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Selected Nonmonetary Types of Income in the Federal Republic of Germany: Macro Economic and Distributional Effects

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Luxembourg Income Study Working Paper Series

Working Paper No. 15

**Selected Nonmonetary Types of Income in the Federal
Republic of Germany: Macro Economic and
Distributional Effects**

Richard Hauser, Irene Becker, Susanne Standecke-Scheid

August 1987

(scanned copy)



Initial Country Report for Germany

"Selected Nonmonetary Types of Income in
the Federal Republic of Germany: Macro
Economic and Distributional Effects"*

by Richard Hauser
Irene Becker
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Working Paper No. 250

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SUMMARY

The goal of this working paper is to show the macro economic importance of in-kind (nonmonetary) income and to work out the criteria for a personal imputing. We can show how the elements of nonmonetary income (including tax subsidies in selected areas) with predominantly private goods character are limited to a few functions and institutions in the Federal Republic of Germany. The emphasis is on public or quasi-public (social insurance) transfers.

In health care, the most important area, statutory health insurance with the dominant insurance principle stands out. Here, total costs should be imputed on an equal per-capita basis. In the area of public education, the imputing of costs of the respective level of education on the basis of individual usage is suggested. In the third important functional area, housing, there are primarily indirect in-kind transfers (tax subsidies and measures to promote housing). It seems that imputing is not to be recommended because of theoretic and methodic problems.

Finally, the inclusion of the elements of nonmonetary income in the analysis of the distribution of personal income should give a clearer picture of the material well-being of the population, although the consistence problems, in particular because of different valuation concepts (market value vs. cost of expenditures) must be considered.

ZUSAMMENFASSUNG

Ziel des vorliegenden Arbeitspapiers ist die Darstellung der gesamtwirtschaftlichen Bedeutung realer (nicht-monetärer) Einkommenskomponenten und die Herausarbeitung von Kriterien für eine personenbezogene Zuordnung. Es wird deutlich, daß nicht-monetäre Einkommenselemente (unter Einbeziehung von Steuervergünstigungen für ausgewählte Bereiche) mit vorwiegend privatem Gutscharakter in der Bundesrepublik Deutschland auf wenige Funktionen und Institutionen beschränkt sind. Das Hauptgewicht liegt auf öffentlich oder quasi-öffentlich (Sozialversicherung) erbrachten Realleistungen.

Im Gesundheitswesen, dem bedeutendsten Teilbereich, tritt die gesetzliche Krankenversicherung mit dem dominierenden Versicherungsprinzip hervor. Hier bietet sich eine Zurechnung der Gesamtausgaben nach pro Kopf gleichem Versicherungsanspruch an. Für den öffentlichen Bildungsbereich wird eine Zurechnung der Kosten der jeweiligen Ausbildungsstufe nach der individuellen Inanspruchnahme vorgeschlagen. Im dritten wesentlichen Funktionsbereich, dem Wohnungswesen, mit vorwiegend indirekten Realleistungen (Steuervergünstigungen und Maßnahmen des Sozialen Wohnungsbaus) erscheint eine Zurechnung wegen theoretischer und methodischer Einwände nicht ratsam.

Letztlich soll die Einbeziehung von nicht-monetären Einkommenselementen in die personelle Einkommensverteilungsanalyse ein deutlicheres Bild über den materiellen Wohlstand der Bevölkerung ermöglichen, wobei jedoch Konsistenzprobleme insbesondere aufgrund der verschiedenen Bewertungskonzepte (Marktpreis- vs. Ausgabenkonzept) berücksichtigt werden müssen.

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Selected Nonmonetary Types of Income in the Federal Republic of Germany: Macro Economic and Distributional Effects

1. Monetary and Nonmonetary Components of Material Well-being

The distribution of material welfare among different population groups is inadequately reflected by the distribution of personal income. Along with monetary components, the standard of living is effected by other elements of real income: nonmarketable household production, merit (or public) goods and services as well as the use of tangible property. These kinds of nonmonetary components of material well-being can be viewed as elements of a broader concept of income. They should be considered in a distribution of income analysis so that statements about standards of living of the population are not distorted. This is particularly true for an international comparison, as is planned by the LIS-Project (Luxembourg Income Study). Because of respective cross-country institutional differences, the importance of the nonmonetary components of well-being varies from country to country. It is important to consider such items as:

- 1) to what extent the employer offers, in addition to monetary income (wages and salaries, continued wage payments in case of sickness, and employer financed pension plans), in-kind compensation, for example through company housing (Werkswohnungen), subsidized meals or medical care;
- 2) if through nonmarket "household production" of goods and services (for example do-it-yourself repairs or in-home care) or through owner-use, costs are saved, particularly the necessary rent cost with real estate (1); and
- 3) to what extent education and job training and health care are furnished by the government or must be privately financed.

In the area of social security, we have to distinguish between tax-financed transfers and social insurance services. When the income distribution analysis is limited to net-income, defined as

1) This can lead to distortions of the welfare distribution, when on the one hand income from rent is treated as monetary income and on the other hand, the savings in rent costs through home ownership is not considered as part of real income.

income after taxes and social security contributions, it would be inaccurate to exclude the insurance protection in sense of a nonmonetary income component, particularly in relation to the privately insured, but also in relation to the distributional effects within the group of socially insured.

For analysis of income distribution, it is reasonable to start with a broad concept of income, which includes nonmonetary elements. This could include tax subsidies because these advantages should not be viewed in isolation as they are dependent on the personal income tax rates. However with such a concept there are certain theoretical as well as empirical restrictions. A basic problem is that many types of nonmonetary income, in particular services of the state, are not private goods, but are (at least partially) public in character. The utility from these kinds of merit or public goods cannot easily be imputed to individuals or groups, because the preferences for these goods are not cardinally measurable and therefore not comparable. Hence, efforts to impute the value of the services of the public infrastructure, for example, in the areas of culture or transportation or (much less the measures for domestic and foreign security), to individuals must be arbitrary at best. Even when the frequency of use or other indicators are known, the external effects would be neglected. The (usual) cost-valuation of public services is not compatible with the principle of market price in obtaining monetary income in these cases.

These theoretical objections vary in importance for different kinds of nonmonetary income. In some areas, such as health care, the direct utility for the recipient outweighs the external effects. This decision must be made in each individual case, i.e. which valuation criteria justifies imputing to the individual and which does not. The theoretically clear boundary between private and public goods can seldom be found in reality and only rarely are there imputing criteria to draw upon in empirical research. Empirical points of reference are needed for measuring the importance of the public and private character of goods in individual real income, as well for the valuation and distribution of the main types of imputable income.

The nonmarketable production of private households should be ignored in this effort, because only a few special studies on the extent of this production are available and the evaluation of these activities causes considerable difficulties (2). Durable consumer goods are also omitted for the same reasons and because of the added problem of differentiating between obtained income through saved costs (for example saved leasing costs by buying an car) and the uses of income (mobility, preferences of personal transportation). With the owner use of real estate, the point "saved costs" seems to clearly dominate because of the possibility of capital appreciation and imputing would be reasonable.

The following section deals with the empirical importance of non-monetary types of income. Section 3 reviews the institutional framework of these income components. In Section 4, theoretic concepts of valuation and imputing are discussed. In Section 5, the results of former empiric research are summarized. In Section 6, suggestions for expanding the LIS-Databank are made.

2. Macro Economic Importance and Development of Nonmonetary Types of Income.

Table 1 gives a first impression of the importance of the components of nonmonetary income of goods which are predominantly private in character in the Federal Republic of Germany. The services from the government and industry shown here are in the form of expenditures and tax subsidies.

According to the Social Policy Report (Sozialbericht) and the National Education Budget (Bildungsbudget) for the Federal Republic of Germany, the (public and private) expenditures consist primarily of monetary payments, but still roughly one third of the expenditures were for non-monetary transfers, going to social programs and education. In 1986 more than 240 billion DM was spent on

2) The valuation with saved costs (market value concept) leads to an over or under valuing of the extra welfare when the accounted amount with free usage would be spent on other (combinations of) goods, i.e. an opportunity cost of time approach.

non-monetary transfers (3), which accounts for 38% of the total transfers and 12% of the gross national product (GNP). When tax subsidies are included, nonmonetary transfers make up 45% of the total transfers and almost 15% of the gross national product. This is a considerable part of the material well-being and this portion of measurable income has not changed considerably since 1970. Table 1 shows a distinct percent increase in nonmonetary types of income between 1970 and 1975. The portion of expenditures (including tax relief), as a percent of the GNP, climbed 3% in this five year period and remained stable in the following decade, where their portion of GNP fluctuated between 12% and 15%.

The most important types of nonmonetary transfers (including tax subsidies) in Table 1 are shown in Table 2 and are organized by institution in order to clarify the relative weighting in the framework of an analysis of income distribution. The dominant type of non-monetary benefits are provided by the Social Insurance System. This portion of the types of real income considered here has risen an additional 6% up to 55% since 1970. Notable is the dominant role of the National Health Insurance (gesetzliche Krankenversicherung; see Table 3) within the Social insurance system. Second in importance are the expenditures for education - excluding investment and monetary transfers - with around 30% of the total outlays and a slightly declining trend. The benefits from other institutions are of little importance. The system for Aid to Civil Servants (Beamtenrechtliches System) deals mainly with cash reimbursements for costs due to illness for civil servants and their families. They range from 50% to 70% of the costs according to marital status and number of children. Although these are cash payments, they will be treated as nonmonetary payments because the reimbursements have the same effect as a nonmonetary transfer and are shown in Table 3 as an explicit non-monetary transfer in the area of health care. The Aid for Civil Servants has amounted to over 3% of all nonmonetary transfers since 1970.

