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Abstract

As simple as it is, results describing the world are heavily dependent on the quality of the underlying data. One of the very crucial variables in microanalytical analyses of well-being and human resources is income. The more, when the situation of the self-employed is regarded.

This paper focus on the distribution of income based on very sound data: the German Income Tax Statistic (Einkommensteuerstatistik) 1992. New is the actual possibility to use for the first time such a sound microdatabase to analyze the self-employed in particular: a 100.000 microdata sample of the population wide German Income Tax Statistic. New is the comparison between income from dependent and self-employed work with emphasis on the entrepreneurs and professions, and new is the indepth decomposition inequality analysis of the aggregated groups and of the single professions based on an inequality generalized entropy decomposition approach.

One overall striking result is: the occupational status as an employee, entrepreneur or as a profession with its connected low between inequality share is by far not the overall driving factor to 'explain' the overall income distribution and inequality picture of the re-unified Germany; it is the within group inequality which counts in particular.

JEL: D30, D31, J23

Keywords: *Income distribution of self-employed, entrepreneurs, professions, income tax statistics, microanalysis, decomposition of inequality*

Zusammenfassung

So einfach, so schwierig: Die Welt zu erklären hängt insbesondere von der Güte der zur Verfügung stehenden Daten ab. Eine der kritischen Variablen in der Mikroanalyse von Wohlfahrt und ‚human resources' ist Einkommen; umso mehr, wenn die Situation von Selbständigen und Freien Berufen und das damit angeheftete hohe Einkommen betrachtet wird.

In dieser Studie wird das Einkommen und die Einkommensverteilung von Selbständigen und Freien Berufen auf einer besonders fundierten Mikrodatenbasis untersucht: der Einkommensteuerstatistik. Dies war die erste aktuelle Möglichkeit, eine so fundierte (anonymisierte) Mikrodatenbasis auswerten und damit vor allem die Situation der Selbständigen analysieren zu können: eine 100.000 Stichprobe der aktuellen Einkommensteuerstatsistik 1992. Neu ist der Vergleich zwischen dem Einkommen aus abhängiger und selbständiger Arbeit mit Schwergewicht auf Unternehmer und Freie Berufe. Neu ist auch die detaillierte Dekompositionsanalyse einmal für die Gruppen der abhängigen und selbständigen Erwerbstätigen und zum anderen für 14 Untergruppen der Freien Berufe auf der Basis eines generalisierten Entropie-Ansatzes.

Ein prominentes Resultat: Die berufliche Stellung als abhängig Beschäftigter, Unternehmer oder Freiberufler mit ihren relativ geringen Ungleichheitsanteilen ist bei Weitem nicht ‚der' Faktor, der das Verteilungs- und Ungleichheitsbild im wiedervereinigten Deutschland zu erklären vermag; es ist die ‚breite' Verteilung innerhalb jeder dieser Gruppen die zählt.

JEL: D30, D31, J23

Schlagwörter: *Einkommensverteilung, Hohe Einkommen, Selbständige, Unternehmer, Freie Berufe, Einkommensteuerstatistik, Mikroanalyse, Dekomposition der Ungleichheit*

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1 Introduction

One of the emerging actual trends within the labour market is the sharp increase in work described as 'self-employment'. From a long lasting trend – in Germany from the 50s on - with a declining amount even of the absolute number of the self-employed this trend has changed in Germany from the early 90s on.

Together with the accompanied structural shift within the labour force the public and the economic and social policy interest increasingly are visualizing and discussing the situation and importance of the self-employed, and as a prominent part of it, the situation of the professions (free-lancer, liberal professions, 'Freie Berufe'). Multi-faceted reasons for this and keywords like industrial restructuring with new labour market flexibility, outsourcing, new government promoted 'culture of enterprise', the 'new self-employed', escaping from unemployment into (marginal) forms of self-employment, 'quasi self-employment' (Scheinselbständigkeit) with legal and social protection aspects etc. might illustrate the complexity.

In a sharp contrast to the growing and actual public interest and discussion the (scientific) knowledge about the situation of the self-employed is still at its infancy; and this holds not only for Germany1. The situation is crucial in particular, if the income situation and distribution is regarded. One of the rare income distribution analyses of the self-employed and professions are the studies by Merz and Kirsten (1995, 1996) which, although based on the 1% German Microcensus, still had to deal with grouped data of specific evaluations of the Microcensus. Another study on the topic 'who pays the taxes' (Merz, Quiel and Venkatarama 1998) analyzes the income distribution of the self-employed and professions on the basis of grouped public and published income tax data of 1989 for Germany before the re-unification.

Our study will contribute to this topic diminishing to a certain extent the knowledge gap of the income situation and distribution of the self-employed and professions. New is the actual possibility to use for the first time a sound microdatabase to analyze the self-employed in particular: a 100.000 microdata sample of the population wide German Income Tax Statistic. New is the comparison between income from dependent and self-employed work with emphasis on the entrepreneurs and professions, and new is the

[1] With regard to research on professions in particular two German institutes are focussing their research in this ares: Forschungsinstitut Freie Berufe (FFB) of the University of Lüneburg (FFB 1999, our institute), and Deutsches Institut für Freie Berufe (IFB) at the University of Erlangen-Nürnberg.

indepth decomposition inequality analysis of the aggregated groups and of the single professions based on an inequality generalized entropy decomposition approach.

The remainder of the study is organized as follows:

After discussing the specific problems and requirements when measuring income of the self-employed and professions, the income data situation in Germany is briefly described. Since tax statistics are of particular importance and suitability for our distributional purposes the overall situation of income and tax revenues is sketched and then our microdata base, the German Income Tax Statistic 1992 is characterized. The results are discussed within two main chapters, one for the income distribution of employees and self-employed (entrepreneurs and professions), the other for profession with 14 single subgroups. Additionaly to the overall picture of predominant income from different sources in Germany 1992, in each chapter the respective distribution of individual net income, the redistributional effects and the decomposition of inequality by the Theil index inequality shares are analyzed. One overall striking result is: the occupational status as an employee, entrepreneur or as a profession with its connected low between inequality share is by far not the overall driving factor to 'explain' the overall income distribution and inequality picture of the re-unified Germany Germany; it is the within group inequality which counts.

2 Measuring Income of Self-employed and Professions: Problems and Requirements Encountered

There are a number of reasons why income distribution analyses are missing for the self-employed. The reasons may be summarized as reporting and measurement together with small sample problems which would bias the real picture with misleading results.

Traditional income analyses focus on income from dependent work only with the argument that the self-employed are distorting the overall and their income distribution picture, because many of those reporting zero, negative or very low incomes also exhibit relatively high standard of living as measured by consumption and/or expenditures. This argument has reinforced the widespread view that self-employed people under-report their earnings. However, many of these assumptions about self-employed earnings are untested, or could be circumvented by a proper and sound microdatabase.

Problems with measuring self-employed earnings include the following[2]

- ?? Differential response rates
- ?? Time lags between the accounting and the survey periods
- ?? Concept of earnings and the measurement of profits
- ?? Treatment of taxes
- ?? Under-reporting of income
- ?? Definition of self-employment
- ?? Definition of professions
- ?? Small population and sample group sizes.

[2] For a more detailled discussion within the UK data situation see e.g. Eardley and Corden 1994

Differential response rates: Sometimes a relatively high level of non-response by self-employed persons tends to support the assumption that they are inclined to conceal information about their finances. This might often not be the case of non co-operativeness but can also reflect the inability to provide the income data just in form the survey is asking for. Examples are problems of disentangling personal and business expenditures connected with only delayed tax information with the necessary final business and personal deductions and taxes.

