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**Working Paper**

## The distribution and re-distribution of income of self-employed as freelancers and entrepreneurs in Europe

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## **The distribution and re-distribution of income of self-employed as freelancers and entrepreneurs in Europe**

**Joachim Merz and Dierk Hirschel**

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# The distribution and re-distribution of income self-employed as freelancers and entrepreneurs in Europe

Joachim Merz and Dierk Hirschel

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## Abstract

The economic transformations of modern industrial societies have changed the labor markets in terms of industrial relations and occupational structure. The transformation of the traditional welfare state, the deregulation of the labor markets, the technological change and the reorganization of industrial structures influenced strongly the attitude of individuals towards their preferred labor contract. The structural change of the occupational structure was one of the results of this tendency. In particular the self-employed and freelancers have been affected and are a driving factor of labor market changings. On the one side the value of autonomy regarding industrial relations is becoming more important for employees. On the other side employers want to get rid of social security contributions. As a result the multitudinousness of these professions increased.

The increasing varieties of occupations among the self-employed and freelancers influenced strongly their income distribution. Recent studies for Germany have shown a great dispersion and a heterogeneous structure of earnings in particular of freelancers (liberal professions) and self-employed. Though there are a variety of international income distribution studies, but – as to the best to our knowledge – no study focusing on the self-employed and freelancers within the total labor force. In our study we concentrate on the income distribution of self-employed and freelancers in different European countries. Based on the Luxembourg Income Study (LIS) we analyze five different European countries and the United States structured by different types of welfare states according to Esping Anderson. We analyze income distributional aspects, an occupational decomposition à la Shorrocks, and re-distributional effects of the tax and transfer systems.

**JEL:** J20, J23, D31

**Keywords:** *Europe, Income distribution of freelancers and self-employed, decomposition of inequality, re-distribution, LIS microdata*

## Zusammenfassung

Der ökonomische Strukturwandel moderner Industriestaaten hat deren Arbeitsmärkte hinsichtlich der Struktur der Beschäftigungsverhältnisse nachhaltig verändert. Die Transformation der traditionellen Wohlfahrtsstaaten, die Deregulierung des Arbeitsmarktes, der technologische Wandel und die Reorganisierung industrieller Strukturen haben die individuellen Präferenzen von Arbeitgebern und Arbeitnehmern bezüglich des von ihnen bevorzugten Arbeitsverhältnisses sehr stark beeinflusst. Der Strukturwandel der Berufsstruktur als Ausdruck der Veränderung von Beschäftigungsverhältnissen war ein Ergebnis dieses Trends. Insbesondere Selbständige und Freiberufler wurden von dieser Entwicklung betroffen und sind gleichzeitig ein Motor der Veränderungen auf dem Arbeitsmarkt. Einerseits wird für die Arbeitnehmer der Grad an individueller Autonomie im Beschäftigungsverhältnis von immer größerer Bedeutung. Andererseits versuchen Arbeitgeber Sozialbeiträge zu senken. Folglich nahm die Vielfältigkeit der Beschäftigungsverhältnisse in diesem Bereich deutlich zu.

Diese zunehmende Vielfalt der unterschiedlichen Formen von Selbständigkeit prägte nachhaltig die Einkommensverteilung von Selbständigen und Freiberuflern. Jüngste Studien für die Bundesrepublik Deutschland dokumentieren eine zunehmende Ungleichheit und heterogene Struktur der Einkommen und Einkommensverteilung von Selbständigen und Freiberuflern. Trotz des Sachverhalts, dass bereits eine ganze Reihe an internationalen Studien zur Einkommensverteilung existieren, gibt es nach unserem Kenntnisstand bis zum jetzigen Zeitpunkt keine Untersuchung, die sich spezifisch mit der Einkommensverteilung von Selbständigen und Freiberuflern auseinandersetzt. In unserer Studie konzentrieren wir uns auf die Einkommensverteilung von Selbständigen und Freiberuflern in unterschiedlichen europäischen Ländern. Mit Hilfe der Datenbasis der Luxemburg Income Study analysieren wir fünf unterschiedliche europäische Industriestaaten und die Vereinigten Staaten, ausdifferenziert nach der Typologie der Wohlfahrtsstaatsregime von Esping Anderson. Wir untersuchen Aspekte der Einkommensverteilung, die Umverteilungswirkung des staatlichen Verteilungsmechanismus und führen eine Dekomposition nach Berufsgruppen à la Shorrocks durch.

