

**Did Earnings Inequality
in the Federal Republic of Germany
Increase from the 1960s to the 1980s?**

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1. Introduction

While in the United States and some other industrialized countries an increase of earnings inequality has been documented in many analyses¹, most previous research on the distribution of wage earnings in the Federal Republic of Germany has ascertained no substantial changes in wage differentials over time. However, for Germany there are only a few studies based on a microanalytical approach and covering a long-term period. Moreover, there is no conclusive evidence about the trend in the earnings distribution, neither for the United States nor for Germany. Burkhauser and Holtz-Eakin (1994) stated in a comparative analysis based on panel data that "shifts in the relative rewards for working over the post-recession years of the 1980s in the two countries were remarkably similar" (p.28). Indeed, the distribution of wage earnings in Germany appears to be a little less unequal than in the United States; but the results suggest an increasing inequality in Germany and an opposite trend for the U.S., especially when focusing on the lower 40 percent of the income distribution. In contrast to these findings, Freeman and Katz (1995) concluded that in the United States "from the late 1970s to the early 1990s, wage dispersion increased dramatically for both men and women ..." (p. 7) whereas Abraham and Houseman (1995) stated for Germany that earnings inequality has fallen since the mid-1970s (p. 400). Some of the confusion about the level and the development of wage dispersion as well as about cross-national differences may be attributed to conceptual issues. Before taking a further look at earnings distribution in Germany during the twenty years period before unification we want to point out an important aspect which probably accounts for much of the differences in empirical results.

Besides the effects of different data sources² and inequality measures, one crucial point appears to be the specification of the research object. The group of wage and salary earners may be defined in several ways with the consequence of different potential biases with respect to the distributional outcome. Should we include all persons with any wage and salary income or should we introduce some kind of bottom-coding to exclude those with only marginal casual earnings? Should one look at weekly or monthly or annual earnings? Is it more

¹See for example Levy, F., R. J. Murnane (1992); Juhn, C., K. M. Murphy, B. Pierce (1993); Freeman, R., L. Katz (1995); Karoly, L. A. (1993); and for a cross-national study Katz, L.F., G.W. Loveman, D.G. Blanchflower (1995).

²For an assessment of the quality of the individual earnings data in the Family Expenditure Surveys of Great Britain see Wilson, M. (1995). It is shown that the reliability of micro-data may change over time. Consequently, the conclusions about trends that can be drawn from those data may be tempered.

appropriate to refer to hourly wages and salaries than to total earnings within the chosen period? In general, the broader the group of wage and salary earners and the longer the income period chosen the higher the level of inequality will appear because of the increasing heterogeneity as to work time and to the "quality of jobs". The distribution of annual wages and salaries of full-time year-round workers and employees can reasonably be assumed to be more equal than the corresponding distribution of all persons with nonzero wage and salary income including part-time workers and those with minor jobs not covered by the German social insurance system. But when looking at changes over time there is no obvious equivalent relationship. Trends by subgroups may be reinforced or compensated by aggregation. For example, an equalizing trend within the full-time year-round employed may be overlapped by some kind of push toward more inequality in annual wage and salary income induced by an increasing share of part-time jobs. Thus an analysis based on the narrow concept would evaluate the outcome as a development with diminishing wage differentials while from the broader perspective one would ascertain quite a stable distribution or even a slight movement towards rising inequality.

The above mentioned diverging results for the earnings distribution in Germany may be caused by such conceptual reasons. Those studies which find moderate downward changes of inequality in West-Germany are considering only full-time workers and employees thus realizing a narrow perspective. Abraham and Houseman (1995) refer to alternative official data sources - implying some further special limitations³ - and to a public-use-file of the German Socioeconomic Panel (GSOEP) covering the period 1983 to 1989. The latter sample is restricted to the year-round (full-time) employed for whom the results indicate falling inequality. In a longitudinal study of Weick (1995) for the period from 1990 to 1994, also based on the GSOEP, the population covered is further restricted to those being full-time employed in every year of observation. It appears that in West-Germany the two bottom quintiles have gained and the two top quintiles have lost a little. Another analysis of GSOEP-data from 1990 to 1992 is devised in part more narrow, in another regard more widely. It does not refer to annual income but to wage and salary income of the previous month and includes part-time workers and employees with a minimum remuneration of 100 DM (Müller, K., R.

³The Surveys of Compensation in Industry and Trade 1964 to 1990 ("Verdiensterhebung in Industrie und Handel"), tabulations on average earnings for workers in broadly defined occupational groups published by the Federal Statistical Office ("Statistisches Bundesamt"); social security data (not covering civil servants and truncating earnings at the social security taxation threshold), special (unpublished) tabulations based on a longitudinal sample (1976 to 1983) held by researchers of the Federal Employment Service ("Bundesanstalt für Arbeit").

Hauser, J. Frick, G. Wagner (1995)). Thus, the level of inequality appears to be higher but an equalizing trend for the early 1990s is corroborated. In contrast to these findings Burkhauser and Holtz-Eakin (1994) stated for West-Germany that the relative positions of the lower two quintiles have worsened during the 1980s. Their results are based on data of the GSOEP, too, but on a widely defined group of wage and salary earners including all persons with nonzero rewards (without any bottom-coding). Burkhauser and Holtz-Eakin take this broad perspective also in their corresponding analysis of the U.S. data (Panel Study of Income Dynamics); this can explain at the least partially, the discrepancy of the findings for the United States of other authors who mostly relate to full-time year-round employed persons and use other data sources⁴.

We have seen from this short review of different research concepts and empirical results that each approach is subject to some kind of bias. While a broad perspective fails to distinguish between working time and hourly wages as causes of income inequality, any narrowed research concept represents only a selected group of workers⁵. For example, increasing unemployment results in fewer full-year full-time workers. Consider a recession during which those with low earnings are subject to a relatively high unemployment rate or the respective jobs are substituted by part-time jobs; the narrow concept of measurement might indicate a trend to more equality in earnings distribution while the broad concept including those employed only part-time and/or part-year would result in rising earnings inequality.

The following analysis of the distribution of annual wage and salary income in the Federal Republic of Germany is based on a quite broad perspective thus covering a heterogeneous group and several structural developments. At first all persons with non-zero wage and salary income will be included to show the cumulative effects of changes in the labour market during the quarter of a century before unification. In a second step we shall concentrate on those who have been employed the main part of the survey year and earned more than the lower annual social insurance threshold. By applying this narrower concept, indeed, persons with casual earnings are excluded but regular part-time workers are still included. We shall look at the overall trend of earnings inequality as well as at group-specific developments by decomposing inequality indicators. But before turning to the microanalytical approach some hypotheses about the distributional effects of structural changes of the labour market will be presented.

⁴Many analyses are based on the Current Population Surveys; see the review article of Levy, F., R. J. Murnane (1992).

⁵See in this context Karoly, L. A. (1993), p. 51.

2. Hypotheses about structural labour market effects

It is often argued that on the supply-side, the solidaristic wage policies pursued by German trade unions tend to limit earnings differentials across groups of workers.^{6 7} On the other hand, there are suggestions that demand conditions, especially shifts in the industrial composition of employment have induced some growth in earnings differentials across education groups.⁸ To mention only a few labour market influences on the distribution of wages and salaries we first take a look at the structure of the German labour force which has changed in many ways from the 1960s to the end of the 1980s.

