Assessing the Economic Status of the Aged and Nonaged Using Alternative Income-Wealth Measures

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This exploratory article examines several aspects of the complex problem of combining data on income and wealth into a single measure of economic well-being. Examples of income-wealth measures that have been used are described. Estimates of the economic well-being of age groups in the current period are presented for several measures. To examine the sensitivity of the results to the choice of method, those estimates are compared. In this article, wealth is defined to include only financial assets. Data from the 1984 Survey of Income and Program Participation are used.

The economic status of the aged relative to the nonaged improves when the measure of resources is changed from income to a combined income-wealth measure. The amount of improvement depends on the income-wealth measure used. When medians are examined, the differences among most of the measures compared are not very large. For every measure compared, the median rises as age increases, then falls. When the percentage of each age group that is in the bottom of the distribution is examined for several income-wealth measures, the differences among measures are small. In general, these percentages are relatively high for the young and old age groups, and relatively low for the middle age groups.

This exploratory article examines the use of income-wealth measures for the analysis of the distribution of economic well-being. Economic status is most commonly analyzed using data on income; but, it is clear that wealth is also an important determinant of economic well-being. The presence of both income and asset tests in several government transfer programs (for example, Supplemental Security Income and Food Stamp) is evidence of the importance of both wealth and income. Perhaps one reason for the relative neglect of wealth has been the scarcity of data. For many years, little information on the distribution of wealth among households was available. In recent years, however, several data sources that contain information on both income and wealth have become available. Examples of recent household surveys that contain extensive information on wealth include the 1983 and 1986 Surveys of Consumer Finances, the 1984 Panel Study of Income Dynamics, and the 1984 Survey of Income and Program Participation (SIPP). This increase in available data has sparked some renewed interest in assessments of economic status that consider both wealth and income.

The best way of using income and wealth data together is controversial and depends on the use to which the estimates will be put. This article discusses several ways in which income and wealth data have been used together in the analysis of economic status. The effects on the well-being of various age groups of using different methods of taking wealth into account are analyzed. How much difference the choice of a method makes is discussed. The emphasis is on the economic status of age groups, with the focus on the aged. Thus, measures are needed that are appropriate for the comparison of age groups. Economic status in the current period, rather than from a longer perspective, is emphasized. Data from the 1984 SIPP are used.

Income-Wealth Measures

Basic Elements of Measures

Several elements of income-wealth measures discussed in this article can be identified. It should be noted that, although these elements are discussed separately, they are interrelated. The treatment of wealth is the most important element. The most widely used method is the conversion of wealth into an annuity. That method of taking wealth into account is discussed below, along with other methods. A second element is the wealth that is included. Some asset types—home equity, for example—might be excluded. Amounts of wealth can also be excluded for bequests and/or the financing of expenses

related to contingencies. A third element is the income that is included. Property income is often excluded from current income. A fourth element is the time horizon that is considered. The current period is used in this article, but a longer (for example, lifetime) period can be used. One year is usually chosen as the income period, but a shorter or longer period can be used. Future earnings have been taken into account in some cases.

Types of Measures Used

There are several basic ways in which wealth has been taken into account in assessing economic well-being. The first method considers only money income. Thus, wealth is included only as the money return on assets. Only income data are needed for this method. Assets that have no return in the form of money income (for example, equity in owner-occupied homes and motor vehicles, some real estate) have no role in such a measure. One modified version of this measure, which requires some wealth data, includes in income an imputed income flow from home equity. The second method looks only at the stock of wealth. Only wealth data are needed (unless Social Security wealth and/or pension wealth are included in the definition of wealth). The other methods discussed use data on both income and wealth.

In the analysis of the distribution of economic well-being, the most widely used income-wealth measure is the conversion of wealth into an annuity and the summing of that annuity and current money income excluding property income.[1] In this measure, the stock of wealth is converted into a constant annuity income stream (Murray 1964, Weisbrod and Hansen 1968, Taussig 1973, Moon 1977, Wolfson 1979). The interest rate and the time period for which the annuity will continue must be specified to compute the factor that is applied to current wealth to obtain the annuity value. Various interest rates, both real and nominal, have been used. The time period chosen has usually been the expected remaining lifetime of the unit. Where the unit is larger than one person, this time span often takes into account the expected remaining lifetimes of both the unit head and spouse of the head. The surviving spouse is often assumed to receive an annuity that is two-thirds of the annuity received by the couple.

Several researchers have commented on problems associated with a measure that sums the annuity value of wealth and current nonproperty income. Projector and Weiss (1969) emphasized that life-cycle patterns of spending and saving should be taken into account in such a measure. Although young units generally have little wealth currently, their wealth can be expected to increase as they age. Such life-cycle increases are ignored by a measure of this type. Thus, such a measure is considered by them to be inappropriate for the comparison of age groups.

For a given amount of current wealth, the annuity measure has the property that the shorter the expected remaining lifetime, the higher the annuity value of that wealth. That is, for given amounts of current income and current wealth, the older the unit is, the better off it is considered to be. This property is present when comparing persons of different ages at the same time or comparing the same person at different times. Taussig (1973) cited this property as a problem for the annuity-based estimates that he presented.

Another issue is the possible inconsistency between the annuity formulation and an individual's actual behavior. The existing evidence suggests that many persons do not draw down their assets after retirement. Also, purchase of annuities is relatively rare. Several researchers (Murray; Weisbrod and Hansen) stated that the annuity method was appropriate as a measure of potential consumption regardless of the individual's actual behavior.[2]

A modified version of the ordinary annuity method has also been used. In this version, the unit is allowed to choose a consumption path in which real consumption is not constant. This is in contrast to the ordinary annuity method, in which a constant real consumption path is usually assumed. It has been claimed that

the modified version is more firmly grounded in economic theory and is less mechanical than the usual annuity method because the modified method takes into account the unit's consumption choices (Beach 1981). Some researchers have used this type of annuity in conjunction with estimates of future earnings (Nordhaus 1973; Irvine 1980); others have combined it with current income (Beach).

Several other measures have also been used. In looking at current potential consumption, wealth and income have been summed (David 1959, Steuerle and McClung 1977). In this case, ordinarily a subset of total wealth is used. Home equity is usually excluded because it is not considered to be readily available for current consumption.

An arbitrary fraction of wealth has also been added to income to illustrate the effects of different weighting of wealth relative to income (Steuerle and McClung). Income flows have also been converted to stocks of wealth (Hurd and Shoven 1983). Imputed rent from equity in owner-occupied homes has been included in income by many researchers (Wolff 1987). Amounts of wealth have been compared with poverty income gaps for poor units and the impact on measured poverty of including the drawing down of wealth to eliminate those gaps has been calculated (Projector and Weiss 1966; Ruggles and Williams 1989).