**JEL:** J20, J23, D31

**Schlagwörter:** *Europa, Einkommensverteilung von Freiberuflern und Selbständigen, Dekomposition von Ungleichheit, Umverteilung, LIS-Mikrodaten*

# **The distribution and re-distribution of income of self-employed as freelancers and entrepreneurs in Europe**

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# The distribution and re-distribution of income of freelancers and self-employed in Europe

Joachim Merz and Dierk Hirschel<sup>1</sup>

## 1 Introduction

The economic transformations of modern industrial societies have changed the labor markets in terms of industrial relations and occupational structure. The transformation of the traditional welfare state, the deregulation of the labor markets, the technological change and the reorganization of industrial structures influenced strongly the attitude of individuals towards their preferred labor contract. The structural change of the occupational structure was one of the results of this tendency. In particular the self-employed as entrepreneurs and freelancers (liberal professions) have been affected and are a driving factor of labor market changes.

The increasing varieties of occupations among the self-employed and freelancers influenced strongly their income distribution. In our study we concentrate on the income distribution of self-employed as entrepreneurs and freelancers in different European countries in the 80ies and in the 90ies. Based on the Luxembourg Income Study (LIS) we analyze five different European countries and the United States structured by different types of welfare states according to Esping Anderson. We analyze income distributional aspects, inequality decompositions in occupational groups à la Shorrocks, and re-distributional effects of the tax and transfer systems.

Though there are numerous international income distributional analyses (Hauser and Becker 2000 Smeeding and Gottschalk 2000, Förster 1993; Beblo and Knaus 2001 e.g. particular for Euroland), all of them traditionally certainly look on different occupational groups, mainly the employees, but none of them – as to the best of our knowledge – focus on the self-employed and in particular on the freelancers (liberal professions).

Income inequality of all active people increased in the majority of the industrialized countries within the last two decades (cp. Smeeding 2000, Merz 2001; Becker and Hauser 1995, 2001 e.g. for Germany). This trend holds for the major occupational groups.

Compared to other occupational groups the level of income inequality of the self-employed seems to be very high. Recent studies for Germany have shown a great dispersion in the income of self-employed in particular (cp. Merz 2001, Merz and Kirsten 1995, 1996). One of the reasons is that the self-employed are a very heterogeneous group. This heterogeneity increased in the last decades presumably resulting in growing income inequality. In our study

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we try to find out if there is a common trend of growing inequality amongst the self-employed in Europe.

The well-being of the self-employed depends - besides the economic success of their business and further factors - on the tax and social contribution system. Different regimes of welfare states have different distributional and re-distributional impacts on the distribution of the net-income of self-employed. In our study we ask how different regimes of welfare-states affect the distribution and re-distribution of the self-employed income.

This study is organized as follows: Section 2 characterizes our occupational group of particular interest: the self-employed divided by freelancers and entrepreneurs. Section 3 describes the different regimes of welfare states and selected countries we investigate therein. In section 4 we outline our microdata base, the Luxemburg Income Study (LIS) data base and define the occupational groups of self-employed and freelancers for the countries selected. Section 5 presents the empirical results of income distribution and re-distribution developments from the eighties to the nineties in Europe. First, embedding our analysis into the overall situation, we compare the self-employed with the employees' development. Second, the self-employed, divided by entrepreneurs and freelancers, then are in the focus of the distributional and re-distributional analysis. Within the concluding remarks we discuss the results in the overall framework of welfare state regimes.

## 2 Self-employed: Freelancers and Entrepreneurs

In our study we focus on the income distribution and re-distribution of freelancers and self-employed. In an international comparison, in particular, we face the problem of different national labor market institutions with different understandings of occupational grouping. In general, besides the grouping into employees and self-employed, the self-employed may be divided into freelancers (liberal professions, professions, 'Freie Berufe') and entrepreneurs. Freelancers are a prominent part of the self employed ranging from the traditional professions like doctors, architects, lawyers, tax advisors, journalists, writers and authors, artists, designers, to new professions like information brokers and environmental consultants. Entrepreneurs, the other part of the self-employed, are carrying on a trade or are farmers.

Only recently a common definition of freelancers in Europe was given by the European Court of Justice of the European Communities<sup>2</sup> characterizing a freelance activity as highly qualified, marked intellectual, personal and economically independent. In many countries national legal frameworks show no clear borderline between freelancers and the self-employed. In contrast to other countries, however, in Germany freelance work (Freie Berufe,

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<sup>2</sup> Professions, Liberal Professions, Freelancers (Freie Berufe): Definition of the Court of Justice of the European Communities: The liberal professions mentioned in Annex F(2) to the Sixth Directive 77/388 are activities which

- involve a *marked intellectual character*,
- require a *high-level qualification*
- and are usually *subject to clear and strict professional regulation*.
- In the exercise of such an activity, *the personal element* is of special importance
- and such exercise always involves a *large measure of independence* in the accomplishment of the professional activities.

