality or poverty. Furthermore as, for better or for worse, they provide the best evidence available on the distribution of income by size, there is a definite advantage in attempting to translate such assessments into some kind of adjustment of survey distributions in order to obtain more realistic representations of income inequalities.

In general, unless there is strong evidence to the contrary, survey incomes falling short of national accounts' corresponding aggregates have been taken here as indicative of underestimation of incomes in the survey.

This criterion is, of course, debatable. National accounts estimates in Latin America are far from being as accurate as they have come to be in more developed countries. But the same can be said of household survey results. After all, both are similarly affected by the degree of institutional development and by the availability of resources for statistical activities in the country concerned.

The presumption of greater accuracy attributed to national accounts estimates is based on the fact that they are the outcome of a detailed assessment and reconciliation of the data available from multiple sources in the context of a coherent conceptual framework, and that through their systematic use these estimates have incorporated a distillation of a fair amount of knowledge about the national economy. Household survey results, although nominally based on statistically more rigorous estimating procedures, on the contrary are seldom validated against other sources.

On the other hand, common experience indicates that non-sampling errors are of far greater consequence to survey results than sampling errors, and that severe underreporting of incomes may affect survey measurements, whereas national accounts aggregates are not suspected of being overestimated, as revealed by most revisions of GDP estimates.

Finally, from a more pragmatic perspective, even if national accounts estimates are not as accurate as they might be, there is a point in reconciling the data from the two sources to a "uniformly biased" yardstick. Even more so, since whatever biases are built into national accounts estimates, they are systematically reproduced over the years, which somehow provides a relatively stable yardstick with which to compare income measurements from surveys that may be very different in type and quality.

To take the relative discrepancy between incomes from household surveys and national accounts estimates as a measure of the reliability of the former is a bold step further. It is, however, the logical consequence of this line of reasoning and instrumental to any adjustment of survey results in order to reconcile them with national accounts.

Considered in this fashion, such discrepancies incorporate all effects which biases in sample composition, sampling errors and income underestimation (due to the failure to apply in the field the income concepts selected, to the omission of income items or to underreporting) may have had on average incomes.

(b) *Procedure and Assumptions*

It is characteristic of Latin American national accounts not to include estimates of total household income by type of income; only six countries in the region maintain series on such aggregates (ECLAC, 1981). Therefore, in order to obtain the national-accounts-based estimates with which to compare household survey incomes it was necessary to go from official estimates of the national income by type of income to total household income by type, making use of available information on flows accruing to other agents. The aggregates thus obtained were further adjusted to the particular income concept used in each survey being compared. Survey results were corrected for price variations and real income growth during the year, to approximate average incomes over a calendar year.

Mean incomes were compared, instead of aggregate incomes, to allow for differences and errors in the coverage of households. National accounts estimates were related to independent demographic estimates. No income allowance was made for the institutional population.

For surveys of subnational coverage, an independent guess was made on the difference between national means and the means corresponding to the area covered by the survey, on the basis of available information, either from other surveys of national coverage, from regional product estimates or from establishment surveys. Naturally, this introduces an additional element of uncertainty into the comparisons; even so, they proved to be worthwhile for gaining insights into the relative reliability of subnational surveys.

As regards average incomes from labour surveys, in most cases these were estimated on the basis of the frequency distribution of recipients grouped by income brackets. The procedure used[15] tends to overestimate the mean income of the top open-ended interval by around 10 to 15 percent which generally causes an overestimation of no more than 3 percent in the average income of the whole distribution. This translates into a slightly lesser discrepancy for those of the survey averages falling short of national accounts figures.

Finally, it should be noted that only a subset of the surveys listed in Table 1 were analysed for consistency with national accounts; some other surveys were excluded, either for lack of enough breakdown of survey results or because, being surveys of subnational coverage, data available from other sources were considered insufficient to infer relative income differentials. The discrepancies with national accounts estimates for that subset of surveys are included in Table 4.

