

EVIDENCE ON RELATIONSHIPS AMONG ALTERNATIVE MEASURES OF CONCENTRATION: A TOOL FOR ANALYSIS OF LDC INEQUALITY

BY ALBERT BERRY*

Department of Economics, University of Toronto

The evidence on economic inequality in nearly all developing countries is both seriously incomplete and of moderate to poor quality. In addition, information often corresponds to distributions which appear to be less revealing and useful than other ones; thus it can be argued that the frequently available distribution of income among households ranked by household income is less helpful than the seldom found distribution of consumption among persons ranked by per capita household consumption. Whether one's objective is to assess inequality in some absolute sense or (especially) to make comparisons across countries or evaluate trends over time, it is useful to know whether systematic relationships exist among various measures of inequality, in particular between those most commonly available and those conceptually most interesting. Illustrative comparisons of a variety of inequality indicators are presented. They suggest that in developing countries the concentration of income among persons (assuming equal distribution within the family) does not differ much from the concentration among households. They also suggest that the concentration of consumption is somewhat less unequal than that of income, the ratio of the respective Gini coefficients tending to cluster around 0.85 to 0.90.

1. INTRODUCTION

Measurement decisions in the study of economic inequality in less developed countries may be classified into four categories: (1) the variable or variables used to measure economic well-being (income, consumption, wealth, etc., each of which may be variously defined¹); (2) the unit of observation (individual, family, etc.); (3) the period of time over which the chosen variable or variables are measured; and (4) the single value indicator of inequality to choose if one is used. In a world of complete and perfect information, these choices could be made solely on the basis of appropriateness to the issue to be analyzed. In fact, however, the total information in most LDCs is very limited, so analysis involves utilizing what is available. In such situations, it is important to know how and how much various distributions tend to differ from each other. Only when sufficient information has been built up to permit the estimation of key missing distributions on the basis of others which are available will studies of trends in economic inequality become possible in those numerous countries where only the conceptually less interesting distributions are available or where different distributions are available at different points of time. Advance in this direction will no doubt be slow and success very relative, but in the absence of any such effort, the evolution of income distribution will remain a matter of speculation in many countries.

*This paper has benefited from the comments of an anonymous referee.

¹Thus, one can use broader or narrower concepts of income according to whether one includes capital gains, imputations for work in the home, imputations for leisure, and so on.

Ideally, one would be able to estimate, say, the Gini ratio (or the quintile shares, or whatever) of consumption among individuals in country i (on which no direct information was available) on the basis of analysis from other countries which had shown it to bear a stable relationship to a set of variables which might include the Gini ratios of other welfare proxies, structural variables (e.g. share of labour force in agriculture), and macroeconomic indicators. Similarly one would hope to be able to guess fairly accurately at the Gini for lifetime income based on that for a year, at the concentration of personal income based on that for household income, and at the Theil coefficient based on the Gini coefficient and other available data.

This paper discusses some of the distributions whose intercorrelations should be useful and hence worthy of theoretical and empirical study. At present the body of evidence on which to draw is quite limited. The first step in empirical analysis is simply to get some feel for which distributions show greater inequality than others, by how much, and how systematically. This paper provides illustrative evidence along these lines with reference to the first two questions mentioned above.² The next step will be to formulate and test hypotheses linking the various inequality measures. The paper does not discuss the related and perhaps equally important question of how measured inequality reflects the way in which variables like income and household are defined,³ or how it reflects the quality of the data.⁴

Most of the available survey based information on economic inequality in developing countries refers to the distribution of income among earners or among families.⁵ The former is central to the analysis of economic structure and functioning but less helpful in the analysis of inequality as a welfare issue. The latter is more relevant to the problem of inequality but ranks persons wrongly because

²On the third point very few data are available for LDCs. The fourth is of less urgency, since it simply involves how distributional data may be summarized for convenience. There exists a considerable literature on how such measures as the Gini coefficient, the Theil coefficient and others differ and on their relative merits. See, for example, D. G. Champnowne, A Comparison of Measures of Inequality of Income Distribution, *The Economic Journal*, December 1974; and A. B. Atkinson, *The Economics of Inequality*, Oxford: Clarendon Press, 1975. On measures involving more than one indicator of inequality, see A. B. Atkinson and F. Bourguignon, The Comparison of Multi-Dimensional Distributions of Economic Status, *Review of Economic Studies*, Vol. 49, 1982.