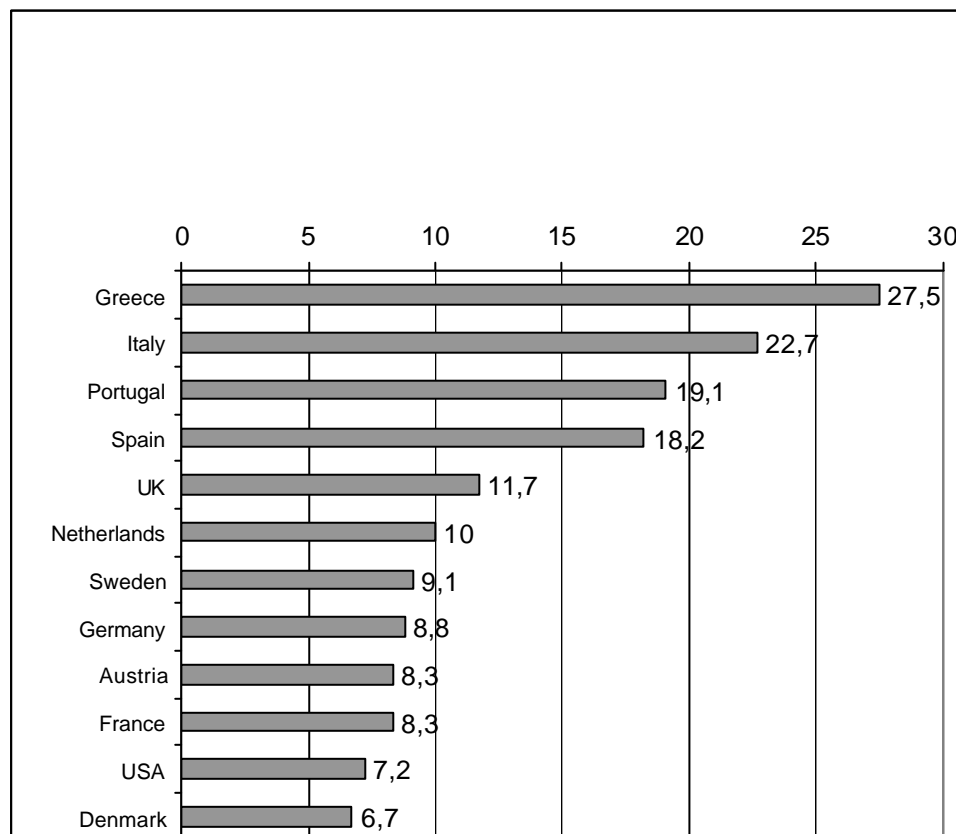
Source: Judgement of the Court of Justice of the European Communities (Second Chamber), 11 October 2001, case number C-267/99, Christiane Adam ./ Administration de l'enregistrement et des domaines, on the interpretation of Annex F(2) of the Sixth Council Directive (77/388/EEC) of May 1977 on the harmonisation of the laws of the member States relating to turnover taxes – Common system of value added tax: uniform basis of assessment (OJ 1977 L 145, p.1)

liberal professions) is legally defined via §18 of the German Income Tax Law: According to §18 Par. 1 Einkommensteuergesetz (EStG, Income Tax Law)) a freelance ('freiberufliche') activity is characterized as a self-employed scientific, artistic, journalistic, instructional or educational activity according to an enumerated catalogue of appropriate distinct and additionally with similar occupations.<sup>3</sup>

The quantitative importance of self-employed varies intensely all over Europe. In Greece, for example, at the end of the last century, the self-employed cover even one third of the active population,<sup>4</sup> in Germany the percentage of the self-employed of all active persons is about 9% (see Figure 1).

Freelancers within the self-employed are of increasing importance in increasing service economies; in Germany e.g. in 2002 about 20% of all self-employed are freelancers. Since there is almost no official statistical data available with regard to freelancers such data can only be achieved via inspecting microdata sets. In addition to our distributional analyses, in our study we shall be able to present such data in a European context (see chapter 5).

**Figure 1: Self-employment in an international comparison:  
Self-employment in percentage of all active people (%) 1997**



Source: Labor Force Statistic, OECD 1997

<sup>3</sup> According to the **German Constitutional Law Judgement (Bundesverfassungsgerichtsurteil) of 02.25.1960** (BVerfGE 10, 354 (364 pp)) the following is characteristic for a freelance ('freiberufliche') activity: intellectual performance which support ideal values of the society; performance in own responsibility and by own working capacity and personal abilities; performance in economic independence.

<sup>4</sup> The high percentage is probably caused by a huge informal sector.



### 3 Welfare States in an International Comparison

In the second half of the twenty century one could see the development of different patterns of welfare-state-regulation representing their different national characteristics. The comparative welfare-state research is trying to figure out a special differentiating typology. The welfare-state regime typology by Esping-Anderson (1990) covers three major categories: The social democratic model of Scandinavia, the conservative-cooperative-model of continental Europe and the liberal-model of the anglo-saxonian area.

