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Source: *The Journal of Human Resources*, Vol. 23, No. 2 (Spring, 1988), pp. 211-221

Published by: University of Wisconsin Press

Stable URL: <https://www.jstor.org/stable/145776>

Accessed: 24-08-2018 18:27 UTC

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# The Definition and Measurement of Poverty

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**Aldi Hagenaars**  
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## ABSTRACT

*Both poverty research and social policy employ a variety of poverty definitions. The choice of one specific definition has major consequences for the resulting poverty population. This paper uses eight different definitions of poverty to determine who is poor, using a 1983 Dutch sample of more than 12,000 households. Poverty according to each of these definitions is compared over different subgroups. The relevance of the choice between definitions for social policy is shown by the presentation of poverty percentages according to the various definitions, which vary widely.*

## I. Introduction

The problem of defining and measuring poverty has received a lot of attention in the last decade. Two questions must be answered in poverty research. The first concerns the identification of the poor and the second concerns the aggregation of the poverty gaps of different individuals to establish an overall index of the extent of poverty. The problems involved in the identification of the poor, which have recently been described by Townsend (1979), Desai (1985), and Hagenaars

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[Submitted August 1986; accepted August 1987]

THE JOURNAL OF HUMAN RESOURCES • XXIII • 2

(1986), are the subject of this paper. Both poverty research and social policy employ a wide variety of poverty definitions. Basically, all definitions can be fit into one of the following categories:

- A. Poverty is having less than an objectively defined, absolute minimum.
- B. Poverty is having less than others in society.
- C. Poverty is feeling you do not have enough to get along.

Poverty according to the first category of definitions is absolute, poverty according to the second category is relative, and poverty according to the third category may be absolute or relative, or somewhere in between. Another difference between the categories is that the third category defines poverty subjectively, while the first and second define poverty to be an objective situation.

All poverty definitions in these three categories may result in different estimates of the determinants of poverty and the extent of poverty. Although some definitions can be argued to be preferable to others (see, e.g., Townsend 1979; Hagenaars and Van Praag 1985), the choice for a certain definition is often made on the basis of the pragmatic argument of availability of data, as a political decision, or on the basis of historical arguments. Usually, economic research or social policy uses just one of many possible definitions of poverty and disregards all others. What is lacking is a comparison of the consequences of applying different definitions on the number and composition of the population of poor. Thus in this paper we apply a variety of poverty definitions to one large dataset, a 1983 survey of more than 12,000 households in the Netherlands.<sup>1</sup>

By comparing poverty percentages for each of the definitions used, we are able to detect discrepancies and similarities between the different definitions of poverty. From this we can infer whether the poverty probability of certain social subgroups seems to be overestimated or underestimated according to each definition.

## **II. A Survey of Poverty Definitions**

A study of the distribution and extent of poverty usually starts with the assumption of a specific poverty line in terms of income. In this paper we will estimate the number and composition of poor according to various definitions of poverty that are not necessarily translated in terms of income level, but define poverty by some other proxy of welfare.

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1. A description of the survey is given in the appendix.

This approach has the advantage that individual differences in welfare, given the welfare proxy of the relevant definition, do not disappear by only taking income into account. It goes without saying, however, that a poverty definition must have some relationship with income; poverty definitions would be meaningless if they characterized as poor those households with high incomes as often as they characterized as poor those households with low incomes. Hence in most definitions income plays some role in determining whether a household is poor. The income-concept we use in this paper is the total after-tax household income, including income of partner and child-allowances.

The three categories of poverty definitions given in Section I may be further specified to include the following definitions:

### *A. Poverty Is Having Less than an Objectively Defined, Absolute Minimum*

#### *P1. Basic Needs Approach*

This method, used by e.g., Rowntree (1901) and Orshansky (1965), defines the absolute minimum in terms of "basic needs,"<sup>2</sup> such as food, clothing, and housing. It requires the assessment of a minimum amount necessary to meet each of these needs. These amounts are added up to arrive at a poverty line in terms of income. In the Netherlands, budget experts from the Social Services Administration in Leeuwarden have calculated a poverty line based on this approach. The poverty line is differentiated according to household composition. Of course, the poverty lines determined in this way will always be more or less arbitrary, because there never will be general agreement as to what basic needs are, and how high these minimal amounts should be.

