TOP INCOMES AND TOP TAXES IN GERMANY

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Abstract

We analyze the distribution and taxation of top incomes in Germany during the 1990s on the basis of individual tax returns data. We derive a measure of economic income from taxable gross income as reported in the tax returns. Thanks to complete sampling, we can deliver a very precise description of very high incomes, in terms of both distribution and composition by source. We also provide a measure of the effective average rate of taxation for various income groups. Our main findings are as follows: (i) incomes are highly concentrated in Germany, more than commonly thought; (ii) the German economic elite relies much less than elites in France or the US upon income from wages and salaries; (iii) income taxes are highly concentrated in Germany, more than commonly thought; (iv) although effective tax rates are significantly lower than statutory ones, the income tax is effectively progressive; (v) income taxation substantially reduces income inequality in Germany.

JEL Code: H24, D31, H26.

Keywords: income distribution, personal income tax, taxing the rich.

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1 Introduction

Despite partial retrenchment of the welfare state in many countries, the personal income tax is still regarded in advanced economies as the centrepiece of the tax system and an essential tool to reduce income inequality. However, things might look very different in a couple of years. Possibly, the income tax might be replaced by a consumption tax in the long run. Alternatively, the progressivity of the personal income tax might be drastically reduced, e.g. by switching to a flat tax with a low tax rate, at least for capital income ("dual income tax").

In order to evaluate the reasons for abolishing, reforming, or retaining the income tax as it is, one has to empirically assess the actual contribution of that instrument to reduce income inequality. Firstly, that contribution depends on the distribution of market incomes. Having an enormous degree of tax progressivity may exert a negligible distributional impact if market incomes are rather equally distributed. Conversely, progressivity is the more valuable for equity reasons the more unequal the distribution of market incomes is. Secondly, the distributional benefits from the income tax depend on true progressivity, which is not only determined by the tax schedule but also by the pattern and the size of tax avoidance. Thus, a highly progressive tax schedule may turn out to be a quite ineffective tool to attain distributional aims if the relative amount of erosion of the tax base increases with income.

In this paper, we examine the concentration of market incomes and the effectiveness of the personal income tax in the largest European economy, namely Germany. Our investigation is based on official tax statistics data at the individual level, accessed to through the Research Data Centre of the Federal Statistical Office of Germany. The data cover the period 1992-1998 and include 10 %-samples of the total taxpayer population in Germany. Noticeably, all German taxpayers that belong to the top percentile of the income distribution are included in our data set. This distinctive trait enables us to deliver a picture of the German distribution of top incomes and top taxes that is much more precise than those obtainable from alternative sources, e.g. the German Socio-Economic Panel (GSOEP) or the German Income and Consumption Survey (EVS).

We find that the distribution of income in Germany is more concentrated than commonly thought. The top decile of the income distribution receives about one third of total income of the taxpayer population. Even excluding capital gains, the top 0.1 % of the German income distribution receives 4 % of total taxpayers' income.

Income levels and income concentration are quite astonishing in the case of the German economic elite. We define the elite as the top 0.001 % group of the taxpayer population. This group included less than 300 households, with an average income without capital gains of 22.3 million Euro in 1998. Roughly, in the German economic elite, a typical household earns as much as one thousand German worker households can earn together.

German tax data show substantial variation across income groups with respect to the composition of their incomes. Wage income is by far the quantitatively most important income source for the vast majority of taxpayers. For the richest 1 % German households, income from capital and self-employment viz. business is the dominant source. Strikingly, the predominance of capital income seems to be much stronger in Germany than in the U.S. – as documented by Piketty and Saez (2003) – or even in France – as documented by Piketty (2003). Apparently, only about 1 % of the economic elite of Germany of the 1990s consisted of top managers.

A large portion of our study is devoted to the distributional implications of the personal income tax. In Germany, the tax schedule was highly progressive up to the end of the 1990s and is still progressive, i.e. the income tax is conceived as an instrument that helps the government to reduce income inequality. However, little is known about the effective degree of progressivity viz. whether the German income tax is progressive at all. Because of several tax exemptions, deductions, loopholes in the tax code and outright tax evasion, taxed income might fall apart from economic income in important ways.

Our study suggests that the gap between actual and taxed income varies according to the income source. Wage earners benefit from tax erosion less than other taxpayer groups. Since the composition of income systematically varies with the income level, effective progression differs from statutory progression.

Despite substantial tax erosion, we find that personal income taxation in Germany is effectively progressive: the effective average tax rate increases with income. Moreover, the distribution of the tax burden is highly concentrated. By way of an example, the top decile contributes more than half of the entire tax revenue and the share of taxes of the top percentile is about 23 %.[1] The German economic elite is heavily affected by the personal income tax. The average tax liability in that group was almost 10 million Euro in 1998 and its average tax rate amounted to about 40 %. As a result, the income tax substantially contributes to reduce the concentration of income in Germany.

The studies that are most closely related to ours are Lang *et al*. (1997) and Dell (2005). The latter offers a thorough analysis of income concentration in Germany over the twentieth century. He investigates tax returns statistics in form of tables containing, for a large number of brackets, the number of taxpayers and the amounts declared. Strikingly, Dell finds that throughout the post-war period top incomes were more concentrated in Germany than in France. Furthermore, he finds that until the late 1980s, the German super-rich were richer than their US counterparts. After that decade, German income concentration lies at the midway between the cases of France and the United States.

Whereas Dell (2005) focuses on the long-run evolution of top incomes, we are interested in the distributional implications of the income tax in the 1990s. Thus, we also investigate the distribution of income taxes and the distribution of net incomes. Furthermore, we extend his analysis of gross incomes in some respects, e.g. by comparing the composition of top incomes to that in other countries and by scrutinizing the 0.001 % top income group, a fractile of the income distribution that has not yet been studied even for other countries.

Lang *et al.* (1997) focussed on the "true" progressivity of the German income tax. Using survey data from the EVS for 1983, those authors found that the effective marginal tax rate for high incomes was

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1 By comparison, Feenberg and Poterba (2000) find that in the US, in 1995 the top 0.5 % of households received about 11 % of total gross income and contributed about 24 % of total income tax.

16 percentage points below the legislated one and that much of that difference was due to underreporting of interest income and income from real assets. Similarly to our study, they also documented that the effective tax rate increases with income. However, they suggested that the tax rate increase is almost negligible at high income levels.

The main problem of Lang *et al.* (1997) is that their data did not include households within the 2 % richest group of the population. Since those households represent the main contributors in terms of income tax, our analysis leads to results that are substantially more reliable. As the period that we study begins nine years after 1983 and ends fifteen years after, we cannot assess to what extent that sample bias distorted the results of Lang *et al.* (1997). Crucially, our results support a more positive assessment of the German income tax as a redistributive tool. According to the current investigation, the income tax does contribute to reduce inequality and its retrenchment would be likely to dramatically increase income concentration in Germany.

The paper is organised as follows. In Section 2, we describe the data set in some details and discuss how we attempt to measure economic income using individual tax returns. The distribution and composition of incomes is the object of Sect. 3. Sect. 4 introduces the German income tax and shows how the income tax liability is distributed. In Sect. 5, the impact of the personal income tax on the distribution of net incomes is investigated. Concluding remarks are contained in Sect. 6.

2 Data and Methodology

Our investigation relies on official income tax returns for re-unified Germany in the years 1992, 1995, and 1998. More recent data on individual tax returns are presently not available. This is due to long-lasting assessment procedures and the triennial interval between subsequent income tax statistics in Germany (the next wave, for 2001, is to become available for research purposes in 2006). We thus utilize all official data from income tax returns that are available for the 1990s.

In the 1990s, there were almost 30 million tax units in Germany. Each yearly wave of data includes a representative sample of about 3 million tax returns, i.e. roughly 10 % of the entire taxpayer population. Samples are drawn by the German Federal Statistical Office from the set of all tax files of each year so as to build a stratified random sample. The sampling fraction for pre-defined cells according to gross taxable income and other tax-relevant characteristics is determined by minimizing the standard error with respect to taxable income (Zwick, 1998). In particular, tax return samples include *all* taxpayers with high incomes or high income losses.[2]

In our sample, a tax unit may consist of a single taxpayer or a married couple. Single taxpayers are taxed according to the tax schedule for individuals ("Grundtabelle"). Couples choose between individual taxation and joint taxation with full income splitting. In the latter case, the couple's tax liability equals twice the tax liability of a single taxpayer whose income is half of the couple's income ("Split-

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[2] Specifically, all taxpayers with a yearly gross taxable income larger than 250,000 DM (128,000 Euro) are included in our data set.

tingtabelle"). In nearly all cases, joint taxation with full income splitting is less onerous than individual taxation, therefore the former procedure is used by default in tax assessment.[3]

The original data set includes all assessed taxpayers, i.e. single persons or married couples who file a tax return in a given year. Households living on social assistance or income replacement benefits (e.g. from private insurance or social security) usually do not file, unless they have other taxable income. Approximately, more than two-thirds of all German retirees do not file a tax return. Until 2005, German tax law has charged life annuity funds only by the interest portion of the annuity payment ("Ertragsanteil"). On average, about 30 % of a typical old-age pension from the statutory pension scheme or from supplementary company pension schemes was subject to income taxation. Thus, many pensioners without significant taxable income from other sources remained below the tax-free basic allowance and did not file a tax return. Furthermore, households with wage earnings only file a tax return if they want to claim itemized deductions that are not already taken into account by their wage tax, which is withhold at source by the employer.

For the above reasons, and as it is often the case with data from tax returns, our data set does not portray well the lower tail of the income distribution. However, in the medium and upper range of the income distribution our sample is very representative, as nearly all domestic residents of these groups file a tax return. Therefore, we concentrate our analysis on the upper tail of income distribution.

From Taxable Income to Gross Income

In principle, German tax law employs a comprehensive notion of income which includes all earned income and capital income, as well as transfer income at least to some extent. As a matter of fact, exemptions and tax reliefs may create a substantial gap between taxable income and economic income. To cope with this problem, we derive a measure of *gross income* by adding all tax-exempted incomes as well as tax reliefs that can be identified within the tax file information. Details of our procedure are provided in Tables A1 to A6 in the Appendix. The main points to be noted are as follows:

- Income from *business activity* includes taxable income from agriculture and forestry, from unincorporated business enterprise and from self-employed activities (professional services). Tax reliefs are taken into account as far as they are identifiable, just as the tax-exempted profits from outbound business investments. Capital gains from business activity could be identified separately. Unfortunately, German income tax statistics do not provide information from financial accounting of firms (tax balance sheet, profit and loss statement). Therefore, we do not know to what extent firms exploit depreciations according to the declining balance method or provisions for impending losses or pension reserves. German tax law was deemed to be quite generous in this field up to the end of the 1990s. A fortiori we cannot quantify the extent to which businessmen avoid taxation by e.g. disguising private expenses as operating expenditures or transferring part of their profits abroad via distorted transfer prices.

[3] Only in some cases of taxing exempted income with progression ("Progressionsvorbehalt") or taxing extraordinary revenues at reduced rates, individual taxation of couples might be favorable.