Wealth and income have also been considered jointly in a two-dimensional classification (Habib, Kohn, and Lerman 1977; Radner 1984, 1989a, 1989b; Wolff). For example, Radner and Vaughan (1984, 1987) examined the percentage of each age group that had both relatively low income and relatively low wealth.

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[1] Property income is excluded from current money income because a property income component is included in the annuity value of wealth that is calculated.

[2] Where the annuity method and the expected remaining lifetime are used, a technical problem has been mentioned (Wolfson 1979). The relationship between wealth levels and the expected remaining lifetime generally is ignored, even though it is known that these two variables are not independent. In general, wealthier persons tend to live longer, ceteris paribus. Thus, wealthier persons are not as well off as they appear to be in this measure because their wealth should be spread out over a longer expected remaining lifetime than is used.

Estimates

The relative economic positions of age groups using different income-wealth measures are analyzed in this section, which is a sensitivity analysis that examines the differences produced when various income-wealth measures are applied. The emphasis is on current economic well-being. Median amounts for age groups and the percentage of each age group in the bottom of the distribution are examined for several income-wealth measures.

Data

The estimates of economic well-being were made using data from Wave 4 of the 1984 SIPP.[3] That wave contained information from interviews conducted in September–December 1984. The estimates are based on information for 18,701 households. Households are classified by age (and marital status) according to the characteristics of the householder, the person (or one of the persons) in whose name the residence is owned or rented.

The estimates use financial assets as the definition of wealth. Thus, several asset types that are important to economic well-being are excluded. The most important of these is home equity, which is the largest asset for many households. The definition is limited to financial assets because of the relatively high liquidity of most such assets.[4]

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[3] See Bureau of the Census (1986b) for more information about definitions and the data.

[4] Although home equity is generally considered to be an illiquid asset, in recent years the availability of home equity loans and lines of credit has become widespread. The general issue of borrowing is not discussed in this article.

Liquidity is emphasized because of the focus on the current period. The use of financial assets can be viewed as a first step in a more comprehensive current period analysis.

Financial assets include passbook savings accounts, money market deposit accounts, certificates of deposit, interest-earning checking accounts, money market funds, U.S. Government securities, municipal or corporate bonds, stocks and mutual fund shares, U.S. savings bonds, IRA's (Individual Retirement Accounts) and Keogh plans, regular checking accounts, mortgages held for sale of real estate, amount due from sale of business or property, other interest-earning assets, and other financial assets. The reference date for amounts of assets was the last day of the month preceding the interview.

Several problems with the SIPP wealth data should be mentioned. The SIPP estimates of financial assets appear to suffer from substantial underreporting and there is general agreement that the SIPP estimates of the upper tail of the wealth distribution are not very good. The emphasis in this article is on households that are not wealthy. Thus, the accuracy of the estimates of the upper tail is not an important concern here. Also, item nonresponse rates were high for amounts of many financial assets. Missing amounts were imputed by the Bureau of the Census. Nonresponse rates for asset ownership were low.

The income estimates used here are 4-month amounts that have been annualized (by multiplying them by three). The income information is for the 4 months preceding the interview month. Thus, the amounts are for the May–November 1984 period. Income is defined to be money

income before taxes or other deductions. The definition includes wages and salaries, nonfarm and farm self-employment income (both measured as the salary or other income received from the business by the owner, rather than as net profit), interest, dividends, rent, royalties, Social Security, and Railroad Retirement benefits, Supplemental Security Income payments, unemployment compensation, veterans' benefits, workers' compensation, Aid to Families with Dependent Children, government and private pensions, alimony, income from estates and trusts, and other income types. Lump-sum and one-time payments, such as inheritances or insurance settlements, are included. Capital gains or losses are excluded, as are accrued interest on IRA's, Keogh plans, and U.S. savings bonds. Nonproperty income, as defined in this article, excludes interest, dividends, rent, and royalties from total money income.

The amounts of income and financial assets have been adjusted to take into account differential need associated with differences in household size and age of householder. Each household's income and financial assets were divided by the appropriate value from an equivalence scale based on the scale implicit in the U.S. poverty thresholds.[5] A one-person

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[5] There is no general agreement on the best equivalence scale to use. No adjustment and a per capita adjustment are usually considered to be extreme treatments. The use of the scale implicit in the poverty thresholds is a moderate adjustment, but other moderate adjustments could have been used instead.

household (all ages) was used as the base for the scale.[6]

Measures Compared

The estimates of economic well-being are shown for four measures. The first measure includes only income and consists of total money income before taxes (TMI). This definition of resources is ordinarily used in the analysis of income.[7]

The other three measures combine data on income and wealth in various ways. One measure sums nonproperty income and financial assets (NPI + FA). Another measure sums nonproperty income and the annuity value of financial assets (NPI + ANFA). The expected remaining lifetime of the householder and a real interest rate of 2 percent were used in computing the annuity.[8] The assumption that the interest rate was a real rate produced an annuity that was fixed

in real terms.[9] The final measure sums nonproperty income and one-third of financial assets (NPI + FA/3). The fraction used is arbitrary and merely serves to illustrate this type of measure. Using a fraction of one-third is equivalent to using an annuity of about 3.1 years for all age groups (with a 2-percent interest rate). Property income is excluded from income in all three measures. Annuity methods make this exclusion and the exclusion is made for the other two measures discussed in this paragraph to simplify the comparisons.[10]

The three measures differ in the proportion of wealth that is considered to be available for consumption in the current period. The NPI + FA measure assumes that all financial assets are available in the current period. The NPI + ANFA measure takes account of both the asset amount and an interest component. This measure assumes that a constant real amount of financial assets plus interest that is consistent with exhausting those assets over the expected remaining lifetime of the unit is available in the current period. The NPI + FA/3 measure assumes that one-third of

financial assets is available in the current period.[11]

In contrast to the income-wealth measures, TMI includes only the income flow from assets. This income flow is a nominal flow, not a real flow. When the price level is rising, part of the value of the asset is counted as "being available for consumption" if the nominal flow is used. The part of the value that is counted is the decline in the real value of the asset that results from inflation. The size of the decline in value is approximately the same as the rate of inflation. The inflation rate was about 4 percent in 1984.