Table 1a refers to the whole labour force including the self-employed and the unemployed and is derived from published data of the micro-censuses. It is shown that the labour force has grown by about 11% and changed in age structure. The relative size of the youngest age group as well as of the groups aged 60 years or more has declined by about one half each or even more. These developments mostly reflect changing attitudes and economic and institutional conditions. The effective retirement age has fallen continuously because of the introduction of several regulations entitling employees to retire prior to regular pensionable age of 65 years. The distributional outcome of this trend is not obvious at all because of the interaction of several influences, for example the variety of different individual income patterns - these patterns may be affected by returns to experience or follow the traditional life cycle hypothesis - and cohort effects. The falling share of the workers and employees aged 15 to 20 years, on

⁶See for example Abraham, K., S. N. Houseman (1995), p. 387. Thiehoff, R. (1987) stated for the period 1957 to 1978 a considerable levelling of relative wage positions of twelve qualifications of blue collar and white collar workers. Furthermore, he concluded that this trend reinforced the existing disequilibrium of the labour market and disturbed the market clearing mechanism, the balance between demand and supply in special segments, respectively. The analysis is based on results of the Wage and Salary Structure Surveys ("Lohn- und Gehaltsstrukturerhebungen") published by the Federal Statistical Office and on some internal statistics of the Federal Employment Service ("Bundesanstalt für Arbeit"). The Wage and Salary Structure Surveys cover the sectors manufacturing, trade, banking and insurance but not other service sectors and the public sector.

⁷For an interesting macro-economic approach to test alternative theoretical explanations of wage inflexibility see Johnes, G., T.J. Hyclak (1995). Their analysis for the United States is based on a two-equation model of the labour market which is separately estimated for each of the 48 contiguous states of the USA. They find some evidence of the efficiency wage model.

⁸See Abraham, K.G., S. N. Houseman (1995), pp. 388-396.

the other side, is partly caused by the demographic development⁹ but mostly by the extension of the schooling and vocational training periods and the increased share of university graduates. This is shown since 1978 on the right hand side of table 1a. There has occurred a substantial shift from the lowest schooling level called "Hauptschule" (9 years of schooling) to the middle ("Realschule"; 10 years of schooling) and the highest educational degree which qualifies for university access ("Fachhochschul-, Hochschulreife"; 12 or 13 years of schooling). Within a period of no more than 11 years (1978 to 1989) the relative size of the group with the highest level of secondary schooling has nearly doubled from about 9% to roughly 17% of the labour force, and the share of those with the middle secondary educational degree has increased by 6 percentage points to nearly one quarter of the labour force. Furthermore, an increasing part of the labour force has obtained some certificate of a post-secondary vocational training or even an academic qualification. In 1978 two thirds kept such certificates, in 1989 the relative size of this group was about three quarters. The relative increase was greatest for the academic group (+55%). These trends which would appear even more clearly in an analysis of birth cohorts coincides with the increasing specialization and professionalization of jobs. But the resulting influence to the distribution of wages and salaries is equivocal because of probably contrary effects in subgroups. The decreasing share of unskilled workers tends to reduce the spread of wage incomes from the bottom end. But if the supply of skilled workers has not changed fast enough to compensate the increased demand for skill wage differentials in the middle and upper classes could have widened.¹⁰

Similarly, the net distributional outcome of the development from an economy dominated by manufacturing to a service-sector dominance is not clear at all. As shown in table 1b, a rising share of the gainfully employed population is working in the trade, transport and communication industries as well as in the "remaining sectors" which especially include services and the public sector. While in 1960 those working in manufacturing made up nearly half the gainfully employed population and those working in agriculture came to about 14%, the relative size of these two groups was in 1988 only a little more than two fifths. The rising share of service jobs even is underestimated in this presentation since these occupations have

⁹There are only few studies about how demographic changes affect wages and the earnings distribution.

According to these analyses demographic effects appear to be very moderate. See in this context Klevmarken, N.A. (1993) who argues that the lack of longitudinal data hinders research progress.

¹⁰The German non-academic system of vocational training seems to provide a quite efficient allocation of young workers thus restraining inequality. See Büchtemann, Ch. F., J. Schupp, D. Soloff (1994). In the context of evaluating the effects of the German apprenticeship system see also Helberger, Ch., U. Rendtel, J. Schwarze (1994), Couch, K.A. (1994) and Harhoff, D., Th. J. Kane (1995).

grown within the manufacturing sector, too. These sectoral developments indicate large changes on the demand side of the labour market. But it is not obvious at all whether these shifts resulted in changes of the earnings dispersion because the supply side also has changed in many ways. The rising labour force participation of women might have induced a push to rising inequality because of the high share of female part-time workers and lower hourly wages. Moreover, even within full-time employed women wage dispersion probably is more substantial than within the respective male group since women returning to work after a family phase earn less than women with the same formal qualification who never have withdrawn from the economically active population.¹¹ On the other hand, the increase of unemployment rates has rather limited wage dispersion since unskilled workers at the bottom of the earnings distribution find themselves unemployed more often (in relative terms) than employees with some vocational certificate.¹² In the following we shall analyse the net outcome of these many diverging effects.

3. The data base

The following analysis is based on microdata of the Income and Consumption Surveys ("Einkommens- und Verbrauchsstichproben", EVS) 1962/63, 1969, 1973, 1978, 1983 and 1988. The EVS are official surveys with voluntary participation comprising about 35,000 to 50,000 households each. The original quota sample is reweighted using data from the respective micro-census participation in which it is compulsory. The EVS data result from two interviews and diaries covering the whole year of investigation¹³. The sample size as well as the sample design and the method of acquiring income and expenditures continually appear to be an appropriate way of data collection for the purpose of analysing income distribution. The anonymized micro-data available for this research consists of a reduced set of variables partly with rounded values and, from 1973, of a reweighted 98% random sample of the original data. Furthermore, households with seven or more persons have been excluded from the transferred data of the last four surveys for reasons of keeping anonymity. Another limitation of the available data seems to be more restrictive in our context. Monthly reported

¹¹See in this context Schulz, E., E. Kirner (1994).

¹²Another interesting aspect is how the individual wage changes after unemployment. See van Santen, F. A., R. Ziegler (1994) who argue that unemployment "as an intermediate state of labour market turnover and job mobility" (p. 211) often ends with a wage increase.

¹³The surveys are described in detail in Horstmann, K. (1961) and Euler, M. (1968, 1972, 1977, 1982, 1983, 1987).

personal income is aggregated to annual values of the particular income sources. Thus, for the older survey data one cannot distinguish year-round employed persons from those having received wage or salary income only part of the year. Only for 1983 and 1988 the employment period is included in the available data.

Besides these restrictions due to the reduced data set transferred by the Statistical Office there are some general limitations of the EVS. First, private households with a foreign head are excluded from the sample population¹⁴. The implied bias is of increasing weight as the foreign population in the Federal Republic of Germany has risen from 4.9% in 1970 to 7.3% in 1988¹⁵. Further biases may result from the principle of voluntary survey participation. The lowest income groups as well as the upper tail of the income distribution are probably not represented adequately; this is an unsolved problem of all general population surveys. The Statistical Office has introduced top coding because of the large statistical error with respect to income ranges including only few cases. For example, households with a monthly net income of more than DM 25,000 in 1988 have been excluded from the sample¹⁶. Although this procedure seems to be problematic, especially when looking at the self-employed, it is of minor consequence in an analysis of wage and salary income. This conjecture is corroborated by a comparison of income aggregates derived from the EVS with data of the National Accounts. Gross wage and salary income reported in the EVS amounts to about 80 to 90% of the respective macroeconomic aggregate while the survey data of income from self-employment and property income account for much smaller percentages of the National Accounts results¹⁷. In summary, the EVS can be considered as highly representative data on income of the German population and appears to contain valuable information about the distribution of wage and salary earners allowing a more detailed disaggregation than surveys with smaller sample sizes. Yet, one has to restrain to mainly descriptive analyses as several variables which theoretically explain wage dispersion are not included in our data, for example working time and human capital variables.¹⁸

¹⁴In the survey of 1988 the inquiry of foreigners has been tested, and 1993 this population group has been included in the EVS survey population for the first time. However, these data are not yet available for microanalytical research.

