REAL INCOME CHANGES OF HOUSEHOLDS IN THE NETHERLANDS, 1977-1983

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This paper deals with the construction of statistics on real income changes of households in the Netherlands. Two different figures are computed, called the dynamic and the static figure. The dynamic figure reflects the change in real income as experienced by *individuals*. It is based on longitudinal data: two panels resulting from an exact match between three files from the Netherlands' IRS. The static figure reflects the change in real income of *positions* (e.g. of a 60-year old civil servant) instead of individuals. It is based on micro-simulation: changes in wages, taxes, etc. are simulated on a sample of individuals for whom socio-economic and demographic positions are assumed constant.

In the paper we discuss both figures and some other problems, e.g. the concept of real income and the price index. Furthermore we give results for the years 1977-1983 and discuss some differences between the dynamic and the static figure. The most notable result is the large variation in the dynamic figure, exhibiting a very substantial income mobility.

1. INTRODUCTION

Statistical information on real income changes for population subgroups is scarce. At least in the Netherlands, however, the demand for this information is considerable. In order to meet this demand, the Netherlands Central Bureau of Statistics (CBS) set up a pilot study in September, 1983. Within the context of this study, statistics on real income changes were constructed for the years 1977-83. The background and results of the study are the subject of this paper.

Changes in real income were computed by means of two different methods: observation of income from longitudinal data, and a kind of micro-simulation. Both methods have a tradition in economics. Information on changes in income based on longitudinal data is given in, e.g. Shorrocks (1976), Schiller (1977), Ruggles and Ruggles (1977), Duncan and Morgan (1984) and Kearl and Pope (1984). (In fact, Kearl and Pope (1984) analyze wealth mobility rather than income mobility.) Compared with the vast literature on the estimation of behavioral models from longitudinal data, however, the number of references is small.

Micro-simulation has drawn more attention in the literature. Overviews are given by Haveman and Hollenbeck (1980) and Orcutt *et al.* (1986). In contrast to the usual practice, however, we have used *observed* changes in wages, prices, etc. in the past instead of hypothetical changes. Also, in both types of simulations, assumptions should be made concerning behavioral reactions. Our assumption

of *no* reactions is fundamental for the concept of the so-called static figure, as will be explained below.

The contents of this paper are as follows. In the next sections, we describe the two computation methods. Section 5 goes into the concept of real income in more depth: real income equals disposable income corrected for changes in prices, but it is not obvious which components should be included in "income", and which should be left out. Some alternative definitions are discussed in section 6. The main results are given in sections 7 and 8. Section 9 concludes.

2. THE DYNAMIC AND THE STATIC FIGURE

Two different real income figures were computed: a *dynamic* one and a *static* one. The dynamic figure describes actual income changes of individuals. It is based on longitudinal data: a panel of individuals whose incomes are measured at two points in time. Consequently, all causes of changes in income are reflected in the dynamic figure. It is not only influenced by changes in wages, taxes, prices, etc., but also by income changes due to becoming unemployed, a new job, retirement, disability, changes in marital status or household composition, etc. Every change in income is observed and thus reflected in the figures.

The dynamic figure can be considered the result of two processes. First, the incomes corresponding to the *positions* individuals hold are subject to change. Such a position is for instance the position of a married twenty year old civil servant, or a sixty year old widower, etc. Second, individuals can change their position and, as a consequence, their income. Such changes of position are, for instance, becoming unemployed, retired, married or divorced. It is quite conceivable that for specific purposes (government policy for example), the first type of changes in income is more interesting than the second, and for that reason we have also computed a figure in which only the first type of changes is reflected. We called it the *static* figure.

For the static figure, the socio-economic and demographic position of the individual has to be kept constant. In reality, however, it changes continuously, so the static figure cannot be based on actual observations of income in two different years. We adopted the following procedure. For a certain year, the base year, we drew a sample of individuals from a file containing individual income and background data. The position of these individuals is determined on the grounds of their socio-economic and demographic characteristics.

Now the static figure is computed by means of a micro-simulation. For each individual in the file the components of his or her income (wage, benefits, interest, rent subsidy, etc.) are updated for the years following the base year. Each component is updated by means of a specific index number reflecting the change of that particular component. The income in the years following the base year is then calculated on the basis of the updated components, and the change in this income finally determines the static figure (after correction for price changes).

So we simulate the income change for hypothetical individuals with constant socio-economic and demographic characteristics. If an individual receives wages or interest in the base year, then our procedure of updating each component

guarantees that he also receives wages or interest in the next years. If he has children and receives family allowance, then in the next years we simulate an individual who also has children, whereas in reality the children might have left the parental home.