Housing Benefits (Wohngeld) are also treated as cash reimbursements in government figures and are listed in Table 2 under Social

3) Payments here are in the areas of home and health care, employment, old age and survivor benefits, political refugees, housing, social aid programs and public education.

Aid and Benefits. The portion of noncash benefits from this institution has risen from 6% in 1970 to 7% in 1986. The other subsidies in the area of housing are comprised of interest and principal payments as well as interest subsidies, particularly in the area of low income housing, but exclude tax subsidies. Their importance has noticeably declined in this time period (from 7% to 2% of non-monetary income). The portion of tax subsidies in the areas of health care, and measures to promote housing and homeownership, and promotion of savings have remained relatively stable since 1970. They are a relatively small share of outlays (about 4%). It should be mentioned, that this representation is based on very narrow definitions, for example the tax advantages for married couples through income splitting as well as tax incentives for economic stimulation are ignored here. The War Victims Support (Kriegsopferversorgung) is of receding importance. Since 1980, nonmonetary benefits in this area have accounted for less than 1% of the total benefits shown in Table 2. The nonmonetary transfers of employers, with only 0.1%, are of least importance. This is because, in the Federal Republic of Germany, optional contributions from employers consist mainly of pension plans and are in the form of cash payments (over 11 billion DM in 1985). The directly imputable nonmonetary transfers, especially health care, were only 350 million DM. The expenses of employer financed social programs (for example company health care, company housing as well as rent and building subsidies) amounted to 2.7 billion DM in 1985, but are counted here as part of the general goods and services which can not be directly imputed and will not be treated in the following discussion.

Table 3 shows the main nonmonetary benefits received in the Federal Republic of Germany in 1985, but here the data is grouped according to functional area. Nonmonetary transfers in the areas of health care, education and housing, valued at cost, account for 85% of the expenditures shown in Table 1. Health care is the most important area. 51% of the total amount shown in Table 2 falls within this sector, accounting for 20% of all social benefits including monetary benefits (see Table 1) and 6% of the GNP. Within the health care sector, 80% of non-monetary health benefits are transfers from the National Health Insurance and 6% are benefits from the Civil Servants System.

In 1985, almost 3% of the GNP was spent for personnel and operating expenditures in the area of education. These monies were 11% of the total social benefits and 28% of non-monetary benefits. Less important are transfers in the area of housing, even when one considers the tax subsidies afforded here. The cash reimbursements for housing benefits, shown in Table 2 (line 5) are not included in Table 3. Interest and principal grants, interest subsidies, and tax subsidies are just over 1% of the GNP, 2% of the total social goods and services and 6% of the nonmonetary benefits from Table 2.

In summary one can see from Tables 1 through 3 that most important types of nonmonetary income are concentrated in a few functions administered by a few institutions. Not considered here are the areas of nonmarketable household production, the so-called shadow economy, as well as government services where the outputs have a predominantly public goods character. These areas are excluded because of theoretical as well as empirical restrictions. The following section presents a closer examination of the institutional setting which is relevant to the structure of nonmonetary income components in the Federal Republic of Germany.

3. Institutional Framework in the Federal Republic of Germany

3.1 Health Care System

3.1.1. The Central Role of the Statutory Health Insurance

In the Federal Republic of Germany, health care is organized mainly within the framework of the social insurance system. In 1985 nearly 56 million people, representing 92% of the population, were covered by National Health Insurance (NHI) (4). Included here are the compulsory insured, who are mostly employees with income under a certain level (1985: 4050 DM per month), retirees, unemployed, and students. The NHI also includes a smaller group of voluntarily insured. Coverage in both groups includes spouses and

4) See: Der Bundesminister für Arbeit und Sozialordnung, Bundesarbeitsblatt, Heft 10/1986, p. 129; Statistisches Bundesamt (ed.) 1986, Statistisches Jahrbuch 1986, p. 52, Wiesbaden

children, as long as their income is not above a certain limit. The NHI is principally financed through contributions which are a percentage of salaries and wages, up to a limit, with the employer and employee each paying half. For retirees, after a transition period, there is a similar contribution structure based on their monthly pension payments. The contributions vary according to region and type of insurance company; the average was 11.8% of gross income in 1985. For students there is reduced rate of 70% of the average general rate based on a basic salary (1985: DM 690). This basic salary is based on the monthly needs of students not living with their parents, as determined in Federal Law in Education and Training Promotion of 26 Aug. 1971 as amended (BAFöG).

Family members are included in the insurance coverage at no extra cost with the financing shared by all the contributors. The services of the NHI, which are 88% noncash payments (1985) are needs tested and are granted in case of sickness or pregnancy. An important consideration concerns whether these benefits should be defined in terms of the actual usage of these services or in terms of insurance protection (in the sense of intertemporal and inter-personal risk equalization). This is also the case with other types of social insurance and will be discussed in greater detail in section 6. The measurement of contributions as well as services is therefore linked to different criteria (5).

The contributions can be over or under the value of the actual insurance services provided so that distributional effects of the NHI cannot be determined through the cost of the premiums alone, but should instead be counted through the relationship between the contribution payments and the claims made for each individual. In the case of civil servants and their dependent family members, between 50% and 70% of the costs are reimbursed in case of illness, but no contribution must be made. This support is financed entirely through taxes. It can be interpreted as a non-monetary portion of the civil servants salary in the sense of saved insurance

5) In the case of sickness pay (Krankengeld) this is not entirely true. In the case of inability to work, compensation from the employer is paid for 6 weeks and is based on net income. This portion of the NHI was less than 6% in 1985 (see Sozialbericht 1986, p. 124). As monetary transfer sickness pay will not be further discussed.

contributions, or it could be counted in relation to the utilization of medical services. On the level of the individual household, this forms a considerable portion of nonmonetary income for these units, even though the government expenditures were under 6% of the total public nonmonetary transfers for health care (see Table 3).

3.1.2 Miscellaneous Institutions in the Area of Health Care

Table 3 shows the nonmonetary transfers from National Pension Insurance (gesetzliche Rentenversicherung or GRV) which consist mainly of expenditures for rehabilitation (6). The National Pension Insurance (NPI) is a mandatory insurance for all employees and provides benefits for the elderly and the disabled, as well as survivorship allowances, mostly in the form of monetary payments. In 1985 almost 85% of NPI expenditures took the form of pension payments. As with the NHI, contributions for the NPI are scaled to wage income up to certain limit, but this limit is one third higher than for the NHI. Contributions are about 18.7% of gross income in 1987. In 1985 they were 19.2%. Employees and employers each pay one half of the contributions. The in-kind health services of the NPI amount to only 2.5% of the total services of the NPI and are less than 4% of the health services shown in Table 3 (7). Included here are the expenditures of the NPI for health insurance. The NPI pays up to half of the compulsory contributions to the NHI for health insurance for retirees. Up to the end of 1982 the total contributions for the NHI were covered by National Pension Insurance. These expenditures can be viewed as cash reimbursements similar to the civil servants system mentioned above.

As with the NPI, the in-kind health services of the Farmers Pension System (Altershilfe für Landwirte) deal primarily with expen-

6) See Bundesminister für Arbeit und Sozialordnung (ed.) 1986: Sozialbericht 1986, p. 122, Bonn

7) In view of the large portion of invalidity pensions (because of premature work disability) amounting to 26% of all the insurance pensions and 18% of the total pensions (1985; see Sozialbericht 1986, p. 120), there should possibly be more contributory investment into the fund itself. The large number of work disability is also due to the poor conditions in the labor market which, if reversed, might reduce the need for further contribution.

ditures for rehabilitation. The Farmers Pension System is conceived as basic insurance plan for farmers and their family members for old age and disability. About 90% of outlays take the form of continuing cash payments. This system is partially financed through standard contributions of equal amounts for all members which covered about 30% of the total expenditures in 1985 (1980: 22%). The rest is financed by government (8). The health care measures amount to 95 million DM (1985; 3% of the total expenditures for farmers) and are of little importance in the aggregate.

The in-kind payments of the statutory work related injury insurance or National Injury Insurance (gesetzliche Unfallversicherung) in the area of health care are also dominated by monetary pension payments. In the 1985, only 18% of National Injury Insurance (NII) expenditures were made in-kind (cost for medical and dental treatment, and care in medical facilities etc.) with a small portion in the form of cash reimbursements (9). The NII helps with the prevention of work related accidents and occupational illnesses as well as offering financial assistance in the case of work related accident, through pension payments. The NII was primarily conceived as a liability insurance to be financed by employers. The contributions to the NII take the place of damages the employer would be liable for in the case of accident or sickness of an employee. Proof of liability is not required. The NII has been expanded beyond being solely a liability insurance. For example, the employee is also covered for accidents during his commute to and from work. Infants in public day-care centers (Kindergarten) and students while at school or the university are also covered. These areas of the NII are financed by the government.

