The Development of the Income Distribution
in the Federal Republic of Germany
during the Seventies and Eighties

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Arbeitspapier Nr. 1

June 1994

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Summary

This paper sketches changes in the distribution of well-being during the period from 1972 to 1991 against the background of West Germany's economic and demographic development, and compares the distribution of well-being in East Germany before and after reunification. We rely on equivalent income of persons as the main indicator to measure well-being, but we also look at the distribution of gross wage income of workers and employees. Estimates of the Federal Statistical Office referring to the meso-level of average equivalent income of socio-economic groups as well as various distributional measures computed by us at the micro-level are used to gauge changes of the distribution. The computations are based on two sets of micro-data available to us, the official Income and Consumption Surveys (1973, 1978 and 1983), and the German Socio-economic Panel (1983 to 1990 for West Germany, 1990, 1991 for East Germany).

At the meso-level we find substantial changes in the relative welfare positions of the ten socio-economic groups distinguished, but a nearly constant ranking of the groups during the whole period under review. At the micro-level our computations indicate slight increases in the inequality of gross earnings during both decades. The distribution of well-being as measured by equivalent income of persons seems also to have become slightly more unequal during the whole period but the changes are very small, and partly reversed during subperiods. A decomposition of overall inequality by occupational status of the heads of household using the Theil measure shows that more than 80 percent of overall inequality is due to within-group inequality with rising tendency. This result is mitigated a little when disaggregating the heterogeneous group of not gainfully employed with regard to the main income source of the household.

Résumé

Le présent papier ésquisse les changements de la distribution de bien-être pendant la période 1972 à 1991 dans le contexte de l'évolution économique et démographique en Allemagne de l'Ouest et compare les distributions de bien-être en Allemagne de l'Est avant et après le réunification. Nous nous référons principalement au revenu équivalent de personnes comme indicateur du bien-être individuel, mais nous recherchons aussi l'évolution distributive des revenus salarials bruts. L'analyse se réfère d'une part aux résultats de l'Office Fédéral de la Statistique présentant les revenus équivalents moyens de groupes socio-économiques à un niveau intermédiaire. D'autre part, nous avons calculés des mesures de distribution différentes sur la base de microdonnées dont les sources étaient les Echantillons sur les Revenus et la Consommation officiels (1973, 1978 et 1983) et le Panel Socio-économique (1983 à 1990 pour l'Allemagne de l'Ouest, 1990 et 1991 pour l'Allemagne de l'Est).

Au niveau intermédiaire, nous trouvons des changements substantiels concernant les positions de bien-être relatives des dix groupes socio-économiques distingués, mais une série de rang des groupes presqu' inchangée pendant toute la période d'observation. Un léger accroissement de l'inégalité des revenus salarials bruts se montre au microniveau. La distribution de bien-être, mesurée avec le revenu équivalent des personnes, semble d'être devenue un peu plus inégale pendant toute la période, mais les changements sont très faibles et ils varient en partie d'une manière inversément proportionnelle pendant les deux décades. La décomposition de l'inégalité distributive par le statut social du chef de ménage, établi par le coefficient de Theil, montre que plus que 80% de l'inégalité résultent des distributions inégales au niveau intra-groupe, ceci avec tendance à la hausse. Ce résultat est adouci un peu si l'on décompose le groupe de ménages avec membres non actifs très hétérogène par la catégorie de revenu principale.

Zusammenfassung

In diesem Arbeitspapier werden Veränderungen der Wohlstandsverteilung während der Periode 1972 bis 1991 vor dem Hintergrund der ökonomischen und demographischen Entwicklung in Westdeutschland skizziert und die Wohlstandsverteilungen in Ostdeutschland vor und nach der Wiedervereinigung verglichen. Dabei beziehen wir uns hauptsächlich auf das Äquivalenzeinkommen von Personen zur Erfassung individuellen Wohlstands, untersuchen aber auch die Verteilungsentwicklung der Bruttoeinkommen aus unselbständiger Arbeit. Die Analyse bezieht sich zum einen auf Ergebnisse des Statistischen Bundesamtes, die auf einem mittleren Aggregationsniveau durchschnittliche Äquivalenzeinkommen nach sozio-ökonomischen Gruppen ausweisen. Zum anderen werden verschiedene Verteilungsmaße auf der Basis von Mikrodaten berechnet, wobei uns zwei Datenquellen zur Verfügung standen: die offiziellen Einkommens- und Verbrauchsstichproben (1973, 1978 und 1983) und das Sozio-ökonomische Panel (1983 bis 1990 für Westdeutschland, 1990, 1991 für Ostdeutschland). Auf mittlerem Aggregationsniveau zeigen sich wesentliche Änderungen in den relativen Wohlstandspositionen der zehn unterschiedenen sozio-ökonomischen Gruppen, aber eine nahezu unveränderte Rangfolge der Gruppen während des gesamten Beobachtungszeitraums. Auf der Mikroebene zeigt sich für beide Dekaden eine leichte Zunahme der Ungleichheit der Bruttoeinkommen aus unselbständiger Tätigkeit. Auch die am Äquivalenzeinkommen der Personen gemessene Wohlstandsverteilung scheint über die gesamte Periode etwas ungleicher geworden zu sein, wobei die Veränderungen allerdings sehr gering sind und teilweise in den beiden Dekaden entgegengesetzte Richtungen aufweisen. Aus der Dekomposition der mit dem Theil-Maß ermittelten Verteilungsungleichheit nach der sozialen Stellung des Haushaltsvorstandes ergibt sich, daß mehr als 80% der Ungleichheit insgesamt auf Intra-Gruppen-Ungleichverteilungen zurückzuführen ist, und zwar mit steigender Tendenz. Dieses Ergebnis wird etwas gemildert, wenn man die sehr heterogene Gruppe der Nichterwerbstätigenhaushalte nach der überwiegenden Einkommensart des Haushalts disaggregiert.

1. Introduction

During the two decades covered by this paper Germany experienced vast economic and political changes. In the beginning of the seventies the German economy was characterized by full employment, medium rates of growth of real national income per capita, and a rate of inflation that according to German standards was considered rather high. The oil-shock of 1974 definitely ended the period of high real growth and low unemployment, and since then several business cycles occurred ending with ever higher rates of unemployment. In 1989, the year at the end of which the wall between East and West Germany fell, unemployment was high, but real growth and the rate of inflation were still at acceptable levels. Unification in 1990 was accompanied by a brief increase of the rates of real growth and a decrease of unemployment in the Western part of Germany, but almost a break-down of the East German economy. In 1992 the old and the new "Länder" of Germany experienced very high unemployment not known since the beginning of the 1950s with negative real growth rates in the West and low positive growth rates in the East accompanied by moderate inflation (Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung, 1993).

Fairly little is known about the changes in the personal distribution of income and wealth that accompanied this development. The independent German Council of Economic Advisers (Sachverständigenrat zur Begutachtung der gesamtwirtschaftlichen Entwicklung, (SVR)) which by law is obliged also to review the distribution of income insists since its setting up in 1963 that the available data are not sufficient for a thorough analysis (most recently SVR 1992, no. 209-211). But there exists a series of statistical tables on income distribution published by the German Statistical Office (Statistisches Bundesamt) in four or five years intervals[3], and a recent publication giving estimates of average income of various socio-economic groups based on the National Accounts for the years 1972 to 1992[4]. In 1981 a Government Commission dealt intensively with the effects of the German transfer system but was also seriously hampered by the lack of statistical data[5]. Recently, the Deutsche Bundesbank reviewed the distribution of income since 1982, and also the wealth distribution[6]. Some scientific studies based on official micro data[7] or on aggregated statistics[8] or on surveys done by Universities and research institutes[9] or derived from simulations with income distribution models[10] are also

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[3] Statistisches Bundesamt (various years); see also Euler, M. (1983b).
[4] Statistisches Bundesamt (1993a).
[5] Transfer-Enquete-Kommission (1981).
[6] Deutsche Bundesbank (1991); Deutsche Bundesbank (1993).
[7] Hauser, R., P. Semrau (1990), pp. 27 - 36; Schlomann, H. (1992).
[8] Huster, E.-H. (1993); Schäfer, C. (1991); Krause, D., G. Schäuble (1986); Lindner, H. (1986).
[9] Hauser, R., B. Engel (1985); Klein, Th. (1987); Krupp, H.-J., U. Hanefeld (1987); Krupp, H.-J., J. Schupp (1987); Rendtel, U., G. Wagner (1991); Berntsen, R. (1992).

available. These studies suggest only slight changes of the personal income distribution during the various business cycles with a general tendency towards increasing overall inequality since the end of the full employment period in 1974. Furthermore, strongly growing numbers of social assistance recipients point to an increase of poverty[11]).

The political debate about the overall distribution of personal incomes was never very heated. It usually concentrated on distributional effects of single policy measures, which during the past decade were mostly seen as redistributing net income from bottom to top[12]). The assertion of the opposition parties that Germany is on its way to a Two Third Society was heavily rejected by the ruling coalition. But it cannot be denied that the word "poverty" that was almost taboo during the seventies is now widely used in political discussions to characterize the problems of groups that were left behind or even marginalized due to the economic, demographic and political changes of the past decade. Partly, this may be due to activities of the Commission of the European Communities that for the first time in 1979 commissioned national poverty reports from independent experts covering all the member states.[13])

In this paper we will use microdata of the official Income and Consumption Surveys (EVS) 1973, 1978 and 1983 as well as data of the German Socio-economic Panel (GSOEP), referring to the years 1983, 1985, 1987 and 1990, to examine more closely the trends of the distribution of income in Germany giving also attention to the poverty problem. In this attempt to bring together microdata from two very different sources to encompass a period of two decades the main aim is primarily descriptive rather than explanatory in any causal sense, emphasis being given to the identification of the various factors that may play a role in determining changes in income distribution with arguments only based on a priori reasoning. The analysis adopts a framework similar to that used by researchers in other countries, thereby allowing common trends and differences to be more easily identified.

The paper is arranged as follows: In section 2 we shall give an overview of the basic features of the German social security system, of the tax system, of the German labor market regulations, and of their main changes during the two decades under review, and, finally, of the transference of the West German institutional setting to East Germany

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[10]) Annual publications of results, e.g. Bedau, K.-D. (1990); see also Deutsches Institut für Wirtschaftsforschung (1993a and 1993b).

[11]) Hauser, R., W. Hübinger (1993). Compare also the broader overview in: Döring, D., W. Hanesch, E.-U. Huster (1990).

[12]) Teichmann, D., R. Zwiener, (1991).

[13]) Compare the report on Germany by Hauser, R., H. Cremer-Schäfer, U. Nouvertné, (1981). The report of the Community is published as a document: Comission of the European Communities, Final Report from the Commission to the Council on the First Programme of Pilot Schemes and studies to Combat Poverty, Brussels 1981 COM(81) 769 final.

during the unification process. Section 3 will present time series of the changes in the relative positions of various socio-economic groups against the background of the economic and demographic development in Germany. In section 4 we will throw some light on changes in the distribution of wage earnings, and, subsequently, we will analyse changes in the overall distribution of net equivalent income (section 5) and, additionally, changes within and between socio-economic groups (section 6). The last section (7) will be devoted to reporting some results about the income distribution in East Germany before and after unification. A summary will conclude this paper.