The differences among these income-wealth measures can also be viewed in terms of the relative weights assigned to wealth as opposed to income. The relative weight assigned to wealth can be put in terms of a fraction applied to the amount of wealth. Of the three specific measures used here, NPI + FA assigns the highest relative weight to financial assets. This method assigns a relative weight of 1 to financial assets for all age groups and for all amounts of financial assets. Because of the high weight assigned to financial assets, this measure can be considered an extreme one. The NPI + FA/3 method assigns the next

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[6] The scale values used were: one person (under age 65), 1.023; one person (age 65 or older), 0.943; two persons (under age 65), 1.323; two persons (age 65 or older), 1.190; three persons, 1.568; four persons, 2.010; five persons, 2.381; six persons, 2.692; seven persons, 3.050; eight persons, 3.403; and nine persons or more, 4.026. It should be noted that, for units of size one and two, aged units are assumed to need slightly less than nonaged units. These values were derived from the weighted thresholds in table A–2, Bureau of the Census (1986a).

[7] Noncash income has been included in the definition of income and taxes have been subtracted from income by some researchers. The inclusion of noncash income is controversial. Tax data were not available in the SIPP file used.

[8] The annuity value of $1 of financial assets was computed as $r/[1 - (1 + r)^{-n}]$, where r is the interest rate and n is the expected remaining lifetime. Expected remaining lifetime for single years of age (ignoring sex) was used. For purposes of the general comparisons in this article, taking into account the sex of the householder and the age of the spouse was an unnecessary complication. The expected remaining lifetime values were taken from National Center for Health Statistics (1987).

[9] The rate chosen is essentially arbitrary. The 2-percent rate used here is, for example, roughly a long-run average real rate on a portfolio consisting primarily of long-term corporate bonds, with a small proportion of the portfolio in common stocks. Radner (1989c) used a real rate of 5 percent in the annuity calculation.

[10] There is a relatively minor inconsistency between the definitions of financial assets and nonproperty income used. Rent and royalties are excluded from nonproperty income (that is, are included in property income) even though they are not returns on assets that are included in financial assets. This inconsistency occurred because those income types were not shown separately in the household data on the SIPP file, but were included in a summary property income item.

[11] For the annuity method (with property income excluded from income), asset values should be measured as of the beginning of the income period used. In Wave 4 of the 1984 SIPP, however, asset values were measured as of the end of the income period. This difference is not important for the purposes of this article. For the NPI + FA measure, the exclusion of property income implies that all financial assets are considered to be "used" at the beginning of the income period. For the NPI + FA/3 measure, the exclusion of all property income is inconsistent with the assumption that only one-third of financial assets is "used." Property income is excluded from all of the income-wealth measures shown here to facilitate comparisons of the effects of different treatments of wealth.

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highest relative weight, one-third, to wealth overall. As in the NPI + FA measure, in this method the weight does not vary among households.[12] The NPI + ANFA method (using a 2-percent interest rate) assigns the lowest overall weight to financial assets. In this method, the weight varies by age group. The older the age group (or, more precisely, the shorter the expected remaining lifetime) the higher the weight assigned to financial assets. The weights vary from about 0.03 for the youngest households to about 0.18 for the oldest.[13] In this method, the interest rate chosen affects the relative weight assigned to wealth. The higher the interest rate used, the higher the annuity value, ceteris paribus. The overall weight for wealth in TMI is the ratio of aggregate annualized property income to aggregate financial assets. Based on the definitions used in this article, the ratio of annualized property income to financial assets was 0.081.

Medians

Medians for the four measures, by age of householder, are shown in table 1 and chart 1 and the corresponding relative medians

(using all ages as 1.00) are shown in table 2 and chart 2. Financial assets (FA) are shown in these tables, but are not included in most of the comparisons discussed. All amounts have been adjusted for household size.

The all ages median is highest for NPI + FA ($19,100). The NPI + FA/3 measure has the next highest median ($16,600), and the NPI + ANFA and TMI measures are lowest ($14,600). These rankings are generally consistent with the relative weights assigned to wealth in the different measures. The relationship between the NPI + ANFA and TMI medians is discussed below.

The pattern of median TMI, adjusted for household size, by age is a familiar one. Amounts are relatively low at the two age extremes and relatively high in the middle age groups. Median TMI peaks in the group aged 45–54 at $18,700, and is lowest in the group aged 75 or older at $9,300 (chart 1). The relative median for the group aged 75 or older (0.63) is roughly one-half of the relative median for the group aged 45–54 (1.28). The two aged groups (65–74 and 75 or older) have lower medians than all other age groups except the youngest one.

The pattern of median FA by age is very different from the pattern for TMI. The median rises with age to a peak in the group aged 65–74 ($10,500), then falls somewhat for the group aged 75 or older ($9,600). The median is only $2,600 in the group aged 45–54 (in which TMI reaches a peak) and the medians for the groups under age 25 and aged 25–34 are extremely low ($300 and $500, respectively). The two aged groups have the highest medians of any group. This examination of age patterns for TMI and FA makes it clear that,

compared with the TMI pattern, measures that combined TMI and FA would tend to show improved economic status for the aged relative to the other age groups. Because nonproperty income, rather than TMI, is used in the income-wealth measures here, the impact on the measured relative economic status of the aged produced by changing from TMI to a combined income-wealth measure depends on the distribution of property income and the distribution of the value of financial assets used in the combined measure.

The economic status of the aged relative to other age groups is improved greatly when the definition of resources is changed from TMI to NPI + FA. The median of NPI + FA rises with age to a peak in the group aged 55–64 ($26,700), then falls. This peak is one age group older than the peak for TMI. The decline in the group aged 75 or older from the peak in the group aged 55–64 is small compared with the decline from the peak for TMI (26 percent, compared with 50 percent). The relative median for the group aged 75 or older is 1.04 for NPI + FA compared with 0.63 for TMI. The two aged groups have higher medians than the three youngest groups. As noted above, this is an extreme treatment of wealth in which wealth has a very high relative weight.

The NPI + ANFA measure would be expected to show the relative economic status of the aged to be lower than the NPI + FA measure showed because the relative weight assigned to financial assets in NPI + ANFA is much lower. However, the lower expected remaining lifetime of the aged applied in NPI + ANFA would be expected to make the aged relatively better off. The results show that, for the specification used

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[12] Radner (1989c) used a variant of this measure in which the weight varied according to the amount of wealth. The measure was NPI + FA/c, where 1/c was one-tenth for the first $6,000 of financial assets and one-third for the excess above $6,000. The lower fraction was used for the first $6,000 to allow for an amount to be set aside to pay for spending on contingencies. The results for this method and the NPI + FA/3 method differ somewhat.

[13] For example, at the 2-percent interest rate used here, the factor applied to the wealth of a household with 10 years expected remaining lifetime (roughly age 75) is 0.111, while the factor applied to the wealth of a household with 50 years expected remaining lifetime (roughly age 25) is 0.032.

