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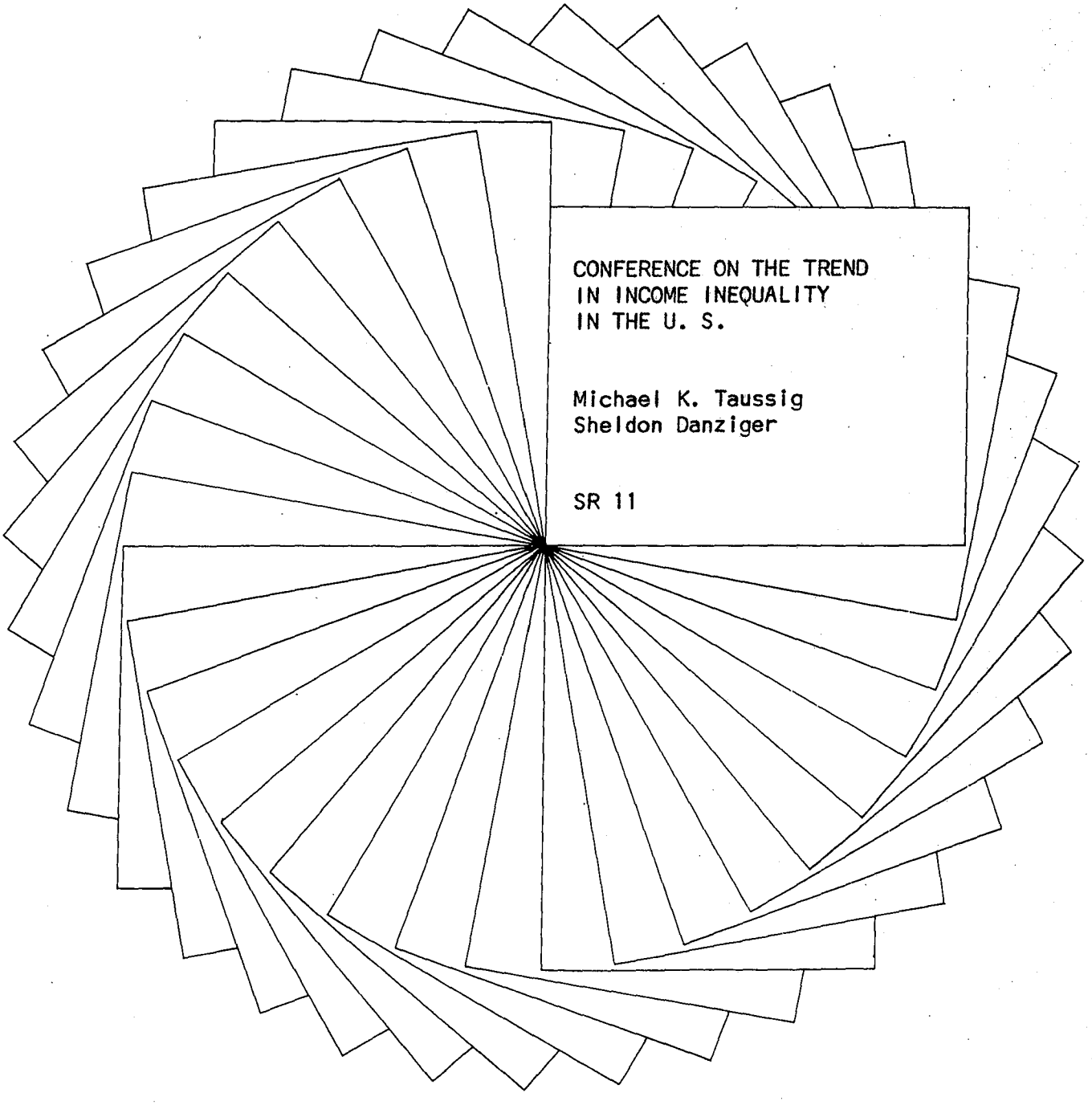

CONFERENCE ON THE TREND
IN INCOME INEQUALITY
IN THE U. S.

Michael K. Taussig
Sheldon Danziger

SR 11

Conference on the Trend in
Income Inequality in the U.S.

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Part 1. Trends in Inequality of Well-Offness in the United States since World War II

Michael K. Taussig

Part 2. Conference Overview: Conceptual Issues, Data Issues, and Policy Implications

Sheldon Danziger

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List of Conference Participants

Alan S. Blinder
Department of Economics
Princeton University

Edgar K. Browning
Department of Economics
University of Virginia

Edward C. Budd
Department of Economics
Pennsylvania State University

James Cowhig
Research Applications
National Science Foundation

Sheldon Danziger
Institute for Research on Poverty
and School of Social Work
University of Wisconsin-Madison

Martin David
Department of Economics
University of Wisconsin-Madison

Irwin Garfinkel
Institute for Research on Poverty
and School of Social Work
University of Wisconsin-Madison

Robert Lampman
Institute for Research on Poverty
and Department of Economics
University of Wisconsin-Madison

Stanley Lebergott
Department of Economics
Wesleyan University (Conn.)

Joseph Minarik
The Brookings Institution

Benjamin Okner
Congressional Budget Office

Morton Paglin
Department of Economics
Portland State University

John L. Palmer
The Brookings Institution

Joseph Pechman
The Brookings Institution

Robert Plotnick
Department of Economics
Bates College

Dan Radner
Office of Research and Statistics
Social Security Administration

Morgan Reynolds
Department of Economics
Texas A & M University

Timothy Smeeding
Department of Economics
University of Utah

James Smith
Institution for Social and Policy Studies
Yale University

Eugene Smolensky
Institute for Research on Poverty
and Department of Economics
University of Wisconsin-Madison

Michael K. Taussig
Department of Economics
Rutgers College

Lester Thurow
Department of Economics
Massachusetts Institute of Technology

John Todd
Office of Income Security Policy
Department of Health, Education, and
Welfare

Trends in Inequality of Well-Offness

in the United States since World War II

Michael K. Taussig

Rutgers College
Department of Economics

In revising this paper, I have made use of a number of points made by the participants in the "Trend in U.S. Income Inequality" conference at the Institute for Research on Poverty on October 29 and 30, 1976. I regret that my notes from that conference are not clear enough to give credit to specific individuals for particular points. I am pleased, however, to give special thanks to Edward C. Budd for detailed written criticisms of the first draft of the paper, and to Alan Cohen for saving me from two serious errors.

Trends in Inequality of Well-Offness in the United States since World War II

INTRODUCTION

This paper attempts to summarize the current state of knowledge on trends in inequality of economic well-offness in the United States since World War II. In brief, it surveys alternative answers to the often asked question: Has inequality in the United States increased, decreased, or remained roughly the same over a period of time? The following sample of summary answers comes from economists who have recently studied the question:

> Not only is the distribution of income more equal in each year than is indicated by the Census figures, but there has also been a marked trend towards equality over the 20-year [1952-1972] period. This is particularly apparent for the lowest quintile, whose share rose from 8.1 percent in 1952 to 11.7 percent in 1972, an improvement of 44 percent in the relative position of low-income families. Most of this occurred since 1962, largely as a result of the expansion of education benefits and in-kind transfers. (Browning, 1976, p. 93)

> [We can make] tentative conclusions about changes in the size distribution of income from the immediate postwar years to the 1960's from evidence drawn from a number of different distributions. This evidence points to a gain by the middle and upper part of the distribution, relative to the lower groups and the upper tail. (Budd, 1970, p. 260)

> A more unusual aspect of the data pertains to the 1958-70 trend. In three of the groups there is a slow but persistent trend toward inequality. (Henle, 1972, p. 17)

> Our empirical analysis has shown that inclusion of all government spending and taxation in household incomes significantly reduces effective income differences among income classes in each year but that dispersion in these post fisc income distributions has not changed significantly between 1950 and 1970. (Reynolds and Smolensky, forthcoming)

> It reveals the decline in interfamily inequality of income, unobscured by changes in the age-income profile, and in the age composition of the population. . . . In contrast to the traditional view, the equation indicates that inequality has declined 23 percent in the 25-year period, 1947-1972. (Paglin, 1975, p. 605)

> According to Table 6-2, income inequality, as measured by the log variance, has apparently increased substantially among both men and women since World War II [1947-1970]. (Schultz, 1975, p. 155)

Intelligent laymen, and indeed economists, might well be confused about the apparent divergence of views on this issue among experts. One purpose of this paper is to reconcile, as far as possible, the disparate results coming out of recent studies. While some of the differences can be readily explained by differences in the income concept and recipient unit used, other discrepancies remain a puzzle mainly because of the inadequacies of available data.

This paper proceeds according to the following plan: Section 1 sets forth the basic Census and other time series data on trends in income distribution since World War II. Section 2 discusses the well-known conceptual weaknesses of the basic data and attempts to focus on those particular defects that might be expected to seriously affect empirical measures of long-run trends in inequality. Section 3 critically summarizes important recent contributions to the subject of this paper and attempts to assess the success of each in resolving the problems raised in the preceding section. Section 4 gives some personal conclusions and briefly discusses the significance of measured trends in inequality.

Finally, I wish to note some important questions not examined here. First, the discussion ignores the impact of the business cycle on inequality and instead attempts to focus on trend. Trend and cycle are of course difficult to distinguish in the postwar data and should be treated simultaneously in any rigorous empirical study.[1] Second, the paper is limited to consideration of the distribution of economic well-offness among the persons living in any given year and ignores the complex of issues related to intergenerational transmission of inequality. Third, the focus is, as far as possible, on the problem of measurement of inequality in economic well-offness to the neglect of a comprehensive theory of what ultimate forces or mechanisms in our society caused the observed pattern of inequality during the time period covered. While it is impossible to measure economic well-offness and its distribution without implicit or explicit theoretical considerations, as the discussion in section 2 will amply illustrate, the overriding objective of the paper is to clarify empirical issues. A common pitfall in this area is

for economists to jump to sweeping explanations of apparent historical trends which are revealed by more careful study to be based upon misinterpretation of the data.

1. THE BASIC TIME SERIES

Table 1 displays published Census Bureau estimates of money income shares by quintiles and the top 5 percent of the size income distributions of families and unrelated individuals separately for the years 1947-1951 and 1970-1974. The estimates come from annual published reports of the Census Bureau's Current Population Survey (CPS), carried out in the spring of the year following every calendar year annual income period. The CPS data are the only reasonably consistent time series on the size distribution of income in the United States covering almost the whole population over nearly the entire postwar period. Let me postpone for the moment the many conceptual difficulties in interpreting the economic well-offness content of these estimates, and look just at the figures themselves. Table 1 shows slight trends to less inequality in both the family and unrelated individual distributions. On the whole, however, the consensus among economists is that these figures reflect substantial stability in the distribution of income over the nearly three-decade period.

Other estimates derived from the same CPS source are displayed in Tables 2 and 3 to supplement those in Table 1. The estimates in Table 2 are for quintile and top 5 percent of the distribution shares from 1958 through 1974 for a single distribution combining unrelated individual and family units. The size distribution for the whole covered population

Table 1

Percentage Shares of CPS Income, 1947-1951 and 1970-1974

	Lowest Fifth	Second Fifth	Third Fifth	Fourth Fifth	Highest Fifth	Top Five Percent
I. Families						
1974	5.4	12.0	17.6	24.1	41.0	15.3
1973	5.5	11.9	17.5	24.0	41.1	15.5
1972	5.4	11.9	17.5	23.9	41.4	15.9
1971	5.5	12.0	17.6	23.8	41.1	15.7
1970	5.4	12.2	17.6	23.8	40.9	15.6
1951	4.9	12.5	17.6	23.3	41.8	16.9
1950	4.5	11.9	17.4	23.6	42.7	17.3
1949	4.5	11.9	17.3	23.5	42.8	16.9
1948	5.0	12.1	17.2	23.2	42.5	17.1
1947	5.1	11.8	16.7	23.2	43.3	17.5
1970-1974 Mean	5.4	12.0	17.6	23.9	41.1	15.6
1947-1951 Mean	4.8	12.0	17.2	23.4	42.6	17.1
II. Unrelated Individuals						
1974	4.0	8.9	14.5	24.2	48.5	19.3
1973	3.7	8.6	14.4	23.9	49.5	20.0
1972	3.3	8.2	13.8	23.9	50.9	21.4
1971	3.4	8.1	13.9	24.3	50.4	20.5
1970	3.3	7.9	13.8	24.4	50.7	20.8
1951	2.9	7.0	14.1	26.7	49.4	18.2
1950	3.1	6.9	13.1	26.6	50.3	19.3
1949	3.2	7.4	13.4	25.9	50.2	19.4
1948	3.3	7.5	13.4	24.9	50.9	20.6
1947	2.9	5.4	11.5	21.3	58.9	33.3
1970-1974 Mean	3.5	8.3	14.1	24.1	50.0	20.4
1947-1951 Mean	3.1	6.8	13.1	25.1	52.0	22.2
1948-1951 Mean	3.1	7.2	13.5	26.0	50.2	19.4

Source: U.S. Bureau of the Census, Current Population Reports, Series P-60, Various Numbers of Annual "Money Income of Families and Persons in the United States."

Note: Estimates for 1947-1951 calculated using grouped data; estimates for 1970-1974 calculated using ungrouped data.

Table 2

Percentage Shares of CPS Income, 1958-1974, Calculated Directly from Computer Tapes for Families and Unrelated Individuals

	Lowest Fifth	Second Fifth	Third Fifth	Fourth Fifth	Highest Fifth	Top Five Percent
1974	3.83	10.07	16.87	24.82	44.40	16.81
1973	3.83	10.02	16.89	24.77	44.49	16.99
1972	3.66	10.02	16.88	24.69	44.75	17.35
1971	3.69	10.21	17.10	24.72	44.28	17.03
1970	3.63	10.34	17.24	24.68	44.11	16.94
1969	3.69	10.52	17.37	24.72	43.70	16.82
1968	3.80	10.66	17.40	24.66	43.48	16.84
1967	3.63	10.62	17.54	24.80	43.42	16.47
1966	3.80	10.65	17.47	24.68	43.41	16.73
1965	3.58	10.55	17.50	24.82	43.55	16.61
1964	3.43	10.36	17.30	24.79	44.12	17.22
1963	3.43	10.41	17.46	24.83	43.87	16.86
1962	3.44	10.41	17.47	24.78	43.90	16.76
1961	3.11	10.18	17.22	24.61	44.88	17.74
1960	3.15	10.58	17.59	24.72	43.96	17.01
1959	3.22	10.55	17.67	24.70	43.87	17.08
1958	3.25	10.78	17.88	24.76	43.34	16.46

Source: U.S. Bureau of the Census, unpublished estimates.