2.   An overview of the German welfare state

The German welfare state can still be characterized as being of the Bismarck type.[14] At present, social protection of workers and employees against the risks of loss of income in case of unemployment, occupational accident, sickness, disablement, old age and death of the breadwinner of a family is based on social insurance with contributions and benefits proportional to wage income, but restricted by upper limits. Special arrangements for craftsmen, independent workers, civil servants (Beamte), professionals and farmers also exist so that only some groups of self-employed are not covered by these compulsory social insurance schemes. The benefit rates range from 56 percent of previous net income (means-tested unemployment assistance) to more than 80 percent. Pensions depend on the relative earnings position acquired in each year of working life and on the length of the period for which contributions were paid. All these benefits are now indexed to increases in net wages.

The main social insurance schemes do not contain provisions for minimum benefits sufficient for a socio-cultural minimum of subsistence. If social security benefits and all other incomes of a family or of an independent person do not sum up to a government defined socio-cultural minimum of subsistence a general social assistance scheme financed by taxes provides additional means-tested benefits to reach this minimum. Since in 1962 a right to social assistance for everybody residing in Germany was introduced, the nominal value of the guaranteed socio-cultural minimum of subsistence was adjusted regularly but slightly less than the increases in average nominal net wages. These adjustments resulted in an increase of the real value of the socio-cultural minimum of subsistence between 1963 and 1991 of at least 60 percent[15].

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[14]   For an overview compare Lampert, H. (1991) and the official publication of Der Bundesminister für Arbeit und Sozialordnung (1991).
[15]   Compare Hauser, R., W. Hübinger (1993), p.51.

Child allowances, maternity leave, an educational allowance and a job guarantee for mothers temporarily interrupting work to care for their children, student benefits, tax allowances and family related implicit transfers built into some social securitiy schemes and into the income tax schedule, all contribute to reduce the cost of child raising and of one-earner marriages. These benefits are also mainly financed by taxes, but are not indexed. Discretionary adjustments occured at irregular intervals.

The costs of health care for workers, employees pensioners and their family members up to certain earning limits are covered by a mandatory social health insurance. High earners, civil servants and most self-employed persons have to take out private health insurance. Since many years a social insurance scheme to cover the cost of permanent nursing is under discussion but up to now the respective law has not been passed by Parliament.

While during the seventies a tendency existed to extend coverage, to increase benefits and to introduce new ones, the eighties saw many efforts to reduce benefits, to tighten the rules for entitlement, to change the formula for the indexing of pensions, and to increase pensionable age. Despite this reversal of social policy during the eighties the contribution rates increased continuously from 26.30 percent in 1970 to 32.4 percent in 1980 and to 36.70 percent in 1991, half of which is born by employers. In addition, employers pay the contribution rates for the occupational accident insurance in full. During the same period social expenditure as a percentage of GNP rose from 26.2 percent (1970) to 32.5 percent (1980) and than fell to 30.4 percent in 1989. After the unification in 1989 social expenditure increased again to a new peak of 33.1 percent in 1992 due to large transfers in favor of East Germans, a considerable portion of which was financed via the social insurance system.

The German tax system relies about equiproportionately on direct and indirect taxes. In 1989 taxes on income, wages and corporate profits amounted to about 47 percent of total tax revenue. Taxes on income and wages are moderately progressive with the highest marginal tax rate reaching 53 percent but with many loopholes to avoid high taxes, especially on income from self-employment and from capital. A tax on long-term gains from capital investment by private households does not exist, and houses and land are for tax purposes grossly undervalued. During the eighties several tax reforms reduced the progressivity of the tax schedule. In 1990 a surtax was introduced to cope with the additional costs of unification, but abolished again in 1992. Recently, two decisions of the German Constitutional Court forced the Government to reduce serious flaws of the German tax system: A tax of 35 percent on interest payments retained at source was introduced, but combined with high allowances for households so that income from small

and medium private wealth holdings remained tax-exempt. The basic allowance for each tax-payer in the income tax schedule was raised to the level of the socio-cultural minimum of subsistence as defined by the social assistance regulation thus avoiding that tax-payers with low earnings are taxed into poverty.

Tax revenue as a percentage of GNP amounted to 22.8 percent in 1970, 24.7 percent in 1980, and 23.8 percent in 1989. Due to the cost of unification the share of taxes rose to 25.2 percent in 1991[16]).

The institutional setting of the German labor market can be characterized as a three tier system. Basic rules to protect workers are set by law, but there does not exist a legal minimum wage. Labor unions and employer's associations have the constitutionally protected right to negotiate wages and working conditions, but agreements about working conditions can only deviate from the minimum standards set by law in favor of workers. Finally, the individual labor contracts can again only deviate from the agreements in favor of the respective worker or employee. Practically the whole labor market is covered by union-employer agreements since the Ministry of Labor has the power to declare agreements as binding even for non-members of the employer's associations and of the unions. Union-employer contracts about wages usually last from one to two years, and after expiry stronger unions, like the metal workers union, often take the lead in negotiating wage increases or working-time reductions for one region. These results are usually used as benchmarks for the negotiations in other regions and industries. Since it was felt that excessive wage increases could cause a cost-push inflation a law enacted in 1967 (Gesetz zur Förderung der Stabilität und des Wachstums der Wirtschaft) provided the government with instruments to counteract economic fluctuations, among others a body called "Concerted Action" that consisted of representatives of the employer's associations, of the labor unions, of farmer's unions, of other associations of industries, of the Deutsche Bundesbank and of representatives of the various levels of Government. This body was expected to issue guidelines for an incomes policy and to recommend acceptable wage increases that would not jeopardize the stabilization policy of the Government. But the recommendations were not universally accepted by the parties finally negotiating the wage increases, working conditions, and working time reductions. In the middle of the seventies the representatives of the labor unions walked out because of a quarrel about a law on co-determination of workers and unions in the coal and steel industry, and the "Concerted Action" broke down. Since then, the process of wage determination is again left to the unions and employer's associations, but it is influenced by public statements of the independent Council of Economic Advisers, and by other public commentators. As a

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[16])   Figures in this section are based on Bundesministerium für Arbeit und Sozialordnung (1993).

reaction to the heavy increases in unemployment, the labor unions more and more changed their strategy to demanding reductions in weekly working hours, at first with full wage compensation but gradually accepting smaller wage increases. The goal of a 35 hours work week is not yet attained but reductions of some hours per week happened in all industries. In general, it is felt that this system of wage determination works rather efficiently, as judged by the comparatively low numbers of working hours lost due to strikes. The main limit to excessive wage increases is a stringent monetary policy of the Deutsche Bundesbank that since the end of the seventies closely adhered to the monetarist creed in setting and enforcing targets for monetary expansion. The aim of price level stability dominated more and more stabilization policy, and the aim of full employment that during the sixties and seventies was considered as equally significant considerably lost in importance. Consequently, the labor market policy of the Government since the middle of the seventies refrained from the use of Keynesian expansionistic instruments and relied on training and retraining measures, on early retirement, and on financing temporary jobs in the fields of public and social work that would not be done otherwise (Arbeitsbeschaffungsmaßnahmen).

After unification the institutional setting of West Germany was transferred to East Germany, but the benefit levels of the social security system were related to the much lower East German wage level - about half of West Germany's - and were to increase only in line with East German net wages. While at the beginning of the unification process a quick rise of East German wages to the West German level was expected, the view now is much more pessimistic supposing that an equalization of wage levels will not happen until the beginning of the next century. Therefore, an analogous discrepancy will also persist with the benefit levels. On the other hand, the transformation of the East German pension system led to increases of most of the pensions so that recipients improved their relative position compared to wage earners. This effect was reinforced by temporarily granting supplements to low pensions and to low unemployment benefits that do not exist in West Germany[17].

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[17]) See Der Bundesminister für Arbeit und Sozialordnung (1991), Textergänzung (Kapitel 26 Übergangsregelungen für die neuen Bundesländer).

3. Macroeconomic development and changes in the relative positions of various socio-economic groups

3.1   An overview based on macroeconomic indicators

The economic development of the Federal Republic of Germany (West) since the beginning of the seventies - starting at quite a high level when taking an international perspective - has resulted in a considerable increase of national income. In real terms (using the price index for a family of four with middle income) national income per capita in 1991 was at a level of 165.8 percent of its value in 1970[18]). However, the upward trend did not proceed continuously as Table 1 shows. The percentage changes in real national income per capita (col. 1) indicate two distinct, though not very regular business cycles. But the periods of prosperity were longer than those of recession. The cyclical changes of growth rates were accompanied by a delayed or an even anti-cyclical development of the rate of inflation (col. 2), and an upward trend of the unemployment rate (col. 6). The unemployment rate rose in times of little or negative growth but did not decline by an equal extent during the periods of recovery. During the seventies the labor force participation rate remained quite stable at a level of about 44 percent, and increased during the eighties to 48 percent. But a structural shift among the labor force towards wage earners continued during the whole period. In 1972 almost 15 percent of the labor force were self-employed persons (including farmers), in 1991 their fraction was reduced to less than 10 percent.

Table 2 shows changes in the composition of the income of the household sector from 1972 to 1991.
Profits (inclusive of the earnings of the self-employed) displayed the usual cyclical behavior with lower shares during recessions, and with a slight general tendency towards lower shares. The share of gross earnings of workers and employees developed counter-cyclical but also with a slight general tendency to lower shares. If these tendencies are seen in conjunction with the changes in the composition of the labor force (Table 1, col. 3 and 4) a pronounced divergence in the per capita market incomes of workers and self-employed is to be expected.

On the other hand, the share of interest and dividends nearly doubled from 3.73 percent in 1972 to 7.25 percent in 1991 thus, presumably, strengthening the tendencies in favor of the self-employed who can be assumed to own on average much higher assets than workers.

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[18])   Calc. from Bundesministerium für Arbeit und Sozialordnung (1993), tables 1.9, 2.1, 6.11.

Employer's social security contributions that by economists usually are considered as a part of wages in a wider sense, also grew faster than the gross market income of the household sector. In 1982 its share amounted to nearly 14.47 percent as against 11.19 percent in 1972, and from then on it remained about at the same level. This tendency of a wage related income component is a consequence of the expansion of the social security system during the seventies and the corresponding increase of the social security contribution rates. Hence, during the seventies transfers paid by the household sector (personal taxes and social security contributions of employees and employers) also rose considerably in relation to gross market income (col. 6 of Table 2). In 1972, transfers paid amounted to 39.18 percent, in 1980 to 46.83 percent, and from then on went only a little up and down again. Monetary transfers received by the household sector (col. 7 of Table 2) increased even a little more in relative terms. The share of these - in a wide sense redistributive - payments amounted to 23.13 percent of gross market income in 1972, and to 30.45 percent in 1982; from then on their share went continuously down to 26.92 percent in 1991 despite the high rates of unemployment and the increase in the share of long-term unemployed (cols. 6 and 7 of Table 1). Obviously, the various measures to curb social expenditure of the Christian Democrat and Liberal Government that came into power in 1982 showed its effects.

