NETTING OUT INCOME TAXES FOR DIFFERENT TYPES OF INCOME OF HOUSEHOLDS

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1. INTRODUCTION

Income is not a well-defined term either in economic statistics or in economic theory. In the national accounts certain definitions of income have been convened and internationally standardised, but the ongoing debate about the coming revision of the United Nations' SNA has shown that different views continue to exist as regarding the conceptual background and the systemic embedding of those definitions.

One issue in this context is the distinction between income paid and income received within a pair of economic transactors. Income is a classical area of government interference in the circuit of economic flows for the purpose of partly correcting the original income distribution, partly of financing its own spending. A view of national accounts shows the difficulties that occur based on the fact that the simple theoretic equality of income paid and income received is not valid in many economic fields. The most conspicuous case is that of indirect taxes, which form part of value added, i.e. income originated in production, but not assigned to either of the production factors. Although this is an old and well-known case and its implications have been accepted in national accounting, they have hardly been reflected in economic theory or political practice.

Even less attention has been devoted to the case of direct taxes although in quantitative terms it is equally relevant. The question is simple. A gap between income paid and income received is generated by direct taxes as well as by indirect taxes so that one would like to know the true net result. What amount remains with the households of each type of income after the government has interfered? For economic analysis the opposition of income from labour and income from capital, each being netted from its direct tax component may be of interest. The income politics of trade unions and of employers can hardly result in decent compromises if the different view points from which income paid and income received must be studied are not taken into account.

In the Federal Republic of Germany a concept of "net compensation of employees" was developed in connection with the early national accounts, although neither of the relevant international systems recommend it. It was later complemented by the concept of "net entrepreneurial and property income." Also transfer incomes were balanced against their share of income tax (Hamer, 1964). It seems that similar ideas are being pursued in the United Kingdom (Central Statistical Office, 1988). The fact that such compilations have not become

part of the international recommendations may be due to different tax systems, which do not allow such adjustments.

In this paper the German national accounts concept of net income by type is briefly described, but also criticised in that it does not fully meet its theoretical goal. A suggestion is then made for a particular concept of net income, namely income after tax, which is readily applied to several income types. Such an undertaking is not trivial, because the different types of income carry very different shares of income tax as will be shown. Sometimes certain types of income are not taxed at all, sometimes different rates apply due to differences in personal circumstances. From the resulting distribution of taxed income by types of income no immediate conclusions can be drawn in respect to the personal income distribution. It is useful for other purposes. For example, in comparing the net earnings of the different factors of production, it represents a more adequate indicator than the ratios formed on the basis of national income at factor cost.

2. THE PRESENT CONCEPT OF NET INCOME BY TYPE IN THE NATIONAL ACCOUNTS OF THE FEDERAL REPUBLIC OF GERMANY

2.1. *Disposable Income of Households by Types of Net Income*

In Table 1 we show the types of net income presently compiled in the West German national accounts. These flows are placed in the context of the derivation of disposable income. One may be tempted to say that disposable income is just the sum of the different types of net income, but as shown in the table, not all transfers which are deducted before arriving at disposable income may be assigned to a certain income source.

In terms of the ordinary concepts of national accounts (SNA) the headings in the table are defined as follows:

Net compensation of employees = Compensation of employees

        − Employers' social contributions

        − Employees' social contributions

        − Tax on wages and salaries.

TABLE 1

TYPES OF NET INCOME AND THEIR RELATIONSHIP TO DISPOSABLE INCOME OF HOUSEHOLDS

Year	Disposable Income	Net Compensation of Employees	Net Entrepreneurial and Property Income	Net Transfers Received	Minus Interest on Consumer Credits	Minus Non-attributable Transfers
			Million DM			
1960	187,960	104,890	47,620	39,220	910	2,860
1970	427,970	238,600	114,940	90,640	3,340	12,870
1980	964,020	487,190	269,280	250,040	13,850	28,640
1988	1,323,520	603,900	430,910	342,750	17,860	36,180

Net entrepreneurial and property income
= Gross entrepreneurial and property income
- Compulsary social contributions of self-employed
- Tax on entrepreneurial and property income

Net transfers received = Social benefits received
- Social contributions
- Tax on public pensions.

