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INCOME SECURITY PROGRAMS

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ABSTRACT

This paper develops a comprehensive measure of economic status for aged families in both a theoretical and an empirical framework. The measure attempts to capture yearly potential consumption for each aged family, consistent with a life cycle hypothesis of saving. Several important nonincome sources of economic welfare are incorporated into the resource constraint. The empirical estimates, based on the 1967 Survey of Economic Opportunity, include the distributions of aged families by current income and by the expanded measure of economic status. Both the absolute level of economic welfare and the rankings within the distribution of families are substantially different from those obtained by a current income distribution. Subsequently, the target efficiencies of eleven transfer and tax expenditure programs available to aged families are examined. Comparisons are made both among the programs and between the current income and economic welfare distributions.

THE ECONOMIC WELFARE OF THE AGED AND INCOME SECURITY PROGRAMS

Introduction

Current money income is an inadequate measure of economic status, particularly for such population groups as the aged. For example, in-kind transfers to the aged total more than 10 percent of the size of their current money income. Net worth holdings spread over an average-aged family's remaining expected lifetime would add as much as 30 percent to its current money income each year.[1] Both the absolute amount of resources and the rankings of families by economic well-being are likely to vary when a more comprehensive measure is used. Such changes can be very important for evaluating the effectiveness of government programs in terms of direct benefits to various target groups. This paper examines several nonmoney components of economic welfare in both a theoretical and an empirical framework, computes the distributional ranking of aged families arising from such a measure, and subsequently examines the target effectiveness of eleven federal programs directed at the aged.

Heretofore, studies of the distribution of economic welfare have been infrequent and incomplete. In general, research in this area has concentrated on measuring only one new component of economic welfare. For example, studies by Peter Steiner and Robert Dorfman (1957), and by Burton A. Weisbrod and W. Lee Hansen (1968) attempt to incorporate net worth into the definition of economic welfare. Steiner and Dorfman, concentrating on aged families, use a measure of "total receipts"--current money income plus any dissaving during the year. In contrast, Weisbrod

and Hansen estimate potential consumption by converting net worth into a constant yearly annuity flow and adding this flow to current income. Another study, by Ismail Sirageldin (1969), adds to current income an estimate of the value of time spent in both leisure and nonmarket productive activities.

The two most important studies on the measurement of economic status do, however, introduce several additional components. James Morgan et al. (1962) discuss a number of additional aspects of economic welfare, including nonmoney components such as benefits from residing with relatives, imputed rent to homeowners, and home production. Their measure also decreases a family's measured welfare by its federal income tax liability, and adjusts for family size and composition. The second study, by Michael Taussig (1973), represents the most recent and comprehensive attempt at extending the measure of economic welfare. Taussig's study brings together a number of components, including those analyzed by others. He uses the net worth approach of Weisbrod and Hansen and values leisure time with a method similar to that of Sirageldin. Taussig incorporates into his measure regional differences in the cost of living, adjustments for family size, federal income and payroll tax payments, and a method of accounting for unusual earnings fluctuations. However, since Taussig does not concentrate on the aged, he fails to capture some of the components important to this group.

The Measure of Economic Welfare

A theoretical discussion of the measure of economic welfare can best begin with a standard utility function framework.[2] Resources that

extend the budget constraint of a family increase its potential consumption, subject to preferences expressed through the family's utility function. Although this study examines economic welfare at only one point in time, the utility maximization problem nonetheless is consistent with a permanent-income hypothesis such as that proposed by Albert Ando, Franco Modigliani, and Richard Brumberg (Ando and Modigliani, 1963).

The Ando-Modigliani-Brumberg life cycle hypothesis asserts that utility is a function of consumption in both current and future time periods. The utility function is then maximized subject to the resources available to an individual over time. The present value of total lifetime resources (V_o) is defined by the following formula:

$$V_o = A_o + Y_o + \sum_{t=1}^{N} \frac{EY_t}{(1+r)^t},$$

where

A_o = stock of assets at beginning of current period,

Y_o = current nonproperty income,

EY_t = expected nonproperty income in period t,

N = years of life expectancy for individual, and

r = the rate of return on assets.

Consumption in any given time period is proportional to the present value of the total resource flow accruing to an individual over the remaining years of his life. The exact proportion of consumption in each period depends upon the age of the person, the rate of return on assets, and the form of the utility function. Consumption is expressed as

$$C_t = \gamma_t V_t,$$

where

C_t = consumption in period t,

γ_t = the proportionality factor for period t.

It is assumed here that as a result of the lifetime utility function, γ_t dictates an equal share of lifetime resources in each period t. Moreover, if in any time period t current nonproperty income (Y_t) is viewed as exogenous, then only assets and expected future nonproperty income can be altered to yield the appropriate level of C_t. For any one year, expectations about future nonproperty income will be reflected in the amount of assets consumed--through saving or dissaving. Consequently, the level of potential consumption (C_t), consistent with the life cycle model, can be divided into two parts:

$$C_t = Y_t + S_t ,$$

where

S_t = the portion of net worth allocated to consumption during the period.