The nonmonetary services of the Social Assistance Bureau (Sozialhilfe) (45% of Bureau's total expenditures) consist mostly of medical care and patient care for the disabled. Social Assistance is designed to close the holes left open by the other parts of the social security system and guarantees every citizen who cannot help himself a "socio-cultural existence minimum". How-

8) See Sozialbericht 1986, p. 137

9) See Sozialbericht 1986, p. 128

ever the level of this existence minimum as determined by the government is very controversial. The health services for those eligible include nearly the entire catalog of NHI services for the insured. Nonmonetary transfers in this framework are comprised mostly of cash reimbursements for patient care personnel. In 1985 the expenditures were just under 1.1 billion DM for aid to the sick and 7.1 billion DM for care for the disabled. That corresponds to 11% and 71% respectively of the in-kind transfers in Social Assistance (10).

Health care services within the War Victims Support are mostly granted to people with illnesses resulting from duty in the second world war. With the passage of time, the importance of these services has diminished. Their portion of all the in-kind health services amounted to only 0.25% in 1985.

Finally the Bureau of Public Health (öffentliche Gesundheitsdienst) should be mentioned. Their expenditures accounted for 1.9 billion DM in 1985 and for 1.6% of total nonmonetary health care services. These services are financed through taxes and can be used by every citizen. Outlays deal primarily with preventive medicine (for example vaccinations or health education), maintenance of health standards, hygiene control, help for needy groups as well as medical examination for school children. The goods provided by the Bureau of Public Health have a decidedly merit good character.

3.2. Educational System

According to Table 3, nonmonetary services in the area of education amounted to 65.1 billion DM. After health care, this is the most important source of nonmonetary income where the goods provided have a private character. The educational services of the schools and universities are offered free of charge in the Federal

10) See Sozialbericht 1986, p. 149.

Republic of Germany and are financed through taxes (11). Neither tuition nor student fees are required and most important school materials are also provided free of charge. Still, bottlenecks can occur, particularly at the tertiary level, for example in libraries. Because of the size of the subsidies on a per student basis, an analysis of income distribution, ignoring these governmentally financed nonmonetary services, can lead to distorted results.

The nonmonetary transfers by the government, in the area of education, include only personnel and current operating costs. The governmental capital investment cost in the education sector (about 6.6 billion DM (12) in 1985) is excluded. As a result of limited data and methodological problems, periodization and accounting of these expenditures to yearly usage indicators is difficult (13). Expenditures for university research are excluded in Table 4 because of the predominantly public goods character. However, separating the research expenditures from the total expenditures can only be done on a general basis. A relationship of 60% for teaching and 40% for research was assumed here.

The educational system in the Federal Republic of Germany is divided into four levels, with pre-school and kindergarten grouped together (14). After the kindergarten level, the compulsory school period begins at the age of six. The primary school (Grundschule) is comprised of four classes. In the secondary school, the student can choose between three educational programs. The Hauptschule is

11) In contrast to free tuition, the cost for room and board during the education period is usually covered privately. Since 1983, subsidies have been only in the form of loans. Until this time, needy students could also receive grants. The government also supports living expenses for students through extended eligibility for child support (up to age 28) as well as through a tax deduction in the income tax.

12) See Bundesminister für Bildung und Wissenschaft (ed.) 1986: Grund- and Strukturdaten 1986/87, p. 245, Bonn

13) The investment expenditures in a given year are not the relevant factors in a cross-sectional analysis. Rather, the investment from preceding years should be studied in regard to their life span and if they are still used for educational purposes, only then, be considered in the year in question.

14) See Bundesminister für Bildung und Wissenschaft (ed.) 1986, p. 8

a five year program (classes 5 through 9) and is followed by job training in a company in combination with vocational school. The Realschule consists of six classes and allows the graduate additional training possibilities. After further studies (Fachoberschule) the graduate of the Realschule can enter the tertiary level (Fachhochschule). The third type of school in the secondary area is the Gymnasium (classes 5 through 13), whose graduates can enter the university or a similar educational program at the next or tertiary level.

The different areas of the educational system, which can only be roughly sketched here, lead to different levels of expenditures, especially when we consider the different number of students enrolled in each area. In a distribution of income analysis, which interprets governmental in-kind educational services as individual nonmonetary income, the cost structure should be considered according to the various levels of education, which shown in Table 4 for 1981 and 1984 (15).

3.3. Housing System

According to Table 3, housing is the third most important component of nonmonetary income in the Federal Republic of Germany. As mentioned above, in-kind transfers in the private sector, for example company subsidized housing, are of secondary importance and can be ignored here. The public subsidies in the area of housing (aside from Housing Benefit, a means-tested monetary transfer) mainly take the form of implicit nonmonetary transfers, or saved costs for the individual. These deal mainly with:

15) The extent to which measures support different areas of education (and thereby specific population groups) is outside the scope of this study. This must be viewed in an intertemporal analysis which considers foregone income during the educational period as well as the resulting changes in life-income. See Heiberger, Christof, Auswirkungen öffentlicher Bildungsausgaben in der Bundesrepublik Deutschland auf die Einkommensverteilung der Ausbildungsgeneration, Schriften zum Bericht der Transfer-Enquete-Kommission "Das Transfersystem in der Bundesrepublik Deutschland", vol. 4, Stuttgart/Berlin/Köln/Mainz

- tax relief (16) as well as
- interest and principal grants, and lower interest rates (with large variations among the federal states).

3.3.1 Tax Subsidies for Private Housing

Table 5 shows the estimates of the federal government for the direct loss of tax revenues as a result of tax subsidies for housing. Their purpose is mainly to support home-ownership (one- or two-family houses or apartments). Tax subsidies for cooperative housing are not considered here. The most important tax subsidy is the accelerated depreciation allowed for housing. We also consider the additional deductions for housing connected with special deductions in cases where there are children in the household (which is allowed since 1981 (17)). These amount to about 60% of the tax subsidies for housing in 1985, over 5 billion DM (see Table 5). The home owner can deduct twice the normal depreciation for his home, namely 5% instead of 2.5% of the purchase price or building costs from his income, as long as these costs are under 200,000 DM (single family dwelling, 1981) or 250,000 DM (two-family house, 1981). For a worker, with an average monthly wage or salary of 3,000 DM (1985) (18), this means a yearly tax saving of up to 3,600 DM (single) or 2,200 DM (married without children) (19). With rising income the tax savings climb considerably. At a marginal tax rate of 56% (this corresponds to an average taxable income of 10,800 DM per month unmarried or 20,000 DM when married) these savings are nearly 5,600 DM per year. In this respect, the policy instruments are of questionable value in achieving the

16) The tax measures for the promotion of housing as opposed to other "tax subsidies" should be mentioned here. But here too, it is difficult to differentiate between marginal tax rates and subsidies.

17) For taxpayers, who use the accelerated depreciation of housing which is allowed under Art. 7b. of the Income Tax Code (Einkommensteuer Gesetz or EStG), the income tax is lowered 600 DM per year for the second child and every child thereafter (Art. 34f EStG).

18) See Sozialbericht 1986 p. 177.

19) This corresponds to the laws in 1981 for the owner of a single family dwelling.

stated goal of promoting home ownership in a large portion of the population, particularly the lower and middle income groups, since it is the higher income groups who receive the greatest benefit.

The extended deductibility of interest payments (Art. 21a par. 4 of the Income Tax Code), allowed since 1982 has a subsidizing effect which similarly rises with income, but is limited to three years and is only allowed for single family houses built or purchased before the end of 1986. This special tax treatment is tied to so-called "usage-value taxation" for single family houses. This allows a further tax subsidy for a large portion of homeowners (20). But since January 1, 1987 the taxes for usage-value have been repealed. Until the end of 1986, in the Federal Republic of Germany, the income tax for the (implicit) rent value for owner occupied single family housing provided a generalized valuation formula which, in usually allowed a land value which was lower than the fair market value. The result was a lower usage value for tax purposes. However, this tax treatment allowed only limited possibilities for deducting operating cost as opposed to the revenue-cost accounting method used for two- or multiple-family dwellings. Along with the above mentioned accelerated depreciation allowed in the first eight years, there were no provisions for deducting repairs, and mortgage interest was only deductible up to a low imputed rent value. To what extent the special treatment of home ownership represented an advantage or disadvantage is different in each case. One can differentiate between two situations. When the undervaluation of imputed rent for tax purposes is greater than the sum of nondeductible operating costs, in particular the mortgage interest, then there is a tax advantage. But if interest payments and operating costs are comparably high, there can be a tax disadvantage for the owner of a single-family dwellings in the old tax code. For these reasons, an extended tax deductibility of interest payments, within time limits, has been

20) This kind of tax advantage cannot be shown in Table 5 because of a lack of data. See Hauser, Richard, Elanie Heldmann 1981: Die Verteilung implizite Transfers zugunsten von Eigennutzerhaushalten im Jahr 1969 - Eine mikroökonomische Analyse auf Basis von Individualdaten der EVS. Sfb 3 Arbeitspapier nr. 53, Frankfurt-Mannheim.

introduced, to promote home ownership as well as stimulate the housing industry (21).

The property tax waiver or reduction for land used in housing projects is not limited to owner-occupied housing. Rather it effects all projects in the area of public housing (first and second measures for housing support or 1. and 2. Förderungsweg, see Section 3.3.2.) because they are promoted primarily through low interest loans. With over 1.2 billion DM (1985), this accounts for 13% of the tax relief shown in Table 5.

Finally, it should be mentioned, that even the purchaser of land or property receives a waiver of the special property purchasing tax (Grunderwerbssteuer). Up until the reform of these taxes in 1983, there were many different statutes for reducing this tax at the federal state level so that this reform is seldom viewed as tax relief. Exclusion from these taxes could be interpreted more as the "norm" or normal tax than was the levying of these taxes (22) so that they will not be included in the following discussion and are omitted from Table 5.