(c) *The Underestimation of Different Types of Income*

The degree of accuracy is very seldom uniform across types of income in any single survey. Comparisons of mean incomes of each type with the corresponding national accounts aggregates reveal a clear pattern: wages and

[15]The mean income of the first interval at the bottom of the distribution is estimated adjusting a polynomial of the third degree to the frequencies accumulated in that and the following interval. The mean income of the top open-ended interval is estimated by means of a Pareto function adjusted to the accumulated frequencies in the two previous intervals. For the remaining intervals, mean incomes are assumed to coincide with the mid-point of each interval (See CEPAL, 1985).

salaries may be more or less underestimated—and even, in some cases, not at all—but entrepreneurial incomes are as a rule well below the corresponding national accounts estimates; as regards property incomes actually carried out, they are quite a bit more underestimated than entrepreneurial incomes, while many surveys provide higher estimates of imputed rents than those included in national accounts; on the other hand, transfers usually tend to be more underestimated than wages and salaries but less than entrepreneurial incomes. As is apparent in Table 4, this happens regardless of the type of survey and of the country concerned, although there are differences in the accuracy with which different types of survey measure each type of income, as far as the discrepancies with respect to national accounts magnitudes are an indication of relative accuracy.

The best income and expenditure surveys produce estimates of wages and salaries that are very close to corresponding national accounts averages. However, in many cases, the combined effect of an upward bias originating in the selection of the sample offset by a downward reporting bias cannot be completely disregarded.[16] As can also be seen in Table 4, other income and expenditure surveys may underestimate mean wages and salaries between 15 and 30 percent, as the net effect of different biases.[17]

Entrepreneurial income in most income and expenditure surveys usually falls short of national accounts totals by something between 25 and 40 percent, and in some cases by more than 50 percent. Indeed, the few surveys that, on the contrary, overestimate this type of income are suspect of sample bias, as indicated above. In fact, for subnational surveys, actual discrepancies may be greater than those indicated, since relative income differentials assumed for this type of income to adjust the national accounts averages to the areas covered by the surveys have tended to be on the conservative side.

However, the discrepancies between entrepreneurial income in national accounts and income from own business as measured by the surveys can only be considered as indications of the reliability of these results as far as the surveys intended to measure entrepreneurial income. As has been noted above, it can be fairly presumed that what they really have measured—with whatever biases—are withdrawals from the own business.[18]

In general, income and expenditure surveys capture only a small proportion of realized property income. However, some of the ECIEL surveys show averages

[16]Ferber and Salazar-Carrillo (1974) point out that the samples for most of the ECIEL family of surveys (included in Table 1) may have been subject to selection errors, due to defects of the sampling frames, that would bias the estimates of the means upwards and the estimates of the variances downwards. Likewise, the analysis of the sample composition of the 1963 Mexican survey (No. 1 in Table 1) revealed that employees in agriculture would have been grossly underrepresented.

[17]It should be noted that, in principle, survey underestimation might be somewhat higher than indicated by the discrepancies, since the national accounts estimates of wages and salaries tend to exclude some components of the salaries of employees in the higher echelons that surveys attempt to capture as such, although probably with little success (for example, monetary fringe benefits, likely to be included as inputs in the accounts of enterprises, or participation in benefits that are part of the net operating surplus).

[18]Therefore, excluding that part of accrued entrepreneurial income that is either reinvested in fixed assets and stocks or applied to reduce liabilities or invested in financial assets, even in those that although nominally personal are perceived as "business operations".

