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The Distribution of Cash and Noncash Income in the Netherlands

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THE DISTRIBUTION OF CASH AND NONCASH INCOME IN THE NETHERLANDS, 1983

Paper prepared for the LIS Noncash Meeting in Rocca di Papa (Roma), August 23-29, 1987

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1. Introduction

During the past 25 years public sector outlays, expressed as a percentage of Gross Domestic Product, increased in all OECD member countries. The growth of public expenditure was mainly caused by a remarkable expansion of income transfer programs. Under such programs households (and private firms) are entitled to cash benefits and subsidies. In addition, the public sector organizes programs that give rise to noncash benefits. In the latter case households consume goods and services that are produced by or financed through the public sector, for less than the cost price. Another type of noncash benefits are employment-related remunerations like employer contributions to private pension schemes and health insurance. A last type of noncash benefits consists of non-monetary proceeds from household property, for instance income in the form of implicit rent of owner-occupied houses.

Usually national income statistics do not take into account noncash benefits, although these benefits enlarge the basket of goods and services that are available to households. For that reason official income statistics may present a misleading picture of the 'true' distribution of welfare among households. Moreover, the picture of trends in income inequality may be (seriously) distorted if the relative importance of noncash benefits has changed in the course of time. Finally, comparison of welfare over countries may be biased when noncash benefits are excluded from the analysis.

The above observations amply demonstrate the importance of research in the field of noncash benefits. In this paper the size distribution of a number of such benefits in The Netherlands in 1983 is described, using data from a representative national survey among households. Changes in the overall income distribution through such transfers will be analyzed.

The Social and Cultural Planning Bureau (SCP) of The Netherlands - a government agency - has paid attention to the distribution of noncash benefits off and on during the past ten years. Its best-known study in this area was published in 1981.[1] That 400-plus pages book offered a complete description of government noncash benefit programs in year 1977, using data from five representative national surveys. At the end of this year a follow-up report will be in print, describing the distribution of the most important noncash income components in 1983. This paper draws heavily upon results in the new report; however, some definitions have been adjusted and the presentation is tailored to suit the requirements of international comparability, as defined in the Luxemburg Income Studies (LIS).

The paper is organized as follows.
Section 2 sets out the conceptual framework. Special attention is paid to the delineation of income and household concepts. This section also specifies the noncash benefits which have been taken into account, and the total amounts involved in these programs in 1983.
Section 3 outlines the growth of selected noncash benefit programs over the past 15 years and relates the public outlays involved to Gross Domestic Product (GDP).
In Section 4 we describe the two data sets used.
The presentation of our results is organised in three sections.
Section 5 presents the distribution of aggregate noncash income components - totalling Dfl.73 billion (which equals 19.5 percent of GDP in 1983).[2]
Distribution of these income components of households is given by income class (20%-groups), by age (elderly versus non-elderly), and by household type (four types are distinguished). In addition, we give the distribution of noncash income components of persons by income class (20%-groups of persons).
Section 6 gives the average value of various income components for households, again by income class (20%-groups), by age and by household type. These results enable us to gauge the relative importance of noncash benefits, for households classified by income, age and type.
Next, Section 7 gives income distributions and measures of income inequality, both for all households and for categories defined by age and household type. These results enable us to trace part of the income redistribution which is effectuated through public sector intervention and employment-related noncash benefits, by comparing gross (cash) income, disposable (cash) income and final income (including noncash benefits) of households.
Section 8 summarizes our main results.

2. Conceptual framework

In imputing noncash benefits to income units (= households), a number of methodological problems have to be solved. We will first outline the definitions of 'household' and 'income' that are used throughout the paper (Section 2.1). Then we will discuss some methodological problems that arise in the valuation of noncash benefits (Section 2.2). Finally, we specify the noncash benefits that have been selected for imputation (Section 2.3).

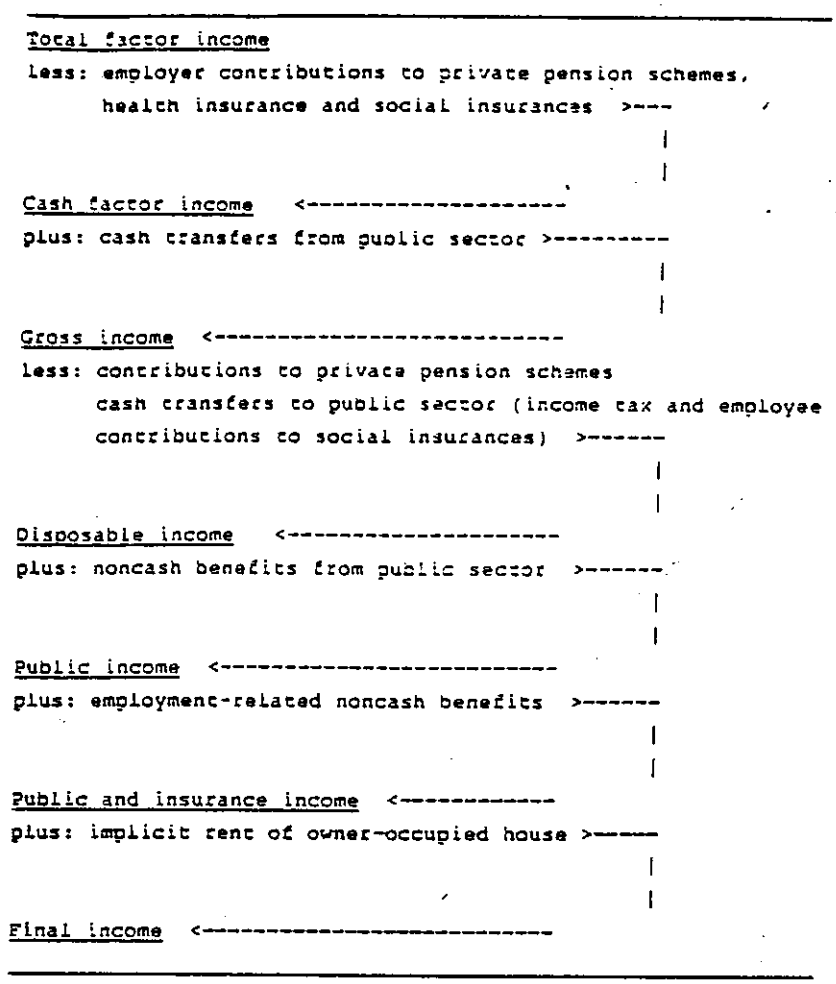
2.1 Household and income concept(s)