#### *P2. Food/Income Ratio*

This poverty definition (Watts 1967; Love and Oja 1977), is based on the Engel Law which states that the ratio of food expenditures to income declines when income increases.<sup>3</sup> The situation of being at the absolute minimum is then expressed in terms of this ratio, for instance at  $\frac{1}{3}$ : every household spending more than one-third of the total household income on food is considered to be poor. Watts considered this definition to be a

2. Usually these basic needs are defined in terms of consumption goods. Sen (1985) suggests that poverty should be defined in terms of capabilities, rather than commodities. A poverty definition according to such an approach is absolute in terms of capabilities, but not necessarily in terms of consumption goods or income.

3. The poverty line of Orshansky (1965) also uses this ratio: the (minimum) costs of food are multiplied by the average food/income ratio in society.

natural solution to the problem of comparing households of different size and composition. For the application of this method to our data we have chosen the ratio to be 0.35.

### *P3. Fixed Cost/Income Ratio*

A related poverty index has become relevant in Dutch social policy, namely the ratio of fixed cost to total household income. The argument for this definition is that many low income households have experienced such an increase in their fixed cost, mainly due to the rising of energy prices, that even with fixed levels of income or social benefits their net disposable income has decreased significantly. The ratio of fixed cost to income which is generally associated with poverty in Dutch policy is 0.50.<sup>4</sup>

### *P4. Total Expenditure/Income Ratio*

A fourth definition in this category is found by defining a person as poor if his total expenditure cannot be paid for out of current income, i.e., if he must borrow money or spend savings in order to get along. In this situation the ratio of total expenditure to current income exceeds one.

In both the food-ratio and the fixed cost definition the choice of the ratio defining poverty is more or less arbitrary. Moreover, both definitions have the serious defect that they do not take into account economies of scale of different expenditure categories. Further, all three poverty definitions based on the ratio of expenditures to income can be criticized because they do not take into account that expenditures may vary because of differences in tastes rather than resources.

## ***B. Poverty Is Having Less than Others in Society***

This category includes two types of definitions based on theories of relative deprivation: one that is defined with respect to income (see, e.g., Abel-Smith and Townsend 1965; Rainwater 1969; and Miller and Roby 1974), and one that is defined with respect to various commodities. We confine our discussion to a commodity based measure.

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4. The expenditures that we have considered to be "fixed" in this respect include cost of housing, municipal levies, energy, insurance payments, telephone, public transport, educational cost, and expenditures on pets. These categories are chosen because the respondents in our survey indicated they would not cut down on these expenditures.

### *P5. Relative Deprivation with Respect to Various Commodities*

This definition (Townsend 1979), based on the concept of relative deprivation, defines households as poor when they are lacking certain commodities that are common in the society they are living in. A standard consumption pattern is chosen to represent society's common practice, and the more aspects of one's actual consumption practice differ from this standard, the higher one's deprivation is assumed to be. Hence a deprivation score is derived as the total number of times such a shortfall of standard consumption practice is observed.

We have operationalized this definition by defining an index that combines the deprivation of four durable consumption goods: car, color television, refrigerator and washing machine, and the expected replacement behavior of the respondents in case of a breakdown. A household scores 3 points on the deprivation index for each durable it does not possess, 2 points for each durable it possesses, but would or could not replace in case it breaks down, 1 point if the durable would be replaced by a second-hand, and 0 if it would be replaced by new. The higher the total score, the higher the household's deprivation. The household is defined to be poor if its score is higher than 4.

A drawback of this approach is, that the choice of the poverty threshold is rather arbitrary. Furthermore, some households, e.g., young, starting singles and couples can be expected to possess less durables without necessarily being poor.

### *C. Poverty Is Feeling You Do Not Have Enough to Get Along*

This category has been subdivided in income- and consumption-concentrated definitions.

### *P6. Subjective Minimum Income Definition*

Definitions of this type have been developed by Goedhart et al. (1977).<sup>5</sup> For this definition survey questions are used to observe the income level that people consider to be "just sufficient" for their household. If their actual income level is less than the amount they consider to be "just sufficient" they are said to be poor.