TABLE

LATIN AMERICA: DISCREPANCIES BETWEEN MEAN INCOMES

(*Percentage difference from*

| Country | Survey: No. in Table 1 | Survey: Title | Year | Coverage[a] |
|---|---|---|---|---|
| (a) *Income and Expenditure Surveys* | | | | |
| Argentina | 3 | Family budget survey | 1969/70 | MA |
| Brazil | 3 | National study of family expenditure (ENDEF) | 1974/78 | N |
| Colombia | 1 | Family budget survey | 1967/68 | 4MC |
| | 3 | National household survey | | |
| | 3.1 | Stage 2 | 1970 | 7MC |
| | 3.2 | Stage 4 | 1971 | N |
| | 3.3 | Stage 6 | 1972 | N |
| Costa Rica | 3 | Family income and expenditures | 1974 | U |
| Chile | 1 | National family budget survey | 1968/69 | MA |
| Honduras | 1 | Family income and expenditure survey | 1967/68 | N |
| Mexico | 1 | Family income and expenditure survey | 1963 | N |
| | 2 | Family income and expenditure survey | 1968 | N |
| | 3 | Income and expenditure survey | 1975 | N |
| | 4 | National income and expenditure survey | 1977 | N |
| Peru | 1 | Family budget survey | 1968/69 | MA |
| | 2 | National food consumption survey (ENCA) | 1971/1972 | N |
| Uruguay | 1 | Family income and expenditure survey | 1967 | MA |
| Venezuela | 1.1 | Family income and expenditure survey | 1966 | MA |
| (b) *Income Surveys* | | | | |
| Argentina | 5.1 | Income supplement | 1970 | MA |
| Brazil | 5.1 | Income survey | 1972 | N |
| Colombia | 2 | Study on the distribution of basic services | 1974 | N |
| Costa Rica | 2 | Income and food consumption | 1971 | N |
| | 4.1 | Income supplement | 1977 | N |
| Chile | 2 | National household sample | | |
| | 2.1 | Family income survey | 1968 | N |
| | 2.2 | Family income survey | 1971 | N |
| Panama | 1 | Special household survey on income | 1970 | N |
| (c) *Labour Surveys* | | | | |
| Peru | 4 | Household survey manpower study | 1974 | U |
| Brazil | 5 | National household sample survey (new PNAD) | 1972<br>1973<br>1976<br>1978 | |

4

FROM DIFFERENT TYPES OF SURVEYS AND NATIONAL ACCOUNTS

*national accounts averages*)

| Total Household Income | Wages and Salaries | Entrepreneurial Income | Property Incomes | | | Transfers |
|---|---|---|---|---|---|---|
| | | | Total | Realized | Imputed | |
| −15.0 | −32.9 | −35.0 | 62.3 | | | 82.8 |
| 8.9[b] | | | | | | |
| 5.0 | −7.3 | 15.5 | 51.5 | −18.0 | 264.6 | 351.4 |
| 11.0 | | | | | | |
| 12.4 | | | | | | |
| 25.8 | | | | | | |
| −12.9 | | | | | | |
| −23.8 | −15.3 | −36.7 | −20.6 | −65.5 | 86.1 | −29.5 |
| −30.4 | | | | | | |
| −26.3 | 22.0 | −53.1 | −64.0 | −89.8 | −1.0 | −46.5 |
| −25.2 | 7.6 | −52.3 | −37.7 | −69.6 | 49.1 | −18.1 |
| −46.5 | −28.2 | −62.9 | −77.5 | | | 2.9 |
| −38.6 | −16.7 | −65.8 | −52.5 | −83.4 | 36.6 | −15.7 |
| 9.7 | −1.4 | 21.9 | 95.7 | 48.9 | 148.9 | −26.7 |
| −25.7 | −20.3 | 25.3 | — | −68.1 | — | −32.4 |
| −13.5 | 2.2 | −29.2 | −63.6 | | | −19.8 |
| 7.2 | −0.9 | −9.6 | 171.1 | 9.8 | 724.9 | 17.3 |
| −33.2 | −16.6 | −42.4 | — | −89.2 | — | −10.7 |
| −20.6 | −10.1 | −21.3 | | | −63.3 | |
| −42.0 | | | | | | |
| −21.1 | | | | | | |
| −45.6 | | | | | | |
| −40.0 | −23.0 | −55.7 | −50.0 | | | −56.9 |
| −32.8 | −25.6 | −42.7 | −25.4 | | | −47.4 |
| −3.2 | | | | | | |
| −35.6 | −19.0 | −38.0 | — | −83.4 | — | −35.6 |
| −25.4[c] | | −13.8[c] | | −49.2[c] | | |
| −16.0[c] | | −12.1[c] | | −61.5[c] | | |
| −13.9 | | 7.4 | | −37.2 | | −14.2 |
| −28.4 | | | −24.5 | | | −65.7 |

| Country | Survey: No. in Table 1 | Survey: Title | Year | Coverage[a] |
|---|---|---|---|---|
| Colombia | 3 | National household surveys: | | |
| | | Stage 1 | 1970 | N |
| | | Stage 5 | 1971 | N |
| | | Stage 9 | 1975 | 7MC |
| | | Stage 10 | 1976 | 7MC |
| | | Stage 16 | 1977 | 7MC |
| | | Stage 20 | 1978 | 7MC |
| | | Stage 24 | 1979 | 7MC |
| Costa Rica | 1 | Household sample survey | 1967 | N |
| | | | 1971 | U |
| Chile | 2 | National household sample | 1968 | N |
| Venezuela | 3 | Household sample survey | 1971 | N |
| (d) *Population Censuses* | | | | |
| Brazil | | | 1970 | N |
| Costa Rica | | | 1973 | N |
| Mexico | | | 1969 | N |