Noncash benefits have to be imputed to income units. Units may be persons or households. Although the emphasis in this Chapter is on the distribution of noncash benefits over households, we will also present some results on the distribution over persons (in Tables 5 and 11). A household is delineated in accordance with the regular definition of the Central Bureau of Statistics and defined as (1) a group of two or more persons living as a family together and sharing their housekeeping, and (2) single persons who independently keep their house. This definition differs from the US household definition in that not only family members are taken to be part of the household, but also people who live together without being married or related by family ties.
We will also present some distributions of aggregate noncash income over persons. To that purpose, all household incomes are first made comparable by the use of an equivalence scale. For each household we derive a factor of standardization (FS) by proceeding as follows:
(a) The first adult in the household is assigned a value of 0,5 and every other household member a value of 0.25. FS of a given household is equal to the sum of these values.
(b) Divide household income by SF; we then have equivalent income for each member of the household.

The position of households may be described using various characteristics, such as household income, the age of the head of the household, and the number of persons in the household. Three characteristics will be used to describe households and to rank them in our tables. For persons only the first two characteristics are used.
(1) Income of household. Income concepts are dealt with hereafter. Households are ranked into five income classes (20%-groups) on the basis of their disposable income.
(2) Age of head of household. Two categories are discerned: non-elderly (age below 65 years) and elderly (age 65 years and over).
(3) Composition of household. Four types of household are discerned: one adult (single) households, with and without children, and two adult (double) households, with and without children.

The income concepts which are used throughout this Chapter are summarized in Chart 1.

Chart 1 Schematic representation of income concepts used



Total factor income is equal to the sum of labor and capital income. Total factor income includes employer's contributions to private pension schemes, employer's social security taxes and employer's contributions to employee social insurance programs and health insurance schemes. After deduction of all these employer's contributions, we have (cash) factor income. Together with cash income transfers (received through the public sector) this results in gross (cash) income of households. After deduction of employee contributions to private pension schemes, employee social security taxes, contributions to employee social insurance programs and personal income tax due we have disposable income.

Next, we start adding various types of noncash benefits. First, noncash benefits which households receive through the public sector. This results in public income. Second, we add employment related noncash benefits. This results in public and insurance income. Please note the following important point. Only employer contributions to private pension schemes and health insurance schemes

are added to public income. Employer's contributions to (public) employee social insurance programs are not considered a noncash benefit of the employees concerned. The reason is that in The Netherlands social insurance programs are run on a pay-as-you-go basis. That is, outlays in any given year more or less equal revenues (from contributions) in that same year. Now, these same outlays constitute cash transfer income for households which receive social insurance benefits. As these benefits are already part of gross income of the households which receive them, including taxes and contributions in employees public and insurance income would be 'double counting'.
Our approach is different in the case of transfer programs which are financed by funding. In the case of The Netherlands all private pension schemes are funded. We reckon employers contributions to these schemes to constitute a noncash employment-related benefit; moreover we reckon private pension benefits to be a component of the gross (cash) income of households that receive them. Our main argument for this procedure boils down to the observation that pension benefits received are financed out of contributions in the past (of both employers and employees) and capital yields. As a consequence, seen over the life-time of the employed, there is only double counting as regards employer's contributions paid. Under a typical private pension scheme the latter contributions are far less than half of the value of benefits ultimately received. As it is extremely difficult, if not outright impossible, to correct for this factor, we have opted for the approach outlined above.
Finally, we add implicit rent of owner-occupied houses to the owners public and insurance income, to arrive at the final income of households. The (tax) treatment of owner-occupied housing will be dealt with in greater detail in subsection §2.3.

2.2 Quantification of noncash benefits: some methodological issues

To impute noncash benefits to households (persons) several crucial assumptions have to be made.
First, it is assumed that a household which receives benefits is the only income unit to benefit, disregarding externalities to other households or society at large. Admittedly, this is a rather strong assumption, as few would deny that good health care, adequate housing and a well functioning educational system do have important positive external effects. The reason to neglect externalities is a simple one: In many cases it is not clear to what degree other households benefit and quantification of the extent to which they benefit proves to be

practically impossible.

A second assumption is that the value of noncash benefits is equal to the amount of money that the public sector (or a private sector employer) spends on each item. It should be noted here that we do not take into account public expenditures on investment goods, but only 'current' expenditures, excluding overhead cost (as far as possible). This approach is taken for two reasons: (1) as investment expenditure may strongly fluctuate from year to year, assigning its total amount in the year of spending might produce a distorted picture, and (2) assigning the benefits of public investment expenditures during a number of years to households (in 1983) poses insuperable technical difficulties. If necessary, current public expenditures for goods and services are first divided by the total number of 'units of use' (for instance: pupils, hours of social services provided) to derive cost per unit of use (costs per pupil, per hour of social services). As we know from the surveys (to be described in Section 4) how many children in which households go to what type of school, how many hours of social services are consumed by each household, etcetera, it is possible to assign a value to the noncash benefits that households receive (in direct relation to the consumption of publicly provided goods and services).

By definition, the consumption of pure public goods like defence cannot be determined per individual household. We have chosen to disregard all publicly provided goods and services which have no identifiable individual consumers.

2.3 Selected noncash benefits

Medical services

In 1983 total consumption of medical services amounted to Dfl.33 bln. These cost were covered by public health insurance programs (Dfl.14.5 bln), by social security taxes (Dfl.9 bln), by private health insurance schemes and user fees (Dfl.8 bln) and out of general tax revenues (Dfl.1.5 bln). Due to lack of data, only Dfl.1 bln in medical consumption has been assigned to households, for services that are delivered under the ambulant mental health program (AGGZ) and district nursing (kruisweck). On the other hand Dfl.8.3 bln in employer contributions to finance the consumption of medical services have been taken into account as employment-related noncash benefits (see below). Annex A gives the distribution of medical consumption in 1977. Data are derived from the SCP study [1981].

Social services

In 1983 total consumption of social services amounted to Dfl.1.3 bln. The program - [gezinsverzorging] - is wholly tax-financed.

Housing

Our main dataset does not allow imputation of noncash benefits from public housing programs. The benefits from these programs will be assigned to households on the basis of the 1981 Housing Needs Survey (with over 60,000 households interviewed). In 1981 public subsidies to reduce the cost of newly-built dwellings amounted to Dfl.2.7 bln. We are not able to incorporate any results in this draft paper, as the work on this part of the project is not yet finished.

