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THE STANDARD OF LIVING IN THE UNITED STATES

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A common approach to the evaluation of the standard of living is based on a function of real income. In the United States this often takes the form of CPI-deflated mean household income. Material well-being is more appropriately evaluated using a consumption-based index. Using data from the *Consumer Expenditure Surveys* we find that real mean income provides an inaccurate representation of the level and trend of the standard of living relative to real per equivalent total expenditure in the postwar United States. The differences between real income and real total expenditure per household equivalent member are found at all levels of aggregation.

1. INTRODUCTION

Many public policies in the United States are designed to raise the relative welfare levels of selected subgroups of the population. Social Security and Medicare are targeted towards the elderly, while affirmative action programs seek to raise the level of welfare of groups of individuals who have been subjected to capricious discrimination. The accurate determination of group welfare is of fundamental importance in assessing the general success of such programs. In this paper we address the issue of the measurement of the standard of living at various levels of aggregation across households.

The standard of living is often evaluated using an index of real income.[1] For example, in the United States a commonly employed indicator of aggregate well-being is the level of real median family income. The Bureau of the Census reports that the median family income increases from $16,834 in 1947 to $33,656 in 1973 in constant 1989 dollars. After 1973 real median income decreases until 1982 and then increases slowly until it attains a level of $34,213 in 1989.[2] This lack of growth in real income has been viewed with great concern and has been attributed to high rates of inflation, high levels of unemployment and low productivity growth in the 1970s.

Most countries have annual income surveys so that assessing the level and trend of real income is a straight-forward exercise. Unfortunately, within a single period the appropriate argument of the household welfare function is consumption rather than income. The extent to which income provides a biased measure of well-being depends on the importance of taxes, saving and the services derived from consumer durables and housing. In-kind government transfers such as food stamps, housing subsidies and health care provision place an additional wedge between before-tax income and consumption.

[1]Sen (1979) provides a survey of welfare economics founded in the use of real income as a measure of well-being.

[2]See Table 8 in the Current Population Reports (1989), Series P-60, No. 168. Jencks (1987) presents a detailed discussion and critique of the use of real median income by the Census in evaluating the aggregate standard of living.

The use of real family income as a welfare measure also implicitly assumes that families are homogeneous units with identical tastes and expenditure patterns. However, few would contend that a family of size one is as well-off as a family of size seven with the same level of income. An obvious solution to this problem is to express the level of real income in per capita terms. This ignores the differential needs of families with different characteristics (other than family size) as well as potential economies of scale in consumption. The appropriate deflator to account for heterogeneous consuming units is the household equivalence scale defined over a broad spectrum of attributes of the household.

The Census computes real family income by deflating the nominal income level by the Consumer Price Index (CPI-U). Deflating the welfare measure by an absolute index ignores the differential impact of relative price changes on the well-being of households. For a given change in the price level, an increase in the price of necessities relative to luxuries will reduce the welfare of the poor vis-á-vis the rich. Further, the CPI-U is biased upwards due to its treatment of housing. The magnitude of the bias grows to as much as ten percent in the 1980s so that family income has been over-deflated and the growth of well-being underestimated.[3]

We present measures of the standard of living for groups of households using total expenditure rather than income as an argument of the welfare function. Preference heterogeneity is incorporated using equivalence scales based on the consumption patterns of households. Relative price effects are included using price indexes that do not suffer from the bias found in the CPI-U. The central finding is that real income provides a very distorted picture of the level and trend of well-being in the United States at all levels of aggregation. Real mean household income decreases by approximately one percent between 1969 and 1984. Over the same time period, real aggregate total expenditure per household equivalent member increases by over 13 percent.

We find that real mean income provides inaccurate representations of relative welfare levels of groups of households differentiated by specific demographic characteristics. Real mean income is the lowest for unrelated individuals and the highest for households of size five in contrast to real group expenditure per household equivalent member which declines monotonically with family size. The level of real mean income of the aged is substantially below that of the nonaged while the opposite is found when well-being is evaluated using real per equivalent total expenditure. Real mean income for female-headed households is less than half that of male-headed households. On a per equivalent basis real consumption of female-headed households exceeds that of males. These results have enormous implications with respect to the targeting of government transfers to the neediest subgroups of the population.

The organization of the paper is as follows. In Section 2 we describe the data set employed to evaluate the standard of living and briefly summarize the method used to estimate the household equivalence scales. In Section 3 we evaluate the social standard of living based on total expenditure in the United States over the period from 1949–89. The consumption-based welfare measures

[3]The Congressional Budget Office (1988) has evaluated the trend in family income after adjusting for family size using the equivalence scales implicit in the official poverty thresholds and deflating by a price index that does not suffer from the deficiencies of the CPI-U.

are compared with the levels and trends of real mean income. In Section 4 the levels of the standard of living for groups of households differentiated by various demographic characteristics are computed. The welfare levels at even lower levels of aggregation are calculated in Section 5. Section 6 contains some concluding comments.

2. The Data

In order to evaluate the standard of living at various levels of aggregation using a welfare function based on total expenditure, we employ the *Consumer Expenditure Surveys* (CEX) published by the Bureau of Labor Statistics. These surveys were conducted approximately every ten years until 1980 at which time they have been administered on an annual basis.[4] We use all of the surveys in the postwar period covering the years 1960/61, 1972, 1973, and 1980–89. The surveys in 1982 and 1983 restrict coverage to the urban population. For these years, cell mean expenditure levels for the rural population are interpolated linearly using the 1981 and 1984 surveys as endpoints.

The coverage of the CEX includes the civilian noninstitutionalized population where the basic observational unit is either a group of two or more persons who pool their income or an unrelated individual who is financially independent. The consumption measure corresponds to out-of-pocket expenditures allocated to the following five broad categories:

1. Energy—expenditures on electricity, natural gas, heating oil and gasoline.
2. Food—expenditures on all food products, including tobacco and alcohol.
3. Consumer Goods—expenditures on all other nondurable goods included in consumer expenditures.
4. Capital Services—the service flow from consumer durables and the service flow from housing.
5. Consumer Services—expenditures on consumer services, such as car repairs, medical care, entertainment and so on.

BLS estimates that reported expenditures in the surveys account for between 90 to 95 percent of total consumer expenditures. The only in-kind transfers that are included in consumption are food stamps and meals and rent received as pay.

The consumption-based approach to the measurement of the standard of living requires an accurate assessment of the service flows from household capital goods. For owner occupiers the housing component of capital services corresponds to the reported rental equivalence of the home rather than expenditures on mortgate principal, interest, insurance and property taxes. The latter provides a severely biased measure of housing consumption for those who have no mortgage or are close to owning their home outright. The consumption of consumer durables are also inaccurately represented by out-of-pocket expenditures. An expenditure-based approach would indicate that consumers either have zero consumption of durables or very large consumption in the years in

[4]After 1980 the design of the survey changed to a rolling panel format in which each consuming unit was interviewed five times over a period of fifteen months. In each quarter, twenty percent of the sample was replaced. Between 1980 and 1988 the second quarter of each survey year is employed in computing the expenditure distributions. The first quarter is used in 1989 as that is all that is currently available.

which they make a purchase. In fact, consumption occurs over the lifetime of the durable good and this consumption ievel is computed as the opportunity cost or rental equivalence of the good. Following Diewert (1974), the service flow is computed using reported purchase prices, the ages of the durables and exogenously determined depreciation rates.

In the years for which there are no expenditure surveys, the level and distribution of total expenditure must be estimated. Households are cross-classified by a number of demographic characteristics in order to form cells. Between 1961-72 and 1973-80 cell mean expenditure levels are linearly interpolated using the CEX cell means as endpoints. The number of households per cell are estimated using the method of iterative proportional fitting. The number of households with various demographic characteristics reported in the *Current Population Reports, Series P-60,* (CPR) serve a control totals against which the cell populations are adjusted.