3.2 Changes in the population shares of various socio-economic groups

Changes in the relative position of various socio-economic groups can be gauged by looking at each group's average equivalent income - to be defined more precisely below - in relation to the overall average equivalent income. These averages are influenced by the population shares of the various groups and their changes. Therefore, we have at first to examine how these shares have developed during the seventies and eighties. Conventionally, the socio-economic groups are distinguished by the social status of the head of household, and family members are classified accordingly. Based on the practice of the German Statistical Office we distinguish the following groups: self-employed, subdivided into farmers and others, civil servants (Beamte), white collar workers, blue collar workers, and those not gainfully employed that can be subdivided into recipients of unemployment benefits, recipients of social old age and survivors pensions, recipients of state pensions for former civil servants, recipients of social assistance, and a mixed group of "others". Table 3 shows the population shares of the various groups during the seventies and eighties.

The share of farmers (including their family members) fell continuously from 3.88 percent in 1972 to 1.68 percent in 1991, i.e., by far more than one half. The share of the self-employed (without farmers) decreased also from 8.13 percent to 7.01 percent, with the main part of the reduction occurring during the first decade. Blue collar workers experienced a decrease in their population share from 37.53 percent to 27.71 percent, but one has to keep in mind that the 1991 figure is biased downwards because it refers only to **employed** blue collar workers. Blue collar workers also make up a larger than proportional group among the unemployed. While civil servants maintained their population share of about 7 percent, the share of white collar workers increased considerably from 20.44 percent to 25.06 percent. This change is mostly due to a shift from blue to white collar workers and to an increase in the labour force participation rate of women who take on white collar jobs to a larger extent. Moreover, it has to be noted, that government and quasi-government institutions employ not only civil servants but also blue and white collar workers.

The biggest increase in their population share happened with the groups of persons who live mainly on public transfers. Taking all the familiy members of heads of households not gainfully employed together we find an increase from 20.85 percent to 28.17 percent. Among them the share of the group of recipients of social old age and survivors pensions increased by over 4 percentage points, but in relative terms the share of the unemployed grew most, namely to five times its original size, followed by the recipients of social assistance whose share more than tripled. These changes in the population shares of those not gainfully employed, most of which mainly had to live on public transfers, put an increasing financial burden on the state budgets and on the social security institutions.

3.3 Changes in relative welfare positions of various socio-economic groups

We define the relative welfare position of a socio-economic group as the ratio of the group-specific average equivalent income to the average equivalent income of the total population.[19] Equivalent income of a person is derived from the net income of its household. Net income of a household equals the sum of all kinds of gross market incomes and transfers reduced by social security contributions of workers and personal

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[19] The following results are derived from estimates of group-specific average equivalent income recently published by the Federal Statistical Office. These estimates are based on data from the National Accounts and structural information from several statistics and inquiries. The equivalence scale used to derive equivalent income assigns a weigth of 1 to the head of household, weights of 0.7 to additional family members over 14 years, and weights of 0.5 to children under 15 years. Compare Statistisches Bundesamt (1993a) and Spies., V. (1992), pp.418-430.

taxes. The equivalent income of each member of a household then results from a division of the net income of the household by the sum of the weights of the household members as defined by an equivalence scale. In calculating group-specific or total averages the respective numbers of persons are used implying the same weight of 1 for everybody.

Diagram 1, based on Table 4, shows time series of relative welfare positions of the ten socio-economic groups mentioned above. A striking patterns holds true during the whole time period observed: In all years since 1972, the self-employed have been best off, and - not surprisingly - persons living mainly on social assistance have been worst off. Moreover, the ranking of the various groups, with the exception of farmers, has remained the same. Compared to their initial position in 1972, farmer households have dropped by two ranks until 1991. Since their relative welfare position has proved to be rather volatile, this decrease may be reversed quickly although a downward tendency cannot be denied. Second in rank are retired civil servants with special state pensions (Beamte), and third are active civil servants (Beamte). The only other group that is above average is that of white collar workers (Angestellte); they are only slightly below active civil servants. In descending order follow recipients of social security pensions for old age, survivors, and disabilitity (Rentner), blue collar workers (Arbeiter), farmers (in 1991), recipients of unemployment benefits, and, finally, recipients of social assistance, the basic means-tested benefit available to all persons with insufficient resources.

In 1991 the differences in the relative welfare positions between the various groups were quite considerable. While the self-employed reached a relative level of 240 percent, social assistance recipients had to live on only 46.67 percent of average equivalent income. In comparing the relative welfare positions realized by households with a gainfully employed head with those of households with a retired head, it is striking to find, that retired civil servants reach a higher relative level (119.67%) than the active group (109.33%), and that retirees on social security pensions are better off (87.67%) than blue collar workers (77.33%). But one has to keep in mind that retirees on social security pensions include not only former blue collar workers but also former white collar workers whose relative welfare position during their active life was far above that of blue collar workers. Due to the rules of the German old age security system this difference also shows in the respective pension levels. For all groups of retirees, it can be supposed that their smaller household size compared to the household size of the active groups mainly accounts for this advantageous position. In Germany this often is not recognized because usually average household income is used for comparisons instead of equivalent income. Finally, it is worth noting that households living mainly on unemployment benefits show the second to lowest relative welfare position amounting to only 55.33 percent of average equivalent income.

Let us now turn to the changes of the relative welfare positions of the various groups during the two decades from 1972 to 1991. From a bird's eye view it can be said for most of the groups that the tendencies that became apparent in the first decade until 1982 were reversed in the second decade. This coincides with a change in the coalitions that formed the government: From 1969 till 1982 a Social Democrat-Liberal government was in power, and since 1982 a Christian Democrat-Liberal coalition is ruling. Although it is tempting to assume a causal relationship between the political change and the changes in the group-specific trends of relative welfare positions, one would need much more detailed studies to ascertain such an influence.

At the beginning of the seventies the data indicate a shift in the welfare positions from the households of self-employed in favor of the households of workers and civil servants, and the households whose heads were not gainfully employed. The relative gains of persons living mainly on transfers were greater than those of the households of blue or white collar workers. During the following period (1975 - 1978), changes in the opposite direction occurred. The relative position of persons living in households of the self-employed rose from 179.56 percent to more than twice of overall average equivalent income, whereas the relative welfare position of farmers, of blue and white collar workers, of civil servants and of civil service pensioners, of the unemployed, and of social assistance recipients fell. The worst drop in relative welfare positions was experienced by the unemployed. Only retirees living on social old age and survivors pensions could maintain their favorable position gained during the first period.

During the last years of the seventies until the change of the coalition government (1978 - 1982), for several groups the development was reversed again. These years can be characterized as a period of intensified distributional battles in a period of more and more serious state budget problems. Farmers experienced a drop and a recovery, the self-employed suffered from an extreme decrease in their relative welfare position by more than one quarter, and the other groups gained more or less, the only exception being the social assistance recipients who remained at the same level of almost 50 % of the overall average equivalent income.

Since 1982, after the change in government, the data show more uniform trends than for the seventies. The most remarkable development is the continuous and sizeable increase in the relative welfare position of persons living in households of self-employed from 144.72 percent to 240 percent, i.e., by nearly two thirds. Farmers experienced ups and downs, but remained on average at the same below average level. The relative welfare position of all the other groups decreased continuously. In this period, the drops in the relative welfare position have been greatest for persons living mainly on state money

(civil service pensioners, civil servants, and retirees with social old age and survivors pensions).

Last but not least, we want to point out the negative development for persons living mainly on unemployment benefits, and those on social assistance. The relative welfare position of the recipients of unemployment benefits decreased especially in the period from 1982 to 1985 from a level of 63.81 percent to 56.25 percent, and remained at that lower level during the following years. The relative welfare position of the recipients of social assistance was reduced continuously by about 7 percentage points from 53.64 percent in the beginning of the seventies to a level of only 46.67 percent in 1991. This result is quite contrary to the view, held publicly and in political circles, that social assistance has been increased by more than net wages, and has become too generous. Based on this view the ruling coalition government intends to reduce social assistance benefits again to increase work incentives although the relative difference between the equivalent incomes of the social assistance recipients and the unemployed has increased from 11.9 percent in 1972 to 18.6 percent in 1991. In relation to the retirees with social old age and survivors pensions the gap has widened from 57.6 percent to 87.9 percent, and in relation to blue collar workers the relative distance grew from 42.4 percent to 65.7 percent.

4.   Changes in the distribution of wage earnings

While the results of the previous section referred to changes in the relative positions of socio-economic groups defined by the social status of the heads of household, we now turn to an analysis at the individual level looking only at wage earnings.

In Table 2 we have shown that the share of wage earnings as percent of gross market income of the household sector slightly increased during the seventies, and then moderately declined during the eighties. But we can see from Table 1 that the absolute numbers and the share of wage earners among the labor force increased continuously during the two decades under review. This increase is partly due to a higher labor force participation rate of women, and to an increasing share of part-time workers. On the other hand, during the eighties a much higher share of the labor force was unemployed than during the seventies. Additional factors not shown here may have exerted their influence. These divergent developments induce the main question of this section: Has the inequality of individual wage earnings increased or decreased during these two decades?

The micro data available to us are somewhat limited in scope and, therefore, preclude a comprehensive analysis for the total resident population of Germany (West). The Income and Comsumption Surveys (EVS) 1973, 1978 and 1983 exclude households with a foreign head, households with a monthly net income of more than DM 15,000 (1973), DM 20,000 (1978) and DM 25,000 (1983), households with more than six persons, and the institutionalized population[20]. Although the waves of the German socio-economic panel (GSOEP) referring to the years 1983, 1985, 1987 and 1990 include foreigners, for the sake of comparability they are excluded from the calculations to follow[21]. These limitations of the data used have to be kept in mind when interpreting the results.

Additionally, we have to mention that since it is our intention to analyse changes in the inequality of regular earnings we performed bottom-coding by leaving out the subgroup of persons having received wage earnings of less than DM 1,200 during the whole year[22]. Since we use two different data sets that fortunately overlap in 1983, we show for this year results derived from both sources (EVS 1983(a), GSOEP 1983(b)) to give an impression of the effects of the methodological differences between them.

Since these micro data sets cover only some benchmark years of the period from 1972 to 1991 it seems appropriate to characterize the state of the business cycle during these years. Table 5 summarizes information on some macroeconomic indicators for the respective years.

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[20] The EVS are official surveys with voluntary participation comprising about 45,000 to 50,000 households each. The original quota sample is reweighted using data from the respective micro-census participation in which is compulsory. The EVS data result from two interviews and diaries covering the whole year of investigation. Retained earnings of unincorporated business are included. The data were edited by the Federal Statistical Office. The anonymized micro-data available to us consist of a reweighted 98.5% random sample of the original data. Compare Euler, M. (1972) pp. 375-377; Euler, M.(1977), pp. 576-579; Euler, M. (1982), pp. 433-437; Euler, M. (1983a), pp. 813-818.