¹⁵See Bundesminister für Arbeit und Sozialordnung (1991), table 2.1.

¹⁶The upper thresholds of the earlier survey years are DM 10,000 (1969), DM 15,000 (1973), DM 20,000 (1978), DM 25,000 (1983). See Statistisches Bundesamt (1994), p. 17.

¹⁷See in this context Becker, I. (1995), pp. 9-16 and tables 3 and 4.

4. Slight changes in the distribution of wage earnings

At first we take a broad perspective including all persons who reported nonzero wage or salary income. Table 2 presents the development of some inequality indicators for six survey years during a period of twenty-five years. Indeed, the results for 1962/63 and 1969, however, should be interpreted with caution. In the respective data sets wage and salary income of persons other than the head of household and the spouse are not included at an individual level but as a summary variable at a household level. Therefore, one had to introduce some simplifying assumptions to attach these values to particular household members. Since this procedure is problematic especially for 1962/63, this survey year has been excluded in all the following tables which refer to several personal characteristics of the wage and salary earners.

The aggregate inequality measures in the upper part of table 2 are reported in absolute as well as in standardized terms. The absolute level of these indicators appears to be quite high when compared with the results of other studies referring only to monthly wages and salaries or excluding part-time and part-year workers¹⁹. The Gini-coefficient exceeds 0.32 in all survey years and amounts to nearly 0.36 in 1988. Thus, with respect to this measure there has occurred a continuous but very slight increase in inequality of no more than 5% within the fifteen years since 1973. The other indicators show similar changes with a little higher but still very moderate increase. The Atkinson-index with low inequality aversion ($\epsilon = 0.5$) has reached in 1988 about 109% of the value in 1973 and 124% of the lowest level of 1969, whereas in the case of high inequality aversion there was no clear trend. Looking at the quintile shares in table 2 the result of slightly rising inequality of wage earnings is corroborated. The two bottom quintiles have lost about one percentage point each during the period of investigation especially in favour of the top quintile which received nearly two fifths of all wage and salary income in 1988. If we draw attention to the time since 1973 with the more reliable data the rise of the fifth quintile share is still nearly two percentage points but the corresponding losses seem to have diffused over all the four lower quintiles. Therefore, the bottom quintile share has remained nearly constant at a level of 4%. The earnings ratios of selected percentiles have also changed little. While the ratio of the ninetieth/fiftieth percentile

¹⁸An estimation of individual as well as structural effects on earnings distribution in East- and West-Germany (1990 and 1989, respectively) is presented by Szydlik, M. (1992) using GSOEP-data.

¹⁹For example, in the analysis of Müller, K., R. Hauser, J. Frick and G. Wagner (1995, p. 79) about monthly gross wages and salaries the Gini-coefficient for West Germany in 1990 comes to only 0.285.

levels of wage earnings amounted during all the years to 1.7 or 1.8²⁰ the tenth percentile has lost relative to the fiftieth and to the ninetieth percentile. Again, these losses appear to be very moderate if we look at the development during the last fifteen years. In 1973 the fiftieth percentile earned about five times the earnings of the tenth percentile, the ninetieth percentile nine times that value; in 1988 the advantage of the fiftieth percentile had increased to nearly the sixfold, that of the ninetieth percentile to the tenfold of the tenth percentile's earnings. The last line of table 2 shows how many workers earned less than half the mean value of wages and salaries. During the 1960s about one fifth of all persons with nonzero wage income belonged to this low earnings group, at the end of the 1980s it was even one fourth. However, this considerable increase occurred mainly between 1969 and 1973 and perhaps is a little overrated because of some deficiencies of the 1969 data. In the 1970s the low earnings group's population share remained constant followed by a one percentage point increase in the 1980s.

The impression of a quite stable distribution of wage income in Germany is confirmed when taking a more narrow perspective. The results presented in table 3 refer only to persons who have been employed as blue-collar workers, white-collar workers or civil servants during the main part of the survey year²¹ and who earned more than the minimum social insurance threshold²². The introduction of bottom-coding corresponding to this institutional limit does not mean that all persons liable for contribution are included because we cannot account for working time which is also relevant for defining the social insurance status. Nevertheless, the annual income threshold appears to be a reasonable minimum to exclude perquisites. Not surprisingly, the inequality indicators in table 3 change to a much lower level than those of table 2 since they refer to a more homogeneous group comprising about 90% of the persons

²⁰It should be mentioned that Abraham, K. G. and S. Houseman (1995, p. 377) come to about the same ratios using data of the German Socioeconomic Panel for the period 1983 to 1989 although they include only full-time full-year workers. The reason for this conformity despite of conceptual divergences is that in the middle as well as in the top area of the wage distribution there are nearly no part-time and/or part-year workers. On the other side the ratios of the ninetieth/tenth and the fiftieth/tenth percentile levels of earnings are much lower according to Abraham and Houseman (2.8 to 2.6 and 1.6 to 1.5, respectively) than in table 2 because of the excluded part-time and/or part-year workers.

²¹For persons with changes of the occupational status during the survey year the employment status held for a longer subperiod than any other status is taken as relevant status.

²²In Germany, minor wage income is not subject to payroll taxes (social insurance contributions). The upper limit of these wages and salaries - in our context introduced as bottom-coding to exclude perquisites - is linked to the development of the mean wage income in the Old Age And Survivors Insurance System. Since 1977 it is defined as one seventh of an institutionally set mean value ("Bezugsgröße in der Sozialversicherung", see SGB IV §18"), for example 1988 as 5,280 DM p.a.; see Bundesministerium für Gesundheit (ed.) (1994), table 10.15. To insure comparability I have introduced a similarly computed limit for the years 1969 and 1973. Since the "Bezugsgröße" amounted to about 90% of the mean wage income of workers and employees in the Old Age And Survivors Insurance System in 1978 and 1983, the limit for 1969 and 1973 has been defined as one

with nonzero wage income. But the development over time is of a similar pattern with an even less distinct upward trend. From 1969 to 1978 the Gini-coefficient remained nearly constant at about 0.29. In the second decade it increased slightly by 4%, the other aggregate indicators rose at most by 8% (Theil-index). The income shares of the first four quintiles did not change considerably during the whole period, but the fifth quintile gained by about one percentage point receiving 37% of all wage and salary income above the social insurance threshold in 1988. This is also shown by the ratio of the ninetieth/tenth percentile levels of wage earnings which rose from 4.6 (1969) to 5.3 (1988). Last but not least, the relative size of the group earning less than half the mean value of all wage and salary income (above the social insurance threshold) has increased moderately to 19% in 1988. This level seems to be quite high indicating a distribution steeply sloped on the left side (at the lower tail). This is partly caused by the differences in working time since part-time workers and employees are still included in table 3. But in consideration of the aggregate measures and quintile shares wage dispersion in the group of full-time workers obviously accounts for most of the overall inequality.

5. Decomposition analyses by sex, age, and occupational status

5.1 Overall trends

As outlined in chapter 2 the general development of inequality may conceal several inequality trends within and/or between subgroups of workers and employees with compensating or cumulative outcomes. Furthermore, changes in the relative size of various groups may also play a role. To tackle this aspect the Theil-index and the coefficient of variation have been decomposed in the following tables.²³ Unfortunately the available EVS-data does not include any human capital variables. Thus, the descriptive results do not really prove causalities. As in the above chapter we look first at the total group of persons with nonzero wage and salary income (tables 4 and 5) and then confine ourselves to workers, employees and civil servants earning more than the minimum social insurance threshold (tables 6 to 9).

seventh of the respective 90%-mean-values. See Bundesminister für Arbeit und Sozialordnung (ed.) (1989 and 1995), table 7.9.