Between 1949 and 1959 the aggregate mean level of consumption is taken to be the mean of personal consumption expenditures reported in the National Income and Product Accounts (NIPA).[5] The distribution of total expenditure across groups of households is estimated using a procedure described by Slesnick (1990a) in which a bridge equation between consumption and income is estimated using the 1960/61 cross section. The bridge equation is used in conjunction with income distributional data reported in the CPR to estimate the distribution of total expenditure. The number of households per cell are estimated in the manner described above.

The different needs of households with different compositions are accounted for through the use of equivalence scales. To describe the method employed to estimate these scales, we introduce the following notation:

p_n—price of the nth commodity, assumed to be the same for all households $(n = 1, 2, \ldots, N)$.

$p = (p_1, p_2, \ldots, p_N)$—the vector of prices of all commodities.

x_{nk}—the quantity of the nth commodity group consumed by the kth household $(n = 1, 2, \ldots, N;\ k = 1, 2, \ldots, K)$.

$M_k = \sum_{n=1}^{N} p_n x_{nk}$—total expenditure, or the dollar value of consumption, of the kth household $(k = 1, 2, \ldots, K)$.

A_k—the vector of demographic attributes of the kth household $(k = 1, 2, \ldots, K)$.

The general equivalence scale $m_0(p, A_k)$ is defined as the ratio of the expenditure required for the kth household to attain a given level of welfare, say W_k at fixed prices to the expenditure needed by a reference household to attain the same level of welfare at the same prices:[6]

[5]Durable purchases are deleted from personal consumption expenditures and replaced with the services flows from the stock of durables held in the household sector. See Slesnick (1990b) for a discussion of the method used to compute the aggregate service flows.

[6]See Deaton and Muellbauer (1980) for further discussion of this form of household equivalence scales. This general method of evaluating the influence of household composition on the distribution of well-being has been considered by van der Gaag and Smolensky (1982) and Lazear and Michael (1980) among others. Arguments against using equivalence scales for welfare comparisons have been presented by Pollak and Wales (1979) and more recently by Gronau (1988).

$$m_0(p, A_k) = \frac{M_k(p, W_k, A_k)}{M_k(p, W_k, A_r)}$$

where A_r is a vector of attributes for the reference household and $M_k(p, W_k, A_k)$ is the expenditure function for the kth household.

If the indirect utility function is of the translog form and the equivalence scales enter the utility function in the manner proposed by Barten (1964), Jorgenson and Slesnick (1987) have shown that the specific representation of the general household equivalence scale is:

$$\ln m_0(p, A_k) = \frac{1}{D(p)}(\ln m(A_k)'\alpha_p + \tfrac{1}{2}\ln m(A_k)'B_{pp}\ln m(A_k) + \ln m(A_k)'B_{pp}\ln p), \tag{2.1}$$

where $D(p) = -1 - i'B_{pp}\ln p$ and $\ln m(A_k) = B_{pp}^{-1}B_{pA}A_k$ $(k = 1, 2, \ldots, K)$. The vector $m(A_k)$ corresponds to the commodity specific household equivalence scales.

The calculation of the household equivalence scale (2.1) requires prices and estimates of the unknown parameters α_p, B_{pp} and B_{pA}. The prices utilized are the implicit price deflators of personal consumption expenditures in NIPA. The parameters are estimated using an econometric model developed by Jorgenson, Lau and Stoker (1982) in which Roy's Identity is applied to the indirect utility function. The resulting demand equations are fit to time series and cross-section data to obtain estimates of the unknown parameters. The household equivalence scales are recovered using the method described by Jorgenson and Slesnick (1987).

The consumption-based measures of the standard of living are compared with real mean income. The level of income is based on the mean household income reported in the annual issues of the CPR. The definition of income is reasonably homogeneous over time and includes: wages and salaries, business and farm income, interest and dividends, Social Security and pension income, unemployment insurance, workers compensation, public assistance and welfare, rental income and income from regular contributions such as child support and alimony. The distribution of income used is that reported in the CEX. In the years in which there is no CEX, the distribution of income reported in the CPR is used.[7]

The demographic characteristics employed as attributes which distinguish individual households are:

1. Family Size—1, 2, 3, 4, 5, 6, and 7 or more persons.
2. Age of household head—16-24, 25-34, 35-44, 45-54, 55-64 and 65 and over.
3. Region of residence—Northeast, Midwest, South and West.
4. Race—White, Nonwhite.
5. Type of residence—Nonfarm, farm.
6. Sex of household head—Male, female.

[7]While there are substantial differences between the levels of income reported in the CEX and the CPR, the distributions are reasonably similar.

The demographic attributes are represented by qualitative or dummy variables to avoid implicit constraints on the effects of household characteristics on expenditure patterns.

3. The Social Standard of Living

In this section we evaluate the aggregate standard of living in the United States over the period from 1949 to 1989. We compare CPI-deflated mean household income to aggregate total expenditure per household equivalent member deflated by an exact cost of living index based on prices from NIPA. We find that the income-based index gives a distorted picture of the level and trend of aggregate well-being. This is due to three factors. First, the trend of aggregate before-tax nominal income is substantially different from that of aggregate total expenditure. Second, average household size has declined in the postwar United States. This increases the growth rate of per equivalent total expenditure relative to an index that does not account for differences in household composition. Finally, the CPI-U provides an upward biased measure of inflation in the late 1970s and 1980s.

A measure of the social standard of living that is commonly used is real income per household which is defined by:[8]

$$Q^Y = \frac{\sum_{k=1}^{K} Y_k}{\Pi K} \tag{3.1}$$

where Y_k is the before-tax income of the k-th household ($k = 1, 2, \ldots, K$) and Π is the CPI-U. This index treats households with different demographic compositions symmetrically and is not based on the total expenditure or consumption of the household.

We compare real mean income with a consumption-based measure of the standard of living that takes into account the heterogeneity of households:

$$Q^W = \frac{\sum_{k=1}^{K} M_k}{P(p, p^0, W^{\max}) \sum_{k=1}^{K} m_0(p^0, A_k)} \tag{3.2}$$

where p^0 corresponds to the vector of prices in the reference period. The index $P(p, p^0, W^{\max})$ is the true social cost of living index (TCOLI) and is defined by:

$$P(p, p^0, W^{\max}) = \frac{M(p, W^{\max})}{M(p^0, W^{\max})}. \tag{3.3}$$

The function $M(p, W)$ corresponds to the minimum aggregate expenditure required to attain social welfare contour W at prices p and $W^{\max}$ is the maximum level of social welfare attainable at prices p and aggregate expenditure level $\sum M_k$.[9]

In Table 1 we present the levels of real mean income for households in the United States over the period from 1949 to 1989 with the CPI-U normalized to

[8]To avoid the undue influence of outliers, the median rather than the mean is sometimes used as an indicator of aggregate welfare. The use of medians instead of means does not alter the basic conclusions of this paper.

[9]This specific form of the social cost of living index corresponds to the price index of the maximizing society introduced by Pollak (1981) and has been implemented by Slesnick (1991). See Diewert (1981) for a survey of the literature on exact cost of living indexes.