- Our measure of *wage income* is calculated before deduction of allowable expenses. Taxable pensions from former employment, which are part of the statutory income from employment, are accounted as transfer income (see below). Tax-exempted foreign wage income is added.
- In the subsequent analysis, *capital income* from investments includes all capital income from private investments, except income from business activities. Especially in this field we face difficult measurement issues. First, interest and dividend income was granted in the 1990s a rather high savers allowance of 6,000 DM / 3,070 Euro per year (double this amount for married couples). We compute those allowances as part of gross income whenever tax units claim them. However, many taxpayers with financial income did not claim them since their financial income was lower. Second, bank secrecy law might have encouraged tax evasion of financial income to some extent. By definition, evaded income is not recorded by tax returns and is therefore neglected by our study. Third, in Germany, capital gains from financial investments are taxable solely if they are classified as "speculation gains", i.e. if sale of the asset closely follows acquisition of that asset. In 1998, this meant that the time lapse between buying and selling had to be less than two years in the case of real estate and less than six month in the case of other assets (e.g. securities) for the capital gain to be legally counted as taxable income.
- For decades, taxable income from *renting and leasing* has been a vast loophole for tax-saving activities in Germany. Depreciation allowances, tax reliefs and generous accounting rules in combination with tax-free capital gains led to massive budgetary losses that could be set off against income from other sources to a large extent. In 1998, positive incomes from renting and leasing amounting to 20.1 billion Euro were offset against losses of 37.7 billion Euro. Since most of this activities are likely to be motivated by tax avoidance, we ignore losses exceeding some thresholds.[4]
- As noted above, German income tax statistics only cover the main components of *transfer income* received by households with medium or higher income. Taxable transfer income includes taxable pensions derived from former employments, the taxable share of life annuity funds (pure interest portion of the annuity payment), and alimonies between separated and/or divorced spouses. We correct for the allowance for taxable pensions from former employment. Furthermore, we add the non-taxable share of life annuity funds, which is estimated as 70 % of the whole pension. The data set also provides the non-taxable replacement amounts from insurances for loss of earned income (e.g. benefits from unemployment or health insurance), as they are relevant for taxation with progression ("Progressionsvorbehalt").[5]

As a result of our corrections, a gross income measure is obtained which is rather close to "pre tax, post transfer" household income. Although there are some shortcomings in comparison to a theoretically well-defined economic income concept in terms of the Schanz-Haig-Simons net accrual principle

[4] Losses of more than 5,000 Euro from direct investments in real estate and of more than 2,500 Euro from shareholdings (closed property funds, property developer partnerships etc.) are disregarded in calculating gross income.

[5] These items might not be part of the current income according to the Schanz-Haig-Simons net accrual principle as they comprehend disinvestments of the capital funds (see Cronin 1999). The resulting mismatch in the timing of income accruals is disregarded in order to compare our results with other surveys on household income.

(see e.g. Cronin 1999), our empirical measure of income is a reasonably effective tool to investigate the income situation and composition of the richer part of the German society, in particular for top-income families.

In order to rank taxpayers by deciles, we employ gross income as defined above, *exclusive* of capital gains. The main reasons behind this choice are as follows:

- Observed capital gains are predominantly capital gains that were realized from transfer of an enterprise, parts of an enterprise, or shareholdings. They form a very volatile component of income since they do not stem from regular business and are realized by individuals in a lumpy way. As they have often a remarkable impact on income, this would distort the ranking across taxpayers.[6]
- One observes an exceptional increase in realized capital gains from business activity in 1998 (29.3 billion Euro against 8.8 billion Euro in 1995 and 8.3 billion Euro in 1992). The reason behind this is likely to be a "Lafontaine effect":[7] When the red-green government came into power in October 1998 they announced far-reaching tax reforms according to the well-tried device "tax-cut-cum-base-broadening". In this context, tax reliefs for capital gains were abolished in 1999 (specific allowances, half average tax rate). There is some evidence from tax authorities that many entrepreneurs jumped on the last chance for realizing hidden reserves at reduced rates by short term transferring operating assets into private property. Therefore, this effect might be transitory to a large extent.[8] Recent information from statistical offices about the nearly completed income tax statistics of 2001 confirms this conjecture.

In the following Sections, we also present computations based on the notion of *taxable gross income*, which is the sum of the statutory single income components, called in German tax law "Summe der Einkünfte". This income concept is, among those defined in the tax code, the one which is closest to an economic definition of income. Notice that the income measure on which the tariff is applied in order to compute the tax liability ("Zu versteuerndes Einkommen") represented in 1998 about 80 % of taxable gross income.

3 Top Income Distribution and Composition

3.1 Structural features

Table 1 presents some summary statistics on the German income tax along with some useful information about the German economy.

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6 Previous studies, as Piketty (2003) and Piketty and Saez (2003), also excluded capital gains from their income measure.

7 Oskar Lafontaine was the first finance minister in the red-green coalition government 1998/99.

8 In 2001, the reduced rates were re-introduced, now bounded on certain circumstances.

Table 1

Taxpayers, gross income and taxable income compared to macroeconomic indicators 1992-1998

	unit	1992	1995	1998
Income taxpayers (assessment)	1 000	29 479	29 676	28 673
Single assessment (singles)	1 000	13 961	14 299	13 789
Joint assessment (married couples)[1)]	1 000	15 518	15 377	14 884
Potential tax units total[2)]	1 000	44 502	44 619	45 173
Estimated non-filers	1 000	15 023	14 943	16 500
Private households total[3)]	1 000	35 700	36 938	37 532
Taxpayers as percentage of potential tax units	%	66.2	66.5	63.5
Taxpayers as percentage of private households	%	82.6	80.3	76.4
Gross income[4)] (tax statistics)	mill. Euro	906 810	1 003 615	1 063 510
Taxable gross income (tax statistics)	mill. Euro	841 412	893 395	940 752
Taxable gross income as perc. of gross income	%	92.8	89.0	88.5
Gross income less capital gains and transfers	mill. Euro	822 813	896 486	928 090
Gross domestic product[5)]	mill. Euro	1 613 200	1 801 300	1 929 400
Primary income of private households[5)]	mill. Euro	1 235 240	1 354 570	1 439 110
Gross income less capital gains and transfers as percentage of primary income private households	%	66.6	66.2	64.5
Wage income[6)] (tax statistics)	mill. Euro	682 194	746 444	750 390
Wages and salaries[5)] (national accounts)	mill. Euro	750 210	806 370	830 500
Wage income from tax statistics as percentage of wages and salaries from national accounts	%	90.9	92.6	90.4
Income from business activities and capital income[4)] (tax statistics, less capital gains)	mill. Euro	140 818	142 637	178 401
Entrepreneurial and property income of private households[5)] (national accounts)	mill. Euro	318 880	358 390	408 550
Entrepreneurial income	mill. Euro	149 500	164 710	173 370
Property income (net)[7)]	mill. Euro	169 380	193 680	235 180
Business and capital income from tax statistics as percentage of entrepreneurial and property income from national accounts	%	44.2	39.8	43.7

1) Married couples living together are assesed as one tax payer.- 2) Derived from population census statistics: Entire population of 20 years and older, married couples counted as one tax unit.- 3) Current population survey, may of resp. years.- 4) Taxable and non-taxable income, as far as included in income tax statistics.- 5) At current prices, national accounts.- 6) Taxable wage income (before deduction of allowable expenses), minus taxable pensions from former employments, plus tax-exempted foreign income.- 7) Recieved less payed property income (interest, distributed income of corporations, property income attributed to insurance policy holders, rents).
Source: Income tax statistics 1992-1998; current population survey; national accounts.

In each wave, about 29 million income tax returns were filled by German taxpayers. Slightly more than fifty percent of those returns were joint files of married couples. By international standards, the share of the German population that pays income tax is rather large. Assuming that one taxpayer corresponds to one household,[9] more than three quarters of all German households pay income tax. The number of assessed taxpayers fell by 1 million units from 1995 to 1998 after that the income tax re-

9 This assumption is violated in the case of unmarried couples or parents with adult children having their own income.

form of 1996 relaxed some provisions for filing tax returns. Since then, taxpayers with only wage income often are not obliged to file, independently of their level of taxable income.

Total gross income recorded in the official tax statistics was about one trillion in 1998, which represents almost two thirds of the primary income of private households as documented by national accounts. As shown by Table 1, the discrepancy between gross income and income from national accounts is mainly due to incomes from business and capital. Unfortunately, German national accounts do not provide differentiated information on business and capital income according to the categories used for the income tax assessment. Capital goods depreciation is differently treated in those two statistical sources. Non-profit organizations like churches, foundations, trade unions, business associations or political parties are classified as part of private households in national accounts – these organizations often have substantial capital income which regularly remains tax-free. And, as we explained in the previous Section, not all capital income of private households is recorded by the official tax statistics. All these factors together may explain the discrepancy between the national accounts and the tax data used here.

3.2 The distribution of top incomes

The distribution of gross income across the various deciles of the taxpayer population is presented in Table 2, while corresponding levels of nominal income are reported in Table 3. Our comments will mainly refer to 1998, the corresponding results for 1992 and 1995 are presented in the Tables.

Over the 1990s, the poorer half of the taxpayer population earned slightly more than one fifth of overall gross income. In 1998, median income amounted to less than 29,000 Euro, while average income was 36,000 Euro. The first four deciles within the upper tail of the income distribution received about 47 % of overall income, so that their average income was not much larger than average overall income. As shown by Table 3, average income of the 9th decile was 55 % larger than average income. The share of total gross income received by the top decile was about 32 %, see Table 2. The Gini coefficient of the gross income distribution is about 0.44 in 1998. Although it increased between 1995 and 1998, there was almost no change compared to its level in 1992. Compared to other estimates of Gini coefficients for the German income distribution, our estimates take into account the higher inequality in the distribution of non-labor incomes. For example, Becker and Hauser (2003) report Gini coefficients of about 0.32, 0.47, and 0.43 for gross income from dependent employment, self employment, and capital income, respectively, on the basis of the 1998 income and consumption survey (EVS). As mentioned in the introduction, the EVS does not include the richest households, and inequality measures derived from it are thus not directly comparable with ours.

In Table 2 we also report the distribution of income when capital gains are included. Since capital gains are concentrated at the top of the income distribution, the top decile now appears to receive 33 % of overall income in 1998 and the Gini coefficient increases by about half percentage point.

Table 2

Distribution of gross income 1992-1998

Gross income[1)]	Gross income[1)] structure in %			Gross income[1)] plus capital gains structure in %		
Income fractiles	1992	1995	1998	1992	1995	1998
1st - 5th decile	21.3	21.9	21.0	21.3	22.0	21.1
6th - 9th decile	47.0	47.2	46.8	46.6	46.9	45.8
10th decile	31.8	30.8	32.2	32.0	31.0	33.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Top 1%	10.2	9.3	10.2	10.5	9.6	11.3
Top 0.1%	3.9	3.5	4.0	4.0	3.6	4.7
Top 0.01%	1.4	1.4	1.6	1.5	1.5	1.8
Top 0.001%	0.5	0.5	0.6	0.5	0.5	0.7
Gini coefficient[2)]	0.4309	0.4181	0.4355	0.4349	0.4219	0.4491

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.-
2) Negative gross income = 0.
Source: Income tax statistics 1992-1998; own calculations.

We now come to the core object of our analysis, namely the upper 10 % fraction of the income distribution. The lower income threshold for that group was in 1998 about 65,000 Euro, see Table 3. Households within this group are very heterogeneous, the top decile includes both families from the middle class and the super rich. An adequate understanding of income inequality and tax progressivity requires one to carefully distinguish between various subgroups within the top decile.

Table 3

Gross income 1992-1998
average income and percentiles

Gross income[1)]	Average gross income[1)]						Highest gross income[1)] (percentile)					
	1 000 Euro			mean = *100*			1 000 Euro			median = *100*		
Income fractiles	1992	1995	1998	1992	1995	1998	1992	1995	1998	1992	1995	1998
1st decile	- 0.3	- 0.2	- 1.6	- 1	- 1	- 4	4.8	6.2	5.6	19	23	19
2nd decile	8.2	10.1	10.3	27	30	29	11.6	13.7	14.2	47	50	49
3rd decile	14.5	16.6	17.4	48	50	48	17.1	19.3	20.3	69	70	70
4th decile	19.3	21.5	22.6	63	64	63	21.2	23.5	24.8	85	86	85
5th decile	23.1	25.5	26.9	76	76	75	24.9	27.5	29.0	*100*	*100*	*100*
6th decile	26.9	29.6	31.3	88	88	87	29.0	31.9	33.9	116	116	117
7th decile	31.5	34.8	36.9	103	104	102	34.3	37.9	40.3	137	138	139
8th decile	37.7	41.8	44.5	124	125	123	41.6	46.1	49.2	167	168	170
9th decile	47.1	52.1	56.0	155	156	155	54.1	60.0	64.9	217	218	223
10th decile	96.8	103.4	116.0	318	308	322	.	.	.	.	.	.
Total	30.5	33.5	36.0	*100*	*100*	*100*	.	.	.	.	.	.
90%-95%	60.5	66.9	72.8	198	200	202	69.2	76.3	83.6	278	278	288
95%-99%	88.8	96.7	107.2	291	289	297	137.0	144.4	162.7	550	526	561
Top 1%	309.9	312.2	367.7	1 017	932	1 020	.	.	.	.	.	.
99.0%-99.9%	213.9	217.9	249.1	702	650	691	480.5	467.2	551.9	1 928	1 701	1 902
Top 0.1%	1 173.5	1 161.2	1 435.1	3 851	3 465	3 981	.	.	.	.	.	.
99.90%-99.99%	816.3	775.4	939.3	2 679	2 314	2 606	2 017.9	1 898.1	2 338.8	8 097	6 909	8 059
Top 0.01%	4 389.5	4 633.1	5 898.1	14 405	13 824	16 363	.	.	.	.	.	.
99.990%-99.999%	3 320.3	3 274.9	4 078.6	10 896	9 772	11 315	7 627.0	8 053.9	10 276.7	30 602	29 316	35 409
Top 0.001%	14 037.7	16 891.6	22 314.7	46 067	50 402	61 907	.	.	.	.	.	.