Time lags between the accounting and the survey periods: In addition to delayed tax and business accounting information to finally define the income situation, self-employed income may be highly variable across short periods and connected with trade or business cycles. Therefore data of a short period may be an unreliable representation of business income. In addition, the questionnaire period (say a month or a calendar year) might not fit into the accounting period or may not be available (business year).

The concept of earnings and the measurement of profits: income concept from household survey might differ from income concepts of trade and business and figures emerging as net profits in business accounts may reflect different and business specific computations.

Collection and treatment of taxes: The collection and treatment of data about tax payments may bias the situation because of the mismatch of the time periods covered by the profit reported and the payments made to the tax authorities.

Under-reporting of income: In addition to the argumentation with regard to differential response rates above (lack of requisite information), much under-reporting is associated with the discussion of the informal economy which will be finally in the shadow anyhow.

Definition of self-employed: Because of multi-income sources on the personal level a definite grouping is difficult. The predominant source concept is one possibility but there might be additional uncertainty about the work status (see the discussion of the 'quasi self-employed' (Scheinselbständigkeit).

Definition of professions: Though in Germany there is a given legal definition by the Income Tax Law which one is a professional status(Freier Beruf) there are a number of so-called similar occupations which had and have to be decided by the court if or not a professional status is given. The problem will become much more complex if there are international comparisons, where such legal definitions are lacking.

Small population and group sizes: The smaller a certain group is in the population the more difficult it is to have a representative part in a sample. For instance, with roughly less than 10% self-employed and less than 2% professions of the labour force in Germany small samples might not provide enough observations for representative and significant results.

To summarize: To analyze the income situation and distribution of the self-employed including the professions, in particular, an ambitious data base is required if all these problems are solved at least to a certain extent.

3 Income Data from Surveys – The Situation in Germany

Having in mind the problems encountered with income data for the self-employed in particular, we briefly sketch the income data situation in Germany in view of our purpose.

In Germany there are various statistics with information about the individual income situation where self-employment and only sometimes professions are coded within the occupational status of the interviewed person. There are large samples like the yearly Microcensus (based on a one-week sampling period) provided by the Federal Statistical Office, a 1% sample of all ca 80 Mio. German inhabitants, with income data only in brackets. Another large sample of the official statistics is the Income and Consumption Survey (Einkommen und Verbrauchsstichprobe, EVS) which comprises detailed income information with certain periods within a year with more detailled information of more than 40.000 households every four years. On the other hand, there are numerous non-official surveys with more or less detailed income information according to interest. One important survey of these is the German Socio-Economic Panel (GSOEP), where each year more than 8.000 households provide not only current income data but within the calendarium further income data of different sources for each of the last 12 months are provided.

Whereas for employees the actual income information in all of these data sources is more or less readily available, the information for the self-employed - and among these for professions (freelancer, liberal professions, 'Freie Berufe'), too – is in many aspects unknown. Due to the tax system with all its deductions and regulations in particular for the self-employed, in all surveys current income is only approximatly available for the interviewed person at the survey time; and accurate, actual income is only possible to be asked for the past (if at all).

Thus, self-employed income data from sample surveys, in principle, provides limited information with regard to the real situation.

The diverse regulations to calculate income and all the efforts for the further tax calculations – in particular for the self-employed - are the reasons for the relatively long delay of official income statistics within the framework of the German tax statistics.

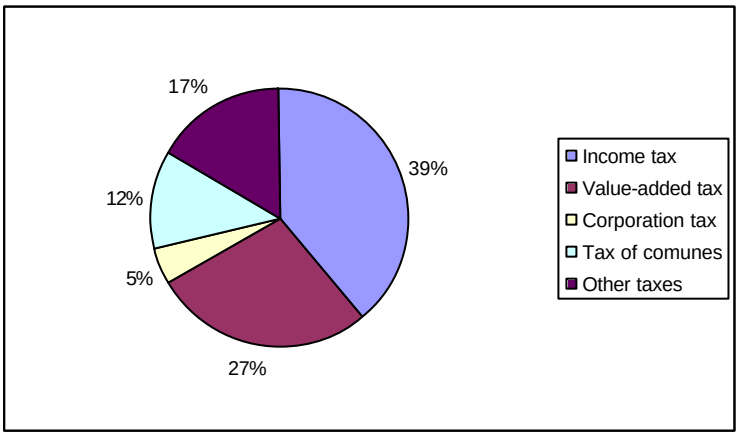
However, one of the more promising data bases for our purpose are data from compulsory tax statistics. In particular, the most reliable income data for the self-employed (and for other socio-economic groups) will be the German Income Tax Statistic (Einkommensteuerstatistik), which will be the further data base of our study.

4 Income and Tax Revenues within the German Tax System: Overall Results

Before going into the details of our specific data base, the Income Tax Statistic, we sketch the size and importance of income and taxes from German tax statistics in general. This allows to integrate the following results into the general income and tax situation in Germany.

Figure 1 describes the revenue percentages of the overall five tax categories. For 1992 the income tax revenue is 39% of all the tax income out of value added tax (27%), tax of communes (12%), corporation tax (5%) and other taxes (17%).

Figure 1: Revenue Due to Type of Tax, Germany 1992



Source: Statistical Yearbook 1998

Thus, in 1992 (and all the years ago) the income tax (Einkommensteuer) is the dominant tax income source within the German tax system. The income tax is divided by the wage tax (Lohnsteuer) and the assessed income tax (veranlagte Einkommensteuer) with 6,1% resp. 32,9% of total 700.034 Mio. DM tax revenue in 1992.

Being the dominant income source in Germany is only one of the reasons why we further on rely on this statistic as our data base. In addition, and focussing in particular on the situation of the self-employed, the income tax statistic – as we shall point out – is the most informative and realistic microdatabase regarding the final individual income situation. Beyond that, and important for the representativity of the results, as a tax statistic this is not a sample statistic but a popuplation statistic including all respective tax payers.

5 Our Data: Income from the German Income Tax Statistic 1992

5.1 General Characteristics and Pros and Cons for the Analysis of Self-employed and Professions

The German Income Tax Statistic is compulsorily comprising the entire German population with the most detailed and accurate data with regard to the final (tax) deductions and the 'real' disposable individual income.

The German Income Tax Statistic[3] is carried out every three years. The actual data at hand (1999) is due to the year 1992. This is the first income and tax statistic data for the re-unified Germany.

The data received by the tax administration from the income tax assessment are processed by state (Länder) statistical authorities (Statistische Landesämter), then are revised by the Federal Statistical Office to be published as grouped data according to different characteristics in a tabled form.

Based on the individual income and tax data the Federal Statistical Office mainly makes use of the total amount of all forms of income as well the taxable income as a stratification characteristic in several dimensions. The main part of the respective published tables follows a subdivision (structure) from the total amount of income (Gesamtbetrag der Einkünfte, see below) according to 18 quantity classes with indications by those liable to pay taxes and the respective sum of characteristics in the quantity class.

Herewith only grouped income data according to these 18 groups are initially available for further analysis.

It should be stressed for the Income Tax Statistic 1992, that nearly all tables indicate wages and income tax grouped together and not separated as done in previous years. The consequences with regard to income delimits from dependent and self-employed work will be discussed at a later stage.

The pros and cons of the German Income Tax Statistic with regard to our purpose may be sketched finally by the following.

The major pros comprise:

The Income Tax Statistic is an exhaustive sample and can therefore avoid the problem of small group (like self-employed and professions) information availability which normally are attained in microdata sampling.

[3] The legal framework for the Income Tax Statistic can be found in the Act on Tax Statistics (Gesetz über die Steuerstatistiken) of the 6th of December 1966 (BGB1. I S. 665) with changes of the 19th of March 1986 (BGB1 I S. 2555) and in conjunction with the act on the Statistics for Federal Purposes (Gesetz über die Statistik für Bundeszwecke, Bundesstatistikgesetz) of 22nd January 1987 (BGB1. I S. 462).