Summarizing: the static figure is a measure of the real income change of *positions*, where positions are characterized by socio-economic and demographic variables. The dynamic figure on the other hand is a measure of the real income change of *individuals*. The difference between the two figures is that the dynamic figure also reflects real income changes due to changes in the position of the individual.

3. A Closer Look at the Dynamic Figure

The construction of the dynamic figure requires longitudinal data on an individual level (panel data). The most appropriate source for such data is the CBS Income Statistics, which are based on extensive fiscal income data. We used the files for the years 1977, 1979 and 1981, each of which is a 3.3 percent sample of the Dutch population (approximately 420,000 individuals or 160,000 households). Income and background information for these individuals is provided by the Netherlands Internal Revenue Service.

We obtained longitudinal information from these samples by matching the files on an individual level. Since the 1979 and 1981 samples were drawn almost independently of each other, the match between these two samples resulted in a panel of 3.3 percent * 3.3 percent = 0.1 percent of individuals who (by chance) were included in both samples. The panel was in fact slightly larger as the two samples were not completely independent of each other. The total panel consisted of 9,800 households, a number large enough to obtain reliable real income figures—at least for the most important population subgroups.

The situation was somewhat more favorable for the years 1977 and 1979 as the same *addresses* were used for the Income Statistics in both years. We therefore had income information at our disposal for everyone in the 1977 sample who had not moved between 1977 and 1979. As moving is correlated with changes in income (moves as a result of, e.g. marriage, divorce, children leaving home, new job or unemployment), we added to the panel the individuals who (by chance) had moved to another sample-address in 1979. After a reduction in the number of (overrepresented) non-movers, this resulted in a panel of 6,200 households.

So the outcome of the matching procedure was two two-wave panels, one for the period 1977–79 and one for 1979–81. It is important to stress that the size of our samples enabled us to perform an *exact* match between the two samples, thereby circumventing the problems associated with statistical matching (Radner et al., 1980 and Rodgers, 1984).

Another important point is that we are interested in the change in *household* income. A household, however, is not necessarily a constant unit in time. We opted for matching the two files on an individual level, after which we added to the file in each year the data on the other (non-matched) members of the household. Changes in household composition between the two years are corrected by means of a so-called equivalence factor, discussed in section 6.

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4. A Closer Look at the Static Figure

In order to be able to use income data that was as detailed as possible, the static figure is also based on a sample of about 5,000 households from the CBS Income Statistics. We chose 1977 as base year. In order to calculate the static figure for the years 1978 up to and including 1983, all income data of each individual person in the base year were updated for each subsequent year. In all, some 90 components of income were involved, corresponding to the components stated on income tax declarations and tax registration forms. Some of these components (e.g. earnings, old age pensions, extra expenses due to illness) were updated with the aid of index numbers, usually already existing within the CBS. For the remaining components (e.g. wage tax, income tax, social security contributions, thresholds for extra expenses and rent subsidies), an extensive computer program was used, which reflected a large number of institutional rules.

As far as possible, the index numbers were corrected for changes in position such as changes in age, in the number of children, etc. Remember, the purpose of the static figure is to measure real income changes under the assumption of a constant distribution of positions: wage rises due to employees growing older (a change in age is also a change in position) should not have any effect on the static figure. In this respect the index numbers are similar to, for instance, the consumer price index: that index is based on a basket of goods which also remains constant.

The most complex index numbers were constructed for wages. From the Wage Survey which the CBS conducts twice a year, average weekly wages were calculated for 18 age groups, 56 industrial activities, the 2 sexes and 10 hourly wage 10 percent-groups. After some combinations, this resulted in a total of 7,880 indices for each pair of years, with which the income component "wage" was updated. One advantage worth mentioning here is that due to the specification by wage level, differentiated wage rises for higher and lower wage-groups could be taken into account.

In updating the various types of social benefits, a distinction was made between benefits based on previous earnings (private pensions and most types of disability pensions and unemployment benefits) and benefits which are completely independent of previous earnings (state pensions, welfare, etc.). The updating of the latter group is simply based on the legal amounts of these benefits. For the updating of the first group a number of methods was used. Because they are dependent on the typical Dutch characteristics of each type of benefit, we shall not go into this any further here; details are included in CBS (1986). It can be stated, however, that these indices are fairly rough. It follows that the static figure for persons receiving these type of benefits is probably less reliable than the figure for the other groups.

For updating income from capital, we decomposed this income component as the interest rate times the value of the capital. Both the interest rate and the value of the capital were updated. The interest rate was updated by means of the quotient of the relevant interest rates, or returns, in both years, as computed and published by the CBS. The value of the capital was updated by multiplying the nominal value by a general price index, so here the static concept is opera-

tionalized by keeping the real value of the capital constant. The latter operationalization could be subject to discussion.