Table 3

Gini Concentration Ratio Estimates For CPS Income, 1947-1974

	Families Only: Calculated Directly from Computer Tapes	Families Only: Calculated from Class Interval Distributions Based on Pareto Function	Families and Unrelated Individuals: Calculated Directly from Computer Tapes	Families and Unrelated Individuals: Calculated from Class Interval Distributions Based on Pareto Function
1974	.356	.358	.409	.405
1973	.357	.355	.410	.409
1972	.360	.357	.414	.411
1971	.356	.355	.409	.407
1970	.354	.353	.407	.405
1969	.349	.347	.403	.401
1968	.348	.344	.400	.395
1967	.348	.347	.400	.399
1966	.349	.354	.399	.403
1965	.356	.360	.403	.407
1964	.361	.361	.410	.405
1963	.362	.364	.408	.405
1962	.362	.362	.407	.407
1961	.374	.377	.420	.418
1960	.364	.366	.410	.410
1959	.361	.360	.409	.407
1958	.354	.354	.403	.400
1957	-	.351	-	.397
1956	-	.358	-	.403
1955	-	.363	-	.408
1954	-	.371	-	.415
1953	-	.359	-	.406
1952	-	.368	-	.408
1951	-	.368	-	.404
1950	-	.389	-	.421
1949	-	.385	-	.421
1948	-	.378	-	.415
1947	-	.384	-	.423

Source: U.S. Bureau of the Census, unpublished estimates.

again appears quite stable for the shorter time period covered, although the estimates suggest that the shares of the second and third quintiles fell somewhat during the period, with corresponding gains by the bottom and top quintiles. Table 3 presents estimates of Gini concentration ratios based on calculations taken directly from the CPS computer tapes since 1958 and estimates from class interval distributions for the whole 1947-1974 period. The differences between the two sets of estimates are not large for the 1958-1974 period, which gives us some confidence in the trends estimated for the whole postwar period (Blinder and Esaki, 1976).[2] At any rate, the Gini concentration ratio estimates in Table 3 appear to tell much the same story as the share estimates in Tables 1 and 2--stability in the size distribution of CPS money income in the postwar period with a slight tendency to more equality. This conclusion depends, of course, on the choice of initial and final years for the comparison. It is also subject to the caution that the Lorenz curves for the different years in the postwar period intersect,[3] and therefore the Gini concentration ratio is not a satisfactory summary statistic of inequality (see Atkinson, 1970). It may also be worth observing that those who, like this author, read stability into the numbers shown in Tables 1-3 must have implicit notions of some order of quantitative differences in shares over time that would <u>not</u> be evidence of stability. According to Table 2, the share of the bottom quintile rose from 3.25 percent in 1958 to 3.83 percent in 1974, an increase of almost 20 percent. One might reasonably argue that this kind of change is evidence of a substantial decrease in inequality.

Instead of further discussion of points of interpretation concerning apparent trends in the CPS distribution, it seems more useful at this

point to examine in detail the construction of the CPS estimates. The important issues are (1) the CPS income concept; (2) the CPS income unit; (3) the CPS accounting period; and (4) certain relevant aspects of the CPS methodology.

The CPS income concept is money income, defined as the sum of money wages and salaries, net income from self-employment, Social Security income, property money income (interest, dividends, income from estates or trusts and net rental income), government cash transfer benefits, and a miscellaneous category of private cash receipts such as private pensions, alimony, regular gifts and other periodic income (U.S. Bureau of the Census, 1976).[4] The CPS income concept is gross of personal income taxes, the employee's share of Social Security taxes, and of other direct taxes, but includes all government cash transfers. CPS income does not include any form of non-money income, whether derived from the private or public sector. Specifically, it excludes all public and private noncash transfers, all net benefits derived from government services, and all fringe benefits related to employment not received in the form of cash. CPS income does not include either realized or unrealized capital gains, nor does it account for the contribution of personal wealth to economic welfare other than the cash return to assets reported by CPS respondents.

The CPS income unit is either the family or an unrelated individual. Population coverage excludes only inmates of institutions and military personnel overseas or living on post in the United States. The CPS household consists of all the persons occupying a housing unit, and the CPS family is defined as two or more persons related by blood, marriage, or adoption residing together in the same household. An unrelated individual

is a person fourteen years of age or older not living with any relatives. He or she may live alone in a one-person household or as one member of a larger household together with other unrelated individuals, families, or both. Hence, the family and the unrelated individual in the CPS are not necessarily income- or consumption-pooling units. Income or consumption pooling within or between households is ignored in the CPS income unit definition (although not in the income definition to the extent that such pooling takes the form of regular cash transfers).

The CPS income-accounting period is the calendar year, but the CPS provides an anomalous match between the income concept and the income unit. The latter is determined as it exists at the time of the Survey in the spring after the annual income period. Thus the income of families does not include cash income received by members of the unit in the previous year who leave the unit before the date of the interview. If the cause of separation from the unit is death or emigration or, in some cases, entry into the armed forces, the income of such persons is not included in the CPS total. The obverse of such cases occurs when the past year's income of individuals who join a family (or combine with other individuals to form a new family) is included in the total family (new family) income even if such income was received prior to joining (or forming) the family.

CPS methodology is important for the purpose of this paper to the extent that either changes in survey techniques or success in implementing old or new techniques may affect long-term trends in the measured money income distribution. The CPS is plagued by underreporting of income. For example, the Census Bureau reports that in 1971 the CPS compiled

88 percent of the benchmark estimate of total money income (U.S. Bureau of the Census, 1972, p. 20). The proportion of money income reported by type ranged from a low of 43 percent for property income to a high of 97 percent for wages and salaries. Budd (1970) has summarized the underreporting problem in commenting: "The CPS comes close to being a distribution of earnings plus Social Security payments" (p. 256). Such systematic underreporting of income will leave trends in income distribution as measured by the CPS unaffected only if the degree of underreporting for each broad income source has not varied over time and if the relative importance of each income source has stayed the same. The extent and pattern of underreporting over time has already been analyzed by some researchers for the more recent part of the postwar period. We also know a good deal about variations over time in the relative importance of the different sources of money income. Thus, future empirical studies may be able to quantify the effects of underreporting in the CPS on measured trends in inequality.

A more general problem is that the techniques used by the CPS have changed over time; therefore, money income distributions for different years are not completely comparable. The longer the time period involved in the comparison, the more serious is the problem of inconsistency in the estimates. As Budd has noted, interviewing methods, editing and processing of the basic data vary over time, and improvements in CPS techniques may introduce important elements of noncomparability over time. (It is worth noting that, despite improved interviewing procedures, the proportion of nonrespondents has risen over time and, as is evident from a study of the nonrespondents, they are predominantly from groups with above-

average incomes (Budd, 1970, pp. 257-58). In general, when improvements in survey techniques are introduced, limited budgets preclude the continuation of the old methods merely for the sake of preserving historical continuity of the size distribution of income time series. My personal judgment that inequality estimates from the CPS show a good deal of stability over the postwar period is based partly on the nonverifiable impression that variations in the quintile share and Gini coefficient estimates are small relative to the random variation or noise caused by lack of consistency in CPS techniques over several decades.

The problems with the CPS time series are serious enough, but the few alternative data sources for the study of long-run trends in U.S. income inequality seem clearly inferior. Probably the best of these alternatives is the old Office of Business Economics (OBE) and the new Bureau of Economic Analysis (BEA) series on the distribution of personal income among consumer units. Table 4 displays some estimates of quintile and top 5 percent of the distribution shares of personal income from the old and new series on personal income for selected years from 1929 to 1971. The great advantage of these series is that, in contrast to the CPS series, their personal income concept is fully accounted for in the estimates. The income unit is the consumer unit, either the family or unrelated individual, as defined by the Census Bureau. The income accounting period, as in the CPS, is the calendar year. Unfortunately, both the old (1929-1963) and new (1964-1971) time series are ill-suited for the study of long-run trends in inequality. Indeed, the old OBE series was discontinued because of out-of-date benchmarks and deficient methodology; the new estimates, while improved in both respects, are

Table 4

Percentage Shares of Family Personal Income, All Consumer Units, Selected Years

	Lowest Fifth	Second Fifth	Third Fifth	Fourth Fifth	Highest Fifth	Top Five Percent
1929	3.5	9.0	13.8	19.3	54.4	30.0
1935-36	4.1	9.2	14.1	20.9	51.7	26.5
1941	4.1	9.5	15.3	22.3	48.8	24.0
1944	4.9	10.9	16.2	22.2	45.8	20.7
1947	5.0	11.0	16.0	22.0	46.0	20.9
1950	4.8	10.9	16.1	22.1	46.1	21.4
1956	4.8	11.3	16.3	22.3	45.3	20.2
1961	4.6	10.9	16.3	22.7	45.5	19.6
1964	4.2	10.6	16.4	23.2	45.5	20.0
1970	4.6	10.7	16.4	23.3	44.9	19.2
1971	4.8	10.8	16.4	23.3	44.6	19.1

Source: Daniel B. Radner and John C. Hinrichs, "Size Distribution of Income in 1964, 1970, and 1971," Survey of Current Business, Vol. 50, no. 10 (October, 1974), Table 10, p. 27.

Note: 1929-1961 Estimates from "old series;" 1964-1971 estimates from "new series."

deficient for our purposes because they cover at best only the 1964 to 1971 period and because the 1970 and 1971 estimates are essentially just extrapolations of the basic 1964 estimates. Furthermore, as the BEA acknowledges, the new series is not really comparable to the old series in some important aspects (see Radner and Hinrichs, 1974). The BEA's work on the new series is ongoing and, if successful, could provide a major new source of information in the future on trends in inequality.

Despite the deficiencies of the BEA series, the information it provides, as summarized in Table 4, can be usefully compared with corresponding CPS estimates in Table 2. If we focus on the year 1964, for example, we may presume that share estimates differ between the two tables mainly because of differences in income concept and the underreporting of income in the CPS estimates. The personal income concept of the BEA includes, in addition to money income, several types of imputed income, Medicare benefits received, and the net value of food stamps, and excludes personal taxes for social insurance. The net result of these differences can be seen by comparing share estimates for 1964 in Tables 2 and 4. The estimated share of the bottom quintile is almost one-fourth higher in the BEA than in the CPS but the estimated shares of the top quintile and top 5 percent are also considerably higher in the BEA. Such comparisons for a single year are interesting in their own right, but they are only suggestive for further research on long-term trends in income inequality. The BEA trend estimates in Table 4, for what they are worth, do tend to confirm the general impression of stability in income shares in the postwar period, and to cast some doubt on the CPS evidence showing some small movement toward more equality during the period.

One further source of time series data on inequality worth noticing here is Internal Revenue Service statistical summaries of personal income tax returns. The time series that can be derived from these data provide the only statistical evidence of which I am aware that support the assertion that income inequality among families or consumer units has actually increased during the postwar period (see Gastwirth, 1972). The evidence from personal tax return data is crucially flawed, however, because the income concept for that series--adjusted gross income (AGI)--excludes several transfer sources of income, such as Social Security and welfare benefits, that have increased greatly in both absolute and relative amounts in the postwar period. (This point is discussed further in Section 2 below.) The omission of these sources of income strongly biases the AGI series toward showing greater inequality over time, since they are known to be heavily concentrated among low-money-income consumer units. The AGI income concept has several other important conceptual shortcomings as an index of economic well-offness. Furthermore, it too is underreported, although the pattern differs somewhat from that of the CPS. The tax return unit is most inappropriate as a consumption-pooling unit for the study of income distribution. The AGI series is subject to inconsistency in both its income concept and tax return unit aspects because of periodic changes in the tax law, e.g., changes in the law affecting the definition of capital gains versus ordinary income. In short, the personal income tax data is of little use for the study of long-run trends in income inequality except as a source of information on the underreporting by high-income groups of certain forms of income over time in the CPS or other survey data.

Finally, I wish to call attention to two important studies quoted in the Introduction to this paper that might be carelessly misinterpreted as showing that long-run inequality in the United States is increasing. Schultz's (1975) excellent study of change in personal income distribution covers the 1947-1970 period. The finding of increasing overall inequality during this period is severely qualified in his detailed analysis; moreover, this analysis applies only to the income of persons with income in the CPS, not to families, households or consumer units. Schultz explicitly chose to study individual incomes rather than family incomes for the purpose of testing a behavioral model of earnings inequality. Neither he nor anyone else has yet provided a link between such a behavioral model and the measurement of the distribution of economic well-offness of consumption-pooling units. The same general point applies to the well-known study by Henle (1972), which finds some evidence of increasing inequality of individual male worker earnings from 1958 through 1970 based on CPS earnings data. The Schultz and Henle studies contain many important findings of value for the study of the generation of inequality over time in our society, but they bear only indirectly on the question of trends in the distribution of well-offness among the whole population.

For two important reasons, time series data on inequality of earnings or incomes of individuals tell us little, unfortunately, about trends in economic well-offness. First, individuals live mainly in family or household units which pool earnings and other personal incomes for common consumption. It is quite plausible, therefore, for the same trend in economic behavior to result both in greater inequality of individual

earnings and in less inequality of economic well-offness; e.g., increasing labor force participation of low-paid secondary workers in family units. The relationship between size of family incomes and size of individual earnings is most complex. Gramlich (1976, pp. 443-49) has recently reported some evidence for the year 1973 showing that a surprisingly high number of low-wage workers come from high-income families. Second, an increase in earnings inequality over time might be the result of the growth of government measures leading to equalization of economic welfare for some groups in the population; e.g., the possible effect of Social Security income in increasing the extent of part-time employment among the aged and other beneficiaries. In short, we must look directly at trends in inequality of the economic well-offness of income-pooling units and not at the trends in inequality of individual income components.

2. PROBLEMS IN INTERPRETING THE BASIC TIME SERIES

This section discusses the conceptual problems with the CPS time series on income distribution. I shall henceforth ignore the serious practical problems associated with CPS survey methods over time and focus on the question of the shortcomings of a hypothetical time series of money income which is fully consistent over time and in which the income concept is fully and accurately reported. The problems with such an ideal time series fall into three categories: the income (or wealth or consumption) concept; the income unit; and the income accounting period. The discussion below is not intended to give a full or definitive treatment of these issues;[5] rather, it attempts to show how each is relevant

to the problem of interpreting empirical measures of the trend in inequality over the postwar period.

The Income Concept

The rigorous theorist would begin a discussion of the income concept issue by posing sophisticated questions about how to relate time series data on income to utility measurement and interpersonal comparisons of utility. Since I can not answer these questions, I shall presume that economic well-offness is adequately measured by personal command over scarce resources. I shall also presume for the moment that a fully comprehensive income concept is best suited to the desired measure of economic well-offness. The issues of income versus consumption and the role of wealth are taken up separately below. The standard public finance approach, followed here, involves taking the Haig-Simons definition of income--the algebraic sum of consumption and change in net worth over the income accounting period--as the comprehensive income concept and assessing the comparative shortcomings in other income concepts by this standard.[6]

CPS versus Haig-Simons. The CPS money income concept differs in many respects from the Haig-Simons standard. The major differences, for the purpose of interpreting the CPS time series, include the following points:

1. CPS money income excludes all forms of nonmoney income and consumption. Among the exclusions are goods and services produced privately for own consumption rather than sale through the market and noncash fringe benefits provided by employers, including personal consumption of leisure goods and services on the job.

2. CPS money income takes no account of the real consumption value of the voluntary leisure enjoyed by members of the income unit. This problem is difficult to distinguish conceptually from the problem of income from home production included in the first point.

3. CPS money income is gross of taxes but includes all regular public and private cash transfer benefits. It excludes all noncash transfers and the value of government services not sold to households on a private market type basis.

4. CPS money income includes only monetary returns from nonhuman assets. It excludes all capital gains, realized and unrealized, and the nonmonetary returns to such assets.

5. CPS money income is not adjusted for systematic price differentials that, together with money income, determine the real market consumption component of Haig-Simons income.

Each of the above points may affect the measured size distribution of income in any one year. The question remains whether they might reasonably be expected to wash out in a consistent time series of money income distributions. That is, is the relative importance of each and its distribution by money income class more or less constant over the postwar period? Available data permit only partial answers.

Nonmoney income. First, consider the relative importance and distribution of nonmoney income over the postwar period. On the one hand, it seems a reasonable presumption that such income is relatively more important among the farm population than among the total population. We know that this population has shrunk drastically in both absolute and relative numbers since World War II: from over 25 million (18 percent

of the national total) in 1946 to under 9 million (4.2 percent of the national total) in 1975 (U. S. President, 1976, Table B-85, p. 270). The average CPS money income of farmers has been far below that of the rest of the population during the period. These facts suggest that the CPS money income time series is biased towards showing less inequality over time; as low money-income farmers have changed to nonfarm employment, their increase in money income has probably exceeded their increase in real income by some amount of foregone nonmoney income. This conclusion is based only on a superficial review of the available figures--it deserves serious investigation.