Y_t is current nonproperty income as defined above and is assumed to be exogenous for any period t. S_t is the share of net worth that insures that current consumption is consistent with the lifetime utility function. The determinants of S_t can be expressed as follows:

$$S_t = f(A_t, \gamma_t, EY_t, r, N) .$$

EY_t influences S_t through its size and stability over time in comparison to the size of Y_t. For example, if future expected income equaled Y_t in all subsequent periods (and since consumption has already been assumed to be equal across all periods), then S_t would also be the same for all

t and depend only on the size of assets and the values for life expectancy (N) and the interest rate (r). Thus, S_t could be viewed as a constant annuity. However, if EY_t were expected to decrease over time, then to maintain consumption at a constant level, S_t would have to increase. In this case, S_t would correspond to a variable annuity formulation such that the current share of assets consumed would be small relative to the share consumed in later periods.[3]

Since information about future expectations and past experience is limited, the measure proposed here may not fully capture C_t, but it should yield a reasonable approximation. Moreover, although the life cycle hypothesis was originally formulated only for current nonproperty income and net worth, this research expands the scope of the resources included. Resources that either directly provide goods or through some other means allow an individual command over goods and services can appropriately be viewed as increasing potential consumption over time. These components of economic welfare are treated in the same manner as nonproperty income, incorporating both current and expected future benefits into the resource constraint. For example, government-provided commodities, leisure time, and nonmarket-produced goods all enhance the level of utility enjoyed by a family. Thus, the measure of economic welfare (W_t) expressed here includes these and other nonincome sources:

$$W_t = \hat{C}_t = \hat{Y}_t + S_t ,$$

$$\hat{Y}_t = R_t + O_t + G_t + I_t + L_t ,$$

where

$\hat{C}_t$ = "expanded" current potential consumption;

$\hat{Y}_t$ = all current net inflows of resources available for consumption (except property income);

R_t = earned income;

O_t = "other" income: remainder not captured in earnings, property income, or cash transfers;

G_t = contribution of government expenditures net of taxes;

I_t = intrafamily transfers;

L_t = value of nonmarket productive activities and leisure time.

R_t and O_t appear to be the only aspects of current income included in the measure. However, G_t contains cash government transfers from current money income. Property income is not included here since it is captured in S_t of the preceding equation.

The portion of net worth assumed to be available for consumption during any time period (S_t) depends upon the size of total net worth, the expected change in the size of $\hat{Y}_t$ over time, the expected rate of return on assets, and the form of the lifetime utility function that dictates consumption over time. The more that changes over time in the separate components of $\hat{Y}_t$ offset each other, the more stable S_t becomes. Where the utility function dictates equal consumption over time and $\hat{Y}_t$ is expected to remain constant--for example, for a retired family with a fixed level of resources--S_t will also be constant over time.

The Empirical Estimate of Economic Welfare

The empirical measure of economic welfare provides somewhat less comprehensive coverage than the theoretical measure discussed above.

In particular, the value of nonmarket productive activities and leisure time have been excluded. Also, several portions of G_t--direct government expenditures and some in-kind transfers and taxes--are not incorporated into the measure. To facilitate comparisons among families, the measure adjusts the level of economic welfare by family size.[4] Thus, the estimated measure of economic welfare (W_t^*) for an aged family appears as follows:

$$W_t^* = \lambda(S_t + Y_t^*) ,$$

$$Y_t^* = R_t + O_t + G_t^c + G_t^{k*} - T_t^* + I_t ,$$

where

λ = adjustment by family size;

Y_t^* = estimated current resources for family;

G_t^c = government cash transfers;

G_t^{k*} = estimated government in-kind transfers: Medicare, Medicaid, and public housing;

T_t^* = estimated tax liability from federal income, payroll, and property taxes.

In addition, the value of Y_t^* is assumed to remain stable over time so that S_t can be expressed in a constant annuity form.[5] Following a brief discussion of the data source and the adjustment for family composition, the following sections present the estimation procedures for each of the components.

The Survey of Economic Opportunity

This analysis uses a subsample of the 1967 Survey of Economic Opportunity comprised of all families with at least one aged person. The sample includes more than 7000 persons aged sixty-five and over in 6300 families. Weights have been assigned to each family to yield population

estimates. The survey contains information on asset and income sources as well as on a wide range of demographic variables. Therefore, the annuitized values of net worth and intrafamily transfers are estimated from the data at hand. An earlier version of the SEO containing information about public housing is matched to the 1967 survey in order to identify housing beneficiaries. For the other in-kind public transfers, separate data sources supplement the SEO.

Standardizing the Distributions

In order to compare families of varying size, the estimated level of economic welfare for each family is multiplied by a weighting factor. This procedure standardizes the welfare level for each family to a level comparable to the welfare of an aged couple. The weight is obtained by dividing $1970, the 1966 poverty threshold for an aged couple, by each family's appropriate poverty threshold. For example, an aged individual's level of welfare, multiplied by a weight of 1.25, yields a level comparable to the economic welfare of an aged couple. With this adjustment, only one distribution is necessary to summarize the economic welfare of aged families of any size.

Net Worth

Dissaving from net worth can play an important role in raising the level of welloffness of an aged family. The constant annuity formula for converting the stock of wealth to a yearly flow is consistent with a life cycle hypothesis for saving, given that other current resources are stable over time and that the family desires a constant yearly consumption pattern. Thus, the estimate for S_t uses a constant annuity

formula with a 4 percent interest rate and an average life expectancy figure based on the age and sex of each aged family member and spouse.