Education

In 1983 total public spending on education amounted to Dfl.26 bln. We assign Dfl.17.7 bln to households. This amount consists of outlays for primary education (Dfl.6.5 bln), secundary education (Dfl.6 bln) and education of persons of 18 years and over, mainly at universities (Dfl.5 bln). Some important spending categories that were left out of consideration consist of investment expenditures (Dfl.1.5 bln), student loans and grants (Dfl.1.5 bln) and the cost of research at universities (Dfl.1.6 bln).

Employment-related benefits: private pensions

Contributions to private pension schemes are determined with a microeconomic model (see Section 4 for details), using available data in the AVO'83 survey. The model contains three separate pension modules:
(1) one that simulates the pension scheme of civil servants;
(2) one that simulates the usual pension scheme of employees in the non-profit sector (hospitals, social services etcetera); and
(3) one that simulates an 'average' pension scheme for workers that are employed by private firms.[3] From the survey used we know the sector of employment of each employee. Each of the three modules determines both the employee and the employer contribution to the relevant pension scheme. Employer contributions constitute a noncash benefit for the households of employees concerned. In 1983 these benefits totalled Dfl.9.9 bln.

Employment-related benefits: health insurance

Contributions to public health insurance programs ('ziekenfondsverzekering'), to the social security tax for long-term hospital care ('AWBZ') and to various

private health insurance schemes are determined with a microeconomic model (see Section 4 for details), using available data from the AVO'83 survey. About half of all employees in private firms are covered by the public health insurance program (if in 1983 their gross wages did not exceed Dfl.46,550). The total contribution (a fixed percentage of gross wage) is shared by the employee and his employer on a fifty-fifty basis. The contribution of the employer is taxable income. Almost all recipients of social security, social insurance and social assistance benefits are also covered by this program. Most self-employed, about half of those employed by private firms and practically all civil servants are covered by private health insurance schemes. In most cases privately insured employees will receive a compensation from their employer. In contrast to the situation in the US, this compensation is taxable income (civil servants are also compensated for the tax due). Employer compensation is deemed equal to the maximum employer contribution under the public health insurance program (= Dfl.1,800 in 1983).[4] These various programs and schemes are represented in separate modules of our microeconomic model. Employer contributions to public health insurance programs and private health insurance schemes constitute an important noncash benefit. In 1983 these benefits totalled Dfl.8.3 bln.

Imputed and implicit rent of owner-occupied housing

In The Netherlands, as well as in other OECD member countries, the treatment of owner-occupied housing under the personal income tax gives rise to both theoretical and empirical problems. In 1983 taxpayers, in computing their taxable income, had to include a 'net imputed rent' in the tax base equal to 0.8 percent of the freehold value of their owner-occupied houses. Cost of maintenance, local taxes etcetera, were not deductible (with some minor exeptions which need not bother us here). However, interest on mortgage loans was (as it is at present) fully deductible.[5] As a result, most home owners have negative income from this source. In the balance, negative income from all owner-occupied housing amounted to an estimated Dfl.7.3 bln, or 2 percent of GDP, in 1983. The personal income tax that is forgone through this provision in the tax code runs into billions of guilders. The present tax treatment of owner-occupied housing is motivated by the explicit policy goal to stimulate home ownership. The program as it stands is a prime example of a tax expenditure program.

From the survey data the (estimated) freehold value of the property is known. Given this value, a 'realistic' net rent is determined, on the basis of a comparison with (gross and net) yield of rented property, that has more or less

the same quality. A realistic 'net implicit rent' on average comes to 2.9 percent of the freehold value.[6] This is the most likely yield (net of cost) when the owner-occupied house would be let to a third party. It follows that the present tax treatment of owner-occupied housing gives rise to a considerable tax expenditure, as 2.1 (2.9 minus 0.8) percent of the freehold value of owner-occupied houses is not taxed under the present tax regime.
In our tables we show both net imputed rent (= the amount taxpayers actually add to their taxable income) and net implicit rent (= the estimated 'realistic' amount taxpayers should add to their taxable income). We add net implicit rent (2.9 percent of freehold value) to public and insurance income to determine the final income of households.[7]

3. Trends in selected noncash benefits, 1965-1983

Table 1 Noncash income components in The Netherlands, 1965-1983

year	1965	1970	1975	1980	1983
Education					
Total public and private spending (Dfl.bln)	4.4	8.5	17.7	25.8	27.5
as a % of Net National Income	7.1	8.1	9.3	8.5	8.1
Health					
Health insurance (Dfl.bln)	1.4	3.1	7.3	12.0	14.4
Mental Health Care	0.0	0.0	0.1	0.4	0.5
Health Centers	0.0	0.1	0.3	0.5	0.7
Total spending on these programs	1.4	3.3	7.7	12.9	15.5
as a % of Net National Income	2.3	3.1	4.1	4.2	4.6
Housing					
Cash rent subsidies	0.0	0.0	0.4	1.0	1.6
Public Housing	0.2	0.3	1.3	2.2	2.8
Total spending on these programs	0.2	0.4	1.6	3.2	4.4
as a % of Net National Income	0.4	0.4	0.8	1.0	1.3

4. Data

Data are mainly taken from the 1983 Supplementary Survey of Program Users (SSPU'83). This survey, which numbers nearly six thousand households, was organised by SCP in October 1983. Important missing data (for instance about

contributions to private pension schemes and personal income tax due) are calculated with a microeconomic model, using available data from SSPU'83, and have been added to the survey data. [pm]

To impute benefits from public spending on housing we use data from the 1981 Housing Needs Survey. [pm]

5. Distributions of noncash benefits, 1983

In 1983 the value of aggregate noncash income in The Netherlands amounted to some Dfl.73 billion, or 19.5% of GDP. In this section we describe how this amount is distributed over household and persons. The distribution of noncash income over households is presented by income class (Table 2), by age (Table 3) and by household type (Table 4). The distribution of noncash income over persons is presented by income class only (Table 5). All tables have a similar format: the distribution of in-kind transfers (part A), employment-related benefits (part B), private housing income in-kind (part C) and total noncash income (part D) is given separately.