In this and similar ways, all the income components in the 1977 file were updated for the years 1978 to 1983. Subsequently, the various deductions and thresholds for the income tax were calculated (standard deductions, taxable income, social security contributions and rent subsidies). This resulted in an up-to-date picture of all income components (gross and net) for each of the subsequent years for each person in the initial file. The structure of the resulting file is identical to the structure of the panels for the dynamic figure. Given a definition of real income, the changes in real income then can be tabulated for various subgroups of the population.

A drawback of the static figure is that it turned out to be impossible to include the category of self-employed persons. There was no information on the change in their income available, suitable for our purpose. Therefore for self-employed persons only a dynamic figure was calculated.

5. WHAT IS REAL INCOME?

Real income equals nominal disposable income corrected for changes in prices. In order to render this general definition operational we first have to establish what should be understood by the term disposable income, and, secondly, we have to determine the way in which corrections for price changes should be applied. The second point is relatively easy. The correction is carried out by means of a price index relating to all expenditures which have to be met by the chosen income concept. In accordance with the usual procedure, we used the same deflator—i.e. the same price index—for the part of income which is not used for consumption but for saving (see, e.g. Galatin, 1973).

The choice of the income concept is more difficult. In casual conversations and also in politics, the concept of real income is used as a "money-metric utility function", a term originated by Samuelson (1974) and extensively discussed by Sen (1979). It measures in dollars or guilders who is better off, who has a higher welfare. A special aspect of our study is that we want an income concept which can be used for both a comparison between individuals at one moment in time and a comparison in time for one individual.

The first choice which has to be made is the choice between life income and yearly income. The desirability of the concept of life income as the best indicator of welfare has been argued frequently. However, operationalization of this concept on the basis of observations of yearly incomes is very difficult, because actually it is only defined at the end of someone's life. For individuals during their life one could think of some kind of expected life income, and subsequently define the real income change as the change in expected life income. In this framework, only unexpected changes in yearly income would lead to a real income change. Because of these problems of operationalization, we have restricted ourselves in this study to the concept of yearly incomes.

In deciding which components of income were to be included in the income concept, we were guided by the "welfare" aspect and—related to this—"free

disposability". All income components which can be spent freely are included in the definition of income (earnings, profits, transfers, income from capital) and all expenses which are inseparably connected with acquiring this income are deducted (income tax, and compulsory contributions (premiums) for pensions, social security and health insurance). This is illustrated in Figure 1, which comprises the most significant items of household income and outlay. The choice of the income concept now comes down to drawing a line in the outlay column such that the outlays below the line can be considered to contribute to the welfare of the household while this cannot be said of the outlays above the line. The price index by which the income is divided should then relate to all outlays below the line.
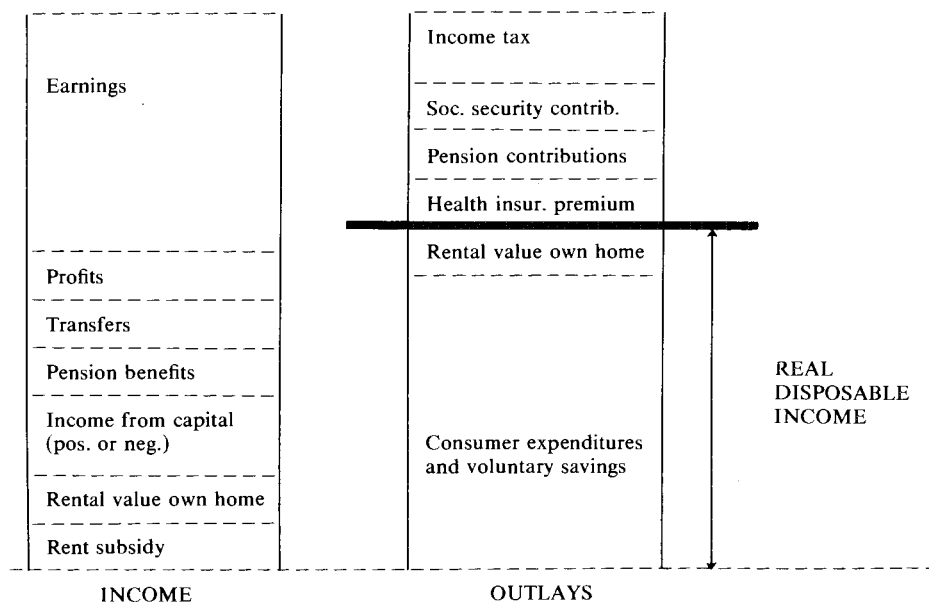

Figure 1. Income and outlays of a household

For some components of income a few comments on their treatment in the income concept are in order:

—*Pensions.* Pensions are treated on the analogy of other transfers, so pension benefits are included as income and the contributions for pensions are deducted from income. This treatment deviates from the treatment in the National Accounts of the Netherlands, where the contributions are treated as savings and the benefits as dissavings. See Ruggles (1985) for a recent discussion of both views.