The Income Tax Statistic provides information for several occupational groups with special tables about selected professions. Of course these tables do not present all of the single professions but the most significant groups (14 groups finally) are represented.

The data is available for the public in grouped form. Information about number of cases and different types of income in brackets are available. Most of all and of particular importance for the self-employed, all necessary information to calculate the final taxes and thus the final and 'real' income situation are included.

In spite of the above mentioned major advantages, the German Income Tax Statistic also has their disadvantages like:

Income Tax Statistics provide no data basis which is very up-to-date, e.g. the data about 1992 was published in 1998. The Periodicity amounts to 3 years therefore data is never available annually. Especially for analysis of time series, which presupposes long time series, this is a serious deficit. Connected with this, changing tax laws make long termed analyses difficult; but this holds for other surveys as well.

The available grouping of professions is not unproblematic. Whereas the division between the legal-, business- and tax-consulting professions and the natural-sciences professions are 'sufficiently' covered, this does not apply to the large remaining group, summarized by the so-called 'other professions'. Here a further disaggregation grouping is very desirable.

However, the income data for the self-employed including the professions in particular provided by the German Income Tax Statistic fits the discussed substantial requirements in an almost ideal way. Besides that, in general it is the best data base at hand in Germany.

5.2 Income and Taxes – Main Definitions

From the abundance of single piece information available from the income tax statistic we will in the following only regard those terms stemming from tax law and delimitations from income tax statistics which are relevant for the income discussion at hand.

The central income term for our analysis is the taxable income as well as the fixed income tax. Roughly speaking the taxable income is calculated according to different additional and deductible amounts of the initial income situation as the sum of all income (Summe der Einkünfte) derived from seven income types. Via the total income Gesamtbetrag der Einkünfte), the individual income (Einkommen) thus finally resulting in the taxable income (zu versteuerndes Einkommen). By means of the tariff income tax (tarifliche Einkommensteuer) and with further considerations is finally the individual fixed income tax (festgesetzte Einkommensteuer) calculated.

5.2.1 General Differentiations and Methodological Issues

Income tax liable persons: A natural person is unlimitedly liable to pay income tax if he/she usually stays in Germany or has his/her normal place of residence here. The unlimited tax liability applies to all forms of income, those derived inside and outside the borders of Germany. If a natural person has neither a usual place of residence nor

normally stays in Germany he/she is limitedly liable to pay income tax, meaning that only the income derived within the boundaries of Germany is taxable.

Tax burdened: A person liable to pay tax is burdened if the assessment delivers a positive income amount and an income tax amount of at least DM 1 has been set

Loss cases: if the assessment yields to a negative income (deficit).

Income types (Einkunftsarten): According to § 2 Abs. 1 EStG the following seven types of income are taxable:

- income derived from agriculture and forestry
- income from business activities
- income derived from dependent work
- income derived from independent work
- income from capital property/assets
- income from letting and lease
- other income according to § 22 EStG.

These types of income are taxable for both unrestrictedly and restrictedly taxable persons. In the latter case this only applies to income attained within the German borders.

Total income (Einkünfte): These are profits for income from agriculture and forestry, business practice and self-employment. It is the surplus of income vs. professional outlay for the other income types.

Professional outlay (Werbungskosten): They serve to secure the income situation. There are lump-sum amounts if the outlays are not certified.

Special expenditures (Sonderausgaben): Deductable expenditures due to certain economic, social and cultural reasons.

Unusual burdens (Außergewöhnliche Belastungen): Deductable expenses for unusual obligations.

5.2.2 Determination of Taxable Income

For each individual tax payer from the sum of all income (Summe der Einkünfte) subdivided into the seven income types, via total income (Gesamtbetrag der Einkünfte), the income (Einkommen) and finally the taxable income (zu versteuerndes Einkommen) according to § 2 Abs. 5 EStG the taxable income finally is calculated (see Table A1a).

All income (Einkünfte) as profits or surplus from the seven income types is calculated after the deduction of professional outlay (Werbungskosten) respective business allowances (Betriebsausgaben).

Besides of old-age exemptions and exemprions for working in agriculture and forestry some amounts still to be taxed have to be added to the sum of all income to get the **total income**.

Special expenditures, part of profits not withdrawn, extraordinary tax burdens, self-utilisation of accommodation and loss deductions reduces total income to **income**.

Finally, child allowances, household tariff allowances and some remaining special allowances are deducted from income to achieve the **taxable income** (for details see Appendix Table A1a).

5.2.3 Determination of Fixed Income Tax

The tax amount according to basic/splitting tables or according to the rate of taxation when applying the progression reservation plus some reduced rates of taxation yield the **tariff income tax** (tarifliche Einkommensteuer). With further reductions according foreign taxes paid, for working in the agricultural or forestry sector, in Berlin-West, supporting political parties, for specific inheritance situations, is finally the **fixed income tax** calculated (for details see Appendix Table A1b).

The fixed income tax is the tax amount finally to be paid by the taxpayers.

5.3 Socioeconomics: Self-employed, Professions and Employees – Who Are They?

Any socioeconomic and employment status and its connected income has to be defined through the seven types of income sources within the German Income Tax Statistic: income from agriculture and forestry (Land- und Fortswirtschaft), business practise (Gewerbebetrieb), independent work (selbständige Arbeit, see below), non self-employed as dependent work (nichtselbständige Arbeit), capital assets (Kapital-vermögen), let and lease (Vermietung und Verpachtung) and other (sonstiges) incomes.

As it is well known, a single natural person might have income from all of these income types. Thus, to discriminate between categories and to relate a person to a certain socioeconomic group as a self-employed, profession or employee, the concept of a *predominant* source is used defining the respective socioeconomic status.

The single differentiation with regard to the self-employed, the professions and the employees based on these income types are as follows:

5.3.1 Self-Employed

The self-employed, in particular, will be defined through the profits received from the first three income sources, through:

Income from	(Einkünfte aus
Agriculture and Forestry	(Land- und Forstwirtschaft)
+ Business Practise	(Gewerbebetrieb)
+ 'independent' work	(selbständiger Arbeit)
Income of self-employed	(Selbständigkeit)

As specific by the German tax definitions and somehow confusing to a certain extent, 'independent' work (selbständige Arbeit) is not covering all the three sources of self-employed work: it refers to more than 90% of work by professions (freelance, liberal professions: Freie Berufe). According to § 18 EStG the remainder of that 'independent' income is made up of income from state lottery as well as from other independent work like supervisory board activities (Aufsichtsrat) or engagements as testament executor (Testamentvollstrecker), alltogether a small group.

If in the following we refer to the self-employed, we include all persons with the above three possible profit income sources, where 'independent' (self-employed) work by professions (selbständige Arbeit) is only one source of self-employed income.

5.3.2 Professions, New Definition in the Recent Income Tax Statistics

The description of the income nature in the light of the German Income Tax Statistics of professions, in particular, is changing. In contrast to other countries, in Germany freelance work, work by professions, is (more or less) exactly defined by the legal framework according to § 18 Abs. Nr. 1 Satz 2 EStG. Here we have a definition of the so-called 'catalogue professions' (Katalogberufe). A key element of what is termed a profession are self-employed activities concerned with science, art, writing, teaching or instructing or education.

The tax law in particular describe self-employed professional activities as activities of medical doctors, dentists, veterinarians, lawyers, notaries, patent attorneys, surveying engineers, engineers, architects, trade chemists, auditors (public accountants), tax consultants, consulting economists and business administrators, sworn in auditors, authorised tax agents (Steuerbevollmächtigte), nonmedical practitioners, physio-therapists, journalists, translators, pilots and similar professions.