²³ The Gini-coefficient is not additively decomposable. See Cowell, F. A. (1988).

Table 4 presents some structural and inequality results for male and female wage and salary earners. The first line indicates a triplication of the nominal mean wage and salary income during the nearly twenty years period of observation but considerable real growth occurred only in the first decade (second line). This development of overall mean values was accompanied by a continuous relative increase of the subgroup of women as well as of their relative position. In 1969 women made up about one third of the labour force, in 1988 their group share came to two fifths. At the end of the 1960s female mean wage and salary income made up only 64% of the overall mean value, at the end of the 1980s it came to 68%. Indeed, this relative position still is quite low and the rise has been only moderate. But when remembering the relative increase of the share of women working part-time²⁴, the advance of the female income position might be in fact more vigorous than shown by our data. Surely, this is caused in part by the increased level of womens educational attainment.²⁵ On the other side, the relative position of male wage and salary earners has remained nearly constant since 1973 after a slight increase before. The development of the group-specific inequality indicators, however, has rather been in the opposite direction for men and women. The distribution of male wage and salary earners has changed considerably though moving on a relatively low level of inequality while the relatively high inequality indicators of female earnings distribution varied only little. The within-group Theil-index of men rose from 1973 to 1988 by one fifth, compared to 1969 even by more than a half. The increase of the coefficient of variation was, indeed, less marked but both indicators show a considerable upward trend especially in the 1980s (from 1978 to 1988). Against this, the changes of within-group inequality of female wages and salaries appear to be minor but the levels are in 1988 still much higher than the corresponding values for men (by 27% and 15%, respectively). Probably, this is mainly due to the different shares of part-time workers (in 1988 2% and 32%, respectively; see table 1).

The within-group inequalities of men and women make up for most of overall inequality as is shown in the bottom part of table 4. Referring to the Theil-index the within-groups component accounts for more than four fifth of the aggregated index, in the case of the coefficient of variation it is even more than nine tenths. Turning it the other way, in a fictitious situation with male earnings as well as female earnings being distributed completely equally within the respective group our inequality measures would fall to less than 20% (Theil-index) and less

²⁴ In 1970 24% of all employed women worked part-time, in 1988 nearly one third (32%); see table 1.

²⁵ See for example Huinink, J. (1989).

than 10% (coefficient of variation), respectively, of the actual values. Moreover, as to the Theil-index the dominance of within-groups inequality has increased over time by about four percentage points reaching 88% in 1988. This outcome is caused by the cumulative effects of the increasing female group share with the relatively high level of earnings inequality and the rise of within-men inequality.

In table 5 inequality is decomposed by age groups of wage and salary earners. Our data indicate an increasing relative group size of those aged 45 to 54 years who made up about one quarter of all persons with nonzero wage and salary income in 1988. In each survey year the group-specific relative positions of the youngest and the oldest groups are lower than those of the middle aged thus in accordance with life-cycle hypotheses (second block in table 5). But some considerable changes have occurred over time in favour of those aged 45 to 64 years. This is true even if we neglect the results for 1969 because of the above mentioned less reliable data quality.²⁶ While the relative losses from 1973 to 1988 of the youngest group come to five percentage points, those of the group aged 25 to 34 years even amount to thirteen percentage points leaving them on a level of nearly 10% below the overall mean. The corresponding development of the older groups was an increase in relative position by ten percentage points for the group aged 45 to 54 years and by even twelve percentage points for those aged 55 to 64. It appears that the economic rewards of vocational experience or of seniority have become more important during the 1970s and 1980s. The rise in earnings positions coincided with increasing within-group inequalities while the Theil-index and the coefficient of variation of the younger groups show less marked changes with no clear trend. Nevertheless, in all survey years inequality measures were highest within the youngest and the oldest group with their probably sizeable shares of part-year and/or part-time workers and employees. This holds especially for those aged 65 years or more as the legal retirement age is at 65. Since the retirement age has been lowered for several groups, for example for women and unemployed complying with special requirements, the rising Theil-index of the group aged 55 to 64 years also may be caused in part by the increasing subgroup of those working only part-year just before retirement.

The outlined developments of age structure, relative positions, and group-specific inequality measures again result in a dominant intra-groups component and a moderate inter-groups share of overall inequality. But in contrast to the decomposition by sex the share of within-age

groups inequality has decreased over time. In 1969, the intra-groups share of the Theil-index came to 92%, that of the coefficient of variation even to 97%, in 1988 it amounted to only 81% and 90%, respectively. If we restrict our interpretation to the period of the 1970s and 1980s, the decline of the within-groups component is less vigorous, but still clear. Thus, the increasing dispersion of age specific relative earnings positions has dominated the trend of rising inequality within the groups aged 45 to 64 years.

5.2 Between-groups and within-groups inequality of blue-collar workers, white-collar workers, and civil servants

In the following we turn back to the more narrow perspective which results in a substantially lower level of overall measures of wage inequality as described in chapter 4. We want to analyse whether the group-specific developments are modified when excluding persons with wages and salaries below the social insurance threshold. The first two lines of table 6 show that the development of real earnings is very similar though on a higher level than in table 4. The results of the decomposition of inequality by sex also come close to those of the broader approach. The relative size of the female group has increased to nearly two fifths in 1988, and the respective relative earnings position amounted to 70% compared to 65% in 1973. Not surprisingly, the difference between male and female mean earnings is somewhat smaller now but still amounts to nearly fifty percentage points. The far below mean position of women is combined with relatively high but nearly constant earnings inequality while wage dispersion within the male group is lower but rising considerably during the last decade of observation. These developments again result in an increase of the intra-groups share of the overall Theil-index and coefficient of variation, respectively, since 1973. As we know from table 1 that the male share of part-time workers still is very small (2.1% in 1988) and unemployment rate more than doubled from 1978 to 1983 (from 4.1% to 8.8%), but remained nearly constant during the next five years, there are obviously further reasons for the rising wage dispersion within male earners. This is corroborated by the development of the Theil-index from 1983 to 1988 for the year-round employed which is shown in the last two columns of table 6.²⁷ While the within-men index increased by 7%, wage inequality in the female group appears to go

²⁶The data restrictions are concerning especially wage earnings of young persons living in the households of their parents, that is the lowest age group of table 5.

²⁷ For the earlier survey years, our data do not allow any distinction of year-round and part-year workers. As expected, overall inequality is considerably lower when part-year workers are excluded.

slightly in the opposite direction. Table 7 presents another way of examining group-specific distributions. Men as well as women are grouped by relative wage classes which distinguish roughly the bottom, the middle range and the upper tail of earnings distribution. In this table income positions are defined in relation to the respective group-specific mean value of wages and salaries. The hypothesis of slightly rising inequality of male earnings is substantiated as the relative size of the broad middle range (relative earnings between 0.6 and 1.4) went down over time while the lower as well as the upper range increased moderately. On the other hand, within the group of female wage and salary earners the middle class rather grew a little.