—*Health insurance.* In the Netherlands, a large part of the population (64 percent) is compulsorily insured against medical costs. The premium for the compulsory insurance is a fixed percentage of income, and is deducted from income, as mentioned before. For the sake of comparability, we have deducted a premium for private insurance from the income of those who are not compulsorily

insured. This implies that our income concept should be net of medical costs, and it also implies that medical costs should not be included in the price index.

—*Income from homeownership.* Another traditional problem is the valuation of the services of owner-occupied houses. In the income tax system of the Netherlands, this rental value is set at approximately 0.7 percent of the value of the house (until 1982), whereas interest on mortgage loans is deductible. For our purpose we used a higher rental value, viz. the economic rental value as used in the National Accounts and the consumer price index in the Netherlands. This value is based on the rent of comparable rented houses. The added rental value amounts to 3 percent of the value of the house (minus some cost items). In line with the income tax system, we furthermore deducted the interest on mortgage loans from the income. Finally, capital gains or losses on the value of the house were *not* taken into account.

—*Taxes and subsidies.* Taxes (and subsidies) which depend on the voluntary consumption of goods and services (for example VAT) are not deducted from income because in our opinion the value of a certain good or service is equal to the price the buyer is willing to pay for it, irrespective the way the price is established. In other words, we have valued at consumer prices and not at producer prices.

The situation is different, however, if the tax or subsidy depends both on income *and* on a voluntary consumption decision. In the Netherlands, individual subsidy on the rent of houses is an important example of this. This subsidy depends both on the income of the individual *and* on the rent of his house; in such a way that housing is cheaper for people with lower incomes. This is a situation where prices are different for two individuals at the same point in time: low-income people pay a lower price for housing than high-income people.

Now the correct treatment in the income concept is not completely clear. If one wants to compare low-income people and high-income people at the same moment in time, the subsidy should be taken into account in one or another way. In this study this has been done by adding the full amount of the subsidy to income. However, it should be mentioned that this slightly overstates the value of the subsidy to the receiver, because adding it implies that the subsidy is assumed to be freely spendable, which is in fact not the case.

Another example of a subsidy which depends both on income and on voluntary consumption is the possibility of some income-tax deductions. Because marginal income-tax rates rise with income, this possibility of deductions is in fact a subsidy for higher-income people. Again we have a situation where some individuals (in this case with high incomes) pay a lower price than other individuals at the same moment in time. We opted for the same solution as in the case of housing subsidies: the full amount of this (implicit) subsidy is added to income, which in this case implies that the income tax is computed taking all deductions into account.

The problems discussed here show a certain resemblance to problems in the discussion of tax expenditures. Tax expenditures are allowances in the tax legislation which violate the general regulations with respect to the tax basis (Surrey, 1973). If we identify the tax basis with the concept of disposable

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income (apart from the tax itself), then every deviation between the concept of real income discussed here and the tax-basis (taxable income) will lead to tax expenditures. For example, if we decide not to deduct extra medical expenses from income in the calculation of disposable income, whereas these expenses are in fact deductible for the income tax, then this deduction can be considered as a tax expenditure in aid of persons with high medical expenses.

6. SOME OTHER CONCEPTS

Taking the concept of income described in the previous section as our starting point, we still have to take a number of steps before realizing our goal, i.e. the measurement of real income change. First of all, the personal incomes of all individuals in a household are added together to form a household income. We define a household in accordance with the usual CBS definition, i.e. a number of persons living together in a domestic arrangement and running a common household. So the incomes of the main breadwinner, partner, children living at their parental home, grandparents living with their children, etc., are added together.

As mentioned in section 3, household income then has to be corrected for differences and changes in the size of the household. The correction is carried out by dividing household income by an equivalence factor reflecting the differences in size between households. Many authors have studied estimation methods for these factors; see e.g. Deaton and Muellbauer (1980, chapter 8). Information on the factors we used is given in CBS (1986).

The third step is assigning the equivalent household income to all members of the household (both adults and children). So our income unit is the individual and our income concept is equivalent household income, and these are the choices suggested by Danziger and Taussig (1979) and Van Ginneken (1982). For the dynamic figure, it was even *necessary* to choose the individual as unit of analysis in view of the fact that a household is not necessarily a constant unit in time (children leaving home, divorce, etc.), so that the matching of files for different years could only take place on an individual level.