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.
Source: Income tax statistics 1992-1998; own calculations.

Therefore, we decompose the top decile into smaller groups. The bottom half of the top decile, with incomes between 65,000 Euro and 84,000 Euro is still relatively close to a widely held notion of middle class. Very high incomes are to be found within the top 1 % fraction of the income distribution. These were households that in 1998 exhibited a gross income of more than 163,000 Euro. All those households are present in our data set. Hence, we can give a picture of the top 1 % fraction of the income distribution in Germany that does not entail any error that can be ascribed to sampling procedures. As revealed by Table 2, the top 1 % of the income distribution received about 10 % of total income less capital gains in 1998; if one includes the capital gains reported in the tax statistics, their share becomes 11.3 %.

Likewise, all German households whose income belongs to the top 0.1 % of the income distribution are present in our data set. In any given year, this group includes about 29,000 tax units. In 1998 you had to earn a gross income of more than 552,000 Euro to be included in the 1 ‰ group of the richest German taxpayers – these are the "millionaires" in terms of old D-Mark. About 4 % of total gross income accrued to this group in 1998. Including capital gains, the income share of the top 0.1 % of the income distribution is 4.7 %. In other words, their average income was almost fifty times larger than average income and sixty-five times larger than median income.

The top 0.01 % of the income distribution captures some 2,900 households. Entry in this group was restricted in 1998 to households that made at least 2,340,000 Euro of regular income, i.e. without capital gains. This tiny group received 1.6 % of total income.

Table 2 and Table 3 also provide some information about the top 0.001 % of the income distribution, a fractile that has not been studied so far in the literature. This group was formed in Germany by some 290 households, with incomes larger than 10,280,000 Euro. We refer to this group as to the *economic elite* of Germany. The average income within this group, without capital gains, was in 1998 about 22,310,000 Euro. This is about one thousand times what a typical German blue-collar worker makes – say, the average of the 4th decile. Those 290 families received about 0.6 % of total income.

3.3 The composition of top incomes

The rich are not only different from most of us because they have more money. One further difference relates to their income sources. This is shown in Table 4, which presents evidence on the composition of gross income in 1998.

While wage income represents almost 73 % of total gross income and households up to the 9th decile receive three fourth or more of their income in form of wages and salaries, the corresponding share for the top decile is less than 60 %. This tendency for the top decile to rely more heavily on income from business and capital is well documented also for other countries.

Within the top decile, variation of income composition is huge. While, on average, households in the top decile receive almost 60 % of their incomes in form of wages, only 30 % of the income received by the top 1 % is made up of wages and only 16 % of income in the top 1 ‰ is derived from wage income. Within the top decile, the share of wages on total income monotonically declines with income.

Table 4

Composition of gross income 1998
structure in %

Gross income[1)] / Income fractiles	Gross income[1)]	Income from business activity[2)] less capital gains			Wage income[3)]	Capital income less capital gains			Transfer income[6)]	Capital gains
		Total	Thereof: income from business enterprise	Thereof: income from profess. services		Total	Interest, dividends[4)]	Renting and leasing[5)]		
1st - 5th decile	100.0	1.5	- 0.4	1.1	74.6	4.7	3.6	1.1	19.2	3.6
6th - 9th decile	100.0	5.7	3.6	1.4	80.6	3.3	2.6	0.8	10.4	0.6
10th decile	100.0	26.5	13.7	11.3	59.7	9.7	7.3	2.4	4.1	5.8
Total	100.0	11.5	6.0	4.5	72.6	5.7	4.3	1.4	10.2	2.9
Top 1%	100.0	49.3	28.1	18.8	30.4	18.0	14.3	3.7	2.2	14.3
Top 0.1%	100.0	59.2	47.0	9.1	15.8	23.9	20.7	3.2	1.1	20.4
Top 0.01%	100.0	68.4	61.5	2.1	6.5	24.4	22.5	1.9	0.7	14.0
Top 0.001%	100.0	71.6	66.3	0.4	1.9	26.1	24.4	1.7	0.5	9.4

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Taxable income from agriculture and forestry, from business enterprise, from self-employed activities (professional services), plus tax reliefs, plus allowance for capital gains from business activity, plus tax-exempted foreign income.- 3) Taxable wage income (before deduction of allowable expenses), minus taxable pensions from former employments, plus tax-exempted foreign income.- 4) Taxable income from investments (exclusive income from business activities), inclusive receipts below the savers allowance.- 5) Taxable income from renting and leasing, plus higher losses from renting and leasing.- 6) Taxable pensions from former employ-ments, taxable share of life annuity funds (mere interest portion of the annuity payment), alimonies between separated and divorced spouses, plus allowance for taxable pensions from former employments, plus non-taxable share of life annuity funds (estimated), plus non-taxable replacement amounts from insurances for loss of earned income (e.g. benefits from unemployment or health insurance), as far as relevant for taxation with progression ("Progressionsvorbehalt").
Source: Income tax statistics 1998; own calculations.

As a consequence, the group with the highest incomes is the one with the lowest wage share. The 290 richest families earned on average less than 2 % of their income from wages and salaries. In 1998, the average member of this group earned only some 400,000 Euro in form of salary; luckily enough, this amount was complemented by 5.8 million Euro derived from capital income and 16 million Euro derived from business income. On top of that, the average member of the German economic elite received 2.1 million Euro capital gains.

Piketty (2003) and Piketty and Saez (2003) contain a detailed description of income composition in, respectively, France and the US. In order to compare those countries with Germany, we now employ those authors' definition of household population to compute the income shares of the various fractiles. While in the rest of our study we define population size by counting all tax units, here we follow the approach of Piketty and Saez and define the fractiles for Germany relative to the total number of *potential* tax units in the entire population of 20 years and older (married couples counted as one tax unit). As documented in Table 1 above, population size as defined in those terms amounts to some 45.2 million units. We also make the reasonable assumption that all those potential tax units that are not assessed for tax purposes do not belong to the top decile of the income distribution.

Results from the comparison with France and the US are reported in Table 5. In all three countries, the share of wage income monotonically decreases with increasing fractile within the top decile. Interestingly, the relative weight of wage income is rather close across countries if one neglects the top 1 %. Within the top 1 %, cross-country differences are overwhelming. The share of wage income is much larger in the US than in France, and in France it is much larger than in Germany. Strikingly, in the US about 45 % of all income accruing to the top 0.01 % consists of wages; for the corresponding group in Germany, wages represent just 8 % of their income.

Table 5

Share of wage income in the US, France, and Germany in the top decile 1998
based on potential tax units[1)]
in %

Gross income[2)] Income fractiles[1)]	Germany	France	United States
90%-95%	82.5	89.2	89.6
95%-99%	73.8	79.7	79.8
99.0%-99.5%	52.8	66.2	69.0
99.5%-99.9%	39.4	50.0	62.7
99.90%-99.99%	25.7	40.1	57.8
99.99%-100%	7.8	21.9	44.8

1) Based on potential tax units: Entire population of 20 years and older, married couples counted as one tax unit.- 2) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.
Source: Germany: Income tax statistics 1998; own calculations. France: Piketty (2001: Tab. B-16). US: Piketty and Saez (2003: Table III).

Thus, our analysis adds a novel aspect to the comparison of Germany with the US and France, as discussed by Dell (2005). He found that, with respect to the concentration of income, Germany is a middle case between the highly concentrated US income distribution and the less concentrated French one. With respect to the income composition pattern, our analysis suggests that it is France which is in the middle between the US and Germany. The German affluent rely much less on wages and salaries for their incomes than their counterparts in France and the US.

In order to arrive at a better understanding of the composition of top incomes in Germany, we investigate how homogeneous income sources are at the individual level. In the left part of Table 6 all taxpayers in the top percentile are ordered according to their income share stemming from the three main income sources: wage, business activity, and capital income. That table reveals that 22.4 % of those taxpayers can clearly be identified as employees or managers since their personal income stemmed by more than 90 % from wage income. Some other 24.2 % of taxpayers in the top percentile can be identified as entrepreneurs and professionals, since more than 90 % of their personal income stemmed from business activity. Only 3 % of the top percentile can be identified as rentiers, whose income is mainly generated by interests, dividends, and rents. About half of the top 1 % includes taxpayers with mixed income from the various sources.

On the right hand side of Table 6, the same analysis is conducted for the top 0.001 % of the income distribution, the economic elite of Germany. By the same token, one can identify in this group a portion of employees equal to 1 %, a portion of entrepreneurs equal to 51.7 % and a portion of rentiers equal to 15.4 %. Hence, the German economic elite consists almost entirely of entrepreneurs and rentiers; top managers constitute noticeable exceptions.

Table 6

Composition of taxpayers within the top 1 % and in the top 0.001 % quantile 1998 by share of income type

Share of income type in gross income[1)]	Top 1 %			Top 0.001 %		
	Taxpayers by share of			Taxpayers by share of		
	Wage income[2)]	Income fr. business activity[3)]	Capital income less capital gains	Wage income[2)]	Income fr. business activity[3)]	Capital income less capital gains
from ... to ...	% of total			% of total		
0 - 10 %	41.4	41.2	69.4	95.1	19.8	57.0
10 - 20 %	7.4	3.3	9.5	3.1	1.9	8.7
20 - 30 %	4.7	2.8	5.0			6.3
30 - 40 %	4.3	2.7	3.5		2.8	2.4
40 - 50 %	4.0	2.8	2.7			3.5
50 - 60 %	3.8	3.2	2.2	0.7	3.5	
60 - 70 %	3.6	4.1	1.8		2.1	2.8
70 - 80 %	3.7	5.7	1.5		6.3	
80 - 90 %	4.5	9.9	1.3		11.9	3.8
90 - 100 %	22.4	24.2	3.0	1.0	51.7	15.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Taxable wage income (before deduction of allowable expenses), minus taxable pensions from former employments, plus tax-exempted foreign income.- 3) Taxable income from agriculture and forestry, from business enterprise, from self-employed activities (professional services), plus tax reliefs, plus allowance for capital gains from business activity, plus tax-exempted foreign income, less capital gains.
Source: Income tax statistics 1998; own calculations.

What could explain the different composition of top incomes in Germany as compared to France and the US? Why does *Das Kapital* matter so much in Germany? We conjecture that the following two factors may substantially contribute to account for the observed differences. First, as suggested by Dell (2005), the relatively favourable tax treatment of capital income in Germany as compared to France and the US over the last decades may be part of the answer.[10] Second, the relatively low remuneration of German CEOs up to the end of the nineties might explain the difference in top income composition with respect to the US.

Another striking feature of the German case that emerges from our study is the relative weight of income from business activity and income from interests and dividends. The former is substantially larger than the latter. This finding may be driven by the very large share of unincorporated firms in Germany. There, even firms of considerable size are often unincorporated. This may be due to various cross-country differences with respect to tax rules, legal frameworks, and financial systems.