Table 1.—Medians of alternative measures, by age of householder, 1984

[Amounts in thousands of dollars]

Age of householder	TMI	FA	NPI + FA	NPI + ANFA	NPI + FA/3
All ages	14.6	1.7	19.1	14.6	16.6
Under 25	11.6	.3	12.4	11.6	11.8
25–34	14.5	.5	15.9	14.4	15.1
35–44	15.9	1.3	18.7	15.8	16.9
45–54	18.7	2.6	23.6	18.4	20.6
55–64	16.8	7.2	26.7	16.3	20.4
65 or older..............	11.1	10.3	22.2	11.7	15.0
65–74	12.3	10.5	23.9	12.3	16.3
75 or older............	9.3	9.6	19.8	10.2	13.0

Note: All amounts have been adjusted for household size.

here, the relative weight differences between the two measures are much stronger than the differences produced by the expected remaining lifetime differences among age groups.

Using the NPI + ANFA measure, the median rises with age to a peak in the group aged 45–54 ($18,400), then falls. The peak is in the same age group as it was for TMI. The lowest median is found in the group aged 75 or older ($10,200), and the relative median for that group is only 0.70.[14] The median for that age group is 45 percent below the median for the peak age group. As is the case for TMI, the two aged groups have lower medians than all the age groups in the 25–64 age range. The relative medians for NPI + ANFA are quite close to the relative medians for TMI except in the group aged 75 or older, where the NPI + ANFA relative median is somewhat higher. That group has the shortest expected remaining lifetime.

It is interesting to note that, for each group under age 65, the

NPI + ANFA median is less than or equal to the TMI median. The difference is largest in the group aged 55–64. The medians are also equal in the group aged 65–74. For those age groups, the inclusion of the annuity value of financial assets adds less than (or the same amount as) the exclusion of property income from the income definition subtracts in terms of the medians. Because medians are used here, the reasons for these differences are quite complex. This comparison is quite sensitive to the interest rate used in computing the annuity. As discussed earlier, a 2-percent real interest rate is used in NPI + ANFA, while nominal property income is included in TMI. Annualized nominal property income was about 8 percent of financial assets.

When the NPI + FA/3 measure is used, it is expected that the aged would not appear to be as well off as using NPI + FA because the relative weight for wealth is lower in the NPI + FA/3 measure. The relationship between the NPI + FA/3 and NPI + ANFA measures is theoretically uncertain in terms of effects on the aged. Given the specification used here, however, it is expected that the aged would
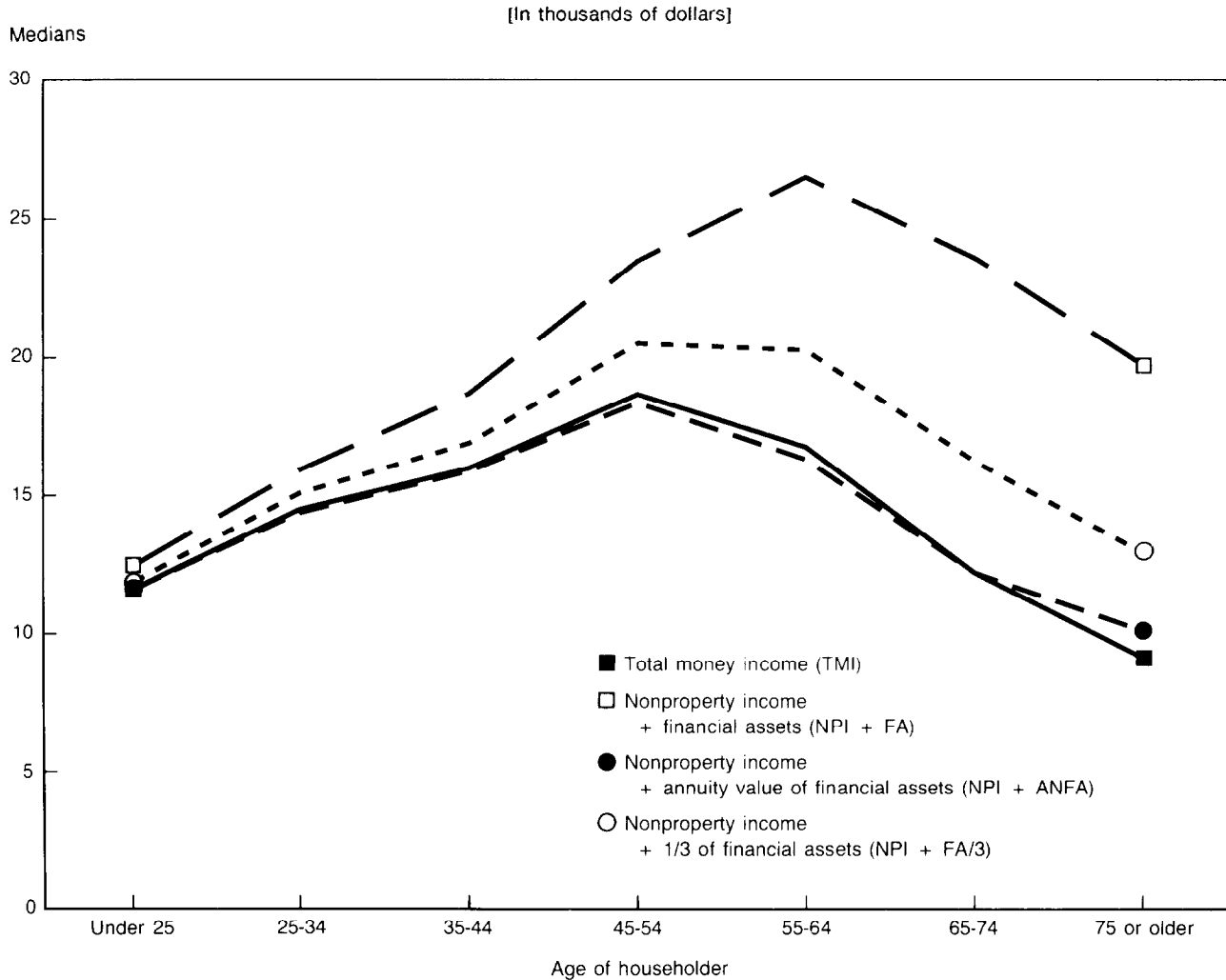
appear to be better off using the NPI + FA/3 measure than using the NPI + ANFA measure because of the much higher relative weight assigned to financial assets in NPI + FA/3.