[a]N: national; U: urban; MA: metropolitan area of the capital; (n) MC: (number of) main cities.
[b]Global expenditure.
[c]Not in agriculture.

close to or even well above those derived from national accounts. This fact cannot be explained away by possible biases in the selection of the samples and can only partially be attributed to our using urban-national differentials possibly too conservative for this type of income; it rather suggests the very likely possibility that property income received in cash by households is grossly underestimated in national accounts.[19]

Conversely, imputed property incomes—consisting of rent of owner-occupied dwellings—as measured by the surveys are usually far higher than the corresponding averages from national accounts. This is partially explained by the fact that most surveys measure gross imputed rents, which may be as much as 20 percent higher than net imputed income from owner-occupied dwellings measured according to national accounting practices. But, even allowing for this and for the suspected effect of sampling biases—in the ECIEL surveys, at least—the magnitude of the discrepancies suggests either a tendency towards underestimation of this aggregate in national accounts or a wide difference between valuation criteria applied by the owner and by the national accountants, or both.

[19]Dividends received are almost surely neither included in survey totals nor as realized property income estimated in national accounts.

4 (*cont.*)

| Total Household Income | Wages and Salaries | Entrepreneurial Income | Property Incomes | | | Transfers |
|---|---|---|---|---|---|---|
| | | | Total | Realized | Imputed | |
| −23.7 | | −4.9 | | −41.1 | | |
| −23.2 | | −11.7 | | −38.6 | | |
| −32.1 | | −10.9 | | −38.2 | | |
| −36.7 | | — | | — | | |
| −37.7 | | — | | — | | |
| −26.7 | | — | | — | | |
| −13.3 | | — | | — | | |
| −21.6[c] | | −18.6[c] | | −33.9[c] | | |
| −13.2[c] | | −7.7[c] | | −36.5[c] | | |
| −45.6[c] | | −7.8[c] | | −53.2[c] | | |
| 6.7 | | −5.6 | | 18.3 | | |
| −28.5 | | −20.0 | | −41.2 | | −24.7 |
| | | −9.9 | | | | |
| −35.6 | | −5.5 | | −60.6 | | |

Income surveys apparently measure income of each type within ranges of accuracy roughly similar to those attained in most income and expenditure surveys: 10 to 25 percent below national accounts for wages and salaries and 20 to 50 percent for entrepreneurial income. But the same cannot be said with respect to the measurement of property income, since this type of survey captures an even lesser proportion of realized income; this difference in relative accuracy appears to be particularly noticeable in income supplements to labour surveys.

The labour surveys analyzed are of varied quality. This is mainly reflected in the discrepancies obtained for money income of employees, which in some surveys are close to nil and in other surveys may be some 15 or 20 percent below national accounts averages, as can be seen in Table 4. Although this type of survey usually measures money wages only, the relative accuracy of those measurements appears to be similar to that obtained in income and expenditure surveys in the measurement of total wages and salaries.

Average money income of the self-employed from labour surveys falls short of averages obtained from national accounts by something between 30 and 50 percent, discrepancies which are slightly higher than those calculated for entrepreneurial incomes in most income and expenditure surveys.

(d) *The Resulting Estimates of Total Household Income*

As can be seen from Table 4, most income and expenditure surveys estimate total household income between 15 and 30 percent below the national accounts

corresponding figure. But a number of surveys of this type show averages of no more than 10 percent above or below those of national accounts. Although this cannot be simply considered as a *prima facie* indication of their general reliability,[20] differences in survey methods may help to explain the cleavage between the two groups of surveys. If the information included in Table 2 is taken into consideration, one is tempted to conclude that income and expenditure surveys taken over subsamples distributed along a year tend to provide income measurements relatively higher and, in the absence of biases in sample composition, closer to national accounts than those obtained from one-time surveys, which are also affected by telescoping effects associated with the longer recall periods.