[21] The first random sample of the GSOEP comprised about 6,000 households including households with a foreign head, but also excluding most of the institutionalized population. The decline in sample size of later waves due to panel attrition is corrected by a reweighting procedure. The GSOEP data are based on a single interview per year. During this interview each household member over 15 years is questioned about its monthly net income at the time of interview as well as about all kinds of gross market incomes and transfers received and contributions and taxes paid during the previous year. The income components were checked by various methods. Our analyses are based on annual income of the previous year, i.e., the information contained in the first wave surveyed in 1984 refers to calender year 1983, and so on. Because of these slight conceptual differences we show in parallel results based on the EVS 1983 and on the GSOEP 1983 marked as 1983(a) and 1983(b), respectively. We use these data only in a cross-sectional perspective. The GSOEP is described in: Hanefeld, U. (1987); Projektgruppe Panel (1990), pp. 141 - 151.

[22] A second way of bottom-coding would have consisted in cutting out all earnings from so-called "geringfügige Beschäftigungen" (minor jobs) that are exempt from social security contributions and do not entitle to any social insurance benefit. The maximum amount to be earned on such a side-job was about DM 500.- in 1991; the maximum amount is indexed. They are considered side-jobs for housewives, students and so on. If persons accumulate (illegally) several of these side-jobs to make a living from it, they would be implicitly included.

A third method, namely to concentrate only on earnings of full-time workers, was rejected, because, given the increase in the numbers of part-time jobs, the connection to the distribution of equivalent income would have become too loose.

All the benchmark years were years of sizeable positive real growth. The years of negative real growth (1974, 1975, 1980, 1981, 1982) were situated between the benchmark years so that we need not consider a possible bias in our comparison. The first benchmark year (1973) was exceptional because it was the last one with full employment albeit one with high inflation. The second benchmark year (1978) was characterized by a high growth rate, moderate inflation and a considerable level of unemployment; part of this was already long-term unemployment. The following years were marked by moderate inflation and high unemployment, almost one third of which had become long-term. The share of gross earnings of workers and employees was continuously diminishing.

Against this macroeconomic background the indicators of inequality of wage earnings, as presented in Table 6, have to be appreciated. The level of inequality seems to be within the range known from other studies[23]. During the first decade (1973 - 1983) inequality of earnings rose continuously but moderately. A causal relation to the rise in unemployment seems plausible. The smallest changes occurred to the Gini coefficient. In 1983(a) it reached 0.345 a level about 6 percent higher than ten years ago. As the other inequality measures increased more during that period, it appears that greater changes occurred at the bottom and at the top of the wage scale. The Atkinson index (with an inequality aversion of 2.0) rose during the first five years by 11 percent, and during the second five years by 5 percent. Likewise, the Theil index rose by more during the first sub-period (10%) than during the second (6.6%). These changes are consistent with the development of the quintile shares. The shares of the bottom quintile of wage earners fell by 9 percent until 1978 and by another 4% until 1983(a), whereas those of the three middle groups diminished only very little. On the other hand, wage earners belonging to the top quintile realised an increase of their share of aggregate gross wage earnings by 1 percent (1978) and 3 percent (1983(a)), respectively.

Comparing the results for 1983(a) and 1983(b) we find that the GSOEP data show a slightly higher inequality of earnings than the EVS data. Therefore, we compare the results of the following years only with 1983(b). The development from 1983(b) to 1990 does not seem to follow a trend as unequivocal as the one during the first decade. All inequality indicators reported in Table 6 continued to rise until the middle of the eighties, and then declined before increasing once more. Again, the Gini coefficient turned out to be quite stable indicating only little changes in the middle range of the earnings distribution with a high population density. During the period from 1983(b) to 1985 the Atkinson index (based on a low inequality aversion), and the Theil index showed the strongest increases. Both indices rose by 10 percent while the Atkinson index

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[23])   Burkhauser, R.V., D. Holtz-Eakin (1993).

with high inequality aversion increased only by about 7 percent. In line with this change, the lower quintile shares decreased considerably - the first by nearly 14 percent and the second by 5 percent - while the fifth quintile increased its share by about 3 percent. But during the second half of the eighties, the losses of the two lowest quintiles were partly reversed. although they did by far not reach again the shares customary at the beginning of the seventies[24]).

As mentioned at the beginning of this section many factors influenced the pattern of inequality during these two decades: Changes in the share of earnings in gross market income of the household sector, an increase of the labor force participation rate, especially of women, changes of the wage structure, a reduction of the working time per month, an increase of the numbers of part-time jobs and "minor jobs", and, finally, increased unemployment that may have lasted for shorter or longer periods during one calender year thus influencing annual incomes differently. Also the fact that the risk of becoming unemployed is not evenly distributed across the various levels of education has its influence. It would need much more detailed information than can be gathered from our data sources to gauge the relative importance of each of these factors on the distribution of annual wage earnings. This question, therefore, has to be left to further studies.

5. Changes of the distribution of equivalent income among persons in Germany (West) from 1973 to 1990

We now turn back to the equivalent income perspective as it was taken in section 3, but instead of looking at the distribution problem at the meso-level of socio-economic groups we focus on the micro-level of individuals. As an indicator of well-being equivalent income of persons is based on household net income weighted accordingly, and, therefore, including all kinds of incomes and deductions as well as all members of a household whether they are income recipients or not.

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[24]) A recent paper by Katherine G. Abraham and Susan N. Houseman emphasizes the general stability of the West German wage structure, but finds a narrowing of differentials at the bottom half of the distribution. This finding need not be in contradiction to our results of a slight increase in the inequality of earnings because Abraham and Houseman concentrate on full-times workes only while we included all wage earnings above DM 1,200 per year. Moreover, Abraham and Houseman include foreign workers resident in West Germany into their computations that we excluded. Compare Abraham, K.G., S.N. Houseman (1992).

Table 7 depicts several inequality measures derived for the benchmark years[25]. These measures differ in the assumed basic social welfare function and, hence, in the normative implications and the sensivity with respect to income ranges [26][27].
We can at once confirm the well known fact that the distribution of equivalent income among all persons is much less unequal than the distribution of earnings among wage earners. But it is amazing to find that the distributional changes during the seventies and the eighties were quite moderate with a very slight tendency to growing inequality while during the first decade the relative welfare positions of the various socio-economic groups reduced its distance, and then during the second decade diverged again (comp. Table 4).

We have also to note that while in 1983 the GSOEP data show a little more inequality of wage earnings than the EVS data, this discrepancy is in the opposite direction if we look at equivalent incomes in years 1983(a) and 1983(b) the only exception being the Atkinson measure with high inequality aversion. But the differences are so small that they cannot jeopardize comparisons.

During the first decade, the Gini coefficient remained nearly constant on a level of about 0.254. During the eighties, however, the Gini coefficient first moved up by nearly 4 percent, then fell back close to the level of 1983(b) and rose again by more than 3 percent to 0.2601 in 1990. As the Gini measure is most sensitive with respect to income ranges with high population density, the distribution within the middle range of equivalent income seems to be quite stable. Looking at the Atkinson index based on low inequality aversion, a similar pattern emerges with a slight indication of growing

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[25] The following computations are based on an equivalence scale that is derived from the German social assistance law. It differs slightly from the less differentiated scale used by the Federal Statistical Office in calculating the results reported in Table 4. In our computations the head of household gets a weight of 1.0, and further adults over 21 years get weights of 0.8; the following weights are assigned to children: 0 - 6 years: 0.45; 7 - 11 years: 0.65; 12 - 15 years: 0.75; 16 - 21 years: 0.90. This scale has been in effect for nearly the whole period covered. Only recently, this scale has slightly been changed. A sensitivity test has been performed on the results reported in Table 7 using the equivalence scale of the Federal Statistical Office. The values of the inequality measures were very close to the ones reported above, and the trends remained the same. It has to be pointed out that the equivalence scale used assigns comparatively high weights to additional household members. A drastically different equivalence scale could lead to a reversal of some results. Compare Buhmann, B., L. Rainwater, G. Schmaus, T.M. Smeeding (1988), pp. 115-142.

[26] As in section 4 the results refer only to persons living in households with a German head. This introduces a slight bias towards underestimating inequality. Based on the GSOEP data that include foreigners we recalculated some inequality measures for the total resident population and found slight differences of not more than 1.9 percent for the various benchmark years. The results differ methodological from those of Guger, A. (1989) who is refering to DIW-data, that present the distribution of income per household, unadjusted for household size. Many studies show that such a distribution is much more unequal than the personal distribution of equivalent income as used here.

[27] For a discussion of various measures of inequality and their normative implications see Atkinson, A.B. (1992).

inequality. The Atkinson measure based on high inquality aversion and the Theil measure indicate more strongly an increase in inequality, the only exception being the year 1987 in which inequality was reduced although the macroeconomic conditions had improved only very little. Especially during the periods from 1978 to 1983(a) and from 1987 to 1990 the Atkinson measure (with high inequality aversion) rose considerably by 6 percent and 10 percent, respectively. During the first period this increase in inequality coincides with a strong increase in unemployment, but during the second period the further increase is accompanied by a reduction of unemployment. An explanation for these opposite changes could be that the effect of reduced unemployment on the distribution of equivalent income was more than compensated by the various measures taken to curb social benefits and to tighten the rules as they were sketched in section 2.

The very moderate trend to increasing inequality becomes also evident by looking at the equivalent income shares of population quintiles - a more disaggregated presentation of the income distribution. From 1973 to 1983(a), the quintile shares remained nearly constant with only very small losses of the lowest as well as of the top quintile to the advantage of the three middle quintiles (between 1978 and 1983(a)). During the eighties, however, the quintile shares went up and down. From 1983(b) to 1985, the equivalent income shares of the three lower quintiles decreased, especially the share of the first quintile, to the advantage of the upper two quintile. During the next two years, this change was almost completely reversed, and then it was reversed again. Comparing 1983(b) with 1990 inequality has definitely increased with losses of the four lower quintiles in favor of the top quintile. This is also the message of the various summary inequality measures[28]. But on the whole, the changes have not been very grave.

Another informative way of looking at income inequality is shown in Table 8. It presents distributions of persons by relative welfare positions, defined as brackets of equivalent income that are deliminated by multiples of the overall average equivalent income. Again, the changes during the whole period appear to be only gradual. As expected with a skewed distribution the fraction of persons below the mean was much greater than the fraction above. In all the years covered, about 60 percent were found to be below the mean. Based on EVS data the percentage was decreasing slightly from 62.3 percent (1973) to 61.1 percent (1983(a)). The GSOEP data show a smaller fraction of 59.4 percent in 1983(b) that at first increased a little and then declined again to 59.2 percent.

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[28] The reversal of this tendency between 1985 and 1987 should be interpreted with caution because of possible distorting effects of panel mortality. The questionaire of the fifth wave of the GSOEP included, for the first time, some detailed questions concerning wealth that have caused a higher panel attrition rate than usual. Since it can be assumed that especially wealthier participants refused to continue with the panel this may have resulted in a seeming reduction of inequality.