In table 8 the decomposition analysis by age-groups of table 5 is repeated after having excluded persons who earned less than the social insurance threshold and/or whose main occupational status during the survey year was not blue-collar worker, white-collar worker or civil servant. Here too, the results are very similar to those of the broad approach. The relative wage positions of workers and employees aged 45 to 64 years have improved continually by about 9 and 14 percentage points, respectively, during the two decades of investigation, and inequality within these groups also increased considerably. This development was to the prejudice of not only the youngest group falling below half the mean wage but also of workers and employees aged 25 to 34 years who are often in the stage of building a family. This second age-group making up about one quarter of all employed came on average to a little more than the overall mean wage at the beginning of the 1970s but to only 92% at the end of the 1980s. Differently from the results of the approach without bottom-coding (table 5) the relative losses of the second age-group are coinciding with an unequivocal fall of inequality measures; the group-specific Theil-index decreased by about 17% since 1973, the coefficient of variation by 6%. The results concerning the year-round employed in the last two columns of table 8 are in accordance with these statements. In sum the growing distance of age-specific relative positions dominates the rising inequality within the older groups which, moreover, is partly compensated by the trend to more equality within the younger groups. Thus, the share of inter-groups inequality has increased significantly from 1969 to 1988. Even when neglecting the outcome of 1969 which is based on somewhat less reliable data the rise in between-groups share of inequality is still vigorous, that is with respect to the Theil-index nearly 40% (nearly six percentage points), referring to the coefficient of variation even 66% (nearly five percentage points).

Last but not least, we want to examine whether changes have occurred between and within the three main occupational groups. The distinction of blue-collar workers, white-collar workers and civil servants is traditionally associated with the notion of some appointed relative earnings position. Table 9 shows that the expected ranking of group-specific relative positions did not change over time but the advantage of civil servants has lowered considerably. The relative position of blue-collar workers decreasing in number has remained nearly constant at a level of slightly less than 90% of the overall mean. The mean position of the growing number of white-collar workers has also changed only slightly. Looking at the within-group inequalities the development with respect to blue- and white-collar workers again appears to be quite stable with a slight downward movement in the first and a moderate upward trend in the latter group. Throughout the survey years inequality within white-collar workers has been much higher than in the other groups, and earnings within the group of civil servants have been distributed less unequally than in the other two groups. But our data indicates a sharp rise in inequality in the latter group especially when looking at the Theil-index. The weighted sum of group-specific inequality measures amount to a share of intra-groups inequality which is even more dominating than in the above presented decompositions by gender and age. It even has increased somewhat since 1969 reaching about 97% with respect to the Theil-index and 94% referring to the coefficient of variation in 1988. Thus, the category of occupational status is not a useful indicator of earnings position.

6. Concluding remarks

We have seen from our empirical analysis based on the Income and Consumption Surveys 1962/63 to 1988 that overall inequality of wage and salary income in the Federal Republic of Germany remained quite stable despite of substantial structural changes of the labour force. Only during the last decade before unification inequality indicators showed a slight rising tendency. This is true for all wage and salary earners without any bottom-coding of income as well as for the more narrow perspective excluding persons who earned less than the social insurance threshold. However, when decomposing the Theil-index and the coefficient of variation some unequivocal trends have been recognized which are concealed by aggregation. Inequality within the subgroup of male employees has increased considerably while their mean relative position remained on a level of nearly 120% throughout the period of observation. An alternative decomposition by age-groups indicated rising inter-groups

inequality favouring those aged 45 to 60 years for whom within group inequality also tended to rise. Having these developments in mind, indicators of overall inequality should be interpreted cautiously. The result of an only moderately rising Gini-coefficient does not necessarily mean that trade unions in Germany have been successful in hindering any movement to more flexible wage structures in response to technological advance. In an analysis of Bispinck (1995) concerning the wage scale valid in West-Germany at the end of 1992, for example, a differentiated structure has been documented. Besides, the effective wages and salaries are often higher than the scaled rewards negotiated by trade unions. The surplus serves as a flexible instrument to respond to specific conditions of the labour market²⁸. This aspect and other questions about the wage setting process in Germany - for example the relevance of the principle of seniority for individual rewards - require further investigation especially of microdata including human capital variables, working time and a sectoral classification.

²⁸ See in this context Bellmann, L., S. Kohaut (1995).

Table 1a: The structure of the economically active population by age and educational level

Year	Economically active population													
	All ¹ in 1000	by age groups (in %): from ... up to ... years							by school level (in %) ²			by vocational degree (in %) ³		
		15-20	20-30	30-40	40-50	50-60	60-65	65 +	HS/Vs	RS	FHR/ HR	Lehre	BFS/FS	FHS/HS
1961	26 772	11,1	25,6	20,3	16,4	18,2	5,2	3,2						
1969	26 535	8,9	21,9	23,2	20,7	14,7	6,5	4,0						
1974	27 147	9,0	21,4	26,2	21,2	14,6	4,9	2,7						
1978	26 692	8,8	22,9	24,1	23,2	16,8	2,4	1,8	72,4	17,5	9,3	53,1	6,3	6,9
1983	28 605	8,3	23,2	21,8	25,8	17,0	2,6	1,3						
1985	28 897								63,1	21,7	14,4	54,7	7,2	9,4
1988	29 608	5,8	26,9	22,9	22,5	18,4	2,5	1,0						
1989	29 799								57,8	23,8	17,5	57,3	7,5	10,7

Sources: Bundesminister für Arbeit und Sozialordnung (1987 and 1992): Statistisches Taschenbuch 1987 and 1992, each table 2.4. Statistisches Bundesamt (1967, 1970, 1975, 1979, 1983, 1989 and 1990): Statistisches Jahrbuch 1967, p. 140; 1970, p. 118; 1975, p. 148; 1979, p. 92 and p. 337; 1983, p. 98; 1989, p. 90; 1990, p. 335.

¹ including soldiers.

² HS/Vs : Haupt-/Volksschulabschluß (Final exams at extended elementary school)

RS : Realschulabschluß (Final exams at secondary school)

FHR/HR: Fachhochschul-/Hochschulreife (Final exams at high school)

³ BFS/FS : Berufsfachschul-/Fachschulabschluß (Final exams at vocational school/technical college)

FHS/HS : Fachhochschul-/Hochschulstudium (University degree)

Table 1b: The structure of gainfully employed persons

Year	Gainfully employed persons					Labor force participation ¹			Share of part-time employees ²		subsequently: Unemployment rate ⁴
	All (in 1000)	among them: in the economic sector... (in %) ³				All	Men	Women	Men	Women	
		A.a.F.	Mnf. Sect.	C.T.TN.	Others						
1960	26 247	13,6	47,6	17,5	21,2	47,8	64,2	33,4	1,5	8,6	1,3
1962	26 783	12,6	48,2	17,3	21,8	47,2	63,3	32,9			0,7
1969	26 822	9,4	48,2	17,6	24,7	44,2	59,5	30,3			0,9
1970	26 668	8,5	48,8	17,5	25,2	44,2	59,6	30,3	1,5	24,4	0,7
1973	26 922	7,2	47,5	18,2	27,1	43,9	57,9	31,0			1,2
1975	25 810	6,8	45,3	18,4	29,4	44,0	57,2	31,9	2,0	29,3	4,7
1978	25 699	6,0	44,4	18,5	31,0	43,5	57,0	31,2			4,3
1980	26 328	5,5	44,1	18,5	31,9	44,2	57,5	32,0	1,3	29,0	3,8
1983	26 347	4,9	40,4	19,0	35,7	46,6	59,3	34,9	1,9	33,0	9,1
1988	27 366	3,9	38,9	19,1	38,0	48,2	60,3	37,0	2,1	31,5	8,7

Sources: Bundesminister für Arbeit und Sozialordnung (1987, 1992 and 1995): Statistisches Taschenbuch 1987 and 1992, each tables 2.3, 2.4 and 2.10, Statistisches Taschenbuch 1995, table 2.5A. Statistisches Bundesamt (1967, 1970, 1975, 1979, 1983, 1989 and 1990): Statistisches Jahrbuch 1967, p. 140; 1970, p. 118; 1975, p. 148; 1979, p. 92 und p. 337; 1983, p. 98, 1989, p. 90; 1990, p. 355.

¹ Economically active population as % of the whole population.

² Part-time employees, who normally work 1-36 hours per week, as % of all employees.