On the other hand, evidence exists on the great and increasing importance of nonfarm, nonmoney income and consumption. In their pioneering study, Nordhaus and Tobin (1972, Table 1, pp. 10-11) estimate that nonmarket consumption grew from about three-fifths of personal market consumption (as defined in the national income accounts) in 1929 to about three-fourths of such consumption in 1965 (see also Scitovsky, 1976, pp. 278-82). Their estimates do not include any nonmoney income associated with time spent in paid employment. Nordhaus and Tobin's estimates are subject to a great deal of error, as the authors clearly acknowledge, but the great importance of nonmoney consumption in a comprehensive income measure for any one year is beyond question. I know of no evidence, however, bearing on how changes in the size and distribution of such consumption affect our measures of income inequality over time. Schultz (1975, p. 166) has hazarded a guess that income in kind (including employer-provided fringe benefits, expense accounts, etc., in addition to the nonmarket production estimates in Nordhaus and Tobin)

is positively correlated with money income and makes real income inequality greater than measured money income inequality in any one year, but he carefully refrains from further conjecture on the effect on the time series trend (see also Epstein, 1969, p. 173).

In summary, we simply do not know whether the omission of all forms of nonmoney income from the basic CPS data and other time series based on money income invalidates all empirical statements about trends in inequality since World War II. The research agenda on this question is challenging. One suggestion for future investigation is to separate, wherever possible, trends in income distribution for farm or rural income units from those trends for the urban population. In my own work on measurement in inequality in a single year, I resorted to the unsatisfactory expedient of eliminating rural income units from my sample (Taussig, 1973). The more general problem requires much more ambitious efforts at data collection. Specifically, the present annual household survey on money income needs to be expanded to provide information on the value of employer-provided fringe benefits and on the use of time off the job. At present there exists no consistent time series on the distribution of fringe benefits such as employer-paid vacations or health insurance that can be linked to size distributions of money income over time. During the postwar period, large employers in both the public and private sectors have provided their employees, especially their top employees, with a wide variety of nonmoney benefits, including in some cases pleasant working conditions and great job security. These developments amount to the growth of a welfare state for the individuals concerned.

The same point applies, of course, to the value of time spent on do-it-yourself activities and other production outside the market. We might suspect that, because of our progressive tax system, both of these forms of income have grown disproportionately for upper-income groups over time. In the absence of relevant empirical work, however, the quantitative importance of this point for measurement of trends in inequality cannot be assessed.

Nonmarket time. Many of the points in the above discussion apply equally to the omission of the value of voluntary leisure from existing income time series. Nordhaus and Tobin (1972, Table 1, pp. 10-11) estimate imputed values for leisure far in excess of the market consumption included in personal income in the national income accounts. The common problem is the omission from the CPS money income time series of the value of time not spent in paid market work. Important trends in the use of time over the postwar period can readily be documented. First, we know that young people spend more time in school now than was the case immediately after World War II. Second, older people leave the labor force earlier now because of retirement and disability than in the 1940's. Third, married women spend more time in the labor force, on average, than in the past. As the net result of these trends, the positive association between relative size of CPS money income of families and the number of earners per family has become somewhat stronger over the postwar period. For example, the mean number of earners in the lowest quintile of families falls from 1.05 in 1950 to 0.85 in 1974; for the highest quintile, the movement was from a mean of 1.93 in 1950 to a mean of 2.31 in 1974.[7] These developments have occurred slowly and steadily over the postwar

period (although not originating at the beginning of the period) and the latter two, at least, appear to be ongoing. How should they be incorporated into a money income time series for studying trends in inequality?

Morgan and Smith (1969) have taken the approach of constructing an index of economic well-offness as the product of an index of a family's command over resources (defined as money income deflated by estimated consumption needs) and another index of leisure per adult, constructed as a residual after accounting for time spent at work or at necessary rest and for time unemployed or unable to work. They assume, in effect, that the economic well-offness of the income unit can be approximated by a rectangular hyperbola between the consumption of market goods and leisure. An hour of leisure is arbitrarily assumed to be of equal value to all individuals regardless of their market wage or the productivity of their nonmarket time.

The major alternative to the Morgan-Smith method is to value nonmarket time explicitly by some observable measure. The prime candidate for such a measure is the market wage rate. If there is no positive or negative utility from the last hour of work, the value of an individual's last hour of nonmarket time should be equal to the net after-tax wage if he or she is in equilibrium. There are many serious conceptual and practical difficulties with the use of the net market wage rate measure of the value of nonmarket time.[8] However, present data sources do not provide any good alternative method for incorporating the value of nonmarket time in a comprehensive measure of well-offness, and economists have recently begun to make significant progress in broadening the income concept by taking this approach.[9] Unfortunately, this work is confined

thus far to measures of income inequality in a single year, and has not yet been extended to time series applications.

Would inclusion of the value of nonmarket time in a comprehensive income concept affect current measured trends in inequality based only on money income? In the absence of systematic empirical work, we can only speculate about the possible effects of the major developments in labor force participation rates since World War II on trends in inequality measures. The lengthening of formal schooling during the period might be expected to have biased inequality measures upward over time to the extent that young people in school with low money incomes have been included as separate income units by the CPS. Earlier retirement and more extensive withdrawal from the labor force because of disability by older workers have likely had a similar effect. The money income fall of income units headed by such individuals may exaggerate their real income fall because of the additional nonmarket time available to them after withdrawal from the labor force. The steady decline in labor force participation of the low money-income aged therefore biases upward inequality measures over the postwar period. Not all such behavior has been voluntary, of course, and the quantitative significance of the effect on measured inequality cannot be assessed without much more extensive study.

Labor force participation of married women. The steady rise in the labor force participation rate of married women probably has imparted a downward bias to the postwar trend measure of money income inequality. In any one year, the earnings of working wives slightly decreases measured inequality in family earnings and, presumably, also family money incomes (Mincer, 1974, pp. 123-25). For a measure of inequality of comprehensive

family incomes, we should include the higher value of nonmarket time for those wives not in the labor force. Because nonparticipation in the labor force is positively related to husband's earnings and other family income, a full accounting for the value of nonmarket time would be expected to increase inequality of comprehensive income relative to inequality of money income alone. On these grounds, I conclude that the postwar increase in the labor force participation of wives has probably biased downwards measured trends in inequality based on CPS money income.[10] The net quantitative effect of all of these biases is, of course, an open question to be resolved only by empirical study.

The government fisc. The CPS's treatment of the public sector's impact on economic well-offness is clearly illogical. To repeat, money income is computed gross of taxes and includes only cash transfers. Noncash transfers and the consumption value of government services are excluded. This treatment of the government fisc by the CPS would allow us to make valid inferences about the trend of inequality only under circumstances we know to be counterfactual. That is, we know that the relative size of the fisc has increased since World War II; we know that the composition of government services provided to households has changed significantly in the postwar period; we know that the relative importance of noncash transfers has increased dramatically in the last decade; and we at least doubt that the incidence of taxes net of cash transfers by size of money income has remained constant since the end of the war. Section 3 of this paper reviews recent studies which attempt to assess the quantitative impact of changes in the government fisc on postwar trends in inequality.

Returns to capital. The fact that the CPS money income concept includes only the cash return to nonhuman assets has uncertain implications for the measured trend in postwar income inequality. The Haig-Simons criterion calls for inclusion of all returns to owners of all forms of property. Even if the pecuniary returns to property were not so seriously underreported in the CPS, the underlying money income concept would be inadequate for capturing the full returns to capital. The single most important problem is that the money income of persons in the CPS does not include the portion of corporate net income after taxes not paid out as dividends. This type of income--retained corporate profits--presumably accrues in the long run to the owners of corporate capital in the form of capital gains. The Haig-Simons criterion, if strictly applied, would add to each income unit's other income either its accrued capital gains during each income accounting period or its pro rata share of retained corporate profits. If either of these adjustments to CPS money income were carried out, the result would be more inequality of comprehensive income than of CPS money income in any year, because ownership of corporate capital is known to be heavily concentrated among the very rich.[11]

The important question for this paper, however, is not the effect on measured inequality of the omission of corporate-retained earnings from CPS money income in any single year, but rather the effect on measured inequality over time. The answer is complex and cannot be dealt with adequately here. Based on Nordhaus's (1974) recent results, however, it seems conservative to conclude that there has been a decline in capital's share of total Haig-Simons income over the postwar period, and that this decline has in turn probably had a mild equalizing effect not fully

reflected in the CPS time series. This bias appears to have been most serious in the last decade, when the real price of equities actually fell and capital gains were presumably very low relative to the earlier part of the postwar period.

Other nonmonetary returns to capital are omitted from the CPS money income concept and may also bias the trend in the series. The full returns to consumer durables should include both the imputed rental income and capital gains on these assets. The effect of omission of the returns to owner-occupied housing from the CPS time series is an outstanding topic on the trends in inequality research agenda. The same qualitative point applies to noncash returns to a variety of miscellaneous assets. The very rich are known to have enormous holdings of assets that yield most of their full returns in nonmonetary form, e.g., fine art and jewelry.[12] We might suspect that tax law incentives have induced high-bracket-rate wealthy individuals to acquire relatively more of such assets over time, but we cannot document any such trend or assess its quantitative impact on measured income inequality. Again, breakthroughs in empirical research are needed to provide the basis for solid answers.

Changes in relative prices. Finally, the effect of changes in relative prices on postwar trends in inequality is a largely unexplored issue.[13] The rich and the poor consume quite different consumption bundles, and therefore changes in their money income may not fully capture changes in their potential real consumption over time. Crudely stated, only the (very) rich purchase services of personal servants, while the poor spend a high proportion of their income on food and other commodities. The relative price of personal servants continued its secular rise in the

postwar period. On the other hand, the relative prices of food and fuel increased sharply in the 1970's after a long period of stability. The net effect of all such relative price changes poses a considerable research challenge to economists.

The same points apply to regional price levels and their changes over time. The latter problem has to be studied jointly with the pattern of interregional migration over the postwar period. To my knowledge, no empirical work has been done on this most difficult problem.

None of the issues touched on above are relevant to the broader issue of whether a comprehensive income measure is preferable to a comprehensive consumption measure or some other alternative as an index of economic well-offness. Nor has the discussion yet touched on the critical role of wealth in determining economic well-offness, except insofar as how the annual returns to wealth should be included in a comprehensive annual income concept. I prefer to postpone both these issues to a later discussion of the income accounting period.

The Income Unit

The income unit for the CPS series covering the whole postwar period is, to repeat, either the Census family or an unrelated individual. (Money income distributions based on the household unit are available extending back as far as the year 1967.) The CPS income unit is most inappropriate for the study of inequality either at one moment in time or over a period of time. Individuals live in various groupings that pool either income or consumption or both. Such groupings may encompass more than just one family or individual to include an entire household or

even more than one household. We know very little about income sharing within or across families and households. But such groupings may also include subfamilies within the same Census family, e.g., aged parents who live with grown children. The major trend in living arrangements over time in this country, both before and after World War II, has been towards splitting up larger household units containing extended families into smaller units containing nuclear families or individuals. This trend does not necessarily imply, of course, a similar sharp separation in the income-pooling units. Substantial income sharing between members of the extended family still exists despite the separation of households (see Morgan, 1965). Such long-term changes in living arrangements further complicate interpretation of inequality measures based on CPS money income for the family or family plus unrelated individual unit.

Changes in family composition. Data from the CPS show that the average number of people in family units has declined slightly from 3.54 in 1950 to 3.42 in 1974, and that the relative number of unrelated individuals in the population has increased substantially from 6.2 percent in 1950 to 9.01 percent in 1974.[14] More important have been changes in the composition of families in the various quintiles of the size distribution of money income by families during the period. For simplicity, consider only the following changes in the characteristics of the bottom and top quintiles during the postwar period: among the bottom quintile of families, the percentage with female heads grew from 18.2 percent in 1947 to 33.3 percent in 1974; the percentage with heads under age 25 rose from 6.5 percent in 1947 to 13.1 percent in 1974; the percentage with heads aged 65 and over rose from 26.2 percent in 1947 to 31.6 percent in

1974; and the mean size of the family unit declined from 3.26 in 1950 to 2.97 in 1974. In contrast, among the top quintile, the percentage with female heads fell from 6.8 percent in 1947 to 3.1 percent in 1974; the percentage with heads under age 25 fell from 1.0 percent in 1947 to 0.8 percent in 1974; the percentage with heads aged 65 and over fell from 8.8 percent in 1947 to 5.9 percent in 1974; and the mean size of the family unit remained virtually constant over the postwar period: 3.79 in 1950 and 3.72 in 1974. All these facts underscore an obvious point about interpretation of trends in inequality: statements about changes in the share of a given quintile over time do not apply to a specified group of recipients. In fact, the composition of the top and bottom of the CPS money income distribution has changed a good deal since World War II.

Kuznets (1974) has recently studied demographic aspects of changes in income inequality in some detail for the years 1947-1969. He divides the total number of CPS families for each of the years into four groups: those with heads under age 25, those with heads over age 65, those with female heads, and a "residual" category for families with male heads aged 25-64. The first three groups totalled almost 30 percent of all families by 1969 and all had CPS money incomes far below the national average income in that and every other year. Kuznets shows that the growth in the relative number of these three types of families from 24.2 percent in 1947 to 28.5 percent in 1969 had a sizable ceteris paribus unequalizing effect on the distribution of incomes over the time period covered. The relative incomes of these groups also fell over the time period, which added to the unequalizing effect of the growth in their relative numbers. Kuznets further finds that the distribution of CPS money income among the

standard category of families headed by males aged 25-64 became substantially more equal over the same period. The two trends for the different types of families were roughly offsetting--hence the apparent stability in the trend for all families in the CPS time series for the postwar period.

With an ideal data set, we could conceivably identify the actual units that pool their incomes and consumption, whether they be families, households, individuals or whatever. If this could be done consistently over time, a time series on income inequality could be constructed on a reasonably consistent income unit basis. The CPS time series does not allow us even to approximate this ideal over the entire postwar period. The systematic changes we can observe over time in the size of income pattern of the Census family and unrelated individual units should make us suspicious that the number and type of units that exist today are functions of changes in both the level and distribution of real income over time.

Evidence from the Michigan 5000-Family Panel suggests the quantitative importance of changes in family composition and related changes in labor force participation on the distribution of economic well-offness. During the first five years of the study, only 42 percent of the families in the sample had no change in composition. About a fourth of the families experienced a change in either the head or the wife of the original unit (Morgan, 1974, p. 101). Morgan has concluded that changes in family composition are critically important in explaining changes in personal well-offness over this period. After Lane and Morgan (1975) analyzed changes in the well-offness of units between 1967 and 1972, they concluded: "It is evident that individual unchanged units are progressing while the

overall distribution is kept relatively stable by the appearance of new families at the bottom and the retirements of a few at the upper ages" (p. 20). In general, it is clear from the study that family splits cause a great amount of unequalizing change in well-offness over just a five- or six-year time span. In this connection, it should be noted again how inadequately the CPS treats family units that split or combine between the income year and the actual interview in the following spring. Any systematic change in the rate or pattern of such changes over time can introduce a bias into the CPS money income time series.

Relative weighting of different income units. A related broad issue is the relative weighting in any income distribution of income units that differ in size and composition. To simplify a complex problem, let us accept the family unit as our income unit and assume that for the ith family with income Y_i there are N_i individuals and N_i^* "equivalent adults."[15] In constructing our income distribution we have several choices: (1) take one unit with income Y_i (implicit in the CPS distribution); (2) take one unit with income Y_i/N_i^*; (3) take a per capita distribution of N_i units with incomes of Y_i/N_i each; or (4) take N_i or N_i^* units with incomes of Y_i/N_i^*.[16] A reasonably persuasive case can be made for each of these alternatives. I have used variant (2) in my own work but now consider variant (4) with N_i units to be a stronger alternative. A per capita distribution is hard to defend because it ignores economies of scale in consumption and differing consumption needs of adults and children. But the undeflated measure implicit in the CPS time series is perhaps even worse. We know that the top quintile of the CPS distribution contains more people than the bottom quintile in any one year and, furthermore,

we know that the relative number of people and the demographic composition of the income units in the various quintiles have varied over long periods of time in such a way as to increase the correlation between incomes and needs; i.e., between Y and N or N^*.