Our dataset is likely to underestimate the portion of rentiers within the top income groups. First, German rentiers are likely to derive some part of their income in form of capital gains, e.g. in the stock

10 In particular, German inheritance and gift taxes have very low effective burden and fiscal impact due to low assessment values and high personal allowances. Nowadays, revenue form inheritance and gift taxes in Germany accounts only for 0.15 % of GDP, compared to 0.36 % in the USA and 0.55 % in France. Moreover, the former general wealth tax on personal and corporate wealth suffered from the same problems and had no significant impact on tax revenue or income distribution. See OECD (2004).

market, which showed a rising trend during the nineties. Our dataset only covers a subset of those gains, namely those that are subject to taxation because the lapse of time between buying and selling was less than six months. Not unsurprisingly, those capital gains amounted to a relatively small amount. Second, rentiers might exploit the German bank secrecy law in order to evade some income tax due on their financial income.

3.4 Differences between West and East Germany

From 1945 to 1990, Germany was split into two states, the FRG (West Germany) and the GDR (East Germany). Immediately before reunification, per capita GDP in capitalist FRG was much higher than in socialist GDR. Since then, regional convergence in economic terms has been a major concern of German public policy.

Whereas regional inequalities in terms of average income are well documented, little is known about the pattern of top incomes in the eastern and the western part of the country. As shown by Table 7, regional disparities matter not only for the absolute level of incomes, but also with respect to their composition.

Table 7

Shares of taxpayers and gross income, and composition of gross income in East Germany (excl. Berlin), 1998

in %

Gross income[1)] / Income fractiles	Share East Germany: Taxpayers	Share East Germany: Gross income[1)]	Composition of gross income in East Germany: Gross income[1)]	Income from business activity[2)] less capital gains: Total	Thereof: income from business enterprise	Thereof: income from profess. services	Wage income[3)]	Capital income less capital gains: Total	Interest, dividends[4)]	Renting and leasing[5)]	Transfer income[6)]	Capital gains
1st - 5th decile	18.7	19.1	100.0	1.8	1.0	0.6	76.8	2.1	2.0	0.1	19.3	2.2
6th - 9th decile	12.2	12.0	100.0	5.4	3.5	1.4	86.8	1.4	1.4	0.0	6.3	1.5
10th decile	8.1	6.9	100.0	29.7	10.4	15.5	65.0	3.8	3.4	0.4	1.5	4.0
Total	15.0	11.8	100.0	8.7	3.9	3.7	79.3	2.1	2.0	0.1	9.8	2.2
Top 1%	5.5	4.1	100.0	64.7	21.9	33.4	25.2	9.4	8.3	1.1	0.7	9.7
Top 0.1%	2.3	1.6	100.0	73.8	29.3	26.9	11.6	14.5	12.9	1.6	0.1	14.7
Top 0.01%	0.7	0.7	100.0	81.6	33.1	8.7	7.2	11.3	10.7	0.5	0.0	11.4
Top 0.001%	1.4	0.9	100.0	94.1	15.8	0.0	0.0	5.9	5.8	0.0	0.0	5.9

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Taxable income from agriculture and forestry, from business enterprise, from self-employed activities (professional services), plus tax reliefs, plus allowance for capital gains from business activity, plus tax-exempted foreign income.- 3) Taxable wage income (before deduction of allowable expenses), minus taxable pensions from former employments, plus tax-exempted foreign income.- 4) Taxable income from investments (exclusive income from business activities), inclusive receipts below the savers allowance.- 5) Taxable income from renting and leasing, plus higher losses from renting and leasing.- 6) Taxable pensions from former employ-ments, taxable share of life annuity funds (mere interest portion of the annuity payment), alimonies between separated and divorced spouses, plus allowance for taxable pensions from former employments, plus non-taxable share of life annuity funds (estimated), plus non-taxable replacement amounts from insurances for loss of earned income (e.g. benefits from unemployment or health insurance), as far as relevant for taxation with progression ("Progressionsvorbehalt").
Source: Income tax statistics 1998; own calculations.

The share of the entire German population that lived in East Germany, Berlin excluded, amounts to 17.1 %, whereas the share of taxpayers was only 15 % in 1998. Presumably, this reflects much higher unemployment and lower incomes and pensions in the eastern part of Germany. Within top income groups, the portion of East Germans declines rapidly.

Table 7 also reports the composition of gross income in East Germany. Comparing this table with Table 4 reveals some distinct traits of income formation in East Germany, for instance, with respect to top incomes, the relatively low income share stemming from business enterprise and the relatively large share of income from professional activities.

4 Effective Income Taxation

An income tax reduces income inequality if the tax schedule is progressive and the tax base closely approximates the economic income of taxpayers. We now turn to the question whether in Germany the income tax effectively is progressive and contributes to reduce income inequality.[11]

True progression depends both on the legislated tax schedule and the pattern of tax erosion. We first examine the statutory tax schedule and then investigate the pattern of tax erosion across various income groups.

4.1 Statutory income tax schedule

In Germany, the income tax of a given taxpayer is computed as a function of his nominal taxable income ("Zu versteuerndes Einkommen") in that year. The resulting curves are plotted in Figure 1. The tax schedule includes a basic allowance ("Grundfreibetrag"), which means that households with low income pay no income tax. The marginal tax rate linearly increases with income until income reaches a threshold. For incomes larger than that threshold, the marginal tax rate stays constant. Hence, the average tax rate converges towards the top marginal tax rate when income goes to infinity. Since the average tax rate increases with income, the tax schedule is progressive.

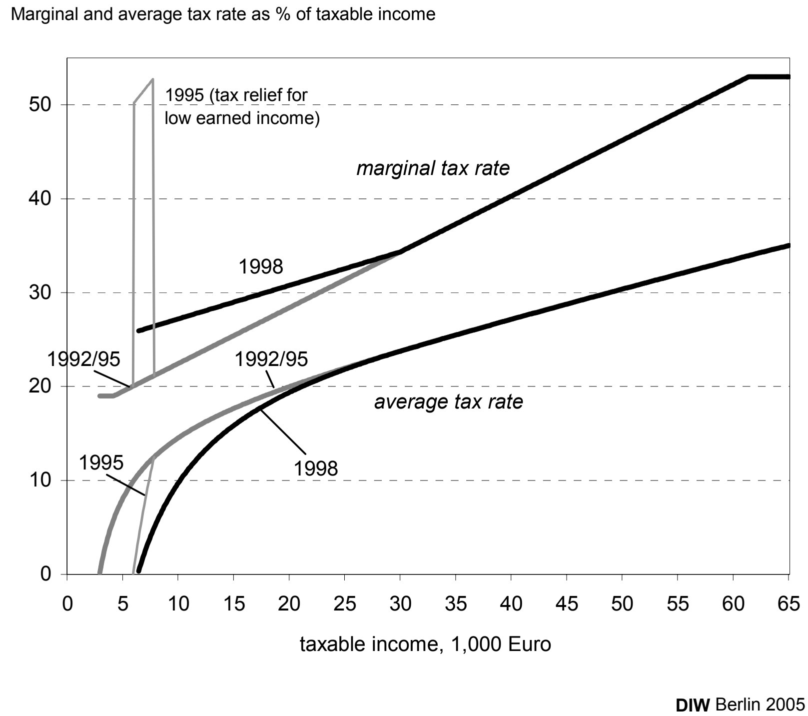
In 1992, the income tax schedule introduced in 1990 was still applied. It displayed a fairly low basic allowance (2,871 Euro), a small bracket with the entrance rate of 19 % and a linear rise in marginal tax rates up to the top rate of 53 %, beginning at 61,376 Euro. At an income level of about 500,000 Euro, the average tax rate was close to the 50 % level.

According to a far reaching sentence of the German federal constitutional court in 1993, the basic allowance had to cover the subsistence level as defined in social welfare assistance. While the 1990 tax schedule was retained until 1995, as a preliminary transitional rule the basic allowance was increased up to the subsistence level of about 6,000 Euro; in a following tax bracket of 1,800 Euro the relief against the 1990 schedule was sharply reduced, which caused very high marginal tax rates. In 1996, the income tax schedule was reshaped so as to start with a relatively high entrance rate (25,9 %) and with a marginal tax rate reaching the 1990 tax schedule at a level close to 30,000 Euro.

[11] Corneo (2005) discusses the evolution of the personal income tax in Germany in historical perspective.

Figure 1

Income tax schedule 1992, 1995 and 1998



4.2 Tax base erosion

As a first step, we offer an estimate of the gap between economic income and income considered for tax purposes. As already shown by Table 1, total taxable gross income amounts to about 90 % of total gross income. Over the years, the share of taxable gross income in gross income decreased, reaching a level of 88.5 % in 1998, see Table 8. This suggests that tax-base broadening did not occur in Germany during the period 1992-1998. As a matter of fact, during the 1990s tax subsidies were increased in order to promote investment in the regions of the former GDR. In particular, investments in real estate as well as capital equipment were generously subsidized by special allowances (e.g. 50 %-depreciation in the first year). This might have had an impact not only on incomes from renting and leasing but also on incomes from business activity.

How does the erosion of the tax base affect the various quantiles of the income distribution and the various income categories? Table 8 addresses the first issue. It reveals that the gap between taxable gross income and gross income is enormous for the bottom decile. Up to the top decile, the share of taxable gross income in gross income is rather stable, varying between 88.3 % and 92.6 %.

The relation between income tax comprehensiveness and income level has an inverted-U shape, with a maximum in the 9th decile.[12] While about 91 % of the income of the middle class (6th to 9th decile) is considered for tax purposes, only 82 % of the income of the lower classes (1st to 5th decile) is subject to the tax and only 85.5 % of the income of the rich (top 1 %) does the same. However, within the latter group, the share of taxable gross income in gross income tends to *increase* with the income level. In 1998, almost 90 % of the income of the economic elite of Germany was subject to the income tax, according to our data.

Table 8

Taxable gross income as percentage of gross income 1992-1998

%

Gross income 1) / Income fractiles	Taxable gross income as percentage of gross income plus capital gains 1992	1995	1998
1st decile	- 85.7	- 195.6	- 528.9
2nd decile	82.2	77.2	76.4
3rd decile	83.3	80.0	80.6
4th decile	88.2	85.7	85.4
5th decile	91.7	88.9	88.3
6th decile	93.3	90.3	89.4
7th decile	94.2	90.9	89.9
8th decile	95.3	92.6	91.4
9th decile	96.3	93.7	92.6
10th decile	93.6	88.6	88.7
Total	92.8	89.0	88.5
Top 1%	90.8	82.5	85.5
Top 0.1%	91.1	82.7	87.1
Top 0.01%	93.1	84.2	88.1
Top 0.001%	93.5	81.6	89.7

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.
Source: Income tax statistics 1992-1998; own calculations.

In order to detect the driving forces behind this finding, Table 9 provides some information about the erosion of the income tax base in the various deciles for the year 1998 and relates it to the composition of their incomes. As shown in Table 9, wage income is almost completely subject to taxation. Also income from business activity is to a very large extent subject to taxation. This is not so for capital income and for transfer income.

12 In their study of income tax avoidance in Germany in 1983, Lang *et al.* (1997) found that the portion of taxed to gross income tends to increase in the income deciles. Their data came from the Income and Consumption Survey (EVS), which does not include households with top incomes.

The pattern of erosion of the tax base concerning interests and dividends is not very different from the one concerning transfer income. In both cases, about half of the tax base is legally eroded. In both cases, the proportion of eroded tax base decreases with income.