Relevant for the differentiation are three criteria: First of all the interaction of the institutions market, family, state and household. Secondly the degree of de commodification of labor, and finally, the way structures of social-inequality are prevented, produced or reproduced by interventions of different types of regimes.

The liberal welfare-states have their main focus on the role of the market and the family. The institutions of the welfare-state are only subordinated. Central is the principle of self-responsibility. Social rights have only little relevance. For our study we picked out the USA as an example for a liberal welfare state.

The conservative welfare-state intervenes stronger. The institutions guarantee the occupational status of the individual. It is characterized by a well developed social-insurance-system. Social rights are combined with class and status of the individual. Claims are based on property laws. We took Germany, France and Italy as examples of conservative welfare-states.

The social democratic regimes try to archive equality on the highest possible level. The institutions of the welfare state aspire to emancipate the individuals from the dependences of the market. Claims are based on the social rights of the citizen. The system of maintenance is independent from the social status. The labor market regime is oriented to the principle of full-employment. For our study we select Sweden as a representative for a social democratic regime.

The post-authoritarian regime is characterized by the fragmentation of the social security and a low level of social-benefits. There are no universal social rights. Deregulation and flexibility dominate the labor market (cp. Lessenich and Ostner 1998). In our research framework we took Poland as an example.

Table 1 summarizes constitutional elements of these welfare state regimes and our selected regime specific countries.

**Table 1: Regimes of welfare-states in comparison**

Type of regime	social democratic	conservative	liberal	post-authoritarian
Countries	Sweden	Germany, France, Italy	USA	Poland
Central element of welfare mix	state	subsidiary	market	household
Dominant system of social security	maintenance	insurance	provision	family
characteristic pattern of regulation of labor market policy	full-employment	disemployment	self-employment	non-standard employment
capacity of redistribution	strong	weak	weak	weak

Source: Lessenich 1998, Esping-Anderson 1990

Our hypothesis to investigate is: according to the self-employed in particular, do we have the most unequal distribution in the liberal welfare states and the most equal one in the social democratic welfare state regimes? Does the conservative welfare states will be in between? And all over, do the empirical inequality pattern in Europe in the eighties and the nineties support such a description of welfare states?

## 4 LIS-Database

### 4.1 LIS-Database - General characteristics and selected countries

There are a number of reasons why income distribution analyses for the self-employed are missing or are so rare. The reasons may be summarized as reporting and measurement together with small sample problems which would bias the real picture with misleading results. At least with large microdata sets one can circumvent the small sample problem. With regard to self-employed reporting and measurement errors one has to admit, that typically in cross section surveys no final income situation with all final firm side and tax regulations and payments can be regarded. It is merely a more subjective measure what is put for current living conditions.<sup>5</sup> Thus, a broad microdatabase with comparable information for European countries as well as for the discussed welfare state regimes is needed for our analysis. Such a microdatabase is available: it is the Luxemburg Income Study.

The Luxemburg Income Study (LIS) is a non-for-profit cooperative research project with a membership that includes 25 countries on four continents: Europe, America, Asia and Oceania (see: [www.lisproject.org](http://www.lisproject.org)). The LIS project started in the year 1983. The project is mainly funded by the national science and social science research foundations of its member countries.

The LIS database is a collection of household income surveys. These surveys provide demographic, income and expenditure information on three different levels: household, person and child (see: [www.lisproject.org/introduction/history.htm](http://www.lisproject.org/introduction/history.htm)). The LIS/LES team harmonizes and standardizes the micro-data from the different surveys in order to facilitate comparative research. For our study the countries we selected are based on the surveys described in Table 2.

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<sup>5</sup> For a further in-depth discussion of self-employed income measurement see Eardley and 1994 and Merz 2000

**Table 2: LIS-Database: Selected countries in the 90ies and 80ies**

	80ies	90ies
<b>Germany</b>	SOEP 1984	SOEP 1994
<b>Sweden</b>	HINK 1987 <sup>6</sup>	HINK 1995
<b>France</b>	Enquete Budget des familles 1995 <sup>7</sup>	Enquete Budget des familles 1995
<b>Italy</b>	L'Indagine Campionaria sui Bilanci delle Famiglie Italiane 1986 <sup>8</sup>	L'Indagine Campionaria sui Bilanci delle Famiglie Italiane 1995
<b>Poland</b>	X	Badania Budzetow Gospodarstw Domowych <sup>9</sup> 1995
<b>USA</b>	The March Current Population Survey (CPS) 1986	The March Current Population Survey (CPS) 1994

Source: LIS: <http://www.lisproject.org/techdoc.htm>

As income aggregate we use the total gross income and the net income after taxes on the household level. The total gross income includes the following components: Gross wages and salaries, farm self-employment income, self-employment income, cash property income, sick pay, accident pay, disability pay, social retirement benefits, basic old age benefits, child or family allowances, unemployment compensation, maternity allowances, military/vet/war/-benefits, other social insurance, means-tested cash benefits, private pensions, public sector pensions, alimony or child support, other regular private income and other cash income.