In Table 2 the distribution of aggregate noncash income is given by 20%-groups; households are ranked by their disposable income. Public expenditure on education constitutes by far the largest item (Dfl.17.7 bln). Households in the first 20%-group receive a relatively small amount of these outlays (10%), whereas half of total outlays for education is received by households in the fourth and fifth 20%-group. This size-distribution is largely explained because households with children of school-age are overrepresented in the highest income classes. Of the in-kind transfers for medical and social services (Dfl.2.3 bln) a large part is received by households in the first 20%-group (30% and 46% respectively).

The employment-related benefits consist of employer contributions to the financing of private pensions, health insurance and the social insurances. As the employer contributions to health insurance and social insurances are a fixed percentage of wages paid (with a cap), households in the the higher 20%-groups receive larger benefits from this source. It is obvious, however, that an allocation of benefits received on the basis of the actual use of these insurance schemes would yield a completely different distribution over income classes, as was clearly shown in the SCP-study "Profijt van de Overheid in 1977".

In-kind income from home-ownership is calculated at 0.8% (net imputed rent) and 2.9% (net implicit rent) of the freehold value of the house respectively. Total value of this income component amounts to Dfl.2.3 bln and Dfl.9.4 bln respectively. As a result of the distribution of home-ownership and house values, we find that the lion's share accrues to higher income households. Over one third of in-kind income from home-ownership benefits the highest 20%-group, while the amount accruing to the lowest 20%-group is almost negligeable.
Finally, part D of Table 2 adds up all different types of noncash income to arrive at an aggregate value of in-kind income per 20%-group. The share in total noncash income (Dfl73.1 bln) increases over income classes: whereas the first 20%-group receives a total of Dfl.4.7 bln (6%), the highest 20%-group receives over Dfl.21 bln (29%. On the other hand, if expressed as a percentage of (average) gross household income, in-kind benefits are most important for households in the lower 20%-groups. Relatively speaking, households in the second 20%-group benefit most: on average aggregate value of noncash income amounts to over one-third of gross household income. This compares to 17% for households in the fifth 20%-group.
Total aggregate value of noncash benefits is equal to 23.7% of total gross household income. We conclude that noncash income components are of considerable importance, and that the overall income distribution may change considerably, when the distribution of noncash components is taken into account. We will return to this point in Section 7.

We now turn to the distribution of noncash income by age-group. Table 3 presents the aggregate value of noncash income in two broad groups: the elderly (head of household 65 years of age or over) and the nonelderly (all other households). Of all households, 21% belongs to the category of the "elderly".
Again, we first look at in-kind transfers. As is to be expected, the elderly receive a relatively large part of the benefits in the form of medical services (30%), and social services (62%). Education benefits, on the other hand, accrue nearly completely to nonelderly households (99%).
The distribution of employment-related benefits over elderly and nonelderly depends even more than the distribution over income classes on the imputation method chosen. In Table 3, where benefits are allocated in line with employers contributions to the financing of private pensions, health insurance and social insurances, benefits accrue nearly completely to the nonelderly. If, however, the actual receipt of pension payments and the use of medical services would be the criterion, rather than contributions to the system, the elderly would

benefit most from the health insurance system. This is demonstrated in Annex A. The explanation is that the (large) deficit of the health insurance fund for the elderly is supplemented by a transfer out of the mandatory health insurance fund for the nonelderly, which results in a considerable redistribution of income over both age-groups.
Hence, conclusions as regards the distributional effect of this particular form of noncash benefits depend heavily on the type of imputation routine used.
Part C of Table 3 gives the aggregate value of in-kind benefits from home-ownership, both for the elderly and the nonelderly. Nonelderly households benefit considerably more, due to the fact that the elderly are more often renters than the nonelderly, and, when home-owners, live in less expensive houses. The benefits for the nonelderly accrue mainly to the middle-aged; young households benefit relatively little, as they own less frequently their house. houses.
Adding up income in-kind from various sources, we see that over Dfl.70 bln out of total outlays of Dfl.73.1 are received by the nonelderly (on average 26.4% of gross household income). Once again, it should be pointed out that this result depends to a large extent on the imputation procedure used for employment-related benefits.

In Table 4 the aggregate value of noncash benefits is shown for different household types. Household types are distinguished according to the presence of children (no kids/with kids) and the number of "adults" ("single" is used to denote one adult, "double" to denote two or more adults). The distribution of the four household types shows that 36% of all households consist of two or more adults without children, 34% of two or more adults with children, and 27% of single persons; one-parent families form 3% of the total population.
From Table 4 it becomes clear that single persons benefit from Health Centers for an amount equal to that of families with children: this is probably due to the relatively large percentage of elderly among this household type. This also explains the relatively large benefit single persons receive in the form of using social services. Benefits from education, however, accrue mainly to households with children, as would be expected.
Employment-related benefits do not show a very consistent pattern over household type. Noncash income in the form of imputed rent, however, is received substantially more by households with children than by single persons and one-parent families.
Adding up all noncash income components by household type, it appears that more

than half of all benefits are received by households with children, who also have the highest percentual share (29.2% of gross income). The lowest amount (in absolute terms) is received by single persons, whereas the lowest percentual share is received by two- or more person households without children. This latter household type numbers relatively most two-earner households, which results in a relatively high gross income.

In Table 5, the distribution of aggregate noncash income components over persons is presented. To that purpose, all household incomes are first made comparable by the use of an equivalence scale (see Section 2.1 for details). Then all persons in these households are classified into 20%-groups on the basis of this equivalent disposable household income. Table 5 may be compared to Table 2, where households were classified into 20%-groups on the basis of their unadjusted household income. We find that the relatively large benefit of medical services by households in the lowest 20%-groups disappears when looking at persons, and diminishes for social services. The distribution of benefits from education changes completely: instead of the highest 20%-groups of households, now the lowest 20%-groups of persons benefit most from education outlays. These changes are due to the fact that household size and household income are positively correlated, and the equivalence scale used gives equal weight to each additional person in the household.
The rising value of employer contributions to health insurance over income classes, found for households, is found for persons as well. The same holds for the value of imputed and implicit rent for owner-occupied housing.
The total value of noncash benefits for 20%-groups of persons is much more equally distributed than the noncash benefits for households. The percentual share [pm]

Table 2 Aggregate noncash income, by 20%-groups, households, 1983 (%)