The social contributions deducted in the last case comprise contributions paid by the recepients of the transfers and payments by government or enterprises on their behalf.

The three balances above do not completely decompose disposable income. All interest on consumer credit and some transfers defy being attributed to a particular income type. Among these are accident insurance claims and net premiums, and transfers paid abroad or taxes in connection with fixed consumption.

The types of net income quoted here are adopted by the Federal Bank for compiling their concept of "mass income" (Schlesinger 1952). They are also used for computing "net wage ratios," and in the realm of social security, a discussion is underway about whether or not to assign to the concept of net wage income the leading role in determining the annual adjustment of old-age pensions.

2.2. *Critical Assessment of the Present Concept of Net Income by Types*

The concept realised in Table 1 is a useful complement to the standard presentation of income, but it has some flaws.

Firstly, as is well known, functional and personal income distribution do not coincide. Employees as well as non-active persons do receive sizable incomes from property. Employees may also earn additional income as entrepreneurs in a second job and vice versa. Both groups receive transfer incomes, etc. In short, there is a considerable "cross-distribution" of types of income for persons within types of households (Stobbe, 1962).

Secondly, there is a bias as regards the taxes attributed to different income types. Taxes on wages and salaries are deducted at the source; they are withheld by the firms paying them and transferred directly to the fiscal office. The eventual declaration following this pre-payment after the year has resulted in a partial refunding of the payment, in many cases. In accordance with the definitions used in Table 1, the total of these repayments is attributed not to wages and salaries, but to income from enterprise and property. This may have been a reasonable procedure for some 20 years after the war when income declarations were mainly filed by earners of these incomes, but it is far from reality today. The procedure overstates net income of entrepreneurial and property type and understates net compensation of employees and net transfer income received.

Thirdly, it is questionable whether the deduction of social contributions makes sense in this context. The original idea might have been that the amount compiled in this way reflects what the wage earner sees accruing on his account.

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However, this simple microeconomic analogy is not valid for the economy as a whole. Social contributions are not payments free of purpose such as taxes. Such contributions are made in order to ensure against personal risks, such as illness or old age. An intra-economically comparable aggregate would not stop here but would take into account other forms of covering these risks as well, e.g. voluntary payments to private health or life insurance, the forming of personal wealth, etc. In addition, such payments ordinarily cover not only the social risks of the income earner himself, but also of his or her dependents. Consequently it does not seem meaningful to only partially deduct social expenditures and to connect this part to a particular form of income.

In this paper, only taxes are netted against gross income on the understanding that these are neutral with respect to any particular purpose of expenditure, and thus may be more easily assigned to particular types of income.

3. Attributing Income Taxes to Types of Income

3.1. *Assessing the Taxes on Revenues Declared to the Financial Office*

Income in the national accounts is not identical in concept to income as declared to the tax authorities. In order to distinguish between the two, we introduce the term revenue for the latter. Revenues, for example, are typically assessed after deduction of certain allowances. The different types of revenues declared to the financial offices and collected in tax statistics form the empirical basis for taxes by types of revenues.

The income tax system in the Federal Republic of Germany is complex and can be described only in its very basic features here. It is a progressive system where the tax share depends on the amount of revenue, which may accrue in seven different forms:

1. Revenues from agriculture and forestry
2. Revenues from business
3. Revenues from self-employment
4. Revenues of employees
5. Revenues from property
6. Revenues from letting and leasing
7. Other revenues

In principle income tax is levied on the sum of the seven types of income declared by the taxable person. The problem of arriving at net income by type poses itself in the following way:

How to partition out a tax amount which has been raised on the basis of total revenue in correspondence to individual components?

The question is new, but the solution proposed can rely on an old-fashioned technique employed in the national accounts. It is common practice to assign inputs proportionately to outputs in order to disaggregate output by commodities in an input-output table. In a similar way we assume here that the tax share is invariant in respect to types of revenue and that each single type is taxed in proportion to its share of total revenue.