21) With the new regulations and the abolition of the value of usage tax, with its different methods for valuation of implicit income there is an equalization of the taxation for owner-occupied housing. The so-called "consumer goods solution" means that the homeowner will no longer be liable for the taxes on the nonmonetary portion of his income received through saved rent costs. The result is to the advantage of home owners over apartment dwellers, whose expenditures for the use of the apartment must be completely financed through consumption expenditures. In addition to this, there is a long list of special rules (for example, in the area of the new special expenditure deduction Art. 10 EStG and deductions for children), which are intended to better promote home ownership.

22) The laws regarding the buying of land 1983 from 17.12.1972 resulted in a uniform treatment in all the federal states. Thereby, almost all the tax waivers were repealed and the tax rate was lowered from 7% to 2% of the valuation basis (usually the sale price).

3.3.2 Miscellaneous Support Measures in the Area of Housing (sozialer Wohnungsbau) (23)

The miscellaneous types of financial aid for housing in the Federal Republic of Germany are summarized in the term "public housing support" (sozialer Wohnungsbau) although the exact forms of these measures are varied. The first group of support measures (1. Förderungsweg) was introduced after the Second World War in response to the housing shortages at the time. These measures are carried out by the federal states so that there are large regional differences in the support conditions as well as the extent of the programs. Within the framework of the first group of support measures, the focal point lies in the granting of public building loans which are interest free or with lower interest after a certain period with the intention of supporting mainly (although not exclusively) apartment buildings. In addition there are loans or subsidies to cover operating cost for housing (interest on annuity allowances or loans). The main preconditions for receiving this support, aside from a few qualitative building standards and floorspace limits, are that a "reasonable portion of the costs" be born by the builder (around 15% of the construction cost (24)). Furthermore, income limits for the tenants (25), and rent limits must be observed when renting the apartments.

In contrast to this, there is a second group of housing support measures, the so called "2. Förderungsweg" of public housing support, which concentrates mainly on owner-occupied housing (single

23) The differentiation chosen here between tax advantages and promotion programs within the framework of public housing overlap somewhat. This is because the above mentioned property tax relief and the programs to promote housing are both regulated within the 2. housing construction law and both could be classified as part of the public housing program.

24) See Hanusch, Horst, K.-D. Henke, K. Mackscheidt, M. Pfaff et. al. 1982: Verteilung öffentlicher Realtransfers auf Empfängergruppen in der Bundesrepublik Deutschland, Schriften zum Bericht der Transfer-Enquete-Kommission, Vol. 3. Nr. 1 and 2, p. 155, Stuttgart

25) This varies according to the type of family and according to certain social characteristics. Within the 2. housing construction laws, for 1985 this is:

- 21,600 DM for the apartment renter
- + 10,200 DM for the second family member
- + 6,300 DM for each additional family member

and two-family dwellings, owned apartments). The main element of support is in the granting of loans to the builder in order to lower his interest and capital repayment costs in the first 12 years. Repayment of principal on these loans begins in the 15th year after completion of the building. The conditions on usage for this aid are similar to the conditions of the first group of support measures, although more generally stated. The income as well as the floor space restrictions are higher (according to federal state, around 40 - 50% and 20% respectively) which is not unusual for measures which were conceived as an "ownership" program. This second group of support measures is historically referred to as "tax-relief housing support", which is an inaccurate description. This does not mean that the support is achieved through lower taxes; characteristic are the above mentioned loans. The reduction in property taxes is not a specific part of the second group of support measures. It is also granted (independent of the builder's income) as part of the first group of housing support measures as well as under other housing programs with conditions on floor space, but without other restrictions on usage (26).

4. Valuation and Imputing of Nonmonetary Income: Theoretic Concepts, Possibilities and Operational Limits

The data presented here on nonmonetary income in the Federal Republic of Germany deals with governmental expenditures or forgone revenues (tax subsidies) (27) in a fiscal year. Within the framework of microanalytic distribution of income analysis, these expenditures cannot simply be viewed as aggregates to be distributed - ignoring the empirical imputing problems caused by the lack of indicators. There can be considerable differences between cost and utility. Costs are determined in the private sector through the

26) In this way, one can differentiate between the property tax relief in public housing and the property tax relief for privately financed housing. See Hanusch, Horst, K.- D. Henke, K. Mackscheidt, M. Pfaff et. al. 1983, Tabellenband, p. 57. In addition, over 80% of the property tax relief is to the advantage of the privately financed homes, so the characterization of the 2. Housing Construction Law as "tax subsidized" housing construction is therefore misleading.

27) The foregone tax revenues shown here are based on rough estimates and should be interpreted with caution.

market price, which can be temporarily over or under the production cost. But if one begins with market price (or cost of provision), one can then ask how the nonmonetary types of income should be valued. Furthermore, there should be a discussion of to what extent individual imputing is reasonable, because the components of real income are at least partially comprised of goods with merit character, so that the incidence of the benefit of these measures is uncertain.

4.1. Concepts and Problems of Valuation

Unlike monetary income, there are fundamental problems of valuation with in-kind income, which vary in seriousness according to area and which also make their summation with monetary income questionable. At present, there are few instances where one is able to value nonmonetary income according to the utility of the recipient and to make it at least approximately comparable with monetary income. The problems of valuation exist not only on the macro economic level - with the determination of the aggregate to be distributed - but also on the individual level with the actual imputing techniques. Valuation and imputing problems should not be viewed in isolation from each other because they are part of the same process.

Only costs and/or expenditures are directly measurable in the context of in-kind income (through the budgets of public authorities and social insurance), although this makes no statement in regard to the aggregate utility of the recipients. Independent of the imputing methods, the orientation of an empirical distribution of income analysis on the expenditures as well as the tax relief shown in tables 1 through 5 is different from a market price valuation, which is the basis for a monetary distribution of income analysis (28). Because consumer preferences remain ignored, the use of a cost accounting approach in in-kind income can lead to distorted results in many areas, in particular:

28) See Rose, Manfred 1977: Finanzwissenschaftliche Verteilungslehre, p. 101, München. Rose speaks of an "amalgamation of goods and income" which does not "serve a contradiction free incidence analysis".

1). The macro economic and individually imputed value of the in-kind income rises with their cost, even with inefficient production techniques or wasteful government expenditures.

2). The actual utility (or growth of utility) can be considerably higher, lower or even negative in comparison to the aggregated expenditures. This is particularly important when utility extends over a longer period than the expenditures so that "periodization problems" may occur, as in the area of education.

The sum of the expenditures does not necessarily correspond with the sum of in-kind income, so that its addition with monetary income is questionable. This aspect becomes particularly clear, when considering the finance side. This is because, in the case of direct payments instead of compulsory participation in the costs, the recipient of in-kind transfers would possibly choose a different level and structure of public expenditures. There are many situations where one could imagine discrepancies between the desired and actual level of goods publicly available. Examples worth mentioning are costly governmental bureaucracies or the developments in the area of health care (too many hospital beds expensive "machine medicine" etc.) and subsidized mis-investment in public housing (with occasionally unsupportable cost-rents). However, this line of argumentation can be defended on the grounds that governmental goods and services, with a predominantly public or merit goods character, are often made for the express purpose of correcting individual preferences, for example with preventative health care and rehabilitation or with foreign and domestic security. In some areas, the cost accounting approach for the entire economy could be considered reasonable but the imputing on the individual level and summation with monetary income is theoretically inconsistent and therefore, at least problematic.

The alternative to the cost approach for valuing the goods and services provided by government is valuation according to the (marginal) utility of the person who uses these services. The starting point here is not the aggregate to be distributed, which is then imputed to the individual on the basis of appropriate indicators. This method would begin on the individual level and the aggregated income equivalent would then be the result of a micro-analytic study. However, this theoretically promising utility ap-

proach and its basis, the microanalytic marginal utility theory ignore the "necessary correction" of individual preferences by the government which result from imperfect information of the citizens and the incomplete functionality of a competitive economy (29). In spite of these problems, this concept of valuation would better reflect the distributional effects than the cost approach for many goods and services with a private goods character (for example, in education where discrepancies between costs and utility exist not only in regard to their level but also in regard to point in time when they occur). Furthermore, on the basis of utility valuation of nonmonetary income the addition with monetary income could be justified on theoretical grounds. For empirical analysis, using present methods, the utility approach cannot be employed because individual preferences are not cardinally measurable and therefore neither interpersonally comparable nor additive. Diverse methods of approximation, for example the estimation of opportunity costs (30) are unsatisfactory, particularly because of empirical problems, but also as a result of unsolved theoretic problems (31).

29) These kinds of "imperfections" can have fatal results, for example in the area of health care.

30) This corresponds to the value of alternative public or private goods, which must be foregone in favor of the goods under consideration. This leads to further problems in valuation. This method is theoretically clear only when there is a comparison group with the same socio-economic characteristics which can freely choose the allocation of their means.