TABLE 1

THE STANDARD OF LIVING IN THE UNITED STATES

Year	CPI-Deflated Mean Income		CPI-Deflated Mean Total Expenditure		CPI-Deflated Total Expenditure Per Equivalent	
	Index (1973 dollars)	Growth (percent)	Index (1973 dollars)	Growth (percent)	Index (1973 dollars)	Growth (percent)
1949	5,946.24	—	6,728.32	—	1,322.25	—
1954	6,867.44	14.40	7,643.17	12.75	1,505.76	13.00
1959	8,042.46	15.79	8,652.51	12.40	1,728.83	13.81
1964	9,276.38	14.27	9,163.59	5.74	1,862.28	7.44
1969	11,104.78	17.99	9,275.80	1.22	1,979.32	6.10
1974	11,313.98	1.87	8,752.42	−5.81	2,066.11	4.29
1979	11,118.44	−1.74	8,137.27	−7.29	2,131.43	3.11
1984	10,992.88	−1.14	7,911.48	−2.81	2,069.82	−2.93
1989	12,109.50	9.67	8,192.08	3.49	2,245.34	8.14
Average growth		1.78		0.49		1.32

Year	TCOLI-Deflated Total Expenditure Per Equivalent		Social Welfare Per Equivalent	
	Index (1973 dollars)	Growth (percent)	Index (1973 dollars)	Growth (percent)
1949	1,305.38	—	692.43	—
1954	1,493.77	13.48	808.90	15.55
1959	1,691.77	12.45	971.45	18.31
1964	1,804.80	6.47	1,079.37	10.53
1969	1,964.27	8.47	1,214.78	11.82
1974	2,093.75	6.38	1,316.85	8.07
1979	2,246.73	7.05	1,407.24	6.64
1984	2,248.61	0.08	1,406.18	−0.08
1989	2,443.34	8.31	1,536.46	8.86
Average growth		1.57		1.99

unity in 1973. The average annual growth rate over the entire forty year period is 1.78 percent. This increase is concentrated over the period from 1949 to 1969 when the average rate of growth is 3.12 percent per year. After 1974 the level of real mean income decreases until 1984 and then increases in 1989. The level of real mean income in 1989 is only 8.66 percent higher than that attained in 1969. This slowdown in the increase of real mean income has been widely reported. A popular explanation for this low rate of growth has been the existence of high rates of inflation, high unemployment and low productivity growth.[10]

The levels of aggregate total expenditure per household equivalent member deflated by the TCOLI are also presented in Table 1. The level and trend of the social standard of living as measured by this index is dramatically different from that of real mean income. From 1949–59 the index increases 25.93 percent, from

[10]See, for example, Levy (1987), p. 62–68.

1959-69 the increase is 14.94 percent and from 1969-79 the increase is 13.43 percent. Over the same time periods, the growth rates of real household income are, respectively 30.19 percent, 32.26 percent and 0.13 percent. While the level of real mean income increases by over eight percent from 1969-89 the level of total expenditure per household equivalent member increases by almost 22 percent.

This suggests that real mean income gives a biased picture of the movement in the standard of living in the postwar United States. In order to identify the sources of the differences, we define consumption-based measures of the standard of living that are less generally defined than (3.2). The first index is mean household expenditure deflated by the CPI-U:

$$Q^M = \frac{\sum_{k=1}^{K} M_k}{\Pi K}. \tag{3.4}$$

This measure differs from (3.1) only in that we have substituted aggregate total expenditure for aggregate before-tax income. The index of CPI-deflated mean total expenditure is presented in Table 1 for the United States over the period from 1949 to 1989.

The average annual growth rate of real mean total expenditure over the entire 40 year period is 0.49 percent as compared to 1.78 percent per year for real mean income. The pattern of movement over five year intervals is also very different. For example, from 1969 to 1974 real mean income increases 1.87 percent while mean expenditure decreases by 5.81 percent. The level of real mean total expenditure is lower in 1989 than it is in 1959. The lower growth rate of real total expenditure helps explain some of the difference between the trends of (3.1) and (3.2). However, the pattern of movement of (3.4) remains different from (3.2) which implies that the price deflator and/or changes in the composition of households in the postwar period are important determinants of the trend of real total expenditure per household equivalent member.

To separate these effects, we consider total expenditure per household equivalent member deflated by the CPI-U:

$$Q^A = \frac{\sum_{k=1}^{K} M_k}{\Pi \sum_{k=1}^{K} m_0(p^0, A_k)}. \tag{3.5}$$

In Table 1 we observe that the average rate of increase of (3.5) over the period from 1949 to 1989 is 1.32 percent per year which is almost three times the growth rate of real mean expenditure. Most of this difference occurred between 1964 and 1979 and can be attributed to the decline in the average household size over this time period. Unlike real mean expenditure, the level of the index (3.5) is substantially higher in 1989 than it is in 1959. This implies that houshold composition changes in the postwar United States are important elements in explaining the change in the social standard of living.

The index (3.2) deflates aggregate expenditure per household equivalent member with the true cost of living index calculated using implicit price deflators from NIPA. The index (3.5) is identical except for the fact that the deflator is the CPI-U. A comparison of the two series indicates that the levels and trends

of these indexes are similar until 1974 at which point they being to diverge. The CPI-U adjusted measure understates the level and growth of the standard of living after 1974.

The CPI-U used to deflate per equivalent total expenditure in (3.5) has been shown to be biased due to its treatment of housing.[11] Until the early 1980s the investment component of owner-occupied housing was used in the price index rather than the rental equivalence or service flow value. Due to the high mortgage interest rates in the 1970s the CPI-U overstates the true price level changes. In Table 2 the CPI-U, normalized to unity in 1973, is presented along with the true cost of living index (3.3) based on the implicit price deflators in NIPA. Over the entire forty year period the CPI-U overstates the average annual inflation rate by 0.25 percent per year. Between 1974 and 1989 the average bias is 0.48 percent per year. This upward bias in the inflation rate implies that a CPI-U deflated index understates the level and growth of the standard of living.

TABLE 2

THE COST-OF-LIVING IN THE UNITED STATES

	Consumer Price Index (CPI-U)		True Cost-of-Living Index (TCOLI)		TCOLI/ CPI-U
Year	Index	Change (percent)	Index	Change (percent)	Ratio
1949	0.5360	—	0.5430	—	1.0129
1954	0.6059	12.24	0.6107	11.76	1.0080
1959	0.6554	7.86	0.6698	9.23	1.0219
1964	0.6982	6.32	0.7204	7.29	1.0318
1969	0.8266	16.88	0.8329	14.51	1.0077
1974	1.1104	29.51	1.0957	27.42	0.9868
1979	1.6351	38.70	1.5512	34.76	0.9487
1984	2.3401	35.85	2.1540	32.83	0.9205
1989	2.7928	17.69	2.5665	17.52	0.9190

The indexes of the standard of living considered to this point do not incorporate distributional issues and thus should be interpreted as measures of efficiency. Equity considerations can be included in the measure of the standard of living by specifying a social welfare function, say W, and representing the index of well-being as:

$$Q^E = \frac{M(p^0, W)}{\sum_{k=1}^{K} m_0(p^0, A_k)}. \tag{3.6}$$

This measure of the standard of living will coincide with (3.2) if the actual level of social welfare W is the maximum attained for a given level of aggregate total expenditure at fixed prices. If the social welfare function is quasi-concave, this will occur at the perfectly egalitarian distribution of household welfare. At any other distribution, the index (3.6) will be less than (3.2).

[11]See Gillingham and Lane (1982) for a detailed discussion of the housing component of the Consumer Price Index.

The measure of the standard of living (3.6) has been implemented for the United States using a social welfare function described by Slesnick (1991) and is presented in Table 1. The average growth rate of the distributionally-sensitive index exceeds that of per equivalent total expenditure deflated by the true cost of living index by 0.42 percent per year. This implies that the distribution of welfare has moved towards greater equality over the postwar period. If the concept of the standard of living is given this more comprehensive definition, real mean income understates the growth of the standard of living from 1949–89. The average annual growth rate of the income-based measure is 1.78 percent as compared to 1.99 percent for the measure of social welfare. While real mean income decreases by 1.74 percent between 1974 and 1979 the distributionally-sensitive index increases by 6.64 percent.