What is problematical at this point is the rather loose legal term 'similar professions'. In the individual case it is often difficult to assign these profession to a certain income tax classification. Next to being self-employed and self-responsible it has been decided by the courts that further elements for classification of professions are an individual specialised knowledge of the subject at hand, practising at own risk and on own account. Hereby it is permissible to for the professional to also make use of services supplied by a third party (like an assistant working under a dentist, for instance).

Alongside these definitions further socioeconomic attempts have been made to classify professions. As examples one could cite Deneke (1956, 1986), Büschges (1989), Sahner (1989) or Merz, Rauberger and Rönnau (1994) which have all characterized the socioeconomic relevance, implications and scope of professions.

For our purposes we naturally will use the definition used in the Income Tax Law as this provides the basis for the Income Tax Statistics, our database.

The German Income Tax Statistics accrues and supplies data for a selected set of professions. Though selected, the complete picture nevertheless is covered with the category 'other professions'.

Those liable to pay income tax are grouped in the following way:

- Lawyers and notaries including patent attorneys
- Auditors and sworn in auditors
- Tax consultants, authorised tax agents (Steuerbevollmächtigte)
- Other business consultants
- Medical doctors
- Dentists excluding dental technicians
- Veterinary doctors
- Natural medical practitioners (Heilpraktiker)
- Paramedical professions
- Architects including garden- and landscape architects, interior architects, surveying engineers, civil engineers but excluding film- and stagearchitects
- Other engineers and technicians

- Chemists, chemotechnicians and physicists
- Artistic professions
- Other professions (Sonstige Freie Berufe).

A statistic like the Income Tax Statistic is of course subject to changes as the underlying laws governing it change continuously. The part concerned with Profession is no exception: Especially in the Income Tax Statistic of 1989 (and in the following 1992) a number of fundamental changes are reflected:

1. Until this date (1989) the special tables concerned with professions only included those professions which were eligible for certain exemption due to the fact that they were self-employed. This legal exemption (Freibetrag) was revoked as of 01. January 1990 which meant that the German Federal Statistical Office had to devise a new set of criteria with which to distinguish professions from other tax payers. They already did this from 1989 now defining professions as those deriving income from self-employed/freelance work – regardless the amount attained (in contrast to a predominant (überwiegend) income contribution).
2. As a quantifying attribute for professions up to that date all income derived from freelance work was used including a possible income out of freelance work from the spouse/partner. This was now split up and only the individual liable to pay tax concerned and his/her income derived from the reported professional work was recorded.
3. Up to that date couples consisting of two individuals both involved with professional work were grouped together without specification of the type of profession practised. From 1989 onwards the partner with the higher income derived from professional activity is defining the type of professional activity exercised.

These new regulations valid from 1992 are summarised in the Table 1.

Table 1: New Definitions of Professions (Freie Berufe) (since 1989)

Previous Regulation	New Regulation
Only those Professions which were eligible for certain exemptions due to the fact that they are Professions (Freibetrags-regelung). (§ 18 Abs. 4 EStG).	All Professions liable to pay Income Tax are considered.
Income classes derived from self-employed work of professional individual and professional partner are recorded.	Income classes derived from self-employed work of professional individual are recorded.
Couples consisting of two individuals both involved with professional work were grouped together without specification of the type of profession practised.	The partner with the higher income derived from professional activity is mentioned with the type of activity exercised.

Source: Federal Statistical Office: Finanzen und Steuern, Fachserie 14, Reihe 7.1 Einkommensteuer (1989, 1992)

Summarizing: the German Income Tax Statistics tables deliver tax and income data for the above 14 selected professions, which together with the large group of "other professions" make up all professions, according to persons liable to pay tax with income derived exclusively from professional work.

With the intention of depicting the predominant life situation (with the additional possibility of historical comparisons to earlier data) we will concentrate to those persons liable to pay tax where the *predominant source of income* (and not just any professional income) defines the status of self-employed work as professions.

With regard to the self-employed definition above: when we refer to professions, then they are exactly defined and built far more than 90% of the 'independent' workers within the entire self-employed group consisting of sources of agriculture and forestry, business practise and 'independent' work.

5.3.3 Dependently Employed, Employees

The group of dependently employed (employees), consisting of (blue-collar) workers, salaried employees (white-collar) and civil servants can be differentiated in the income tax statistic directly from those persons liable to pay tax with income derived from non self-employed work (nichtselbständiger Arbeit). Again, we will concentrate here on the predominant source concept, too, when employees are regarded.

5.4 Finally: Our Microdata Base of Individual Income and Tax Information

Our specific microdata base of individual income and tax information of the actual German Income and Tax Statistic 1992 allows for the first time a microanalysis of the distribution of income with special emphasis on the income situation of the self-employed and the professions.

The German Income Tax Statistic is a population wide statistic with wages and income tax (Lohn- und Einkommensteuer) information of overall ca. 30 Mio. cases, 450 items.

Our final microdatabase is a stratified random sample of 100.000 tax payers (finally with 80.007 as 'working' people) out of a 10% tax microsample drawn by the Federal Statistical Office. A description of the 100.000 sample is given in Zwick 1998.

Because of the data anonymization and data protection rules, special arrangements were necessary for the income and tax calculations inside the Federal Statistical Office. Based on our inequality program package including the new decompostion of generalized entropy measures written in SPSS (based on program parts of the Sfb3-group at the University of Frankfurt under Prof. Dr. R. Hauser)[4] within the Federal Statistical Offcie all microdata calculations were done with the described microdata base.which was delivered to the Office for the further calculations.[5]

[4] Many thanks to Dr. Irene Becker for her helpul comments and support.

[5] We are very grateful to Markus Zwick from the Federal Statistical Office for his excellent and engaged cooperation and his efforts in preparing, selecting and (re-)running all the jobs.

6 Results I: The Income Distribution of Employees and Self-Employed (Entrepreneurs and Professions*[6])

6.1 Predominant Income from Different Sources - The Overall Picture

Before discussing the income distribution of employees, entrepreneurs and professions as single groups defined via predominant income let us briefly integrate the single group figures within the overall picture of predominant income as given by the Income Tax Statsistics 1992 in Germany.

As it can be seen in Table 2 the dominant group are the employees with 87,2% (ca. 24 Mrd. persons) of all income tax payers and a taxable income of about 80% (1.000 Mrd. DM) of the total amount of taxable income. With a mean taxable income of 42.294 DM per year they show the second smallest mean income of all dependent and self-employed working groups.

Table 2: Predominant Income from Different Sources: Income Tax Statistic 1992 Overall Results[1)]

Predominant income from	Tax payers (n)	Tax payers (%)	Taxable income (Mio. DM)	Taxable income (%)	Taxable income Mean
Agriculture, Forestry	205.170	0,8	7.611	0,6	37.096
Trading	1.311.449	4,8	132.682	10,7	101.172
Independent workers[2)]	431.991	1,6	56.343	4,5	130.426
Employee	23.691.661	87,2	1.002.009	80,5	42.294
Capital assets	436.689	1,6	26.346	2,1	60.331
Let and lease	313.818	1,2	13.062	1,0	41.623
Other income	767.935	2,8	6.954	0,6	9.055
Total	27.158.713	100,0	1.245.007	100,0	45.841
Professions [3)]	515.544	1,9	61.562	4,9	119.412
Professions [4)]	*958.196*	*3,5*	*64.114*	*5,1*	*66.911*

1) Without loss cases
2) Professions are by far the dominant group of the independent workers (‘Selbständige’, income tax definition).
3) With predominant professional income
4) With any professional income
Because of the different account for the spouse’s situation within the professions and within the independent workers by the Federal Statistical Office, however, the figures of professions and all other income sources (as for independent workers, for instance) in this table are not directly comparable

Source: Federal Statistical Office (1998) , p.1-24

[6] Since professions are by far the dominant group of the 'independent' workers (‘Selbständige’, income tax definition) we use professions* (with star) as a synonym for the independent workers.