31) Even with this method, one can question what the "correct" discount factor should be when costs and benefits occur at different points in time. The market rate of interest, whose future level can only be estimated with uncertainty is seldom suitable for comparing the costs and benefits of nonmonetary income because the market interest rate is not valid for every kind of investment. This discount factor is particularly problematic when there are external effects as in the areas of health care or education and individual preferences should be corrected in view of socio-political goals. See. Zeppernick, Ralf 1985: Transfereinkommen und Einkommensverteilung. Schriftenreihe des Rheinisch-Westfälischen Instituts für Wirtschaftsforschung, (RWI Essen) N.F. Heft 47, p. 50, Berlin

4.2. Possibilities and Limits of the Imputing of Nonmonetary Income

The imputing of nonmonetary income is not independent of the concept of valuation. As mentioned above, one must start either from the distribution of a given aggregate among the individual recipients (cost approach) or the determination of the (cardinal) utility on the micro analytic level, which can be aggregated to determine "total utility" (utility approach). The "total utility" can differ considerably from the total costs. Both methods pose fundamental imputation problems when dealing with public goods as well as for goods with external effects. This is because the more distinct the public character of a service is, the less the total utility and the "benefiting" group can be determined. For this reason, the analysis in this paper is limited to selected types of nonmonetary income. But even in this area, there are external effects (32), aside from the direct utility, of the in-kind transfers. For example, a vaccination program, administered by the Bureau of Public Health, benefits not only the people who take advantage of this service, but all citizens because the risk of infection is lessened or eliminated. The possibility to impute the benefits from such in-kind transfers to individuals is therefore limited (33).

Closely related to the problems of external effects is the question of the incidence of nonmonetary income (34). Once again, in addition to the people who directly use offered services, there are possibly other groups which benefit from nonmonetary services

32) This is not always positive utility because there can also be external costs (a lessening of utility), for example, the destruction of recreation areas as a result of expansion of the street or highway system can result in a lessening of well-being.

33) This theoretically based objection in regard to the analysis of the distribution of personal income is not limited to in-kind transfers. There are also external effects associated with monetary transfers. For example in employment programs there are "side effects" from the transfers on the lower income groups through a higher propensity to consume.

34) These unsolved problems also concern monetary transfers in a similar way. One can question, for example, if Housing Benefits are only to the advantage of the direct recipient or if the landlord, who can charge a comparatively higher rent is also a beneficiary.

(35). This is particularly true for in-kind transfers whose preparation and distribution are administered by third parties (36). In as far as the suppliers of governmentally financed subsidized services can influence prices, for example with housing support, they should be counted in with those who enjoy the benefits of the public expenditures. This kind of distributional effect is not considered in present theoretic and empiric research, so that, because of the uncertainty as to incidence, the imputing of the benefits from in-kind transfers to individuals is only possible within limits.

In spite of these objections, the imputing of nonmonetary income to individuals is better suited for the study of income distribution than is the complete omission of these components of well-being. The following discussion does not examine the methods of estimation in the framework of a utility concept because the present methods for measuring utility (37) on an individual level are not compatible with the framework of a total income distribution analysis.

The cost approach is compatible with several imputing methods. These are the results of hypotheses about external effects and assumptions on incidence. When it is assumed, that the public goods character of in-kind transfers is predominant, the total costs may be divided equally among the citizens, who have access to these goods. In this case, the actual usage is not of central importance, rather the value is attributed to the availability of the goods and services ("availability concept" (38)). For example, expenditures for education are not imputed as nonmonetary transfers only to the students, but rather to all citizens. This method

35) The differentiation between external effects and simply passing the costs on to others or expropriating the benefits is not always clear. For example, the advantages that an apartment builder enjoys as a result of a governmental housing support program can be viewed as a shifting of the benefits (in the form of higher prices) or as an external effect (in the form of demand stimulation).

36) See Zeppernick, Ralf 1985, p. 48

37) The individually valued utility should not be equated with the frequency of use.

38) See Zeppernick, Ralf 1985, p. 51

of imputing implies, that the existing educational possibilities are valued as an increase in utility for all individuals. This can be justified by actual participation by the individual, by opportunities of the children, or because of the external effects from the education of others (for example economic growth, job availability, a supply of services, for example in the area of health care or cultural activities). Education as a private good, with a "payoff" in the form of future personal income, remains ignored. This aspect of the private nature of nonmonetary goods and services is accented by the "usage concept" of imputing (39). This theory does not consider the external effects and imputes only actual usage to real income. For the above example, in the area of education, this means that the cost are imputed to the students as an income equivalent. The "availability concept" and the "usage concept" - two opposing concepts in valuation - should be combined. A separation of the "public" and "private" portion of goods would however be arbitrary, given the present state of research. Therefore, the imputing of nonmonetary income should be decided in each case, according to the concept which is best justified by the assumed distributional effects.

5. Former Empiric Research and Results in the Federal Republic of Germany

Other studies on the distribution or redistribution of income in the Federal Republic of Germany have concentrated primarily on monetary income. In more recent analysis of budget incidence, the in-kind goods and services of the government, including even some collective goods (for example defense expenditures), were imputed to individuals. The above mentioned valuation and imputing problems were, however, not satisfactorily solved. In some areas of nonmonetary income, there are more comprehensive studies, which were in part carried out by the federal government. In these studies, using the cost valuation approach, relatively detailed group-specific frequency of use is considered. Many studies find a distinct leveling of income as an effect of in-kind transfers from the government, but these results should be interpreted with caution because of the generality of the assumptions and the prob-

39) See Zeppernick, Ralf 1985, p. 48

lematic concepts in valuation. Some of these studies deal only with model calculations for a "typical" household whose empiric relevance in regard to single characteristics is in no way known.

An article by Andreas Obersteller (40) analyzes the redistribution effects of group specific in-kind transfers in the working class. Although the author recommends that his results be interpreted as provisional, Obersteller imputes governmental expenditures, valued at factor cost (41) to the worker households for the areas of transportation, education and health care. However, it is questionable if governmental expenditures for the transportation system can be considered group specific in-kind transfers, because the external effects are particularly important in this area. The empirical base for this study was, aside from the economic accounts computation, the micro census from 1978 as well as the results of private surveys. The resulting income leveling, due to in-kind transfers, is not surprising in view of the basic hypotheses and distributional rules for benefits. Here, he ignores the insurance principle in the area of health-care (42), the future utility for students in the area of education (although this is difficult to measure), and the public character of goods and services in regard to the promotion of public and private transportation.

The distributional effects of in-kind transfers are much more noticeable when all the public expenditures (even where the collective goods character of clearly dominates) are imputed individually in an arbitrary manner. In regard to the quantitative

40) Obersteller, Andreas 1983: Umverteilungswirkungen gruppenspezifischer Realtransfers bei Arbeitnehmern - Zur Bedeutung öffentlicher Leistungen im Umverteilungsprozeß, Mitteilungen des Rheinisch-Westfälischen Instituts für Wirtschaftsforschung (RWI), Vol. 34, pp. 25 - 50; See also Obersteller, Andreas 1982: Umverteilungswirkungen der Staatstätigkeit bei den wichtigsten Haushaltstypen, Dritter Untersuchungsteil - Eine empirische Analyse gruppenspezifischer Realtransfers - RWI, Essen

41) Because of the large portion of investment in the area of transportation, a cost accounting which considers time-factors can not be used here.

42) As with private insurance, this is not based on a single period, but rather on a larger portion of the life-span.

importance of governmental in-kind transfers (43) on the distribution of income analysis, the direction as well as the extent of governmental redistribution results only because of the assumptions used. With presently used methods for incidence analysis of the budget (44), group specific or merit goods provided by the government are imputed by various indicators of usage and collective goods are imputed in equal amounts per household (45). Measuring the incidence as a percent of household income, the redistribution effect shown by this procedure must be larger for the lower classes (as compared to a situation where the effects of collective goods are ignored). In a study from Hake, using data from 1963, the advantages for purely collective goods sank from almost 30% of the households net income, for the lowest group to around 6% in the highest group (46). In a more recent study from Grüske for the years 1963, 1969, 1973, and 1978, the purely public goods lowered the gini-coefficient for the concentration of income about 8% - 10% (47).

Important methodological problems in relation to valuation and imputing in-kind transfers were studied by the Transfer-Enquete-Kommission within the framework of a report on the transfer system in the Federal Republic of Germany. The commission was sponsored by the federal government to undertake monetary and in-kind transfers in theoretic as well as empiric studies and the attempt was

43) The expenditures for defense, internal security, and law enforcement were over 13% of the entire governmental expenditures in 1983 (74 billion DM); See Statistisches Bundesamt (ed.) 1985: Datenreport 1985. Zahlen und Fakten über die Bundesrepublik Deutschland, Schriftenreihe der Bundeszentrale für politische Bildung, Vol. 226, p. 217, Wiesbaden

44) See, for example Hake, Wilfried 1972: Umverteilungseffekte des Budgets. Eine Analyse seiner personalen Inzidenz. Göttingen; Grüske, Karl-Dieter 1978: Die personelle Budgetinzidenz. Eine Analyse für die Bundesrepublik Deutschland, Göttingen; Grüske, K.-D. 1985: Personelle Verteilung und Effizienz der Umverteilung. Analyse und Synthese, Göttingen

45) As an alternative, one could use the total wealth of households as an imputing criteria; see, Grüske, Karl-Dieter 1978, p. 142, p. 193, and p. 224. There is a regressive effect on the distribution of income with this variant, as is to be expected. The highest income classes receive the most benefits.