4. The Group Standard of Living

The social standard of living index provides a summary statistic of the level and trend of aggregate well-being. However, for policy analysis more disaggregated information is often required since many government programs are tailored to specific subgroups of the population. Evaluating the level of group welfare is an important component in targeting the most needy recipients and the growth rate of the group standard of living index provides crude evidence of the general effectiveness of such policies. In this section we present indexes of the standard of living for groups of households. We consider a group of G households where $1 \leq G \leq K$; without loss of generality we can take the group to be comprised of the first G households in society.

As in Section 3 the income-based measure of the group standard of living is taken to be the mean household income deflated by the CPI-U:

$$Q_G^Y = \frac{\sum_{g=1}^{G} Y_g}{\Pi G}. \tag{4.1}$$

This index is insensitive to the heterogeneity of households within the group. In addition the price deflator is the same for each group so that the differential impacts of changes in relative prices on the well-being of different groups of households are ignored.

An alternative index is a consumption-based measure of the standard of living that is exactly analogous to (3.2).[12] This measure corresponds to the per equivalent group expenditure deflated by the group-specific true cost of living index:

$$Q_G^W = \frac{\sum_{g=1}^{G} M_g}{P_G(p, p^0, W_G^{\max}) \sum_{g=1}^{G} m_0(p, A_g)} \tag{4.2}$$

where $P_G(p, p^0, W_G^{\max})$ is the group cost of living index corresponding to group welfare contour $W_G^{\max}$. This price index is defined in a manner exactly analogous to (3.3) and is computed using the implicit price deflators from NIPA.

[12]We will ignore equity concerns within the group not because these are unimportant, but in order to preserve conceptual consistency with the income-based indexes of welfare.

The income- and consumption-based measures of the group standard of living are computed for the twenty-three demographic groups described in Section 2. In Table 3 we present indexes for groups differentiated by the size of the household. In every year the lowest level of real mean income is attained by households of size one. The highest level is attained by households of size five or size six in all years except 1989. The highest average growth rate is 2.19 percent per year for unrelated individuals while the lowest is 1.39 percent per year for families of size six. Over five year intervals the growth rates across the different family types vary substantially. For example between 1984 and 1989 the growth rate of real mean income for families of size six is −22.01 percent while that of families of size seven is 36.36 percent.

The consumption-based index gives a different picture of the level and trend of the standard of living for households of different sizes. The group standard of living declines monotonically with family size. While unrelated individuals have the lowest levels of real income, they have the highest levels of real per equivalent consumption. The highest average growth rate is 1.75 percent per year for families of size one and the lowest average annual growth rate is 1.02 percent for families of size five. As with real income there is substantial variation in the five year growth rates for families of different sizes. The pattern of movement of the consumption-based measure is substantially different from real income for given family types. While real per equivalent consumption increases 1.32 percent from 1974 to 1979 for unrelated individuals, the corresponding growth rate of real income is −5.85 percent.

In Table 4 we present the levels and trends in real income and real expenditure per household equivalent member for households differentiated by the age of the head of household. The lowest levels and growth rates of real income are for households with heads age 16–24 and 65 and over. The highest levels and growth rates are for prime age households with heads age 35–54. The average annual growth rate of real income for the youngest households is 1.08 percent while that of households with head age 45–54 is 2.29 percent. The level of real income for households in the latter age group is over three times that of households age 16–24 by 1989.

The consumption-based index gives exactly the opposite depiction of the relative levels of well-being for households differentiated by the age of the head of household. The young and the elderly households have the highest levels of the standard of living and the worst-off households are those in the age group from 35–44. While the households with the head age 16–24 have the lowest average growth rate of real income, they have the highest average growth rate of real per equivalent total expenditure. Much of the discrepancy in the growth rate occurs over the period from 1964–79 when the consumption-based index increases 22.11 percent as compared to 5.20 percent for real income.

Of separate interest are the relative levels and trends of the standard of living of the elderly and nonelderly. In Table 4 we see that the levels of real income of those age 65 and over are substantially below those of the nonelderly and the differences have been growing. By 1989 the level of real mean income of those less than 65 is almost twice the level of those age 65 and over. The average annual growth rate of real income for the elderly is 1.52 percent per year as compared

TABLE 3

THE GROUP STANDARD OF LIVING IN THE UNITED STATES—FAMILY SIZE

Year	Size 1	Size 2	Size 3	Size 4	Size 5	Size 6	Size 7+
	Real Mean Income (1973 dollars)						
1949	2,823.74	5,603.00	6,828.95	7,330.63	7,434.84	7,563.64	7,344.64
1954	3,036.90	6,708.74	8,191.11	8,420.69	8,484.72	8,370.73	7,299.07
1959	3,521.00	7,715.60	9,314.36	10,085.24	10,461.06	10,027.52	8,987.29
1964	4,351.00	8,904.35	10,716.59	11,813.55	11,776.89	11,818.62	10,441.60
1969	5,143.59	10,640.77	12,782.68	14,353.93	14,798.03	14,748.01	13,979.79
1974	5,690.23	11,127.84	13,270.50	14,820.25	15,510.24	15,290.46	15,241.58
1979	5,366.75	11,677.95	13,742.14	15,376.47	16,310.78	16,047.11	16,057.50
1984	6,536.05	11,243.32	13,015.82	14,332.96	13,024.03	16,437.93	10,997.69
1989	6,786.22	13,104.78	14,714.53	16,185.97	15,383.80	13,189.94	15,819.50
	Growth Rates (percent)						
1949	—	—	—	—	—	—	—
1954	7.28	18.01	18.19	13.86	13.21	10.14	−0.62
1959	14.79	13.98	12.85	18.04	20.94	18.06	20.81
1964	21.17	14.33	14.02	15.82	11.85	16.43	15.00
1969	16.73	17.82	17.63	19.48	22.84	22.14	29.18
1974	10.10	4.48	3.75	3.20	4.70	3.61	8.64
1979	−5.85	4.83	3.49	3.68	5.03	4.83	5.21
1984	19.71	−3.79	−5.43	−7.03	−22.50	2.41	−37.85
1989	3.76	15.32	12.27	12.16	16.65	−22.01	36.36
Average growth	2.19	2.12	1.92	1.98	1.82	1.39	1.92

Year	Size 1	Size 2	Size 3	Size 4	Size 5	Size 6	Size 7+
	Real Per Equivalent Total Expenditure (1973 dollars)						
1949	2,045.01	1,729.19	1,518.64	1,260.65	1,172.35	836.05	556.80
1954	2,308.61	2,020.15	1,792.62	1,454.51	1,324.67	919.44	597.14
1959	2,661.99	2,314.90	2,042.26	1,682.90	1,531.80	1,080.75	695.71
1964	3,309.32	2,385.45	2,155.24	1,803.59	1,673.97	1,147.96	803.66
1969	3,713.76	2,637.05	2,273.31	1,887.32	1,678.71	1,227.50	911.77
1974	3,832.09	2,707.61	2,283.24	1,892.25	1,699.28	1,249.85	890.29
1979	3,883.20	2,815.87	2,328.55	1,880.99	1,724.66	1,193.85	816.08
1984	4,031.92	2,866.15	2,307.63	1,855.72	1,630.03	1,371.40	811.97
1989	4,113.39	3,064.89	2,387.99	1,925.68	1,762.89	1,281.32	1,056.85
	Growth Rates (percent)						
1949	—	—	—	—	—	—	—
1954	12.12	15.55	16.59	14.30	12.22	9.51	6.99
1959	14.24	13.62	13.04	14.59	14.53	16.16	15.28
1964	21.77	3.00	5.38	6.93	8.88	6.03	14.42
1969	11.53	10.03	5.33	4.54	0.28	6.70	12.62
1974	3.14	2.64	0.44	0.26	1.22	1.81	−2.38
1979	1.32	3.92	1.97	−0.60	1.48	−4.58	−8.70
1984	3.76	1.77	−0.90	−1.35	−5.64	13.87	−0.50
1989	2.00	6.70	3.42	3.70	7.84	−6.79	26.36
Average growth	1.75	1.43	1.13	1.06	1.02	1.07	1.60

to 1.90 percent per year for the nonelderly. This is generally consistent with the popular perception of the standard of living of the aged relative to the rest of the population.