In our survey we asked for the amounts the households considered to

5. Applications and extensions of the method are found in Van Praag, Goedhart and Kapteyn (1980), Van Praag, Hagenaars and Van Weeren (1982), Van Praag, Spit and Van de Stadt (1982), Danziger et al. (1984), Colasanto, Kapteyn and Van der Gaag (1984), Hagenaars (1986).

be “sufficient” and “not sufficient” for their situation. Taking the geometric mean of these two amounts, we get a subjective minimum income that we may associate with “just sufficient.” Comparison with the actual household income puts the household in the category poor or nonpoor.

This subjective poverty definition is based on the assumption that the expressions “sufficient” and “insufficient” are associated with the same welfare levels by everybody.

#### *P7. Subjective Minimum Consumption Definition*

An approach reconciling the subjective poverty definitions and the basic needs definition is to ask people what they consider to be basic needs, and to let them specify how much they need to meet these basic necessities. In the survey we asked for the amount people consider to be minimally necessary for food. By comparing the actual amount spent on food by this household to this subjective minimum we may categorize the household as poor or nonpoor.

Along with the question whether “the minimum amount needed” is an unambiguous term, the fact that food is the only relevant expenditure category for the determination of poverty must be mentioned as an objection against this definition.

#### *P8. Official Minimum*

In addition to all definitions described above, the official minimum income level is an important measuring rod for comparison. If the actual household income is lower than or equal to the amount households receive when they are on social assistance, we deduct that people are poor according to the official definition.

### **III. Empirical Results**

In this section we compare the percentages of people who are poor according to different definitions. The section consists of two parts. First, we present poverty percentages within social subgroups according to all definitions. Second, we analyze how many people defined to be poor according to one definition are also poor according to another definition.

#### *A. Poverty Percentages in Social Subgroups*

In Table 1 the poverty-percentages are presented for different household types. Looking at the last line in the table, presenting the total percent-

**Table 1**  
*Poverty Percentages in Social Subgroups According to Different Indicators*

Social Subgroup	P1	P2	P3	P4	P5	P6	P7	P8
Single, working	7.5	6.6	26.5	22.9	42.4	12.1	32.7	4.7
One-parent family	32.3	32.6	23.7	40.6	21.6	39.9	30.8	26.1
Two-earner family	2.0	9.6	15.3	20.6	3.7	7.9	32.9	0.3
One-earner family	6.9	16.9	22.4	32.4	5.4	13.2	32.4	1.1
Nonworking family	34.7	37.4	24.1	40.4	12.1	35.6	36.2	20.1
Single, over 65	19.4	12.6	10.3	14.7	39.0	36.1	35.6	7.6
Not single, over 65	12.7	15.5	8.9	12.8	8.5	16.8	33.9	6.3
Total	10.9	14.0	17.8	23.5	13.6	15.0	33.5	5.7

P1: Basic needs definition

P2: Food ratio definition

P3: Fixed cost definition

P4: Total expenditure definition

P5: Durables index definition

P6: "Just sufficient" income definition

P7: Minimum food definition

P8: Official definition

ages of poor we see that the headcount ratio varies enormously over the definitions, from 5.7 percent according to the official definition to 33.5 percent according to the minimum food definition. Furthermore, we see that vast differences in poverty percentages are found for a household type according to different definitions, relative to the percentages for the total sample. If we first look at the working single persons, we see that the poverty percentage in this subgroup is about equal to the average poverty percentage according to the total expenditure ratio and the minimum food definition. It is less than average according to the basic needs, the food ratio, the subjective "just sufficient" income, and the official definition. Poverty in this subgroup is, however, much larger than average according to the fixed cost ratio, and the durables index. To a large extent, these differences illustrate the objections mentioned against the poverty-definitions in Section II. For example, the high poverty percentage for singles according to the durables-index may be accounted for by the fact that singles are often young persons who have not settled down yet or did so only recently and hence cannot be expected to own a whole array of durables. The high percentage of poor according to the fixed cost definition is due to the relatively high economies of scale of fixed cost, because



of which singles can be expected to have a rather high fixed cost ratio without necessarily being poor. A first conclusion from these figures seems to be that poverty definitions based on consumption behavior, like the food ratio and the durables index are no suitable poverty indices to use for all subgroups, although they may be useful for the analysis of poverty in standard families.