Finally, the change in nominal income was corrected by means of a price index to arrive at the change in real income. As our concept of real income deviates from the concept of household consumption to which the CBS consumer price index refers, a few corrections had to be applied to this index. We do not go any further into this here.

7. SOME RESULTS

Table 1 shows the static changes in real income for a number of population subgroups compared to the preceding year and for the period 1977–83. The figures quoted are the *medians* of the individual changes. The results for the period 1977–83 are presented as average changes per year. Just as in the next table, three background variables are used: income, socio-economic category and type of household. For income as background variable, we used the same concept as for the calculation of real income changes, i.e. household income assigned to the

TABLE 1
STATIC REAL INCOME CHANGES, 1977–83 (EXCLUDING SELF-EMPLOYED)

	Change in real income with respect to preceding year						1977–83 average
	1978	1979	1980	1981	1982	1983	
	percent per year						
Income 1977							
1st 10 percent-group	3.9	1.1	−1.2	−3.1	−2.0	−2.5	−0.7
1st 25 percent-group	3.6	1.3	−1.3	−3.3	−2.1	−3.0	−0.9
2nd 25 percent-group	3.2	1.2	−1.7	−4.0	−2.3	−4.0	−1.4
3rd 25 percent-group	3.0	1.1	−1.8	−4.2	−2.7	−4.1	−1.5
4th 25 percent-group	2.5	1.0	−1.8	−4.1	−2.5	−3.6	−1.4
10th 10 percent-group	2.4	1.1	−1.8	−3.9	−2.2	−3.3	−1.2
Socio-economic category, main breadwinner 1977							
Private sector employees	3.1	1.5	−1.7	−3.9	−2.2	−4.1	−1.3
Civil servants	1.8	0.1	−2.2	−5.5	−2.6	−4.4	−2.1
Pensioners and disabled	3.7	1.4	−1.1	−2.9	−2.3	−2.3	−0.6
Unemployed and others	3.3	1.1	−1.4	−3.3	−2.8	−2.7	−0.9
Type of household 1977							
One-person households	3.6	1.2	−0.6	−2.9	−1.9	−2.4	−0.5
Married couples without children	3.4	1.5	−1.2	−3.2	−2.4	−2.6	−0.9
Married couples with children	2.9	1.0	−1.9	−4.3	−2.4	−4.2	−1.5
One-parent families	3.1	1.4	−1.4	−3.0	−2.3	−2.7	−0.9
Others	3.2	1.2	−1.4	−3.6	−2.4	−3.5	−1.2
Total	3.1	1.2	−1.6	−3.9	−2.4	−3.7	−1.2

individual and corrected for differences in household size. The individuals are classified by 10 percent groups and 25 percent groups.

The last row of Table 1 shows that the overall change in real income in the Netherlands for the period 1977–1983 was negative. From 1977 to 1979 real income was still rising by an average 2.1 percent per year, but from 1979 to 1983 it dropped by 2.9 percent per year on average. The cumulative decline over the entire period amounted to 7.3 percent.

Obviously, these results should be treated with due reserve. The static figure is based on a large number of indices, some of which were only chosen for want of better ones. The index numbers for income from capital and for some benefits in particular are based on rather arbitrary assumptions. In view of these assumptions and in view of the fact that the calculations are based on a sample with limited size, the figure behind the decimal point should only be considered as purely indicative.

The results of Table 1 are depicted in Figures 2 and 3. Figure 2 gives the static results for four income classes, Figure 3 for four socio-economic categories. The most striking result is probably the difference between civil servants and the other categories: mostly due to government budget cuts their decline in real income exceeds that of other groups by about 1 percent a year.

In columns one and five of Table 2 the dynamic figures are given. Again, the median is used as the measure of the real income change for a population
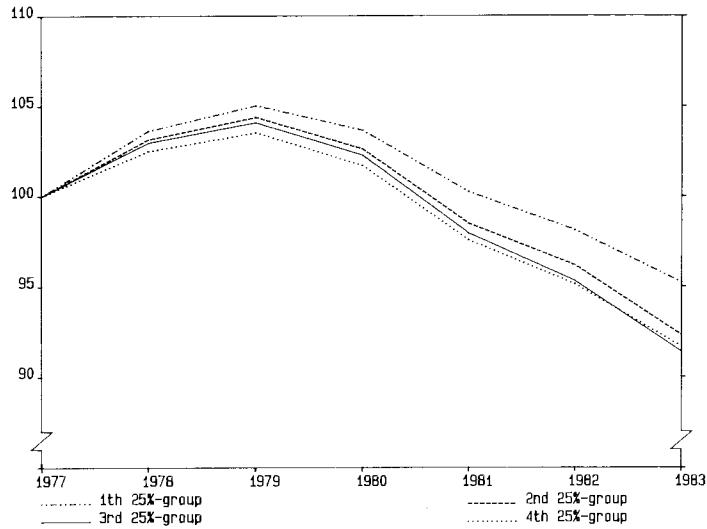
Figure 2. Static real income, 1977-83 (1977 = 100), with respect to income class