The case of incomes from renting and leasing is special. Erosion is so extreme that positive economic incomes turn into negative taxable incomes. The ability to perform such a transformation is increasing with the income level of the household. According to our data, in 1998 the top percentile of the income distribution could transform each Euro of positive income from renting and leasing into two Euros of income losses for tax purposes. This was not magic, but just a careful exploitation of loopholes in the tax code.[13]

Table 9

Taxable gross income as percentage of gross income 1998

%

Gross income[1)] / Income fractiles	Gross income[1)] plus capital gains	Income from business activity[2)]		Wage income[3)]	Capital income			Transfer income[6)]
		Total	Thereof: Capital gains		Total	Interest, dividends[4)]	Renting and leasing[5)]	
1st - 5th decile	82.4	92.0	90.5	100.0	13.8	24.3	- 21.2	28.8
6th - 9th decile	91.1	96.6	84.3	99.9	3.4	28.4	- 82.8	47.9
10th decile	88.7	96.7	98.2	99.4	11.4	72.3	- 175.8	54.2
Total	88.5	96.3	94.9	99.8	9.6	51.7	- 125.3	41.2
Top 1%	85.5	96.8	99.4	99.0	27.6	86.2	- 202.2	52.5
Top 0.1%	87.1	96.3	99.9	98.5	50.8	92.1	- 216.7	50.6
Top 0.01%	88.1	94.4	100.0	97.6	65.5	93.2	- 262.3	39.6
Top 0.001%	89.7	93.9	100.0	98.0	77.1	93.8	- 168.8	35.7

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Taxable income from agriculture and forestry, from business enterprise, from self-employed activities (professional services), plus tax reliefs, plus allowance for capital gains from business activity, plus tax-exempted foreign income.- 3) Taxable wage income (before deduction of allowable expenses), minus taxable pensions from former employments, plus tax-exempted foreign income.- 4) Taxable income from investments (exclusive income from business activities), inclusive receipts below the savers allowance and taxable capital gains from private investments (solely speculation gains).- 5) Taxable income from renting and leasing, plus higher losses from renting and leasing.- 6) Taxable pensions from former employments, taxable share of life annuity funds (mere interest portion of the annuity payment), alimonies between separated and divorced spouses, plus allowance for taxable pensions from former employments, plus non-taxable share of life annuity funds (estimated), plus non-taxable replacement amounts from insurances for loss of earned income (e.g. benefits from unemployment or health insurance), as far as relevant for taxation with progression ("Progressionsvorbehalt").
Source: Income tax statistics 1998; own calculations.

[13] From a pure fiscal perspective, the German government would be better off if incomes from renting and leasing were not subject to taxation. We used a personal income tax micro-simulation model to estimate the revenue impact of declaring those incomes tax-free. Disregarding any behavioural response, in 1998 German tax revenue would have increased by 7.6 billion Euro (0.4 % of GDP) if incomes from renting and leasing had been untaxed.

4.3 True tax progressivity

Assessed income tax liability ("Festgesetzte Einkommensteuer") is computed as the tax burden on the entire taxable income assessed for the tax year (which is the calendar year), on which the tax schedule is applied. Paid withholding taxes, such as the monthly wage tax or capital yields taxes on interest and dividends, are offset against the income tax liability and are correspondingly taken into account by our tax measure. Notice that in the 1990s the German corporate income tax was integrated into the personal income tax according to the imputation system. Domestic corporation tax on dividends received from domestic corporations was fully credited against income tax liability (full imputation); correspondingly, the entire gross amount of distributed profits was included in the income tax base.[14]

How is the tax burden distributed across the income distribution? The distribution of personal income taxes is presented in Table 10. The distribution of the tax burden is very unequal, and exhibits a Gini coefficient of 0.7 in 1998. The time pattern is similar to the one observed for the development of income inequality: the Gini coefficient increased somewhat between 1995 and 1998 after a slight decline in the first half of the 1990s. Interestingly, the top decile contributes more than half of the total tax revenue. On average, in 1998 households in the top decile paid about 30,000 Euro as income tax. By comparison, the average income tax paid by the 10 % poorest households was about 500 Euro. At the other end of the distribution, in the same year the top 1 % on average paid about 137,000 Euro as income tax, and the richest 0.001 % almost 10 million Euro on average.

Average effective tax rates for the various income groups are presented in Table 11. For each group, the effective tax rate is lower than the legislated tax rate. Effective tax rates are found to be increasing with income, which suggests that the German income tax is truly progressive.

In 1998, the average tax rate for the entire taxpayer population was 16 % and taxpayers at median income were effectively hit by a 10 % tax rate. The effective tax rate is found to increase with the level of gross income and to reach about 25 % in the highest decile. Within the highest income decile, the effective tax rate increases rapidly, reaching 36.5 % for the top 0.1 % group and getting close to 40 % for the economic elite.

As a plausibility check, we present the picture of tax progression that one obtains if the income tax is set in relation to the official notion of taxable gross income, rather than our notion of gross income plus capital gains. Results appear in the right hand side of Table 11. In comparison to our measure, this one exhibits somewhat higher tax rates. For instance, the average tax rate is about 11 % at the median and 44 % for the economic elite. Also according to this measure, the effective tax rate strictly increases with income.

All in all, our findings support the view that, in Germany, the personal income tax effectively is progressive and that therefore, this instrument does contribute to reduce the inequality of disposable income in the German population. The effective burden of the income tax is not as high as the German tax schedule would imply, but it is still substantial.

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[14] In the case of foreign dividends there was no tax credit.

Table 10

Assessed income tax liability 1992-1998
structure and average tax burden

Gross income[1)] / Income fractiles	Assessed income tax liability					
	structure in %			average tax burden in 1 000 Euro		
	1992	1995	1998	1992	1995	1998
1st decile	0.2	0.2	0.8	0.1	0.1	0.5
2nd decile	0.6	0.6	0.3	0.3	0.3	0.2
3rd decile	1.9	2.1	1.6	0.9	1.0	0.9
4th decile	3.6	3.9	3.1	1.7	1.9	1.8
5th decile	4.9	5.1	4.3	2.3	2.5	2.5
6th decile	6.0	6.3	5.5	2.9	3.1	3.3
7th decile	7.6	8.1	7.4	3.6	4.0	4.4
8th decile	10.2	10.9	10.4	4.9	5.3	6.2
9th decile	14.5	15.5	15.3	7.0	7.6	9.1
10th decile	50.6	47.4	51.2	24.3	23.3	30.4
Total	100.0	100.0	100.0	4.8	4.9	5.9
Top 1%	24.2	20.3	23.2	115.8	99.8	137.4
Top 0.1%	10.8	8.8	10.6	516.6	432.1	631.4
Top 0.01%	4.2	3.6	4.3	2 031.5	1 781.8	2 574.0
Top 0.001%	1.4	1.3	1.6	6 549.7	6 228.4	9 708.1
Gini coefficient	0.6746	0.6644	0.7037			

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.
Source: Income tax statistics 1992-1998; own calculations.

Our analysis also shows some variation of the tax burden across income percentiles over time. During the 1990s, the average tax rate for the top 0.1 % markedly decreased by roughly 5 percentage points, see Table 11. During the same period, the average tax rate for the other income groups remained more or less stable or even increased. The reason behind this diverging evolution may be found in the following phenomena. On the one hand, top incomes exhibited relatively large losses from renting and leasing in 1998, while benefiting from the high concentration of capital gains in 1998, which were taxed at a reduced rate (half of the individual average tax rate). On the other hand, inflationary income growth implied that the tax burden increased – because of bracket creep – more rapidly in the case of ordinary taxpayers, since the average tax rate grows at a reduced pace with increasing income.

Table 11

Effective income tax rates 1992-1998

Gross income[1)] / Income fractiles	Assessed income tax liability: as percentage of gross income plus capital gains 1992	1995	1998	as percentage of taxable gross income 1992	1995	1998
1st decile	25.0	19.8	207.1	- 29.1	- 10.1	- 39.2
2nd decile	3.3	2.8	1.6	4.0	3.6	2.1
3rd decile	6.3	6.2	5.3	7.5	7.8	6.6
4th decile	8.8	8.8	8.1	10.0	10.3	9.5
5th decile	10.1	9.8	9.4	11.0	11.1	10.7
6th decile	10.7	10.5	10.4	11.4	11.6	11.7
7th decile	11.6	11.3	11.9	12.3	12.5	13.2
8th decile	12.9	12.8	13.8	13.5	13.8	15.1
9th decile	14.7	14.5	16.1	15.3	15.5	17.4
10th decile	24.6	22.2	24.7	26.3	25.0	27.9
Total	15.6	14.5	16.0	16.8	16.3	18.1
Top 1%	35.9	30.8	32.7	39.5	37.4	38.2
Top 0.1%	41.6	35.1	36.5	45.6	42.5	42.0
Top 0.01%	44.0	36.0	38.3	47.3	42.8	43.5
Top 0.001%	45.1	35.7	39.8	48.3	43.7	44.3

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.
Source: Income tax statistics 1992-1998; own calculations.

5 Net vs. Gross Income Concentration

We are now in a position to estimate the impact of the income tax on the disposable income of German taxpayers. Table 12 presents the pre-tax and after-tax distribution of income. Its left hand side portrays the distribution of gross income, *including* capital gains. The right hand side presents results concerning gross income *including* capital gains minus tax liability. We now take capital gains into account because they are subject to taxation and neglecting them would seriously distort results.

The only decile of the distribution for which its share in terms of gross income is larger than in terms of net income is the top one. While the top decile received 33.8 % of total gross income in 1998, it only received 30.5 % of total net income in that year. Much of this difference is due to the relatively heavy taxation of very high incomes. While 12.2 % of total gross income accrues to the top percentile, only 9.9 % of total net income accrues to it.

Table 12

Distribution of gross income and net income plus capital gains 1992-1998

Gross income[1)] / net income[2)] plus capital gains	Gross income[1)] plus capital gains structure in %			Net income[2)] plus capital gains structure in %		
Income fractiles	1992	1995	1998	1992	1995	1998
1st - 5th decile	21,2	21,8	20,5	22,9	23,4	22,5
6th - 9th decile	46,6	46,9	45,6	48,2	48,0	47,0
10th decile	32,2	31,3	33,8	28,9	28,6	30,5
Total	100,0	100,0	100,0	100,0	100,0	100,0
Top 1%	10,7	9,8	12,2	8,3	8,0	9,9
Top 0.1%	4,3	3,8	5,6	3,1	3,0	4,4
Top 0.01%	1,7	1,6	2,5	1,2	1,3	2,0
Top 0.001%	0,5	0,6	0,9	0,4	0,5	0,6
Gini coefficient[3)]	0,4349	0,4219	0,4491	0,3991	0,4033	0,4109

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.-
2) Gross income less assessed income tax liability, disregarding other direct taxes on household income or wealth, social security contributions and other charges levied by public authorities.- 3) Negative income = 0.
Source: Income tax statistics 1992-1998; own calculations.

Additional hints on the equalizing impact of the German income tax can be derived from Table 13. The average member of the top percentile receives about eleven times as much gross income as the average German taxpayer; however, in terms of net incomes the ratio is only 9:1. The equalization effect due to the income tax is stronger for the economic elite. As shown by Table 13, the average gross income of the economic elite is almost 660 times larger than the average income of all taxpayers; however, in terms of net incomes the ratio is only 470:1. Referring to the typical German blue-collar worker's household income – measured by the average of the 4th decile – the net income of the elite is about 700 times lager, compared to 1000:1 in terms of gross income.