Net worth is defined as all assets minus all debts reported by each family. Where the SEO has missing or unusable net worth information, a value is imputed for each family from a linear regression model. This model predicts net worth from socioeconomic variables of those families whose records are intact. For those living in larger extended family groups, net worth is assumed to "belong" to the nuclear family that contains the household head.[6] If the head is under age sixty-five and not the spouse of an aged person, the aged family is assumed to have no net worth.[7]

A downward adjustment in the value of home equity included in net worth reflects the problem of rationing the flow of housing services over one's lifetime so as to exhaust the full measure of value. The adjustment assumes that a private individual could contract now to sell his home in exchange for a current annuity, with the purchaser assuming control of the house upon the aged person's death. Thus, at any point in time the family would receive both the current flow of housing services and some portion of the discounted value of services that will remain after the death of the last family member.

This reduction in the value of the home is estimated from a formula based on the life expectancy of family members. The estimate approximates the difference between the value of the home to the family if it were able to consume all housing services and the smaller resulting value if it were to purchase an annuity with those housing assets expected to remain after the death of the family members. The greater the life expectancy of family members, the smaller the necessary reduction in

value. This reduced value of home equity is then included in the net worth computations.[8]

Cash Components

The first three components of Y_t^* are portions of money income--earnings, government cash transfers, and "other" income. Since these components come directly from SEO data on income, they pose no substantial estimation problems. However, for those families who reside in extended family groups, some division of these components is necessary. Earnings are listed separately for each member; also, those portions of cash transfers and private pensions that are retirement-oriented are assumed to accrue to the aged subfamily. The remaining portions of "other" income and unemployment insurance, workmen's compensation, and public assistance are allocated among the subunits in proportion to the size of each nuclear family within the extended unit.

In-Kind Transfers

The in-kind programs included in this research are the important medical transfers, Medicare and Medicaid, and public housing. Other transfers were excluded because of difficulties in identifying recipients. However, in 1967 these other transfers were small in size and would not significantly alter the final distribution of economic welfare. For the in-kind transfers included, expenditures are used as the measure of benefits, rather than using the cash value that a recipient would accept in place of the in-kind transfer. Hence, benefits identified here represent an upper bound (Smolensky et al., 1974).

Medicare is treated as a health insurance program for persons over age sixty-five.[9] Per capita benefits are, therefore, the amount of the

insurance premium subsidized by the government, allocated among all persons eligible to receive payments. In this study, the eligible population consists of all persons over age sixty-five, although in actuality about 4 percent of the aged are not covered by either Part A or Part B of the Medicare program. Consequently, the insurance benefit for Medicare is calculated by dividing payments plus administrative costs of the program by the number of eligible persons. From this "gross" insurance benefit, the premium required for enrollment in Part B is subtracted. Although Medicare is a national program, Martin S. Feldstein (1971) has found that real benefits vary widely across states. Hence, the value of the subsidized insurance for any aged beneficiary should be computed for the state in which he resides. Since the SEO data preclude a state-wide breakdown, regional insurance values are imputed instead.[10]

Medicaid is also estimated as an insurance program in which benefits accrue to all eligible persons. Under the general Medicaid heading, there are actually two programs for providing health care, each with different eligibility requirements. Consequently, benefits are estimated separately for those who receive Medicaid through participation in public assistance programs and for those considered "medically indigent." In 1967, the latter was the more restricted program, with only twenty-three states participating compared to thirty-seven for the public assistance portion.[11] In addition, benefits varied substantially among the states.

To obtain the insurance value for the first portion of Medicaid, payments for medical services for the group plus administrative costs of the program are divided among the Old Age Assistance (OAA) recipients. This calculation is done for each of the four census regions since state

data are unavailable. For the second group, income and asset limits used for determining medical indigence are averaged by census region. The eligible population in each region is subsequently defined as any family having income and assets under the limits and not receiving public assistance. Again, benefit payments plus administrative costs in each census region are divided by the eligible population. Thus, eight sets of per capita Medicaid insurance premiums are estimated for the two programs and four census regions.[12]

Two separate steps are necessary to obtain information about public housing benefits. First, recipients are identified by matching data from the 1966 SEO, which contains information on public housing, to the 1967 survey. The second step involves the more difficult problem of valuing the housing subsidy. One appropriate method is to measure the differences between the market value of the rental units and the rent actually paid. This research uses the methods of Eugene Smolensky and J. Douglas Gomery (U.S. Congress, Joint Economic Committee, 1973) to obtain an estimate for market value based on the 1967 statutory provisions for public housing. Units may rent for no more than 80 percent of market value and must cost tenants no more than 20 percent of their income. These figures establish a proxy for the market rent of public housing units equal to 25 percent of the appropriate income limit for region of residence and family size. The housing subsidy for a family is therefore equal to the difference between this market value and the rent actually paid. Regional estimates capture differences among local housing authorities.

Taxes

An exhaustive study of tax incidence for the aged is beyond the scope of this research. Consequently, only three taxes are examined:

the federal personal income tax, the Social Security payroll tax, and the residential property tax.

The incidence of the income tax is assumed to fall directly on those who are taxed. Moreover, several simplifying assumptions aid in imputing tax liabilities for each family. First, assume that all aged families file separately (even if they reside in extended family groups) and take full advantage of available tax expenditures. Aside from the tax expenditures that will subsequently be examined, not all provisions are specifically included in computing tax liabilities. In general, this study uses the simplifying assumptions of Robert E. Hall (1973) and Taussig (1973). Taxable income includes earned income, dividends, interest and rental income, and the "other" income category. From taxable income, a $600 personal exemption for each family member is deducted. In addition, the standard deduction is computed as $200 plus $100 for each family member, or 15 percent of taxable income, whichever is higher. Calculations by Taussig indicate that this 15 percent figure is a better approximation of standard and itemized deductions for all income classes than the actual statutory provisions.[13] For aged families, additional calculations are necessary to include the effects of available tax expenditures. One of the three major tax expenditures--the exclusion of government transfer income--has implicitly been incorporated into the initial calculations. The remaining two are the retirement income tax credit and the extra $600 personal exemption allowed all persons over age sixty-five.