³ A.a.F. : Agriculture, forestry, fishing

Mnf. Sect. : Manufacturing sector

C.T.TN. : Commerce, trade, transmission of news

Others : Remaining sectors (including soldiers), especially services

⁴ Unemployed persons as % of the economically active population (without soldiers) according to the Microcensus

Table 2 : The development of selected inequality measures of gross income¹ in the Federal Republic of Germany, 1962 - 1988

Inequality measures	1962	1969	1973	1978	1983	1988
Gini-coefficient ²	0,3306 (97,3)	0,3226 (95,0)	0,3396 (100,0)	0,3414 (100,5)	0,3522 (103,7)	0,3574 (105,2)
Atkinson-index ²						
$\epsilon = 0.5$	0,1036 (93,7)	0,0969 (87,6)	0,1106 (100,0)	0,1130 (102,2)	0,1183 (107,0)	0,1204 (108,9)
$\epsilon = 2.0$	0,6213 (99,8)	0,5426 (87,2)	0,6223 (100,0)	0,6647 (106,8)	0,6428 (103,3)	0,6296 (101,2)
Theil-index ^{2 3}	0,2617 (91,8)	0,2382 (83,5)	0,2851 (100,0)	0,2937 (103,0)	0,3065 (107,5)	0,3092 (108,5)
Variation-coefficient ²	0,6328 (100,8)	0,6163 (98,2)	0,6276 (100,0)	0,6353 (101,2)	0,6651 (106,0)	0,6740 (107,4)
Quintile shares in %						
1st quintile	4,7	5,2	4,1	4,0	3,9	3,8
2nd quintile	13,4	13,5	12,7	12,8	12,5	12,2
3rd quintile	19,5	19,3	19,9	20,0	19,4	19,3
4th quintile	24,5	24,3	25,3	25,2	24,9	25,0
5th quintile	37,9	37,6	37,9	38,1	39,3	39,6
Relations of percentils						
50./10.	4,7	3,9	5,2	5,5	5,7	5,7
90./50.	1,7	1,7	1,7	1,7	1,8	1,8
90./10.	8,1	6,7	9,0	9,5	10,1	10,2
Share of persons below the 50%-line ⁴ (in %)	21,6	20,8	23,9	23,9	24,3	24,8

Source: EVS-Database; own computations.

¹ Each person with employment income, without bottom-coding. For the years of 1962/63 and 1969 simplifications concerning classifications of incomes of children or other members of the relevant household were necessary.

² Figures in brackets: standardized terms, 1973 = 100.

³ Strictly decomposable version of the Theil-index, which is bottom-sensitive (logarithm of the inverse relative income position).

⁴ Share of persons with less than 50% of the average gross income in all persons with employment income.

Table 3: The development of selected inequality measures of gross employment income above the social insurance threshold¹ of blue collar workers, white collar workers and civil servants

	1969	1973	1978	1983	1988
Gini-coefficient ²	0,2890 (100,3)	0,2882 (100,0)	0,2899 (100,6)	0,2954 (102,5)	0,3010 (104,4)
Atkinson-index ²					
$\epsilon = 0,5$	0,0729 (99,3)	0,0734 (100,0)	0,0744 (101,4)	0,0761 (103,6)	0,0785 (107,0)
$\epsilon = 2,0$	0,3183 (95,9)	0,3319 (100,0)	0,3337 (100,5)	0,3317 (99,9)	0,3351 (101,0)
Theil-index ^{2,3}	0,1621 (97,3)	0,1665 (100,0)	0,1685 (101,2)	0,1704 (102,3)	0,1753 (105,3)
Variation-coefficient ²	0,5610 (103,6)	0,5417 (100,0)	0,5493 (101,4)	0,5666 (104,6)	0,5801 (107,1)
Quintile shares in %					
1st quintile	7,0	6,6	6,5	6,7	6,5
2nd quintile	14,3	14,3	14,3	14,2	13,9
3rd quintile	19,0	19,5	19,5	19,0	19,0
4th quintile	23,5	24,0	23,9	23,5	23,5
5th quintile	36,2	35,6	35,8	36,6	37,1
Relations of percentils					
50./10.	2,7	3,0	3,1	2,9	3,0
90./50.	1,7	1,7	1,7	1,7	1,8
90./10.	4,6	5,0	5,1	5,0	5,3
Share of persons below the 50%-line ⁴ (in %)	17,0	18,3	18,6	18,4	19,0

Source: EVS-Database; own computations.

¹ The minimum social insurance threshold is defined since 1977 as one seventh of an institutionally set mean value („Bezugsgröße in der Sozialversicherung“, see SGB IV § 18); see Bundesministerium für Gesundheit (ed.) (1994), table 10.15. To insure comparability I have introduced a similarly computed limit for the years 1969 and 1973. Since the „Bezugsgröße“ amounted to about 90% of the mean wage income of workers and employees in the Old Age Survivors Insurance System in 1978 and 1983, the limit for 1969 and 1973 has been defined as one seventh of the respective 90%-mean-values. See Bundesminister für Arbeit und Sozialordnung (ed.) (1989 and 1995), table 7.9.

² Figures in brackets: standardized terms, 1973 = 100.

³ Strictly decomposable version of the Theil-index, which is bottom-sensitive (logarithm of the inverse relative income position).

⁴ Share of persons with less than 50% of the average gross income in all persons with employment income.

Table 4: Decomposition of gross employment income (YUST) ¹ inequality by the sex

	1969	1973	1978	1983	1988
Annual average income					
YUST nominal	12 807	18 975	26 462	33 058	37 103
YUST real ²	21 416	26 029	28 889	28 597	30 412
	Share of total group (in %)				
Men	66,4	62,9	61,9	60,5	59,8
Women	33,6	37,1	38,1	39,5	40,2
	Group-specific relative position (YUST; in %)				
Men	118,3	122,1	121,6	121,3	121,4
Women	64,1	62,6	64,9	67,3	68,2
	Group-specific Theil-index (YUST)³				
Men	0,1555 (77,2)	0,2014 (100,0)	0,2130 (105,8)	0,2351 (116,8)	0,2441 (121,2)
Women	0,2848 (96,0)	0,2967 (100,0)	0,3103 (104,6)	0,3166 (106,7)	0,3112 (104,9)
	Group-specific Variation-coefficient (YUST)³				
Men	0,5154 (100,2)	0,5144 (100,0)	0,5299 (103,0)	0,5737 (111,5)	0,5853 (113,8)
Women	0,6993 (105,9)	0,6603 (100,0)	0,6641 (100,6)	0,6671 (101,0)	0,6711 (101,6)
T in total	0,2382	0,2851	0,2937	0,3065	0,3092
Share of within-groups inequality (in %)	83,5	83,0	85,1	87,2	87,7
Share of between-groups inequality (in %)	16,5	17,0	14,9	12,8	12,3
V in total	0,6163	0,6276	0,6353	0,6651	0,6740
Share of within-groups inequality (in %)	93,7	90,6	91,5	91,8	92,0
Share of between-groups inequality (in %)	6,3	9,4	8,5	8,2	8,0

legend: T = Theil-index; logarithm of the inverse relative income position; strictly decomposable version, which is „bottom sensitive“.

V = Variation-coefficient.

Source: EVS-Database; own computations.

¹ Each person with employment income, without bottom-coding. For 1969 simplifications concerning classifications of incomes of children or other members of the relevant household were necessary.

² Prices of 1980; Computation of the real value by using the price-index for cost-of-living of employees' households with middle income; see Bundesminister für Arbeit und Sozialordnung (1989), table 6.11.

³ Figures in brackets: standardized terms, 1973 = 100.