46) See Hake, Wilfried 1972, p. 244

47) See Grüske, Karl-Dieter 1985, p. 387

made to show the entire effects on distribution of income from the transfer system. Precisely in the area of nonmonetary goods and services, there were, as before, many fundamental obstacles surrounding the imputation process, because on the basis of expenditures and the concept of formal incidence, a direct imputing is not possible with the present state of statistics. The final report of the commission as well as the single reports (48) nonetheless contain interesting results. These results went a long way to correct the existing deficit of research through a comprehensive empiric analysis of the usage of in-kind goods and services. The single reports dealt with the areas of health care, housing, education, transportation and culture and were based on group specific pattern of use. Because of the unsolved problems, the commission declined to combine the single results into an integrated distribution of income accounting.

The study in the area of health care from Klaus-Dirk Henke is based on a survey from the year 1975 concerning the frequency of use of health care services in the previous four months. In relation to different socio-economic data also surveyed, Henke came to the conclusion that the usage is in part determined by age and sex, because his method of analysis did not consider the partial equalization of over and under usage across the life cycle. This could also be a reason that one and two person households have above average cost of usage, especially for ambulant medical care and for medication, because older people live primarily in small households. In regard to the net income of the households, the pattern of usage (the portion of users in each group) was not as clear, although with rising income, the intensity of usage sinks. The frequency of use per person results should be interpreted with

48) See Transfer-Enquete-Kommission 1981: Das Transfersystem in der Bundesrepublik Deutschland. Bericht der Kommission, Bonn; and in particular Hanusch, Horst et. al. 1982: Verteilung öffentlicher Realtransfers auf Empfängergruppen in der Bundesrepublik Deutschland, Schriften zum Bericht der Transfer-Enquete-Kommission, Vol. 3, No. 1 and 2, Stuttgart; Helberger, Christof 1982: Auswirkungen öffentlicher Bildungsausgaben in der Bundesrepublik Deutschland auf die Einkommensverteilung der Ausbildungsgeneration, Schriften zum Bericht der Transfer-Enquete-Kommission, Vol.4, Stuttgart

care because the chosen indicators for usage do not necessarily reflect the actual intensity of costs (49).

Works from Martin Pfaff, Wolfgang Asam and Andreas Netzler in the areas of education and culture (50) are also based on indicators of the actual usage of goods and services within one year (1975), as far as these can be determined and imputed. The study was based on data from the microcensuses from 1974 to 1976. They showed that the main part of the educational goods and services went to households with four or more members, although with a sinking portion in the higher levels of education. The differentiation in relation to net income of the household shows that in spite of the educational expansion in the seventies, the lower income groups are still at a disadvantage in this area.

In a further special report sponsored by the Transfer-Enquete-Kommission, the attempt was made to determine the investment character of educational goods and services. Aside from the analysis of the basic types and direction of the effects in regard to the distribution of income in a cross-section of the population and the distribution of the chances, Christof Helberger performed a life-cycle analysis, which (in contrast to the costs approach methods for single birth cohorts) explains the income biography of people who participated in the educational system. Within the framework of this simulation, not only the direct advantages of the free usage of the services were relevant, but also the future income earnings possibilities (private revenues) as well as the education specific advantages of the statutory pension insurance. This intertemporal analysis (a status quo analysis, based on the existing institutional features in 1975) led to some results which were directly opposed to those of the cross-sectional analysis. He

49) A fundamentally different approach can be found in: Becker, Irene 1985: Einkommensumverteilung im Rahmen der gesetzlichen Krankenversicherung - Eine empirische Untersuchung, in: Schmähl, Winfried (ed.), Versicherungsprinzip und soziale Sicherung, p. 98 - 119, Tübingen. Although this work is based on the imputing of costs, the group specific intensity of use is determined through a special evaluation from the accounts of the statutory health insurance.

50) The results of culture and transportation cannot be discussed in greater detail here because of the problems of imputing these goods and services to individuals.

showed that the educationally dependent transfers are clearly regressively distributed, so that the comparatively high cost of higher education pays for itself in the form of higher life income. This remained true, even when one considers the relatively shorter time spent in the work force and the progressive structure of annual income taxes. According to Helberger's study, university graduates had an annual net income of 156% of the cohort average, the Hauptschule graduates, an income of 83%.

A study by Klaus Mackscheidt, Inge Hackenbroch and H. Werner Kammann finds that the middle income groups receive most of the advantages in the area of housing. The subsidies, tax advantages as well as Housing Benefits (which could also be treated as monetary transfers) were considered and imputed according to the indicators for usage or "plausible hypotheses". The authors of this study deviated from the expenditure method of valuation when they attempted to estimate the level of monetary advantages (subsidy value) for the recipients of federal building loans. In spite of the unsatisfactory data, the difference between public and market conditions were determined in regard to outstanding mortgage for the year 1975. This subsidy value was then imputed to the renter in public housing. Households with higher or middle incomes, civil servants and self employed individuals, as well as larger households seemed to be at an advantage, although there were large differences between the individual program effects on the distribution of income. As a result they figured that nearly 60% of the tax advantages for premiums from savings and loan associations (Bausparbeiträge) accrued to the top income classes, but only 7% of the transfer went to public housing tenants.

6. Suggestions for expanding the LIS-Databank for the Federal Republic of Germany

The LIS-Noncash Income Project serves the purpose of expanding the databank of the "Luxembourg Income Study" to better enable comparative analysis of income distribution. At present, the databank, for the Federal Republic of Germany is limited to socio-economic characteristics and monetary income of households and fami-

lies (51). However, the distribution of material welfare is also determined by the public or private in-kind transfers received. These transfers can be directed at an object (for example through governmental interest subsidies to limit rent increases) or directed towards individuals (for example, through direct rent subsidies (monetary transfers) to the poor). Furthermore, a study of the distributional effects of tax subsidies is desirable. Although these are implicitly included in the distribution of net income, they can not be differentiated from the effects of the tax rates.

In order to achieve greater comparability of the data for the countries participating in the LIS-Project, certain common conceptual principles for the imputing of nonmonetary income should be recognized. Otherwise, there is a danger that the resulting (expanded) databank could contain additional distortions (caused by the methods) when used for international comparative analysis.

We offer the following suggestions for discussion:

1) The Imputing of governmental nonmonetary income should be limited to benefits which have predominantly a private goods character.

2) In regard to the valuation of in-kind income, the utility method should not be "risked" because of unsolved theoretical problems. Rather, the simpler cost method should be chosen.

3) The in-kind income from the social insurance should not be valued on the basis of individual usage, but rather be considered in the sense of a valued insurance protection.

4) Restrictive methods should be used for determining the definitional limits and imputation of tax subsidies, because of the arbitrary nature of the standards of reference, which must be set, because of the different types of tax progressions and because of considerable empirical problems.

51) An example of this is the use of direct transfer payments as opposed to the reduction of tax liability to achieve a given goal.

6.1. Imputing of Health Care Services

The imputing of health care costs must vary with institution. National health care is built around the insurance principle so that the frequency of individual claims for services is not a suitable basis for imputing, although it can be used as an empirical basis to identify risk groups. Deviations from this basic insurance principal exist in financing, through the income dependent contribution structure (52) and through nonconsideration of group specific risks. One can ask to what extent an imputing of the NHI expenditures, in the sense of valued insurance coverage, can and should take health care cost risks into account, for example by age, sex, professional, industry or regional risks. Because a large portion of the insured are covered by the NHI most if not all of their lives (53), yearly imputing on the basis of risk can be ignored. In this case it would be assumed that differences in the claimed cost of goods and services during the life-cycle cancel each other out (54) and that other extraordinary health circumstances (55) fall under the insurance blanket of risk equalization. For this reason, the total NHI expenditures, net of monetary transfers could be imputed on an equal per-capita basis to the in-

52) The contributions are already incorporated in the LIS-Data.

53) At the end of 1985 there were almost 24 million employed (not including unemployed, youth, and handicapped, students and convalescing) insured by the NHI, which is 92% of the work force. In addition to this, there is a compulsory insurance for students, unemployed and the retired as well as coverage for children (up to a certain age and income limit) and non-working spouses, so that almost 56 million people, 92% of the population are included in the NHI. See *Bundesarbeitsblatt* 1986, No. 10, p. 126 and p. 129; *Bundesministerium für Arbeit und Sozialordnung* (ed.) 1986: *Arbeits- und Sozialstatistik, Statistisches Taschenbuch*, p. 2.5 and 2.1

54) Another approach can be found in Becker, Irene 1985. There the risk characteristics of age and sex are considered by insurance protection value within the framework an annual accounting because on the individual level, the under or over average usage of these services is not always included. In contrast to this the insurance principle is accented in Hauser, Richard 1986: *Empirische Umverteilungsanalysen als Beitrag zu einer Theorie des Systems der sozialen Sicherung*, in Hanau, Klaus, R. Hujer, W. Neubauer (ed.), *Wirtschafts- und Sozialstatistik, Empirische Grundlagen politischer Entscheidungen*, pp. 417 - 443, here p. 433, Göttingen

55) Examples would be the regional differences in pollution or work place related health risks.

sured and their family members (see Table 6) (56). In a similar way, the expenditures for Aid for Civil Servants and Retirees could be imputed in absolute equal amounts. Because of a lack of data, the number of the included family members should be estimated using a quota similar to the one used to estimate the number of co-insured family members in the NII.

Other nonmonetary health care transfers need not be included in extensions of the LIS-Databank. In view of the comparably small macroeconomic importance (57) and the available information, an individual imputing of the benefit received would be at best only a rough estimate (58).