From a more impressionistic viewpoint, it is apparent from Table 4 that a greater relative accuracy in measuring total household income is mainly associated with the degree of underestimation of entrepreneurial income.

Special income surveys carried out in Latin America underestimate total household income by around 20 percent.[21] This compares favourably with the performance of most income and expenditure surveys. But, as shown also in Table 4, measurements obtained by means of income supplements incorporated in a particular round of recurrent labour surveys fall short of national accounts by around 30 to 45 percent.

Labour surveys usually only investigate total money income or total money earnings among the economically active. Once the corresponding adjustments to national accounts averages are made in order to make the comparisons possible, survey averages fall between 15 and 40 percent short of natural accounts averages, as can be seen from Table 4. This wide range involves substantial differences in reliability. In fact, some labour surveys provide income measurements that are as close to the corresponding national accounts averages as the best income and expenditure surveys or income surveys.[22]

### (e) *The Underestimation of Income in Population Censuses*

Population censuses measuring income are frequently used as a source for income distribution analyses, although with some hesitation due to the marginal and global nature of their income questions and, above all, to the insufficient training of interviewers to tackle this subject.

Table 4 also includes the discrepancies obtained comparing average income from three Latin American censuses with the corresponding figures derived from national accounts. These are not very different from those obtained for most

[20]Suspicions of sample biases and the possible effect of offsetting biases in the measurement of different types of income—such as those just reviewed—should be first cleared up.

[21]These are the special income surveys carried out in 1972 in Brazil (No. 5.1 in Table 1) and the income and food consumption survey of Costa Rica (No. 2 in Table 1), both being surveys which were extended over three months. Survey No. 1 of Panama was carried out as part of the programme for the revision and improvement of that country's national accounts, the two sets of data having been checked against each other along the way; therefore, the small discrepancy shown in Table 4 for this survey is an indication of the interdependence between the sources, which in itself is a token of its reliability.

[22]In fact, the apparent improvement in the accuracy attained by the Brazilian PNAD income measurements, as seen in Table 4, is associated with a change in the income questionnaire which incorporated the experience gained through the 1972 income survey. Likewise, the improvement revealed by the latest rounds of the Colombian labour survey may be the result of changes in the income questions and in survey management.

labour surveys: around 30 percent for total income, with income for employees either quite close to national accounts or 20 percent below them and the underestimation of incomes of the self-employed between 40 and 60 percent. However, it is hard to accept this as an indication of a degree of reliability of census measurements similar to those surveys, since the limitations pointed out above may bring about additional response biases with offsetting effects on the averages, the influence of which on the distribution is difficult to determine.

## VI. Comparability and the Need for Adjustments

Systematic biases affecting income measurements may result in under- or overestimation of income means or variances. As far as means are concerned, if there were no distortions in the estimation of the dispersion of income, their biased estimation affects the picture obtained for the analysis of absolute levels of living, exaggerating poverty and concealing wealth if they are underestimated.

But biases frequently also affect variances, distorting the picture of income concentration. That is why any sensible and informed adjustments to survey data, although unavoidably arbitrary in essence and debatable in form, would at least enrich the information on which equity considerations could be based. Moreover, when comparisons of income distribution are attempted across countries or over time, biases affecting comparability may even impair the analysis of the relation between growth and equity. In those instances, informed and consistent adjustment to survey data might—just might—improve the basis for such an analysis. There is no pretence that such conjectural adjustments can infuse accuracy and outright comparability into data obtained by means of different methods, using different concepts, and applying diverse professional know-how and organizational capabilities. Rather, such adjustments should quantify and incorporate the awareness of the existence of biases of different significance and of their likely distortions into non-comparable data, attempting to improve their comparability for analytical purposes.

Both biases in the representativeness of the samples, detectable through the analysis of non-response and of sample composition, and in the measurement of income, assessable at least by means of the comparisons with national accounts, may involve significant distortions in the measurement of the distribution of income.