Table 5: Decomposition of gross employment income (YUST)¹ inequality by groups of age

	1969	1973	1978	1983	1988
Share of total group (in %)					
under 25 years	16,3	16,2	15,7	16,6	16,4
25 - 34 years	24,2	26,6	21,9	24,9	24,9
35 - 44 years	23,2	24,2	28,6	25,2	23,2
45 - 54 years	19,5	20,4	20,7	21,3	24,4
55 - 64 years	14,8	11,0	12,1	11,5	10,6
65 years and older	1,9	1,7	0,9	0,5	0,4
group-specific relative position (YUST; in %)					
under 25 years	65,5	46,8	43,0	45,0	41,9
25 - 34 years	102,7	105,1	98,2	95,7	92,4
35 - 44 years	115,2	119,4	118,0	119,1	117,2
45 - 54 years	109,5	114,3	117,9	120,7	124,2
55 - 64 years	102,0	103,5	107,4	110,4	115,8
65 years and older	67,0	56,2	54,2	56,5	57,2
group-specific Theil-index (YUST)²					
under 25 years	0,3194 (79,0)	0,4044 (100,0)	0,4233 (104,7)	0,4129 (102,1)	0,3874 (95,8)
25 - 34 years	0,1876 (86,9)	0,2159 (100,0)	0,2067 (95,7)	0,2176 (100,8)	0,2245 (104,0)
35 - 44 years	0,1905 (98,6)	0,1933 (100,0)	0,2009 (103,9)	0,2068 (107,0)	0,2056 (106,4)
45 - 54 years	0,2032 (109,6)	0,1855 (100,0)	0,1873 (101,0)	0,2093 (112,8)	0,2102 (113,3)
55 - 64 years	0,2055 (88,3)	0,2327 (100,0)	0,2347 (100,9)	0,2804 (120,5)	0,2735 (117,5)
65 years and older	0,4276 (107,5)	0,3979 (100,0)	0,5733 (144,1)	0,8213 (206,4)	0,6308 (158,5)
group-specific Variation-coefficient (YUST)²					
under 25 years	0,7516 (99,0)	0,7596 (100,0)	0,7904 (104,1)	0,7748 (102,0)	0,7873 (103,7)
25 - 34 years	0,4960 (96,2)	0,5156 (100,0)	0,4988 (96,7)	0,5142 (99,7)	0,5186 (100,6)
35 - 44 years	0,5500 (103,0)	0,5341 (100,0)	0,5412 (101,3)	0,5514 (103,2)	0,5525 (103,4)
45 - 54 years	0,6069 (108,4)	0,5598 (100,0)	0,5544 (99,1)	0,5995 (107,1)	0,5995 (107,1)
55 - 64 years	0,6306 (101,2)	0,6230 (100,0)	0,6192 (99,4)	0,6885 (110,5)	0,6660 (106,9)
65 years and older	0,9446 (101,5)	0,9311 (100,0)	1,2755 (137,0)	1,6358 (175,7)	1,1899 (127,8)
T share of within-groups inequality (in %)	92,3	84,1	82,2	83,5	80,8
share of between- groups inequality (in %)	7,7	15,9	17,8	16,5	19,2
V share of within-groups inequality (in %)	97,3	93,7	92,8	91,8	90,2
share of between-groups inequality (in %)	2,7	6,3	7,2	8,2	9,8

legend: see table 4.

Source: EVS-Database; own computations.

¹ Each person with employment income, without bottom-coding. For 1969 simplifications concerning classifications of incomes of children or other members of the relevant household were necessary.

² Figures in brackets: standardized terms; 1973 = 100.

Table 6: Decomposition of gross employment income (YUST) inequality above the social insurance threshold¹ of blue collar workers, white collar workers and civil servants by the sex

	1969	1973	1978	1983	1988	1983	1988
Annual average income						Full-year	
YUST nominal	13 562	20 729	28 800	36 131	40 897	employed persons	
YUST real ²	22 679	28 435	31 441	31 255	33 522		
	Share of total group (in %)						
Men	68,3	65,0	63,7	61,9	61,4	62,9	62,4
Women	31,7	35,0	36,3	38,1	38,6	37,1	37,6
	Group-specific relative position (YUST; in %)						
Men	115,3	118,9	118,6	118,5	118,5	117,5	117,6
Women	67,0	65,0	67,4	69,9	70,5	70,2	70,8
	Group-specific Theil-index (YUST)³						
Men	0,1134 (102,9)	0,1102 (100,0)	0,1161 (105,4)	0,1247 (113,1)	0,1354 (122,8)	0,1099	0,1188
Women	0,1735 (107,8)	0,1610 (100,0)	0,1651 (102,6)	0,1627 (101,0)	0,1600 (99,4)	0,1519	0,1473
	Group-specific Variation-coefficient (YUST)³						
Men	0,4822 (107,9)	0,4470 (100,0)	0,4629 (103,5)	0,4910 (109,8)	0,5100 (114,1)	0,4663	0,4840
Women	0,6100 (111,8)	0,5454 (100,0)	0,5468 (100,3)	0,5468 (100,3)	0,5475 (100,4)	0,5224	0,5199
T in total	0,1621	0,1665	0,1685	0,1704	0,1753	0,1548	0,1582
share of within-group inequality (in %)	81,7	76,9	79,4	81,7	82,6	81,1	81,9
share of between-group inequality (in %)	18,3	23,1	20,6	18,3	17,4	18,9	18,1
V in total	0,5610	0,5417	0,5493	0,5666	0,5801	0,5396	0,5517
share of within-group inequality (in %)	93,2	88,9	89,8	90,4	90,4	90,3	90,2
share of between-group inequality (in %)	6,8	11,1	10,2	9,6	9,6	9,7	9,8

legend: see. table 4.

Source: EVS-Database; own computations.

¹ The minimum social insurance threshold is defined since 1977 as one seventh of an institutionally set mean value („Bezugsgröße in der Sozialversicherung“, see SGB IV § 18); see Bundesministerium für Gesundheit (ed.) (1994), table 10.15. To insure comparability I have introduced a similarly computed limit for the years 1969 and 1973. Since the „Bezugsgröße“ amounted to about 90% of the mean wage income of workers and employees in the Old Age Survivors Insurance System in 1978 and 1983, the limit for 1969 and 1973 has been defined as one seventh of the respective 90%-mean-values. See Bundesminister für Arbeit und Sozialordnung (ed.) (1989 and 1995), table 7.9.

² In prices of 1980; Computation of real values by using the cost-of-living-index of employees' households with middle income; see Bundesminister für Arbeit und Sozialordnung (1989), table 6.11.

³ Figures in brackets: Standardized terms; 1973 = 100.

Table 7: Distribution of workers and employees above the social insurance threshold¹ by relative wage classes²

Relative wage position from ... to ...	All blue-collar workers, white-collar workers and civil servants					Year-round employed	
	1969	1973	1978	1983	1988	1983	1988
	Men						
- 0,6	13,0	12,0	12,6	13,5	14,9	9,9	11,2
0,6 - 1,4	73,5	74,5	73,5	71,5	69,5	75,8	74,2
1,4 and more	13,5	13,5	13,9	15,0	15,6	14,3	14,6
	Women						
- 0,6	27,3	26,3	26,4	25,7	25,1	23,9	22,6
0,6 - 1,4	52,7	51,5	51,4	53,9	54,6	57,3	59,0
1,4 and more	20,0	22,2	22,2	20,4	20,3	18,8	18,4

Source: EVS, own computations.