Within the segment below the mean some important changes occured. The fraction of the population that belongs to the lowest group with less than half of mean equivalent income fluctuated but in general tended to increase considerably - during the first decade by more than 10 percent and during the second period by about 5 percent. Partly, this increase seems to have come from a decrease of the groups in the second and in the third bracket although it is not possible to verify this conjecture without longitudinal data[29]. If one accepts the frequently used relative poverty line of 50% of mean equivalent income, the increasing population share in the lowest bracket can be considered as an indicator of growing poverty[30]. Remembering the indicators of income inequality shown in Table 7, it seems that the Atkinson index based on an inequality aversion of 2.0 is more sensitive to distributional changes at the very bottom than the Theil index which is sensitive to a more widely defined bottom group.

In the two top groups only small changes can be found if one neglects the year 1987 that also from this angle looks a little out of line.

6.   Changes of inequality between and within socio-economic groups

The amazing discrepancy between the changes of the relative welfare positions of the socio-economic groups - a convergence during the first decade and a divergence during the second - and the continuous tendency to a slight increase of overall inequality[31] poses questions. One possible explanation would be that the socio-economic groups traditionally distinguished in Germany are extremely heterogeneous so that changes of their relative average equivalent incomes are very misleading for the appraisal of changes of overall inequality. Changes of the relative size of the various groups may also play a role.

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[29]   Studies with these GSOEP data using their longitudinal properties showed that the increased share of this low income group mainly resulted from persons dropping down from the two neighboring brackets. Compare Hauser, R., R. Berntsen (1992) pp. 73-98 and Habich, R., B. Headey, P. Krause (1991), pp.488-509.

[30]   A tendency to growing poverty from 1973 to 1983(a) and 1983(b) to 1986 is also shown in: Hauser, R., P. Semrau (1989), but the levels are higher. For these computations imputed rent of owner occupied houses was added to net household income; this correction has a double effect: on the one hand, it raised average equivalent income and, therefore, the poverty line and the head-count measures of poverty. On the other hand, some persons with sizeable imputed rent are lifted out of poverty resulting in a reduction of the head-count measure. Additionally, it has to be remembered that in our study as well as in Hauser/Semrau's foreigners are excluded from the data. This has a similar double effect on the results. Calculations by other authors based on the GSOEP data from 1983(b) to 1990 including foreigners depict an almost stable tendency of the poverty head-count measure. Compare Habich, R., P. Krause (1992), pp. 482-495.

[31]   It has to be kept in mind that the two analyses are not strictly comparable because our computations based on microdata exclude foreigners while the figures of the Federal Statistical Office refer to the whole resident population.

One approach to tackle this problem consists of a decomposition of the overall inequality into inequality within groups and between groups. Fortunately, the Theil index in contrast to the Gini and Atkinson measures is additively decomposable. This means, that "for any non-overlapping exhaustive grouping of the population, the total inequality can be expressed as a weighted sum of the same index for the different groups (the "within-groups" component) plus the value of the index for the population as a whole, where each member is given the average income of its particular group (the "between-groups" component)"[32]). The Theil index used in this paper is strictly decomposable and bottom-sensitive.

In line 1 of Table 9 the overall Theil index is repeated from Table 7.
This overall index is decomposed according to population groups characterized by the occupational status of the head of household. All family members are assigned to the group of the head of household. For weighting the "within-groups" component, we have used the population shares of the respective groups as derived from our microdata. This fact together with the exclusion of foreigners explains differences between the figures in Tables 3 and 9.

The results of the decomposition of the Theil index are given in lines 2 and 3. They show, first, a clear prevalence of the total within-groups inequality in all benchmark years (line 2), and, second, a pronounced tendency to an increase of the total within-group inequality that amounted to 6 percent during the first decade, and to 3 percent during the second period. For Germany this is a striking result. The occupational status, often associated with a specific income range, seems to contribute much less to overall inequality than is frequently assumed, and this contribution is even diminishing. Around 80 percent of overall inequality is due to differences of equivalent income within the groups defined with respect to the occupational status of the household head, and this percentage is clearly increasing. According to the decomposition reported in Table 9, the sole reason for the trend of increasing overall inequality, ascertained by the Theil measure, is the rising within-groups component, whereas the differences of average equivalent income between these groups have even diminished.

Looking at the group-specific Theil indices (second group of lines in Table 9) those of persons living in households of the self-employed are by far the highest, fluctuating between 0.143 and 0.174 during the first decade, and between 0.1389 and 0.1677 during the second period, but following no clear pattern over time. At the other extreme, the Theil indices for the population living in households of blue collar workers are the lowest ones in nearly all years. The index shows a stable level of about 0.058 during the

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[32]) Compare Rodrigues, C.F. (1993), p. 6.

first decade, and a much higher level around 0.076 but with considerable fluctuations during the second period. Especially the increase by 25 percent from 1987 to 1990 is amazing. A similar development - yet on a higher level - occurred in the second half of the eighties within the population living in households of white collar workers. But during the seventies and the beginning of the eighties, the results for white collar workers, fluctuating around 0.08, were less stable than for their blue collar collegues. The group-specific Theil index for civil servants was mostly at a level between those of blue and white collar workers but with less fluctuations. Inequality within the population group living in households of farmers, with one exception (1985), rose considerably - during the first decade by about 12%, during the following period by 11%. Farmers seem to become a more and more heterogenuous group.

Finally, persons living in households of not gainfully employed heads seem to be an even more heterogenuous group, especially when compared with the subgroups of workers and employees. In nearly all benchmark years, the Theil indices for that population subgroup came nearest to that of the self-employed. The values fluctuated in the range of 0.10 to 0.125 with increasing tendency. This group consists of pensioners, retired civil servants, widows, disabled persons, recipients of unemployment benfits and social assistance, but also of persons living on income from their wealth. It is obvious that the discrepancy between social assistance recipients and rich people living on income from their wealth is large, but due to the principle of maintaining the relative standard of living, that is incorporated into the German social insurance system for unemployment benefits, social pensions for old age and survivors, and even more pronounced for state pensions of civil servants, inequality of earnings during the working period is maintained while receiving social transfers. Therefore, having the heterogeneity of this population group in mind, the above average level of the goup-specific Theil index is not surprising.

In the lower part of Table 9, the group-specific population shares that serve as weights, and the group-specific share of within-group inequality are presented, demonstrating the results outlined above in another way. The self-employed and the not gainfully employed are the only groups whose group-specific share of within-group inequality exceeds the respective population shares in all years covered. That means that they contribute more to the within-group component of overall inequality than would correspond to their population shares. But it is interesting to note that due to changes in the population structure there was a tendency to a diminishing influence of the self-employed on this component of overall inequality during the period under review. On the other hand, due to rising unemployment and changes in the age structure, the population share of the population in households with a not gainfully employed head rose sharply between 1973

and 1978, and from then on showed a slight tendency to further increase. Therefore, their influence on the within-group component of overall inequality increased.

The three groups of civil servants, white and blue collar workers contributed to the within-group component of overall inquality less than would correspond to their population shares.

Summarising the changes during the whole period under review, it seems that the increase of the share of within-group inequality (line 2) is mainly caused by the white collar workers and the not gainfully employed because their population shares rose as well as their group-specific Theil index while the effect of the increase of the group-specific Theil index of the self-employed and of the farmers was compensated by a reduction of their population shares.

As mentioned above, the population group living in households of not gainfully employed is more heterogeneous than other groups as it comprises the poorest, living on social assistance, as well as the wealthiest, living on profit and interest income. This may considerably affect the share of within-groups inequality and its change over time. To analyse this aspect in more detail, we have disaggregated the group of not gainfully employed heads with respect to the main income source of the household for the first decade (data source: EVS).

In Table 10 we distinguished six subgroups (see lines 10 to 15):
- (1) those with old-age/ survivors/ disability transfers from social insurance
- (2) those with transfers from state pension schemes
- (3) those with a combination of (1) and (2)
- (4) those with transfers from unemployment insurance
- (5) those with other state transfers, mostly means-tested
- (6) those with private transfers and / or income from wealth
as main income source. The group-specific values for the gainfully employed are repeated from table 9. The results are corroborating our preliminary conjectures. The share of within-groups inequality is reduced considerably when building more subgroups, in 1983 to 76 percent (see line 2 in Table 10) against nearly 84 percent according to the more aggregated approach (see Table 9). Furthermore, the tendency towards increasing within-groups inequality appears to be much more moderate when disaggregating the not gainfully employed - from 74.1 percent (1973) to 76.4 percent (1983) against an increase by nearly five percentage points in Table 9.

First, have a look at the three groups of persons living in households with a not gainfully employed head and old-age transfers as main income source (lines 10 to 12 in Table 10),

which make about 70 percent of the whole group belonging to not gainfully employed heads. The Theil-indices are much lower than the respective one for the aggregated group (see Table 9) and far below the overall Theil-index. Equivalent income is more equally distributed within the household group of former civil servants than within the group living mainly on old-age transfers from social insurance, which comprises former blue as well as white collar workers (with respect to main income recipient). While the Theil-index of the group belonging to former civil servants slightly has decreased - by 6.5 percent to 0.063 -, the respective value for those belonging to former blue and white collar workers shows an upward tendency - by 4.5 percent up to nearly 0.08 -, maybe because of the increasing population share of white collar workers.

For the other groups of persons living in households with a not gainfully employed head and public transfers as main household income source, Table 10 also shows below average Theil-indices. The group-specific value of those living mainly on transfers from unemployment insurance (line 13 in Table 10) moves in the range of about 0.075 with changing directions. But because of their increasing population share, the respective group-specific share of overall within-groups inequality clearly has risen (from 0.1 to 0.6 percent). In contrast to that, inequality within the subgroup living mainly on other, mostly means tested state transfers (line 14 in Table 10) unambiguously has increased - by 28 percent up to 0.084. This quite amazing trend within the group taken to be the most needy may result from non-dynamic, arbitrary adjustments of means-tested transfers and restrictive social legislation. The effect of this development was mitigated, because the correspondent population share only slightly moved upwards; therefore, the group-specific share of within-groups inequality rose by not more than 25 percent during the covered period. Later on, in the eighties, the structural development probably turned out to affect the share of within-groups inequality in the opposite direction.

Not surprisingly, the Theil-indices of the group with private transfers and / or income from wealth or any other combination of incomes not mentioned above as main household income source (line 15 in Table 10) are the highest according to our decomposition of persons living in households with a not gainfully employed head. This heterogeneous rest-subgroup includes wealthy people in middle and upper age classes as well as students living from parental transfers, for example, and its population share rose from 5.6 percent (1973) to 7 percent (1983). Furthermore, inequality within this group has risen by about 27 percent during one decade, starting from a below average level (0.0913) in 1973 and reaching an above average level (0.1161) in 1983. The group-specific share of overall within-groups inequality amounts to about 10 percent in 1983, this is 50 percent more than the respective value of 1973.