The CPS time series, therefore, is probably somewhat biased towards showing more inequality over time because of its definition of the income unit. The trend in Y/N^* is likely to be more equalizing than the trend in Y alone (see Kuznets, 1974, p. 233). The size of this bias would be difficult to assess even if much better data sets were available. The unresolved conceptual problem concerns the rather mechanical construction of equivalence scales to estimate the requisite equivalent adult deflators, N^*'s, for income. Ideally, these deflators allow us to say that two units with N_A and N_B equivalent adults, respectively, are equally well-off when Y_A/N_A equals Y_B/N_B. But economists who construct equivalence scales concern themselves only with equivalent consumption of market goods and services. They do not take into account the likelihood that individuals and nuclear families often value the opportunity of living apart from the extended family. Thus, if an aged parent with a very low money income voluntarily chooses to live apart from his grown child's family, the distribution of well-offness should rise because both new households are better off even if the household split causes the distribution of Y/N^* to become more unequal. The same point applies to couples who voluntarily choose to have children and thus lower their value of Y/N^*. Rivlin (1975) has made the point forcefully in her observation on the effect of household splits on measured trends in inequality:

> This increase in units, often at low income levels, has made the distribution of income less equal than it would otherwise have been even though it doubtless reflects an increase in economic well-being. Rising incomes, including transfers, have enabled Americans to increase their consumption of a luxury good--the luxury of living apart from relatives. (p. 5)

These points reinforce the conclusion that the CPS definition of the income unit biases upwards the apparent inequality in the distribution of income over time. Once again, however, the available numbers tell us little about the magnitude of such bias. The problem is immensely difficult. As Mincer (1974) has said in the conclusion to his work on the determinants of white male earnings:

> [The] grouping of persons into households as well as their behavior as members of households, needs to be studied in the context of income distribution. For this, the merging of population, labor supply and human capital theories is required. (p. 144)

The Income Accounting Period

An even more complex conceptual problem in the study of income distribution is the choice of the income accounting period. For the CPS series and, indeed, for virtually all other data sources, it is the calendar year. The calendar year is by no means a bad compromise between very short and very long accounting periods if a single choice is required. As Lampman (1973, pp. 84-85) has observed, however, the choice of accounting

period for studies of income distribution depends on which of several aspects of economic welfare the researcher considers most important for his or her purposes. For the ordinary individual, say, suffering from hunger, the relevant accounting period is a single day; for the starving graduate student, however, the period stretches far beyond the current year past the completion of the dissertation. The calendar year is long enough to average out most temporary fluctuations in income and short enough to reflect pressing consumption needs in a world in which capital markets do not accept future earnings as collateral for loans. Annual income does give us one important measure of economic welfare.

The annual accounting period. Most economists would agree, however, that income distributions based on the calendar year accounting period badly neglect long-run aspects of the distribution of economic well-offness. The widely accepted life-cycle hypothesis, greatly simplified, suggests that annual money income will vary for the typical (male) person in the following way: When he is young (and sets up as part of a new income unit), his money income will be low because he foregoes earnings to invest in human capital; when he is middle-aged, his money income peaks as he reaps the returns to his previous investment; and when he is aged, his money income falls as he draws upon the savings from his accumulated peak-years' incomes to finance his consumption during retirement. Thus his money income in any one year provides very poor information on his lifetime income and consumption.

Given this pattern of behavior among the whole population, changes over time in the distribution of annual money income may reflect various factors irrelevant to the distribution of economic welfare in its long-run

aspect. A time series of annual money income distributions may show a trend to, say, less inequality over time despite no change in the distribution of lifetime incomes for any cohort in the population if (1) the age distribution of the population changes such that the relative number of income units with earners in the low-income age groups decreases; (2) the money income-age profile becomes less steep over time either because of gradual changes in tastes for distributing lifetime income between work and leisure (e.g., a trend towards shorter work weeks combined with a trend towards later retirement) or because of less investment over time in human capital. Public finance literature has a long tradition of dealing with such problems for the personal income tax by mechanisms for income averaging over several years. The ultimate averaging period is the lifetime and, in fact, Vickrey's (1947) classic treatise, the Agenda for Progressive Taxation, works out an elaborate scheme for comprehensive lifetime averaging of personal income for the income tax. The analog for the study of income distribution would be a distribution of lifetime incomes.

Let me digress here to make the possibly obvious point that the income accounting period and the income concept are intimately related. Specifically, the longer the income accounting period, the less critical are the limitations of the money income concept. The exclusion of the value of nonmarket time from a comprehensive income concept is probably not as serious in an income distribution based on a lifetime accounting period rather than an annual period, since differences in the amount of nonmarket time depend largely on variations over the life cycle. On the other hand, the longer the income accounting period, the more complex the

problem of defining the income unit becomes. The incomes of individuals vary more or less systematically over their lifetimes but their living arrangements change less systematically. The data problems involved in following large samples of individuals through their lifetimes and estimating their changing equivalent income or consumption over time as members of different family or household groupings are beyond the capability of available research resources.

The multiyear accounting period. One step intermediate between a full lifetime distribution and an annual distribution is based on a multiyear accounting period. Some recent studies have used newly available panel data to estimate and compare such distributions to annual ones. Hoffman and Podder (1976) have used the first seven years of the Michigan 5000-Family Panel to estimate the distribution of average income between 1967 and 1973 for the 3294 sample families with the same head for all seven years. As expected, their results show that the distribution based on the seven-year accounting period is less unequal than the annual distribution. They estimate that the income share of the bottom quintile rises from 6.1 percent on an annual (1973) basis to 7.4 percent on a seven-year (1967-1973) basis. The corresponding Gini coefficient estimates are .379 and .345, on annual and seven-year bases respectively. Their results for an income to needs (Y/N^*) measure of well-offness are qualitatively similar (Tables 12.1 and 12.2, pp. 338-39).[17] While the results are in the expected equalizing direction, they are not dramatic. Short-run income fluctuations do not appear to be a major factor in explaining aggregate inequality; the annual accounting period is sufficient to average out the bulk of short-run variations in income. This result is

based on a sample of relatively intact income units, however, and it is unclear whether it would hold up if all original income units in the panel could be included in the distribution. The meaning of a multiyear or lifetime income distribution including all individuals of original units in the sample, whether or not they had become members of new units, would be extremely difficult to interpret.

The lifetime accounting period. Nordhaus (1973) has made the most ambitious attempt to analyze the distribution of lifetime income in his recent simulation study of the effects of inflation. He defines lifetime wealth, W, as

$$W = W_o + \sum_{o}^{T} y_t \, d_t$$

where W_o is initial wealth, y_t is annual income in year t, and d_t is a discount factor equal to $(\frac{1}{1+r})^t$, where r is the appropriate interest rate. Lifetime wealth can also be written as

$$W = \sum_{o}^{T} C_t \, d_t + B_T \, d_T$$

where C_t is annual consumption in year t and B_T is the bequests left at death in year T. Lifetime consumption equals lifetime income in present value terms except for initial endowments and the present value of bequests. (All this ignores, of course, the problems of defining the income, consumption or wealth unit over a lifetime and the operational definition of r in a world without idealized capital markets.) On the assumption that individuals maximize utility, which is a function of lifetime consumption, Nordhaus shows that the level of economic welfare is approximately lifetime wealth divided by life expectancy, or W/T.

Nordhaus's analysis demonstrates that if we are to implement the lifetime income approach empirically for the study of trends in the distribution of well-offness, we should have joint observations on each income unit's income (or consumption), wealth, and age (life expectancy). Such data exist only for a single year, 1962 (see Projector and Weiss, 1966). For the postwar period, we have some evidence from estate tax return data of considerable stability in the distribution of wealth among the very rich (Smith and Franklin, 1974), but this evidence is just as difficult to interpret as that on stability in the money income distribution. Furthermore, even taken at face value, such evidence does not allow us to conclude that wealth/income ratios at different ages have remained constant over the time period. In short, severe data problems limit research into changes in the distribution of lifetime incomes.

The lifetime income accounting period concept does help to clarify several important issues in the study of income distribution. First, in my mind, is the inappropriateness of aggregation of individuals of all ages in a single social distribution. The association of economic well-offness with expected lifetime income is most plausible for the very young. It is much less plausible for older persons, for whom well-offness is much more likely to be linked to current income. Their lifetime income consists largely of past consumption, which may bear little relationship to their present level of well-offness. Implicit comparisons of the economic well-offness of persons of different ages (life expectancy) make little sense to me. Annual money income distributions ignore the problem of differences in life expectancies. Lifetime income distributions, if they could be estimated within a Nordhaus-type framework, would exaggerate the differences.

I recommend disaggregating the distribution of income by narrow age groupings as I have done in my own work.

Consideration of the lifetime accounting period also helps to clarify the issue of consumption versus income as a measure of well-offness and to emphasize the role of wealth in addition to either flow measure in a full accounting of personal command over resources. Over a lifetime, the difference between the present values of consumption and income is probably not too important for most persons, especially if we choose to regard bequests as equivalent to consumption in affecting well-offness. Over a single year, however, consumption and income give us quite disparate pictures. Personal consumption, as approximated by consumption expenditures, is distributed less unequally than personal money income in any one year.[18] Consumption and income measure two different aspects of well-offness in any one year and it is debatable which is more important. The consumption aspect certainly has been neglected in existing studies of the distribution of well-offness, largely due to the lack of good personal consumption data by individual units. We do not know whether a postwar time series on the distribution of annual consumption would show the same trend (or lack of trend) as the existing time series on the distribution of annual income.

The role of personal wealth in determining inequality in well-offness has been badly neglected in the literature. The distribution of wealth over time has been little studied and the relationship of wealth to income and consumption has been virtually ignored in empirical studies of inequality. Aside from the obvious data problems, this neglect is probably due to the public finance tradition of treating wealth and income separately

in analyzing tax equity. That is, "progressive" taxation has generally been taken to apply to a Haig-Simons comprehensive income base while taxation of wealth has been treated separately as a virtually unrelated topic.[19] From the perspective of a lifetime accounting period, personal wealth is an integral component of personal well-offness and should be included in a comprehensive measure of discounted lifetime income. When the estimated lifetime annuity equivalent of family wealth is added to family money income in an annual accounting period, the effects on overall inequality are rather complex and difficult to summarize.[20] However, it is certainly clear enough that taking account of wealth greatly increases the measured well-offness of the top 1 percent or so of the distribution. We can only speculate whether similar adjustments for wealth in a time series would have a substantial effect on measured trends in inequality over the postwar period.

The lifetime accounting period perspective raises still another significant issue, that is, the arbitrary nature of the annual accounting period classification of certain important income sources. For specificity, I limit my discussion below to Social Security old-age pensions, but the same points apply to some other sources as well. Census and other data sources on annual income treat Social Security income as current receipts or transfer payments. Such a treatment implicitly considers Social Security benefits to be pure transfers completely unrelated to prior payroll tax contributions. The opposite extreme view of the system is that the rights to benefits accrue to the individual at the moment he or she contributes--pays taxes--to the system.[21] If we adopt the latter view for an annual accounting period, the income of an individual would

include the change in net worth during his or her working years and the implicit interest on his or her accumulated prior contributions; but the actual receipt of benefits during retirement would be mostly a return of capital and, except for the interest portion, would not be included in current year income.

Neither extreme view of the Social Security retirement system is an adequate description of reality. The latter private insurance view certainly is not applicable to the first generation of Social Security old-age beneficiaries since World War II, because their benefits far exceeded in present value terms their prior contributions to the system. The important point, however, is that the annual income period classification of Social Security pensions and similar income sources is necessarily arbitrary. If such income were assigned to young workers rather than aged retirees, apparent inequality in any one year would increase. Because of the rapid growth in the Social Security and related public and private retirement plans, the trend in inequality would also have to be revised upwards. If we measure inequality over a lifetime, however, or substitute annual consumption for annual income as our measure of well-offness, the differences in classification of receipts are less important and perhaps even negligible. This point may become more critical in the future as the Social Security retirement system matures and perhaps moves away from a largely tax and transfer arrangement.

3. RECENT CONTRIBUTIONS TO THE LITERATURE

This section critically reviews selected recent contributions to our knowledge about trends in inequality in the postwar period. The primary purpose of this review is to show to what extent economists have been able to resolve the data and conceptual problems discussed in the previous two sections. Of particular interest is the rough quantitative importance of various adjustments to the basic money income time series on the measured trend in inequality. A second purpose is to point out what problems remain partially or wholly unresolved. The discussion focuses on only those aspects of the various studies relevant to the subject of this paper; no attempt is made to summarize their full scope or their contributions to other subjects of comparable importance.

Browning

In a recent paper, Edgar K. Browning (1976b) has attempted to resolve empirically many of the major shortcomings of the CPS money income distributions both for the year 1972 and for the period 1952-1972.[22] As summarized in the quote reproduced in the Introduction to this paper, he finds, after adjustments to the CPS time series are made, evidence of a marked trend towards less inequality over the twenty-year period examined. Browning's basic data sources are published Census estimates of the quintile income shares of families for the years 1952, 1962 and 1972 and various demographic and economic information from Census and other sources that he can relate to each of the family quintiles. He does not include unrelated individual units in his estimates, presumably because of lack of suitable data.

Browning reports the individual and net effects of five adjustments to the CPS money income shares for the years 1952, 1962 and 1972. These adjustments to annual money income include (1) adding an estimate of the market value of in-kind benefits; (2) adding an estimate of the costs of education services provided by all levels of government; (3) adding an estimate of potential earnings of all adults not in the labor force during the year; (4) netting out estimated federal individual income and Social Security employee taxes; and (5) converting the family income shares to per capita income shares by taking into account the number of individuals in the families in each quintile. Browning reports that the latter two adjustments have little effect in equalizing the trend in the distribution despite the fact that, according to his estimates, they both have a large equalizing effect in any one year. The first three adjustments to money income--for in-kind benefits, education and leisure (potential additional earnings)--do result in the equalizing trend summarized above. According to Browning, the lowest quintile's share of CPS money income was 4.9 percent in 1952, 5.0 percent in 1962 and 5.4 percent in 1972; its share of adjusted income was 7.8 percent in 1952, 9.0 percent in 1962 and 12.6 percent in 1972.

Browning's adjustments to money income are, by his own admission, very rough estimates based on incomplete and inappropriate data. Defending these estimates as the best possible with available data, he considers them to be conservative in the sense of understating the true equalizing effect in any one year. Specifically, he obtains the quintile shares of in-kind benefits to families in 1972 from estimates of the total dollar value of such benefits and from estimates of the share of such benefits

that go to poor families. From this information, he determines that the lowest quintile received $22 billion of the $38 billion of in-kind benefits in 1972, or almost 58 percent of the total. He then assumes that the quintile shares of such benefits were the same in 1952 and 1962 as in 1972, so that the equalizing effects of these benefits in his results for adjusted income derived solely from the fact that the relative importance of this source of income rose from 1952 to 1972 (in particular, between 1962 and 1972). It would certainly be unfair to criticize Browning for making such strong assumptions in the absence of better, strictly comparable data over the time period he examines. However, Browning also claims that any deficiencies in his estimated adjustments for any one year are less important when the same estimating methods are used consistently to study trends in distribution. I cannot accept this judgment.