As is true for the other measures, the median for the NPI + FA/3 measure rises with age, then falls. The peak is reached in the group aged 45–54 ($20,600). The relative medians for the groups aged 65–74 (0.98) and 75 or older (0.79) are above the NPI + ANFA values, but far below the NPI + FA values. The median for the group aged 75 or older is 37 percent below the peak median (a decline that is slightly smaller than the decline using NPI + ANFA). The median for the group aged 75 or older is below all medians in the 25–64 age range, while the median for the group aged 65–74 is below all medians in the 35–64 age range.[15]

In summary, the general relationship between age and income-wealth values is quite similar for TMI, NPI + ANFA, and NPI + FA/3 (chart 2). Medians rise as age increases, with a peak in the group aged 45–54, then fall. Both aged groups have lower relative medians than the groups aged 35–64 for those three measures. The relative positions of the aged are somewhat different using the different measures. Using TMI, the relative median for the group aged 65 or older is 0.76; using NPI + FA, the

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[14] These relative medians are not very sensitive to small differences in the interest rate used. For example, Radner (1989c) found a relative median of 0.71 for the group aged 75 or older using a real interest rate of 5 percent.

[15] The inclusion or exclusion of property income can make a difference in the results for the aged. For example, when property income is added to the NPI + FA/3 measure, the relative median of the group aged 75 or older rises from 0.79 to 0.84. If one-tenth of the first $6,000 of financial assets and one-third of the excess over $6,000 is added to nonproperty income (as in Radner 1989c), the relative medians for the aged are lower than when NPI + FA/3 is used. For example, the relative median for the group aged 75 or older is 0.74, rather than 0.79.

Chart 1.—Medians of alternative measures, by age of householder, 1984

[In thousands of dollars]

Medians

- ■ Total money income (TMI)
- □ Nonproperty income
  + financial assets (NPI + FA)
- ● Nonproperty income
  + annuity value of financial assets (NPI + ANFA)
- ○ Nonproperty income
  + 1/3 of financial assets (NPI + FA/3)

Age of householder

relative median is 1.16 for that group. The other two estimates are between the TMI and NPI + FA values (0.80 for NPI + ANFA and 0.91 for NPI + FA/3), but closer to the TMI value.

Lower Part of the Distribution

The previous section examined medians and relative medians for different measures of economic status. It is also useful to consider more than just a measure of central tendency of the distribution. In this section, the proportion of households in each age group that are in the bottom of the distribution

using alternative measures of economic status is discussed.[16]

In addition to the income-wealth measures shown in the previous section, a two-dimensional income-wealth classification is used. In this low income and low financial assets (LILFA) measure, the bottom portion of the distribution is defined to be those households that have total money income that is less than one-half median total money income (for all ages) and financial assets that are less than one-half median

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[16] Although the household is used as the unit here, other units, such as persons or equivalent adults, could also have been used in these comparisons.

financial assets (for all ages).[17] Both income and financial assets are adjusted for household size in these comparisons. The two-dimensional classification does not produce a complete ordering of households by size of income-wealth as the other three income-wealth measures do. The two-dimensional classification can, however, identify a portion of the joint distribution such as the portion with both low income and low wealth.

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[17] If property income is excluded from income to avoid counting both the asset and the income from that asset, the pattern by age group is very similar to the pattern shown here.

Table 2.—Relative medians of alternative measures, by age of householder, 1984

Age of householder	TMI	FA	NPI + FA	NPI + ANFA	NPI + FA/3
All ages	1.00	1.00	1.00	1.00	1.00
Under 25	.79	.15	.65	.80	.71
25–34	.99	.29	.83	.99	.91
35–44	1.09	.73	.98	1.09	1.02
45–54	1.28	1.49	1.23	1.26	1.24
55–64	1.15	4.12	1.39	1.12	1.23
65 or older..............	.76	5.90	1.16	.80	.91
65–74	.84	6.04	1.25	.84	.98
75 or older............	.63	5.54	1.04	.70	.79

Note: All amounts have been adjusted for household size.

In the LILFA measure, quite low amounts of financial assets can disqualify a household from being in the bottom of the income-wealth distribution. This disqualification happens because median financial assets, and therefore one-half the median, are quite low. One-half the median, after adjustment for household size, was only $871. Thus, although income and wealth are assigned equal weight as classifiers in this measure, because of the shape of the distribution of financial assets, many aged (and other) households are excluded from the bottom category even though they have amounts of financial assets that are quite small. About 42 percent of all households and 25 percent of aged households had financial assets that were less than one-half the median. One-half the median income (annualized) was $7,312 after adjustment for household size. About 20 percent of all households and 29 percent of aged households had income that was less than one-half the median.

The comparisons between LILFA and the other measures are carried out by tabulating the weighted number of households of all ages that have both low income and low financial assets as defined above and then identifying that weighted

number of households at the bottom of the distribution using each of the other measures. The group with low income and low financial assets consisted of 13,293,000 households (15.2 percent of all households). Thus, the bottom 13,293,000 households using each of the other measures was identified.

The percentage of each age group that is in the bottom of the distribution is shown in table 3 and chart 3. The age pattern for LILFA shows high percentages at young ages that decline to a low in the group aged 45–54 (11.7 percent) and rise in the older age groups. The group aged 75 or older has 16.4 percent in this bottom group; the group under age 25 has 25.3 percent. This pattern is similar to patterns found earlier by Radner (1984, 1989a, 1989b) and Radner and Vaughan (1987) using a slightly different formulation and, in some cases, earlier data.[18]

All of the other income-wealth measures show a similar pattern of

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[18] The other formulation used the household's relative position in the income distribution and in the wealth distribution. To be counted in the bottom of the distribution, the household had to be in the bottom 20 percent of the (all ages) income distribution and the bottom 40 percent of the (all ages) wealth distribution (in both cases after adjustment for household size). In the 1984

high percentages at young ages followed by a decline to a low in the group aged 45–54 and then a rise in the older age groups (chart 3). The TMI measure also shows a similar pattern. The similarity of these patterns reflects the fact that many households have no financial assets or very small amounts of those assets. If the amounts are zero or very small, then the method used to take them into account will make little or no difference. About 15 percent of all households and 12 percent of aged households had no financial assets (Radner 1989a).