Summarising the results of Table 10, the high level of within-groups inequality among those belonging to not gainfully employed heads of households shown in Table 9 is resulting from strong impacts of relatively small groups. For the majority of the not gainfully employed, especially for the retired, within-group inequality is far below overall inequality and quite stable - when measured by the Theil-index.

7. A first look at inequality in East Germany before and after unification in comparison to inequality in West Germany

The historically extraordinary event of the unification of a country divided for more than forty years not only by state boundaries but also by two radically different economic and social systems happened in autumn 1990. Although Germany is since then one country again, for a long time to come it will be a dual economy and a dual society. During the transition period that is, among others, characterized by different wage and social benefit levels it seems appropriate to maintain the distinction between the population of the former German Democratic Republic, now East Germany, and the former Federal Republic of Germany, now West Germany, and to compare only income distribution within each subpopulation instead of comparing levels of well-being by using measures of real income.[33]

Fortunately, the GSOEP was extended to the former German Democratic Republic (GDR) just before the unification with West Germany, and since then was regularly conducted once a year using a slightly modified questionnaire[34].

To get an idea of the inequality of equivalent income in both parts of Germany before and after unification, Table 11 presents some inequality measures[35]. Though not completely comparable with Table 7 because of some differences in the basic income concept (compare footnote), Table 10 yields an impression of the distributional

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[33] Even comparisons of income distributions have to be done very cautiously because in socialist economies income is a much worse indicator of well-being than in market economies. The main reasons, taking the former German Democratic Republic as an example, are the following: distortion of the price system with high subsidization of basic goods and housing, rationing, special privileges for the nomenclatura and other groups, fulfillment of many "social tasks" by state enterprises, differences in state provided free goods, a job guarantee, the use of working time for many private purposes, and a considerable share of private barter trade. Compare for a more systematic analysis Hauser, R. (1992), pp. 37-72.

[34] The methodology is described in: Schupp, J., G. Wagner (1990), pp. 152-159.

[35] Many aspects of inequality are discussed in a conference volume Glatzer, W., H.-H. Noll (1992); see also Berger, H., W. Hinrichs, E. Priller, A. Schultz (1993); Hauser, R., K. Müller, G. Wagner, J. Frick (1991); Frick, J., R. Hauser, K. Müller, G. Wagner (1993), pp. 204-228.

discrepancies, on the one hand between West Germany (1989) and the former GDR (1990), and on the other hand between East Germany unter the old and the new regime. The differences in the inequality of equivalent net income between West Germany in 1989 and the German Democratic Republic in 1990 were really very substantial, especially if measured by the Atkinson index. For both levels of inequality aversion used in Table 11 the Atkinson measure for West Germany was more than double its value for the German Democratic Republic whereas the respective Gini coefficient amounted to a little less than 150 percent. This indicates that great differences existed especially at the bottom and at the top of the equivalent income scale. This impression is verified by comparing the quintile shares. The share of equivalent income of the first quintile in West-Germany is 21 percent lower, and the share of the fifth quintile is 21 percent higher than the respective shares for the German Democratic Republic whereas the differences with respect to the middle range are the less the higher the quintile. Although there existed considerable inequality in the German Democratic Republic based on a socialist model, these inequalities were much less pronounced than in the Federal Republic of Germany. Other computations not shown here[36] depicted also much less poverty as measured by the head-count ratio at the 50 percent line in the GDR than in the FDR. Two main reasons for this more favorable situation are obvious: In the German Democratic Republic practically nobody willing to work was unemployed, and the labor force participation rate of women was as high as the men's. Moreover, minimum pensions existed at a level slightly above the poverty line, housing cost were almost negligible and basic goods were cheap because of subsidization. On the other hand, very high incomes did practically not exist because persons could not receive high incomes from large private wealth holdings.

After unification the distribution of equivalent income in East Germany immediately turned to more inequality. The Gini coefficient rose by about 6 percent, the two Atkinson indices increased by about 20 percent within one year[37]. But in 1991 the inequality of the income distribution in East Germany still was far away from the situation in West Germany.

In this transformation process the results for 1991 are only a snapshot of a quickly changing situation. Although the West German system of social protection was transferred to the East with some additional minimum regulations that do not exist in

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[36] Compare Hauser, R., K. Müller, G. Wagner, J. Frick (1991); Table 2; Krause, R. (1993).

[37] These computations include all persons resident in the GDR in 1989 before unification although they may have moved afterwards. Upon closer inspection one finds that this first increase in inequality was mainly due to the several hundred thousand persons who moved from the East to the West and took on jobs at the Western pay level, and to a great number of commuters who resided in the East but worked in the West.

West Germany, this will not hamper a further increase in inequality. One factor is rising unemployment (rate in East Germany in 1991 11.3% and 1993 16.1% compared to West Germany 7.3% and 8.9%), another one are the new opportunities to earn income as a self-employed person or from capital that can be mobilized by selling private land the market value of which has experienced huge increases. Analyses of the following waves of the GSOEP will give more insight into the further development and speed of social change within the, at present, dual society of unified Germany.

8.   Summary

This paper sketches the changes in the distribution of well-being during the period from 1972 to 1991 against the background of West Germany's economic and demographic development, and, finally, compares the distribution of well-being in East Germany before and after unification. We rely on equivalent income of persons as the main indicator to measure well-being, but we also look at the distribution of gross wage income of workers and employees. Estimates of the Federal Statistical Office referring to the meso-level of average equivalent income of socio-economic groups as well as various distributional measures computed by us at the micro-level (Gini coefficient, Atkinson measure, Theil measure, quintile shares) are used to gauge changes of the distribution. The computations are based on two sets of micro-data available to us, namely the official Income and Consumption Surveys (Einkommens- und Verbrauchsstichproben) referring to the benchmark years 1973, 1978, 1983, and the German Socio-economic Panel (GSOEP) referring to the years 1983, 1985, 1987, 1990 for West Germany and to the years 1990, 1991 for East Germany.

At the meso-level we find substantial changes in the relative welfare positions of the ten socio-economic groups distinguished. While the ranking of the groups remained nearly constant during the whole period under review we find during the first decade a considerable decrease of the self-employed and an increase of all groups of wage earners; among those not gainfully employed pensioners and recipients of unemployment benefits improve their position slightly, but social assistance recipients experience a decrease. During the second decade these tendencies are reversed with a strong increase of the self-employed and slight decreases of the other groups.

Due to limitations of our data at the micro-level only persons living in households with a German head are included. We find slight increases in the inequality of gross earnings during both periods. The distribution of well-being as measured by equivalent income of persons seems also to have become slightly more unequal during the whole period but

the changes are very small, and partly reversed during subperiods. Poverty as measured by the head-count ratio at the 50 percent line increased also slightly to a level of almost 9 percent in 1990. A decomposition of overall inequality by occupational status of the heads of household using the Theil measure gives two interesting results: More than 80 percent of overall inequality is due to within-group inequality compared with less than 20 percent due to between-group differences, and the share of within inequality was rising continuously. The two groups that contribute more than their population shares to overall inequality are the self-employed and the not gainfully employed. This picture changes somewhat when disaggregating the quite heterogeneous group of persons living in households of not gainfully employed by the main income source. The share of within-groups inequality is reduced to about three quarters of the overall Theil-index, and its increase during the first decade (1973 to 1983) appears to be quite moderate. This can be attributed to the situation within the subgroup living mainly on old-age transfers from state or social insurance. Their group-specific shares of within-groups inequality are less than their population shares whereby the difference rose during the seventies. Finally, it is reported that before unification the distribution of well-being in East Germany was much less unequal than in West Germany, but that inequality is rising although it has by far not yet reached the West German level.

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Table 1: Selected economic indicators of the Federal Republic of Germany (West), 1972 - 1991

Year	Percentage change in real national income per capita (prices of 1985)	Rate of inflation[1] (in %)	Labor force participation (inclusive of self-employed)[2] (in %)			Unemployment rate[3]	Long-term-unemployed[4] (as % of all unemployed persons)
			self-employed	wage earners	all		
	1	2	3	4	5	6	7
1972	3.49	5.4	6.56	37.44	44.00	1.1	--
1973	4.40	6.7	6.39	37.91	44.30	1.2	--
1974	-0.07	6.8	6.14	38.06	44.20	2.5	--
1975	-1.57	6.0	5.93	38.07	44.00	4.6	--
1976	5.45	4.5	5.59	38.31	43.90	4.5	--
1977	3.08	3.4	5.37	38.63	44.00	4.3	14.3
1978	5.29	2.6	5.34	39.06	44.40	4.1	14.7
1979	3.61	3.8	5.22	39.68	44.90	3.6	15.6
1980	-0.42	5.2	5.14	40.26	45.40	3.6	12.9
1981	-2.88	6.4	5.08	40.82	45.90	5.1	13.0
1982	-2.12	5.2	4.97	41.33	46.30	7.2	17.9
1983	2.21	3.3	5.00	41.60	46.60	8.8	24.9
1984	3.45	2.3	4.93	41.87	46.80	8.8	28.8
1985	2.59	2.0	5.02	42.38	47.40	8.9	31.0
1986	6.59	-0.2	5.00	42.80	47.80	8.5	31.9
1987	3.38	0.1	4.92	43.18	48.10	8.5	31.8
1988	3.74	1.1	4.90	43.30	48.20	8.4	32.6
1989	2.28	2.9	4.84	43.16	48.00	7.6	31.4
1990	3.64	2.7	4.75	43.25	48.00	6.9	29.7
1991	1.62	3.6	4.74	43.16	47.90	6.1	28.3

[1] Consumer price index of a family of four with middle range income.

[2] Workers and employees (inclusive of the unemployed) and self-employed as percent of the whole population.

[3] Unemployed as percent of all workers and employees (inclusive of the unemployed).

[4] Period of uninterrupted unemployment 12 months or more.

Sources: Sachverständigenrat: Jahresgutachten 1992/93 zur Begutachtung der gesamtwirtschaftlichen Entwicklung, Bundestagsdrucksache 12/3774, pp. 118, 296, 309, 383; Bundesanstalt für Arbeit: Amtliche Nachrichten (ANBA), vol. 40 (1992), p. 84 and vol. 41 (1993), p. 85; and own computations.