Browning allocates 60 percent of educational expenditures by quintiles for 1972 in proportion to the number of children under 18 years of age in each quintile and the remaining 40 percent in proportion to the sum of total money and in-kind income. Data limitations again force him to assume the same 1972 distribution by quintiles for 1952 and 1962. The equalizing effects of educational expenditures in his results depend, therefore, on the fact that educational spending increased relative to money income during the time period and were (by assumption) more equally distributed than money income in 1972. Browning's assumption of the quintile incidence of educational benefits for 1972 is necessarily arbitrary, as is his further assumption of unchanging incidence of these benefits over the 1952-1972 period. The latter premise again casts doubt on any

presumption that Browning's trend estimates are likely to be less subject to error than his single year estimates.

The estimated adjustment for the value of leisure is, by Browning's statement, the least reliable of all. He obtains each quintile's value of leisure time in 1972 by estimating the number of adults in each quintile who are not earners and multiplying this number by the average earnings per earner in each quintile. He assumes that these results measure the potential additional earnings in each quintile if all adults were earners. He clearly recognizes the obvious deficiencies of these estimates for the single year 1972; i.e., the possibilities that "leisure" may be involuntary for the aged and disabled and that the average earnings of all workers, including part-time workers, may be an inappropriate value for the leisure time of nonworkers for any quintile. The equalizing effect of this adjustment on the trend in inequality in Browning's results comes from the changes in the demographic and economic compositon of Census family quintiles discussed in section 2. According to Browning, the average number of earners per family in the bottom quintile of families fell from 1.03 to 0.87 between 1952 and 1972 but rose from 1.60 to 1.85 for all other families. His calculations show that the bottom quintile's share of total potential additional earnings rose from 6.2 percent in 1952 to 15.2 percent in 1972 and accounted for about 18 percent of the total 62 percent gain in the bottom quintile's share of (adjusted) income during that period. Here too I judge Browning's trend estimates for his value of leisure adjustment to be no more reliable than his estimates for the single year 1972. Lack of earnings data by quintile for 1952 and 1962 force him to assume that the ratios of earnings to total money income

for each quintile were identical for those years to the estimated ratios in 1972. Because of the documented increases in the relative number of retired aged and other family units without earnings who were in the bottom quintile during the period, this assumption almost certainly is wrong. At any rate, Browning himself does not regard his results for the leisure adjustment to be reliable.

Browning's finding that converting family income to per capita income has a negligible equalizing effect on the trend does not, of course, adequately dispose of the family unit problem. This adjustment merely eases computation. It ignores a large body of evidence showing significant economies of scale within an income-pooling unit, and it implicitly accepts the family as the appropriate unit. Further, Browning's per capita adjustment is from a distribution of family income (Y) counted once each to a distribution of per capita income (Y/N) counted once each, and not to the more intuitively plausible distribution of (Y/N) counted N times each.

A more complex problem related to the family unit in the CPS time series is that the number of units at different levels of money income may be a function of economic change over long time periods. Browning makes no attempt to deal empirically with this most complex issue; therefore his negative result for per capita adjustments of family income on the trend in inequality cannot be interpreted as meaning that the family unit problem is negligible.

For all its originality and suggestive findings, Browning's research illustrates the difficulties of working with aggregate cross-section data in studying trends in inequality. One technical problem he recognizes is

that the distribution of adjusted incomes has to be based on family quintiles ranked on the basis of unadjusted money income. To the extent that the rankings of families change sufficiently to make adjusted income quintiles differ from money income quintiles, this exaggerates the equalizing effect (or understates the unequalizing effect) of an adjustment in any one year.[23] It also leads to some exaggeration of the equalizing trend effect of Browning's adjustments for in-kind and education benefits, because these depend on the fact that the total benefits to be allocated among quintiles increase in relative amounts over the time period studied.

The more fundamental problem with aggregate cross-section data is that they only enable the researcher to make the crudest of adjustments for non-monetary income components of total income. Yet it is hard to suggest any improvements on Browning's arbitrary adjustments, given the data sources on which he had to rely.

Reynolds and Smolensky

Morgan Reynolds and Eugene Smolensky (forthcoming) have attempted to deal empirically with some of the same problems as Browning in their recent book on the redistributive effects of the fisc in the United States in 1950, 1961 and 1970. Their treatment encompasses the full range of government expenditures, taxes and transfers in these years. Browning's important equalizing adjustments for his trend estimates, aside from that for leisure, are confined solely to government in-kind transfers and educational expenditures. He investigates the redistributive effects of personal income taxes and the employee's share of Social Security payroll taxes but finds them to have little effect on the measured trend in

inequality. Despite their several important differences in scope and method, these two bodies of work provide a useful basis for comparison of contrasting treatments of essentially the same problem.

The two studies are not directly comparable, however, because they examine different years and utilize different data sources. Reynolds and Smolensky use the Federal Reserve System's Survey of Consumer Finances for 1950, the Bureau of Labor Statistic's Survey of Consumer Expenditures for 1960, and the CPS for 1970. They recognize that the use of these different data sources creates problems of comparability and attempt to correct the data for their work. Browning's study uses the CPS for 1952, 1962 and 1972 but, as observed in section 1 above, this does not guarantee perfect comparability over time. It is not clear from the results of the two studies how important quantitatively is the choice of the exact years included, although Reynolds and Smolensky present some evidence that extension of their estimates through 1973 would have negligible effects on their results.

The two studies differ greatly in methodology as well as scope. Reynolds and Smolensky make several specific assumptions about the incidence of various classifications of different expenditures and taxes, based as much as possible on existing theory and evidence. Browning, in contrast, assumes in effect that all taxes and expenditures are not shifted. He argues that no adjustment should be made for taxes other than the personal income tax and the employee's share of the Social Security payroll tax, on the grounds that the redistributive effects of all other taxes "are already captured in the distribution of money income" (1976b, p. 917). For example, Browning explicitly assumes that the distributional effects

of all business taxes are already reflected in the distribution of money income, while Reynolds and Smolensky use "standard incidence assumptions" to estimate their effect on the distribution of income. In Browning's methodology, excise taxes have no effect on the distribution of post-fisc income. In Reynolds and Smolensky's methodology, such taxes are distributed as consumption; that is, regressively with respect to current annual income. This divergence in assumptions leads to somewhat different results.

As noted above, Browning finds that his estimated tax effects have had a negligible effect on trends in inequality despite their equalizing effect in any one year and despite their growth relative to money income over the time period for his study. Reynolds and Smolensky find direct evidence of decreasing progressivity in the tax structure--in the personal income tax, in particular--over the time period for their study, a result implicit in Browning. That is, relative growth in a progressive tax system is equalizing, ceteris paribus, and can be roughly neutral only if progressivity declines over time. Reynolds and Smolensky's approach also allows for the changing composition of taxes over the period, notably the shift away from relatively heavy reliance on the (assumed) progressive corporation income tax to relatively more reliance on the (assumed) regressive payroll tax. Although the theory and the evidence on tax incidence underlying the Reynolds and Smolensky "standard incidence assumptions" are rather weak, they are probably the best bases currently available for estimating the redistributive effects of the fisc.

Reynolds and Smolensky's results for taxes carry over to their estimates of the redistributive effects of the total fisc from 1950 to 1970. The large relative growth in a fisc progressive on both the tax and

expenditure sides resulted, according to their estimates, in virtually no change in postfisc inequality over the period. Expenditures as well as taxes became less progressive over the period to offset their increasing relative size. In particular, they find that Social Security benefits, though increasing substantially in relative size, also became less equalizing during the period studied. Their results on the expenditure side are somewhat sensitive to their quite arbitrary alternative assumptions about allocating general government spending by income class, but on the whole are remarkably consistent. Their overall findings suggest that stability in postfisc inequality between 1950 and 1970 was the net arithmetic result of a decreasingly progressive tax system and a rapid increase in progressive cash transfers. This basic result, which they project to hold through the year 1973, assumes that the underlying money income concept, the income unit and the income accounting period are acceptable as the appropriate bases on which the estimated distributional effects of the fisc can be evaluated.

In fact, Reynolds and Smolensky recognize clearly that their results are founded on ultimately unacceptable conceptual bases. Their work is easily the best, most comprehensive study of the distributional effects of the fisc to date, but it leaves unanswered the question of what has happened to inequality of well-offness over the time period. In particular, it does not tell us anything definitive about the true redistributive effects of the fisc. The effects of a growing fisc on incentives to obtain income in various nonmonetary forms, to split off new family units with low money income, and to spend income more evenly over the life cycle are theoretically clear, but its ultimate quantitative impact on trends

in inequality remains unknown. In short, the traditional treatment of trends in incidence of the fisc based on evidence from aggregate cross-sections for different years just cannot cope adequately with the complex problems related to the income concept, the income unit and the income accounting period.

Reynolds and Smolensky do not disagree in principle with this conclusion but, like Browning, they argue that many biases in the available data are systematic over a relatively short time period like two decades, and may largely cancel out in comparisons over time for such a period. They cite as an example the exaggerated equalizing effects of the Social Security system apparent in an annual rather than a lifetime income accounting period. But they argue that much of this bias cancels out in estimating year-to-year changes "because the redistributive effects of the system are approximately equally exaggerated in each year" (Chapter 2, p. 21). They do not present quantitative evidence supporting this assertion, however, and it seems dubious that such a priori reasoning would stand up empirically over the 1950-1970 period when the Social Security system was experiencing such large relative growth.

Smeeding

Timothy Smeeding (1977) has recently made a number of important contributions to the study of income distribution through use of disaggregated microdata from the 1968 and 1972 CPSs. This data source allows him to make improved estimates of comprehensive income by adjusting money income for underreporting, for the cash equivalent value of in-kind transfers, and for the personal income tax and employee share of the Social

Security payroll tax. Also, he estimates summary statistics for the distribution of income on the basis of the household rather than the family and unrelated individual unit in an attempt to capture implicit transfers among all the persons living within a household. He then deflates comprehensive household income with the equivalence scales implicit in the Orshansky poverty lines to obtain a distribution of "equivalent" incomes. For my purpose, his results are of interest mainly because they give some indication of the quantitative importance of such adjustments on changes in the distribution of well-offness over time. Unfortunately, the microdata sources available to Smeeding allow him to make such comparisons only for the five-year time span from 1968 to 1972.

Smeeding finds that between 1968 and 1972 the distribution of unadjusted CPS money income on a household unit basis became slightly more unequal; he estimates the share of the bottom quintile to have remained stable at 4.0 percent of total income, with the Gini coefficient rising from .3852 to .3890. These results can be compared to the corresponding estimates for CPS income on a family unit or on a combined family unit-related individual basis in Tables 2 and 3 above. However, the distribution of comprehensive income--CPS money income adjusted for income underreporting, personal income and payroll taxes, and the estimated cash value of in-kind transfers--changed in a more ambiguous pattern during the same period. The bottom quintile's share of comprehensive income rose from 5.4 percent to 5.6 percent of the total, but the Lorenz curves for the two years intersect and the estimated Gini coefficient actually rose from .3476 to .3522. When Smeeding converts comprehensive income to an equivalent income basis for the same years, however, the

distribution shows a clear movement to greater equality. According to his estimates the bottom quintile's share of equivalent comprehensive income rose from 6.0 percent in 1968 to 6.9 percent in 1972, with the Gini coefficient falling from .3479 to .3287. These differences in the estimated changes between the original CPS and the adjusted data are quite substantial, especially if they can be assumed to be typical of the whole postwar period.

Two further details from Smeeding's study are worth noting here. First, his microdata source allows him to rank units correctly on the basis of the size of the appropriate income concept in calculating quintile shares for the Lorenz curve or in estimating Gini coefficients. Therefore, his estimates are not subject to the bias involved in using aggregate data noted for Browning. Smeeding reports, for example, that the bottom quintile's share of comprehensive cash income in 1972 was 5.6 percent when ranked by size of cash income; the same households (ranked in the same order) had 7.8 percent of equivalent comprehensive income. The bottom quintile's share of equivalent comprehensive income, when ranked correctly according to size of each household's equivalent income, was only 6.9 percent.

Second, Smeeding shows that the relative growth in the last decade of the number of young adults living together as unrelated individuals has introduced an important source of bias into the CPS series on income distribution based on the combined family-unrelated individual unit rather than the household unit--if we are willing to assume that such individuals share their incomes. Based on the effect of this development on the

poverty count, Smeeding estimates that the bias resulting from the Census use of the inappropriate income-sharing unit doubled in importance from 1968 to 1972.

Smeeding's use of the household unit leads to some interesting findings but, as he notes, we lack conclusive, direct evidence that the household is the best approximation of the appropriate income-sharing unit. However, we do know for certain that neither the family nor the unrelated individual unit in the CPS corresponds with the income-pooling unit that would be ideal for estimating inequality of well-offness.

Danziger and Plotnick

Sheldon Danziger and Robert Plotnick (1977) have also taken advantage of the availability of disaggregated microdata sets to make important contributions to the study of income distribution. They rely on the 1966 Survey of Economic Opportunity and the March 1975 CPS to study various distributional changes between the years 1965 and 1974. They utilize two income concepts for their work--CPS annual money income (posttransfer income) and CPS annual money income net of all government cash transfers (pretransfer income). They break down the population into twelve exhaustive and mutually exclusive groups based on type of income unit (here, Census family or unrelated individual), sex of head, and age of head (under 25, 25-64, and 65 and over). Their most interesting results for the purposes of this paper relate to their analysis of the effects of demographic change in measured inequality for the whole population.

Danziger and Plotnick document the following substantial demographic changes that occurred in the short 1965-1974 time span: (1) the total

number of Census income units increased by 24 percent while the total national population grew by only 10 percent; (2) the percentage of all units consisting of families headed by prime-age (25-64) males fell from 57.8 to 51.0; (3) the percentage of all units consisting of families headed by females increased from 8.2 to 9.7; (4) the percentage of all units consisting of unrelated females increased from 12.5 to 14.8; and (5) the percentage of all units consisting of unrelated young (under 25) males increased from 0.7 to 2.2. Danziger and Plotnick use their data sources to calculate the values of Gini coefficients for the pretransfer and posttransfer income of the whole population and of each of their twelve subgroups. They find that the value of the Gini coefficient for posttransfer income increased for the whole population combined in one distribution, from .3922 to .4077, or by 4.0 percent, but decreased for eight of the twelve subgroups. (The estimates for the whole population can be compared with the results in Table 3 based on the CPS for both years.)

The most interesting results emerge when they decompose the change in Gini coefficients for posttransfer income between 1965 and 1974 into a component due to demographic change and a component due to change in within-group distribution. Beginning with the actual 1965 Gini coefficient value of .3922, they estimate that, for an unchanged 1965 demographic composition of units with a 1974 distribution of income within each of the twelve subgroups in the population, the Gini coefficient value would have been .3932, or virtually unchanged. The actual estimated value was .4007. Thus their method for decomposing changes in inequality suggests that .145 of the total .155 change in the value of the Gini coefficient,

or about 94 percent, was due to demographic change between the two years. Alternatively, they calculate that the 1965 Gini coefficient value would have been .4075 with the 1974 demographic composition of units, or virtually the same as the actual 1974 value. Thus, for the years studied, demographic change accounts, arithmetically, for almost all of the observed increase in inequality. The precise numerical results depend critically on the years covered in the study. Most significant is the finding that demographic change has had an unequalizing effect on the CPS trend in the last decade, largely due to a substantial increase in the relative number of low-income unrelated individual units during this period.

Their findings for 1965-1974 do not necessarily hold over the entire postwar period. The relative increase in the number of unrelated individual units was small in the first two postwar decades compared to the last decade. The findings for the last decade do, however, suggest that the observed stability in inequality of CPS income per family or family-unrelated individual unit over some 30 years conceals a trend towards equality in a hypothetical population with constant demographic composition. As was noted in section 2, this hypothesis has been advanced by Rivlin and others; the Danziger-Plotnick study provides solid supporting evidence. The authors are careful to caution that their results prove nothing about what caused the behavior underlying observed demographic change. We can speculate that growth in the level of average real income and, perhaps, also a trend to less inequality induced family splits and the formation of new families, but this cannot be proved without more direct evidence.