¹ The minimum social insurance threshold is defined since 1977 as one seventh of an institutionally set mean value („Bezugsgröße in der Sozialversicherung“, see SGB IV § 18); see Bundesministerium für Gesundheit (ed.) (1994), table 10.15. To insure comparability I have introduced a similarly computed limit for the years 1969 and 1973. Since the „Bezugsgröße“ amounted to about 90% of the mean wage income of workers and employees in the Old Age Survivors Insurance System in 1978 and 1983, the limit for 1969 and 1973 has been defined as one seventh of the respective 90%-mean-values. See Bundesminister für Arbeit und Sozialordnung (ed.) (1989 and 1995), table 7.9.

² Individual wage/salary in relation to the group-specific mean value.

Table 8: Decomposition of gros employment income (YUST) inequality above the social insurance threshold¹ of blue collar workers, white collar workers and civil servants by groups of age

	1969	1973	1978	1983	1988	Full-year employed persons	
						1983	1988
Share of total group (in %)							
under 25 years	16,0	13,2	12,8	13,8	13,5	12,6	12,4
25 - 34 years	24,2	27,2	22,5	25,5	25,1	24,7	24,2
35 - 44 years	23,8	25,8	30,3	26,7	24,6	27,6	25,5
45 - 54 years	20,0	21,8	22,0	22,7	26,2	23,8	27,4
55 - 64 years	14,9	11,1	12,0	11,2	10,5	11,2	10,3
65 years and older	1,1	1,0	0,3	^β	^β	^β	^β
Group-specific relative position (YUST; in %)							
under 25 years	66,9	54,2	50,9	52,7	48,7	52,9	48,6
25 - 34 years	102,8	103,1	96,1	94,8	91,9	95,9	93,0
35 - 44 years	113,0	113,3	112,4	113,3	111,7	111,5	109,9
45 - 54 years	107,5	108,2	111,6	113,6	116,9	111,1	114,4
55 - 64 years	101,1	102,1	107,2	110,9	115,4	109,8	115,6
65 years and older	87,6	76,0	103,7	^β	^β	^β	^β
Group-specific Theil-index (YUST)²							
under 25 years	0,2341 (124,6)	0,1878 (100,00)	0,1823 (97,0)	0,1749 (93,1)	0,1763 (93,9)	0,1774	0,1802
25 - 34 years	0,1074 (87,5)	0,1227 (100,0)	0,1151 (93,8)	0,1042 (84,9)	0,1024 (83,4)	0,0814	0,0777
35 - 44 years	0,1339 (95,5)	0,1403 (100,0)	0,1445 (103,0)	0,1438 (102,5)	0,1341 (95,6)	0,1320	0,1198
45 - 54 years	0,1453 (103,4)	0,1405 (100,00)	0,1388 (98,8)	0,1527 (108,7)	0,1552 (110,5)	0,1433	0,1450
55 - 64 years	0,1461 (103,1)	0,1417 (100,00)	0,1361 (96,1)	0,1604 (113,2)	0,1635 (115,4)	0,1494	0,1458
65 years and older	0,1885 (89,1)	0,2117 (100,00)	0,2924 (138,2)	^β	^β	^β	^β
Group-specific Variation-coefficient (YUST)²							
under 25 years	0,6814 (122,3)	0,5572 (100,0)	0,5651 (101,4)	0,5549 (99,6)	0,5768 (103,5)	0,5467	0,5714
25 - 34 years	0,4313 (97,8)	0,4409 (100,0)	0,4268 (96,8)	0,4226 (95,9)	0,4149 (94,1)	0,3814	0,3736
35 - 44 years	0,5102 (102,9)	0,4959 (100,0)	0,5014 (101,1)	0,5047 (101,8)	0,5005 (100,9)	0,4855	0,4781
45 - 54 years	0,5687 (108,0)	0,5264 (100,0)	0,5209 (99,0)	0,5525 (105,0)	0,5620 (106,8)	0,5370	0,5465
55 - 64 years	0,5861 (105,7)	0,5546 (100,0)	0,5427 (97,9)	0,5910 (106,6)	0,5836 (105,2)	0,5721	0,5567
65 years and older	0,7436 (103,7)	0,7168 (100,0)	0,8647 (120,6)	^β	^β	^β	^β
T share of within-groups inequality (in %)	91,4	85,7	83,5	83,4	80,2	84,0	80,1
share of between-groups inequality (in %)	8,6	14,3	16,5	16,6	19,8	16,0	19,9
V share of within-groups inequality (in %)	97,0	93,2	91,5	90,3	88,7	90,7	88,9
share of between-groups inequality (in %)	3,0	6,8	8,5	9,7	11,3	9,3	11,1

¹ See foot-note 1 in table 6.

² Figures in brackets: Standardized terms ; 1973 = 100.

³ Unter 60 cases.

Legend: see table 4.

Source: EVS-Database; own computations.

Table 9: Decomposition of gross employment income (YUST) above the social insurance threshold¹ by social status

	1969	1973	1978	1983	1988	1983	1988
						Full-year employed persons	
Share of total group (in %)							
Blue collar workers	51,0	44,0	41,0	37,0	36,1	36,1	35,2
White collar workers	40,0	46,1	48,3	51,3	52,0	51,5	52,1
Civil servants	9,0	9,9	10,7	11,7	11,9	12,3	12,7
Group-specific relative position (YUST; in %)							
Blue collar workers	87,6	89,4	87,9	86,9	87,9	86,7	88,1
White collar workers	107,5	103,6	104,9	105,8	105,4	106,1	105,5
Civil servants	137,5	130,7	124,4	115,8	113,2	113,7	110,2
Group-specific Theil-index (YUST)²							
Blue collar workers	0,1216 (94,3)	0,1289 (100,0)	0,1350 (104,7)	0,1241 (96,3)	0,1266 (98,2)	0,1113	0,1102
White collar workers	0,2050 (99,8)	0,2054 (100,0)	0,2035 (99,1)	0,2114 (102,9)	0,2174 (105,8)	0,1937	0,2002
Civil servants	0,0845 (101,4)	0,0833 (100,0)	0,0773 (92,8)	0,0893 (107,2)	0,1003 (120,4)	0,0755	0,0868
Group-specific Variation-coefficient (YUST)²							
Blue collar workers	0,4337 (102,5)	0,4230 (100,0)	0,4306 (101,8)	0,4117 (97,3)	0,4198 (99,2)	0,3832	0,3848
White collar workers	0,6411 (103,4)	0,6201 (100,0)	0,6207 (100,1)	0,6424 (103,6)	0,6603 (106,5)	0,6126	0,6317
Civil servants	0,4097 (105,5)	0,3884 (100,0)	0,3863 (99,5)	0,4051 (104,3)	0,4187 (107,8)	0,3816	0,3984
T share of within-groups inequality (in %)	93,5	95,9	96,1	96,7	97,4	96,4	97,4
share of between-groups inequality (in %)	6,5	4,1	3,9	3,3	2,6	3,6	2,6
V share of within-groups inequality (in %)	91,7	94,2	94,3	93,4	93,9	92,8	93,4
share of between-groups inequality (in %)	8,3	5,8	5,7	6,6	6,1	7,2	6,6

Legend: see table 4.

Source: EVS-Database; own computations.

¹ The minimum social insurance threshold is defined since 1977 as one seventh of an institutionally set mean value („Bezugsgröße in der Sozialversicherung“, see SGB IV § 18); see Bundesministerium für Gesundheit (ed.) (1994), table 10.15. To insure comparability I have introduced a similarly computed limit for the years 1969 and 1973. Since the „Bezugsgröße“ amounted to about 90% of the mean wage income of workers and employees in the Old Age Survivors Insurance System in 1978 and 1983, the limit for 1969 and 1973 has been defined as one seventh of the respective 90%-mean-values. See Bundesminister für Arbeit und Sozialordnung (ed.) (1989 and 1995), table 7.9.

² Figures in brackets: Standardized terms, 1973 = 100.

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