6.2. Imputing of Educational Services

Imputing nonmonetary transfers in the area of education, when using an annualized database, is particularly problematic for theoretical as well as methodological reasons. The utility occurs in later periods than the year of the expenditure and estimating these transfers is only possible using restrictive assumptions. The results are then, uncertain, and one must deal with the problems of discounting as well. The value, for individuals and groups, of free or tax-financed education would be better determined through an intertemporal study, although even this type of complicated study ignores external effects such as economic growth etc. The results of this type of analysis (59) should not to be

56) Health insurance for the retiree is in part financed by the statutory pension insurance, but according to this concept, it should be valued individually with the same amount as for other insured persons.

57) The health care services of the Social Assistance, at almost 8 billion DM, is considerable. However these are primarily cash reimbursements for people in homes for the elderly and disabled. This population group is not included in the original LIS-databank.

58) So in the case of the Bureau of Public Health (1,930 million DM 1983, see Table 3), because of lacking indicators for the distribution of usage and because of external effects, these services should be imputed on an equal per-capita basis, resulting in an annual in-kind component of about 32 DM.

59) See Helberger, Christof 1982.

interpreted within the framework of a crosssectional analysis of the material welfare distribution and should not be added to other components of income (60) because the (potential) rise in well-being occurs in later periods. That leaves the possibility, despite all our reservations, to impute the cost of the educational system through indicators of individual usage. With this concept, a very unrealistic reference standard is assumed and used as a basis for quantitative analysis. The assumed standard of comparison is based on individual usage, financed through fees, but with an unchanged user behavior and costs (and cost structure) in regard to the status-quo (61). The imputed cost for students at different levels of education are shown in Table 4 for the years 1981 and 1984. Capital expenditures are not included here because of the limited relevance of a periodized imputing of these costs.

The LIS-Databank contained no specific information on the usage of educational institutions by the different household members at the time of the survey. This information could, however, be obtained through the data of the transfer survey of 1981 (the empiric basis of the LIS-Databank for the Federal Republic of Germany). The personal imputing of costs is particularly problematic for students at the tertiary level for three reasons: first, the data does not differentiate between universities and senior technical universities (Fachhochschulen); second it is difficult to differentiate between the expenditures for research and instruction in the universities; and third, the services offered to the community, particularly the university clinics (for example patient care for the disabled) should be deducted from the total expenditures. As an alternative, one can omit public education from nonmonetary income during the educational period; this "restrictive" method is more compatible with the goals of this study, the estimation of the distribution of material welfare in a crosssection of populations.

60) Intertemporal simulations are less a description of the status quo, but rather are directed towards more far-reaching questions of the possible effects of potential political programs.

61) In the framework on ex-post analysis and for theoretical reasons, it would be more sensible to impute as benefits for an employed person, a portion of the costs of their education, which occurred in the past, but also considering the length of time, they will be in the work force.

6.3. Imputing of Nonmonetary Income in Housing

The imputed nonmonetary income for housing can only be a rough estimate at best, because of the complexity of rules, relevant characteristics as well as regional differences. Even estimates of the total volume of governmental support for housing show large discrepancies (62). A simplified accounting on the basis of the number of owner-occupied houses and apartments, or certain private expenditures, for example home maintenance, probably leads to distortions. This is because of two factors:

- 1). the portion of home and property owners is relatively high in the lower income classes. This is possibly a result of inheritance (63) or the relatively lower income position in the life-cycle ("elderly" households); and
- 2). home maintenance rises with the age of the building.

Both indicators make the proportional accounting of public support for housing difficult, because, in the course of time, the declining support for owner-occupied housing is not considered. Subsidies in the area of housing cannot be determined on the basis of single characteristics, instead one must consider a variety of variables from the household level. In addition, there are problems here (which have not yet been resolved), as to the unexplained incidence of support, the needed periodization, as well as the lack of data for the Federal Republic of Germany. In particular, the lack of housing data in the LIS Databank restricts the imputing of housing subsidies. The databank differentiates only between rented and owner-occupied housing and for the latter, an imputed rent is estimated. The renters of public housing cannot be distinguished from the renters of private housing. Tax sub-

62) See Transfer-Enquete-Kommission 1981, p. 87 ff.: The studies contrasted there, differ from each other as to volume of support by about 100%, which is not only due to the different years treated in the studies (1972 and 1975), but is also due to differences in definitions of terms, distribution hypotheses and the statistical data.

63) According to the income and usage survey of 1983, just under 20% of home-owner households acquired their property through inheritance, see Wirtschaft und Statistik 1985, No. 12, p. 973

sidies cannot be meaningfully imputed when the age of the building is unknown and the precise rental value of owner occupied housing is only possible with information about qualitative characteristics of the property and its location.

As with education, the best way to consider housing subsidies lies in making estimates directly, using data from the transfer survey of 1981. The somewhat broader catalog of variables contains some starting points for imputing the value of nonmonetary subsidies in the area of housing:

- Information on the housing conditions, differentiated in regard to public housing,
- Information on size, characteristics and location of the home,
- Information on rent costs or estimated rent for owner occupied housing (64) as well as maintenance costs,
- Information on, if governments loans or interest subsidies were granted and what tax subsidies exist, and finally,
- Information on savings premiums received in the last year. These should be considered as monetary transfers but are not contained in the LIS-Datatape and should be added to complete this information.

The differentiated data from the transfer survey 1981 should be extended through broad simplifying assumptions in order to impute income. Problems arise from the differences between the time of taxation (65), which is only known for the time period before the survey, and the monetary income, which relates to time of the survey. This makes it difficult to determine reliable estimates of

64) See Klein, Thomas 1985: Umfang und Strukturen der Armut unter dem Einfluß von Zweitverdiensten, Sfb 3 Arbeitspapier Nr. 170, p. 7, Frankfurt-Mannheim. Klein uses a concept of income, which includes the rent value of owner occupied housing (estimate by the surveyed). Missing values were estimated through regression analysis.

65) For example, accelerated depreciation, Art. 7 EStG, tax subsidies from savings and loan contributions or the granting of a savings premium.

marginal tax rates. Also, the volume of subsidies for public housing can not be adequately considered because the incidence is unknown. The imputing of governmental expenditures to renters alone, is not justifiable in this area. This is because the subsidy can only be determined as the difference between subsidized rent for public housing and the market rent for private housing. The size of the difference between the cost based rent and the market rent may vary in different periods and have different effects on income distribution (66). Also, the fact that landlords and construction firms are obviously recipients of these benefits which cannot be adequately considered. Finally, the methods of imputing implicit rent for owner-occupied housing should be viewed critically. Aside from the fact, that the estimates of the surveyed are possibly unrealistic, there is the problem of considering the deductibility of costs (depreciation and maintenance) (67).

On the basis of the considerations shown in the preceding section and the structure of nonmonetary income in the Federal Republic of Germany, we are planning the following concrete additions to the LIS-Data.⁶⁸

66) See Bartholmai, Bernd, R. Ulbrich 1979: Freigabe der Sozialwohnungen? Deutsches Institut für Wirtschaftsforschung (DIW), Wochenbericht 1-2, 1979, Berlin

67) See Hauser, Richard, Elanie Heldann 1981: Die Verteilung impliziter Transfers zugunsten von Eigennutzerhaushalten im Jahr 1969 - Eine mikroökonomische Analyse auf Basis von Individualdaten der EVS. Sfb 2, Arbeitspapier Nr. 53, p. 18, Frankfurt-Mannheim.

68) For the imputations based on households, the original data from the transfer survey 1981 must be used, because the LIS-Data-tape contains too little personal data. It is also necessary to create an addition tape based on the transfer survey, and to associated by page number, the data for the households with the LIS-

Type of Income	Imputing Method	Amount per person in DM (1981)
Nonmonetary transfers of the GKV (medical, dental and hospital care)	Valuation of the insurance protection in equal amounts per insured person. Summation with every household member (LD1(5)=1 or LD(5)=2) or family member (LD1(5)=3) belonging to the NHI (variable TR61(I))	1,458
Aid to Civil Servants (50%-70% reimbursements for medical, dental, and stationary care)	Valuation of the insurance protection in equal amounts per eligible person, where the same family quota as in NHI is used (53%). Summation with every household member or family members. Civil servants, judges, retirees, those receiving pensions or qualifying dependent of these persons	<u>5,902 mil.</u> P with P=(civil servants, judges, career soldiers and pension recipients) *1.53

Costs for education for students (excluding compulsory school period)

Valued by expenditure per student, differentiated according to educational level (excluding capital investments research expenditures) Summation with every household member over 15 years of age and who is attending one of the mentioned educational institutions.

Realschule: 3,700
Gymnasien: 4,700
Berufliche Schulen: 2,400
Fachhochschulen: 5,700
Universitaeten: 7,800

Rental value for owner occupied housing

Valuation by the estimation of those questioned (TR184). Estimation by regression in case of missing answer.

Estimated value using data from the Transfer Survey (1981)

These imputational procedures sketched here will have to be carried out in Frankfurt because the LIS-Databank is too limited. In Luxembourg, the files will be merged (exact determination the page numbers).

