UPDATING POVERTY STANDARDS AND PROGRAM BENEFITS

Poverty standards have risen in the past with increasing income but they have not done so at a uniform rate. Periodically there has been renewed interest in the problem of poverty and new standards have been established. Statistical definitions of poverty have become critical in the formulation of public policy toward income maintenance and social insurance. With increasing frequency they have been used as explicit criteria in determining the eligibility for programs and services and for evaluating their impact.

Until now there has been no agreement on the way in which poverty standards should be revised over time. The official definition takes into account changes in the Consumer Price Index but does not take into account the growth of real income. Proponents of alternative measures of poverty differ as to whether or not the poverty standard should remain at an absolute level or whether it should be raised in proportion to changes in real income. The analysis develops a methodology which provides a solution which falls in the middle ground. An interpretation of the recommended decision rule leads to criteria for the revision of program benefit levels.

Revision of Standards

The Orshansky Index developed by the Social Security Administration has served as the standard measure of poverty in the United States. It contains useful detail, defining poverty according to family status, family size, age, sex of family head and farm/nonfarm status and provides a standard for the near poor as well. The level of the poverty line was set at \$3,022 in 1960 for a nonfarm family of four. Since that time it has been updated regularly for changes in the Consumer Price Index.¹

The Orshansky Index was derived from budget studies with the level set at three times the cost of a minimum food budget. This conformed closely with the standard of \$3,000 for a family of four in 1960 derived from an earlier budget study in the same way and adopted by the Council of Economic Advisors.² The level chosen reflected a broad consensus and because of its acceptability has come into widespread use.

There has been no similar agreement as to the way in which poverty standards should be revised over time.³ The Orshansky Index as presently computed takes no account of increases in real income. A number of other measures have been developed which allow the real poverty standard to rise as the standard of living changes. For example the measure "half of the median income" proposed by Fuchs automatically rises by the same percentage as real median income. It is a relative poverty measure rather than an absolute one; in fact it is fully relative.⁴

The degree of relativeness of poverty is

characterized by the "income elasticity of the poverty line." The "income elasticity of the poverty line" tells the number of percentage points which the poverty line increases for a one percent change in real income. An absolute measure of poverty has an income elasticity of zero; when income rises the poverty line remains the same. A fully relative measure such as "half the median income" has an income elasticity of 1.0 since it increases in proportion to median income. A semi-relative measure of poverty has an income elasticity between zero and 1.0; the poverty line rises when income rises, but not as rapidly.

One way to adjust the poverty line for increases in income is to refer to public preferences. We will later show that the results which emerge are consistent with reasonable criteria for the distribution of increases in real income which occur with economic growth. Criteria for changing poverty standards can be inferred from responses to survey questions over time, comparing them with changes in income. The Gallup Poll provides responses to the question "What's the smallest amount of money a family of four (husband, wife and two children) needs each week to get along in this community." The wording of the question produces only a general indication of the level of poverty standards. The results are much closer to the near poverty line than the poverty line in 1960. But the measure provides information on the way in which responses change when a consistent question is asked over an extended period of time. The pattern of changes can be taken as a useful indication of the way in which responses to a more explicit question about poverty would also change.

In a recent study Kilpatrick has shown that the Gallup measure rises about six-tenths as fast as real income. The estimated income elasticity of .6 is consistent in a variety of tests.⁵ To verify this finding we derived ordinary least squares estimates of the income elasticity of the poverty line using data for all available years from 1947 to 1973, holding constant the percentage change in the Consumer Price Index, the unemployment rate and defense expenditures as a percentage of Gross National Product. A one percent increase in median family income was associated with a .65-.67 percent increase in the Gallup minimum income standard in alternative specifications. The estimates are lower than 1.0 by amounts which are statistically significant at high levels (Table 1).

None of the other variables was statistically significant. This finding increases our confidence in the interpretation of the estimates. Had the measure shown variation with economic activity one would suspect that it reflected changes in income expectations, earnings capacity or some other market-related concept rather than a more basic standard.⁶

Comparison of Poverty Lines

In 1973 the Orshansky poverty line for non-farm family of four was \$4,540.7 We computed the Orshansky measure (income elasticity zero) with the poverty lines that are obtained using alternative values for the income elasticity. With an income elasticity of 1.0 the poverty line rises from \$3,236 to \$6,485 between 1947 and 1973, reflecting the doubling of real median income. The poverty lines are started at the same level in 1960. More recent values are higher than the Orshansky poverty line when a positive income elasticity is used. This reflects the fact that the poverty line is raised by some proportion of the increase in real income. The difference between the poverty line with a positive income elasticity and the poverty line with an income elasticity of zero is greater the larger the income elasticity.