Non-response by sampled households almost certainly biases income distribution measurements, but in degrees and directions that are impossible to assess *ex-post facto.* The same can be said of non-response to income questions, although it may exert a stronger bias, as far as it is concentrated at both ends or even at the upper end of the income range. Percentages of both types of non-response can be considered as the upper bound of such possible biases in sample composition.[23]

[23]An exercise was carried out to assess the maximum eventual distortion this type of bias may bring about in the overall income distribution, as measured by survey No. 4 of Mexico, in which 12 percent of the household samples could not be interviewed (as against 1.4 percent for survey No. 2). Alternatively assuming that the final sample omitted the inclusion of 10 percent of households with incomes similar either to those of the upper quintile or to those of the bottom quintile of the measured distribution, two distributions were obtained: one with a 0.49 Gini coefficient and 35.7 percent of total income going to the upper decile and the other with a 0.51 Gini coefficient and a 38.4 percent share for the upper decile; while the original survey distribution had a 0.48 Gini coefficient and a 36.3 share for the upper decile.

Biases in the representation of any socio-economic group in a sample are most likely to distort the resulting income distribution. In those instances in which it was found that a particular socio-economic group was considerably under- or overrepresented in the sample by an estimated proportion, an adjustment was made to somehow correct the distortion, under assumptions based on whatever indications from other sources were available.

However these biases in sample representativeness may affect the accuracy of income distributions and embarrass their comparability, the distortions they produce are in most cases overshadowed by those associated with underreporting of incomes and their generalized underestimation. The assumption frequently implicit in many analyses that income underestimation has a more or less neutral effect on relative incomes and their concentration (i.e. income-elasticity of underestimation is unity) is untenable. As we have seen, income underestimation varies greatly from one type of income to another and the composition of household income by source of income is not uniform along the distribution. On the other hand, although there are some common factors determining response biases there are also many factors in any particular survey that give rise to response biases or omissions specific to each type of income.

This is particularly clear as regards the measurement of income in kind. As previously pointed out and shown in Table 3, survey methods for investigating wages and salaries in kind and production for self consumption vary widely and are successful to differing degrees.

Monetary incomes of different types may be suspect of being subject to different patterns of underestimation. Here we are entering the realm of the conjectural, the only support being some informed judgements on response biases and the comparison of the distribution of incomes of the same type from surveys considered of different quality, in order to devise a method of adjustment which allocates by size of income the differences with national accounts estimates.

One such method has been applied to Mexican survey data by Bergsman (1980), distributing the discrepancy from national accounts in total household income alternatively assuming the income elasticity of underestimation to be either 0.95 or 1.20, in order to obtain lower and upper bounds to the likely income distribution, for comparisons over time. Pfefferman and Webb (1979) estimated household income shares from Brazilian censuses and surveys by alternatively allocating the difference between totals from each source—adjusted for non-monetary income—and national accounts total personal income either proportionally to measured incomes or to the top decile and selecting the midpoints of the resulting range.

Navarrete (1970) adjusted survey income distributions for Mexico assuming that in the lower income brackets, where expenditure significantly exceeds income, income is underreported mainly because incomes in kind are omitted, and correcting this on the basis of consumption data. She also assumed that the remaining discrepancy with national accounts was due to deliberate underreporting by households in those upper brackets recording income in excess of expenditure, and allocated that discrepancy according to mean reported income in each of those brackets (i.e. in fact, in proportions increasing with the size of income). Felix (1979) also adjusted Mexican survey data, substituting consump-

tion for income in the lower 40 percent of households and allocating the remaining discrepancy with national accounts to the upper 60 percent assuming an income-elasticity of underreporting greater than unity.

Substituting consumption for income for some range of the distribution or, as proposed by Ojha and Bahtt (1974), for the whole range, with the addition of independent estimates of saving ratios, raises a number of objections. To consider consumption as a proxy for income, under the assumption that it is more accurately measured, overlooks the fact that the lower income groups actually consume beyond their incomes, although little is known about the way in which households accommodate these differences, as pointed out by ILO (1977). Even the procedure proposed by Ojha and Bahtt leads us to consider whether those ways can be captured by estimates of savings ratios, since the measurement of saving is currently shakier than that of income.

Different implications are raised when the proposal of basing equity analyses on consumption data is motivated by the notion that consumption, *per se* or as an approximation to permanent income, is a more relevant welfare indicator than current income. But this being a matter for conceptual and practical discussion (Altimir and Sourrouille, 1980), in which all the limitations of income data for analytical purposes are to be taken into consideration, it should not be disguised as an "adjustment" to income data to overcome some of those limitations.