Table 1: Public and Private Expenditures for Social Security and Education in the Federal Republic of Germany
- in Min. DM -

Year	1970	1975	1980	1981	1982	1983	1984	1985	1986 (1)
Type of transfer (2)									
Direct Monetary Transfers (3)	111.236	212.613	285.368	301.850	311.158	319.257	327.862	336.161	350.897
Tax Subsidies (4)	18.079	19.612	28.762	29.890	30.874	32.753	34.016	36.291	45.208
Direct and Indirect Nonmonetary Transfers (5)	59.068	133.917	191.679	209.147	215.967	218.300	228.084	235.714	242.323
Total Transfers	188.383	366.042	505.809	540.887	557.999	570.310	589.965	608.166	638.218

- Structure in % of Total Transfers -

Direct Monetary Transfers (3)	59	58	57	55	55	56	56	55	55
Tax Subsidies (4)	10	5	6	6	6	6	5	6	7
Direct and Indirect Nonmonetary Transfers (5)	31	37	38	38	39	38	39	39	38
Total	100	100	100	100	100	100	100	100	100

- in % of the GNP -

Direct Monetary Transfers (3)	17	21	19	20	20	19	19	18	18
Tax Subsidies (4)	3	2	2	2	2	2	2	2	2
Direct and Indirect Nonmonetary Transfers (5)	9	13	13	13	13	13	13	13	12
Total	29	36	34	35	35	34	34	33	32

Source: Federal Ministry of Labor and Social Affairs (FMLSa ed.) 1986: Materialband zum Sozialbudget 1986.
Bonn and Federal Ministry for Education and Science (FMES ed.) 1986: Grund- und Strukturdaten 1986/87, Bonn.

- 1) By estimation.
- 2) After definition of the "Sozial Budget"; excluding non-imputable general goods and services.
- 3) Monetary transfers with the function of wage replacement.
- 4) Without tax subsidies in the areas of housing, health, savings . see FMLSa, p. 234
- 5) Cash reimbursement and goods and services + direct expenditures for education (operating costs in the areas: Kindergarten, external education of youth, school, university, additional vocational training) + indirect transfers in the areas of housing (public housing, allowances for civil servants, lower interest rates and grants + tax reliefs), health and private savings.
See FMLSa, p. 123 and 237; FMES, p. 245.

Table 2: Nonmonetary Transfers (1) in the Federal Republic of Germany

Year Institution	1970	1975	1980	1981	1982	1983	1984	1985	1986*
Social Insurance System (2)	29.051 49	73.823 55	103.876 54	115.066 55	120.243 56	119.658 55	125.401 55	129.363 55	133.145 55
System for Aid to Civil Servants (3)	1.938 3	3.991 3	5.799 3	6.320 3	6.704 3	6.586 3	6.991 3	7.192 3	7.407 3
Employer Transfers (4)	86 0,1	201 0,1	252 0,1	268 0,1	282 0,1	296 0,1	346 0,1	350 0,1	372 0,1
Social Indemnity (5)	892 1,5	1.468 1,1	1.745 0,9	1.855 0,9	1.537 0,7	1.927 0,9	1.934 0,8	1.882 0,8	2.061 0,9
Social Aid and Benefits (6)	3.532 6	8.672 7	12.739 7	14.281 7	15.284 7	15.578 7	15.866 7	16.625 7	17.630 7
Tax Subsidies (7)	2.648 4	4.448 3	7.167 4	7.485 4	7.783 4	8.342 4	9.161 4	9.761 4	9.670 4
Housing Transfers (8)	4.053 7	4.650 4	5.960 3	6.420 3	4.370 2	4.720 2	5.070 2	5.420 2	5.540 2
Educational System (9)	16.868 29	36.564 27	54.141 28	57.452 28	59.211 28	61.193 28	63.318 28	65.121 28	66.498 27
Total	59.068	133.817	191.679	209.147	215.414	218.300	228.087	235.714	242.323

* estimated

Source: FHLSA (ed.) 1986: Materialband zum Sozialbudget 1986, Bonn
 FMES (ed.): Grund- und Strukturdaten 1986/87, Bonn

1) Cash reimbursement, goods and services in definition of the "Sozialbudget" + selected indirect transfers + operating cost of selected areas in definition of the "Bildungsbudget".

1. line: in Mio. DM, 2. line: in % of total monetary transfers.

2) NPI, NHI, NII, Transfers according to the Labor Promotion Law, Farmers Pension System and Insurance for the Self-Employed.

3) Mostly cash reimbursement.

4) Mostly in the area of healthcare.

5) Mostly in the area of War Victims Support.

6) Mostly in the area of Social Assistance, Support for Youth (Jugendhilfe) and Housing Benefit (here included as cash reimbursement).

7) In the areas of health, housing and private savings.

8) Lower interest rates and grants for loans in the area of Public Housing; including expenditures from public employers and grants from the Equalisation of Burdens Fund.

9) Public expenditures for: kindergarten, external education of youth, school, university, additional vocational training; excluding investment cost.

Table 3: Selected Nonmonetary Types of Income in the Federal Republic of Germany for the Year 1985

	in Mio. DM	in %	Share of GNP (1.837,9 Bio. DM) in %	Share of Total Transfers (s.Tab.1) in %	Nonmonetary Transfers (s.Tab.1) in %
Healthcare System (1)	120.028	60	6	20	51
with					
- Social Insurance System					
NPI	4.390				
NHI	96.636				
NII	1.992				
Farmers Pension System (2)	220				
- Aid for Civil Servants	6.736				
- War Victim Support (3)	304				
- Social Assistance (4)	7.820				
Bureau of Public Health	1.930				
Educational System (5)	65.121	33	3	11	28
Housing System	14.350	7	1	2	6
- Tax Subsidies (6)	9.370				
- Other Housing Transfers (7)	4.980				
Total Transfers	199.499	100	10	33	85

Source: FMLS (ed.) 1986: Sozialbudget 1986 and FMES (ed.) 1986: Grund- und Strukturdaten 1986/87

1) Nonmonetary transfers incl. cash reimbursements; excluding non-imputable general services.

2) Health care measures and expenditures for care personnel; see Sozialbudget 1986, p. 137; no cash reimbursements.

3) Without measures in the area "political refugees"; including this area, there are expenditures about 1.670 Mio. DM; respective to the definition of the "Sozialbudget" were the expenditures for curative treatment about 980 Mio. DM.

4) Health care measures without Care Benefit (Pflegegeld).

5) Personnel and operating cost, respective to the definition of the "Bildungsbudget"; see FMES (ed.): Grund- und Strukturdaten 1986/87, p. 245

6) Extended deductibility of interest payments, property tax reduction, extended depreciation for private housing, tax reductions for savings in home loan associations, special tax reduction for children; see Sozialbudget 1986, p. 155

7) Interest and principal grants, lower interest rates for Public Housing, without public premiums for savings in home loan associations and employee's savings premiums.

Table 4: Expenditures for Education and Imputed Cost for Students at Different Levels of Education in the Federal Republik of Germany

Year Level of Education	1981 Expend. in Mio. DM (1)	per Stu- dent in DM	1984 Expend. in Mio. DM (1)	per Stu- dent in DM
Primary and Lower Secondary School (Grund- und Haupt- schulen (2))	15.381	3.800	15.626	4.600
Special School (Sonderschulen (2))	2.497	9.400	2.690	14.100
Intermediate School (Realschulen und Abendrealschulen)	3.564	3.700	3.728	4.700
Academic Secondary S. (Gymnasien und Abendgymnasien)	7.745	4.700	8.430	6.700
Vocational School (Berufliche Schulen)	5.178	2.400	5.934	2.800
School Administration	2.417	300	2.370	300
Technical University (Fachhochschulen)	1.110	5.700	1.290	5.000
University (3)(4)	6.500	7.800	9.500	9.000

Source: FMES (ed.) 1986: Grund- und Strukturdaten 1986/87, p. 83 and 205; Statistisches Bundesamt (ed.) Fachserie 14, Reihe 3.4 and Fachserie 11, Reihe 4.1

1) Personnel- and operating cost; excluding investment cost.

2) Including Pre-School.

3) Income from offered services in the area of university clinics is deducted.

4) Average expenditures per student (share of expenditures for instruction as assumed by Helberger, Christof 1982, p. 39, 60% of total expenditures).

Table 5: Tax Subsidies in the Area of Housing. (1)

	1980	1984	1985
Extended Depreciations for Homebuilding	4.200 (65,4)	5.100 (58,7)	5.150 (55,0)
Special Child-Deductions for Homebuilding	-	335 (3,8)	410 (4,4)
Extended Deductibility of Interest Payments	-	1.200 (13,8)	1.800 (19,2)
Property Tax Reduction	1.320 (20,6)	1.240 (14,3)	1.220 (13,0)
Tax Reduction for Savings through a Loan Association	900 (14,0)	820 (9,4)	790 (8,4)
Total Tax Subsidies	6.420	8.695	9.370

Source: FMLSA (ed.) 1986; Sozialbericht 1986, Bonn, p. 155

1) 1. line: in Mio. DM;

2. line: in % of column

Table 6: Nonmonetary Transfers of the National Health Insurance in the Years 1981 and 1985

Year	Expenditures (1) - in Mio. DM -	Number of Covered Persons (2) - in 1.000 -	Average Annual Risk Protection per Person - in DM -
1981	80.070	54.930	1.458
1985	96.636	55.954	1.727

Source: FMLAS (ed.) 1986: Materialband zum Sozialbudget 1986, Bonn, p. 66 and 74; Bundesarbeitsblatt 1982, no. 12, S. 124 and 1986, no. 10, p. 129 .

- 1) For goods and services + cash reimbursements; excluding non-imputable general services.
- 2) The data for 1981 must be estimated, because of lack of data for included family members (ratio of 35% of total insured).

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