The incidence of the employer's contribution to the payroll tax for Social Security is a controversial topic.[14] While the argument has not been finally settled, this research attributes only the 4.2 percent employee contribution on the first $6600 of earnings (or 6.15 percent for

self-employed workers in 1966) as a cost to the worker. The limited importance of this tax for the aged reduces the significance of the issue in this study.

Finally, estimates of the property tax represent only that portion assessed against residential property and ignore taxes on commercial property. Although the residential portion represents only about one-half of the revenue from the property tax, its incidence can more readily be computed. From previous studies there seems to be a consensus that taxes on residences are shifted only to the extent that the occupant bears the burden. That is, if an individual rents his home, he, rather than the owner, pays the tax.[15] Therefore, in this research we assume that the burden of the property tax falls on the occupant of the house regardless of whether that person is the owner or the renter. The actual burden of the tax is estimated separately for each census region. For homeowners, a percentage of the value of the home, ranging from 0.8 to 2.2 percent, is assessed. Taxes for renters are estimated as a percentage of rental payments.[16] While these estimates fail to pick up the higher burden of property taxes found in some metropolitan areas, the regional breakdowns provide some meaningful property tax variations.

Intrafamily Transfers

Nearly 30 percent of all aged families live with relatives in extended family units, often for economic reasons (Murray, 1971). Although the potential importance of such living arrangements is undeniable, the lack of guidelines for allocating potential welfare gains or losses to the aged from such living arrangements has hampered work in this area. The estimation procedure used here attempts to compute a conservative value for such transfers.

Because intrafamily transfers depend upon the economic positions of both the younger and older subunits relative to their needs, estimation of the value of such transfers uses the welfare measure derived thus far for each family. Two assumptions dictate the form of the transfer equation. First, it is assumed that the highest priority of the extended family is to insure all its members a subsistence level of consumption. For those extended families whose total welfare is less than or equal to a subsistence standard (poverty threshold), this assumption indicates that the welfare ratios are equalized. Everyone in the extended family shares equally the burden of too few resources. Second, for families with resources greater than subsistence, transfers to the "needy" subfamily are assumed to rise as the level of total economic welfare rises, but somewhat less than proportionally. For example, an elderly person residing with relatives would benefit from their higher levels of economic welfare, but it seems unlikely that the family would insure the aged relative a proportional share of all its resources. Thus, when total family welfare is high enough to allow each nuclear family a welfare ratio greater than one, the needy subfamily is still subsidized and assured a welfare ratio greater than or equal to one, but its welfare ratio remains less than that of the "donor" subfamily.

In the estimation procedure, the "donor" is always the nuclear family with the higher welfare ratio. The higher the total extended family's welfare ratio and the higher the welfare ratio of the recipient nuclear family, the greater the allowed differences between the welfare ratios. To achieve this, the question for equalizing the welfare ratios uses a weighting function, δ:

$$I_{12} = \delta\left(\frac{p_2(W)}{p_1+p_2} - W_2\right),$$

where

$$\delta = \begin{cases} 1 \text{ when } W - p_1 - p_2 \leq 0, \\ \dfrac{f_1-f_2}{f_1+f_2} \text{ when } W - p_1 - p_2 > 0; \end{cases}$$

I_{12} = intrafamily transfer from subfamily 1 to subfamily 2;

W = total level of economic welfare for extended family;

W_i = that portion of the welfare (in dollars) attributable to subfamily i;

p_i = the poverty threshold for subfamily i;

$f_i = W_i/p_i$, the welfare ratio.

The final effect of intrafamily transfers is to increase or decrease the level of welfare for an aged family, depending upon whether the family is the recipient or the donor of the imputed transfer. The allocation procedure used here is a purely judgmental and synthetic relationship. However, it is consistent with the small amount of information available on such transfers (Baerwaldt and Morgan, 1971). Aged persons tend to live with relatives for economic reasons, preferring otherwise to remain independent (Morgan et al., 1962). Thus, it seems reasonable to assume some sharing of resources, particularly among those who have very little. Moreover, the fraction δ tends to fall rapidly as W increases, resulting in a conservative estimate of the transfer among families.

The Distribution of Economic Welfare

This section compares the distribution of economic welfare to the distribution of money income. Before the distributions are presented,

Table 1 illustrates the relative size of the various components estimated here.[17] The small size of earnings relative to both cash transfers and the net worth annuity is particularly interesting. In addition, the size of transfers often thought to be oriented exclusively at low-income groups, such as public assistance, public housing, and Medicaid, is small in comparison to the size of other government transfers. While intrafamily transfers overall tend to be offsetting, the absolute value of these resource flows is substantial. In general, the nonmoney-income components of economic welfare are very important to the aged.

Table 2 presents the changes in the distribution as additional components are added. The intermediate distribution in column 1 includes only the cash-income components and the annuity value for net worth. A comparison with current money income clearly illustrates the effect of the annuity calculation.[18] The number of families with total resources under $2000 drops by fifteen percentage points with the substitution of the annuity for interest income, while the median dollar value rises by more than $1000. The addition of in-kind transfers also has a substantial effect on the distribution, largely as a result of the assumption that all aged families receive Medicare benefits. Again, the number of families with resources below $2000 drops substantially, and the median rises by almost $400. The inclusion of tax liabilities has little effect on those families at the bottom of the distribution. However, the median falls as families at higher levels incur the tax liabilities. Intrafamily transfers reduce both tails of the distribution and raise the median slightly. About 4 percent fewer families have resources below $2000 as a result of these intrafamily transfers.