³In principle, of course, all sources of differences in measured inequality should be considered simultaneously, and some of the comparisons undertaken below may attribute to differences in the variables being used what is in fact due to differences in how given variables are being defined. Some countries define the household to include live-in domestic servants; such a decision could affect the measured inequality of household income distribution significantly. Such definitional questions are dealt with in detail in United Nations, Department of International Economic and Social Affairs, *National Accounts Statistics: Compendium of Income Distribution Statistics*, Statistical Papers Series M, No. 79, New York, United Nations, 1985. This source also provides, for a number of countries, data on household distribution both when households are ranked by household income and when they are ranked by per capita household income.

⁴This issue is touched on in Albert Berry, On Trends in the Gap Between Rich and Poor in Developing Countries: Why We Know So Little, *Review of Income and Wealth*, Income and Wealth Series 31, No. 4, December 1985, pp. 347-350.

⁵It may be that as many or more developing countries have data on household expenditure distribution (needed as a source of weights for consumer price indices) as on income distribution, but usually at quite infrequent intervals and sometimes not given wide circulation.

families differ in size and age structure.⁶ Both are subject to doubts as to whether income is as good an indicator of welfare as is consumption, and whether measures of current income (or consumption) are as meaningful as measures corresponding to a longer period. Of distributions available for a not insignificant number of countries, the two most interesting are probably that of income among persons ranked by per capita household income⁷ and that of consumption among persons ranked by per capita household consumption, the reference period usually being a month. But the household income and consumption distributions are much more widely available. Accordingly, it is of particular interest to consider the relationship between the distribution of income among households and that among persons ranked by per capita household income,⁸ and the relationship between the distribution of consumption among households and the distribution of consumption among persons ranked by per capita household consumption.⁹

In illustrating such relationships empirically, we compare alternative distributions from the same data base. While it is also possible to study these relationships when, say, household income concentration has been calculated from one data set and personal income concentration from another, the resulting difference would then reflect not only the conceptual difference between the two measures of inequality but also differences in the data bases (different point of time, different accuracy of measurement, etc.). Since these latter differences are very large in the imperfect measurement conditions of LDCs, they would introduce a large amount of noise into the comparisons. When the number of surveys on which one can draw is much greater than it is now, and good statistical procedures can be applied, this restriction could be relaxed.

The following symbolism is adopted here. The welfare proxies, income and consumption, are represented respectively by y and c . The population of units for which income or consumption is defined is either persons (p) or households (h). Thus, hy refers to household income, pc to personal consumption. A measure

⁶An issue discussed, for example, by Simon Kuznets in *Size of Households and Income Disparities*, in *Research in Population Economics*, ed. Julian L. Simon and Peter H. Lindert, Greenwich, Conn.: JAI Press, 1981; Gautam Datta and Jacob Meerman, *Household Income or Household Income Per Capita in Welfare Comparisons*, *Review of Income and Wealth*, Series 26, No. 4, December 1980; P. Visaria, *Poverty and Living Standards in Asia: An Overview of the Main Results and Lessons of Selected Household Surveys*, Working Paper No. 2, Living Standards Measurement Study, Washington, World Bank, 1980.

⁷A true personal income distribution would distinguish income levels among members of the household, but we are still so far from operationalizing such a concept that for present purposes we use per capita family income and personal income as interchangeable terms, the latter being chosen for brevity, though recognizing the risk of its being somewhat misleading.

⁸We give little attention here to the household distribution of income where each household is weighted by the number of persons it contains, or to the personal distribution where each person's weight is the inverse of the size of the family of which he/she is a member. Such distributions are neither common ones nor ones with an obvious usefulness for analysis of welfare. A range of inequality statistics, generated by varying both the income concept and the income unit, is discussed by S. Danziger and M. Taussig, *The Income Unit and the Anatomy of Income Distribution*, *Review of Income and Wealth*, Series 25, No. 4, December 1979. Also in the U.S. context see Frank A. Cowell, *The Structure of American Income Inequality*, *Review of Income and Wealth*, Income and Wealth Series 30, number 3, September 1984, pp. 351-376.