	20%-groups disposable income					total	
	1	2	3	4	5	(%)	(Dfl. bln)
A. In-Kind Transfers							
medical benefits a)	30	20	20	20	10	100	1.0
social services benefits b)	46	8	15	15	8	100	1.3
housing benefits							
education benefits	10	18	22	25	25	100	17.7
B. Employment-related benefits							
discretionary contributions	3	18	22	26	31	100	18.2
(private pensions)	1	17	21	27	33	100	9.9
(health insurance)	5	18	23	24	29	100	8.3
mandatory (public) contributions	4	19	22	25	29	100	25.5
(social security)	5	19	22	25	28	100	19.8
(employee social insurance)	2	18	23	26	33	100	5.7
C. Private housing income in-kind							
imputed rent c)	4	13	17	22	39	100	2.3
implicit rent d)	5	12	20	23	38	100	9.4
D. Total noncash income (A+B+C) e)	6	17	22	25	29	100	73.1
as % of gross income	32	37	30	24	17	24	
(Dfl. per household)	0000	0000	0000	0000	0000	100	0000

a) AGGZ and Kruiswerk.

b) Gezinsverzorging.

c) Imputed rent is part of taxable income.

d) Estimated at 2.9% of freehold value.

e) The amounts of A, B and the implicit rent of C.

Source: AVO'83

Table 3 Aggregate noncash income, by age, households, 1983 (%)

	elderly	nonelderly	total	
			(%)	(Dfl. bln)
number of households (%)	21	79	100	
A. In-Kind Transfers				
medical benefits a)	30	70	100	1.0
social services benefits b)	62	38	100	1.3
housing benefits				
education benefits	1	99	100	17.7
B. Emplovment-related benefits				
discretionary contributions	3	97	100	18.2
(private pensions)	0	100	100	9.9
(health insurance)	6	93	100	8.3
mandatory (public) contributions	0	100	100	25.5
(social security)	0	100	100	19.8
(employee social insurance)	0	100	100	5.7
C. Private housing income in-kind				
imputed rent c)	13	87	100	2.3
implicit rent d)	12	88	100	9.4
D. Total noncash income (A+B+C) e)	4	96	100	73.1
as % of gross income	7	26	24	
(Dfl. per household)	0000	0000	100	0000

a) AGGZ and Kruiswerk.
b) Gezinsverzorging.
c) Imputed rent is part of taxable income.
d) Estimated at 2.9% of freehold value.
e) The amounts of A, B and the implicit rent of C.

Source: AVO'83

Table 4 Aggregate noncash income, by type of household, households, 1983 (%)

	household type				total	
	single person	single person w/kids	double no kids	double with kids	(%)	(Dfl. bln)
number of households (%)	27	3	36	34	100	
A. In-Kind Transfers						
medical benefits a)	40	0	20	40	100	1.0
social services benefits b)	46	0	23	23	100	1.3
housing benefits						
education benefits	10	7	8	76	100	17.7
B. Employment-related benefits						
discretionary contributions	12	2	38	48	100	18.2
(private pensions)	10	1	37	53	100	9.9
(health insurance)	14	2	40	43	100	8.3
mandatory (public) contributions	12	2	40	46	100	25.5
(social security)	13	3	40	45	100	19.8
(employee social insurance)	11	2	39	51	100	5.7
C. Private housing income in-kind						
imputed rent c)	9	0	35	52	100	2.3
implicit rent d)	11	1	35	52	100	9.4
D. Total noncash income (A+B+C) e)	12	3	31	54	100	73.1
as % of gross income	26	29	17	29	24	
(Dfl. per household)	0000	0000	0000	0000	100	0000

a) AGGZ and Kruiswerk.

b) Gezinsverzorging.

c) Imputed rent is part of taxable income.

d) Estimated at 2.9% of freehold value.

e) The amounts of A, B and the implicit rent of C.

Table 5 Aggregate noncash income, by 20%-groups, persons, 1983 (%)

	20%-groups equivalent disposable income					total	
	1	2	3	4	5	(%)	(Dfl. bln)
A. In-Kind Transfers							
medical benefits a)	20	20	20	20	10	100	1.0
social services benefits b)	31	31	8	23	8	100	1.3
housing benefits							
education benefits	33	21	20	16	10	100	17.7
B. Employment-related benefits							
discretionary contributions	p.m.					100	
(private pensions)	p.m.					100	
(health insurance)	11	17	22	23	28	100	8.3
mandatory (public) contributions	p.m.					100	
(social security)	p.m.					100	
(employee social insurance)	p.m.					100	
C. Private housing income in-kind							
imputed rent c)	9	13	17	22	35	100	2.3
implicit rent d)	11	15	17	22	34	100	9.4
D. Total noncash income (A+B+C) e)	p.m.				100		
as % of money income	p.m.					..	
(Dfl. per household)	p.m.					100	

a) AGGZ and Kruiswerk.
b) Gezinsverzorging.
c) Imputed rent is part of taxable income.
d) Estimated at 2.9% of freehold value.
e) The amounts of A, B and the implicit rent of C.

Source: AVO'83

6. Average value of noncash benefits, 1983

In this section we describe the average amounts or various noncash benefits, in relation to the average value of various income concepts. Amounts are given for households by 20%-groups, (Table 6), age (Table 7), and household type (Table 8). In Table 6 the average value of the various income concepts (introduced in Section 2.1) is presented, both for the total population and for five 20%-groups of households. In addition, the ratio of average income in the highest 20%-group to average income in the lowest 20%-group is given. Table 6 shows that in 1983 average gross household income amounted to Dfl.66.335, ranging from Dfl.16,012 in the first 20%-group to Dfl.136,534 in the highest 20%-group. The ratio of average gross income in the fifth to that in the first 20%-group comes to 8.5. The average value of taxes and employee contributions to private pension schemes, health insurance and the social insurances is a higher proportion of gross income as gross income rises. The redistributive effect of taxes and employee contributions shows up in the more equal distribution of disposable incomes, as reflected by the high/low ratio of 6.7. Of the in-kind transfers allocated, education benefits higher income classes most. As the total value of in-kind transfers is much more equally distributed than disposable income, the distribution of public income is more equal than the distribution of disposable income. This does not alter when employment-related benefits are taken into account. When we move from public and insurance income to final income, by adding the value of the implicit rent for owner-occupiers, the income distribution gets slightly more unequal (the high/low ratio goes up from 5.8 to 5.9).
Whereas, however, the total effect of moving from gross income to final income for the fifth 20%-group is an income loss of almost 40,000 guilders, the total effect in the first 20%-group is an increase of some 500 guilders. The average value of all income in-kind is about 8,000 guilders per household. In absolute terms higher income classes benefit most from noncash income components; in percentual terms of gross or disposable income the lowest 20%-groups benefit most.