Income intensive groups in particular are the independent workers with a mean taxable income of 130.426 DM (2,8 times overall mean) as on the top rank of all mean incomes and those of trading work with a mean taxable income of 101.172 DM (2,2 times overall mean). As pointed out above, the number of professions are by far the dominant group of the independent workers (‘Selbständige’, Income tax definition). Because of the different account for the spouse’s situation within the professions and within the independent workers by the Federal Statistical Office, however, the figures are not directly comparable. Therefore the total amount of professions with any professional income here is even greater than the number of independent workers.

Directly comparable is the number of professions with predominant respective any income from professional work. The mean taxable income of persons with predominant income from professional work is 119.412 DM. (2,6 times overall mean). The relatively large number of professions with any professional income and their mean taxable income of 66.911 DM (1,5 times overall mean) pinpoint the situation of a large group of professions with relatively low and not dominant professional income compared to their other sources.

Besides of the employees, the trading persons and independent workers all further predominant groups of income are relative income non-intensive. Thus, besides our substantial interest on the 'working people', the aggregate income figures, too, support our concentration on this further called 'working group' of employees, entrepreneurs (as from trading and agriculture and forestry) and professions (as a definit part of the independent workers).

6.2 The Distribution of Individual Net Income of Employees and Self-Employed (Entrepreneurs and Professions*)

Our interest is to analyze the distribution of a disposable individual income as that part of income finally individually available for consumption and savings. To operationalize this idea and concept on the individual level the fixed income tax (the tax to be paid finally) is subtracted from the taxable income to yield what we further call the *net income* of a person. Of course, this is the advantage of analyzing microdata; all published data from the income statsistics only deal with grouped data of the above different gross incomes and the fixed income tax to be paid.

As stated we concentrate on the 'working' people consisting of employees and the self-employed. The self-employed are further divided into entrepreneurs (agriculture, forestry and trading) and independent workers where the professions by far are the dominant part of them.

In Table 3 different measures of inequality of the net income distribution are shown. Overall: there are remarkable differences concerning our three groups, i.e. between the dependent employed (employees) and the self-employed (entrepreneurs and professions) in the re-unified Germany 1992.

Table 3: Measures of Inequality of the Distribution of Net Income in Germany 1992: All working, Employees, Entrepreneurs and Professions*

	All Working	***Employees***	Entrepreneurs	Professions*
Mean	36.492	33.928	61.430	87.516
Gini	0,42520	0,38669	0,63745	0,52990
Atkinson-Index				
? = 1	0,33723	0,29985	0,56254	0,48280
? = 2	0,86086	0,85363	0,89964	0,85292
Quintile Shares (%)				
1. Quintile	3,58	3,87	1,91	1,60
2. Quintile	10,67	11,55	5,44	6,21
3. Quintile	16,29	17,45	9,54	13,89
4. Quintile	23,03	24,33	16,38	24,11
5. Quintile	46,43	42,79	66,73	54,19
90/10 ratio	34,3	27,6	101,9	85,7
n	80.074	67.415	8.368	4.291
N	25.611.412	23.613.824	1.586.264	411.324

Net income = individual taxable income minus fixed income tax (yearly)
All working = employees and self-employed (entrepreneurs and professions*);
not included: income predominant from capital assets, let and lease, ther sources
Self-employed are divided in entrepreneurs (with profit income from agriculture and forestry and from trading) and in professions* here as the independent (the number of independent persons are by far dominated by the number of professions (Freie Berufe)
Due to sampling errors the total population N might deviate from the actual figure like in Table 2

Source: Income Tax Statistic 1992, Sample of Individual Incomes and Taxes, Federal Statistical Office 1999, 1995; Own calculations

Measured by the mean as a simple measure of center, the spectrum ranges from a mean yearly net income of 33.928 DM of all employees (sample n= 67.415) to a multiple of ca. 2,6 of that with 87.516 DM for the professions.

Since the Gini-coefficient is sensitive for the income region with great population density there are remarkable differences with regard to the middle income situation: whereas for employees the Gini coefficient is about 0,3867 the most unequal distribution is given for entrepreneurs with a Gini of 0,6375. This difference is more important since the Gini coefficient only varies by small numbers 'normally'.

The Atkinson-Index is calculated for Table 3 with a relative small (? = 1) and a relative high (? = 2) inequality aversion to cover a broad spectrum with a multitude of possible normative evaluations. The Atkinson-index is sensitive to changings in the lower part of the income distribution. The differences between the three working groups are dominant with respect to a low inequality aversion. Together with the low income sensitivity of the Atkinson-index in general, this indicates above all striking differences between the distributions in their respective lower income parts.

The quintile shares describe the relation between the population share and their share of the entire income cake. The above hints to differences above all within the lower income parts which are enlighted by the quintile results: for entrepreneurs and

professions, i.e. for the self-employed, the population quintiles with a lower income are all smaller compared to those of the employees (see Figure 2).

In particular, the 90/10 ratio, which is the relation of the upper 10% to the lowest 10% income cake, marks a strong right hand side distribution of the self-employed compared to the employees. Nevertheless, it is remarkable that more than 40% of the employee's net income cake is gained by the 5th quintile, the richest of 20%.

6.3 Redistributional Effects of Taxation of Employees and Self-Employed (Entrepreneurs and Professions*)

One important aspect of any tax system is the size of its redistributional impact of taxation. As in the case of the before tax situation we define the taxable income situation. The after tax situation then is our net income situation. Thus, we analyze the redistributional impacts strictly of the tax tariff (not the overall taxation) in particular, since some parts (see the above definitions and the Appendix) of the tax system is already taken into account to calculate the individual taxable income.

We like to measure the redistributional impacts by two approaches: first by the relative differences of inequality measures, and, second, by an overall redistributive scheme easily to be interpreted.

The relative differences of inequality measures of Table 4 are calculated as follows: With all individual data inequality measures as in Table 3 are calculated for our before-tax situation, the taxable income. Then the relative difference of the global measures compared to the net income of Table 3 are calculated ((net-'gross')/'gross' in %). Thus, the redistributional impacts of the fixed income tax (festgesetzte Einkommensteuer) is our analytic concern.

The means of the self-employed are reduced by ca. 33% compared to ca. 20% of the employees (Table 4). Relatively in the same order of magnitude both for entrepreneurs and professions are all the further inequality measures which describes the redistributional effects. The inequality is reduced by almost 10% for the self-employed compared to ca. 7% for employees (Gini-coefficient). Inequality is the most reduced, the more the situation of the lower income part is of concern (small Atkinson inequality aversion index). The quintile relative changes show negative impacts for the 5th quintile: with more than 6% for the self-employed compared to 2,5% of the employees, the progressivity of the tax system becomes evident.