Substituting the final measure of economic welfare (column 4) for money income obviously moves a large number of families above the $2000

Table 1. The Components of Economic Welfare

Component of Economic Welfare	Size (in thousands of dollars)	Average per Aged Family	Percent of Families Receiving	Average per Recipient Family
Money income components				
Earnings	$16,372,026	$1210.00	32.68	$3700.30
Other income	2,747,659	203.07	16.87	1279.58
Cash transfers				
Social Security	14,866,341	1098.72	81.13	1354.27
Public assistance	1,091,108	80.64	10.30	782.91
Government pensions	2,925,992	216.25	10.58	2043.95
Veterans' benefits	1,491,749	110.25	9.38	1175.37
Unemployment and Workmen's Compensation	132,068	9.76	2.80	348.57
Annuity	34,638,336	2560.00	81.62	3125.00
In-kind transfers	5,168,689	382.00	100.00	382.00
Medicare	3,599,140	266.00	100.00	266.00
Medicaid	1,503,926	111.15	31.90	348.43
Public housing	65,623	4.85	1.28	378.91
Taxes				
Income	2,045,421	151.17	19.23	786.12
Social Security	538,653	39.81	30.50	130.52
Property	1,825,143	134.89	78.05	172.71
Intrafamily transfers				
Positive	3,457,880	255.56	15.28	1672.49
Negative	4,040,778	298.64	12.56	2377.72

Note: Size figures do not necessarily correspond to national aggregates. See note 17.

Table 2. Distributions for Current Income and the Intermediate and Final Measures of Economic Welfare

Income or Welfare Class	1 $Y_t^e + O_t + G_t^c + S_t$	2 Column 1 $+ G_t^{k*}$	3 Column 2 $- T_t^*$	4 Column 3 $+ I_t$	5 Current Money Income
$-500 - -1	.07%	.03%	.03%	.03%	.13%
0	1.30	0	0	0	1.92
1 - 499	2.20	.61	6.1	.17	3.19
500 - 999	6.31	3.44	3.52	1.65	8.73
1000 - 1499	7.45	5.68	5.74	3.91	13.37
1500 - 1999	7.88	7.46	7.82	7.82	12.92
2000 - 2499	7.65	8.17	8.56	8.76	11.30
2500 - 2999	7.24	8.10	8.55	8.96	8.91
3000 - 3999	12.59	15.26	15.86	17.72	13.13
4000 - 4999	11.31	11.86	12.00	13.53	7.35
5000 - 5999	8.16	9.25	9.30	9.57	5.43
6000 - 7999	10.06	11.17	11.09	11.93	5.60
8000 - 9999	5.47	5.80	5.58	5.58	2.95
10,000 - 14,999	5.97	7.59	6.26	5.85	3.13
15,000+	5.35	5.56	5.06	4.50	1.93
Under $2000	25.21	17.22	17.72	13.59	40.36
Under $2500	32.86	25.39	26.28	22.35	51.66
Median	$3743	$4105	$3956	$4072	$2427
Gini coefficient	.482	.442	.432	.398	.458

line. However, it is more significant that even with all the increased opportunities to move up, almost 14 percent of the aged families remain below $2000. It is important to note that although the Orshansky poverty-threshold measure of $1970 for an aged couple is designed for use with a current income measure of economic status, the inclusion of these additional nonmoney resources still cannot raise all aged families over this benchmark.

Comparisons of the final distribution of economic welfare and money income are displayed graphically in Figure 1. Overall, the economic welfare measure lies to the right of current income, while the shapes of the distributions also differ somewhat. Moreover, as summary statistics in Table 2 for these two measures indicate, economic welfare is more equally distributed than current income. The Gini coefficient for income is .458; that for economic welfare is only .398.[19] While including the annuity value for net worth creates more inequality, the other nonincome components--taxes, in-kind transfers, and intrafamily transfers--all increase the equality of the distribution.

Table 3 indicates differences in the ranking of families within the distribution depending upon whether current income or the economic welfare measure is used. Both distributions are divided into deciles. Each row of the table indicates where families in each decile of income rank when measured by economic welfare. Families do not benefit uniformly from the additional resources included in the economic welfare measure. For example, only about three-fourths of the bottom 40 percent of families as measured by current income are in the bottom four deciles of the economic welfare measure. Even those families in the lowest 10 percent of the distribution