## VII. A Method for Adjusting Income Distribution Data

All the limitations already listed hindered the comparison of the distribution of income in Latin American countries, the analysis of the evolution of income inequalities over time in some countries, and also the measurement of poverty using the income approach (Altimir, 1982).

In order to somehow improve the comparability of income distributions available from household surveys in Latin America, a general method was devised, roughly applicable to most survey results, for reconciling income totals and averages with national accounts and for consistently adjusting in the process assumed biases in the distributions.

The method is based on allocating the discrepancies from national accounts by size of income for each type of income, rather than for total income, as proposed by other authors.

The main assumptions are:

(i) Underreporting—be it deliberate or not—is more strongly associated with the type of income than with the size of income;

(ii) The overall magnitude of unreported incomes of each type is approximated by the discrepancy between survey incomes and the corresponding estimate for that type of income from national accounts—already corrected for differences in income concept—if the former is less than the latter;

(iii) If reported incomes of any type are above national accounts, and if careful consideration of sample composition and survey methods does not provide any clear evidence of possible overestimation, the survey

measurement of that type of income is accepted as the more accurate of the two, and therefore is not adjusted;

(iv) Underreporting of each type of income follows a pattern of unitary income elasticity, except for monetary property incomes;

(v) Underreporting of monetary property incomes is concentrated in the highest quintile of households, deliberate concealing of this type of income being much more frequent by high-income households than by the lower groups.

Thus, the reconciliation of survey incomes with national accounts involves adjustments of different magnitude according to type of income. But the composition of household income by type of income varies with income size.

If only the overall distribution of households by size of income is available, but there is information on the composition of income in each bracket, it would only be possible to adjust incomes in each interval according to the composition by type of income, since the interval adjustment factors would be differently weighted averages of the adjustment factors for each type of income.[24]

However, in each interval of reported income there are households in which total income is distributed in widely different ways, and the aggregate composition by types of income is only the average. As far as assumption (i) reflects the combined pattern of response biases, the cluster of all households classified in any particular interval reflects the effect of biases of different degree, and adjusting incomes of the whole cluster in the same proportion overlooks a good portion of the overall distortion those biases bring into the distribution of income and leads, in general, to underestimation of income concentration.

Even when the incomes of each household cannot be separately adjusted and full reranking of households according to adjusted income is impossible, because of lack of access to the survey microdata base, any split of the households in each interval that may be pertinent with respect to the differences in income composition could allow a better adjustment to be made according to the assumptions adopted.

Classifications of households by socio-economic groups, defined according to type of activity, employment status and broad sector of activity of the head, is such a partition. Even if such groups[25] usually are rather broad, most of them are strongly associated with some particular type of income.

The adjustment procedure was, therefore, to separately adjust incomes in the distribution of households of each socio-economic group, by means of the weighted coefficient corresponding to the group assuming a unitary income

[24]Let $Y_j^u$ = the amount of the overall discrepancy for income type "$j$", $Y_{ij}^0$ = the reported income of type "$j$" in the "$i$" interval, $Y_{ij}^A$ = the adjusted income of type "$j$" in the "$i$" interval. Defining:

$$c_j = 1 + \left( Y_j^u \Big/ \sum_i Y_{ij}^0 \right)$$

then

$$Y_i^A = \sum_j c_j Y_{ij}^0.$$

[25]See United Nations (1977).

elasticity of underreporting, except monetary property incomes, which were adjusted according to assumption (v).[26]

By this procedure, the distribution corresponding to each socio-economic group is shifted along the income scale by a specific proportion ($c_g$) and its incomes at the upper end are additionally adjusted by allocation of property income. Reaggregating group distributions interpolated to a common income scale yields the overall adjusted distribution of income.

Proportional adjustment may be considered conservative as regards actual income concentration, particularly concerning entrepreneurial income and especially when amounts eventually reinvested in the business are taken into account. However, response biases associated with the investigation of this type of income also occur at lower income levels, where also omissions of self-produced consumption items and confusion between the business and the household may be more frequent. On the other hand, the combined effect of proportional adjustment of entrepreneurial incomes and the allocation of unreported property incomes to the upper quintile represents a more than proportional adjustment to wealth-related income.

Although unavoidably arbitrary in its assumptions, and limited in its application by the disaggregation of the data available, this method was devised with a view to adjusting income data from different types of survey in a uniform way.