Table 2: Gross market income of household sector and its components in the Federal Republic of Germany (West), 1972 - 1991

Year	Gross market income of household sector (million D-Mark)[1]	Income components as percent of gross market income				Transfers paid[3] (in % of col. 1)	Transfers received (in % of col.1)
		Employer's social security contributions	Gross earnings of workers and employees	Profits (inclusive of retained earnings of unincorporated business)[2]	Interest and dividends		
	1	2	3	4	5	6	7
1972	607 636	11.19	61.57	23.51	3.73	39.18	23.13
1973	676 906	11.56	62.59	21.77	4.08	42.18	23.13
1974	727 865	12.18	64.10	19.55	4.17	44.23	24.68
1975	761 343	13.00	63.47	19.20	4.33	44.58	29.10
1976	837 034	13.31	62.04	20.40	4.25	45.89	28.61
1977	893 037	13.10	62.83	19.79	4.28	46.26	28.34
1978	953 132	13.38	62.63	19.95	4.04	45.71	28.03
1979	1 029 472	13.44	62.74	19.34	4.48	45.28	27.83
1980	1 085 906	13.80	64.71	16.29	5.20	46.83	28.28
1981	1 123 401	14.16	65.49	14.38	5.97	47.57	29.65
1982	1 163 473	14.47	65.01	14.04	6.48	48.16	30.45
1983	1 210 182	14.29	63.66	16.18	5.88	47.69	29.83
1984	1 273 133	14.31	62.50	16.94	6.25	47.58	29.03
1985	1 335 344	14.17	61.94	17.28	6.60	47.77	28.35
1986	1 426 429	14.13	60.92	18.72	6.24	46.79	27.71
1987	1 477 336	14.11	61.43	18.57	5.89	47.50	28.21
1988	1 562 784	14.04	60.27	19.69	5.99	46.75	27.91
1989	1 650 963	13.65	59.87	19.90	6.58	47.04	27.80
1990	1 794 907	13.60	59.35	20.09	6.96	45.13	27.05
1991	1 906 320	13.91	60.36	18.49	7.25	47.04	26.92

[1] Inclusive of employer's social security contributions.

[2] According to the conventions of national accounting, profits are calculated by using depreciation based on replacement cost. Retained earnings are calculated as a difference of all other components of national income, thus comprising all errors and omissions. The housing sector regularly shows a large negative value of retained earnings that dominates the positive value of retained earnings of unincorporated companies. (Comp. Schüler, K./ Spies, V.: Einkommen aus Unternehmertätigkeit und Vermögen, in: Wirtschaft und Statistik, vol. 10/1991, pp. 653-666).

[3] Income tax, social security contributions of employers and employees and other transfers.

Sources: Statistisches Bundesamt (III B) 1993: Verfügbares Einkommen, Zahl der Haushalte und Haushaltsmitglieder nach Haushaltsgruppen - Aktualisierte Ergebnisse der Volkswirtschaftlichen Gesamtrechnungen für die Jahre 1972 bis 1992 -, Wiesbaden (Sonderdruck);
and Statistisches Bundesamt (III B) 1993: Einkommensverteilung nach Haushaltsgruppen und Einkommensarten - Aktualisierte Ergebnisse der Volkswirtschaftlichen Gesamtrechnungen für die Jahre 1972 bis 1992 -, Wiesbaden (Sonderdruck).

Table 3 : The development of the relative size of Socio-economic groups in the Federal Republic of Germany (West), 1972 - 1991

Year	Total population in Thousands	Percentage of persons in households by status of head in the Fed. Rep. of Germany (West)									
		Farmers	Self-employed (without farmers)	Civil servants (Beamte)	White collar workers	Blue collar workers	Not gainfully employed with ... as main source of income				Others
							Unemploy-ment benefits	Social old age and survivors pensions	State pensions for civil servants	Social assistance	
1972	60 310	3.88	8.13	7.02	20.44	37.53	0.47	17.17	2.56	0.65	2.08
1973	60 783	3.71	7.95	7.03	20.60	37.21	0.43	17.72	2.54	0.74	1.91
1974	60 655	3.52	7.79	7.13	21.06	36.05	0.88	18.33	2.56	0.86	1.96
1975	60 577	3.26	7.61	7.31	21.42	33.91	1.86	18.85	2.55	0.94	2.14
1976	60 228	3.10	7.47	7.36	22.08	33.35	1.71	19.34	2.57	1.04	2.11
1977	60 173	2.98	7.31	7.40	22.10	33.28	1.51	19.68	2.58	1.14	2.19
1978	60 173	2.91	7.26	7.40	22.27	32.91	1.38	19.67	2.58	1.14	2.45
1979	60 214	2.77	7.25	7.35	22.71	32.82	1.19	19.84	2.56	1.10	2.47
1980	60 437	2.70	7.20	7.31	23.15	32.64	1.17	19.72	2.51	1.09	2.59
1981	60 644	2.62	7.17	7.37	23.36	31.73	1.76	19.75	2.47	1.09	2.74
1982	60 561	2.55	7.14	7.48	23.33	30.47	2.59	20.06	2.42	1.18	2.86
1983	60 255	2.47	7.12	7.56	23.15	29.55	3.22	20.56	2.42	1.30	2.88
1984	60 063	2.42	7.11	7.54	23.36	28.99	3.14	21.03	2.43	1.37	2.76
1985	60 155	2.36	7.07	7.47	23.39	28.52	3.11	21.34	2.43	1.47	2.65
1986	60 198	2.28	7.10	7.36	23.63	28.37	2.98	21.37	2.46	1.70	2.67
1987	60 149	2.13	7.04	7.38	23.87	27.97	3.03	21.55	2.49	1.89	2.69
1988	60 478	2.02	6.97	7.35	24.17	27.59	3.09	21.43	2.48	1.99	2.91
1989	61 097	1.89	7.02	7.28	24.23	27.55	2.92	21.44	2.45	2.11	3.02
1990	62 142	1.80	6.98	7.17	24.75	27.78	2.55	21.33	2.39	2.20	3.19
1991	63 168	1.68	7.01	7.04	25.06	27.71	2.34	21.33	2.37	2.13	3.23

Table 4 : Relative welfare positions[1] by status of head of household in the Federal Republic of Germany (West), 1972 - 1991

Year	Annual average equivalent income in DMark	Group - specific average equivalent income in % of overall average equivalent income by status of head of household					Not gainfully employed with ... as main source of income			
		Farmers	Self-employed (without farmers)	Civil servants (Beamte)	White collar workers	Blue collar workers	Unemploy-ment benefits	Social old age and survivors pensions	State pensions for civil servants	Social assistance
1972	11 000	90.00	228.18	110.91	106.36	76.36	60.00	84.55	122.73	53.64
1973	11 800	88.14	211.86	114.41	107.63	77.97	61.86	86.44	127.97	53.39
1974	12 500	76.00	193.60	119.20	110.40	79.20	66.40	89.60	132.80	55.20
1975	13 700	88.32	179.56	119.71	109.49	79.56	67.88	89.78	134.31	53.28
1976	14 700	94.56	197.96	116.33	107.48	77.55	62.59	91.16	131.97	52.38
1977	15 500	88.39	193.55	116.13	108.39	78.71	60.00	93.55	132.26	52.26
1978	16 700	82.63	201.80	114.97	107.78	79.04	59.88	91.62	128.74	49.70
1979	17 900	73.18	206.70	114.53	107.82	79.89	60.89	90.50	128.49	48.60
1980	18 600	65.05	177.96	117.20	109.68	81.72	62.37	93.01	134.41	49.46
1981	19 300	65.80	154.92	119.17	110.88	83.42	64.25	94.82	139.38	49.22
1982	19 900	80.90	144.72	118.09	112.06	82.91	62.81	96.48	141.21	48.74
1983	20 700	64.25	182.61	115.94	110.63	81.16	59.42	93.72	134.30	47.83
1984	21 600	71.30	198.15	113.43	109.26	79.63	56.94	91.67	130.56	48.15
1985	22 400	65.63	206.70	113.84	108.48	79.46	56.25	90.18	129.02	50.00
1986	23 900	74.06	227.62	111.72	107.53	79.08	55.65	87.87	124.69	48.54
1987	24 600	60.57	232.11	112.20	108.13	78.86	56.91	87.80	123.98	48.37
1988	26 100	73.95	245.21	109.58	106.51	77.78	56.32	86.21	120.31	47.13
1989	27 100	87.08	241.70	108.86	107.01	77.12	55.35	87.82	120.30	46.86
1990	29 400	74.15	255.78	107.82	106.46	77.21	55.10	85.03	115.99	44.90
1991	30 000	67.33	240.00	109.33	107.00	77.33	55.33	87.67	119.67	46.67

[1] The relative welfare position is defined as group-specific average equivalent income in percent of overall average equivalent income. Equivalent income is based on an equivalence scale used by the Statistisches Bundesamt (Federal Statistic Office) : the head of household is weighted by a factor of 1.0, other household members of 15 years or more are weighted by a factor of 0.7, household members up to 15 years by a factor of 0.5.

Source : Statistisches Bundesamt (III B) 1993: Verfügbares Einkommen, Zahl der Haushalte und Haushaltsmitglieder nach Haushaltsgruppen - Aktualisierte Ergebnisse der Volkswirtschaftlichen Gesamtrechnungen für die Jahre 1972 bis 1992, Wiesbaden (Sonderdruck).

Table 5: Economic indicators of the Federal Republic of Germany (West) for benchmark years
- in percent -

	1973	1978	1983	1985	1987	1990
Rate of real growth of national income per capita	4.4	5.3	2.2	2.6	3.4	3.6
Rate of inflation	6.7	2.6	3.3	2.0	0.1	2.7
Unemployment rate	1.2	4.1	8.8	8.9	8.5	6.9
Share of long-term-unemployed	--	14.7	24.9	31.0	31.8	29.7
Share of gross earnings of workers and employees in gross market income of household sector	62.6	62.6	63.7	61.9	61.4	59.4

Sources: Statistisches Bundesamt (III B) 1993: Verfügbares Einkommen, Zahl der Haushalte und Haushaltsmitglieder nach Haushaltsgruppen - Aktualisierte Ergebnisse der Volkswirtschaftlichen Gesamtrechnungen
für die Jahre 1972 bis 1992 -, Wiesbaden (Sonderdruck);
and Statistisches Bundesamt (III B) 1993: Einkommensverteilung nach Haushaltsgruppen und Einkommensarten - Aktualisierte Ergebnisse der Volkswirtschaftlichen Gesamtrechnungen für die Jahre 1972
bis 1992 -, Wiesbaden (Sonderdruck).
Sachverständigenrat: Jahresgutachten 1992/93 zur Begutachtung der gesamtwirtschaftlichen Entwicklung, Bundestagsdrucksache 12/3774, pp. 118, 296, 309, 383;
Bundesanstalt für Arbeit: Amtliche Nachrichten (ANBA), vol. 40 (1992), p. 84 and vol. 41 (1993), p. 85;
and own computations.

Table 6: Indicators of the inequality of earnings[1] in the Federal Republic of Germany (West), 1973 - 1990

Inequality measures	1973	1978	1983(a)	1983(b)	1985	1987	1990
Gini-coefficient	0.3256	0.3330	0.3452	0.3594	0.3743	0.3693	0.3693
Atkinson-index							
$\varepsilon = 0.5$	0.0975	0.1046	0.1112	0.1179	0.1296	0.1243	0.1281
$\varepsilon = 2.0$	0.4654	0.5181	0.5435	0.5519	0.5914	0.5757	0.5992
Theil-index	0.2359	0.2598	0.2769	0.2210	0.2428	0.2334	0.2443
Quintile shares in %							
1st quintile	4.85	4.41	4.25	3.96	3.42	3.72	3.63
2nd quintile	13.08	12.94	12.76	12.20	11.61	11.72	11.98
3rd quintile	19.82	19.91	19.46	18.90	18.99	18.93	18.94
4th quintile	24.96	24.94	24.58	24.98	25.09	25.05	24.71
5th quintile	37.29	37.70	38.95	39.76	40.87	40.49	40.72

[1] Reference group: all German persons having reported wage earnings, bottom coding at the level of D Mark 100,-- per month.