When the standard of living is measured using real per equivalent total expenditure the level of well-being of the aged exceeds that of the nonaged in every year of the sample period. In some years the difference is quite large such as in 1979 when the level of real per equivalent total expenditure of the elderly is $3,163.17 as compared to $2,149.34 for the nonelderly.[13] Note, however, that the growth in the standard of living of those age 65 and over is substantially lower than for the rest of the population. Thus, while the aged are better off than the rest of the population, their relative position has been slipping over the last forty years.

In Table 5 we present the measures of the standard of living for households differentiated by the region of residence. For this demographic classification the income- and consumption-based measures of the standard of living give qualitatively similar depictions of the distribution of well-being. The South has the lowest level of real income from 1949 to 1979 but the highest average annual growth rate. By 1989 the level of real income in the South surpasses the Midwest. The West has the highest level of real household income between 1979 and 1989 while the Midwest region has the lowest.

The rise of the South is also found when the standard of living is measured using real per equivalent total expenditure. The average growth rate over the forty year period is 2.01 percent per year. The next highest average annual growth rate is 1.43 percent for the West. Despite the high rate of growth, the standard of living in the South remains substantially below the other regions. The highest level of well-being is found in the West.

The standard of living for groups differentiated by farm and nonfarm residence is also presented in Table 5. Farm households attain lower levels of well-being in every year using both the income- and consumption-based indexes of well-being. However, the magnitude of the differences are very much larger for real per equivalent total expenditure. In every year the standard of living for farm households is less than half that of nonfarm households. The growth rates of real mean income and the consumption based index indicate a convergence in the level of welfare of farm and nonfarm households in the postwar period.

For households differentiated by the race of the head of household, the income- and consumption-based standard of living indexes give the same picture of the relative levels and trends of welfare. The results presented in Table 6 indicate that the levels of well-being of nonwhite households are substantially below those of white households. However, the average growth rate of real per equivalent total expenditure for nonwhite households is 2.17 percent per year as compared to 1.58 percent for white households. Most of the growth occurs between 1949 and 1969 when the standard of living grows 58.05 percent for nonwhite households. Over the same years the increase in the standard of living for white households is 40.60 percent.

[13]Hurd (1990) also reports evidence that the relative position of the elderly has been understated in recent years. This evidence is based on alternative definitions of income and are adjusted for family size in various ways.

TABLE 4

THE GROUP STANDARD OF LIVING IN THE UNITED STATES—AGE OF HEAD

Year	Age 16-24	Age 25-34	Age 35-44	Age 45-54	Age 55-64	Age 65+	Age <65	Age 65+
				Real Mean Income (1973 dollars)				
1949	3,710.14	6,091.80	6,610.46	7,071.26	6,225.57	3,948.02	6,294.95	3,948.02
1954	4,831.88	6,986.78	7,917.45	8,219.47	6,895.02	4,312.07	7,373.25	4,312.07
1959	5,119.56	8,262.28	9,719.19	9,483.66	8,428.33	4,727.06	8,751.54	4,727.06
1964	6,030.47	9,540.67	11,253.22	11,450.70	9,503.74	5,607.15	10,133.66	5,607.15
1969	6,804.97	11,530.73	13,872.74	14,401.48	11,716.21	6,073.40	12,310.70	6,073.40
1974	6,513.63	11,503.56	14,245.93	15,232.84	12,322.49	6,646.38	12,443.87	6,646.38
1979	6,353.01	10,912.95	14,310.83	15,146.96	12,763.69	6,544.47	12,231.94	6,544.47
1984	5,936.93	11,637.54	14,568.01	13,599.70	11,535.07	6,881.19	11,982.63	6,881.19
1989	5,713.28	12,089.37	15,459.80	17,670.26	13,262.86	7,246.96	13,448.88	7,246.96
				Growth Rates (percent)				
1949	—	—	—	—	—	—	—	—
1954	26.42	13.71	18.04	15.05	10.21	8.82	15.81	8.82
1959	5.78	16.77	20.50	14.31	20.08	9.19	17.14	9.19
1964	16.38	14.39	14.66	18.85	12.01	17.07	14.66	17.07
1969	12.08	18.95	20.93	22.93	20.93	7.99	19.46	7.99
1974	−4.38	−0.24	2.65	5.61	5.05	9.02	1.08	9.02
1979	−2.50	−5.27	0.45	−0.57	3.52	−1.55	−1.72	−1.55
1984	−6.77	6.43	1.78	−10.78	−10.12	5.02	−2.06	5.02
1989	−3.84	3.81	5.94	26.18	13.96	5.18	11.54	5.18
Average growth	1.08	1.71	2.12	2.29	1.89	1.52	1.90	1.52

Real Per Equivalent Total Expenditure (1973 dollars)

Year	Age 16–24	Age 25–34	Age 35–44	Age 45–54	Age 55–64	Age 65+	Age <65	Age 65+
1949	1,719.78	1,426.60	1,046.18	1,169.44	1,489.45	2,091.60	1,247.48	2,091.60
1954	2,235.23	1,625.18	1,222.44	1,336.50	1,669.78	2,298.82	1,428.08	2,298.82
1959	2,397.90	1,840.61	1,403.73	1,472.19	1,895.73	2,654.37	1,609.49	2,654.37
1964	2,975.87	1,925.79	1,495.78	1,632.41	1,946.68	2,563.68	1,735.10	2,563.68
1969	3,686.20	2,164.96	1,527.15	1,744.17	2,120.87	2,902.64	1,880.39	2,902.64
1974	3,602.76	2,382.97	1,582.24	1,813.33	2,183.06	2,982.93	2,004.04	2,982.93
1979	3,712.20	2,543.47	1,697.55	1,965.59	2,271.69	3,163.17	2,149.34	3,163.17
1984	3,512.49	2,422.03	1,887.44	1,920.37	2,194.11	3,146.26	2,138.28	3,146.26
1989	3,618.07	2,545.11	2,034.51	2,202.74	2,483.87	3,385.06	2,314.95	3,385.06
				Growth Rates (percent)				
1949	—	—	—	—	—	—	—	—
1954	26.21	13.03	15.57	13.35	11.43	9.45	13.52	9.45
1959	7.02	12.45	13.83	9.67	12.69	14.38	11.96	14.38
1964	21.59	4.52	6.35	10.33	2.65	−3.48	7.51	−3.48
1969	21.41	11.71	2.08	6.62	8.57	12.42	8.04	12.42
1974	−2.29	9.59	3.54	3.89	2.89	2.73	6.37	2.73
1979	2.99	6.52	7.03	8.06	3.98	5.87	7.00	5.87
1984	−5.53	−4.89	10.60	−2.33	−3.47	−0.54	−0.52	−0.54
1989	2.96	4.96	7.50	13.72	12.40	7.32	7.94	7.32
Average growth	1.86	1.45	1.66	1.58	1.28	1.20	1.55	1.20