A high income elasticity means that the poverty line must have been rising more rapidly in the past in order to reach its 1960 level. In the earlier years poverty lines with positive income elasticities are at lower levels than the Orshansky measure. Thus, to assert that the poverty line does not respond to income growth at all is to imply that the poverty standard was a larger and larger proportion of median income as we go further back in time. It is not reasonable to assume that the poverty line for a nonfarm family of four was as high as three-fourths of the median income of families and individuals of \$6,011 (in 1973 dollars) in the years immediately following World War II. When an income elasticity of .6 is used the poverty line for a nonfarm family of four is 19 percent below the Orshansky level in 1947 and 24 percent higher in 1973.

In subsequent calculations we will consider the implications of accepting the Orshansky Index as providing the level of the poverty standard in 1960 and relying on the income elasticity of .6 as the criterion for revision of the standard over time.

Implications of an Elastic Poverty Line for the Poverty Income Gap

Before presenting an interpretation of the income elasticity of the poverty line the implications for past and future poverty income gaps are considered. The poverty income gap measures the amount of income which would raise all families and individuals below the Orshansky poverty line up to the line. The use of the poverty income gap does not imply that that specific amount of money should be given to the poor but rather gives a general magnitude of the size of the poverty problem. The actual distribution of program benefits among groups varying by level of income depends on the way in which complex work incentives, equity and other issues are resolved. The measures shown are based upon the Current Population Survey. The gap is overestimated by several billion dollars because of the exclusion of benefits under a number of programs.⁶

We compared poverty income gaps under the

Orshansky Index with the gaps for an income elasticity of .6. When the poverty line remains constant the deficit was nearly cut in half between 1947 and 1973, from \$23 billion to \$12 billion in real terms. When the poverty line is raised 60 percent as fast as income the gap increased by one-third between 1947 and 1960 from \$15 to \$21 billion but remained at about \$21 billion in 1973. With one measure the gap dropped by half over the entire period while with the other it increased by half.

Projections of the poverty income gap were made to 1980 and 1985 for alternative growth rates assuming the income distribution shifts upward proportionally and allowing for population growth. With a constant poverty line the poverty income gap continues to fall substantiahly. With a 3 percent growth rate the gap is below \$8 billion. Taking into account transfers, which are not included, and anticipating moderate growth in transfers the poverty income gap by this measure would effectively be zero by 1985.

The results with an income elasticity of .6 are quite different. The poverty income gap continues at above \$20 billion in each year under every growth rate assumption. The gap rises from \$21 billion to \$23 billion between 1973 and 1985 as a result of an increase in population. Although economic growth will reduce the percentage of families and individuals in poverty, if a somewhat elastic definition of poverty is used the size of the deficit does not decline.

The estimates do not project more rapid increases in income for the poor than the nonpoor. The experience from 1947 to 1973 was that a one percent increase in median family income was associated with a 1 1/4 percent increase in the average income of the poorest fifth of families when variations in economic conditions are held constant.⁹ A higher growth rate implies that a given amount of poverty reduction will come about in a shorter span of time. Such an assumption would make the declines with a zero elasticity even sharper. The calculations with an income elasticity of .6 show a roughly constant gap regardless of time period. These results are less sensitive to assumptions about the relative growth of incomes of the poor.

The poverty income gap even with a .6 elasticity, represents only 2 percent of the trillion dollar U.S. national income in 1973. A constant gap with rising income implies that the gap is a decreasing percentage; by 1985 the poverty income gap would be only 1 1/4 percent. If account were taken of unmeasured transfers the gap would be 1 percent of national income in 1985.

An Interpretation of the Income Elasticity of the Poverty Line

Studies of economic growth have found that a large proportion of the increase in output in the American economy is not attributable to increases in quantities of labor, machinery and skills (human capital) but rather is accounted for by a residual which represents technological progress and other factors. The results become even more dramatic when changes in output per capita rather than total output are considered. Table 2 presents findings of Denison's landmark study for the period 1929-1969. Denison indicates the proportion of economic growth which is accounted for by each major source of economic growth. The measure of growth shown is potential national income per person potentially employed. This measure abstracts from fluctuations in the rate of use of productive capacity.

The important distinction for the present purposes is between those sources of growth which are associated with gains accruing specifically to individual workers, owners of factories, land, etc., as a result of their own efforts and those sources which produce gains which are of general benefit to society as a whole. In the category of specific sources of growth are clearly changes in the quantity of labor, capital and land. Education also contributes to higher earnings in ways that are particularly related to the efforts of individuals rather than general societal forces. The category "improved resource allocation" contains two elements--the shift of labor from farms to nonfarm activities and the shift from self-employment to wage and salaried employment. In both cases there is presumed to be low productivity in the initial activity. Productivity increases as a result of shifts to more productive sectors as wage rates attract labor from agriculture and self-employment. The gains of geographic and occupational changes accrue to the employees as rewards for mobility.