Paglin

The recent contributions to the literature discussed above all adhere to the annual accounting period, leaving unresolved the problems related to the relationship between short-term and long-term incomes. If we are willing to accept the hypothesis that personal well-offness is best measured by lifetime income or consumption, then we must attempt to make some quantitative inferences about the distribution of lifetime income from information on the distribution of annual incomes. Vladimir Stoikov (1975) has shown in a recent paper just how difficult a task this can be with readily available data on annual incomes or earnings. He concludes:

> . . . current earnings distributions are a function of the age composition of the population and the distribution of earnings over the lifetime of the individuals making up the population. There is no feasible way in which one can construct earnings distributions standardized for these factors because they interact in a multiplicative manner. (pp. 249-50)

He argues that the information available from annual earnings distributions is almost impossible to interpret. The facts that income sources other than earnings also vary systematically over the life cycle, that the family or other unit sharing income also varies more or less systematically over time, and that the "age" of a family unit is at best an ambiguous concept all reinforce Stoikov's pessimistic conclusion.

Morton Paglin (1975) has recently revived a technique pioneered by George Garvy (1952) in an original and ambitious effort to resolve the problem of inferring changes in lifetime income distribution from annual

income distributions. Paglin argues, first, that all standard measures of inequality such as the Gini coefficient and the Lorenz curve implicitly accept perfect equality of annual incomes as the basis for measuring equality of well-offness. He further argues, like Stoikov, that if we instead accept equality of lifetime income as our basis, standard measures of inequality may give wrong and misleading answers about the true extent of inequality at a moment in time and about changes in inequality over time. To solve the problem of inferring inequality in lifetime incomes from data on the distribution of annual incomes in a world of changing age compositon of the population, changing age-income profiles, and systematic growth in the size of incomes, Paglin (1975) defines perfect equality at any point in time as "equal incomes for all families at the same stage of their life cycle, but not necessarily equal incomes between different age groups" (p. 602).

To make this definition operational, Paglin then uses Garvy's technique for decomposing total inequality in annual incomes into a component due solely to age differences and a component due to true inequality, i.e., inequality of incomes within age groups. He does this by constructing an age-group Lorenz curve and a corresponding "age Gini" by ranking age groups (by age of family heads) in order of size of mean incomes and calculating the appropriate cumulative percentages of family units and incomes. The total (Lorenz) Gini can then be decomposed into the age Gini and the residual true (Paglin) Gini measuring inequality within age groups. Applying this technique to the CPS time series on money income of families, Paglin finds a marked trend towards greater equality over the postwar period. According to Paglin, the Lorenz Gini

value was .378 in 1947 and .359 in 1972 (compare to Table 3) while the Paglin Gini was .303 in 1947 and only .239 in 1972. He attributes this result to the effect of the expansion of higher education in producing a greater arching of the average age-income profile over the period and to changes in the age composition of the population: increases in the relative number of low-income very young and very old groups. He concludes that after such obscuring factors are removed from the annual income data by his technique, the residual Paglin Gini results show a substantial decline in inequality over the 1947-1972 period that cannot be seen in the unadjusted (Lorenz) Gini results (pp. 603-605).

Paglin's work has been subjected to much criticism. The first and most fundamental objection to his technique for decomposing inequality is that he does not adequately justify why age, and only age, should be chosen as the variable to use in the partition of total inequality into two categories. As Minarik (1976) has argued, Paglin implicitly assumes that for perfect equality to obtain, all families with heads of the same age should have the same income regardless of other attributes. Minarik suggests a number of variables other than age which might plausibly be used as the basis for further decompositon of total inequality, such as years of schooling of the head of the family or number of earners in the family. He constructs an age-schooling Gini by use of the Paglin technique for constructing the age Gini and shows that, from 1965 to 1972, his measure of the residual, "true" inequality reverses the trend result he obtains by use of the Paglin Gini for the same period. According to Minarik, the Paglin Gini fell from .239 in 1967 to .237 in 1972, while his adjusted Paglin Gini--obtained as the residual from the Lorenz

Gini by netting out the age-schooling Gini--rose from .167 to .173. Thus Minarik's work makes clear that Paglin's results are sensitive to his choice of age as the only variable used to partition total inequality into age-related (irrelevant) and Paglin (relevant) components.

Danziger, Haveman and Smolensky (1977) have shown, moreover, that Paglin's technique for constructing his age Gini and residual Paglin Gini estimates confounds the effects on inequality of changes in the age-income profile, the age composition of the population, and interfamily inequality within each age group. They recalculate Paglin's results from disaggregated CPS data for 1965 and 1972 and estimate that the Paglin Gini fell from .1812 to .1699. This result did not reflect a decrease in within-cohort inequality. The change in within-cohort inequality contributed to an increase in total inequality. Their technique for decomposing the sources of changes in inequality over time appears to be more fruitful than the Garvy-Paglin alternative.

Paglin's critics have also disputed his assertion that "the question of the optimum age-income profile is a different issue from that of equality as commonly conceived . . ." (p. 601). In fact, as Danziger, Haveman and Smolensky argue, it is conceivable that a number of circumstances could cause the age-income profile to change in such a way as to increase the value of the age Gini by more than the value of the Lorenz Gini, and thus to decrease the degree of inequality as measured by the value of the residual Paglin Gini. Not all of such circumstances would be considered truly equalizing by most economists or policymakers. The

complex issue of the optimum age-income profile cannot be avoided by the use of the Paglin measure of inequality in studying the postwar trend in inequality.

Paglin shows himself to be well aware of the income concept and income unit issues, but data limitations force him to rely on the CPS money income of families series in his study of the postwar trend in inequality. Both the money income concept and the Census family unit for these data are particularly inappropriate for his attempt to infer from them the trend in lifetime inequality. The money income concept omits a variety of nonmonetary forms of income which vary greatly over the life cycle and which have grown in relative importance in the postwar period. As noted above, the relative numbers of very young and very old individuals who receive relatively large amounts of nonmonetary income have also grown in this same period. For this reason, the trend in Paglin's age Gini based on money income is likely to be severely biased upwards relative to the true value based on a comprehensive income concept, and the trend in his residual Paglin Gini is thus likely to be biased downwards.

Paglin's technique for constructing his age Gini value is critically dependent on the proper classification by age of certain income receipts over one's lifetime. Two extreme hypothetical cases help illustrate this point. If a law required employers to spread out lifetime earnings of workers evenly in annual payments over a lifetime career, the age Gini would approach a value of zero. If, instead, employers were required to pay out all earnings in a lump sum at the age of retirement, with all previous payments considered advances or loans before the final reckoning, the age Gini would approach a value of unity. These cases are unrealistic,

of course, but institutions such as unions may affect the timing of a given lifetime total of wage and salary payments over a person's working life, and it is at least conceivable that institutional practices have changed in such a way since World War II as to introduce some bias in one direction or the other into the Paglin age Gini trend. The large relative growth of the Social Security system in the postwar period is especially important in this respect, as was explained in section 2. To some degree, the age classification of Social Security retirement benefits is arbitrary. Paglin's use of CPS money income implicitly accepts an extreme age classification of such income and incorporates it all in the income of his oldest cohort in calculating the value of his age Gini. Other age classifications of this income might yield quite different results for his time series on age and Paglin Gini values.

Finally, the family unit is inappropriate for Paglin's purposes, as he is well aware. This time series neglects all unrelated individuals, who increased in relative numbers over the postwar period. The age of the head of a Census family is not an unambiguous measure of the "age" of all the persons in the family. As older and younger individuals have increasingly split apart from the standard nuclear family, the mean and the variance of the ages of individuals within families headed by individuals of a given age may have varied systematically. Age is crucial to Paglin's technique for decomposing inequality over time but it is inappropriately measured in the time series on which he relies.

4. CONCLUSIONS

Danziger and Smolensky (1976) conclude their review of the evidence on postwar inequality in the United States as follows:

> Whether inequality is increasing or decreasing, by no matter how small an amount, seems to carry an enormous emotional and ideological charge. For that reason, there needs to be available a consistent and accurate record of the past, with all the qualifications quantified. Such a record does not exist. (p. 10)

As should be obvious from my own review of the evidence, I concur with their conclusion. I cannot accept the evidence on the trend in inequality drawn from the CPS or other available sources as a reasonable approximation of the true trend because I dispute the contention that any biases in the data can be expected to persist over time and not affect the dominant trend movement very much. In fact, there are strong reasons to believe that the various factors that could bias the basic data on inequality have certain strong trend movements of their own whose importance cannot yet be quantified.

The biases stem from deficiencies in the income concept, the income unit and the income accounting period in the basic time series data. The tax and transfer structure of the United States incorporates strong incentives for the reported money incomes of factors of production to diminish and even disappear, and for substitutes in the form of leisure and various nonmonetary returns to develop in their place over time. These incentives in the tax system existed long before World War II, of

course, but we cannot dismiss their effect on postwar developments unless we believe that the situation in 1947 was one of general long-run equilibrium with respect to the tax structure. The postwar increases in the relative number of individuals facing high marginal tax rates on factor money incomes and in the general education level and tax awareness of the population have been forces likely to cause a decline in reported factor money incomes relative to comprehensive incomes over the period. The development of a large system of government cash and in-kind transfers has come about only since the war, particularly in the last decade. Like the tax system, it contains incentives for the reported money incomes of factors to diminish and disappear and for nonmonetary substitutes to develop. The quantitative importance of these tax and transfer incentives in affecting measured trends in inequality cannot yet be gauged.

Related points apply to systematic changes in the income unit over the postwar period. The development of the Social Security and related public and private retirement and disability programs has been an important factor in the large growth in the relative number of retired individuals and couples living apart from their children in separate households on relatively low money incomes. Increasing levels of affluence have also led to more family splits and to the formation of new households headed by very young individuals, again with relatively low money incomes. Several economists have hypothesized that living apart from relatives is a form of nonmonetary consumption that is omitted from conventional data sources on personal and family incomes. These systematic postwar developments affecting the basic income unit cannot be expected to wash

out in measuring the trend in inequality of money incomes of the family or combined family and unrelated individual income units.

The fact that virtually all available income data are for an annual accounting period creates further complex difficulities in interpreting the postwar trend in inequality. The secular increase in years of schooling and other forms of human capital investment has increased the peakedness of the age-earnings profile of individuals. The trend to earlier retirement has had the same effect, especially if we measure income only in money terms. The relative increase in the number of income units headed by the very young and the very old reinforces the tendency to more peakedness. Yet none of these developments is unambiguously unequalizing if we accept a lifetime or some alternative long-term basis for measurement of inequality. We know in fact that many of the people in the bottom quintile of the money income distribution in 1974 were not there one, two, or three decades earlier. Some of them were children or not yet born in the 1940's, while others were in the labor force with money incomes above the upper limit of the bottom quintile. Paglin's contribution emphasizes the crucial importance of the income accounting period to our quantitative knowledge about the trend in true inequality in the postwar period.

What is to be done? To what extent can we reduce our ignorance through further theoretical and empirical work? The several research efforts summarized in this paper point the way: future research should attempt simultaneously to correct deficiencies in the basic money concept and to standardize the distribution for changes in demographic composition. This can be done properly only with disaggregated microdata sets, which limits extension of such work only as far back as the mid 1960's. I am

pessimistic about squeezing much more information out of the older aggregate cross-sections from the CPS and other data sources. The ideal data source for such work is a large sample of persons followed over long periods of time. The best such data base available, to my knowledge, is the Michigan 5000-family panel, which goes back through 1967.

Panel data also should make possible empirical research into inequality based on long-term accounting periods. I cannot offer constructive suggestions for improving on Paglin's treatment of the problem with only conventional data sources based on annual income. Even with good panel data, however, a study of the distribution of the long-term incomes of all persons originally in the sample faces enormous conceptual and computational difficulties as original family units split and new ones form over time. My own inclination is to avoid the income accounting period as much as possible by measuring the inequality of incomes--annual or long-term--within cohorts, as narrowly limited by age as possible. Paglin (1975) has argued against this alternative on the grounds of important practical data problems and because ". . . even if we had a truly age-specific Gini, we would have the problem of weighting and combining fifty-some measures into one coefficient" (p. 602). He has a strong case if it is really necessary to summarize all of complex reality into one number. I would argue that several numbers are necessary to summarize adequately the experience of several cohorts that differ greatly in the ratio of their expected future consumption to total lifetime consumption because of differences in age and life expectancy.

As noted in section 2, the lifetime income perspective suggests the desirability of joint observations over time on consumption, wealth and

age. Although such data do not exist, available disaggregated microdata on consumption expenditures from the Bureau of Labor Statistics Surveys of Consumer Expenditures for 1960-61 and 1971-72 could be exploited to study the badly neglected consumption aspects of trends in inequality. To be sure, consumption data are no easier to interpret than income data as measures of economic well-offness. They are not clearly better or worse than similar income data, but they do offer a different perspective.

In addition, it seems to me that there is much to be learned about trends in inequality from the study of the distribution of particular categories of consumption in the United States over time. Stanley Lebergott (1976) has recently published some fascinating estimates of changes in the prevalence of certain forms of consumption since 1900 among the total population (pp. 248-98). He reports, for example, that the number of non-farm workers taking vacations rose from 6 percent in 1901 to 80 percent in 1970; that the number of urban households with boarders or lodgers fell from 23 percent in 1900 to only 2 percent in 1970; that the number of families owning their own homes rose from 47 percent in 1900 to 63 percent in 1970; that the number of homes with running water rose from 24 percent in 1890 to 98 percent in 1970; that the number of families with central heating rose from 1 percent in 1920 to 42 percent in 1940 to 78 percent in 1970; and that the number of families with electric lighting rose from 3 percent in 1900 to 35 percent in 1920 to 99 percent in 1970. All these estimates give us information about trends in certain aspects of inequality that cannot be obtained from conventional data sources on total family incomes. Further research

along the lines pioneered by Lebergott could provide useful supplemental information about long-run trends in inequality.

Another alternative to conventional studies of inequality by economists is surveys asking people in various circumstances whether they are happy or unhappy and to what degree. This method may appear quaint at best to rigorous economic theorists but, after all, are we not ultimately interested in the distribution of subjective utilities, rather than the distribution of money incomes, wealth or material things in general? Richard Easterlin (1973) has reviewed the results of a large number of surveys of this type for both differences over time and differences across countries. His results show very little change in the distribution of self-reported happiness in the United States in the postwar period,[24] despite the fact that such happiness is highly correlated in any year with income and that the average income level has increased steadily during the period. In my opinion, these results on the trend in distribution of self-reported happiness are no more and no less informative than the results on trends in income inequality derived from the CPS.

Finally, I wish to raise the question of why we are concerned with determining the trend in inequality. Many writers devote singleminded attention to the inequality issue without asking why the answer is important. For some, it can be used as a weapon either to defend or to attack the "system." For those without strong ideological commitments, the answer to the question of whether inequality has risen, fallen, or stayed the same is of only moderate interest.[25] Even if we could resolve all the conceptual and data problems, it is not clear what use we could make of the answer. If it could ever be established empirically,

for example, that the Lorenz curve for well-offness in 1976 lay everywhere closer to the line of perfect equality than the corresponding curve for 1946, that fact by itself would not be compelling evidence that our society was becoming more just, more humane or, all things considered, better. It would all depend on the sources of the equalizing trend. Achieving the goal of more equality would not lead us closer to the good society if it involved too many sacrifices in other areas such as growth in the general level of material well-offness, fair treatment of high ability women married to high-income men, and horizontal equity in government programs.

Furthermore, for most people, inequality of well-offness is probably too general and vague a concept to be of any great, abiding interest. Rather, people seem more concerned about specific aspects of inequality such as: (1) equality of opportunity; e.g., Does society provide racial minorities with opportunities equal to those of the white majority? (2) alleviation of outright poverty; e.g., Does society provide all people unable (or unwilling) to support themselves with a decent minimum standard of living? (3) extreme concentrations of wealth and power; e.g., Why does our society allow the succeeding generations of a John D. Rockefeller to have the wealth (and often the accompanying political power) amassed by an ancestor decades before? These are the kinds of concrete issues that should be the focus of future study of trends in inequality.