Table 13

Average gross income and net income plus capital gains 1992-1998

Gross income 1)	Average gross income 1) plus capital gains						Average net income 2) plus capital gains					
	1 000 Euro			mean = *100*			1 000 Euro			mean = *100*		
Income fractiles	1992	1995	1998	1992	1995	1998	1992	1995	1998	1992	1995	1998
1st decile	0,3	0,4	0,2	1	1	1	0,3	0,3	- 0,2	1	1	- 1
2nd decile	8,3	10,2	10,6	27	30	29	8,0	9,9	10,4	31	34	33
3rd decile	14,6	16,7	17,6	47	49	48	13,7	15,7	16,7	53	54	54
4th decile	19,3	21,6	22,8	63	64	61	17,6	19,7	21,0	68	68	67
5th decile	23,1	25,6	27,1	75	76	73	20,8	23,0	24,5	80	80	79
6th decile	26,9	29,7	31,5	88	88	85	24,1	26,6	28,2	93	92	91
7th decile	31,5	34,9	37,1	103	103	100	27,9	30,9	32,7	107	107	105
8th decile	37,8	41,9	44,8	123	124	121	32,9	36,5	38,6	127	126	124
9th decile	47,2	52,3	56,4	153	155	152	40,2	44,7	47,3	155	155	152
10th decile	98,5	105,0	122,8	320	310	331	74,2	81,7	92,4	286	283	297
Total	30,8	33,8	37,1	*100*	*100*	*100*	26,0	28,9	31,2	*100*	*100*	*100*
90%-95%	60,7	67,1	73,5	197	198	198	50,4	56,0	59,8	194	194	192
95%-99%	89,7	97,6	110,0	292	289	297	70,8	78,2	85,5	273	270	274
Top 1%	322,9	323,9	420,4	1 050	958	1 133	207,1	224,1	283,0	797	775	908
99.0%-99.9%	220,7	223,1	275,2	717	660	742	149,4	160,2	192,7	575	554	618
Top 0.1%	1 242,6	1 230,6	1 727,5	4 040	3 639	4 657	726,0	798,6	1 096,1	2 796	2 763	3 517
99.90%-99.99%	868,1	818,1	1 172,3	2 822	2 419	3 161	519,7	536,0	756,7	2 001	1 854	2 428
Top 0.01%	4 614,1	4 943,4	6 726,0	15 000	14 617	18 134	2 582,6	3 161,6	4 152,0	9 945	10 938	13 324
99.990%-99.999%	3 517,7	3 555,8	4 766,3	11 436	10 514	12 850	1 986,9	2 266,7	2 983,0	7 652	7 842	9 573
Top 0.001%	14 507,1	17 466,6	24 406,8	47 160	51 648	65 802	7 957,4	11 238,2	14 698,7	30 643	38 880	47 168

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Gross income less assessed income tax liability, disregarding other direct taxes on household income or wealth, social security contributions and other charges levied by public authorities.
Source: Income tax statistics 1992-1998; own calculations.

6 Concluding Remarks

Issues of income inequality, income concentration, and governmental redistribution are again at the forefront of both policy and scientific debate. The current paper has provided an empirical analysis of the distribution and taxation of income in Germany, based on individual tax returns data for the 1990s. The great advantage of our data source is that it enables one to investigate the upper tail of the income distribution on the basis of relatively complete and reliable data. Since all German taxpayers that belong to the top percentile of the income distribution are included in our data set, we can provide a picture of income concentration and effective tax progressivity that is much more precise that the one obtained from previous studies, based on household surveys. For the first time, the top 0.001 % fractile of the income distribution, the economic elite of Germany, has been thoroughly investigated.

Our empirical analysis has yielded several new insights. Germany turns out to be a country with a very strong concentration of market incomes. Roughly, a typical household representing the German economic elite earns as much as one thousand worker households – a village or a small town - can earn together. This contrasts with the popular view of contemporary Germany as a relatively egalitarian society.

Also, the rich are not only different from the rest of us because they have more money. The composition of income according to its sources is very different for the top of the income hierarchy and the rest of the German population. Wages and salaries are by far the quantitatively most important income source for the 99 % poorest part of the taxpayer population. This pattern starts to change at the top percentile of the income distribution. In that group, the weight of wages and salaries rapidly diminishes with increasing income. Strikingly, only 1 % of the households that belong to the German economic elite can be identified as managers. The rest of it is, by and large, formed by entrepreneurs and rentiers. Interestingly, the predominance of capitalists within top income groups seems to be much stronger in Germany than in the US or even France.

The study of economic elites has hitherto been largely neglected by the literature, partly because there is no straightforward access to suitable data.[15] However, recent investigations suggest – and ours confirms – that even in contemporary welfare states, economic elites not only exist but dispose of an enormous economic power, measured in terms of income relative to ordinary people's income. Thus, elites constitute an important ingredient of contemporary economic systems, one that deserves enhanced research efforts. Specifically, exploring the income composition of elites may contribute to a better understanding of the determinants of economic success and therefore of the chances of upward mobility in our societies. A deeper knowledge of economic elites may also provide hints about the intensity and direction of forces that those groups can exert upon processes of collective decision making; in this way, knowledge about elites may help to better predict politico-economic outcomes.

The current paper has not only shown that in Germany market incomes are more concentrated than usually thought. We have also found that, given this type of market outcome, the German income tax substantially contributes to reduce economic inequality. In the 1990s, more than half of the total tax revenue is contributed by the top decile. Moreover, households with top incomes play their part: the effective tax rate rises with income, the more so within the top decile. While the tax rate effectively applied to a typical worker household is around 9 %, the one applied to households of the economic elite is almost 40 %. Tax progression is real and strong, although definitely not as strong as the statutory tax rates would imply.

Possibly, we might overestimate the degree of effective tax progressivity in Germany, since our measure of gross income cannot account for all means of tax avoidance and taxpayers with very high incomes might be in a better position to exploit those unobserved avoidance strategies. The apparent discrepancy in business and capital incomes reported to the tax authorities compared to the corresponding items in national accounts give some hints on this topic, although several conceptual difficulties and data restrictions hamper a detailed comparison. Still, the magnitude of tax progressivity revealed by our analysis is so large that our conclusions would remain valid even if the margins of error of our estimates were considerable.

Specifically, we find that net income is substantially less concentrated than gross income. The Gini coefficient drops from 0.45 to 0.41. In terms of net income, the ratio of the average income in the top percentile to average income in the bottom half of the income hierarchy is 22:1. In terms of gross income, the ratio is almost 30:1. The ratio of the net income of a member of the elite to that of a typical worker household is about 700:1. This is impressive, but much less than 1000:1, which is the ratio in terms of gross income.

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[15] See, however, Slemrod (1994) for an early investigation of top income households in the US.

Thus, progressive income taxation turns out to be an effective tool for reducing economic inequality in Germany. Interestingly, tax progressivity has partially been rolled back in the years after our period of observation, and this process is likely to continue in the near future. Our estimates suggest that rolling back tax progressivity would have a substantial impact on income concentration in Germany.

References

Becker, Irene and Richard Hauser (2003): Anatomie der Einkommensverteilung. Ergebnisse der Einkommens- und Verbrauchsstichproben 1969-1998. Berlin: edition sigma.

Corneo, Giacomo (2005): The Rise and Likely Fall of the German Income Tax, 1958-2005. *CESifo Economic Studies* 51, 159-186.

Cronin, Julie-Anne (1999): U.S. Treasury Distributional Analysis Methodology. U.S. Department of the Treasury, Office of Tax Analysis (OTA). OTA Paper 85, September 1999. *http://www.treas.gov/offices/tax-policy/library/ota85.pdf*

Dell, Fabien (2005): Top Income in Germany and Switzerland over the Twentieth Century. *Journal of the European Economic Association* 3, 1-10.

Feenberg, Daniel R. and James M. Poterba (2000): The Income and Tax Share of Very High-Income Households, 1960-1995. AER Papers and Proceedings 90, 264-270. See also: NBER Working Paper No. 7525, February 2000. *http://www.nber.org/papers/w7525.pdf*

Lang, Oliver, Karl-Heinz Nöhrbaß and Konrad Stahl (1997): On Income Tax Avoidance: The Case of Germany. *Journal of Public Economics* 66, 327-347.

OECD (2004): Revenue Statistics 1965-2003. 2004 Edition. Paris.

Piketty, Thomas (2003): Income Inequality in France 1901-1998. *Journal of Political Economy* 111, 1004-43.

Piketty, Thomas and Emmanuel Saez (2003): Income Inequality in the United States, 1913-1998. *Quarterly Journal of Economics* 118, 1-39.

Saez, Emmanuel (2004): Reported Incomes and Marginal Tax Rates, 1960-2000: Evidence and Policy Implications. NBER Working Paper No. 10273, January 2004. *http://papers.nber.org/papers/w10273.pdf*

Slemrod, Joel (1994): On the high-income Laffer curve. In: J. Slemrod (Ed.): Tax Progressivity and Income Inequality. Cambridge: Harvard University Press.

Zwick, Markus (1998): Einzeldatenmaterial und Stichproben innerhalb der Steuerstatistiken. *Wirtschaft und Statistik* 7/1998, 566-572.

Appendix

Table A 1

Gross income, income components and income tax liability according to the income tax statistics 1992

million Euro

Gross income[1] Income fractiles	Gross income[1] plus capital gains	Income from business activity[2]: Total	Income from business activity[2]: Thereof: Capital gains	Wage income[3]	Capital income: Total	Capital income: Interest, dividends[4]	Capital income: Renting and leasing[5]	Transfer income[6]	Assessed income tax liability: mill. Euro	Assessed income tax liability: %	For information: Highest income[7] 1000 Euro	For information: Tax-payers[8] 1000	For information: Average income[7] 1000 Euro	For information: Average tax liabil.[7] %
1st decile	1 000	- 6 070	1 714	4 535	655	477	178	1 881	250	0.2	4.8	2 948.1	0.3	25.0
2nd decile	24 470	1 950	224	15 767	898	578	321	5 855	800	0.6	11.6	2 947.9	8.3	3.3
3rd decile	42 929	2 862	199	28 562	1 439	898	541	10 066	2 684	1.9	17.1	2 947.8	14.6	6.3
4th decile	56 899	2 758	141	42 766	1 325	887	438	10 049	5 033	3.6	21.2	2 947.9	19.3	8.8
5th decile	68 194	2 573	123	55 744	1 276	909	368	8 601	6 874	4.9	24.9	2 947.9	23.1	10.1
6th decile	79 410	3 225	162	66 833	1 432	1 032	399	7 921	8 464	6.0	29.0	2 948.2	26.9	10.7
7th decile	92 968	4 089	177	78 409	1 762	1 287	474	8 709	10 748	7.6	34.3	2 948.0	31.5	11.6
8th decile	111 387	5 375	182	95 570	2 164	1 613	551	8 278	14 382	10.2	41.6	2 947.4	37.8	12.9
9th decile	139 169	8 335	320	121 047	3 050	2 240	810	6 737	20 523	14.5	54.1	2 947.9	47.2	14.7
10th decile	290 383	85 386	5 075	172 962	24 652	18 731	5 921	7 384	71 543	50.6	.	2 947.9	98.5	24.6
Total	906 810	110 482	8 317	682 194	38 653	28 653	10 000	75 481	141 303	100.0	.	29 479.0	30.8	15.6
90%-95%	89 470	8 157	328	75 368	2 699	1 884	814	3 246	15 161	10.7	69.2	1 474.0	60.7	16.9
95%-99%	105 734	22 822	966	73 639	6 241	4 219	2 022	3 032	22 246	15.7	137.0	1 179.2	89.7	21.0
Top 1%	95 179	54 406	3 781	23 954	15 712	12 627	3 085	1 106	34 136	24.2	.	294.8	322.9	35.9
99.0%-99.9%	58 549	29 966	1 764	19 930	7 729	5 679	2 050	924	18 906	13.4	480.5	265.3	220.7	32.3
Top 0.1%	36 629	24 440	2 017	4 024	7 983	6 949	1 035	182	15 230	10.8	.	29.5	1 242.6	41.6
99.90%-99.99%	23 032	14 512	1 363	3 409	4 951	4 160	791	159	9 243	6.5	2 017.9	26.5	868.1	40.1
Top 0.01%	13 598	9 928	654	615	3 032	2 789	243	23	5 987	4.2	.	2.9	4 614.1	44.0
99.990%-99.999%	9 333	6 581	517	546	2 185	1 977	209	20	4 061	2.9	7 627.0	2.7	3 517.7	43.5
Top 0.001%	4 265	3 347	137	69	847	812	35	3	1 926	1.4	.	0.3	14 507.1	45.1

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Taxable income from agriculture and forestry, from business enterprise, from self-employed activities (professional services), plus tax reliefs, plus allowance for capital gains from business activity, plus tax-exempted foreign income.- 3) Taxable wage income (before deduction of allowable expenses), minus taxable pensions from former employments, plus tax-exempted foreign income.- 4) Taxable income from investments (exclusive income from business activities), inclusive receipts below the savers allowance and taxable capital gains from private investments (solely speculation gains).- 5) Taxable income from renting and leasing, plus higher losses from renting and leasing.- 6) Taxable pensions from former employments, taxable share of life annuity funds (mere interest portion of the annuity payment), alimonies between separated and divorced spouses, plus allowance for taxable pensions from former employments, plus non-taxable share of life annuity funds (estimated), plus non-taxable replacement amounts from insurances for loss of earned income (e.g. benefits from unemployment or health insurance), as far as relevant for taxation with progression ("Progressionsvorbehalt").- 7) Percentile, relating to adjusted gross income.- 8) Married couples are counted as one taxpayer due to joint assessment (taxation with full income splitting).