TABLE 5

THE GROUP STANDARD OF LIVING IN THE UNITED STATES—REGION OF RESIDENCE

Year	Northeast	Midwest	South	West	Nonfarm	Farm
	Real Mean Income (1973 dollars)					
1949	6,532.38	6,365.71	4,661.52	6,205.89	6,268.63	3,812.72
1954	7,417.07	7,146.52	5,921.56	7,161.92	7,204.00	4,225.84
1959	8,663.18	8,221.07	6,687.67	9,199.97	8,272.79	5,259.58
1964	10,043.89	9,372.69	7,870.76	10,388.39	9,460.69	6,272.51
1969	11,747.33	11,480.28	9,848.14	11,755.56	11,219.14	8,533.31
1974	11,848.48	11,889.38	10,379.20	11,419.55	11,337.49	10,705.21
1979	11,654.32	11,585.92	10,505.61	10,897.19	11,112.52	11,374.26
1984	10,881.73	10,290.39	10,922.16	12,024.82	11,002.00	8,047.22
1989	12,169.54	11,728.18	12,078.19	12,526.95	12,113.77	11,003.51
	Growth Rates (percent)					
1949	—	—	—	—	—	—
1954	12.62	11.57	23.93	14.33	13.91	10.29
1959	15.61	14.01	12.17	25.04	13.83	21.88
1964	14.79	13.11	16.29	12.15	13.42	17.61
1969	15.67	20.28	22.41	12.36	17.05	30.78
1974	0.86	3.50	5.25	−2.90	1.05	22.68
1979	−1.65	−2.59	1.21	−4.68	−2.00	6.06
1984	−6.86	−11.86	3.89	9.85	−1.00	−34.60
1989	11.19	13.08	10.06	4.09	9.63	31.29
Average growth	1.56	1.53	2.38	1.76	1.65	2.65

Year	Northeast	Midwest	South	West	Nonfarm	Farm
	Real Per Equivalent Total Expenditure (1973 dollars)					
1949	1,580.16	1,231.50	930.03	1,939.92	1,588.89	426.27
1954	1,821.02	1,429.69	1,095.28	2,151.87	1,764.91	491.31
1959	2,007.51	1,627.40	1,245.10	2,502.80	1,883.10	611.22
1964	2,138.99	1,712.33	1,331.09	2,687.73	1,951.78	703.65
1969	2,191.85	1,834.23	1,551.45	2,939.93	2,074.42	833.57
1974	2,288.38	1,999.58	1,700.10	3,017.29	2,194.34	878.59
1979	2,330.19	2,137.22	1,917.76	3,183.50	2,312.13	942.47
1984	2,214.45	2,066.21	1,982.08	3,227.63	2,258.04	789.80
1989	2,661.76	2,155.20	2,074.01	3,433.41	2,464.39	855.58
	Growth Rates (percent)					
1949	—	—	—	—	—	—
1954	14.19	14.92	16.35	10.37	10.51	14.20
1959	9.75	12.95	12.82	15.11	6.48	21.84
1964	6.34	5.09	6.68	7.13	3.58	14.08
1969	2.44	6.88	15.32	8.97	6.09	16.94
1974	4.31	8.63	9.15	2.60	5.62	5.26
1979	1.81	6.66	12.05	5.36	5.23	7.02
1984	−5.09	−3.38	3.30	1.38	−2.37	−17.67
1989	18.40	4.22	4.53	6.18	8.74	8.00
Average growth	1.30	1.40	2.01	1.43	1.10	1.74

TABLE 6

THE GROUP STANDARD OF LIVING IN THE UNITED STATES—RACE OF HEAD

Year	White	Nonwhite	Male	Female
	Real Mean Income (1973 dollars)			
1949	6,226.01	3,220.35	6,468.04	3,467.84
1954	7,195.61	3,939.34	7,607.77	3,707.59
1959	8,452.66	4,500.83	9,005.36	4,094.85
1964	9,689.61	5,819.67	10,477.12	4,688.72
1969	11,562.82	7,380.54	12,715.17	5,407.51
1974	11,772.26	7,925.11	13,167.21	5,578.23
1979	11,588.16	7,890.73	13,037.09	5,781.84
1984	11,433.29	8,187.65	12,820.89	6,089.94
1989	12,548.54	9,319.04	14,190.25	7,090.28
	Growth Rates (percent)			
1949	—	—	—	—
1954	14.47	20.15	16.23	6.69
1959	16.10	13.32	16.86	9.93
1964	13.66	25.70	15.14	13.54
1969	17.67	23.76	19.36	14.26
1974	1.80	7.12	3.49	3.11
1979	−1.58	−0.43	−0.99	3.59
1984	−1.35	3.69	−1.67	5.19
1989	9.31	12.94	10.15	15.21
Average growth	1.75	2.66	1.96	1.79

Year	White	Nonwhite	Male	Female
	Real Per Equivalent Total Expenditure (1973 dollars)			
1949	1,369.19	724.95	1,247.12	2,144.47
1954	1,572.06	850.90	1,436.49	2,222.29
1959	1,787.12	950.38	1,627.65	2,476.94
1964	1,896.82	1,126.74	1,718.59	2,790.00
1969	2,054.80	1,295.39	1,878.24	2,825.58
1974	2,211.24	1,346.42	1,982.10	3,004.10
1979	2,370.27	1,493.58	2,109.24	3,260.50
1984	2,392.40	1,485.97	2,116.73	3,111.03
1989	2,572.34	1,723.84	2,306.56	3,226.36
	Growth Rates (percent)			
1949	—	—	—	—
1954	13.82	16.02	14.14	3.56
1959	12.82	11.06	12.49	10.85
1964	5.96	17.02	5.44	11.90
1969	8.00	13.95	8.88	1.27
1974	7.34	3.86	5.38	6.13
1979	6.95	10.37	6.22	8.19
1984	0.93	−0.51	0.35	−4.69
1989	7.25	14.85	8.59	3.64
Average growth	1.58	2.17	1.54	1.02

The standard of living for male- versus female-headed households is also presented in Table 6. The real mean income for female-headed households is less than half that of their male counterparts. This relative difference has narrowed since 1974. When the standard of living is measured using real per equivalent total expenditure female-headed households have higher levels of real per equivalent total expenditure in every year, although the difference has been narrowing. The relative levels of group welfare are largely a reflection of the fact that the equivalence scale of the female-headed households are between 60–70 percent of their male counterparts. The low equivalence scale for female-headed households is the result of the fact that such households are composed of a single adult and children. Male-headed households typically have at least two adults. The average annual growth rate for female-headed households is 1.02 percent as compared to 1.54 percent per year for male-headed households.

To summarize, the use of real mean household income gives a different picture of the level and trend of well-being across groups of households. The consumption-based measure of well-being declines with family size while real mean income increases. The level of real per equivalent total expenditure is higher for the elderly than for the nonelderly. Female-headed households are better off than their male counterparts in every year of the sample using the consumption-based index while real mean income indicates the opposite. The South has the lowest standard of living among all of the regions although the difference has been narrowing over the postwar period.

5. Individual Standard of Living

We can evaluate the standard of living at even lower levels of aggregation using the income- and consumption-based indexes of well-being. We could conceivably compare the movement in the standard of living indexes for each of the 1,344 distinct household types considered in our model. Such a level of disaggregation is not terribly useful for policy analysis. Instead, we analyze the standard of living at a more disaggregated level than considered in the previous sections, but some aggregation across cells is used.

In Table 7 we present the levels and trends of the standard of living for four different types of households. These households are of size three with the head of household age 35–44. The level of real income for white female-headed households is substantially less than for their male counterparts. The growth of real income averages 2.42 percent per year for white females as compared to 2.26 percent for males. For nonwhite households the convergence in real income levels by the sex of head is not found. Male-headed households have higher real income levels and higher average growth rates relative to nonwhite female-headed households.