⁹Since the distribution among earners is also widely available, this exercise should be extended to include such distributions but we have not attempted it here.

of concentration may be defined by the trait being measured (here the welfare proxies), the population, and the ranking criterion; we refer here to the Gini ratio of household income among households ranked by household income as $G(hy, h, hy)$. $T(py, p, py)$ refers to the Theil coefficient of concentration of personal income among persons ranked by personal income. (hy, p, py) refers to the distribution of household income among persons ranked by personal income; although the distribution is among persons ranked by personal income (i.e. per capita household income) the income assigned to each person is his/her household income. Thus the trait referred to (household income) does not correspond to the individuals defining the population (persons); as a result the common meaning of "distribution of income" as "the allocation of total income among the members of a population" becomes inappropriate, since when the incomes attached to each person in the distribution are summed the total does not correspond to the total income of the group. The mathematical concept of the distribution of a random variable as the number of individuals for which the variable has values in each possible range is still applicable, of course, and such "distributions" may be of interest for a variety of reasons.

For distributions where the welfare proxy, the population unit and the ranking criterion all coincide, i.e. when the welfare proxy and the ranking criterion involve the same trait, which is measured for the population units (e.g. the distribution of household income among households ranked by household income) it is convenient to abbreviate the description from (hy, h, hy) to hy^* . Much of the discussion is in terms of such distributions.

2. LINKING HOUSEHOLD AND PERSONAL DISTRIBUTIONS

Comparisons between hy^* and py^* estimated from the same data base are now available for a few developing countries, with the general finding that the Gini coefficients of the two distributions tend not to differ much (see Table 1).

TABLE 1
SUMMARY OF COMPARISONS OF MEAN GINI COEFFICIENTS, VARIOUS PAIRS OF DISTRIBUTIONS, LESS DEVELOPED COUNTRIES

1. Comparisons of Mean Gini Coefficients between Household and Personal Distributions			
a)	Ghy^*	= 0.443	Gpy^* = 0.440 (7 cases)
b)	Ghy^*	= 0.436	$G(py, p, hy)$ = 0.366 (9 cases)
c)	$G(hy, h, py)$	= 0.375	Gpy^* = 0.477 (4 cases)
d)	Ghc^*	= 0.386	Gpc^* = 0.363 (5 cases)
e)	$G(hc, h, pc)$	= 0.315	Gpc^* = 0.405 (4 cases)
f)	Ghc^*	= 0.410	$G(hc, h, hy)$ = 0.352 (2 cases: Colombia, Philippines)
2. Comparisons of Mean Gini Coefficients between Income and Consumption Distributions			
a)	Gpy^*	= 0.433	Gpc^* = 0.365 (2 cases: Sri Lanka, Malaysia)
b)	Ghy^*	= 0.452	Ghc^* = 0.408 (6 cases: Indonesia, Colombia, Philippines, Iran, Sri Lanka, Malaysia)
c)	Ghy^*	= 0.435	$G(hc, h, hy)$ = 0.363 (4 cases: Sri Lanka, Dominican Republic, Mexico, Pakistan)

For the Philippines,¹⁰ Taiwan, and Trinidad-Tobago the reported Ginis are almost identical, differing by less than 0.01 after rounding. In the Hong Kong and Colombia surveys the Gini of py^* is somewhat above that of hy^* , while for Sri Lanka and Malaysia the opposite is the case.¹¹ But in no case is the gap greater than about 0.025. Thus, for a country with no estimate for the Gini of py^* , a best guess based on evidence from other countries would put it quite close to that of hy^* .¹² Data on hy^* can also be used to provide evidence on py^* in another, albeit indirect, way, following from the facts that (i) another distribution (py, p, hy) can be estimated with reasonable precision from hy^* , as long as average family size is known for the various income categories (e.g. deciles) of the household income distribution and (ii) the Gini ratio of py^* is by definition more unequal than is that of (py, p, hy),¹³ so the inequality of (py, p, hy) thus provides a lower limit to the range within which that of py^* must fall. In the context of a country with no direct measurements of py^* , evidence on (py, p, hy) could be more useful than that on hy^* if the relationship between py^* and (py, p, hy) is tighter (i.e. has a lower variance) than that between hy^* and py^* ; whether this is true is not yet known for want of information.¹⁴

Evidence is scantier on the relationship between hc^* and pc^* than on that between hy^* and py^* . Figures from five countries are presented in Table 1; in the four Asian countries represented (Sri Lanka, Malaysia, India, and Nepal), the Gini is higher for hc^* than for pc^* by an average of 0.047. For urban Colombia (1967-68), however, the Gini of pc^* was above that of hc^* (0.49 to 0.42). While the difference between the five country average Gini of hc^* (0.386) and pc^* (0.363) is small, the considerable variance of that difference across countries suggests that hc^* may be considerably less useful as a guide to pc^* than hy^* is

¹⁰A. Berry, *Income and Consumption Trends in the Philippines, 1950-1979*, *Review of Income and Wealth*, June 1978.