Table 4: Redistributional Effects of Taxation in Germany 1992: Employees and Self-Employed (Entrepreneurs and Professionals*)

	All Working	***Employees***	Entrepreneurs	Professions*
Mean	-22,0	-19,7	-32,6	-34,4
Gini	-9,0	-7,1	-9,7	-9,9
Atkinson-Index				
? = 1	-13,3	-11,1	-13,5	-14,1
? = 2	-3,0	-2,8	-3,3	-5,0
Quintile Shares (%)				
1. Quintile	20,5	16,2	43,6	44,1
2. Quintile	11,7	8,2	34,7	27,3
3. Quintile	6,8	3,7	26,4	18,9
4. Quintile	4,2	1,4	19,2	9,4
5. Quintile	-7,3	-5,3	-9,0	-10,1
90/10 ratio	-30,3	-24,4	-39,9	-42,8
R (%)	-8,4	-5,9	-13,6	-11,7
k (DM)	-3.950	-2.486	-12.424	-15.557

Net income = individual taxable income minus fixed income tax (yearly)
All working = employees and self-employed (entrepreneurs and professions*);
not included: income predominant from capital assets, let and lease, other sources
Self-employed are divided in entrepreneurs (with profit income from agriculture and forestry and from trading) and in professions* here as the independent (the number of independent persons are by far dominated by the number of professions (Freie Berufe)
k = redistributional effect in DM
R = k/mean: redistributional effect as % of mean gross income (=2(Gini(nett)-Gini(gross))*100

Source: Income Tax Statistic 1992, Sample of Individual Incomes and Taxes, Federal Statistical Office 1999, 1995; Own calculations

The above measures show different impacts with regard to different part of the income distribution. An overall redistributional and easily to be interpretable measure is the k-measure by Blackburn 1989. Blackburn considers a simple redistributive scheme: to every income unit below the median level of income an equal-sized, lump-sum tax, is applied while transferring the value of the lump-sum tax to every unit above the median (or vice versa). The redistributional effect, the impact here of the taxation system then is that value of the lump-sum as a percentage of the mean level of before tax income. As Blackburn (1989) has shown the respective index partitioning is valid only for the Gini-coefficient resulting in

(1) $R = k/\text{mean}_{\text{before tax}} = 2(\text{Gini}_{\text{after tax}} - \text{Gini}_{\text{before tax}})$

The redistributional impacts of the German tax system 1992 are: R% from mean taxable income, or equivalent k DM, is the lump-sum necessary to make the net income distribution - after imposing the tax system - equally distributed (same inequality index) as 'gross' taxable income: for employees R= -5,9% (k = -2.486 DM), for entrepreneurs R = -13,6 % (k = -12.424 DM) and for professions* R = -11,7% (k = -15.557 DM) is the necessary amount every person above the median had to transfer to the persons below the median to achieve the same distributional measure before and after.

Thus, in absolute DM-values the main redistributive impacts of the German tax law is given for professions with -15.557 DM followed by the entrepreneurs with -12.424 DM to be paid to every person below the median to show the before tax distribution. This is more than 6 times respective 5 times than the redistributional amount for employees, a remarkable difference.

6.4 Decomposition of Inequality of Employees and Self-Employed (Entrepreneurs and Professions*)

To answer the question how much of the overall inequality can be 'explained' by the specific groups a decomposition of the overall inequality into the inequality within groups and the inequality between these groups is required. Such a decompostion is available via a classs of additively decomposable inequality measures (Shorrocks 1980, 1984) with

(2) $I_{total,c} = I_W + I_B = \sum_g I_{Wg} + I_B = \sum_g (n_g/n) (\mu_g/\mu)^c I_c(y_g) + I_B$

where I_W is within and I_B is between group inequality, g is the group index, μ is the overall respective group mean, n is the number of observations, $I_c(y_g)$ is the group inequality index dependend on group's incomes y_g; the group weights $w_g = (n_g/n) (\mu_g/\mu)^c$ only sums to unity when c = 0 or c = 1. The only class of inequality measures that satisfies the principle of scale invariance when comparing distributions with different means, and that ensure that the decomposition procedure is valid for arbitrary specifications of the partition, belongs to the generalised entropy class with

(3) $I_c = (1/n)\ 1/[c-(c-1)] \sum_i [(y_i/\mu)^c - 1]$ c ? 0 or 1.

We further use the Theil index as the overall and group inequality index which is given for c = 1 and applying the rule of de l'hopital by

(4) $I_1 = 1/n \sum_i (y_i/\mu) \log(y_i/\mu)$.

Thus, the Theil inequality index decomposition by equations (2) and (4) provides additive group specific inequality contributions. We finally use group specific inequality shares (%) as a group specific percentage of I_w, the overall within group inequality part. The between group inequality share (%) is calculated as I_B as a percentage of the overall inequality index $I_{total,c}$.

Table 5 now presents the decompostion of net income inequality by the Theil inequality index. We see a very dominant within ('intra') group inequality (I_W = 93,5% = 100 - 6,5) compared to the between ('inter') group inequality of I_B = 6,5% and a remarkable high inequality for the self-employed compared to the overall inequality. This very striking result of a low between group inequality is somewhat surprising, since the occupational status is often related to a certain income range. This obviously is far less important to 'explain' income inequality in Germany. This is in line with results of Becker and Hauser (1995, p. 330) for a quite different data base, the Income and Consumption Survey of 1990 and even for the two decades ago.

Table 5: Decomposition of Net Income Inequality in Germany 1992: Employees and Self-Employed (Entrepreneurs and Professionals*)

	Theil Index	Inequality Share (I_{Wg}) %	Income Share %	Population Share %
All Working	0,39458	100,0	100,0	100,0
Groups: Employees and Self-employed				
Employees	0,26264	61,0	85,7	92,2
Entrepreneurs	1,19141	33,7	10,4	6,2
Professions*	0,51100	5,3	3,9	1,6
Between Group (I_B)	-	6,5	-	-

Net income = individual taxable income minus fixed income tax (yearly)
All working = employees and self-employed (entrepreneurs and professions*);
not included: income predominant from capital assets, let and lease, other sources
Self-employed are divided in
entrepreneurs (with profit income from agriculture and forestry and from trading) and in professions* here as the independent (the number of independent persons are by far dominated by the number of professions (Freie Berufe)

Source: Income Tax Statistic 1992, Sample of Individual Incomes and Taxes, Federal Statistical Office 1999, 1995; Own calculations

Though the group of entrepreneurs show the most inequal distribution with the highest group specific Theil index, when the inequality contribution is weighted by the respective population and income share (w_g), the highest inequality share with 61% is contributed by the group of employees followed by the entrepreneurs.

To further illustrate the 'ingredients' of the group weighting the last two columns of Table 5 show the population share (%) as the respective population part of the total population[7] and the income share (%) as the income part of the total sum of income.

The self-employed, with their groups of entrepreneurs and professions*, is the only group whose inequality share is larger than its population share. Thus, the self-employed contribute more to the overall inequality than they contribute to the population number. The very importance in 'explaining' overall inequality by the group of entrepreneurs partly can be explained by their members: besides persons with predominant income from trading (mean taxable income of 101.172, see Table 2), the second group of the entrepreneurs, farmers, show a much lower income (mean taxable income of 37.096 DM, see Table 2); together with their different group homogeneity this will be the particular reason for the income heterogeneity of the entrepreneurs.

By the income share column we see that the self-employed with 7,8% of the working population yield 14,3% of total net income. The most gap between these shares is given for the professions with 1,6% of all working people yielding almost 4% of total net income.

[7] All individual microdata are weighted by sample weights to achieve representative results; thus, the total population is the sum of all sample weights.

7 Results II: The Income Distribution of Single Professions

After having discussed the distributional picture for the employees and self-employed we are now going into more details: we analyze the distribution of professions and their subgroups. Professions are of interest in particular for several reasons: they are satisfying important goods like health or justice and they are an important factor of the service industry in general. In addition to the substantial reasons: although fom the beginning of the 50s in Germany the absolute amount of self-employed has decreased, the number of professions and the relative importance of professions within the group of self-employed has even increased all over the last decades. This is reflecting the growing importance of the service industry in general and a growing important contribution of the professions. For a further discussion of the size, structure and general importance of the professions in the society e.g. see Merz, Rauberger and Rönnau (1994) and the literature cited there.

Our contribution to the professions' discussion and the question to be answered here is: is there a typical income distribution of 'the' professions showing more or less homogeneous concentration on higher income? In either cases, what can be said about the income inequality of single groups of professions and their contribution to the overall income distribution?.