Table 5 summarizes the results obtained by applying the adjustment method to a series of Latin American household surveys. Adjustment brings about a significant increase in concentration. Gini coefficients are generally increased by between 10 and 15 percent of their original values, rather independently of the degree of concentration in the original distribution. These are substantial changes, given the relative insensitivity of these types of measures of shifts in income distributions.

On the other hand, not all the surveys are affected to the same extent by the adjustment process. There is a slight tendency for the increase in concentration to be associated with the degree of underestimation of total income in Table 4, but this is not always so, depending on the pattern of underestimation by type of income and the relative position of socio-economic groups.

The shares of the poor in aggregate household income decrease significantly, between one and two and a half percentage points. The upper decile of households usually increases its share in a somewhat larger proportion than general inequality, gaining from 3 to even 8 percentage points of total household income.

[26]Defining

$$c_g = \frac{\sum_{j \neq p} cj Y^0_{jg} + Y^0_{pg}}{\sum_j Y^0_{jg}}$$

where $g$ = socio-economic groups, $j \neq p$ = monetary property incomes, and $(m-r)$ = the income intervals just above the 80th percentile, then

$$Y^A_{ig} = c_g Y^0_{ig}, \quad \text{for every } i \notin (m-r)$$

$$Y^A_{ig} = Y^0_{ig}(c_g + c_{pg}), \quad \text{for every } i \in (m-r)$$

where

$$c_{pg} = (c_p - 1)\, Y^0_{pg} \Big/ \sum_{i=r+1}^{m} Y^0_{ig}.$$

TABLE 5

LATIN AMERICA: EFFECT OF ADJUSTMENTS FOR INCOME UNDERESTIMATION ON CONCENTRATION

| Country | Survey No.[a] | Year | Original Distributions | | | Adjusted Distributions | | |
|---|---|---|---|---|---|---|---|---|
| | | | Lower 40% | Upper 10% | Gini | Lower 40% | Upper 10% | Gini |
| (a) *National Level* | | | | | | | | |
| Brazil | 5.1 | 1972 | 7.0 | 50.6 | 0.605 | 5.6 | 58.7 | 0.662 |
| Colombia | 3 | 1972 | 5.9 | 50.8 | 0.618 | 6.5 | 50.1 | 0.607 |
| Mexico | 1 | 1963 | 10.2 | 42.2 | 0.530 | 7.5 | 50.2 | 0.606 |
| | 2 | 1968 | 10.6 | 42.1 | 0.521 | 8.1 | 48.3 | 0.586 |
| | 4 | 1977 | 11.5 | 36.3 | 0.482 | 10.4 | 40.1 | 0.518 |
| Peru | 2 | 1971/72 | 7.0 | 42.9 | 0.568 | 5.7 | 46.2 | 0.603 |
| Venezuela | 3 | 1971 | 10.3 | 35.7 | 0.494 | 9.8 | 36.3 | 0.505 |
| (b) *Urban Areas* | | | | | | | | |
| Argentina | 5.1 | 1970 | 16.0 | 28.8 | 0.385 | 13.6 | 35.8 | 0.448 |
| Brazil | 5.1 | 1972 | 8.6 | 47.0 | 0.569 | 6.3 | 54.8 | 0.633 |
| Colombia | 3 | 1975 | 8.0 | 43.6 | 0.565 | 8.1 | 45.2 | 0.572 |
| Mexico | 2 | 1968 | 11.7 | 40.1 | 0.498 | 9.3 | 45.4 | 0.553 |
| Peru | 2 | 1971/72 | 12.2 | 36.3 | 0.471 | 11.6 | 38.8 | 0.489 |
| Uruguay | 1 | 1967 | 14.3 | 30.5 | 0.419 | 13.3 | 35.7 | 0.454 |

[a]See Table 1.

Indeed, adjustment grossly changes the picture of inequality, even considering the rather conservative nature of the assumptions made. It alters in more subtle ways the comparative picture. Even more so, since some other surveys not included in Table 5 were not adjusted because their results were considered reasonably reliable, this highlights the case for adjustment and for the host of reliability analyses on which it can be based as a means to somehow take into consideration the limitations posed by differences in reliability of income distribution measurements to comparisons between countries and over time.

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