¹¹The cases of Trinidad-Tobago and Hong Kong are discussed by C. Morrison, *Income Distribution in Less Developed Countries: Methodological Problems*, in *Personal Income Distribution*, International Economic Association, 1978, p. 243. The Colombia figures are based on data from a survey whose results are reported in Marcelo Selowsky, *Who Benefits from Government Expenditures: A Case Study of Colombia*, New York, Oxford University Press, 1979.

¹²For the U.S., the relationship under discussion is unclear. Danzinger and Taussig reported figures for 1967 and 1976 which are almost equal, whereas Datta and Meerman's 1947 and 1972 figures show the Gini of py^* up to 0.04 higher.

¹³From the general rule that the Gini ratio is greater when the members of the population are ranked by the variable whose concentration is being measured (here income) than when they are ranked by any other variable.

¹⁴The relationship between hy^* and (py, p, hy) depends on the relationship between household income and family size. For developed countries like the U.S. and the U.K. the Gini coefficient of hy^* is markedly greater (typically over 0.10 in both cases), since size of household rises strongly with average household income. The same pattern holds for Canada, Ireland and probably most Western developed countries. (For a compilation of data on which we have drawn heavily, see International Labour Office, *Household Income and Expenditure Statistics*, No. 3, 1968-1976, Geneva, I.L.O., 1979. See also Nos. 1 and 2 in this series.) In the LDCs for which we have data, the Ginis tend to differ by much less, except for Pakistan and Bangladesh where the difference of 0.14 is similar to that for the U.S. and the U.K. Otherwise, the maximum difference observed in our set of information (see table A) is 0.09 (Malaysia, 1973) or a 17 percent decline from hy^* to (py, p, hy); it is also near the median and mean percent decline of the nine LDC cases (including Pakistan and Bangladesh) for which we have data. In some cases there is almost no difference. But the relationship is obviously characterized by considerable variability across countries. As for the relationship between (py, p, hy) and py^* we have as yet, unfortunately, no evidence at all so nothing can be said about the potential value of (py, p, hy) as anything more than a lower limit for py^* .

to py^* . For the two countries where both the hy^* with py^* comparison and the hc^* with pc^* comparison are possible (Sri Lanka and Malaysia), it is true that Ghc^*-Gpc^* is greater than Ghy^*-Gpy^* .

A little additional evidence of possible use in estimating the personal distribution in countries lacking direct figures may come from studying, in countries where both are available, py^* and (hy, h, py) or their counterparts on the consumption side. Since average family size is usually related negatively to per capita household income the Gini of py^* will normally exceed that of (hy, h, py) ; for the four cases where income data are available the average Ginis were 0.477 and 0.375.¹⁵ A parallel relationship will exist also on the consumption side (Table 1).

3. LINKING INCOME AND CONSUMPTION DISTRIBUTIONS

The relationship between consumption distributions and income distributions is of great interest given that consumption may be the better indicator of welfare but that income data are more commonly available. The key question is how the more interesting income distributions (especially py^*) differ from the counterpart consumption distributions (especially pc^*). We have seen direct evidence on the relationship between those two distributions only for Sri Lanka (1969-70) and Malaysia (1973), with the Gini coefficient of py^* substantially greater in each case, the mean gap being 0.07.¹⁶

In terms of indirect evidence, since hy^* is the most frequently available distribution, it is important to assess its relationship with one or more distributions of consumption, and ultimately with pc^* . For a few countries both a household income distribution, hy^* , and a household consumption distribution, hc^* , are available; the difference in Gini coefficients is on average rather small but unfortunately somewhat variable. In Bandung (Indonesia) the former Gini was 0.337, the latter 0.366;¹⁷ in Bangkok and in urban Iran (1971) the two were very close, while in the other four cases a common pattern emerged with Ghy^* averaging 0.467 and Ghc^* 0.401. For all six countries the Gini averages were 0.452 for hy^* and 0.408 for hc^* . It is interesting to note that the ratio of Gpc^*/Gpy^* is 0.843 for the two cases for which those two distributions are simultaneously available. If we exclude those two surveys (Sri Lanka, 1969-70 and Malaysia, 1973) and estimate the ratio on the basis of Gpy^*/Ghy^* (which averaged 0.993 for five other countries) Ghc^*/hy^* (which averaged 0.919 for four other countries)

¹⁵In Colombia (1974) the differential was 0.536 to 0.461. In the Federal District of Brazil (1968) and Malaysia (1973) it was similar, while in Israel where the negative association of size of family with per capita family income was very strong it was 0.351 to 0.184.