Having noticed this, we now try to determine which social subgroups are systematically more often in poverty than others, according to all definitions. Comparing the percentages in a number of different social subgroups (not all of which are shown in the table) with the mean percentages according to each definition, we see that one-parent families, non-working families, and aged singles almost always have poverty percentages above the mean, while two-earner families nearly always have a poverty percentage lower than the mean. Working single persons, one-earner families and households over 65 years of age take an intermediate position. With respect to the latter category, it is seen that although their poverty percentage is usually slightly above average, it is much lower than the percentages of the household types mentioned to be at large poverty risk. Hence a common characteristic of all household types with large poverty percentages is that they do not have a paid job.<sup>6</sup>

Furthermore, we conclude that the basic needs definition and the subjective "just sufficient" income definition are best able to identify social subgroups at high poverty risk. The indicator based on relative deprivation with regard to consumption is disqualified, as it is not able to distinguish poverty from health, taste or age as the reason for the observed consumption behavior. The remaining indicators, food-ratio, total expenditures, fixed cost ratio, minimum food, and the official minimum are also not able to identify all groups at high poverty risk.

### ***B. Overall Percentages of Poor According to Different Definitions***

In Table 2 we present poverty percentages that indicate to what extent poverty according to one index corresponds to poverty according to another. The table should be read as follows. In each cell  $c_{ij}$  we have given the percentage of people who are poor under definition  $i$  (given in the row), who are also poor according to definition  $j$  (given in the column). The first line of the table, for instance, indicates that of all households that are poor according to the basic needs definition, only 35.8 percent are also poor according to the food-ratio definition, and 35.4 percent according to

6. Of all one-parent families, which we did not differentiate according to employment, the majority has no paid job, or only a part time job, supplemented with social allowances to attain the official minimum income.

**Table 2**  
*The Coincidence of Poverty According to Different Indicators*

	P1	P2	P3	P4	P5	P6	P7	P8
P1	100.0	35.8	35.4	48.3	37.2	56.8	40.0	50.8
P2	27.6	100.0	18.7	56.0	18.2	31.6	25.5	16.2
P3	18.7	14.4	100.0	63.3	15.6	28.2	35.6	12.4
P4	17.9	31.6	47.2	100.0	9.9	27.6	33.0	11.2
P5	29.7	18.8	24.4	22.1	100.0	26.2	36.9	18.7
P6	35.9	27.7	38.0	49.1	20.9	100.0	37.6	24.7
P7	13.1	10.6	19.6	24.7	15.1	17.4	100.0	6.6
P8	97.9	40.4	45.8	61.9	44.5	73.8	39.4	100.0
Total	10.9	14.0	17.8	23.5	13.6	15.0	33.5	5.7

P1: Basic needs definition

P2: Food ratio definition

P3: Fixed cost definition

P4: Total expenditure definition

P5: Durables index definition

P6: "Just sufficient" income definition

P7: Minimum food definition

P8: Official definition

the fixed cost ratio. Slightly more than half of the people that are poor according to the basic needs definition are also poor according to the official definition. The largest correspondence is found with the subjective "just sufficient" income: 56.8 percent. The second line implies that of all people who spend more than 35 percent of their income on food, only 16.2 percent are poor according to the official definition. The largest correspondence is with the total expenditure ratio: 56.0 percent. Analogously the other figures in this table may be interpreted.

We may look at poverty indicators that correspond most to other indicators as probably being the better measures of poverty. We see that the official poverty definition and the basic needs definition have highest correspondence with other definitions. No percentage is less than 39.4 for the official definition, or less than 35.4 for the basic needs definition. Next comes the subjective definition based on "just sufficient" income, with 20.9 percent. We tentatively conclude that the official definition, the basic needs definition, and the subjective "just sufficient" income are best able to identify poverty. The differences between the poor according to these definitions remain very large, however. Hence the choice of one specific

definition from these four “best” definitions still can lead to very different conclusions.