subgroup. For the sake of comparability with the other results, all changes are given in percentages per year.

In the first six rows of the table the changes in real income are given for each income class. A problem here is the phenomenon of "regression towards the mean": the tendency to decrease in the case of variables with initially high values and the tendency to increase in the case of variables with initially low
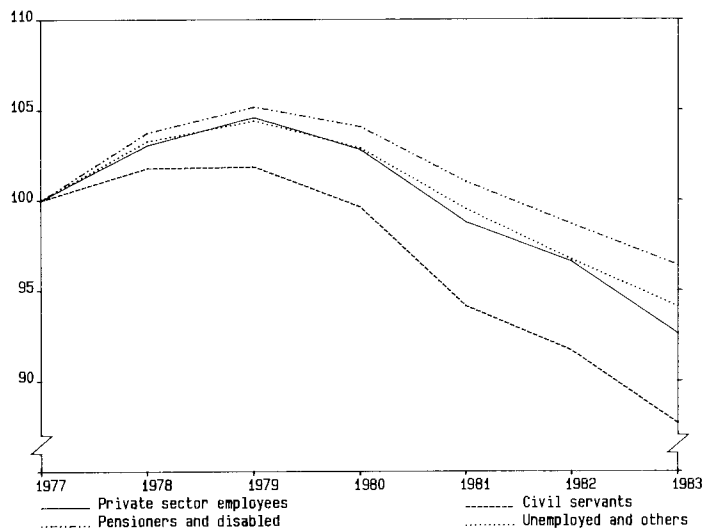

Figure 3. Static real income, 1977-83 (1977 = 100), with respect to socio-economic category of the main breadwinner

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TABLE 2

DYNAMIC REAL INCOME CHANGES, 1977–81, AND A COMPARISON WITH THE STATIC CHANGES

	1977–79				1979–81			
	Dynamic	Dynamic Excluding Self-Employed	Dynamic "Static" Sub-Population[a]	Static	Dynamic	Dynamic Excluding Self-Employed	Dynamic "Static" Sub-Population[a]	Static
	average percent per year							
Income b)								
1st 10 percent-group	2.8	2.6	2.4	2.5	−1.9	−2.0	−1.8	−2.1
1st 25 percent-group	2.5	2.4	2.4	2.5	−2.4	−2.5	−2.4	−2.4
2nd 25 percent-group	2.7	2.5	2.5	2.3	−2.9	−2.8	−2.6	−3.0
3rd 25 percent-group	3.3	3.2	3.2	2.1	−2.1	−2.1	−2.2	−3.1
4th 25 percent-group	2.5	2.1	2.2	1.9	−2.1	−1.7	−1.6	−3.0
10th percent-group	2.3	1.8	1.8	1.9	−2.3	−2.1	−2.1	−2.8
Socio-economic category, main breadwinner in first year								
Self-employed	5.5	—	—	—	−6.3	—	—	—
Private sector employees	3.1	3.0	3.1	2.3	−2.1	−2.1	−2.0	−2.8
Civil servants	1.8	1.8	2.1	1.0	−3.6	−3.7	−3.7	−3.8
Pensioners and disabled	2.3	2.3	2.1	2.6	−1.9	−1.9	−2.0	−1.9
Unemployed and others	7.3	7.3	4.9	2.3	−0.0	−0.9	−1.8	−2.4
Type of household in first year								
One-person households	2.5	2.5	2.4	2.5	−1.8	−1.8	−1.9	−1.8
Married couples without children	1.8	1.6	2.1	2.4	−2.6	−2.5	−2.2	−2.2
Married couples with children	3.2	3.0	2.7	2.0	−2.5	−2.5	−2.6	−3.1
One-parent families	4.8	4.0	4.0	2.3	−1.6	−1.8	−1.8	−2.3
Others	2.1	2.0	2.5	2.2	−3.5	−3.2	−1.7	−2.5
Total	2.7	2.6	2.5	2.2	−2.4	−2.4	−2.3	−2.8

[a]Type of household and socio-economic category of main breadwinner and individual equal in first and second year.
[b]For the dynamic figure this is the average income in the first and second year; for the static figure, the income in 1977.