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If T_j measures the total tax paid by individual j, $j = 1, \ldots, N$, if T_{ij} measures the share carried by revenue of type i, $i = 1, \ldots, 7$ and, finally, if R_{ij} measures the revenue of type i declared by individual j the proportional approach is given algebraically by

$$(1) \qquad T_{ij} = T_j \cdot \frac{R_{ij}}{\sum_i R_{ij}}.$$

Due to specific allowances, reliefs or professional costs individual revenues may turn out negative. Formula (1) transforms negative revenues, if they occur, directly into negative taxes. As the concept of negative tax is alien to the tax system of the Federal Republic of Germany, we assume that the total tax paid is attributable to positive components of revenue $R(+)$ only. This implies the assumption that the tax diminuition caused by the negative revenue components is distributed proportionally over all positive components:

$$(2) \qquad T_{ij} = T_j \frac{R_{ij}(+)}{\sum_i R_{ij}(+)}.$$

Summing over all individual taxpayers yields the different taxes according to types:

$$(3) \qquad T_i = \sum_j T_{ij}.$$

National accounting rules require that taxes be recorded at the date they become due (transaction principle). The data source however, offers figures only for the period at which the taxed revenue occurred. The time gap between the two events is difficult to determine. Due to the German tax system the structure of the lags with which the actual tax falls due after the corresponding revenue has been earned is rather complex. Taxes are collected at source, or as pre-payments or as conclusive payments after the tax has been fixed, sometimes taxes are also refunded. Hence it is hardly possible to connect the date of payment to the period of the revenue in respect to which the tax has been determined, except by means of a sophisticated model (Schüler, 1986).

Also from a conceptual point of view, it seems reasonable to remain with the periodisation of tax used in the tax statistics, as the analytical context aims at the net income received in these different types. Therefore we will not try to transform the periodisation of taxes according to income earned into one of taxes due.

3.2. *Transforming the Basic Data to Types of Income in the National Accounts*

The transformation of the data supplied by financial statistics for seven types of revenue into types of income computed in the national accounts is carried out in two steps:

—Allocating the income tax to the different types of revenue of the tax system. This computation must be carried out by size of revenue classes in order to disentangle the correlation between size and types of revenue inherent in the data. Whatever one may say about the proportionality assumption (2), the gist of the procedure lies in this microsimulation of the revenue and tax structure where the non-linearity of the tax system is fully encompassed.

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—Bridging the conceptual differences between the revenues taxed and the income shown in the national accounts. This includes an assignment of zero bias to those income types which are not considered revenue in the tax system (children allowance, unemployment and other social benefits) and clarifying the overlappings which exist between the concepts at the two levels.

4. RESULTS

4.1. *Tax Incidence for the Seven Types of Revenue Defined in the Tax System*

The only source available for studying income by types in the Federal Republic of Germany are the compilations of revenues and taxes carried out by the fiscal office at the state level and compiled at the statistical offices. They are published every three years, and appear relatively late, due to long delays which may occur between the earning of income and the payment of taxes. The most recent data today relate to the year 1983, the figures for the year 1986 will not be available before mid-year 1990. In this paper we take 1983 as our period of reference.

TABLE 2

TAX INCIDENCE FOR DIFFERENT REVENUES IN THE YEAR 1983

Types of Revenue	Amount of Revenue	Taxes Determined	Average Tax Rate
	Bill. DM		Percent
Agriculture and forestry	8.7	1.1	12.6
Business	90.0	26.1	29.0
Self-employement	36.0	10.7	29.8
Employees	706.4	108.4	15.3
Property	19.4	5.7	29.4
Letting and leasing	14.2	2.8	19.9
Other revenues	8.9	0.8	9.1

In Table 2 we show the distribution of tax by types of revenue as calculated by means of formula (3). The resulting tax rates carried by the different revenues vary considerably. As one might have expected, the highest rate falls on revenues from business, from property and from self-employment (almost 30 percent) while employed labour is taxed at a rate of 15 percent only.