In Table 7 the average values of income (components) are presented for elderly and nonelderly households separately. It appears that the elderly have a lower average income, according to each income definition used. The largest income differential regards gross income: average gross household income of the elderly amounts to no more than .58 of nonelderly gross household income. The

elderly/nonelderly ratio slightly improves when moving from gross income to final income: whereas nonelderly households are more heavily charged by taxes, resulting in an improved disposable income for the elderly, all noncash components - as imputed here - work together to destroy this redistributive effect. Again, however, it should be noted that this result is due to the particular imputation procedure used.

In Table 8 the average values of income (components) are presented by household type. Gross income of single persons is lowest of all household types, followed by that of one-parent families. Highest gross incomes are found for families with kids. This household type, in spite of paying the highest absolute amount of taxes, is also best off in terms of disposable income. One-parent families pay less taxes than any other household type as a percentage of gross income. A large noncash benefit is received by households with children, because of public expenditure on education. In addition, these households receive the largest average amounts of employment-related benefits and imputed rent from owner-occupied houses. The total average amount of noncash income for this household type comes to about Dfl.14,000. One-parent households receive on average some Dfl.11,000. The amount received by the other household types is much smaller; single persons receive about Dfl.4,000 and other households without children some Dfl.5,000.
As a percentage of disposable income, noncash benefits are highest for one-parent families, followed by other households with children.

Table 6 Average value of income (components), by 20%-groups, households, 1983 (1000 Dfl.)

income concepts and components	20%-groups disposable income					total	highest/ lowest-20%-group ratio
	1	2	3	4	5		
Gross income e)	16.0	36.9	58.0	84.2	136.5	66.1	8.5
- taxes f)	3.3	11.8	15.5	18.6	30.2	15.9	9.1
Disposable income	12.8	24.9	39.0	55.5	85.6	43.6	6.7
+ in-kind transfers	2.8	3.7	4.7	5.2	5.1	4.3	1.8
(medical transfers) a)	0.3	0.2	0.2	0.2	0.2	0.2	0.5
(social services transfers) b)	0.7	0.1	0.2	0.3	0.1	0.3	0.2
(housing transfers)							
(education transfers)	1.8	3.4	4.2	4.8	4.8	3.8	2.7
Public income	15.6	28.6	43.7	60.7	90.7	47.9	5.8
+ discretionary employ-related benefits	0.5	1.7	2.0	2.2	2.6	1.8	5.6
(health insurance)	0.5	1.7	2.0	2.2	2.6	1.8	5.6
Public & insurance income	16.1	30.3	45.7	62.9	93.3	49.6	5.8
+ other income in-kind	0.5	1.2	2.0	2.4	3.9	2.0	7.4
(imputed rent) c)	0.1	0.3	0.5	0.6	1.0	0.5	7.5
(implicit rent) d)	0.5	1.2	2.0	2.4	3.9	2.0	7.4
Final income	16.6	31.4	47.7	65.4	97.2	51.7	5.9

a) AGGZ and Kruiswerk.

b) Gezinsverzorging.

c) Imputed rent is part of taxable income.

d) Estimated at 2.9% of freehold value.

e) «Gross income» = «cash factor income» plus cash transfers. This seems to be more or less equal to the US concept of «Census income». The Netherlands do not have this concept.

f) Income tax and employee contributions for pension, health care and social security.

Source: AVO'83

Table 7 Average value of income (components), by age, households, 1983 (1000 Dfl.)

income concepts and components	elderly	nonelderly	total	elderly/ nonelderly-ratio
number of households (%)	21	79	100	
Gross income e)	42.5	72.8	66.3	0.58
- taxes f)				
Disposable income	31.2	46.9	43.6	0.66
+ in-kind transfers	1.2	5.2	4.3	0.24
(medical transfers) a)	0.3	0.2	0.2	1.94
(social services transfers) b)	0.8	0.1	0.3	6.15
(housing transfers)				
(education transfers)	0.1	4.8	3.8	0.01
Public income	32.4	52.1	47.9	0.62
+ discretionary employ-related benefits	0.6	2.1	1.8	0.26
(health insurance)	0.6	2.1	1.8	0.26
Public & insurance income	33.0	54.2	49.7	0.61
+ other income in-kind	1.1	2.3	2.0	0.49
(imputed rent) c)	0.3	0.6	0.5	0.47
(implicit rent) d)	1.1	2.3	2.0	0.49
Final income	34.1	56.5	51.7	0.60

a) AGGZ and Kruiswerk (district nursing).
b) Gezinsverzorging.
c) Imputed rent is part of taxable income.
e) «Gross income» = «cash factor income» plus cash transfers. This seems to be more or less equal to the US concept of «Census income». The Netherlands do not have this concept.
f) Income tax and employee contributions for pension, health care and social security.

Source: AVO'83

Table 8 Average value of income (components), by type of household, households, 1983 (1000 Dfl.)

income concepts and components	household type				total
	single no kids	single with kids	double no kids	double with kids	
number of households (%)	27	3	36	34	100
Gross income e)	27.5	48.8	78.6	86.3	66.3
- taxes	7.5	7.6	18.0	21.3	15.9
Disposable income	19.3	34.9	51.5	55.6	43.6
+ in-kind transfers	2.1	8.3	1.2	8.9	4.3
(medical transfers) a)	0.3	0.3	0.1	0.2	0.2
(social services transfers) b)	0.5	0.2	0.2	0.2	0.3
(housing transfers)					
(education transfers)	1.3	7.8	0.9	8.5	3.8
Public income	21.4	43.2	52.6	64.5	47.9
+ discretionary employ-related benefits	0.9	1.0	2.0	2.3	1.8
(health insurance)	0.9	1.0	2.0	2.3	1.8
Public & insurance income	22.3	44.2	54.7	66.8	49.6
+ other income in-kind	0.8	0.9	2.0	3.1	2.0
(imputed rent) c)	0.2	0.2	0.5	0.8	0.5
(implicit rent) d)	0.8	0.9	2.0	3.1	2.0
Final income	23.1	45.1	56.7	69.9	51.7

a) AGGZ and Kruiswerk.

b) Gezinsverzorging.

c) Imputed rent is part of taxable income.

d) Estimated at 2.9% of freehold value.

e) «Gross income» = «cash factor income» plus cash transfers. This seems to be more or less equal to the US concept of «Census income». The Netherlands do not have this concept.

f) Income tax and employee contributions for pension, health care and social security.