Nonwhite male-headed households have levels of real income that are less than two-thirds those of white males until 1959. From 1959 to 1969 the nonwhite households experience a 57.03 percent increase in real income as compared to 39.90 percent for white male-headed household. The convergence in the real income levels continues until 1989 when the white households have a real income level of $17,296.27 while the nonwhite households have $14,633.33. The real

income levels for female-headed households exhibit the same convergence by race although the higher growth rates for nonwhite households are found after 1964.

The standard of living measured using real per equivalent total expenditure for the same four household types is also presented in Table 7. White, female-headed households have higher levels of well-being than white male-headed households and these differences have been growing. The differences in levels are reflections of the lower equivalence scales for female-headed households. For nonwhite households, the level of real per equivalent total expenditure is lower for female-headed households relative their male counterparts in all but two of

TABLE 7

THE INDIVIDUAL STANDARD OF LIVING IN THE UNITED STATES

(Size-3; Age 35-44)

Real Mean Income (1973 dollars)

	Male Head of Household				Female Head of Household			
	White		Nonwhite		White		Nonwhite	
Year	Index	Growth (percent)	Index	Growth (percent)	Index	Growth (percent)	Index	Growth (percent)
1949	7,013.60	—	4,197.69	—	4,576.74	—	1,994.95	—
1954	8,937.18	24.24	5,626.90	29.30	5,401.36	16.57	2,485.63	21.99
1959	10,581.42	16.89	6,463.55	13.86	6,040.25	11.18	2,636.95	5.91
1964	12,200.79	14.24	8,382.08	25.99	6,466.96	6.83	3,178.54	18.68
1969	15,769.69	25.66	11,432.48	31.04	8,159.20	23.24	4,089.36	25.20
1974	16,036.04	1.67	11,112.67	−2.84	9,015.00	9.97	5,323.70	26.38
1979	16,319.43	1.75	11,669.39	4.89	10,360.69	13.91	6,159.48	14.58
1984	17,860.09	9.02	14,338.21	20.60	7,161.15	−36.93	5,703.84	−7.69
1989	17,296.27	−3.21	14,633.33	2.04	12,065.92	52.17	6,194.18	8.25
Average growth		2.26		3.12		2.42		2.83

Real Per Equivalent Total Expenditure (1973 dollars)

	Male Head of Household				Female Head of Household			
	White		Nonwhite		White		Nonwhite	
Year	Index	Growth (percent)	Index	Growth (percent)	Index	Growth (percent)	Index	Growth (percent)
1949	1,442.85	—	832.93	—	1,545.83	—	814.39	—
1954	1,769.02	20.38	1,051.28	23.28	1,712.90	10.26	930.38	13.32
1959	2,065.08	15.47	1,208.00	13.90	1,949.80	12.95	1,046.32	11.74
1964	2,155.09	4.27	1,535.52	23.99	2,298.48	16.45	1,042.52	−0.36
1969	2,201.09	2.11	1,300.30	−16.63	2,538.82	9.95	946.32	−9.68
1974	2,012.65	−8.95	1,199.87	−8.04	2,762.72	8.45	1,743.60	61.11
1979	2,083.61	3.46	1,277.98	6.31	3,099.52	11.50	1,202.39	−37.16
1984	2,200.94	5.48	1,404.15	9.42	3,030.05	−2.27	2,053.50	53.52
1989	2,366.69	7.26	2,055.72	38.12	3,210.79	5.79	1,416.67	−37.12
Average growth		1.24		2.26		1.83		1.38

the years examined. There is substantial fluctuation over five year intervals, but on average the growth rate of well-being is much lower for nonwhite female-headed households relative to nonwhite male-headed households.

The levels of real per equivalent total expenditure of both male- and female-headed nonwhite households are substantially lower than their white counterparts. The rate of growth of well-being of male nonwhite households is 2.26 percent as compared to 1.24 percent for white households. However, the standard of living for nonwhite female-headed households has been declining relative white females. In many years the level of well-being of nonwhite female-headed households is less than one-half that of white households.

TABLE 8

THE INDIVIDUAL STANDARD OF LIVING IN THE UNITED STATES

(Size-1)

Real Mean Income (1973 dollars)

	Head of Household Age 16–24				Head of Household Age 65 and over			
	White		Nonwhite		White		Nonwhite	
Year	Index	Growth (percent)	Index	Growth (percent)	Index	Growth (percent)	Index	Growth (percent)
1949	2,577.16	——	1,734.72	——	2,235.46	—	1,003.01	—
1954	3,193.46	21.44	2,268.09	26.81	2,270.58	1.56	1,137.20	12.56
1959	3,463.26	8.11	2,414.89	6.27	2,536.20	11.06	1,240.94	8.73
1964	4,343.39	22.64	3,452.47	35.74	3,161.74	22.05	1,782.93	36.24
1969	4,815.89	10.33	5,073.85	38.50	3,690.38	15.46	1,973.24	10.14
1974	4,396.44	−9.11	4,669.91	−8.30	4,159.46	11.97	2,020.49	2.37
1979	3,980.92	−9.93	4,165.76	−11.42	4,064.41	−2.31	2,000.93	−0.97
1984	3,668.26	−8.18	3,222.97	−25.66	4,595.32	12.28	2,196.70	9.33
1989	3,685.98	0.48	2,111.80	−42.28	4,365.91	−5.12	2,951.84	29.55
Average growth		0.89		0.49		1.67		2.70

Real Per Equivalent Total Expenditure (1973 dollars)

	Head of Household Age 16–24				Head of Household Age 65 and over			
	White		Nonwhite		White		Nonwhite	
Year	Index	Growth (percent)	Index	Growth (percent)	Index	Growth (percent)	Index	Growth (percent)
1949	2,950.01	—	1,767.77	—	2,664.03	—	1,006.20	—
1954	3,826.70	26.02	2,423.03	31.53	2,840.80	6.42	1,161.04	14.31
1959	4,189.91	9.07	2,634.18	8.36	3,257.55	13.69	1,376.74	17.04
1964	6,263.04	40.20	4,037.15	42.70	3,567.38	9.09	1,679.62	19.89
1969	6,349.88	1.38	4,112.12	1.84	3,850.20	7.63	1,944.14	14.63
1974	6,116.30	−3.75	4,486.40	8.71	4,059.84	5.30	2,120.79	8.70
1979	5,865.30	−4.19	3,736.31	−18.30	4,200.69	3.41	2,296.17	7.95
1984	4,732.89	−21.45	3,823.44	2.31	4,547.24	7.93	1,946.46	−16.52
1989	4,250.50	−10.75	4,433.86	14.81	4,598.28	1.12	2,712.26	33.18
Average growth		0.91		2.30		1.36		2.48

In Table 8 we examine the level of well-being for unrelated individuals differentiated by race and the age of head of household. For white individuals, those in the age group 16–24 have higher real income levels than the elderly through 1974. For nonwhite individuals the level of real income is higher for the young relative to those over 65 in every year of the sample except 1989. The levels of real income for the white elderly individuals exceed those of their nonwhite counterparts in every year of the sample. For the young individuals the differences in real income across race are not as large.

Real total expenditure per equivalent for white individuals age 16–24 is substantially higher than for white elderly individuals at the beginning of the sample period. However, the differences continue to narrow after 1964. By 1989, white individuals age 65 and over have a higher level of real per equivalent total expenditure than white individuals age 16–24. The same general relationship between the level of well-being of the elderly and young is found for nonwhite households although the rate of convergence is much slower. White individuals are substantially better off than their nonwhite counter-parts in each age group although the racial differences are much larger for the elderly.