Countries with data on the distribution of consumption across persons ranked by per capita family consumption (pc^*) show similar differences between that distribution and (hc, h, pc) , with the former being markedly greater in urban India (0.313 to 0.167) and moderately so in rural India (0.303 to 0.254), Tunisia (about 0.40 to about 0.32), Malaysia (0.421 to 0.340) and four Colombia cities in 1967-68 (0.49 to something less than 0.42, since hc^* is 0.42). In the last case the difference could be rather large.

¹⁶Of equal interest would be distributions using adult equivalents instead of persons, or total expenditures instead of consumption. India has long collected expenditure data, classifying by per capita expenditure of family. But there appear to be no independent income figures.

¹⁷The average expenditure to income ratio was 1.234, suggesting high under-reporting of income relative to that of expenditure.

and G_{pc}^*/G_{hc}^* (which averaged 0.992 for two other other countries), the resulting figure of 0.901 is fully independent of the first two cases but reasonably close to it. These illustrative figures seem not to contradict each other, albeit leaving us far from any statistically serious propositions.

Another form of indirect evidence can be adduced from a number of other countries for which distributions of household income and of household consumption are available by the same ranking of households, either household income or household consumption. In several countries where hy^* is available, the distribution of consumption among households ranked by household income (hc, h, hy) is also available (or can be calculated). Since inequality in terms of any welfare proxy is less when they are ranked by any variable other than that proxy, one can in some countries use the proposition that the G_{hc}^* must exceed $G(hc, h, hy)$ to learn something about the relationship between hc^* and hy^* . For four LDCs the averages were 0.435 for G_{hy}^* and 0.363 for $G(hc, h, hy)$,¹⁸ a difference which seems consistent with that observed between G_{hy}^* and G_{hc}^* for the set of countries where the direct comparison was available and thus adds a bit more weight to the proposition that G_{hc}^*/G_{hy}^* probably averages about 0.9 in the developing countries.

Less frequently we have the Ginis of both hc^* and (hc, h, hy); both for four Colombian cities (1967-68) and in the Philippines (averages across the years 1961, 1965 and 1971), $G(hc, h, hy)$ was about 85 percent of G_{hc}^* . Since both cases were included among those for which a direct comparison of hy^* and hc^* could be made, these data add no new information on that comparison.

4. SUMMARY AND CONCLUSIONS

Among the practical alternatives available, inequality is probably best measured using distributions of monthly income or consumption among persons classified by per capita (or per adult equivalent) household income or consumption, but since few data are available on these distributions (especially prior to the last decade), indirect methods are a *sine qua non* of any attempt to measure these dimensions of inequality. While scattered data are available on a wide range of distributions, not enough cases have been recorded to permit firm generalizations as to how these distributions differ and in response to what, either on average or for particular types of countries. But the available data do point

¹⁸The cases include Sri Lanka (four different years) with averages of 0.423 and about 0.298 for the two Ginis (the latter figure includes a rough upward adjustment to allow for the smaller number of categories used in the calculation of $G(hc, h, hy)$ than of G_{hy}^*); Santo Domingo (1969, a sample which excludes one person families), 0.488 and 0.447; Mexico (1968), 0.489 and 0.420; Pakistan (1971-72), 0.339 and 0.288. Among developed countries we have data for the U.K. (1975), 0.343 and 0.271; and for the U.S.A. (1973), 0.411 and 0.255.