Figure 1
Relative Frequency Distributions

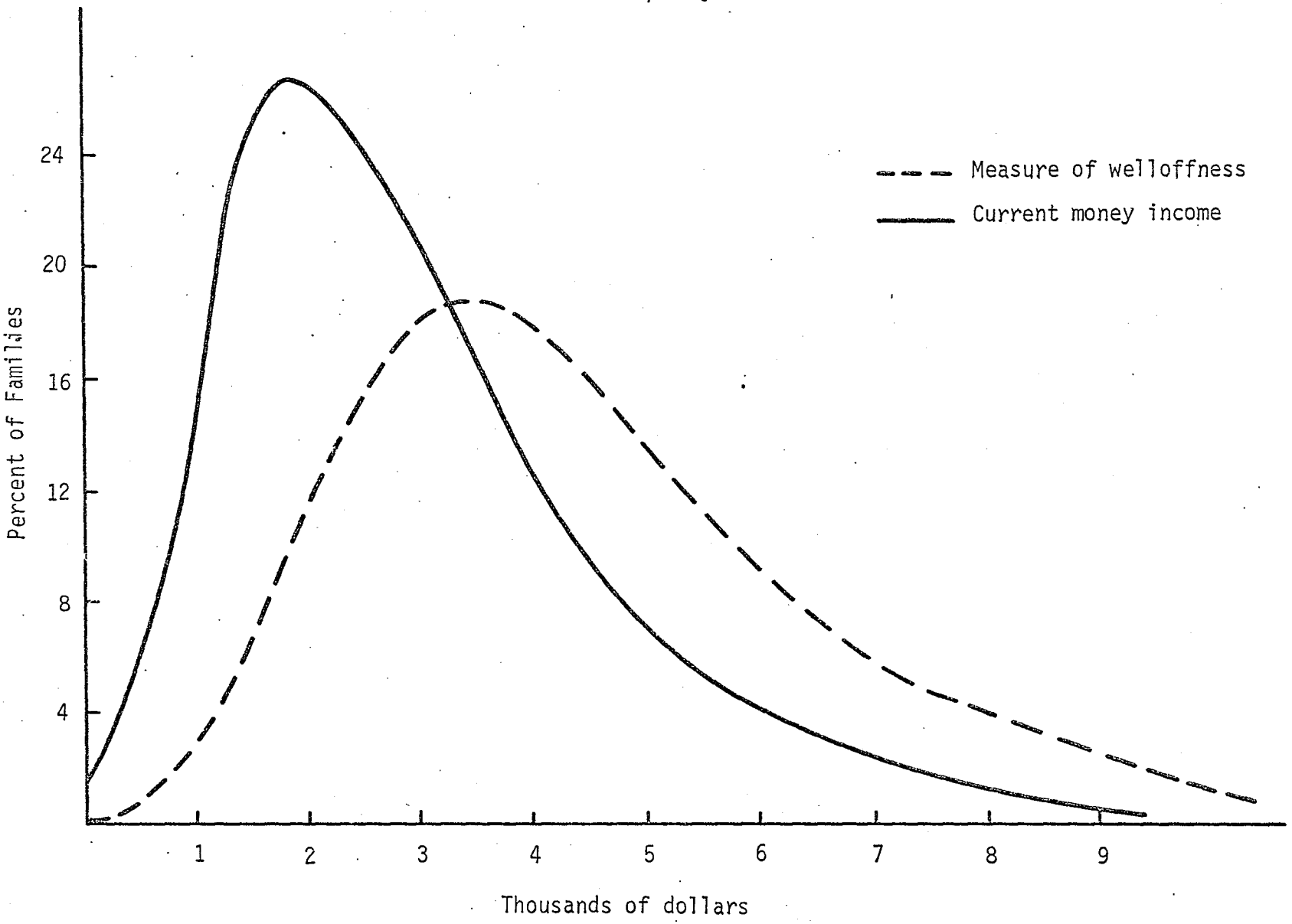

Table 3. Comparison of Decile Rankings of Aged Families by Current Income and Economic Welfare

Distribution of Current Income by Deciles	Economic Welfare										
	1	2	3	4	5	6	7	8	9	10	Total
1	4.1%	1.9%	1.3%	.5%	.6%	.4%	.3%	.3%	.4%	.2%	10.0%
2	3.4	2.4	1.2	1.0	.6	.6	.5	.2	.1	.1	10.1
3	1.0	3.2	1.8	1.6	.9	.7	.3	.4	.1	.1	10.1
4	.3	1.6	3.1	1.7	1.1	.9	.4	.5	.1	.2	9.9
5	.4	.4	1.8	2.6	1.9	1.2	.7	.5	.4	.1	10.0
6	.2	*	.5	1.7	2.3	2.1	1.4	1.1	.5	.2	10.0
7	.3	.3	.1	.6	1.9	2.3	2.2	1.2	.7	.3	9.9
8	.2	.1	.2	.1	.5	1.6	2.8	2.3	1.7	.6	10.1
9	0	.1	.1	.1	.1	.2	1.1	3.0	3.2	2.1	10.0
10	*	0	*	.1	.1	*	.2	.5	2.9	6.2	10.0
Total	9.9**	10.0	10.1	10.0	10.0	10.0	9.9	10.0	10.1	10.1	

*Less than .05 percent.

**Each row and column may not total 10 percent as a result of rounding errors.

of current income change position substantially when ranked by economic welfare; 59 percent move to higher decile rankings. Moreover, above this first percentile a number of aged families fall in rank when the expanded measure is used. Thus, the measure of economic welfare derived here affects not only the measured level of resources available to a family, but also the equality of the distribution and the ranking of families within the distribution.

The Impact of Government Programs on the Aged

Government transfer programs constitute fully 34 percent of the total measured economic welfare of the aged. This section examines the effects of each of these major tax expenditure and transfer programs on both current money income and the measure of economic welfare. The specific cash transfer programs included are Social Security and Railroad Retirement, government employee and military retirement programs, Veterans' Disability pensions and compensation, and public assistance. In-kind transfers include Medicare, Medicaid, and public housing. Finally, benefits from tax expenditures that are targeted directly at the aged--the double personal exemptions, exclusion of Social Security and other transfer income, and the retirement income tax credit--are also examined.[20]

The marginal contribution of each government program is obtained by "subtracting" the program from the measure of economic welfare. The difference between the resulting distribution and total economic welfare indicates the contribution of the program to each welfare class.[21] A similar procedure is used for examining the effect of each cash transfer on current income. Since tax expenditures and in-kind transfers are not

included in current money income, no adjustments are made when computing the distributional effects of these programs. Comparisons with the economic welfare measure indicate how the distributional effects differ depending upon the measure used. Since for nearly every family dollars of welfare are higher than dollars of income, comparisons are based on a fixed percentage of families at the bottom of each distribution.