Source: AVO'83

7. Redistribution through noncash benefits, 1983

The previous two sections showed that the distribution of income over households or persons may differ substantially, depending on the income concept used. In this section some conventional inequality measures will be applied to the distribution of income according to the various definitions used throughout this paper. Table 9 presents shares of 20%-groups, Gini ratio's and Theil coefficients, both for all households jointly, and for separate household categories, differentiated according to age and household type. All inequality indices used, measure that the income distribution becomes increasingly more equal when moving from factor income via gross income to disposable income. However, when all noncash income is added to move from disposable income to final income, inequality increases again. The Gini ratio of final income for all households is equal to the Gini of gross income, indicating that all redistributive impact of taxes is annihilated by the distributional impact of noncash benefits.
The shares of 20%-groups show that this must be due to an increasing income share of the second and third 20%-group, as the share of the highest 20%-group decreases.
For the distribution of income amongst the elderly, the difference between disposable and final income is small; the latter is slightly more equal. For the nonelderly a reverse pattern is seen: the income distribution on the basis of final income is slightly more unequal then the distribution of disposable income. As a large number of elderly households have zero factor income, the inequality indices for this income concept are extremely high for the elderly. When looking at the distribution differentiated according to household type, we see that noncash benefits reduce income inequality amongst single persons and one-parent households. A small increase in inequality, however, is found for other households without children. The same effect, but stronger, results for families with children: the Gini ratio increases from .25 to .29 when applied to final, instead of disposable income.

In Table 10 the distribution of income according to various income definitions is presented for equivalent household incomes, applying the LIS-equivalence scale introduced in Section 2.1.
It is seen that the distribution of equivalent household income becomes more equal when noncash benefits are taken into account. When differentiating according to age, the pattern for the elderly is the reverse from the

non-adjusted income distribution: The distribution becomes slightly more unequal, when noncash benefits are included in income. The nonelderly, on the other hand, now show a decrease of income inequality. These effects are due to the fact that a large part of noncash benefits, (viz. education) is related to the presence of children. This also shows in the distribution according to household type, where families with children now show a decrease in income inequality. This holds even stronger for one-parent families. The only household type that still shows a slight increase in income inequality when moving from disposable income to final income is the more-person household without children.

We conclude this section by a discussion of Table 11, containing the distribution of equivalent incomes over persons for all income definitions. It is seen that the distribution for all persons is less unequal than the distribution over households, and that the same pattern is found for various income concepts: (equivalent) disposable income is much more equally distributed than factor income and gross income, but final income is again slightly more unequally distributed over persons. The difference between the distribution of gross income and final income for the elderly is very large, whereas the difference for the nonelderly in tiny. For the elderly the distribution of equivalent final income is again slightly more unequal than the distribution of equivalent disposable income.

Table 9 Income distributions and measures of income inequality, by age and household type, households, 1983

	20%-groups disposable income					total	Gini ratio	Theil coeff
	1	2	3	4	5			
A. ALL HOUSEHOLDS a)								
total factor income	1	10	17	26	45	100	.50	.45
factor income	1	10	16	26	47	100	.52	.51
gross income	5	11	18	25	41	100	.37	.23
disposable income	6	11	18	26	39	100	.34	.19
final income	6	12	18	25	38	100	.37	.22
B. AGE								
Elderly households								
total factor income	1	3	17	34	45	100	.80	1.32
factor income	0	3	16	34	47	100	.81	1.45
gross income	17	12	20	23	28	100	.44	.32
disposable income	20	13	20	22	25	100	.38	.24
final income	22	13	20	21	24	100	.38	.23
Nonelderly households								
total factor income	1	11	17	26	46	100	.41	.30
factor income	1	10	16	26	47	100	.44	.36
gross income	3	11	17	26	43	100	.34	.19
disposable income	3	11	18	26	42	100	.32	.17
final income	4	12	18	26	40	100	.34	.19
C. HOUSEHOLD TYPE								
Singles, no kids								
total factor income	14	46	24	10	6	100	.72	.99
factor income	11	46	25	10	7	100	.75	1.18
gross income	33	36	19	7	5	100	.38	.26
disposable income	37	34	18	7	5	100	.33	.20
final income	41	32	16	6	5	100	.30	.16
Singles, with kids								
total factor income	3	11	29	27	30	100	.59	.62
factor income	1	10	30	29	32	100	.65	.82
gross income	12	16	28	23	21	100	.34	.19
disposable income	12	17	29	23	20	100	.31	.15
final income	13	19	29	21	18	100	.29	.13
Doubles, no kids								
total factor income	0	5	17	27	50	100	.44	.35
factor income	0	6	16	27	51	100	.47	.41
gross income	2	8	19	27	45	100	.30	.14
disposable income	2	8	20	27	43	100	.27	.11
final income	2	8	20	27	42	100	.27	.12
Doubles, with kids								

total factor income	0	8	15	28	49	100	.31	.17
factor income	0	7	15	28	50	100	.35	.20
gross income	0	8	15	29	48	100	.27	.12
disposable income	0	8	16	29	46	100	.25	.10
final income	0	10	17	29	44	100	.29	.13

a) Income concepts are defined in Diagram 1.

Source: AVO'83

Table 10 Income distributions and measures of income inequality, by age and household type, households, 1983