Source: Income tax statistics 1992; own calculations.

Table A 2

Taxable gross income, income components and income tax liability according to the income tax statistics 1992

million Euro

Gross income[1] Income fractiles	Taxable gross income[2]	Taxable income from business activity[3]: Total	Taxable income from business activity[3]: Thereof: Capital gains	Taxable wage income[4]	Taxable capital income: Total	Taxable capital income: Interest, dividends[5]	Taxable capital income: Renting and leasing[6]	Taxable transfer income[7]	Assessed income tax liability: mill. Euro	Assessed income tax liability: %	For information: Highest income[8] 1000 Euro	For information: Tax-payers[9] 1000	For information: Average income[10] 1000 Euro	For information: Average tax liabil.[10] %
1st decile	- 857	- 6 148	1 631	4 518	- 152	477	- 629	925	250	0.2	4.8	2 948.1	- 0.3	- 29.1
2nd decile	20 115	1 879	156	15 611	725	578	148	1 900	800	0.6	11.6	2 947.9	6.8	4.0
3rd decile	35 768	2 790	133	28 354	1 233	898	335	3 390	2 684	1.9	17.1	2 947.8	12.1	7.5
4th decile	50 175	2 710	103	42 529	1 096	887	209	3 841	5 033	3.6	21.2	2 947.9	17.0	10.0
5th decile	62 534	2 536	96	55 479	974	909	65	3 545	6 874	4.9	24.9	2 947.9	21.2	11.0
6th decile	74 128	3 178	127	66 546	1 009	1 032	- 23	3 395	8 464	6.0	29.0	2 948.2	25.1	11.4
7th decile	87 563	4 030	134	78 132	1 098	1 287	- 189	4 302	10 748	7.6	34.3	2 948.0	29.7	12.3
8th decile	106 195	5 317	150	95 243	1 157	1 613	- 457	4 479	14 382	10.2	41.6	2 947.4	36.0	13.5
9th decile	134 012	8 236	265	120 662	1 295	2 240	- 945	3 819	20 523	14.5	54.1	2 947.9	45.5	15.3
10th decile	271 778	84 349	4 908	172 129	10 809	18 731	- 7 922	4 491	71 543	50.6	.	2 947.9	92.2	26.3
Total	841 412	108 877	7 703	679 204	19 244	28 653	- 9 409	34 086	141 303	100.0	.	29 479.0	28.5	16.8
90%-95%	85 981	8 061	286	75 087	899	1 884	- 986	1 936	15 161	10.7	69.2	1 474.0	58.3	17.6
95%-99%	99 417	22 574	887	73 250	1 734	4 219	- 2 485	1 860	22 246	15.7	137.0	1 179.2	84.3	22.4
Top 1%	86 380	53 714	3 735	23 793	8 177	12 627	- 4 451	696	34 136	24.2	.	294.8	293.0	39.5
99.0%-99.9%	53 004	29 683	1 723	19 824	2 919	5 679	- 2 760	578	18 906	13.4	480.5	265.3	199.8	35.7
Top 0.1%	33 376	24 032	2 012	3 969	5 258	6 949	- 1 691	118	15 230	10.8	.	29.5	1 132.2	45.6
99.90%-99.99%	20 718	14 308	1 358	3 379	2 929	4 160	- 1 231	102	9 243	6.5	2 017.9	26.5	780.9	44.6
Top 0.01%	12 658	9 724	654	589	2 329	2 789	- 460	16	5 987	4.2	.	2.9	4 295.1	47.3
99.990%-99.999%	8 670	6 476	517	522	1 657	1 977	- 319	14	4 061	2.9	7 627.0	2.7	3 268.0	46.8
Top 0.001%	3 988	3 247	137	67	671	812	- 141	2	1 926	1.4	.	0.3	13 563.6	48.3

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Taxable income, as far as included in income tax statistics.- 3) Taxable income from agriculture and forestry, from business enterprise, from self-employed activities (professional services).- 4) Taxable wage income (before deduction of allowable expenses), minus taxable pensions from former employments.- 5) Taxable income from investments (exclusive income from business activities), inclusive receipts below the savers allowance and taxable capital gains from private investments (solely speculation gains).- 6) Taxable income from renting and leasing.- 7) Taxable pensions from former employments, taxable share of life annuity funds (mere interest portion of the annuity payment), alimonies between separated and divorced spouses.- 8) Percentile, relating to adjusted gross income.- 9) Married couples are counted as one taxpayer due to joint assessment (taxation with full income splitting).- 10) Relating to taxable income.

Source: Income tax statistics 1992; own calculations.

Table A 3

Gross income, income components and income tax liability according to the income tax statistics 1995

million Euro

Gross income[1] / Income fractiles	Gross income[1] plus capital gains	Income from business activity[2]: Total	Income from business activity[2]: Thereof: Capital gains	Wage income[3]	Capital income: Total	Capital income: Interest, dividends[4]	Capital income: Renting and leasing[5]	Transfer income[6]	Assessed income tax liability: mill. Euro	Assessed income tax liability: %	For information: Highest income[7] 1000 Euro	For information: Tax-payers[8] 1000	For information: Average income[7] 1000 Euro	For information: Average tax liabil.[7] %
1st decile	1 159	- 8 227	1 737	5 672	1 338	989	350	2 377	230	0.2	6.2	2 967.9	0.4	19.8
2nd decile	30 278	2 859	419	18 413	1 293	862	431	7 712	836	0.6	13.7	2 967.4	10.2	2.8
3rd decile	49 642	3 387	320	32 312	1 741	1 127	614	12 203	3 101	2.1	19.3	2 967.8	16.7	6.2
4th decile	64 002	3 145	244	47 234	1 702	1 177	525	11 921	5 630	3.9	23.5	2 967.7	21.6	8.8
5th decile	75 852	3 097	204	60 106	1 771	1 283	487	10 879	7 457	5.1	27.5	2 967.4	25.6	9.8
6th decile	88 177	3 653	215	71 510	2 095	1 535	560	10 919	9 227	6.3	31.9	2 967.8	29.7	10.5
7th decile	103 488	4 884	262	84 023	2 636	1 967	669	11 945	11 740	8.1	37.9	2 967.4	34.9	11.3
8th decile	124 272	6 265	299	103 705	3 137	2 352	785	11 164	15 858	10.9	46.1	2 967.6	41.9	12.8
9th decile	155 202	9 423	427	132 322	4 291	3 188	1 103	9 167	22 558	15.5	60.0	2 967.7	52.3	14.5
10th decile	311 543	84 325	4 699	191 147	26 282	18 962	7 320	9 789	69 182	47.4	.	2 967.6	105.0	22.2
Total	1 003 615	112 811	8 827	746 444	46 285	33 442	12 844	98 075	145 820	100.0	.	29 676.3	33.8	14.5
90%-95%	99 597	8 888	351	82 726	3 698	2 625	1 074	4 284	16 506	11.3	76.3	1 483.8	67.1	16.6
95%-99%	115 831	23 263	960	81 165	7 341	4 840	2 501	4 063	23 052	15.8	144.4	1 187.0	97.6	19.9
Top 1%	96 115	52 174	3 388	27 257	15 243	11 498	3 745	1 441	29 624	20.3	.	296.8	323.9	30.8
99.0%-99.9%	59 595	27 818	1 355	22 745	7 806	5 370	2 437	1 226	16 803	11.5	467.2	267.1	223.1	28.2
Top 0.1%	36 520	24 356	2 034	4 512	7 436	6 128	1 308	216	12 822	8.8	.	29.7	1 230.6	35.1
99.90%-99.99%	21 850	13 232	1 123	3 914	4 519	3 542	977	185	7 534	5.2	1 898.1	26.7	818.1	34.5
Top 0.01%	14 670	11 124	910	598	2 917	2 586	332	31	5 288	3.6	.	3.0	4 943.4	36.0
99.990%-99.999%	9 499	6 900	745	535	2 036	1 773	263	28	3 444	2.4	8 053.9	2.7	3 555.8	36.3
Top 0.001%	5 170	4 224	166	62	881	812	69	2	1 844	1.3	.	0.3	17 466.6	35.7

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Taxable income from agriculture and forestry, from business enterprise, from self-employed activities (professional services), plus tax reliefs, plus allowance for capital gains from business activity, plus tax-exempted foreign income.- 3) Taxable wage income (before deduction of allowable expenses), minus taxable pensions from former employments, plus tax-exempted foreign income.- 4) Taxable income from investments (exclusive income from business activities), inclusive receipts below the savers allowance and taxable capital gains from private investments (solely speculation gains).- 5) Taxable income from renting and leasing, plus higher losses from renting and leasing.- 6) Taxable pensions from former employments, taxable share of life annuity funds (mere interest portion of the annuity payment), alimonies between separated and divorced spouses, plus allowance for taxable pensions from former employments, plus non-taxable share of life annuity funds (estimated), plus non-taxable replacement amounts from insurances for loss of earned income (e.g. benefits from unemployment or health insurance), as far as relevant for taxation with progression ("Progressionsvorbehalt").- 7) Percentile, relating to adjusted gross income.- 8) Married couples are counted as one taxpayer due to joint assessment (taxation with full income splitting).
Source: Income tax statistics 1995; own calculations.

Table A 4

Taxable gross income, income components and income tax liability according to the income tax statistics 1995

million Euro

Gross income[1] / Income fractiles	Taxable gross income[2]	Taxable income from business activity[3]: Total	Taxable income from business activity[3]: Thereof: Capital gains	Taxable wage income[4]	Taxable capital income: Total	Taxable capital income: Interest, dividends[5]	Taxable capital income: Renting and leasing[6]	Taxable transfer income[7]	Assessed income tax liability: mill. Euro	Assessed income tax liability: %	For information: Highest income[8] 1000 Euro	For information: Tax-payers[9] 1000	For information: Average income[10] 1000 Euro	For information: Average tax liabil.[10] %
1st decile	- 2 267	- 8 451	1 541	5 650	- 507	370	- 877	1 041	230	0.2	6.2	2 967.9	- 0.8	- 10.1
2nd decile	23 375	2 657	229	18 313	347	229	118	2 059	836	0.6	13.7	2 967.4	7.9	3.6
3rd decile	39 720	3 212	166	32 154	561	319	243	3 792	3 101	2.1	19.3	2 967.8	13.4	7.8
4th decile	54 838	3 014	141	47 064	479	333	146	4 280	5 630	3.9	23.5	2 967.7	18.5	10.3
5th decile	67 412	2 979	118	59 903	329	339	- 10	4 201	7 457	5.1	27.5	2 967.4	22.7	11.1
6th decile	79 593	3 524	132	71 291	319	425	- 106	4 459	9 227	6.3	31.9	2 967.8	26.8	11.6
7th decile	94 113	4 712	163	83 781	166	588	- 422	5 454	11 740	8.1	37.9	2 967.4	31.7	12.5
8th decile	115 014	6 056	197	103 421	- 54	738	- 792	5 591	15 858	10.9	46.1	2 967.6	38.8	13.8
9th decile	145 415	9 109	311	131 968	- 536	1 084	- 1 621	4 876	22 558	15.5	60.0	2 967.7	49.0	15.5
10th decile	276 182	81 673	4 417	190 196	- 1 365	14 068	- 15 434	5 677	69 182	47.4	.	2 967.6	93.1	25.0
Total	893 395	108 488	7 413	743 740	- 262	18 494	- 18 756	41 429	145 820	100.0	.	29 676.3	30.1	16.3
90%-95%	92 767	8 605	267	82 414	- 670	1 026	- 1 697	2 419	16 506	11.3	76.3	1 483.8	62.5	17.8
95%-99%	104 110	22 562	823	80 756	- 1 575	2 621	- 4 197	2 366	23 052	15.8	144.4	1 187.0	87.7	22.1
Top 1%	79 304	50 507	3 327	27 026	880	10 420	- 9 540	892	29 624	20.3	.	296.8	267.2	37.4
99.0%-99.9%	49 114	27 094	1 305	22 592	- 1 323	4 435	- 5 758	752	16 803	11.5	467.2	267.1	183.9	34.2
Top 0.1%	30 190	23 413	2 021	4 434	2 203	5 985	- 3 782	140	12 822	8.8	.	29.7	1 017.3	42.5
99.90%-99.99%	17 839	12 938	1 116	3 852	929	3 415	- 2 486	120	7 534	5.2	1 898.1	26.7	667.9	42.2
Top 0.01%	12 352	10 475	905	582	1 274	2 571	- 1 297	21	5 288	3.6	.	3.0	4 162.3	42.8
99.990%-99.999%	8 133	6 723	740	521	870	1 760	- 890	19	3 444	2.4	8 053.9	2.7	3 044.5	42.3
Top 0.001%	4 218	3 752	166	61	404	811	- 407	1	1 844	1.3	.	0.3	14 251.0	43.7

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Taxable income, as far as included in income tax statistics.- 3) Taxable income from agriculture and forestry, from business enterprise, from self-employed activities (professional services).- 4) Taxable wage income (before deduction of allowable expenses), minus taxable pensions from former employments.- 5) Taxable income from investments (exclusive income from business activities), inclusive receipts below the savers allowance and taxable capital gains from private investments (solely speculation gains).- 6) Taxable income from renting and leasing.- 7) Taxable pensions from former employments, taxable share of life annuity funds (mere interest portion of the annuity payment), alimonies between separated and divorced spouses.- 8) Percentile, relating to adjusted gross income.-
9) Married couples are counted as one taxpayer due to joint assessment (taxation with full income splitting).- 10) Relating to taxable income.
Source: Income tax statistics 1995; own calculations.