Several measures of "target efficiency" are used for evaluating the effectiveness of a program in aiding families at the bottom of each distribution. Target efficiency as defined by Weisbrod (1970) refers to the "degree to which the actual redistribution coincides with the desired redistribution." The target groups used here are defined by various percentages of families at the bottom of each distribution. For example, in both Tables 4 and 5, the first column indicates the percentage of total benefits from a transfer program received by the lowest 15 percent of families.

Any comparison of transfers must proceed with caution. The programs vary widely by size and distributional goals. As a consequence, while comparisons among the programs are of interest, no one statistic can offer conclusive evidence about their ultimate value to the aged. For example, one program might be very target efficient, but, because of its size, benefit only a small number of people. Moreover, since any one program may have multiple goals, it is difficult to rank the transfers in any meaningful way. This section compares these programs only for their effectiveness in providing benefits to those at the bottom of each distribution.

The most striking result in a comparison of Table 4 with Table 5 is the similarity in both the rankings of the transfers and the actual target

Table 4. Target Efficiency Measures by Distribution of Economic Welfare

Government Program	Percent of Benefits from Each Program to Aged Families					
	Lowest 15 percent of distribution	(Rank)	Lowest 30 percent of distribution	(Rank)	Lowest 40 percent of distribution	(Rank)
Cash transfers						
Social Security	15.69%	6	30.75%	6	40.33%	5
Public assistance	67.51	1	88.71	1	93.57	1
Government pensions	16.71	5	31.65	5	39.37	6
Veterans' benefits	30.24	4	46.13	4	58.40	4
Unemployment and Workmen's Compensation	9.52	8	19.98	8	28.11	8
In-kind transfers						
Medicare	12.63	7	26.59	7	36.64	7
Medicaid	33.21	3	63.65	3	77.54	3
Public housing	61.85	2	83.97	2	91.36	2
Tax expenditures						
Double exemption	1.91	9	3.61	9	7.09	9
Exclusion of transfers	1.62	10	2.65	10	6.85	10
Retirement credit	.35	11	.85	11	1.72	11

Table 5. Target Efficiency Measures by Distribution of Current Income

Government Program	Percent of Benefits from Each Program to Aged Families					
	Lowest 15 percent of distribution	(Rank)	Lowest 30 percent of distribution	(Rank)	Lowest 40 percent of distribution	(Rank)
Cash transfers						
Social Security	14.41%	6	30.82%	6	41.40%	6
Public assistance	70.50	1	91.58	1	94.54	1
Government pensions	25.63	5	41.69	5	49.12	5
Veterans' benefits	29.27	3	46.07	4	56.71	4
Unemployment and Workmen's Compensation	11.04	8	23.52	8	27.60	8
In-kind transfers						
Medicare	13.20	7	26.73	7	36.56	7
Medicaid	29.14	4	56.60	3	73.54	3
Public housing	33.15	2	63.37	2	76.24	2
Tax expenditures						
Double exemption	trace	9	.13	9	.30	9
Exclusion of transfers	0	10	.02	10	.11	10
Retirement credit	0	11	0	11	0	11

efficiency measures. These findings might imply that the ranking of recipient families did not change between the two distributions. Such an explanation would seem to be valid for public assistance, for example, where benefits are both income and asset conditioned. However, Table 3 showed that substantial numbers of families do shift by decile ranking between the two distributions, making this explanation less likely for programs such as Medicare, unemployment compensation, and government pensions. Another plausible explanation is that for those families in the middle range of the income distribution whose rankings do change, benefits may be randomly distributed. One notable exception to the similarities in target efficiencies is the much higher 15 percent figure for public housing when the economic welfare measure is used. It is also interesting that while the target efficiencies of the three tax expenditures are very low, they are consistently higher for the economic welfare distribution.

Within each table, the rankings of the transfers based on target efficiency remain remarkably stable for all the measures. As would be expected, public assistance and public housing are quite target efficient. Although the Medicaid program is ranked as third- or fourth-most target efficient, its percentage efficiency is substantially lower than the figures for public assistance. Moreover, benefits are less than proportional for the Medicare program in every instance, and Social Security comes very close to being distributionally "neutral." While neither of these two programs is aimed specifically at low-income aged families, it is nonetheless important to note that they do not in any way favor the poor. The combined effect of Unemployment Insurance and Workmen's

Compensation is particularly target inefficient. Finally, although the tax expenditure programs could a priori be expected to provide few benefits to aged families at the bottom of the distributions, in no case do they target substantial benefits to even the lower half of either distribution.

Conclusion

This paper has attempted to derive a theoretical measure of economic welfare for the aged in the form of a resource constraint defining a family's yearly potential consumption. From this definition, an empirical measure of economic welfare has been developed and applied to a large sample population, yielding the distributional rankings of those aged families.