Although the results are generally similar for the various measures, there are some differences. For this part of the distribution, the LILFA measure makes the aged relatively better off (that is, shows a lower percentage) and the young worse off than using the other income-wealth measures shown. The NPI + ANFA measure makes the aged relatively worse off and the young relatively better off than using the other income-wealth measures. The NPI + FA/3 measure has relatively high percentages for the aged groups. The NPI + FA measure has relatively high percentages for the young and relatively low percentages for the aged. If TMI were included in the comparisons, TMI would have the lowest percentages for the four groups under age 55 and the highest for the groups aged 65–74 and 75 or older.
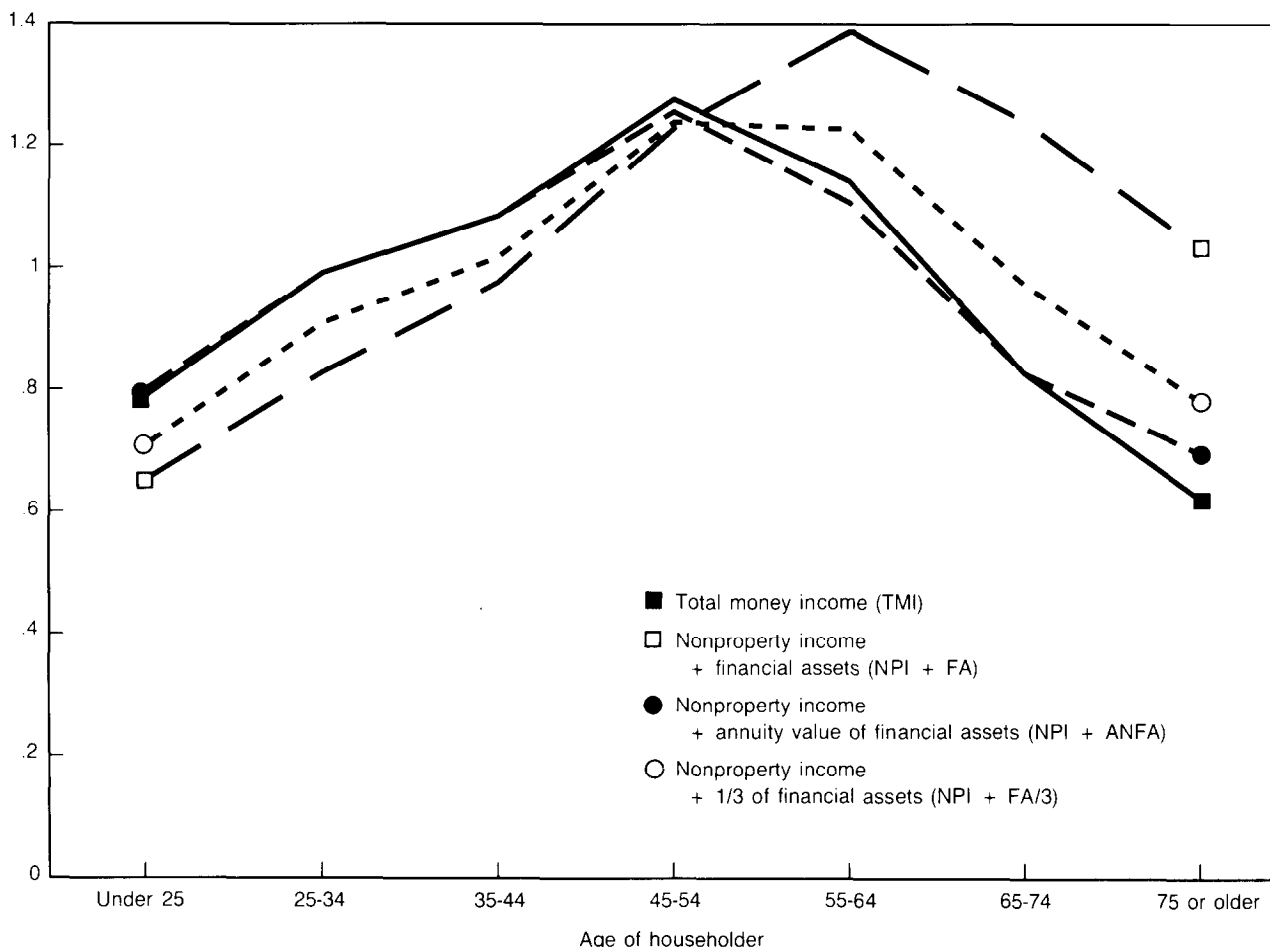
It is useful to compare these measures in terms of the relationship between the percentages for the youngest and

SIPP, the income cutoff was 49 percent of the median and the financial assets cutoff was 43 percent of the median using that formulation. The results using that formulation are close to the results shown here. Several of the papers cited used data from the 1979 Income Survey Development Program, which was similar to SIPP.

Chart 2.—Relative medians of alternative measures, by age of householder, 1984

Relative medians

Age of householder

Legend:
- ■ Total money income (TMI)
- □ Nonproperty income + financial assets (NPI + FA)
- ● Nonproperty income + annuity value of financial assets (NPI + ANFA)
- ○ Nonproperty income + 1/3 of financial assets (NPI + FA/3)

oldest age groups. The ratio of the percentage for the oldest age group to the percentage for the youngest age group provides a crude measure of the relative positions of the old and young for this bottom part of the distribution. The lower the ratio is, the better off the old are relative to the young.

The LILFA measure has the lowest ratio (0.65 = 16.4/25.3) and, therefore, shows the most favorable relative status for the old. The NPI + FA measure has the next highest ratio (0.77), followed by NPI + FA/3 (0.92), NPI + ANFA (1.02), and TMI (1.15). In general, the higher the relative weight assigned to financial assets in the measure, the lower the ratio. This is

the result that would be expected because older persons have more financial assets than younger persons.

The percentages for the group aged 45–54 are similar for all of the measures (including TMI). The spread is only 0.9 percentage point (11.1 percent to 12.0 percent). The spread in the estimates for the group under age 25 is 2.9 percentage points. The differences for the group aged 75 or older are much greater. The spread for those estimates is 9.4 percentage points. This sensitivity for the group aged 75 or older is related to the presence of many households with small amounts of income and/or financial assets.

The percentage of aged households that are in the bottom of the distribution is shown by marital status in table 4. This table is a further breakdown of the estimates shown in table 3. A household is considered to be "married" if the householder is married with spouse present. All other households are in the "other" category.

For all of the measures, the married group shows a far lower percentage in the bottom of the distribution than the other group does. This result applies to both age groups shown. For the group aged 65–74, differences among the measures are quite small. The range is only from 6.4 percent to 7.1 percent for married households and

Table 3.—Percent of households in each age group in bottom of all ages distribution, for alternative measures, 1984

Age of householder	TMI	NPI + FA	NPI + ANFA	NPI + FA/3	LILFA
All ages	15.3	15.3	15.3	15.3	15.2
Under 25	22.4	24.5	22.6	23.5	25.3
25–34	15.0	16.7	15.0	15.9	17.7
35–44	13.1	13.9	13.4	13.8	13.9
45–54	11.1	12.0	11.6	11.7	11.7
55–64	13.2	12.5	13.9	12.5	12.6
65 or older..............	19.9	16.6	18.6	18.0	15.4
65–74	15.8	15.0	15.5	15.5	14.6
75 or older............	25.8	18.8	23.1	21.6	16.4

Note: All amounts have been adjusted for household size.

from 23.1 percent to 25.0 percent for other households. For the group aged 75 or older, however, the differences are larger. The range for married households is from 7.8 percent (LILFA) to 10.9 percent (TMI). For other households, the range is much larger, from 20.4 percent (LILFA) to 32.8 percent (TMI).