For Bangkok-Thonbari (1972) G_{hy}^* (annual income) was 0.421 and $G(hc, h, hy)$, for monthly expenditure rather than consumption, was 0.318. But only money income was included in the former distribution so the Gini may have been a little above the true one for that reason. But the average expenditure/income ratio in the survey was 0.923, suggesting not too much unreported income. For Maracaibo, Venezuela, where the expenditure/income ratio was only 83.5 percent, G_{hy}^* (0.464) was much above $G(hc, h, hy)$ (0.264). Of the three cases with a large gap between the Ginis of the two distributions under discussion, we have data on family size by income level only for Bangkok-Thonbari, where the positive association is very marked.

to several interesting hypotheses:

- (1) The concentration of income among persons in developing countries (judged by the Gini coefficient) differs little from the concentration among households,¹⁹ when one assumes an equal distribution within each family. While the Ginis of the household and personal consumption distributions also differ little on average for the countries for which we have data, considerable differences appear for some individual countries, so the parallel hypothesis is weaker on the consumption side.
- (2) Distributions of consumption are somewhat less unequal than those of income. Whether we compare the Gini of hc^* to that of hy^* or the Gini of pc^* to that of py^* (directly or indirectly), the ratios of the consumption Gini to the income Gini cluster around 0.85 to 0.90.

Obviously, much more empirical work will be required before formal statistical tests can be applied to these hypotheses or to more interesting ones; comparisons are also needed in terms of other indicators of inequality than the Gini coefficient, given its known defects.²⁰ More important for many purposes than ascertaining average relationships among distributions will be explaining why they vary, i.e. understanding what it is about countries or situations which makes distributions differ by more or by less.²¹ Only with organized information of this sort will it be possible to fill in some of the informational gaps which now constitute a major obstacle to the study of economic inequality, its determinants, and its trends in less developed countries. It is worth noting that the battery of useful information includes some distributions which have little or no innate interest but which are useful because they appear to have (or may in future be shown to have) predictable relationships to distributions which are of direct interest. On a less optimistic note, it is clear that the great economies of scale which would characterize the sort of research effort alluded to suggest the need for a major, well organized attack on the problem.

¹⁹Were one to allow for intra family differences, the distribution of personal income would be somewhat but perhaps not much more unequal than that among households.

²⁰Particularly unfortunate is its insensitivity to large percentage changes in the incomes of the very poor. Many users are probably especially interested in this part of the income distribution.

²¹Only a few detailed country analyses have yet been undertaken. S. Anand (*Inequality and Poverty in Malaysia: Measurement and Decomposition*, Oxford University Press, 1983) has analyzed several income distributions for Malaysia; P. Visaria (*Incidence of Poverty and the Characteristics of the Poor in Peninsular Malaysia, 1973*, World Bank, Staff Working Paper No. 460, 1981), also working on Malaysia, has presented detailed information on the distribution of expenditures.

Some of the reasons for the differences among distributions are fairly clear *a priori*, but the size of differences is equally important; here valid generalizations can only be made after the number of careful country studies has been multiplied severalfold at least.

APPENDIX

TABLE A

A COMPARISON OF THE GINI COEFFICIENTS FOR SELECTED DISTRIBUTIONS OF INCOME AND CONSUMPTION, VARIOUS COUNTRIES

Country or City	Gini Coefficients of the Distribution of Household Income Among:			
	Households Ranked by Income: G_{hy}^* (1)	Households Ranked by Per Capita Household Income: $G(hy, h, py)$ (2)	Households Ranked by Household Consumption: $G(hy, h, hc)$ (3)	Persons Ranked by Household Income: $G(hy, p, hy)$ (4)
Brazil (Distrito Federal), 1968		0.424		
Indonesia (1968-69)				
Jakarta	0.395 ^a			
Bandung	0.337			
India (1964-65)	0.410 ^b			
(1973-74)—rural				
urban				
Gujarat 1972-73—rural				
urban				
Maharashtra 1972-73—rural				
urban				
Tunisia 1964-65 and 1966-68				
Pakistan	0.339			
Mexico (1968)	0.489			
Egypt (1964-65)—urban				
rural				
Colombia 1967-68 (4 cities)	0.47			
Colombia (1971)	0.515			
Colombia (1974)	0.51	0.461		
Israel ^c (1975-76)		0.184		
Bangladesh (1968-69)	0.307			
(1973-74)			0.338	
Philippines 1961	0.50			
1965	0.507			
1971	0.490			
Zambia (1966-68)				
(low income housing area)	0.390			
Iran—urban (1971)	0.478			
Donimican Republic				
(Santo Domingo) (1969)	0.488			
Sri Lanka 1953	0.487			
1963	0.472			
1968-69	0.378			
1969-70	0.381			
1972	0.353			
Malaysia 1970	0.513			
1973		0.428 ^j		
1974	0.48			
Nepal (11 towns) 1973-74				
Taiwan 1968	0.330			
1974	0.301			
Canada 1970	0.418	0.429 ^k		0.293 ^h
U.S.A. (1973)	0.411			
1947	0.378 ^g			
1967	0.399			0.354
1976	0.406			0.366
1972	0.359 ^e			
U.K. (1975)	0.343			