The development of a broad measure of the economic welfare of the aged provides a valuable framework for a study of the distributional impacts of government transfer and tax expenditure programs. The results from this research are compared with a current money income measure. Consequently, this work represents a first step toward a better evaluation of government policy toward the aged.

Notes

[1]See, for example, Special Analyses of the Budget (U.S. President, 1972) and U.S. Department of Health, Education, and Welfare, Social Security Administration (1967).

[2]A caveat about economic welfare should be made. The ideal measure of economic welfare for a family is the level of satisfaction attained as measured by its utility function. However, even if such measures were attainable, the limitations of standard consumer theory would prevent comparisons of the magnitude of one family's preferences with any other family's preferences. Neither ordinal nor cardinal rankings can be obtained. In this sense, then, economic welfare may never be truly measurable. This should not, however, be viewed as a counsel of despair. Comparisons among families by current money income are often used in distributional studies as crude approximations of economic welfare. The measure developed here can certainly improve upon a money-income ranking of individuals.

[3]Although the issues are not addressed here, S_t could also be negative, indicating income greater than consumption. Such a formulation might be appropriate for younger families, but S_t is implicitly assumed to be positive or zero for aged families.

[4]The adjustment also includes a differentiation between farm and nonfarm residence.

[5]This is not an unreasonable assumption for the majority of aged families, in which all members have retired from the labor force. Pensions and other fixed transfer payments are likely to make up the bulk of current resources. Moreover, to the extent that various government transfer programs provide earnings replacement upon retirement, the sharp drop in private sources of economic welfare can be mitigated.

[6]An extended family is assumed to exist when there are one or more persons between the ages of eighteen and sixty-four in the household who are not the spouses of aged persons. Aged relatives living together are considered one family unit and not an extended group regardless of their relationship.

[7]Although this is a rather arbitrary assumption, its effect will later be reduced with the estimation of intrafamily transfers, which will result in the sharing of net worth and other resources among members of the extended family.

[8]A more detailed specification of this adjustment is available from the author.

[9]By assuming that all the aged benefit from the insurance nature of Medicare, the problem of overestimating the welloffness of those in ill health is avoided. That is, if benefits were allocated according to actual payments received, the more medical bills incurred by an individual, the better off that individual would appear to be. Certainly most persons consider themselves less well off when they are ill, and since some of the medical costs must still be borne by the individuals, their needs rise even though their Medicare benefits increase. Thus, an aged person who is ill is likely to be less well off than his healthy counterpart. This is particularly important since no adjustment to welloffness is made because of ill health.

[10]The benefits average $183 and range from $141 to $247. Derived from Stuart (1971).

[11]See O'Connor (1971). However, the lack of a Medicaid program should not be interpreted as indicating a complete lack of medical programs for the aged in a particular state. The 1960 Kerr-Mills provisions for Medical Assistance for the Aged (MAA) allowed generous federal matching grants to states to provide for medically needy aged persons. In addition, many states provided some care through public assistance programs. The programs were certainly more limited than Medicaid but for the aged they were sometimes important sources for medical care. Where appropriate, benefits from these programs have been included.

[12]Average benefits to public assistance recipients were $309.18, while average per capita benefits to the medically needy were $209.65. Derived from U.S. Department of Health, Education, and Welfare (1971).

[13]Although there is a legal limit of $1000 on the standard deduction, the 15 percent reduction evidently captures other provisions in the tax laws that limit the liability of persons at higher income levels.

[14]See, for example, Brittain (1971; 1972), and Feldstein (1972).

[15]An exception is the portion of the tax that is charged against the land. This would not be shifted to the renter, but since this portion is usually less than 10 percent of the tax, it will be ignored (Netzer, 1966).

[16]Derived from U.S. Bureau of the Census (1964) and U.S. Congress, Joint Economic Committee (1968).

[17]However, these figures do not necessarily correspond to the appropriate national aggregates. The totals computed here are based on the size of each component after its conversion into "equivalent" dollars as described earlier. Moreover, the definition of aged families differs in two respects from the norm, thus affecting the distribution of income. In order to be consistent with the measure of economic welfare,

17 (cont.)

income of aged families living with relatives is computed separately for the aged subunit. Also, most studies count as aged only those families where the head is over age sixty-five. The definition used here includes any family where head or spouse is sixty-five or over.

[18]It is important to note from the outset that order does matter in assessing the distributional consequences of a particular component. That is, the annuitized value of net worth appears to have a different effect on the distribution depending upon whether or not cash transfers are already included. Therefore, while a reasonable ordering for the inclusion of these components has been attempted, caution should be taken in the interpretation of marginal changes in the distribution.

[19]The Gini coefficient estimates the area between the line of equality and the Lorenz curve as a proportion of the total area under the line of equality. A decrease in the coefficient indicates an increase in the equality of a distribution.

[20]Tax expenditures provide benefits to aged families through a reduction in the income tax liability they face. The benefit from each tax expenditure is calculated as the difference between a family's tax liability and the liability that would exist without the particular tax expenditure. For example, to compute the incidence of the double personal exemption, tax liabilities are recalculated for each family without subtracting the additional $600 for each member over age sixty-five. This amount should be greater than or equal to the tax liability computed with the exemption. When the latter is subtracted from the former, a positive (or zero) benefit will result.

[21]Actually the process is somewhat more complicated. Since intrafamily transfers are assumed to vary by the relative size of each family's resources, these transfers are recomputed for each new distribution when a transfer or tax expenditure is subtracted. When the aged family benefits more from a program than the younger members of the extended family, the marginal changes to the distribution of welfare will be somewhat offset.

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