As stated in the introduction, this is the first time for Germany to be able to answer these questions based on such a rich database and in particular on anonymized microdata. As above, we divide our analysis into three steps: we measure the inequality situation, analyze the redistributional effect of the German tax system and investigate the overall professions' income distribution by the decompostion of inequality for single subgroups of professions.

Official Federal Statistical Office (1998) income tax publications deliver 14 selected subgroups of professions as provided by all the grouped table information. Though selected, the 14 subgroups nevertheless covers the complete picture of the professions (with their rest category 'other' professions).

To allow further comparisons between our microdata sample results and the grouped total population results we continue with these 14 subgroups of professions when analyzing the situation based on the sample microdata. Because of the very nature of the microdata, of course further single and specific professions can be regarded, but need additional computations within the Federal Statistical Office.

We analyze professions defined by the predominant income concept. Again, the microdata sample, too, covers all professions summarized in the before mentioned 14 subgroups. Since professions with 1,85% (1992 population) build a relatively small group in the population, even in a large micro sample the absolute amount of persons regarded is expected to be relatively small. Thus, for valid results the more it is important that the sample structure is similar to the population structure. Table A2 in the Appendix compares the unweighted and weighted sample structure of single professions with the actual population structure in Germany 1992. The overall result: our sample fits the actual professions' structure pretty good: all single subgroup percentage differences are less than 1 percentage point besides of the 1,07 percentage point difference of artistic professions. With the details of Table A2 we have a valid

structure. Nevertheless, the further interpretation has to be taken in mind in considering the number of sample units available.

7.1 The Distribution of Individual Net Income of Single Professions

The distribution of net income (as individual taxable income minus fixed income, yearly) now is described with Table 6 by a number of summarizing measures including quintile shares for all professions and all 14 subgroups.

The overall inequality result of the weighted sample: Professions' net income mean of 86.929 DM is 2,38 times all working people's net income mean of 36.492 DM. The income distribution of all working people (Gini: 0,42520) is more equally distributed than for professions (Gini: 0,50539). The quintile shares show that the richer 40% of all working covers almost 69,5% of their total income cake whereas the richer 40% of professionals earns 76% of their total income. Though there are differences, the overall inequality differences are not as significant as one might have expected. However, and as we shall see by the inspection of the further single subgroups of professions, professions's income is very heterogeneous with a wide range of different unequal income distributions.

The professions' distributional heterogeneity can be described is as follows:

For a concise discussion all inequality information is ordered by the size of the 14 Gini-coefficients. The striking result: The most unequal net income distribution can be found for natural medical practioners (Heilpraktiker) with a Gini-coefficient of 0,70605 (but see the relatively small cell size) followed by artistic professions and auditors. Last in order are (beyond the natural medical practioners) all medical Professions: veterenary doctors, dentists and with the most equally distributed net income: medical doctors (Gini: 0,34229).

The Atkinson ? = 1 measure show a similar picture with only a slight changing ordering with regard to auditors and architects and between veterenary doctors and dentists.

The quintile shares deepen the distributional picture: The 90/10 ratios show a broad spectrum from 10 for medical doctors (as indicating that the cake of the richest is ten times as much than the cake of the relative poorest) compared to 1.637 for other business consultants. Although the 90/10 ratio is the preferred measure for a 'most' lower and upper distributional tail comparison – because of the relative low cell occupation of the poorest 10% for almost all professional quintiles might here be more expressive. The wide range of different distribution tail thickness between the 14 single professions is confirmed by a 80/20 or a *60/40* ratio (Natural medical practioners: 22,1 (*23,5*) compared to medical doctors: 2,2 (*1,2*)). Naturally, these are relative distributional figures where additionally the wide range of the single net income level has to be considered (see Table 6).

7.2 Redistributional Effects of Taxation of Single Professions

The redistributional impacts are discussed – as above - by two approaches: first by the relative differences of inequality measures (between the net and 'gross' taxable income situation), and, second, by the overall redistributive scheme following Blackburn (1989). Table 7 presents the relative differences (%) of the inequality measure set used and the respective k-values for all of the 14 single professions. We concentrate our discussion on the most important extreme results describing the range of inequality betweeen the subgroups of professions.

Overall: whereas mean income is reduced by 22%, i.e. the mean tax rate is 22%, for all working people, professions have a mean tax rate of 33%. Inequality is more reduced by the tax system for professions (Gini: -11%) than overall (-9%). The redistributional effect measured by the extreme tails (90/10 ratio) in particular is -30% overall and -42% for professions.

Measured by the relative differences of the single Gini-coefficients between the net income distribution and the taxable income ('gross') distribution (%) the most redistributional impacts are given for medical doctors (-15,5%) and dentists (-13,1%). Though it is not very surprising that for these relatively high income groups the progressive income tax scheme has its highest impact with reducing inequality this information is naturally not sufficient for measuring distributional effects. For illustration, the high mean income group of auditors which 'only' has a Gini-coefficient decrease of -7,8% is last in the 14 subgroups order. This picture is supported by the Atkinson measure (? = 1).

The quintile relative changes are negative only for the 5^{th} quintile by a range from -6,5% for veterinary doctors to -19,4% of artistic professions (but taking into account the relative small cell occupation by the artistic professions) followed by 11,7% for other engineers /technicians. The redistributional impacts are very much in favour of the lowest two quintiles with a range from 7,9% for paramedical professions up to natural medical practioners with a 53,3% decrease in their 2^{nd} quintile.

The redistributional impacts of the German tax system 1992 following Blackburn 1989 is measured in Table 7 by the overall lump-sum necessary to make the net income distribution - after imposing the tax system - equally distributed (same inequality index) as taxable ('gross') income. The results in Table 7 are ordered according to the lump-sum as the DM amount k in % of the ('gross') taxable income before taxation (R%).

The lump-sum ranges from other engineers/technicians with R = -14,4% and architects (R = -13,8%) showing the most impacts compared to paramedical professions (R = -8,4%) and veterinary doctors (R = -6,6%). The absolute DM-values support the stated heterogeneity also for the redistributional impacts with a range from k = -86.275 DM for auditors and k = -28.240 DM for medical doctors compared to k = -5.025 DM for paramedical professions and k = -4.597 for veterinary doctors to be paid to every person below the median to show the before tax distribution. The redistributional difference between all subgroups of professions is about 19 times for the extreme values of the k-ordering, and 5,6 times if we consider the respective second.

The conclusion so far: not only the distributions but the connected redistributional effects differs a lot and is quantified in our tables over all subgroups of professions.

7.3 Decomposition of Inequality of Single Professions

This last chapter discusses the decompostion of net income inequality by the Theil inequality index as in chapter 6.4. Table 8 in particular shows the inequality shares (I_{Wg}) as the single additive decomposed within group inequality part and the overall between group share, in particular. For the easyness of survey the results in this Table are ordered by the size of the 14 inquality shares.

The within ('intra') group inequality (I_W = 80,96% = 100 - 19,04) compared to the between ('inter') group inequality of I_B = 19,04% is dominant. The dominance, however, is by far not as strong as between the employees and self-employed (entrepreneurs and professions*) stated in chapter 6. Thus, inequality differences between the employees and the two self-employed subgroups are less pronounced as between the professions' subgroups.

Which single profession is the most responsible for the professions's overall inequality? The answer is given by the single inequality shares of Table 8 which sum up to 100%. The broad rest group of other professions, which are 39% of all professions contribute to overall inequality almost by the size of its population share: by 38%. It is desirable, that with further definitions and groupings of the professions by the Federal Statistical Office, this group will be more divided to provide more insights of the single contributions. Next in line is the contribution of medical doctors (14,1%) and of architects (13,6%). All other ten single professions contribute with less than 10% with a broad range again from 7,5% by lawyers/notaries and 6,8% by dentists compared to 0,62% by auditors and 0,13% by chemists. With regard to the population share and relative income and income inequality importance the inequality shares of other professions, medical doctors and architects together 'explain' ca. two out of three (66%) of the overall inequality. Such an ordering is not deductable by the single Theil indices; e.g. the natural medical practioners had shown an outstanding inequality with a Theil-index even greater than 1, however, the inequality contribution to the professions' inequality overall, is less than 2%.