The net income is the gross income less mandatory contributions for self-employed, income taxes and mandatory employee contributions. The net income aggregate is a proxy of the well-being of the household.

The income variables are recorded as yearly amounts in national currency. For comparable reasons we have to restrict our analyses to the household level, where the occupational status of the household head is defining the household's occupational status.

In general, income data for self-employed have to be handled with precaution. The reports for the income data of self-employed are made voluntarily. There is no way to control these reports. As addressed, final gains and losses of self-employed often only could be realized after the survey period. These restrictions have to be considered, when we interpret the empirical results of our study.

#### 4.2 Freelancers and self-employed: LIS data definitions

Certainly, there are possibilities to define freelancer in European countries in the spirit of the mentioned European Constitutional Law judgement, however, there are many information missing at least in the LIS datafiles to shed light in such a grey colored definition attempt. Therefore, in this study we follow the available freelance definition by European countries themselves. Following the way occupational groupings see itself with a respective variable in the LIS dataset, freelance definitions are only available for Germany, Italy, France and Poland.<sup>10</sup>

<sup>6</sup> INKOMSTFÖRDELNINGSUUNDERSÖKNINGEN 1987

<sup>7</sup> Household Budget Survey

<sup>8</sup> The Bank of Italy Income Survey

<sup>9</sup> Polish Household Budget Survey

<sup>10</sup> A freelance definition is also available for Greece but not considered here any further within our selection of welfare state regime countries

Table 3 describes the country specific LIS database possible definition of the freelancer and the self-employed which is further used in our analyses.

**Table 3: Definition of occupational groups**

	<b>Self-employed</b>	<b>Freelancer</b>
<b>Germany</b>	Independent farmers Self-Employed / 0-9 Co-Workers Self-Employed / >9 Co-Worker Academic Professions (1984) Assistance Family	Academic Professions (1984) Freelancer (1994))
<b>Sweden</b>	Entrepreneurs Farmers	
<b>France</b>	Independent(1984b) Unpaid family helper (1984b) Non paid family worker(1994) Self-employed (1994)	Liberal professions
<b>Italy</b>	Businessmen (1986) Doctor/lawyer (1986) Other Self-employed (1986) Professional/artist (1995) Sole proprietor (1995) Freelance (1995) Family company (1995) Active-shareholder partner (1995)	Doctor/lawyer (1986) Freelancer (1995)
<b>Poland</b>	Farmer Farm help, unpaid family members Employer Self-employed Independent professional	Independent Professionals
<b>USA</b>	Self-employed Agriculture (1986) Unpaid Agriculture (1986) Self employed non agriculture (1986)	