There are two categories however which represent general rather than specific sources of economic growth. These are advances in knowledge and economies of scale. The gains from these sources are of such a nature that they accrue to the entire society rather than appearing as returns to specific workers, machines, etc. Between 1929 and 1969 46 percent of the growth of potential national income per person potentially employed was associated with advances in knowledge and other factors not directly owned and 18 percent was associated with economies of scale. In combination these general sources of growth accounted for 64 percent of growth. The figure was guite constant for the two sub-periods examined.

We can view the way in which we increase the poverty line over time as a statement regarding the extent to which the poor are expected to share in economic progress. Such a progress sharing criterion would raise the incomes of the poor in such a way as to give them approximately a six-tenths of a percent increase for every one percent rise in real income. The share of growth accounted for by general sources is very similar to the magnitude of the estimated income elasticity of the poverty line. Thus, such a criterion would appear to be consistent with public preferences.

Implications of Progress Sharing

The method by which gains from general sources of economic growth are distributed throughout the population depends on very different aspects of the economic structure than the distribution of gains from specific sources. The results are dependent upon the rate of inflation and the barriers to deflation.

If the price level in the economy falls over time at the same rate as productivity¹⁰ advances the gains from general sources of economic growth will accrue to all consumers who could purchase larger quantities of goods and services with a given number of dollars. The gains would go both to persons who were working and to persons who were retired or otherwise on fixed incomes. If prices do not fall when productivity rises, persons who are working will share in the benefits in the form of higher wage rates. However, persons receiving pensions and income maintenance payments will not automatically receive the gains from general sources of economic growth.

Over the years the American economy has built up a large inflationary bias. It has been considered acceptable to allow prices to drift upward because policies to lower inflation further would have serious effects on unemployment in an economy with wages and prices that are not fully flexible downward. As a result, the benefits of general sources of growth are obtained in the form of wage increases which exceed the rise in the price level. Population groups which receive income from transfer payments will not share in these gains unless policies are established to assure progress sharing.

If we accept the proposition that the growth in real income per capita attributable to general sources of productivity change should be shared generally, some very important implications follow. Within a range which we can now define it is no longer valid to view the costs of raising benefits under Social Security either as an unfair tax on the rest of society or as a philanthropic transfer which younger populations make to the aged from their resources on their own volition. Neither can most of the future claims on the Social Security trust funds be regarded as deficits. Instead, a substantial rise in benefit levels with rising real incomes is necessary simply to restore benefits which would have accrued to the aged automatically if the structure of institutions had allowed prices to fall with economic progress.

Sharing of general sources of economic progress implies an increase in Social Security benefits based on the change in the Consumer Price Index <u>plus</u> about three-fifths of the rate of change in real wage rates.¹¹ The actual rate of growth of the Social Security benefit rate for a retired worker was .8 percent per year between 1954 and 1974.¹² This is less than one-third of the 2.7 percent per year average increase in real median family income and only about half of the growth of real income per capita attributable to general sources.¹³ The notion of "progress sharing" contains direct implications as to the efficacy of paying for increases in Social Security benefits through taxation on current versus future generations. From a decision to share progress from general sources of productivity growth it follows that the distribution of current economic gains to the aged is a responsibility of current generations, not appropriately handled through a tax on future income growth. A consistent method of financing is implied.

Social Security taxes are collected by a uniform percentage tax on earnings up to a maximum level. The earnings limit above which earnings are not taxed is increased automatically with changes in the Consumer Price Index. If Social Security benefits were increased at threefifths of the rate of growth of output per worker it would be appropriate to raise the earnings limit to which the tax rate applies correspondingly. If the earnings limit were increased in an amount related to the rate of growth of productivity then revenues would rise so as to provide much of the funding required for a progress-sharing policy.

Similar considerations apply more simply to other groups dependent on transfer payments. A progress-sharing policy would automatically raise the benefits for the disabled under the Supplemental Security Income program and the benefits under Public Assistance by three-fifths of the rate of growth of productivity as well as by the rise in the cost of living. It should be noted that this is substantially less rapid than the rate of rise of Welfare benefit levels which occurred in the 1960s.