APPENDIX TABLE A—continued

Gini Coefficients of the Distribution of Personal Income Among:				
Country or City	Persons Ranked by Household Consumption: $G(py, p, hc)$ (5)	Persons Ranked by Personal Income: Gpy^* (6)	Households Ranked by Household Income: $G(py, p, hy)$ (7)	Households Ranked by Personal Income: $G(py, h, py)$ (8)
Brazil (Distrito Federal), 1968		0.52		
Indonesia (1968-69)				
Jakarta				
Bandung				
India (1964-65)			0.39 ^b	
(1973-74)—rural				
urban				
Gujarat 1972-73—rural				
urban				
Maharashtra 1972-73—rural				
urban				
Tunisia 1964-65 and 1966-68				
Pakistan			0.202	
Mexico (1968)			0.470	
Egypt (1964-65)—urban				
rural				
Colombia 1967-68 (4 cities)				
Colombia (1971)				
Colombia (1974)		0.536		
Israel ^c (1975-76)		0.351		
Bangladesh (1968-69)			0.155	
1973-74)	0.179			
Philippines 1961				
1965			0.452	
1971		0.49		
Zambia (1966-68)				
(low income housing area)			0.336	
Iran—urban (1971)			0.407	
Dominican Republic (Santo Domingo) (1969)			0.449	
Sri Lanka 1953				
1963				
1968-69				
1969-70		0.364		
1972				
Malaysia 1970		0.498		0.537
1973		0.502	0.429	
1974		0.46		
Nepal (11 towns) 1973-74				
Taiwan 1968		0.321		
1974		0.287		
Canada 1970		0.410		
U.S.A. (1973)			0.291	
(1947)		0.418		0.352
(1967)		0.396	0.412	
(1976)		0.391	0.403	
(1972)		0.390		0.297
U.K. (1975)			0.210	

APPENDIX TABLE A—continued

Gini Coefficients of the Distribution of Household Consumption Among:				
Country or City	Households Ranked by Consumption: <i>Ghc*</i> (9)	Households Ranked by Income: <i>G(hc, h, hy)</i> (10)	Household Ranked by Per Capita Household Consumption: <i>G(hc, h, pc)</i> (11)	Households Ranked by Per Capita Household Income: <i>G(hc, h, py)</i> (12)
Brazil (Distrito Federal), 1968)				
Indonesia (1968-69)				
Jakarta	0.380			
Bandung	0.366			
India (1964-65)				
(1973-74)—rural			0.254	
urban			0.167	
Gujarat 1972-73—rural	0.328			
urban	0.304			
Maharashtra 1972-73—rural	0.354			
urban	0.371			
Tunisia 1964-65 and 1966-68			0.317-0.332	
Pakistan		0.288		
Mexico (1968)		0.420		
Egypt (1964-65)—urban	0.398			
rural	0.348			
Colombia 1967-68 (4 cities)				
Colombia (1971)	0.42	0.364		
Colombia (1974)				0.086-0.29 ^f
Israel ^e (1975-76)				
Bangladesh (1968-69)		0.283		
(1973-74)	0.381			
Philippines 1961	0.400	0.361		
1965	0.407	0.336		
1971	0.396 ^c	0.321		
Zambia (1966-68)				
(low income housing area)		0.190		
Iran—urban (1971)	0.472			
Dominican Republic (Santo Domingo) (1969)		0.447		
Sri Lanka 1953		0.322 (0.304) ¹		
1963		(0.254) ¹		
1968-69		>0.304 (0.291) ¹		
1969-70	0.330			
1972		(0.286) ¹		
Malaysia 1970				
1973	0.452		0.340	
1974				
Nepal (11 towns) 1973-74	0.388			
Taiwan 1968				
1974				
Canada 1970				
U.S.A. (1973)		0.255		
(1947)				
(1967)				
(1976)				
(1972)				
U.K. (1975)		0.271		