Table A 5

Gross income, income components and income tax liability according to the income tax statistics 1998

million Euro

Gross income[1] / Income fractiles	Gross income[1] plus capital gains	Income from business activity[2]: Total	Income from business activity[2]: Thereof: Capital gains	Wage income[3]	Capital income: Total	Capital income: Interest, dividends[4]	Capital income: Renting and leasing[5]	Transfer income[6]	Assessed income tax liability: mill. Euro	Assessed income tax liability: %	For information: Highest income[7] 1000 Euro	For information: Tax-payers[8] 1000	For information: Average income[7] 1000 Euro	For information: Average tax liabil.[7] %
1st decile	630	- 5 317	5 043	3 382	1 840	1 524	315	725	1 304	0.8	5.6	2 867.3	0.2	207.1
2nd decile	30 399	3 793	821	18 121	1 712	1 297	415	6 773	492	0.3	14.2	2 867.3	10.6	1.6
3rd decile	50 600	4 365	713	33 007	2 210	1 577	633	11 017	2 703	1.6	20.3	2 867.4	17.6	5.3
4th decile	65 375	4 038	503	47 382	2 254	1 705	548	11 701	5 294	3.1	24.8	2 867.2	22.8	8.1
5th decile	77 632	3 925	445	59 920	2 386	1 886	501	11 401	7 311	4.3	29.0	2 867.4	27.1	9.4
6th decile	90 336	4 556	456	70 871	2 864	2 235	629	12 046	9 426	5.5	33.9	2 867.3	31.5	10.4
7th decile	106 443	6 002	538	83 250	3 519	2 731	788	13 672	12 617	7.4	40.3	2 867.2	37.1	11.9
8th decile	128 360	7 889	720	103 191	4 133	3 234	899	13 146	17 669	10.4	49.2	2 867.3	44.8	13.8
9th decile	161 609	11 961	995	132 587	5 607	4 292	1 314	11 454	26 082	15.3	64.9	2 867.3	56.4	16.1
10th decile	352 126	107 281	19 056	198 678	32 671	24 651	8 020	13 496	87 098	51.2	.	2 867.3	122.8	24.7
Total	1 063 510	148 494	29 290	750 390	59 196	45 133	14 063	105 430	169 997	100.0	.	28 672.9	37.1	16.0
90%-95%	105 435	11 194	1 048	83 959	4 615	3 354	1 260	5 668	19 644	11.6	83.6	1 433.7	73.5	18.6
95%-99%	126 145	29 232	3 121	82 622	8 814	5 966	2 848	5 477	28 063	16.5	162.7	1 146.9	110.0	22.2
Top 1%	120 546	66 855	14 888	32 097	19 243	15 331	3 912	2 351	39 391	23.2	.	286.7	420.4	32.7
99.0%-99.9%	71 015	34 216	6 607	25 588	9 312	6 727	2 585	1 898	21 288	12.5	551.9	258.1	275.2	30.0
Top 0.1%	49 531	32 639	8 280	6 510	9 930	8 604	1 327	453	18 103	10.6	.	28.7	1 727.5	36.5
99.90%-99.99%	30 251	18 725	5 931	5 409	5 788	4 784	1 004	330	10 725	6.3	2 338.8	25.8	1 172.3	35.5
Top 0.01%	19 280	13 914	2 349	1 101	4 142	3 820	323	123	7 378	4.3	.	2.9	6 726.0	38.3
99.990%-99.999%	12 299	8 758	1 763	982	2 466	2 250	216	93	4 602	2.7	10 276.7	2.6	4 766.3	37.4
Top 0.001%	6 980	5 156	587	119	1 676	1 569	107	30	2 777	1.6	.	0.3	24 406.8	39.8

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Taxable income from agriculture and forestry, from business enterprise, from self-employed activities (professional services), plus tax reliefs, plus allowance for capital gains from business activity, plus tax-exempted foreign income.- 3) Taxable wage income (before deduction of allowable expenses), minus taxable pensions from former employments, plus tax-exempted foreign income.- 4) Taxable income from investments (exclusive income from business activities), inclusive receipts below the savers allowance and taxable capital gains from private investments (solely speculation gains).- 5) Taxable income from renting and leasing, plus higher losses from renting and leasing.- 6) Taxable pensions from former employments, taxable share of life annuity funds (mere interest portion of the annuity payment), alimonies between separated and divorced spouses, plus allowance for taxable pensions from former employments, plus non-taxable share of life annuity funds (estimated), plus non-taxable replacement amounts from insurances for loss of earned income (e.g. benefits from unemployment or health insurance), as far as relevant for taxation with progression ("Progressionsvorbehalt").- 7) Percentile, relating to adjusted gross income.- 8) Married couples are counted as one taxpayer due to joint assessment (taxation with full income splitting).
Source: Income tax statistics 1998; own calculations.

Table A 6

Taxable gross income, income components and income tax liability according to the income tax statistics 1998

million Euro

Gross income[1] / Income fractiles	Taxable gross income[2]	Taxable income from business activity[3]: Total	Taxable income from business activity[3]: Thereof: Capital gains	Taxable wage income[4]	Taxable capital income: Total	Taxable capital income: Interest, dividends[5]	Taxable capital income: Renting and leasing[6]	Taxable transfer income[7]	Assessed income tax liability: mill. Euro	Assessed income tax liability: %	For information: Highest income[8] 1000 Euro	For information: Tax-payers[9] 1000	For information: Average income[10] 1000 Euro	For information: Average tax liabil.[10] %
1st decile	- 3 331	- 5 467	4 920	3 380	- 316	528	- 844	- 927	1 304	0.8	5.6	2 867.3	- 1.2	- 39.2
2nd decile	23 234	3 578	619	18 110	276	269	6	1 271	492	0.3	14.2	2 867.3	8.1	2.1
3rd decile	40 807	4 164	540	32 988	595	354	241	3 061	2 703	1.6	20.3	2 867.4	14.2	6.6
4th decile	55 830	3 891	390	47 360	478	382	96	4 100	5 294	3.1	24.8	2 867.2	19.5	9.5
5th decile	68 539	3 779	341	59 895	400	411	- 10	4 465	7 311	4.3	29.0	2 867.4	23.9	10.7
6th decile	80 720	4 396	365	70 836	396	517	- 121	5 092	9 426	5.5	33.9	2 867.3	28.2	11.7
7th decile	95 706	5 806	440	83 187	316	713	- 397	6 398	12 617	7.4	40.3	2 867.2	33.4	13.2
8th decile	117 332	7 606	601	103 076	50	912	- 862	6 600	17 669	10.4	49.2	2 867.3	40.9	15.1
9th decile	149 690	11 561	880	132 326	- 217	1 409	- 1 626	6 020	26 082	15.3	64.9	2 867.3	52.2	17.4
10th decile	312 226	103 718	18 711	197 463	3 728	17 829	- 14 100	7 317	87 098	51.2	.	2 867.3	108.9	27.9
Total	940 752	143 031	27 806	748 621	5 705	23 322	- 17 617	43 396	169 997	100.0	.	28 672.9	32.8	18.1
90%-95%	97 057	10 802	953	83 609	- 481	1 356	- 1 837	3 126	19 644	11.6	83.6	1 433.7	67.7	20.2
95%-99%	112 147	28 216	2 958	82 073	- 1 097	3 258	- 4 355	2 956	28 063	16.5	162.7	1 146.9	97.8	25.0
Top 1%	103 022	64 700	14 800	31 781	5 306	13 215	- 7 908	1 234	39 391	23.2	.	286.7	359.3	38.2
99.0%-99.9%	59 898	33 264	6 529	25 371	258	5 291	- 5 033	1 005	21 288	12.5	551.9	258.1	232.1	35.5
Top 0.1%	43 124	31 436	8 271	6 410	5 049	7 924	- 2 875	229	18 103	10.6	.	28.7	1 504.0	42.0
99.90%-99.99%	26 147	18 298	5 922	5 335	2 334	4 363	- 2 029	181	10 725	6.3	2 338.8	25.8	1 013.2	41.0
Top 0.01%	16 977	13 138	2 348	1 075	2 715	3 561	- 846	49	7 378	4.3	.	2.9	5 922.6	43.5
99.990%-99.999%	10 715	8 296	1 762	959	1 423	2 089	- 666	38	4 602	2.7	10 276.7	2.6	4 152.4	42.9
Top 0.001%	6 262	4 843	587	116	1 292	1 472	- 180	11	2 777	1.6	.	0.3	21 894.2	44.3

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Taxable income, as far as included in income tax statistics.- 3) Taxable income from agriculture and forestry, from business enterprise, from self-employed activities (professional services).- 4) Taxable wage income (before deduction of allowable expenses), minus taxable pensions from former employments.- 5) Taxable income from investments (exclusive income from business activities), inclusive receipts below the savers allowance and taxable capital gains from private investments (solely speculation gains).- 6) Taxable income from renting and leasing.- 7) Taxable pensions from former employments, taxable share of life annuity funds (mere interest portion of the annuity payment), alimonies between separated and divorced spouses.- 8) Percentile, relating to adjusted gross income.-
9) Married couples are counted as one taxpayer due to joint assessment (taxation with full income splitting).- 10) Relating to taxable income.
Source: Income tax statistics 1998; own calculations.

Table A 7

Taxpayers with higher losses from renting and leasing according to the income tax statistics 1995-1998

Gross income[1)]	Tax payers with higher losses from renting and leasing 1 000			Higher losses from renting and leasing[2)] as percentage of gross income[1)] %		
Income fractiles	1992	1995	1998	1992	1995	1998
1st - 5th decile	0.7	1.1	1.2	0.9	1.3	1.3
6th - 9th decile	2.9	4.0	4.5	0.9	1.3	1.4
10th decile	16.3	20.2	21.4	4.9	7.4	6.6
Total	3.1	4.2	4.6	2.2	3.2	3.1
Top 1%	42.0	51.0	49.4	8.2	14.3	11.2
Top 0.1%	48.6	58.5	55.5	7.9	14.8	10.2
Top 0.01%	47.2	56.8	55.3	5.4	11.8	6.9
Top 0.001%	50.0	63.0	59.8	4.3	9.5	4.5

1) Taxable and non-taxable income, as far as included in income tax statistics, less capital gains.- 2) Losses of at least 5,000 Euro from direct investments in real estate and at least 2,500 Euro from shareholdings (closed property funds, property developer partnerships etc.).
Source: Income tax statistics 1992-1998; own calculations.

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