Such a policy would have significant implications for the introduction of work incentives into the Welfare system. If it does not become possible to increase work incentives by an earnings supplement or a substantial reduction in marginal tax rates then the basic guarantees under present programs are likely to continue for some time. If a policy is adopted of raising the benefit rates three-fifths as fast as increases in real per capita income, then as time goes by the guarantee level and the earnings levels provided in the marketplace will increasingly diverge. As a result the incentives to seek work will continue to rise and eventually become guite substantial. In the long run this provides a fallback position if Welfare reform does not produce the work incentives which are desired.

References

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- ¹Mollie Orshansky, "Recounting the Poor A Five Year Review," <u>Social Security Bulletin</u> (April, 1966), pp. 20-37.

²U.S.President, Economic Report of the President, 1964.

³For a discussion of recent efforts to update poverty standards in the Federal government see Bette Mahoney, "Review of Poverty and Income Distribution Statistics," <u>Statistical Reporter</u>, (January, 1974), pp. 117-121.

⁴Victor Fuchs, "Redefining Poverty and Redistributing Income," <u>The Public Interest</u>, 8, (Summer, 1967), pp. 88-95.

- ⁵Robert Kilpatrick, "The Income Elasticity of the Poverty Line," <u>The Review of Economics and Statistics</u>, 4, No. 3 (August, 1973), pp. 327-332. Kilpatrick explored the use of different time periods, the use of median and mean income and the use of current and permanent income measures.
- ⁶Variation in the rate of price change was dominated by the rapid inflation from 1946 to 1947 as wartime price controls were lifted. In order to test for this effect the regressions were rerun for the years 1948 to 1973. The income elasticity in those tests was slightly lower, .6, and none of the other variables approached significance.

⁷Figures may vary slightly due to rounding.

- ⁸In the official figures the gap is calculated from individual observations using separate poverty lines applicable to different poverty subgroups. Our measures are calculated from aggregate data and adjusted to conform with the figures derived on a detailed basis.
- ⁹Irving Leveson, <u>Poverty and Public Policy</u>, HI-2307-RR, Hudson Institute, July, 1975.
- ¹⁰Defined here as output per unit of total factor input.
- In the long run the rate of interest will depend on the rate of productivity advance while the principal will not. The three-fifths rate should therefore only be applied to the principal. The rate applied to benefits payments which contain both interest and principal would be somewhat different.
- ¹²The increase in the average benefit of retired workers was 2 percent per year. The average will rise because nearly retired workers will tend to have higher earnings than already retired workers as a result of the growth of earnings over time. The .8 percent figure excludes this effect.
- ¹³Future patterns can be expected to be quite different under current formulas. See Lawrence Thompson, "An Analysis of the Factors Currently Determining Benefit Level Adjustments in the Social Security Retirement Program," Technical Analysis Paper No. 1, Office of Income Security Policy, Office of the Assistant Secretary for Planning and Evaluation, U.S. Department of Health, Education and Welfare, September, 1974.

TABLE 1

RELATIONSHIP OF GALLUP MINIMUM INCOME* TO MEDIAN INCOME AND OTHER VARIABLES, AVAILABLE YEARS, 1947-1973

	Line	inear Logarit		ithmic
	Income Only	Variables	lncome Only	All Variables
Intercept	39.1	28.8	1.84	1.84
Median Income (hundreds of 1973 dollars)	.907 (.082)	.887 (.093)	.659 (.057)	.645 (.063)
Inflation Rate ^{**}		167 (.920)		.003 (.007)
Unemployment Rate ^{**}		2.154 (3.312)		.012 (.027)
Defense Expenditure Rate **		.411 (1.234)		.002 (.010)
R ²	.910	. 920	.919	.929
Durbin-Watson statistic	1.86	2.219	1.72	2.12

* 1973 dollars ** linear Note: Standard errors are in parentheses

TABLE 2

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PERCENTAGE DISTRIBUTIONS OF GROWTH RATES OF POTENTIAL NATIONAL INCOME PER PERSON POTENTIALLY EMPLOYED, ACCORDING TO SOURCE OF GROWTH, 1929-1969

	1929-48	1948-69	1929-69
Potential National Income Per Person Potentially Employed	100%	100%	100%
Sum of Advances in Knowledge and Economies of Scale	63	64	64
Advances in knowledge and not elsewhere classified	42	48	46
Economies of scale	20	17	18
Improved Resource Allocation	21	12	15
Farm	19	9	13
Non-farm self-employment	2	3	2
Education per worker	27	17	21
Labor input per worker, except education	- 5	-11	- 9
Capital per worker	- 5	20	11
Land per worker	- 4	- 2	- 3
Dwellings occupancy ratio	1	*	1
Irregular factors	1		0

*Closer to zero than .5 or -.5

Source: Edward Denison, <u>Accounting for United States Economic Growth</u>, 1929–1969, Washington: The Brookings Institution, 1974, Table 9.8.