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values. Stated otherwise, if for accidental reasons income is low in a certain year, then the expected value of the income change between that year and the next year is, ceteris paribus, positive. In order to avoid this bias, Table 2 uses the average income of the first and second year as classification variable (except in columns four and eight). Then, an artificial correlation between classification variable (income level) and target variable (income change) is avoided. The importance of regression towards the mean becomes evident if we would classify according to the income in the first year: the median change for the first 10 percent-group would be more than 5 percent higher and that for the tenth 10 percent-group nearly 3 percent lower (for 1979–81). The lack of attention to this phenomenon in the economic literature on the analysis of panel data is remarkable. References are restricted to the statistical literature, see e.g. Goldstein (1979) and Van de Stadt and Wansbeek (1986).

For the sake of comparison with the static figure, Table 2 also includes a number of additional results. Columns 2 and 6 quote the dynamic figures excluding the self-employed and their households, since they are not included in the static figure. Columns 3 and 7 show the dynamic figure for an even more limited portion of the population, namely those whose socio-economic category and type of household both remained unchanged. Here too, the self-employed and their households are excluded. Finally, columns 4 and 8 state the corresponding static figures.

A number of interesting conclusions can be drawn from Table 2. In spite of the vastly different calculation procedures, the results of the static and dynamic figures are reasonably in line with each other, while the differences can be explained. The most notable difference is probably that the equalizing tendency in the static figure is not reflected in the dynamic figure.

An explanation for this difference is the phenomenon of age-dependent earnings. As a consequence of accumulating experience in the job, earnings rise as an individual grows older and this is reflected in the dynamic figure. It is, however, not reflected in the static figure as the age is kept constant there. Due to the fact that rises in earnings which depend on age occur most frequently in the higher income classes, the difference between the dynamic and the static figure is greatest there. Figure 4 illustrates the difference.
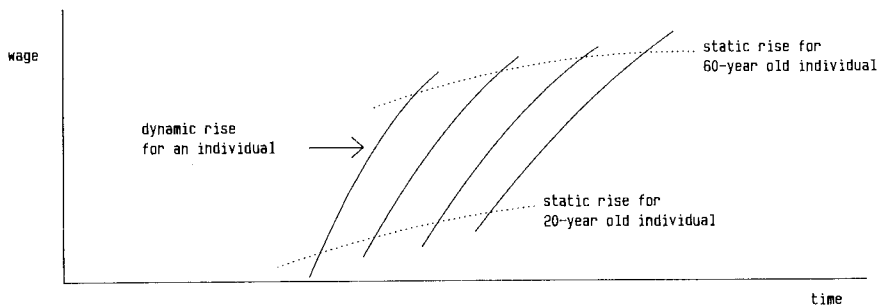

Figure 4. Static and dynamic wage rises

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## 8. The Variation in the Static and the Dynamic Income Changes

Up to this point, we have only considered the median of the individual real income changes: a measure for the central tendency of the distribution. Probably the most interesting result of the study, however, is generated if we also look at the *variation* of the distribution. Figures 5 and 6 depict the distribution of the

Figure 5. Distribution of the real income changes, static and dynamic, excluding self-employed, 1979–81, with respect to income class[a]
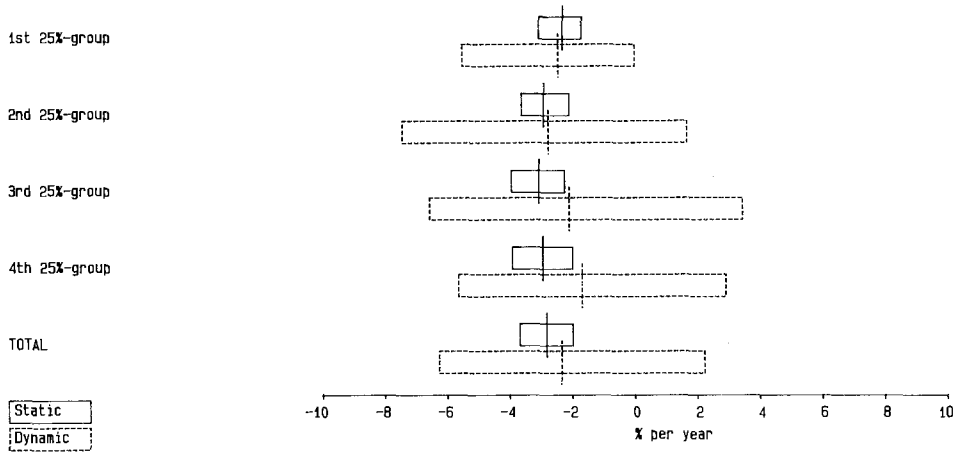
ªThe left and right side of the rectangles correspond with the first and third quartile; the vertical line in the middle corresponds with the median (= second quartile).