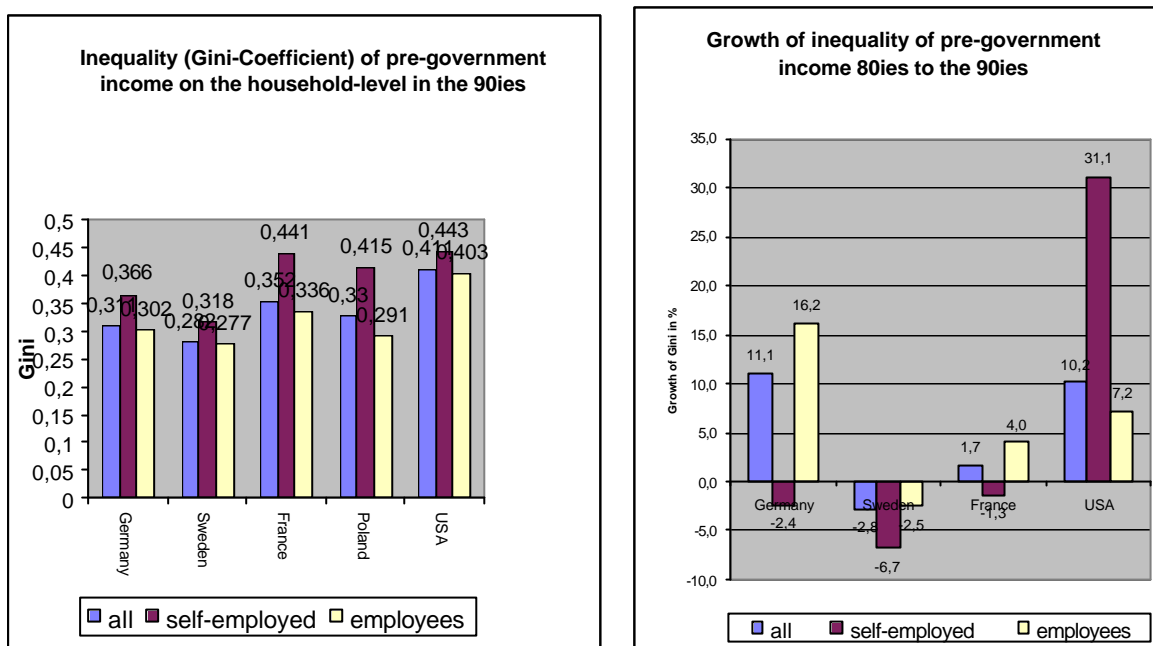
Source: LIS-database, own compilation

## 5 Income Distribution and Re-distribution in Europe in the 80ies and 90ies

We first embed our analysis into the overall occupational situation comparing the self-employed with the employees. The second section is about an in-depth analysis of the self-employed analyzing the distribution and re-distribution of both the self-employed groups, freelancers and entrepreneurs, in the 80ies and 90ies.

### 5.1 Overall Occupational Groups: self-employed and employees

According the available data for the two decades and countries under consideration we start the presentation of our results with the distribution of pre-government-income of all occupational groups divided by the self-employed and the employees. For the pre-government-household-income of self-employed we only have data from Germany, Sweden, France, Poland and the US.

**Figure 2: Inequality of pre-government-income**

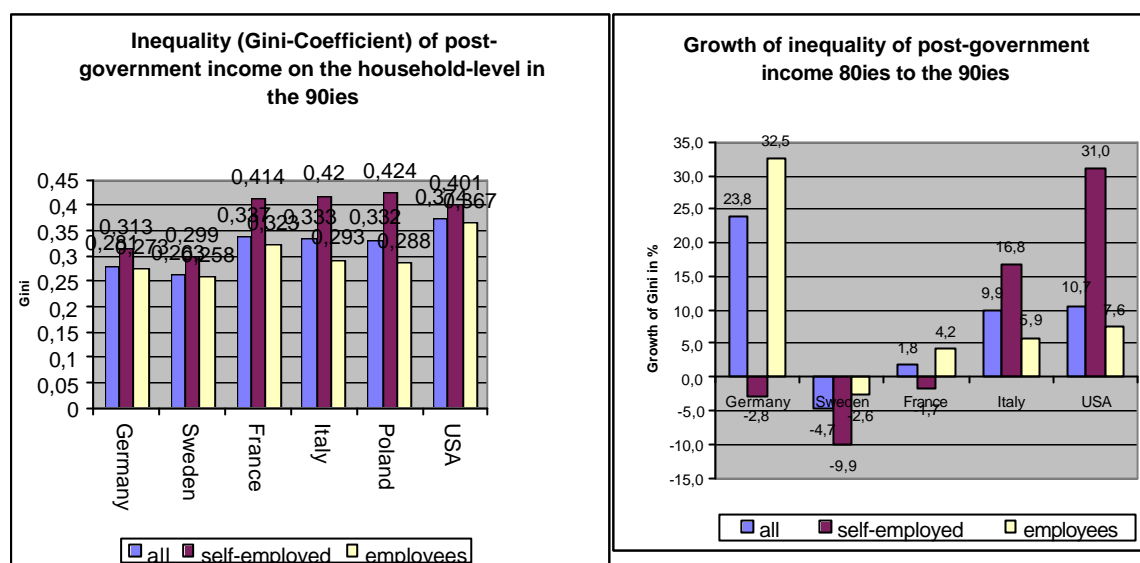
Source: LIS-Data, own computations

If we compare the level of inequality for the 90ies we see the highest level of inequality (measured by the Gini-coefficient) in the United States closely followed by France and Poland. In Sweden we find the most equal distribution of pre-government-income. Remarkably, inequality of self-employed income in all of our countries is significantly more pronounced than the inequality of the employees. The different levels of inequality reflect the different forms of regulation of the national labor markets. The United States with the most deregulated labor market have the highest level of inequality of pre-government income, while Sweden with the most regulated labor market in our study has the lowest level of inequality.

What's about the development of inequality from the 80ies to the 90ies? What we can see from Figure 2 is a growing allover inequality in the income-distribution of pre-government-income in Germany, France, and the US, from the 80ies to the 90ies.<sup>11</sup> In contrast to that overall picture, for the self-employed inequality even decreased in Germany and slightly in France, and the most in Sweden. The only considered country with a remarkable increase in the dispersion of self-employed income are the United States. The trends for Sweden and the US are in common with the specific structure of their labor markets.

The tax and transfer systems alter the inequality situation as follows: Figure 3 shows the highest level of inequality of post-government-income of the self-employed in Poland, followed by France and Italy. Sweden got the most equal post-government income-distribution of self-employed. As by the pre-government inequality picture: the self-employed in all these countries remain the group with a higher inequality than the employee's group.

<sup>11</sup> This is in line with Smeeding's 2000 findings of a u-shaped inequality trend in western countries.