	20%-groups equivalent disposable income					total	Gini ratio c)	Theil coeff c)
	1	2	3	4	5			
A. ALL HOUSEHOLDS a)								
total factor income	5	10	18	26	40	100	.49	.44
factor income	4	10	18	26	42	100	.52	.51
gross income	7	12	18	25	38	100	.34	.19
disposable income	8	12	18	25	36	100	.31	.16
final income	10	13	19	24	34	100	.30	.14
B. AGE								
Elderly households								
total factor income	1	3	9	28	59	100	.79	1.29
factor income	0	3	8	28	61	100	.81	1.43
gross income	11	13	13	23	40	100	.38	.24
disposable income	13	15	14	23	36	100	.31	.16
final income	14	16	14	22	35	100	.32	.17
Nonelderly households								
total factor income	5	11	19	26	39	100	.41	.29
factor income	4	10	18	26	41	100	.44	.36
gross income	6	12	19	26	38	100	.32	.18
disposable income	7	12	19	26	36	100	.30	.15
final income	9	13	20	25	34	100	.29	.13
C. HOUSEHOLD TYPE								
Singles, no kids								
total factor income	5	14	39	27	14	100	.71	.98
factor income	4	12	39	28	17	100	.75	1.18
gross income	15	22	30	19	13	100	.36	.23
disposable income	18	25	29	18	11	100	.29	.17
final income	23	24	27	17	10	100	.25	.12
Singles, with kids								
total factor income	7	10	19	30	34	100	.59	.62
factor income	5	8	19	31	36	100	.67	.96
gross income	16	16	19	24	24	100	.32	.17
disposable income	18	17	20	24	22	100	.29	.13
final income	22	18	19	22	19	100	.23	.09
Doubles, no kids								
total factor income	1	5	11	23	59	100	.44	.35
factor income	1	5	11	23	60	100	.47	.41
gross income	3	7	12	24	55	100	.30	.15
disposable income	4	7	12	24	53	100	.27	.12
final income	4	7	13	24	52	100	.28	.12

Doubles, with kids								
total factor income	7	14	21	29	30	100	.34	.19
factor income	7	13	20	29	31	100	.35	.22
gross income	8	14	21	28	29	100	.29	.14
disposable income	8	14	22	28	28	100	.27	.12
final income	10	16	22	27	26	100	.26	.11

a) Income concepts are defined in Diagram 1.

Table 11 Income distributions and measures of income inequality, by age, persons, 1983

	20%-groups equivalent disposable income					total	Gini ratio	Theil coeff
	1	2	3	4	5			
A. ALL PERSONS a)								
equivalent total factor income	5	11	18	25	41	100	.44	.34
equivalent factor income	5	11	17	25	42	100	.46	.39
equivalent gross income	7	12	18	24	39	100	.33	.18
equivalent disposable income	8	13	18	24	38	100	.30	.15
equivalent final income	9	13	18	23	37	100	.31	.15
B. AGE								
Elderly persons								
equivalent total factor income	1	3	6	25	65	100	.75	1.11
equivalent factor income	0	3	5	25	67	100	.77	1.24
equivalent gross income	10	13	11	22	44	100	.37	.23
equivalent disposable income	12	15	12	21	40	100	.31	.16
equivalent final income	14	15	12	21	38	100	.32	.16
Nonelderly persons								
equivalent total factor income	6	12	18	25	40	100	.39	.26
equivalent factor income	5	11	18	25	41	100	.42	.32
equivalent gross income	7	12	18	24	38	100	.32	.17
equivalent disposable income	7	13	19	24	37	100	.32	.17
equivalent final income	8	13	19	24	36	100	.32	.17

a) Income concepts are defined in Diagram 1.

8. Summary

In this chapter we have presented some information on the magnitude and distributional impact of noncash benefits in The Netherlands in 1983. We have used a survey among some six thousand households, providing us with data on the use of various government services, like medical and social services and

education. A microsimulation model has been used to calculate the taxes and employee contributions paid by each household, as well as the employer contributions to various insurance schemes. A large part of government outlays on medical and educational services, as well as employer contributions to health insurance, have been allocated to individual households, using these survey data. The aggregate value of all these noncash benefits to households, as well as the distributional effects have been discussed. It appears that the contribution of noncash benefits to household welfare is considerable: in total almost a quarter of gross income is received by households in the form of noncash benefits. Large differences, however, are found in the amount of benefit for various household types: the elderly profit more than the nonelderly, households with children profit more than households without children, and households in the middle income range profit more than others. An accurate assessment of the value of noncash benefits hence is of extreme importance when welfare comparisons between different households are made. The LIS noncash project is the first of such assessments to allow for international comparison as well.

Notes

1. Sociaal en Cultureel Planbureau (1981). Profijt van de overheid in 1977 [Benefits from public sector programs in 1977]. The Hague: Government Printing Office.

2. In 1983 GDP of The Netherlands amounted to Dfl.374 billion. In the summer of 1987 $1 = Dfl.2.

3. This is the usual assumption of the Central Planning Bureau (a government agency).

4. This is the usual assumption of the Central Planning Bureau.

5. Interest paid is a component of disposable household income. In calculating personal income tax due, this deductible item has been taken into account.

6. Of course, one might wonder why it is that taxpayers invest their money (which they borrow at say 8%, and - taking into account interest deductability for the personal income tax against 50% at the margin - at an effective rate of 4%) in assets that produce a realistic net implicit rent of 2.9% (1.5% after tax). Several explanations suggest themselves. For one, the favourable tax treatment of owner-occupied housing is already reflected in current property prices. Moreover, we feel that the 'realistic' net implicit rent of 2.9% is not really that realistic, even if the prospect of possible future capital gains (which as a rule are not taxed) is discounted. There is a case to be made for fixing the net implicit rent at a higher percentage, say 6% (the current effective yield of government bonds in The Netherlands).
On the other hand we must point out that many tax economists in our country defend the position that the present net imputed rent (of 0.8%) is about right.

7. Net (imputed/implicit) rent is no component of factor income and of gross income, as it is no cash income.

Annex A

Table 12 Net redistribution through health care expenditure, 1977

age group (years)	total	18-26	27-39	40-49	50-64	65+
number of households (x 1000)	6237	1557	1659	867	1161	990
%-distribution of households	100	25	27	14	19	16
net expenditure (subsidy out of tax revenue) (x mln Dfl)	1918	-653	83	141	611	1736

Source: SCP [1981, p.432]

Explanatory note: health insurance premiums paid and health care consumption have been compared by age class. Only the balance of the two is shown in Table 12. This is no zero-sum game, because Dfl.1918 mln in subsidies is paid out of general tax revenue to the health care financial system.

Annex B

Table 13 Miscellaneous, 1983

	20%-groups disposable income					
	1	2	3	4	5	total
E. Direct taxes a)						
(per household) (x1000)	1.3	3.8	5.4	6.9	14.1	6.4
as % of money income	0.0	0.0	0.0	0.0	0.0	0.0
F. Total census money income a)						
(per household)	0.0	0.0	0.0	0.0	0.0	0.0
AOW (Dfl.mln)	6.7	2.8	3.0	2.4	1.7	16.6
CER (Dfl.mln)	0.1	0.7	1.9	2.5	4.4	9.6

a) See Table 2.

Source: AVO'83