In summary, all of the measures show a similar pattern of a low percentage in the group aged 45–54 and higher percentages at young and old ages. For most age groups,

Chart 3.—Percent of households in each age group in bottom of distribution, for alternative measures, 1984

Percent

■ Total money income (TMI)

□ Nonproperty income
+ financial assets (NPI + FA)

● Nonproperty income
+ annuity value of financial assets (NPI + ANFA)

○ Nonproperty income
+ 1/3 of financial assets (NPI + FA/3)

△ Low income and low financial assets
less than 1/2 median total money income and
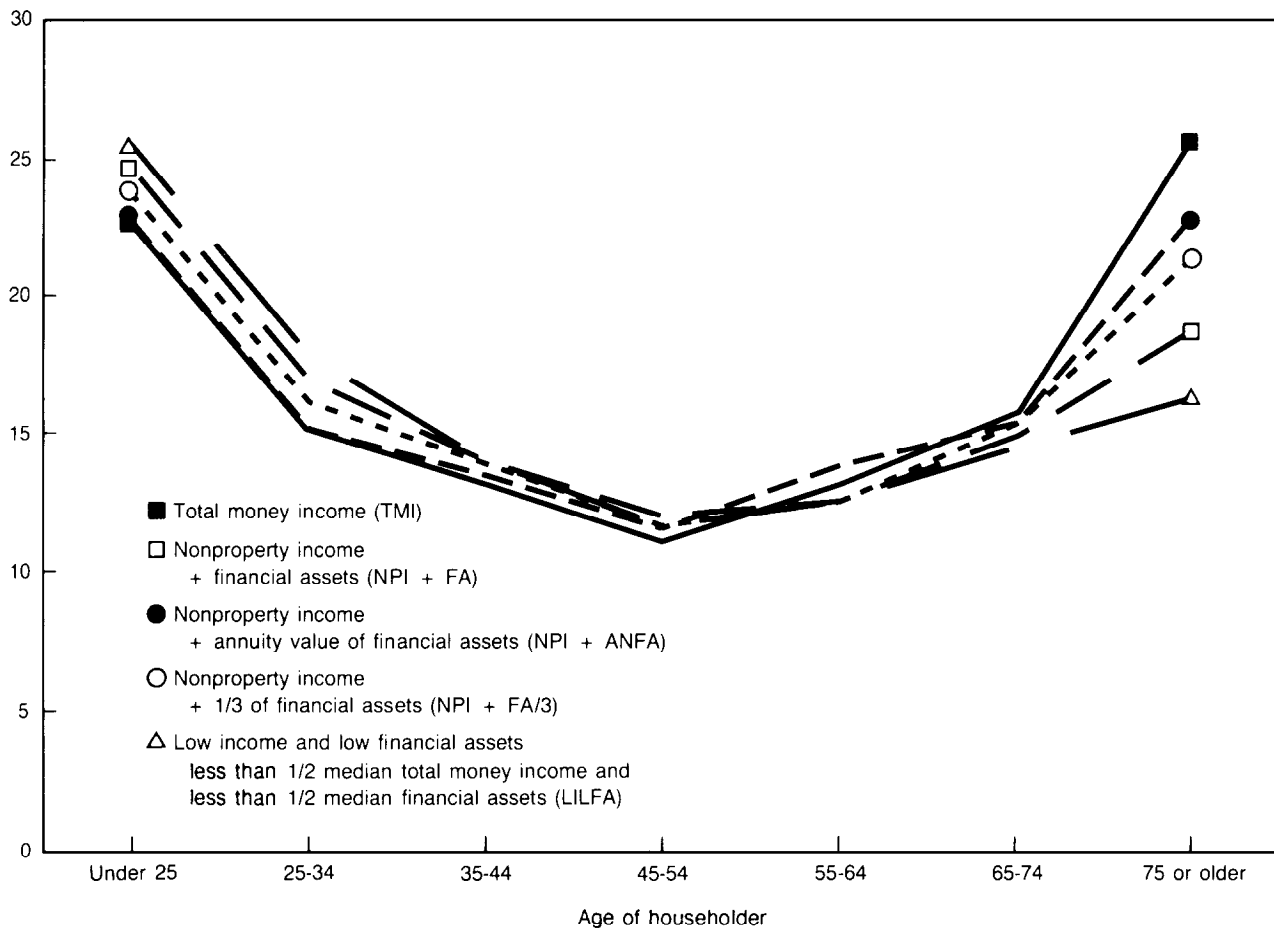less than 1/2 median financial assets (LILFA)

Age of householder

Table 4.—Percent of aged households in bottom of all ages distribution, by marital status, for alternative measures, 1984

Characteristic of householder	TMI	NPI + FA	NPI + ANFA	NPI + FA/3	LILFA
Aged 65 or older:					
Married...............	8.3	6.9	7.9	7.4	7.1
Other	28.9	24.0	26.8	26.1	21.8
Aged 65–74:					
Married...............	7.1	6.4	7.1	6.6	6.7
Other	25.0	24.0	24.3	24.9	23.1
Aged 75 or older:					
Married...............	10.9	8.0	9.7	9.5	7.8
Other	32.8	23.9	29.3	27.3	20.4

Note: All amounts have been adjusted for household size.

the proportions in the bottom of distribution are quite similar for the different income-wealth measures. The group aged 75 or older shows the largest differences among measures, with LILFA having the lowest percentage and NPI + ANFA the highest. Among aged households, the percentages for married households are far below the percentages for other households for all measures.

Summary and Conclusions

This article has examined several methods in which data on both income and wealth were used in the assessment of economic well-being in the current period. Estimates of the economic well-being of age groups using several methods were presented and compared to examine the sensitivity of the results to the choice of method. Medians and the proportion of each age group that was in the bottom of the distribution were analyzed. Data from the 1984 Survey of Income and Program Participation (SIPP) were used.

One important finding was that the general results were not very sensitive to the income-wealth

measure chosen, at least when wealth was defined to include only financial assets, as it was in this article. Some detailed results, however, were sensitive to the measure chosen, even using financial assets. Differences among measures were somewhat larger when medians were examined than when the bottom of the distribution was examined.