APPENDIX TABLE A—continued

Country or City	Gini Coefficients of the Distribution of Personal Consumption Among:			
	Persons Ranked by Per Capita Household Consumption:	Persons Ranked by Per Capita Household Income:	Persons Ranked by Household Consumption:	Persons Ranked by Household Income:
	G_{pc}^* (13)	$G(p_c, p, p_y)$ (14)	$G(p_c, p, h_c)$ (15)	$G(p_c, p, h_y)$ (16)
Brazil (Distrito Federal), 1968		0.45		
Indonesia (1968-69)				
Jakarta			0.267	
Bandung				
India (1964-65)				
(1973-74)—rural	0.303			
urban	0.313			
Gujarat 1972-73—rural	0.259			
urban	0.261			
Maharashtra 1972-73—rural	0.272			
urban	0.331			
Tunisia 1964-65 and 1966-68				
Pakistan				
Mexico (1968)				0.399
Egypt (1964-65)—urban			0.297	
rural				
Colombia 1967-68 (4 cities)				
Colombia (1971)	0.49		0.173	
Colombia (1974)		0.259 (0.299) ^f		
Israel ^e (1975-76)				
Bangladesh (1968-69)				0.129
(1973-74)			0.230	
Philippines 1961				0.274
1965				
1971				
Zambia (1966-68)				0.138
(low income housing area)				
Iran—urban (1971)				
Dominican Republic (Santo Domingo) (1969)				0.401
Sri Lanka 1953				0.215
1963				0.198
1968-69				
1969-70	<0.309			
1972				0.179
Malaysia 1970				
1973	0.421		0.335	
1974				
Nepal (11 towns) 1973-74	0.312			
Taiwan 1968				
1974				
Canada 1970				
U.S.A. (1973)			0.233	0.125
(1947)				
(1967)				
(1976)				
(1972)				
U.K. (1975)				0.131

^aIncome plus other sources of funds.

^bThe families appear to be ranked by family income so presumably persons would also have to be.

^cBased on seven classes whereas the other figures for Philippines 1971 are based on about 15.

^dSpending units rather than families.

^eNet income.

^fDistribution of expenditure, for the figure in parenthesis.

^gRefers only to families, excluding single individuals, so the level of inequality is less than when those individuals are included.

^hAdjusted up by about 20 percent to account for the use of only 10 classes in its calculation.

ⁱThis value appears suspiciously low, but no reason for such a result is apparent.

^kThis figure is implausibly high; further, theory precludes its being greater than the figure in column (1), so one or both must be wrong. We were unable to ascertain which.

^lFigures in parentheses are the original estimates, based on a smaller number of categories than used in the estimation of Ghy^h; figures not in parentheses include a rough upward adjustment to make them comparable in that respect to the estimates of Ghy^h.

Sources: Figures have been calculated on the basis of data presented in ILO, Household Income and Expenditure Statistics, Nos. 1 to 3, except for those mentioned specifically below. For Colombia the other sources used are: for 1967-68, Berry and Soligo, *The Distribution of Income in Colombia: An Overview* in Berry and Soligo (editors), *Economic Policy and Income Distribution in Colombia*, Boulder, Colorado, Westview Press, 1980, p. 61; for 1974, Selowsky, *Who Benefits from Government Expenditures?* For the Philippines, the data come from Bureau of the Census and Statistics, *Family Income and Expenditures*, the years in question. For Sri Lanka: 1953, *Survey of Ceylon's Consumer Finances, 1953*, Colombo, Central Bank of Ceylon, 1954; for 1963 the corresponding volume of the same title; for 1973, *Survey of Sri Lanka's Consumer Finances, 1973*; for 1969/78, Department of Census and Statistics, *Report on the Socio-Economic Survey of Ceylon, 1969/70*, Colombo, 1970; for 1969-70, Visaria, "Demographic Factors and the Distribution of Income: Some Issues" paper prepared for the Conference on Demographic and Economic Change: Issues for the 1980's, convened by the International Union for the Scientific Study of Population, Helsinki, 1978. The figures for U.S. (1967) and U.S. (1976) are from Danziger and Taussig, "The Income Unit . . .," p. 369. Figures for 1947 and 1972 are from Datta and Meerman, "Household Income . . .," p. 413. For Malaysia, 1978, Anand, *Inequality and Poverty . . .*, p. 791; for 1973, Visaria, *Incidence of Poverty*, p. 15). For Taiwan, Visaria, "Demographic . . ." Table 1. For Canada, Roger Love, *Income Distribution and Inequality in Canada*, Ottawa, Statistics Canada, p. 36, p. 38, p. 104. The definition of the household employed is the Economic Family Unit, i.e. "a group of two or more persons living together and related to each other by blood, marriage, or adoption" (p. 25).