6. Summary and Conclusion

The use of real mean income provides a biased picture of the level and trend of the standard of living in the United States. At the highest level of aggregation, real income increases sharply until 1969, but increases only eight percent over the next twenty years. In contrast, real per equivalent total expenditure increases by approximately 22 percent between 1969 and 1989. The differences between the two indexes of the standard of living can be attributed to three sources. The level and trend of aggregate total expenditure differs substantially from that of before-tax income. Second, the incorporation of household composition effects through adult equivalence scales influences the trend of the standard of living index significantly. Finally, the CPI-U that is employed to deflate the income measure is biased upwards in the 1980s.

The bias inherent in the use of real income extends to lower levels of aggregation. For households differentiated by family size, real mean income indicates that unrelated individuals are the worst-off and families of size five have the highest level of well-being. Using real per equivalent total expenditure, the standard of living declines monotonically with family size. The nonelderly have substantially higher levels of real income relative to the elderly. However, the level of real per equivalent total expenditure for those age 65 and over exceeds that of the rest of the population although the difference has been narrowing. Perhaps most surprising is the difference between households differentiated by the sex of the head of household. While the level of real income for female-headed households is dramatically less than for male-headed households, the reverse is true when well-being is measured using real per equivalent total expenditure.

It is no doubt appropriate to conclude with some important qualifications to the results presented in this paper. At a conceptual level, it has been justifiably argued that evaluating the standard of living using either income- or consumption-based measures is itself a narrow conception of individual or aggregate well-being.

Identifying welfare with the level of consumption ignores other factors which influence the standard of living of households such as their health, life expectancy or personal freedom. Sen (1984a, b) argues that the "capabilities" of individuals form the foundation of the level of well-being. Jencks (1984) has shown that basic capabilities in the United States have increased substantially over the postwar period and the 1970s in particular. This suggests that the most comprehensive definitions of well-being indicate a pattern of movement that is generally consistent with the index based on real per equivalent total expenditure.

A second qualification concerns the levels of total expenditure used in the comparisons of real income and real per equivalent total expenditure. From 1961-89 the levels and distribution of total expenditure are obtained from the *Consumer Expenditure Surveys.* An alternative source of aggregate expenditure data are personal consumption expenditures reported annually in NIPA. The aggregate totals and trend of the NIPA expenditure data are substantially different from those reported in the various CEX.[14] In Table 9 we present the levels of real per equivalent aggregate expenditure, deflated by the TCOLI, using the NIPA totals. The average annual growth rate is substantially higher than that based on the CEX. Relative to real mean income the differences in trend are amplified, especially after 1969. Real mean income increases by about eight percent as opposed to over 46 percent for the NIPA-based consumption measure.

A final caveat concerns the equivalence scales used in the computations presented in this paper. The household equivalence scales are based on the consumption patterns of households and have been estimated statistically in a manner described by Jorgenson and Slesnick (1987). However, there is substantial variation in estimated equivalence scales and those used in this paper do not represent the consensus. To assess the sensitivity of the above results, we repeat some of the calculations using alternative estimates of the equivalence scales. In the second panel of Table 9 we present CEX-based real per capita total expenditure for the United States and four subgroups. The price indexes used are the TCOLI computed using the implicit price deflators of NIPA. This equivalence scale assumes no economies of scale in consumption and no variation across attributes other than family size. For the most part, the qualitative results are similar to those obtained using the estimated equivalence scales. The growth rates are somewhat lower, but the trends for the aggregate measure and for the subgroups are essentially the same. Real per capita total expenditure is higher for female headed households until 1984. The elderly have higher levels of real per capita expenditure than the nonelderly in every year, but the differences have been narrowing.

In the final panel of Table 9 we repeat the calculations described above using the equivalence scales developed by the Social Security Administration for the purpose of adjusting the official poverty thresholds.[15] These equivalence scales are based solely on the nutritional requirements of households rather than on the needs as defined across all commodities in the budget. The economies of scale in consumption implied by these equivalence scales are so large as to be

[14]These differences have been investigated by Slesnick (1990b).

[15]See Orshansky (1966) for a description of the method used to compute these equivalence scales. The scales used are those presented in Table 1 of this paper.

TABLE 9

ALTERNATIVE MEASURES OF THE STANDARD OF LIVING

Year	Real Mean Income		CEX-Based Real Total Expenditure Per Equivalent		NIPA-Based Real Total Expenditure Per Equivalent	
	Index (1973 dollars)	Growth (percent)	Index (1973 dollars)	Growth (percent)	Index (1973 dollars)	Growth (percent)
1949	5,946.24	—	1,305.38	—	1,305.38	—
1954	6,867.44	14.40	1,493.77	13.48	1,493.77	13.48
1959	8,042.46	15.79	1,691.77	12.45	1,691.77	12.45
1964	9,276.38	14.27	1,804.80	6.47	1,926.23	12.98
1969	11,104.78	17.99	1,964.27	8.47	2,294.07	17.48
1974	11,313.98	1.87	2,093.75	6.38	2,633.10	13.78
1979	11,118.44	−1.74	2,246.73	7.05	3,063.00	15.12
1984	10,992.88	−1.14	2,248.61	0.08	3,182.39	3.82
1989	12,109.50	9.67	2,443.34	8.31	3,652.14	13.77
Average growth		1.78		1.57		2.57

Real Per Capita Total Expenditure (1973 dollars)

Year	Aggregate	Male	Female	Age <65	Age 65+
1949	2,101.46	2,076.34	2,338.95	2,047.20	2,676.75
1954	2,390.37	2,385.27	2,433.24	2,335.63	2,910.14
1959	2,633.99	2,627.13	2,690.60	2,563.23	3,275.82
1964	2,751.39	2,719.46	2,999.33	2,709.10	3,109.07
1969	3,009.86	3,013.64	2,984.98	2,956.77	3,459.99
1974	3,183.45	3,176.20	3,223.05	3,123.37	3,651.40
1979	3,365.00	3,338.33	3,498.45	3,299.38	3,855.54
1984	3,263.83	3,283.90	3,177.41	3,190.26	3,740.96
1989	3,558.64	3,639.15	3,263.36	3,481.08	4,006.19
Average growth	1.32%	1.40%	0.83%	1.33%	1.01%

Real Per Equivalent Total Expenditure-SSA Equivalence Scales (1973 dollars)

Year	Aggregate	Male	Female	Age <65	Age 65+
1949	4,340.59	4,447.83	3,608.90	4,313.27	4,575.89
1954	4,909.38	5,089.87	3,798.94	4,906.24	4,933.46
1959	5,361.18	5,556.78	4,176.54	5,349.50	5,445.60
1964	5,569.00	5,730.26	4,647.74	5,637.44	5,111.55
1969	5,956.59	6,198.15	4,730.55	6,039.73	5,416.50
1974	6,131.85	6,379.37	5,071.70	6,194.77	5,743.01
1979	6,211.17	6,466.44	5,225.73	6,271.27	5,852.23
1984	6,060.49	6,323.68	5,113.16	6,059.14	6,067.94
1989	6,469.98	6,857.46	5,255.82	6,465.02	6,494.96
Average growth	1.00%	1.08%	0.94%	1.01%	0.88%

very similar to a per household method of counting. Aggregate real per equivalent total expenditure grows at a much slower rate relative to that obtained using the Jorgenson-Slesnick scales. Female-headed households have lower levels of real per equivalent total expenditure than males and the difference has been growing slightly. The relative differences, however, are much smaller than what is found

for real mean income. The elderly have higher levels of real per equivalent total expenditure from 1949–59 and from 1984–89.

These results suggest that to some extent the quantitative results presented in this paper are sensitive to the consumption concept employed (CEX versus NIPA) and to the equivalence scale used. What is robust is the substantial difference between the level and trend of real mean income and any consumption-based indicator of the standard of living. In a period of tight fiscal budgets, the accurate assessment of material well-being is essential for the effective targeting of transfer programs to the most needy. Real mean income does not fit the bill for this purpose.

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