4.2. *Tax Incidence for National Accounts Types of Income of Households*

The primary data collected in Table 2 adjusted to meet the income concepts of the national accounts is shown in Table 3. All incomes are shown gross in order to ensure comparability. Gross compensation of employees includes employers' social contribution and social benefits include government payments to social security on behalf of recipients of social benefits in accordance with

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TABLE 3

TABLE 3

TAX INCIDENCE FOR TYPES OF INCOME OF HOUSEHOLDS IN THE YEAR 1983

Types of Income	Gross Income	Taxes	Net Income	Average Tax Rate (Col. 2/Col. 1)
	Bill. DM			Percent
Agricultural[1]	10.2	1.1	9.1	10.4
Entrepreneurial outside of agriculture[2]	216.1	36.6	179.4	17.0
Compensation of employees[3]	920.9	103.3	817.6	11.2
Property[4]	89.1	6.3	82.8	7.1
Letting, leasing[5]	13.1	2.7	10.4	20.6
Pensions[6]	194.4	1.0	193.4	0.5
Public pensions	38.3	4.5	33.7	11.9
Other social benefits	115.1	0.0	115.1	0.0

[1]Without forestry and fishery.

[2]Without letting, work at own house, etc.

[3]Including actual and imputed social contributions of employers.

[4]Including income from insurance, renting, immaterial assets.

[5]Letting of dwellings including garages and owner-occupied housing. Letting of business rooms are not included.

[6]Old age pensions of government social security funds, including farmers' schemes; accident insurance, private pensions, etc.

the national accounts conventions. On a theoretic level it is not altogether clear that these conventions are adequate in describing the notion of income. For example, the rationale of including employers' payments is that these represent costs to the payer caused by labour. It does not follow that all costs of labour can also be considered income to the recipient, the labourer. Under a pure transaction approach employers' contributions are not income, but rather comparable to indirect taxes because they are payments to the government sector. We leave that question open here.

In Table 3 we show how the tax incidence for revenues in the tax system is transformed in the national accounts. The different types of income carry very different tax burdens. Although a certain incompleteness in the data must be acknowledged due to income declarations submitted after the statistics were completed, the order of magnitude of the average tax rates can be expected to be correct. Transfer incomes are taxed least. In fact, children allowances, unemployment benefits, social care, etc. are not taxed at all. A negligeable share of 0.5 percent tax is paid out of old age pensions. The more interesting news is that property incomes are taxed at 7.1 percent. One reason is that one-third of these flows consists of income from private insurance which is not taxed. Another reason is that many property incomes are small and lower than the basic allowance. Finally, property incomes are often underreported in tax declarations.

The comparatively high tax load of income from letting and leasing is explained by the fact that the tax shown includes tax paid for business rooms while income from letting and leasing excludes these items. In addition the consumption of capital computed in national accounts uses repurchasing prices which also lowers the residual income from letting.

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Taxes on entrepreneurial income outside of agriculture are relatively low. Again this may be due to underreporting, but it must also be noted that this type of income, which appears greater in the national accounts than in the tax statistics, is determined as a residual in the national accounts, and may therefore be misleading.

4.2. *Comparing Primary Incomes Before and After Tax*

Judgements on income distribution between factors are often based on shares of gross income. In Table 4 we compare the gross and the net shares of three types of income.

TABLE 4

DISTRIBUTION OF FACTOR INCOME EARNED BY HOUSEHOLDS

Unit	Employed Labour	Income from/of Entrepreneurs	Property	Total
		Before Tax		
Billion DM	920.9	239.3	89.1	1,249.4
Percent	73.7	19.2	7.1	100.0
		After Tax		
Billion DM	817.6	198.9	82.8	1,099.3
Percent	74.4	18.1	7.5	100.0

After tax the share of the labour is higher than before tax, while that of entrepreneurial income is lower. The share of property income, low in any case, rises slightly when tax is deducted. As said before, this is a break-down of income by types and care should be taken not to interpret it in terms of groups of households. To do this a cross-tabulation of income by types and by groups of households would be required.

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