**Figure 3: Inequality of post-government-income**

Source: LIS-Data, own computations

The low level and the decreasing trend of inequality in Sweden reflects the strong capacity of redistribution of social democratic welfare states. The high level and the growing trend of inequality in the United States stands in line with the weak capacity of redistribution of liberal welfare state regimes. The conservative welfare states of Germany, Italy and France with a weak capacity of redistribution have a level and trend (only for Germany and France) of inequality which is somewhere within between the results for the liberal and social democratic welfare states regimes.

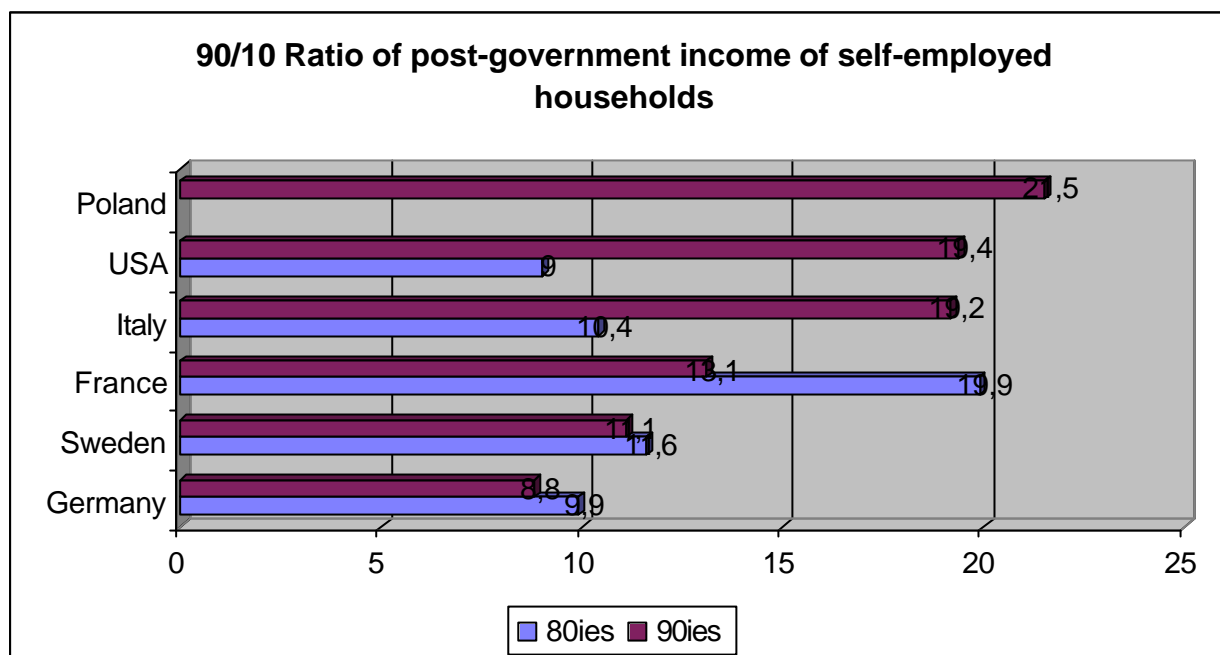
The growth of inequality over our countries shows a similar profile for the post-government income distribution as for the pre-government income distribution.

### Post-government income inequality in the 90ies: self-employed and employees

Table 4 shows an in-depth inspection of the post-government inequality of our six countries. Besides the mentioned Gini-coefficients (middle income sensitive), the Atkinson indices, describing the inequality situation by two inequality aversion levels, underlines the broader lower income spread of the self-employed compared to the employees. The 90/10 relations is an illustrative measure of overall spread by the multiple of the ten percent richest income share compared to the poorest ten percent income share. In line with the other overall inequality measures this relation is in all selected countries higher for the self-employed than for the employees showing the pronounced income inequality of the self-employed. The most unequal income distribution is seen in Poland with a most pronounced richest decile share of the self-employed (with the highest Gini-coefficient, too). Next in line are the self-employed 90/10 relations for the self-employed for the US and Italy.

Ten years before, the distributional figure in particular for the self-employed was quite different. Pinpointing only the dispersion by the 90/10 relation<sup>12</sup> France by far and not Poland was the country in the 80ies with the most unequal self-employed income distribution (see Figure 4). As mentioned above, a remarkable growth of self-employed income inequality is seen for the US and Italy within that decade from the 80ies to the 90ies.

<sup>12</sup> All further inequality measures accordingly Table 4 are available upon request.