## IV. Conclusions

Some poverty indicators are better qualified to identify the poor than others. One important finding of this paper is that indicators based on consumption behavior are unable to distinguish poverty from other causes of deviations from the norm, e.g., health, age, and household size. The coincidence of poverty according to various indicators is rather low. The choice of a specific poverty definition as the one and only measuring rod thus appears to have major consequences, both for the observed incidence of poverty and for the distribution of the poor over social subgroups.<sup>7</sup>

## Appendix

### *Description of the Data*

The dataset used in this research was collected in a rather unusual way. In cooperation with the Center for Research in Public Economics of Leyden University ten regional Dutch newspapers have included a questionnaire with a set of 67 questions in their Saturday edition in September 1983. About 20,000 households have returned this questionnaire. Although the resulting sample is not representative for the population as a whole, re-weighting yields a dataset that is comparable to most surveys obtained in a more traditional manner. In this paper a subset of about 12,000 households is used, for which most of the variables relevant to our analysis were observed.

## References

- Abel-Smith, Brian, and Peter Townsend. 1965. “The Poor and the Poorest.” *Occasional Papers on Social Administration* No. 17. London: Bell & Sons.
- Colasanto, Diane, Arie Kapteyn, and Jacques van der Gaag. 1984. “Two Subjective Definitions of Poverty: Results from the Wisconsin Basic Needs Study.” *Journal of Human Resources* 19(1):127–37.

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7. The latter conclusion is also reached by Van der Gaag and Smolensky (1982), who compared the characteristics of the poor using four poverty lines in terms of income with different equivalence scales and one poverty definition based on total consumption.

- Danziger, Sheldon, Jacques van der Gaag, Michael K. Taussig, and Eugene Smolensky. 1984. "The Direct Measurement of Welfare Levels: How Much Does It Cost to Make Ends Meet?" *Review of Economics and Statistics* 66(3):500–505.
- Desai, Meghnad, and Anup Shah. 1985. "An Econometric Approach to the Measurement of Poverty." London: Suntory Toyota International Centre for Economics and Related Disciplines.
- Goedhart, Theo, Victor Halberstadt, Arie Kapteyn, and Bernard M. S. Van Praag. 1977. "The Poverty Line: Concept and Measurement." *Journal of Human Resources* 12(4):503–20.
- Hagenaars, Aldi J. M. 1986. *The Perception of Poverty*. Amsterdam: North Holland Publishing Co.
- Hagenaars, Aldi J. M. 1987. "A Class of Poverty Indices." *International Economic Review*. Forthcoming.
- Hagenaars, Aldi J. M., and Bernard M. S. Van Praag. 1985. "A Synthesis of Poverty Line Definitions." *Review of Income and Wealth* 31(2):139–53.
- Love, Roger, and Gail Oja. 1977. "Low Income in Canada." *Review of Income and Wealth* 23(1):39–61.
- Miller, S. M., and Pamela Roby. 1974. "Poverty. Changing Social Stratification." In *The Concept of Poverty*, ed. P. Townsend, 124–45. London: Heinemann.
- Orshansky, Mollie. 1965. "Counting the Poor: Another Look at the Poverty Profile." *Social Security Bulletin* 28:3–29.
- Rainwater, Lee. 1969. "The Lower-Class Culture and Poverty-War Strategy." In: *On Understanding Poverty*, ed. D. P. Moynihan, 229–59. New York: Basic Books.
- Rowntree, B. S. 1901. *Poverty: A Study of Town Life*. London: Macmillan.
- Sen, Amartya K. 1985. *Commodities and Capabilities*. Amsterdam: North Holland.
- Townsend, Peter. 1979. *Poverty in the United Kingdom*. Harmondsworth: Penguin Books.
- Van der Gaag, Jacques, and Eugene Smolensky. 1982. "True Household Equivalence Scales and Characteristics of the Poor in the United States." *Review of Income and Wealth* 28(1):17–28.
- Van Praag, Bernard M. S., Theo Goedhart and Arie Kapteyn. 1980. "The Poverty Line. A Pilot Survey in Europe." *Review of Economics and Statistics* 62(3):461–65.
- Van Praag, Bernard M. S., Aldi J. M. Hagenaars and Hans Van Weeren. 1982. "Poverty in Europe." *Review of Income and Wealth* 28(3):345–59.
- Van Praag, Bernard M. S., Jan S. Spit, and Huib Van de Stadt. 1982. "A Comparison Between the Food-Ratio Poverty Line and the Leyden Poverty Line." *Review of Economics and Statistics* 64(4):691–94.
- Watts, Harold W. 1967. "The Iso-Prop Index: An Approach to the Determination of Differential Poverty Income Thresholds." *Journal of Human Resources* 2(1):3–18.