NOTES

[1]Two recent studies that focus on cyclical aspects of postwar inequality are Blinder and Esaki (1976) and Budd and Whiteman (1976).

[2]However, Blinder and Esaki (1976) report results suggesting that the lack of microdata prior to 1958 makes the 1947-1957 and 1958-1974 CPS series inconsistent.

[3]Budd (1970) gives detailed attention to intersecting Lorenz curves for annual CPS money income distributions after World War II. He concludes that between 1947-1948 and the mid-1960s the shares of the two bottom quintiles and the top 5 percent fell, while the shares of the middle and upper portion of the distribution rose. This pattern cannot be found in extensions of the same time series into the 1970's.

[4]U. S. Bureau of the Census P-60, No. 101 (1976). The P-60 Series of the Bureau's Current Population Reports fully documents all the concepts and procedures discussed in the text. Number 85 (1972) in this series gives an especially good discussion of the limitations of the data and compares and contrasts the CPS with alternative data sources.

[5]For fuller discussions of the issues, see Atkinson (1975, Chap. 4); Morgan (1962); Morgan et al. (1962); and Morgan (1965).

[6]See Goode (1976, Chap. 2) for a recent treatment and Okner (1975) for an extensive empirical study of income distribution based on a comprehensive definition of income.

[7]Data on these three trends can be found in the Manpower Report of the President (U. S. President, 1975): (1) The median years of school

completed by the civilian labor force rose from 10.9 years in 1952 to 12.5 years in 1974 (Table B-9, p. 264); (2) The labor force participation rate of white males aged 65 and over fell from 46.5 percent in 1948 to 22.5 percent in 1974 (Table A-4, p. 208); (3) The labor force participation rate of married women, husband present, rose from 22.0 percent in 1948 to 43.0 percent in 1974 (Table B-4, p. 254).

Data on trends in the number of earners for each quintile of families over the postwar period is available in U. S. Bureau of the Census, Current Population Reports, Series P-60, various volumes.

[8]See Scitovsky (1973). He makes the extremely important point that the net market wage rate for an individual enjoying a pleasant and challenging market job not only understates the net return to such employment but also understates the value of leisure time. His point emphasizes the problems of measurement arising from omission of the nonmoney benefits of a job from standard measures of income.

More practical problems arise in imputing the value of nonmarket time with available data. Net wage rates must be imputed or measured with a great deal of error for many individuals. The concept of voluntary "leisure" time is difficult to make operational and the amount of such time for any individual can only be approximated with available data. For further discussion of these issues, see Sirageldin (1969).

[9]Garfinkel and Haveman (forthcoming) have made the most ambitious attempt to develop a more comprehensive income measure along these lines by estimating the "earnings capacity" of income units as an alternative to actual earnings. They define earnings capacity as the net returns a family would anticipate if it were employing its resources at full capacity.

They then explore the implications for inequality in a single year when earnings capacity is used as the underlying income concept in place of actual earnings. See also similar work by Moon (1975).

[10]To put the point somewhat differently, the equalizing effect of increased labor force participation of wives since World War II as measured in the CPS time series on money income probably somewhat overstates the true equalizing effect on comprehensive income. Past experience may not be a good predictor of the future, as the trend to more market work may in the future affect relatively more women with high-income husbands.

[11]See the evidence on realized gains cited in Miller (1971, p. 52), and in U. S. Bureau of the Census (1966, p. 6). Also see the estimates in Browning (1976b) for the single year 1972.

[12]See Smith (1974, Table 16, p. 172) for estimates of the distribution of various categories of assets among persons in 1969.

[13]But see Hollister and Palmer (1972) for a pioneering contribution on the effects of price changes on the status of the poor.

[14]Data in this paragraph come from U. S. Bureau of the Census, Current Population Reports, Series P-60, No. 101 and earlier volumes. Also see U. S. Bureau of the Census, Trends in the Income of Families and Persons in the United States 1947-1964 (1967).

[15]See Seneca and Taussig (1971) for a recent paper estimating a set of equivalence scales and for a bibliography. Equivalence scales in general use have weak conceptual and empirical bases. Thus the choice of a set of N* deflators raises a number of difficult, unresolved issues.

[16]This framework was suggested to me by A. B. Atkinson in a personal correspondence.

[17]For similar kinds of evidence, see the studies by Benus and Morgan (1975), and Kohen, Parnes, and Shea (1975).

Alan Blinder informs me that two recent unpublished studies suggest that inequality of the lifetime income of persons is about 25 percent less than inequality of annual income.

[18]A few years ago, I used the 1960-61 Survey of Consumer Expenditures microdata on urban families to estimate the following Gini coefficients for income and consumption expenditures:

Age of Head	Income	Consumption
All ages	.348	.304
Less than 25	.245	.226
25-34	.244	.218
35-44	.269	.238
45-54	.333	.292
55-64	.380	.328
65 and over	.456	.369

[19]Lester Thurow (1975) in this country and A. B. Atkinson (1974, 1975) in Britain are two exceptions to these generalizations. They both have given wealth a central role in their studies of inequality.

[20]This procedure was first employed by Weisbrod and Hansen (1968). For some of the distributional consequences of using their methods on disaggregated microdata, see Taussig (1973).

[21]For a discussion of these two perspectives on the Social Security system, see Pechman, Aaron and Taussig (1968).

[22]Also see Brownings's (1975, 1976a) related research reports.

[23]It may also be the cause of his result that putting income on a per capita basis makes the annual distribution more equal. Morgan (1962, p. 271) reports evidence for the opposite result. Browning obtains his per capita result by dividing total adjusted income in each family quintile by the number of people in the families in each quintile. But this procedure is sure to rerank drastically the true distribution and thus greatly exaggerate the equalizing effect he estimates. Also, as explained in the text, his version of a per capita distribution is not really one which incorporates as income units all persons in the population.

[24]The survey results are from R. A. Easterlin, "Does Economic Growth Improve the Human Lot?" in P. A. David and M. W. Reder, editors, Nations and Households in Economic Growth. Essays in Honor of Moses Abramovitz. New York: Academic Press, 1974. As cited in Scitovsky (1976, Table 6A, p. 135).

[25]Reynolds and Smolensky (1977, Chap. 1) provide a good summary of views on this issue.

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Conference Overview:

Conceptual Issues, Data Issues, and Policy Implications

Sheldon Danziger

University of Wisconsin-Madison
Institute for Research on Poverty
and
School of Social Work

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Conference Overview:
Conceptual Issues, Data Issues, and Policy Implications

On October 29 and 30, 1976, the Institute for Research on Poverty sponsored a conference on the trend in inequality of well-offness in the United States since World War II. About twenty experts from the academic community and government participated. Michael Taussig's review of the literature and summary of the issues provided background material and served as a starting point for discussion. This essay summarizes the discussion of the conference participants and raises additional issues central to the measurement and interpretation of the trend in income inequality.

The conference was motivated by a recent debate in the literature on the trend in inequality since World War II and the possible effects of the public sector on this trend. At the core of this debate is disagreement as to the comprehensiveness and reliability of available time-series data. For the overall post-World War II period and most but not all subperiods, the annual Current Population Survey (CPS), the major source of data on personal income, indicates that inequality among households has been quite stable.

This indication of stability has recently been challenged. Several economists have argued that inequality has declined substantially, but that the decline has been obscured in the CPS either because income is defined to exclude in-kind transfers (e.g., Medicare, Medicaid, Food Stamps, public education), or because users of the data fail to consider properly the relatively rapid growth of smaller aged, young, and female-headed households which, on average, have low incomes. Some of

these economists have linked problems with the definitions of income and recipient unit by arguing that it is the growth of transfers (both cash and in-kind) which has led to the falling proportion of households headed by males in the prime working ages--thus the irony that increased transfers may simultaneously yield greater equality of economic well-being and greater measured income inequality. Others have concluded that these critics have overstated their case. All of these studies question the effectiveness of policies designed to alter the trend in inequality, producing such diverse conclusions as (1) all that needs to be done has been done, (2) nothing has been done, and (3) nothing can be done.

There is a consensus, however, that statements concerning the trend in inequality are sensitive to the choice of income-receiving units and the choice of income concept, and that government actions affect both recipient units and the form of income. These choices, often dictated by data deficiencies, bias estimates of the trend. While the various biases have been enumerated in the literature, their magnitude and direction have not been systematically measured.

The conference format was designed to catalog what was known about how each of these biases affected the level of inequality and its trend. Three sessions focused on measurement issues: (1) "Inequality of What: Some Issues in the Definition of Income," (2) "Inequality amongst Whom: Some Issues in the Definition of the Recipient Unit;" and (3) "Public Budgets and the Trend in Inequality." A final session was devoted to summing up the positive issues and relating them to any policy implications which might be derived.

It is ironic that the following statement, written in 1920 by Hugh Dalton, could have served as an introduction to this conference:

> The question whether the inequality of income is increasing or decreasing in modern communities is one of the most important questions in economics. Many writers have attempted to answer it, but their answers do not generally carry much conviction. To determine whether, under modern conditions, inequality tends to increase or decrease, involves the enumeration of a large number of distinct and conflicting tendencies and the weighing and balancing of them one against the other (quoted in Brady, 1951, p.4).

Dalton's statement served the same function at a National Bureau of Economic Research (NBER) conference on the size distribution of income held in 1949.[1] Successive generations of economists have addressed distributional issues, but these remain largely unresolved. Almost sixty years after Dalton, we still attach normative significance to the trend in inequality, still cannot agree as to what the trend actually has been, and still end our conferences with a call for more and better data. What follows is a summary of the Poverty Institute's 1976 conference on income inequality.

1. CONCEPTUAL AND DATA ISSUES

The Current Population Survey attempts to measure the annual money income of individuals and families, rather than the consumption plus changes in net worth of units within which consumption is

shared. The available data deviate from the theoretical norm in at least eight ways, relating to the income concept, recipient unit, and accounting period. These data problems, detailed by Taussig and discussed at the conference, affect the measurement of both the level and trend of income inequality.

Table 1, which lists these major data problems, is discussed below.[2] For each problem I have indicated the direction of the bias on the level and trend of inequality. Taussig's review reveals that the size of most of the biases has not been determined; in fact, Taussig concludes that the sign of some of these biases remains unknown. Conference participants offered their opinions as to the direction of some of these biases and I have attempted to speculate beyond the discussion.

A majority of conference participants would probably agree on their "best guess" as to what a perfect data source would reveal: less inequality in any one year than is shown by the CPS, and a slightly greater trend toward less inequality over time. (A (+) in Table 1 indicates that the measurement problem leads to an overstatement by the data of the actual level [or trend] of inequality. If the data problems were remedied, measured inequality would be less [and the trend would be toward less inequality] than the data now indicate.) The overall trend would be only slightly affected if all the issues were to be remedied, not because each one makes little difference but because the differences would offset each other.

Table 1

Problems in the CPS Measurement of the 1976 Level and the Post-World War II Trend of Inequality of Well-Offness

	Understatement or Overstatement	
	Level	Trend
Exclusion of in-kind transfers	+	+
Exclusion of work-related perquisites	-	-
Exclusion of realized and unrealized changes in net worth	-	+
Exclusion of taxes	+	-
Exclusion of the value of leisure, home production, and school attendance		
(a) of wives	-	-
(b) of the young and the old and of female heads of households	+	+
Failure to adjust for the composition of living units	+	+
Money income underreporting	?	+
Annual accounting period	+	?
A summing up	+	+

NOTE: A (+) indicates that the CPS methodology leads to an overstatement of either the level or trend in inequality; a (-) that it leads to an understatement; a (?) that the direction is uncertain.

Exclusion of In-Kind Transfers

While cash transfers from public programs such as Aid to Families with Dependent Children and Social Security are included as income in the CPS, in-kind transfers from other public programs such as Food Stamps and public housing are excluded. Both types of transfers raise the level of economic well-being of consumption units. Since the benefits of in-kind transfer programs are distributed primarily to those with lower-than-average incomes, their exclusion overstates the level of inequality in any year. In recent years in-kind transfers have grown at a faster rate than either cash transfers or earned income, and in-kind transfers as a percentage of personal income have increased. Thus, the effect of their exclusion increases with their relative importance and overstates the trend toward more inequality.

Exclusion of Work-Related Perquisites

Just as the government subsidizes the purchase of certain commodities for those with low incomes through a non-cash program such as Medicare, employers subsidize the purchase of similar commodities through noncash components of compensation, such as group health insurance, life insurance, and vested pensions. As workers' incomes, and hence the marginal tax rates they face, increase, the value of an additional dollar of untaxed, employer-provided fringe benefits may even exceed the value of an additional dollar of taxable earnings.[3] In the past twenty-five years, employer-provided perquisites have grown more rapidly than earnings. The exclusion of such benefits, unlike the

exclusion of in-kind transfers, understates the level and trend of inequality because they benefit only those with earnings, and are distributed more unequally than earnings.

The differences between the exclusion of in-kind transfers and the exclusion of job perquisites are striking, and tempt one to assume they offset each other. However, what is known about the distribution of the latter is sufficient to determine only the direction and not the magnitude of these biases.

Exclusion of Realized and Unrealized Changes in Net Worth

Two individuals with the same money income but vastly different wealth holdings are considered to be equally well-off by the CPS. If one of these individuals holds an interest-bearing savings account while the other holds a block of shares (purchased at the same total cost) in a corporation with no dividend payment but with accumulated retained earnings, true inequality in the command over resources is understated. The CPS neglects the unrealized capital gains in this example, as well as all realized capital gains that occur in the year.

Since wealth is distributed more unequally than is income, and is highly correlated with income, and since the returns to wealth may be distributed even more unequally than wealth holdings, the exclusion of these returns understates the level of inequality in any year. However, as Joseph Pechman pointed out at the conference, the exclusion is likely to have overstated the trend toward more inequality in the recent past because the relative importance of the nonemployment and nontransfer components of personal income has declined (due in part to a depressed stock market).

Exclusion of Taxes

The work by Pechman and Okner (1974) and Pechman and Minarik (forthcoming) using microeconomic data for 1966 and 1970, and the work by Reynolds and Smolensky (1977) using aggregate data for 1950, 1961, and 1970 suggest that the tax system is mildly progressive in any one year and that the exclusion of taxes overstates the level of inequality. But the changing composition of tax revenues--the growing relative importance of the federal payroll tax and state and local taxes--has led to an erosion of this progressivity over time, and to an actual understatement of the trend toward less inequality.

Exclusion of the Value of Leisure, Home Production, and School Attendance

Since World War II there have been dramatic changes in the age and sex composition of the labor force and of household heads. The young, the old, and males account for a smaller portion of the labor force, while the young, the old, and women account for a larger portion of household heads. Some of these changes occurred because of exogenous changes in birth rates, death rates, the desire to work, and the demand for education, and increases in income levels. Others occurred in response to changes in the government transfer system. In particular, increases in the levels of transfer payments, both absolutely and relative to wage rates, tend to reduce work hours and labor force participation rates and encourage households that in earlier times would have been composed of one or more earners and perhaps one or more transfer recipients to break apart. Divorce, made economically feasible in instances where

it was infeasible in the past, may have added to the number of households headed by transfer recipients. Thus, the transfer system affects the level and distribution of both pretransfer and "final" income, the size and composition of households, and household headship characteristics. While the behavioral relationships underlying these changes are not well understood, conference participants attempted to piece together their effects on the level and trend of inequality. These effects are discussed as part of the fifth and sixth measurement problems of Table 1.