Table 9: Decomposition of Net Income Inequality in Germany 1992: Single Professions (ordered by Inequality Shares (I_{Wg}))

	Theil Index	Inequality Share (I_{Wg}) %	Income Share %	Population Share %
Professions, all	0,48005	100,0	100,0	100,0
Groups: Single Professions				
Other Professions	0,55036	38,03	26,86	38,98
Medical Doctors	0,20617	14,14	26,65	16,12
Architects	0,53460	13,63	9,91	8,61
Lawyers/ Notaries	0,36174	7,50	8,06	6,80
Dentists	0,24067	6,75	10,90	6,46
Tax Consultants	0,31679	5,17	6,34	5,57
Other Engineers/ Techn.	0,51472	4,97	3,75	3,79
Artistic Professions	0,74017	4,09	2,15	5,73
Natural Medical Practicioners	1,30857	1,79	0,53	0,73
Paramedical Professions	0,27231	1,59	2,27	4,27
Other Bus. Consultants	0,36617	0,95	1,01	1,07
Veterinary Doctors	0,24964	0,65	1,01	1,65
Auditors	0,53939	0,62	0,44	0,08
Chemists	0,40850	0,13	0,12	0,15
Between Group (I_B)	-	19,04	-	-

Net income = individual taxable income minus fixed income tax (yearly)
All working = employees and self-employed (entrepreneurs and independent workers);
not included: income predominant from capital assets, let and lease, other sources
Professions = defined by predominant income

Source: Income Tax Statistic 1992, Sample of Individual Incomes and Taxes, Federal Statistical Office 1999, 1995; Own calculations

8 Conclusions

Having the opportunity to use a large actual administrative microdata sample within the Federal Statistical Office we were able to analyze for the first time in Germany the income distribution of the self-employed compared to the employees and to deepen the microanalysis for the group of professions on a sound base. This sample of tax payers, the German Income Tax Statistic 1992 is an outstanding statistic and microdata base, because it allows the individual determination of the 'real' income and tax situation for the self-employed in particular.

After having discussed the institutional particularities of the income tax statsistic with emphasis to the self-employed, we first quantified the importance of our data base within the overall German income and tax situation. Based on the income and tax sample with finally more than 80.000 individual taxpayers, we then compared the inequality pattern of employees, and self-employed with its entrepreneurs and professions*. We could even quantify the income situation for the relative small but important group of professions with reliable results not only for the professions overall but also for the important 14 single subgroups of professions.

Our analyses encompass a variety of central inequality measure to analyze the net (after tax) income distribution, an analysis of the redistributional impacts of the German tax system and the decomposition of the respective overall inequality by the generalized entropy decomposable Theil index.

There are a lot of single interesting results discussed and presented by our tables. To be brief with our conclusion and to answer the question from the beginning of the single professions' chapter: there is by no means a typical income distribution of 'the' professions (and 'the' self-employed) showing more or less homogeneous concentration on higher income. In addition, a (existing) discussion of the income situation by measures of the income level only, like the mean value, is a misleading discussion concerning the actual income situation of the professions. First, as we have seen there is a widespread of mean income between the different single professions with quantitative important groups having low professional (though predominant) income. Second, the single distributions of subgroups of professions show a very heterogeneous picture, where only some distinct professions are 'responsible' for the overall inequality measured by the inequality shares. Nevertheless, dominant is the within group effect for all the professions; the connected low between group inequality importance shows that a certain professional occupational status is not the overall driving factor in 'explaining' the professions overall inequality: it is the distribution within the single occupational subgroups.

The last result can even be generalized for the all working people: remarkable is the striking evidence of a low between group inequality (only 6%) when decomposed the all working people to the employees, entrepreneurs and professions*. This quantified result is in contrast to an opinion, that the occcupational status, in particular the status being an employee or a self-employed person, is related to a certain income range. This is obviously far less important compared to the within group inequality to 'explain' income inequality in the re-unified Germany.

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Appendix

Table A1a: German Income Tax Statistic: Determination of Individual Taxable Income

	SUM OF ALL INCOME (Summe der Einkünfte) **as the sum from the seven income types (after deduction of professional outlay (Werbungskosten)/business allowances (Betriebsausgaben)**
+	**Amount still to be taxed (nachzuversteuernder Betrag) (§ 10a EStG)**
+	**Dissolved accumulation reserves (§ 58 Abs. 2 EStG)**
+	**Amount to be added (Hinzurechnungsbetrag) (§ 2 Abs. 1 Satz 3 AIG)**
?	**Old-Age exemption (Altersentlastungsbetrag) (§ 24a EStG)**
?	**Exemption for persons working in agriculture and forestry (§ 13 Abs. 3 EStG)**
=	TOTAL INCOME (Gesamtbetrag der Einkünfte)
?	**Special Expenditures (§§ 10, 10b, 10c EStG)**
?	**Taxably favourable profits not withdrawn (§ 10a EStG)**
?	**Extraordinary tax burdens (§§ 33 bis 33c EStG, § 33a EStG in conjunction with § 52 Abs. 22 and 23, §53a EStG)**
?	**Favourable tax rate for self-utilisation of accommodation (§ 10e EStG)**
?	**Loss deduction (§ 10d EStG, § 2 Abs. 1 Satz 2 AIG)**
=	INCOME (Einkommen)
?	**Child Allowance (§ 32 Abs. 6 EStG)**
?	**Household budget allowance (§ 32 Abs. 7 EStG)**
?	**Tariff/Progressive allowance (§ 32 Abs. 8 EStG)**
?	**Amount remaining exempt according to § 46 Abs. 3 EStG, § 70 EStDV**
?	**Special allowance for persons limitedly liable to pay tax (§ 50 Abs. 3 EStG)**
=	TAXABLE INCOME (zu versteuerndes Einkommen)

Source: Federal Statistical Office: Finanzen und Steuern, Fachserie 14, Reihe 7.1 Einkommensteuer (1992), pp. 10

Table A1b: German Income Tax Statistic: Determination of Fixed Income Tax

	TAX AMOUNT **According to basic table/splitting tables or according to the rate of taxation when applying the Progression Reservation (§ 32b EStG)**
+	**Tax on income which is subject to a reduced rate of taxation (§§ 34, 34b, 34c Abs. 4 EStG)**
=	TARIFF INCOME TAX (Tarifliche Einkommensteuer) **(§ 32a Abs. 1 und 5 EStG)**
?	**Foreign taxes (§ 34c Abs. 1 und 6 EStG, § 12 AStG)**
?	**Tax reductions for persons working in agriculture and forestry (§ 34e EStG)**
?	**Tax reduction for income attained in Berlin-West according to § 21 BerlinFG**
+	**Taxes according to § 34c Abs. 5 EStG**
?	**Building children allowance (Baukindergeld) (§ 34f EStG)**
?	**Tax reductions on expenses incurred in the support of political parties, voting communities or membership fees (§ 34g EStG)**
?	**Tax reductions on burdens as a result of Inheritance Tax (§ 35 EStG)**
+	**Supplementary tax according to §§ 30, 31 EStDV**
=	FIXED INCOME TAX (Festzusetzende Einkommensteuer) (§ 2 Abs. 6 EStG)

Source: Federal Statistical Office: Finanzen und Steuern, Fachserie 14, Reihe 7.1 Einkommensteuer (1992), pp. 11

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