Sources: col. 1-3: EVS 1973, 1978, 1983; col. 4-7: GSOEP, waves 1984, 1986, 1988, 1991; own computations.

Table 7: Indicators of income inequality in the Federal Republic of Germany (West) based on equivalent income[1], 1973 - 1990

Inequality measures	1973	1978	1983(a)	1983(b)	1985	1987	1990
Gini-coefficient	0.2537	0.2535	0.2548	0.2504	0.2595	0.2517	0.2601
Atkinson-index							
$\varepsilon = 0.5$	0.0527	0.0539	0.0534	0.0505	0.0552	0.0518	0.0557
$\varepsilon = 2.0$	0.1765	0.1774	0.1877	0.1944	0.1943	0.1828	0.2008
Theil-index[2]	0.1038	0.1051	0.1065	0.1057	0.1177	0.1100	0.1186
Quintile shares in %							
1st quintile	10.36	10.40	10.08	10.09	9.84	10.09	9.85
2nd quintile	14.12	14.15	14.18	14.23	13.99	14.31	14.09
3rd quintile	17.53	17.53	17.72	17.87	17.77	17.78	17.60
4th quintile	22.12	22.06	22.38	22.64	22.67	22.44	22.49
5th quintile	35.87	35.86	35.64	35.16	35.65	35.38	35.96

[1] Equivalence scale derived from the scale specified in social assistance law:-- head of household: 1.0; -- other household members -- aged 22 years or more: 0.80; -- aged 16 to 21 years: 0.90; -- aged 12 to 15 years: 0.75; -- aged 7 to 11 years: 0.65; -- aged up to 6 years: 0.45. The calculations for all years refer only to the subpopulation with a head of household of German nationality. Data for households with a non-German head referring to the years 1973 - 1983 (a) are not available. Calculations with the GSOEP-data for the years 1983 (b) - 1990 including households with a foreign head showed only very slight differences in the inequality measures (mostly less than 1 %, maximum 1.9 %)

[2] Strictly decomposable version of the Theil-index, which is bottom sensitive.

Sources: col. 1-3: EVS 1973, 1978, 1983; col. 4-7: GSOEP, waves 1984, 1986, 1988, 1991; own computations.

Table 8: The distribution of persons by relative welfare positions[1] in the
Federal Republic of Germany (West), 1973 - 1990
(in % of all persons in private households)

Year	Relative welfare position (in relation to average equivalent income)					
	< 0.5	0.5 - 0.75	0.75 - 1.0	1.0 - 1.25	1.25 - 1.5	> 1.5
1973	7.1	28.3	26.9	16.4	9.2	12.0
1978	6.9	28.5	27.1	16.8	9.1	11.6
1983 (a)	7.9	26.9	26.3	17.2	9.7	11.9
1983 (b)	8.3	25.6	25.5	17.9	9.9	12.7
1985	8.5	26.6	24.8	16.3	11.0	12.8
1987	7.7	25.6	26.7	18.0	10.2	11.4
1990	8.8	25.6	24.8	17.8	10.0	13.0

[1] Equivalence scale derived from the scale specified in social assistance law.

Sources: line 1-3: EVS 1973, 1978, 1983; line 4-7: GSOEP, waves 1984, 1986, 1988, 1991; own computations.

Table 9: Decomposition of overall inequality by occupational status of head of household, based on equivalent income[1], Federal Republic of Germany (West), 1973 - 1990 (resident foreigners excluded)

	1973	1978	1983 (a)	1983 (b)	1985	1987	1990
Overall Theil-index	0.1038	0.1051	0.1065	0.1057	0.1177	0.1100	0.1186
Share of within-groups inequality (in %)	79.1	79.3	83.8	84.1	85.7	85.0	86.8
Share of between-groups inequality (in %)	20.9	20.7	16.2	15.9	14.3	15.0	13.2
Occupational status of head of household	Group - specific Theil-index						
Self-employed	0.1430	0.1740	0.1531	0.1389	0.1677	0.1649	0.1582
Farmers	0.0647	0.0708	0.0728	0.1004	0.0777	0.1009	0.1117
Civil servants	0.0730	0.0696	0.0693	0.0789	0.0719	0.0763	0.0797
White collar workers	0.0817	0.0777	0.0853	0.0864	0.0962	0.0805	0.1012
Blue collar workers	0.0593	0.0567	0.0579	0.0759	0.0759	0.0647	0.0803
Not gainfully employed	0.1001	0.0979	0.1125	0.0950	0.1246	0.1223	0.1193
	Group - specific population share (in %)						
Self-employed	8.2	7.4	7.4	6.9	6.8	6.4	5.9
Farmers	3.5	2.9	2.5	2.7	2.4	2.4	1.8
Civil servants	7.9	8.2	8.2	8.7	9.3	9.1	8.0
White collar workers	22.7	23.4	24.6	24.9	26.1	25.9	28.1
Blue collar workers	34.1	30.0	27.5	29.4	27.3	27.5	26.5
Not gainfully employed	23.6	28.1	29.9	27.3	28.1	28.6	29.8
	Group - specific share of within-group inequality (as percent of within-groups inequality altogether)						
Self-employed	14.2	15.4	12.6	10.8	11.3	11.3	9.0
Farmers	2.8	2.5	2.0	3.0	1.9	2.6	1.9
Civil servants	7.1	6.8	6.4	7.8	6.6	7.4	6.2
White collar workers	22.5	21.8	23.5	24.2	24.9	22.3	27.6
Blue collar workers	24.6	20.4	17.8	25.1	20.5	19.0	20.7
Not gainfully employed	28.7	33.0	37.6	29.1	34.7	37.4	34.6

[1] Equivalence scale derived from the scale specified in social assistance law.

Sources: col. 1-3: EVS 1973, 1978, 1983; col. 4-7: GSOEP, waves 1984, 1986, 1988, 1991; own computations.

Table 10: Decomposition of overall inequality by occupational status of head of household/by main income source if not gainfully employed, based on equivalent income [1] , Federal Republic of Germany (West), 1973 - 1983 (resident foreigners excluded)

	1973			1978			1983		
Overall Theil-index	0.1038			0.1051			0.1065		
Share of within-groups inequality (in %)	74.1			74.6			76.4		
Share of between-groups inequality (in %)	25.9			25.4			23.6		
Occupational status of head of household/main income source (m.i.s.)	Group-specific Theil-index	Group-specific population share (in %)	Group-specific share of within-groups-inequality (in %)	Group-specific Theil-index	Group specific population share (in %)	Group-specific share of within-groups-inequality (in %)	Group-specific Theil-index	Group-specific population share (in %)	Group-specific share of within-groups-inequality (in %)
Self-employed	0.1430	8.2	15.2	0.1740	7.4	16.4	0.1531	7.4	13.9
Farmer	0.0647	3.5	3.0	0.0708	2.9	2.7	0.0728	2.5	2.2
Civil servant	0.0730	7.9	7.5	0.0696	8.2	7.3	0.0693	8.2	7.0
White collar worker	0.0817	22.7	24.1	0.0777	23.4	23.2	0.0853	24.6	25.8
Blue collar worker	0.0593	34.1	26.3	0.0567	30.0	21.7	0.0579	27.5	19.5
Not gainfully employed/m.i.s.[2] old-age tansfers from social insurance (I)	0.0760	12.6	12.5	0.0750	16.8	16.1	0.0794	16.9	16.5
Not gainfully employed/m.i.s.[2] state pensions to former civil servants (II)	0.0675	3.7	3.2	0.0615	3.6	2.8	0.0631	3.7	2.8
Not gainfully employed/m.i.s. [2] old-age transfers I + II	0.0710	0.3	0.3	0.0680	0.4	0.4	0.0698	0.3	0.3
Not gainfully employed/m.i.s.[2] transfers from unemployment insurance	0.0770	0.1	0.1	0.0781	0.2	0.3	0.0734	0.7	0.6
Not gainfully employed/m.i.s. [2] state transfers, mostly means-tested	0.0655	1.3	1.2	0.0852	1.4	1.5	0.0837	1.4	1.5
Not gainfully employed/m.i.s.[2] none of the above mentioned transfers	0.0913	5.6	6.6	0.1077	5.6	7.6	0.1161	7.0	9.9

1) Equivalence scale derived from the scale specified in social assistance law.
2) m.i.s. = main income source of the household.
Source: EVS 1973, 1978, 1983; own computations.

Table 11: Indicators of income inequality[1] in the Federal Republic of Germany (FRG; 1989), the German Democratic Republic (GDR; 1990) and the "new" states of the FRG (East-Germany; 1991)

Inequality measures	FRG 1989 (West-Germany)	GDR 1990	East-Germany 1991
Gini-coefficient	0.274	0.187	0.199
Atkinson-index			
$\varepsilon = 1$	0.119	0.056	0.067
$\varepsilon = 2$	0.226	0.111	0.136
Quintile shares in %			
1st quintile	9.29	11.75	11.34
2nd quintile	13.73	15.77	16.07
3rd quintile	17.60	19.25	18.90
4th quintile	22.65	23.00	22.33
5th quintile	36.73	30.23	31.36

[1] The figures refer to the distribution of equivalent income. The basic equivalence scale is derived from the scale specified in social assistance law. In contrast to table 7, a different income concept has been used: to net household income reported for one month (FRG: March or April; GDR: May) one twelfth of single payments as well as the imputed rental value of owner-occupied houses and apartments has been added. Additionally, resident foreigners are included.

Source: Wagner, Gert/ Hauser, Richard/ Müller, Klaus/ Frick, Joachim 1992: Einkommensverteilung und Einkommenszufriedenheit in den neuen und alten Bundesländern, in: Glatzer, Wolfgang/ Noll, Heinz-Herbert (Hrsg.) 1992: Lebensverhältnisse in Deutschland: Ungleichheit und Angleichung. Soziale Indikatoren XVI, Frankfurt a. M./ New York, p.91-137.

Arbeitspapiere des EVS-Projekts "Personelle Einkommensverteilung in der Bundesrepublik Deutschland"
(Stand: Juni 1995)

Arbeitspapier Nr. 1: The Development of the Income Distribution in the Federal Republic of Germany during the Seventies and Eighties (Richard Hauser und Irene Becker).

Arbeitspapier Nr. 2: Die Entwicklung der Einkommenslage von Familien über zwei Dekaden - einige empirische Grundlagen zur Würdigung der deutschen Familienpolitik (Richard Hauser).

Arbeitspapier Nr. 3: Die Entwicklung der Einkommensverteilung in der Bundesrepublik Deutschland in den siebziger und achtziger Jahren (Irene Becker und Richard Hauser).

Arbeitspapier Nr. 4: Die Veränderung der personellen Einkommensstruktur in der Bundesrepublik Deutschland (Uwe Fachinger und Jürgen Faik).

Arbeitspapier Nr. 5 (erscheint demnächst): Kostenelemente eines Bürgergeldmodells (Irene Becker).