Figure 6. Distribution of the real income changes, static and dynamic, excluding self-employed, 1979–81, with respect to socio-economic category of the main breadwinner[a]
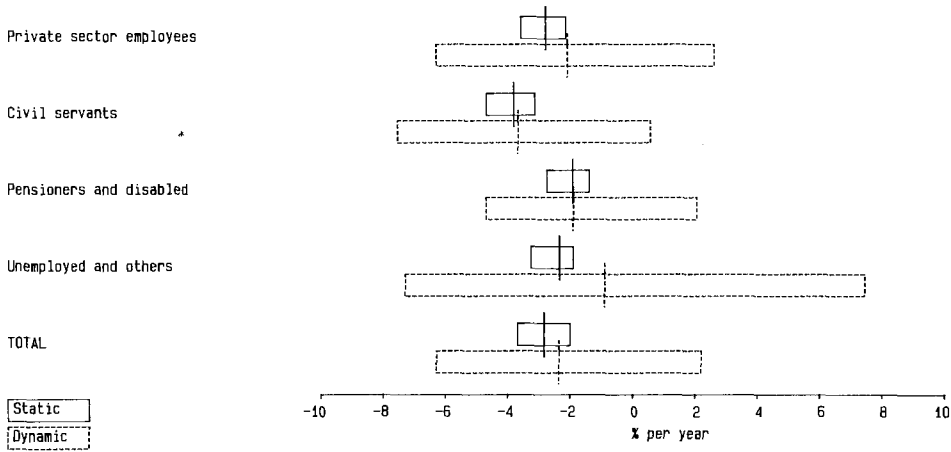
ªThe left and right side of the rectangles correspond with the first and third quartile; the vertical line in the middle corresponds with the median (= second quartile).

static and dynamic income changes for four income classes and four socio-economic categories, respectively. The distribution is shown by means of the three quartiles: the left and right side of the rectangles correspond with the first and third quartile, respectively, and the vertical line in the middle corresponds with the median. The median values in the figures are equal to the values in Table 2.

The most striking result is the large difference in variation between the dynamic and the static figure. For the Netherlands as a whole, the variation in the dynamic figure is about five times the variation in the static figure, and for some groups, viz. the unemployed, the difference is even larger. The main reason for the difference are changes in socio-economic and demographic characteristics (changes in position), which are not taken into account in the static figure. So an important conclusion of our study is that the data exhibit a very substantial income mobility, a mobility which can only be measured by means of panel data, not by successive and unrelated cross sections.

9. CONCLUDING REMARKS

This paper deals with a study of real income changes of households in the Netherlands between 1977 and 1983. An important aspect of our study is that we have systematically distinguished two types of real income statistics, which we have called the static and the dynamic figure. The static figure measures the real income changes of *positions*, where positions are characterized by socio-economic and demographic variables. The dynamic figure, on the other hand, measures the real income changes of *individuals*, and this figure therefore also reflects income changes due to changes in position.

The most notable result of the study is the large variation in the dynamic figure, exhibiting a very substantial income mobility. This result is in line with the results of Duncan and Morgan (1982, 1984) and Ruggles and Ruggles (1977) for the US. These studies also show a very remarkable income mobility.

Other results of our study are given in two publications in the Dutch language: CBS (1986) and Van de Stadt *et al.* (1985). The first of these publications also includes a more extensive description and justification of the index numbers and methods used.

In the present paper, the concept of real income is dealt with in section 5. In the operationalization of this concept, a number of choices had to be made, just as is the case for the National Accounts and the Income Statistics, for example. If we evaluate the pros and cons of the operationalization chosen, the weakest point is probably the incorporation in the real income concept of voluntary actions with consequences for real income. Examples of this are voluntary reductions in hours worked resulting in lower earnings, voluntary saving implying an increase in real income due to interest in later years, the choice between renting and buying a home and most decisions in the area of household formation.

If we compare the consequences of this sort of voluntary actions with the consequences of events which are more or less inevitable (retirement, disability, unemployment), it is defensible that the former type of actions should not—at

least not in the same way—be reflected in the real income figure. This could be implemented by altering the definition of real income, for example by assigning a value to the leisure which becomes available as a consequence of reductions in hours worked, by not including income from capital in the concept of real income or by using individual incomes instead of household incomes. This seems a point worthy of attention in future studies.

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