The differences among income-wealth measures were generally not very large for medians. For every income-wealth measure used, the median rose as age increased, then fell. The steepness of the rise and fall varied somewhat among the measures. For two of the three income-wealth measures examined, the medians for the groups aged 65–74 and 75 or older were below the median for each group in the 35–64 age range.

The relative economic status of the aged improved when the measure of resources was changed from income to a combined income-wealth measure. The amount of improvement depended on the income-wealth measure used. The improvement was small when the measure included the annuity value of financial assets. It was large when an extreme

measure, the sum of financial assets and income, was used. The measure that summed income and one-third of financial assets showed far less change than the latter, but more than the former.

When the bottom of the distribution was examined using several income-wealth measures, the differences among measures were small. The percentages of households in the groups aged 65–74 and 75 or older that were in the bottom of the distribution were higher than the percentages for the groups in the 35–64 age range for each of the measures. The percentages for the aged groups fell when the measure was changed from income to any of the combined income-wealth measures. In general, these percentages were relatively high for the young and old age groups, and relatively low for the middle age groups for each measure.

This exploratory article has examined several aspects of the very complex problem of combining data on income and wealth into a single measure of current economic well-being. Several income-wealth measures were compared. No generally acceptable measure was suggested.

The treatment of income-wealth measures for age groups was quite limited here. The definition of wealth was confined to financial assets, although other asset types, particularly home equity, are clearly very important. Possible differences in levels of need among age groups were ignored. For example, the aged face a significant probability of large medical expenses and may try to accumulate assets to protect against that contingency. Also, a current period perspective is only one of several possible approaches. Life-cycle issues are ignored. For example, the aged have had much

more time to accumulate wealth than the young have had.

A better understanding of the issues involved in combining income and wealth into a single measure is needed before satisfactory income-wealth measures can be constructed. The data (for example, SIPP) are now available to explore different possibilities for new and better income-wealth measures.

References

Beach, Charles M. 1981. **Distribution of Income and Wealth in Ontario: theory and evidence**. Ontario Economic Council Research Studies, Toronto: University of Toronto Press.

Bureau of the Census. 1986a. "Characteristics of the Population Below the Poverty Level: 1984," **Current Population Reports** (Series P-60, No. 152), June. Washington, DC: U.S. Government Printing Office.

_____. 1986b. "Household Wealth and Asset Ownership: 1984," **Current Population Reports** (Series P-70, No. 7), July. Washington, DC: U.S. Government Printing Office.

David, Martin. 1959. "Welfare, Income, and Budget Needs," **The Review of Economics and Statistics**, November, pages 393-99.

Habib, Jack; Meir Kohn, and Robert Lerman. 1977. "The Effect on Poverty Status in Israel of Considering Wealth and Variability of Income," **Review of Income and Wealth**, Series 23, March, pages 17-38.

Hurd, Michael D. and John B. Shoven. 1983. "The Economic Status of the Elderly," in **Financial Aspects of the United States Pension System**, Zvi Bodie and John B. Shoven, editors. Chicago and London: University of Chicago Press.

Irvine, Ian. 1980. "The Distribution of Income and Wealth in Canada in a Lifecycle Framework," **Canadian Journal of Economics**, August, pages 455-74.

Moon, Marilyn. 1977. **The Measurement of Economic Welfare (Its Application to the Aged Poor)**, Institute for Research on Poverty Monograph Series, New York: Academic Press.

Murray, Janet. 1964. "Potential Income from Assets: Findings of the 1963 Survey of the Aged," **Social Security Bulletin**, December, pages 3-11.

National Center for Health Statistics. 1987. **Vital Statistics of the United States, 1984**, vol. II, sec. 6, Life Tables. Public Health Service: U.S. Government Printing Office.

Nordhaus, William D. 1973. "The Effects of Inflation on the Distribution of Economic Welfare," **Journal of Money, Credit, and Banking**, February, pages 465-504.

Projector, Dorothy S. and Gertrude S. Weiss, 1966. **Survey of Financial Characteristics of Consumers**. Washington, DC: Board of Governors of the Federal Reserve System.

_____. 1969. "Income-Net Worth Measures of Economic Welfare," **Social Security Bulletin**, November, pages 14-17.

Radner, Daniel B. 1984. "The Wealth and Income of Aged Households," **1984 Proceedings of the American Statistical Association, Social Statistics Section**, pages 490-495.

_____. 1989a. "Net Worth and Financial Assets of Age Groups in 1984," **Social Security Bulletin**, March, pages 2-15.

_____. 1989b. "The Wealth of the Aged and Nonaged, 1984," in **The Measurement of Saving, Investment, and Wealth**, Studies in Income and Wealth, vol. 52, Robert E. Lipsey and Helen Stone Tice, editors. Chicago: University of Chicago Press, pages 645-84.

_____. 1989c. "Income-Wealth Measures of Economic Well-Being for Age Groups," **1989**

Proceedings of the American Statistical Association, Social Statistics Section (forthcoming).

_____ and Denton R. Vaughan. 1984. **The Joint Distribution of Wealth and Income for Age Groups, 1979** (ORS Working Paper No. 33). Office of Research, Statistics, and International Policy, Social Security Administration, March.

_____. 1987. "Wealth, Income, and the Economic Status of Aged Households," in **International Comparisons of the Distribution of Household Wealth**, Edward N. Wolff, editor. Oxford: Oxford University Press.

Ruggles, Patricia, and Roberton Williams. 1989. "Longitudinal Measures of Poverty: Accounting for Income and Assets over Time," **Review of Income and Wealth**, Series 35, September, pages 225-43.

Steuerle, Eugene and Nelson McClung. 1977. "Wealth and the Accounting Period in the Measurement of Means," in **The Measure of Poverty**, Technical Paper VI. Washington, DC: Department of Health, Education, and Welfare.

Taussig, Michael K. 1973. **Alternative Measures of the Distribution of Economic Welfare**. Princeton, NJ: Industrial Relations Section, Department of Economics, Princeton University.

Weisbrod, Burton A. and Lee W. Hansen. 1968. "An Income-Net Worth Approach to Measuring Economic Welfare," **American Economic Review**, December, pages 1315-29.

Wolff, Edward N. 1987. **Wealth Holdings and Poverty Status in the U.S.**, Paper presented at the 20th General Conference of the International Association for Research in Income and Wealth. Roca di Papa, Italy, August 23-29.

Wolfson, Michael C. 1979. "Wealth and the Distribution of Income, Canada 1969-70," **Review of Income and Wealth**, Series 25, June, pages 129-40.