Suppose two individuals receive the same weekly earnings, but one works sixty hours per week while the second works only forty. The CPS considers each individual to be equally well-off, but a comprehensive definition of well-being would consider the earner with greater leisure to be better off. The exclusion of the value of leisure and of other nonmarket uses of time, such as home production or school attendance, biases the measurement differently for various demographic groups.

When a housewife enters the labor force and accepts a job, family money income increases but the increase in economic welfare is not commensurate with this rise. If a housekeeper is hired to perform some of the duties previously performed by the woman, then the change in family income will overstate the change in well-being. A similar overstatement occurs if the woman (or another family member) continues to do the housework, since the change in well-being due to the increased income is partially offset by the reduction in leisure.

Hence, the inclusion of the earnings of working wives, unadjusted for increased housekeeping expenses, overstates their family's well-being. The exclusion of the value of leisure understates the well-being of families with nonworking wives. Since wives whose husbands have high earnings have below-average labor force participation rates, the understatement of well-being occurs relatively more towards the top of the income distribution, and the overstatement relatively more towards the middle of the distribution: the level of inequality is understated. The secular increase in labor force participation by married women whose husbands do not have high incomes implies that inequality in money income is becoming parallel to inequality in well-being, and that the trend has also been understated.[4]

Differences in labor force participation among the young and the old overstate the level and trend toward inequality for the same reason that differences among wives understate the level and trend. The economic welfare of students is understated because the consumption benefits and the increased value of their human capital derived from education are not valued; the annual incomes of the old are understated because their retirement leisure is unvalued. The young and the old have lower-than-average incomes, so these understatements overstate the level of inequality. The increase in school attendance rates and retirement rates in the past quarter century has led to an overstatement of the trend.

Female heads of household also have below-average labor force participation rates and incomes, so the failure to value their leisure also overstates the level of inequality. The number of households headed

by females has increased, and increases in their labor force participation rates and incomes have lagged behind those of other households; these changes overstate the trend.

Failure to Adjust for the Composition of Living Units

The increase in the number of households headed by the young, the old, and women, and the increase in the number of unrelated individuals relative to families--however influenced by government policies or by exogenous forces--have reduced average family size and increased the number of low-income living units. Failure to adjust for these changes leads to an overstatement of the level and trend of inequality.

George Garvy (1952) pointed out that part of this bias is probably due to the number and amounts of transfers to the retired and low-income units:

> Thus, in recent years, the broader and larger transfer payments made to an increasing number of elderly persons and others . . . has augmented not only the number of units separately domiciled but more particularly those at the lower end of the income distribution. Paradoxically, the very process that has contributed to raising the economic level of old and incapacitated people and of families relieved of responsibility for these dependents at the same time has been reflected statistically as an increase in the inequality of the income size distribution . . . . Any future shifts in the income distribution of the active population in the direction of more equality are, therefore, likely to be obscured statistically by the offsetting effect of additional numbers of retired units receiving transfer income (p.46).

Many conference participants revealed a preference for correcting this failure by utilizing distributions of per capita income (or income per equivalent adult). The same issue was discussed at the 1949 NBER conference, and Dorothy Brady's (1951) conclusion characterizes the consensus at the 1976 conference:

> If the changes in the age and sex distributions of the population are small enough to be ignored, it is reasonable to compare distributions without regard to differences in "needs." In long run comparisons, changes in the composition of the population should probably be recognized by recourse to a scale of equivalents or to income distributions standardized for these population characteristics (pp. 10-11).

However, per capita adjustments are not without problems. According to Lebergott (1976):

> The simple move from using GNP as a measure of economic welfare to using GNP per capita tacitly implies that the birth of children reduces human economic welfare and that death increases it (p. 43).

Eugene Smolensky pointed out that if children are viewed as consumption goods, a per capita adjustment is unnecessary. This view was criticized because while children may be appropriately considered as consumption goods of their parents, once born, they are individuals whose independent levels of economic welfare should be explicitly considered. Smolensky countered that if a child's welfare were considered, then a per capita adjustment implies that the birth of a sibling reduces that child's economic welfare.

Whether one uses income per recipient unit or income per capita, the CPS demarcation of families and unrelated individuals is based on living arrangements, not income-sharing arrangements. These latter arrangements may continue even when individuals live apart from their families. The growth of units composed of single individuals will overstate the level and trend of inequality because unrecorded income-sharing raises the well-being of some units with lower-than-average incomes.

Money Income Underreporting

While income from employment is adequately captured by the CPS, property income and transfer income are seriously underreported; and other forms of income, such as illegal income, are totally unreported. The underreporting of property income understates the incomes of the wealthy, while the underreporting of transfers understates the incomes of the poor. The effect on the level of inequality is thus indeterminate, a priori. John Palmer argued that the effect on the trend can be determined by assuming that a constant proportion of cash transfers is underreported in each year. Since cash transfers have grown relative to earnings and property income in the CPS, this underreporting obscures the full extent of the equalizing effect of transfers and overstates the trend.[5]

Annual Accounting Period

The appropriate accounting period over which to measure inequality was one of the most controversial issues discussed at the conference.

Participants agreed that transitory influences cause both unusually low and unusually high annual incomes, and thus overstate the level of inequality in any year relative to that shown over a longer time period. Some participants felt that the problem of income fluctuations could be remedied by using incomes averaged over several years, while others favored a lifetime income concept. Lester Thurow and others who opposed the lifetime income concept asserted that only individuals have lifetime incomes and that an acceptance of the lifetime income concept implies a rejection of consuming units or families as the recipient unit. Edward Budd and Joseph Pechman contended that uncertainty and capital market imperfections made it impossible to borrow against future income and to operationalize lifetime income. Others argued that if individuals have high discount rates, then the weighted average of, say, five to ten years of income would merge the permanent income and lifetime income approaches, or that the life cycle problem could be overcome by disaggregating the population into specific cohorts and analyzing inequality within cohorts. There was no consensus as to the effect of using annual income rather than permanent or lifetime income on the trend.

A Summing Up

Taussig's review of the literature contrasts Edgar Browning's (1976) conclusion of significant equalization of incomes over time with Morgan Reynolds' and Eugene Smolensky's (1977) conclusion of no change in inequality. The consensus at the conference placed the "true" trend between these two positions, but somewhat closer to Reynolds and

Smolensky: although many biases have a large impact on the level of inequality, the net results of these biases on the trend were judged to be small.

The Data Debate

Although I have reported the consensus view from the conference, it was an uneasy one. Despite the several empirical studies reviewed by Taussig, a definitive answer was seen as too elusive to be revealed with existing data. Participants were nearly unanimous in their call for new and improved data sources.

Again a review of the 1949 NBER conference is instructive. Although that conference was concerned with measuring the size distribution in any one year, while the 1976 conference was interested in measuring the trend over a period of time, the two share common measurement problems and a dissatisfaction with available data sources. Yet since the NBER conference we have accumulated twenty-five years of CPS data, ten years of CPS microdata, and about ten years of longitudinal data from the Michigan Panel Study of Income Dynamics. If there is a lesson to be learned, it is that more data may not be a panacea. The data issue is perhaps an excuse used to dissuade us from tackling difficult issues relating to the interpretation of measured inequality.

Milton Friedman (1951) offered this comment on the need for more data at the 1949 conference:

> Concentration on nationwide estimates of the distribution of income leads us to think we know what we want to measure--at least act as if we did . . . . It leads us to think of

> the problem in terms of gathering more and yet more data, instead of analyzing those we already have . . . (p. 60).

Friedman's caveat remains appropriate; our problems with the trend in inequality are not due for the most part to data deficiencies, but to our uncertainty as to the appropriate conceptual constructs and to why we measure inequality. Taussig recognizes this point at the end of his paper:

> Finally, I wish to raise the question of why we are concerned with determining the trend in inequality. Many writers devote singleminded attention to the inequality issue without asking why the answer is important . . . Even if we could resolve all the conceptual and data problems, it is not clear what use we could make of the answer (p. 69).

In the next section, I report on discussions at the conference addressed to policy implications, and attempt to clarify how we can use what we measure.

2. POLICY IMPLICATIONS

Economists have focused mainly on the measurement, rather than the normative interpretation, of inequality because measurement issues are more amenable to analysis. But a concern with the positive issues relating to income inequality has not prevented economists from attaching normative significance to the trend. Arthur Burns (1951), commenting on work by Simon Kuznets (1953), stated that:

> The distribution of national income is always a vital concern of a free and progressive people seeking to raise their plane of living . . . . Few Americans and still fewer Europeans are aware of the transformation in the distribution of our national income that has occurred within the past 20 years--a transformation that has been carried out peacefully and gradually, but which may already be counted as one of the great social revolutions of history. . . . If we are to look forward constructively to a material reduction of income inequalities in the future, we must seek to attain it principally by raising the productivity of those at the bottom rather than by transferring income from the rich to the poor (pp. 3-5).

Anthony Crosland (1962) observed a similar secular decline in inequality in Britain and offered an opposing interpretation of the need for further reductions in inequality:

> The inequality of living standards in Britain; although less marked than before the war, is still greater than should be tolerated in a democracy. . . . The highest rewards are inordinately high--far higher than any civilized person should want or need; and the lowest are inhumanly low--far lower than any civilized person should have to endure. . . . We want a more equal distribution of wealth, not because redistribution today will make all the workers rich, but to help create a more just, united and humane community (p. 28).

The conflict inherent in these interpretations may explain the reluctance of economists to dwell on normative issues. However,

unless we can agree on some explicit policy goal relating to the reduction of inequality, we will continue to be mired in seemingly intractable data problems.

By not articulating a specific policy goal relating to inequality, we implicitly accept perfect equality--the 45 degree line of the Lorenz curve--as our aim. Garvy (1952) first recognized this dilemma:

> Most contemporary writers on income size distribution are concerned with measuring the degree of inequality. It is the contention of this paper that the line of absolute equality (or any similar absolute measure) cannot serve as a base for an operational measure of income inequality; no "natural" income distribution or unambiguous or generally acceptable "normative" distribution has been developed that could take its place; and the problem really is to identify, isolate, and then measure the various factors that determine relative income positions, not to "measure" inequality (p. 27).

Confirming Garvy's contention, no acceptable normative guidepost, no "socially desirable minimum degree of inequality (Garvy, p. 30)" has yet been developed. Despite a broad consensus among economists that perfect equality would not be socially optimal, it remains the benchmark for comparison. Morton Paglin (1975) reminded us of the undesirability of the conventional standard. However, the Paglin-Gini is not an acceptable alternative because its normative underpinnings are at odds with conventional notions of equity (see Danziger, Haveman, and Smolensky, 1977).

Although notions of equity are difficult to specify, a policy goal relating to the reduction of poverty was articulated and implemented in the mid-1960s. Even though poverty data had not been systematically

gathered, and even though the measurement issues of inequality apply as well to the measurement of poverty, the articulation of the poverty goal stimulated scores of analyses that enhanced our understanding of the phenomenon. Studies focused not only on measuring poverty, but also on understanding its causes and cures.

A specific goal for reducing inequality, a socially desirable distributional standard, is a logical extension of the antipoverty goal. If one is not specified, the measurement issues that plagued the conferences of 1949 and 1976 are likely to form the basis for discussion at a similar conference in the year 2000.[6] If a goal is specified, and if the comparison with the adoption of the poverty goal is valid, then attention will be focused on analyzing the causes and meaning of inequality.

The discussion at the final session of the conference reinforced the need for an explicit policy goal. Eugene Smolensky characterized the Gini coefficient or any summary measure of inequality as "a number in search of an interest," admired by economists but probably irrelevant to policymakers or the general public. Robert Lampman argued that there are a multiplicity of social welfare goals--such as an end to discrimination by race and sex, fair taxes, full employment, the provision of essential commodities--and that a single measure of inequality cannot serve as an indicator of progress in all, or perhaps any, of these dimensions.

Irwin Garfinkel suggested that economic well-being is a function of relative as well as absolute command over resources, and of the surety and steadiness of resources. Thus, policies must be addressed to annual income, variations in income, and relative income. Antipoverty

programs attempt to raise annual income, while retirement, disability, and unemployment programs attempt to cushion fluctuations in income. All transfer and tax programs alter relative income, but unlike poverty lines or full employment, no specific goal relating to relative incomes has been articulated.

The articulation of a goal aimed at relative income will not eliminate normative difficulties; various social welfare goals may still be inconsistent. Assume that both a reduction in the black-white income differential and a reduction in income inequality are desired. Assume also that a policy is adopted that raises the wages of the highest quintile of blacks to equality with those of the highest quintile of whites. The policy reduces the black-white income differential and raises mean black incomes, but increases inequality among blacks and among the entire population. The optimal tradeoff between the two goals depends, of course, on the social welfare function, including the standard of equality embedded in it.

Lampman's (1971) observation on the current poverty goal reiterates the desirability of adopting a distributional goal:

> While income poverty is a relative matter, I do not think we should engage in frequent changes of the poverty lines, other than to adjust for price change. As I see it, the elimination of income poverty is usefully thought of as a one-time operation in pursuit of a goal unique to this generation. That goal should be achieved before 1980, at which time the next generation will have set new economic and social goals, <u>perhaps including a new distributional goal for themselves</u> (p. 53, emphasis added).

A distributional goal represents a logical outgrowth of the current measure of poverty. Any goal will be plagued by the measurement issues of defining appropriate recipient units, income concepts, and time periods of analysis, but will offer a realistic standard against which normative interpretations can be gauged.

In accordance with Lampman's suggestion we might set the distributional goal for this generation, after which we would expect a new standard to have evolved. To say that the distributional goal is only temporary is not to deny its usefulness. Because we have used perfect equality as the standard, inequality remains "a number in search of an interest." The specification of a distributional goal is not a panacea, but an attempt to answer one of the most important questions in economics.

NOTES

[1]Two participants at the 1976 conference, Stanley Lebergott and Joseph Pechman, were also participants at the 1949 NBER conference.

[2]Taussig discusses many of these issues in greater detail; I have attempted to avoid repetition wherever possible. I refer to individual conference participants only in relation to identifiable positions they advocated. As a result of the attempt to minimize such citations, I apologize for the failure to cite the contributions of all participants.

[3]If the employee were to choose the fringes in a situation where the employer's contribution could be taken as either cash or as fringe benefits, then the value of an additional dollar of untaxed perquisites would definitely exceed the value of an additional taxed dollar. But workers are generally confronted with a fixed bundle of perquisites which they may value at less than the employer's cost. For example, a young, single worker may place little value on employer-provided life insurance.

[4]Conference participants felt that the link between husband's income and wife's labor force participation has recently weakened, and might be reversing the direction of the bias. If the women's movement and antidiscrimination statutes equalize participation rates of women at all income levels, then measured inequality will increase (and will be overstated because of the exclusion of changes in leisure), since wives in high-income families comprise a relatively larger share of potential labor force entrants.

[5]I crudely estimated these biases using the CPS microdata and the published underreporting totals for the different income sources. For example, for 1974, wages and salaries reported in the CPS represent 96.7 percent of all wages and salaries; interest reported, 38.6 percent; unemployment insurance reported, 56.2 percent. Some individuals report all of their income while others significantly underreport, but it is impossible to distinguish accurate reporters from underreporters or nonreporters in the CPS. Therefore, I assumed that each person reported only the average for that income source (e.g., each person who reported interest income reported only 38.6 percent of his interest). Gini coefficients of income adjusted for underreporting were then computed for all household units (families and unrelated individuals) for 1965 and 1974 using the 1974 underreporting percentages for both years. The Gini coefficients of income adjusted for underreporting were virtually identical to those of reported income for both years. As Palmer suggested, the Gini coefficients of adjusted income revealed a smaller trend toward inequality than did the Ginis of reported income. The failure to adjust for underreporting overstates the trend.

[6]I am not implying that the adoption of a policy goal will solve the data problems discussed; rather, a solution to the data problems is a necessary, but not sufficient, condition for an understanding of the trend in inequality.

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