**Figure 4: Concentration of post-government income of self-employed**

Source: LIS-Data, own computations

### *Inequality decomposition: self-employed and employees*

The Theil Index decomposition by Shorrocks (1980, 1984) answers the question how much of overall inequality ( $I_{TOTAL}$ ) can be 'explained' by the within group ( $I_W$ ) and the between group (comparison of group means,  $I_B$ ) inequality:

$$(1) \quad I_{TOTAL,c} = I_W + I_B = \sum g I_{Wg} + I_B = \sum g (n_g/n) (\mu_g/\mu)^c I_c(y_g) + I_B,$$

where  $g$  is the group index,  $\mu$  is the overall respective group mean,  $n$  is the number of observations,  $I_c(y_g)$  is the group inequality index dependent on group's incomes  $y_g$ ; the group weights  $w_g = (n_g/n) (\mu_g/\mu)^c$  only sums to unity when  $c = 0$  or  $c = 1$ . We choose the Theil index with  $c=1$  as

$$(2) \quad I_1 = 1/n \sum_i (y_i/\mu) \log(y_i/\mu).$$

The answer: We face a very dominant within ('intra') group inequality ( $I_W > 98\%$ ) compared to the between ('inter') group inequality of  $I_B < 2\%$  for all of our selected countries. This very striking result of a low between group inequality is somewhat surprising, because this marks a similar inequality profile of the self-employed as well as of the employee's income despite the great divergence with regard to the inequality spread. This is in line with German results e.g. of Becker and Hauser (1995, p. 330) for a quite different data base, the Income and Consumption Survey of 1990 and even for the two decades ago (70ies and 80ies).

With regard to the within inequality shares ( $I_{Wg}/I_W$ ; with  $g$ =self-employed or employee) for Germany, Sweden, France and the US the employee's inequality is dominant ( $>80\%$ ) to explain the within group inequality. One of the reasons is the dominant number of employees, respectively low number of self-employed (around 10%), which is part of the within group's weight. Remarkably, in Italy and Poland the self-employed and employee inequality shares are equal ( $I_{Wself-employed}$  is about 50%). In these countries the share of self-employed to the active people is much higher: the share is almost three times as large as in the other countries (around 30%).

### ***Re-distribution***

To measure the re-distributional impacts of the tax and transfer system and complementary to the above short discussion, Blackburn's (1989) k-measure describe the re-distributional impacts by a simple re-distributive scheme: to every income unit below the median income level an equal-sized, lump-sum tax, is transferred to every unit above the median (or vice versa). The re-distributional effect, then is that value of the lump-sum as a percentage of the mean level of before tax income. The respective index partitioning is valid only for the Gini-coefficient resulting in

$$(3) \quad R = k/\text{mean before tax} = 2(\text{Gini after tax} - \text{Gini before tax}).$$

Thus, Blackburn's measure is complementary to the pure Gini before and after taxes and transfers comparisons. The country specific tax progressivities are obvious in resulting a higher lump-sum R for the self-employed compared to the employees in all selected countries. As an example, in Sweden the tax and transfer system acts as R=12% of the mean income (i.e. k=11.818 kroner) were transferred from all above the median to all below the median.

### ***Re-distribution of self-employed post-government income from the 80ies to the 90ies***

Our main interest is focused on the distributional and re-distributional effects of the different regimes of welfare-states with reference to the self-employed.

What we can see from Figure 5 is the unexpected result that the highest re-distributional effects for the self-employed took part in Germany and the US – even higher in both countries in the 90ies compared to the 80ies. Sweden, the social democratic type of welfare-state has one of the lowest re-distributional impacts amongst the self-employed though re-distribution increased in the 90ies compared to the 80ies.

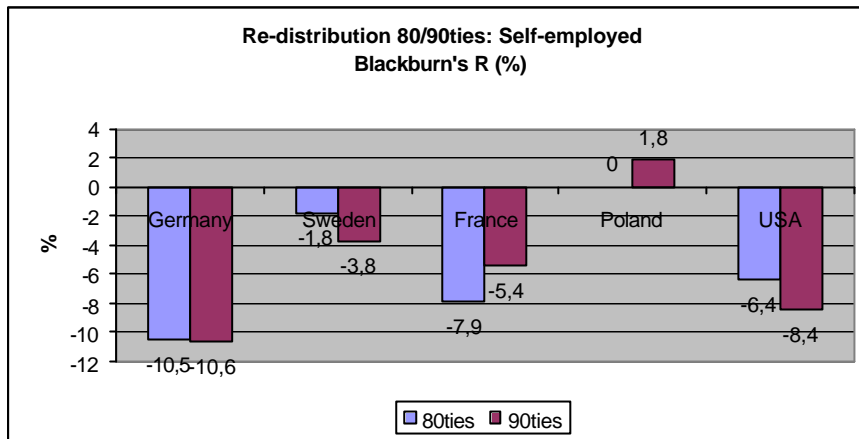


**Table 4: Post-government income – inequality measures 90ies; Germany, Sweden, France, Italy, Poland, USA; All, self-employed and employees**

	Germany			Sweden			France			Italy			Poland			USA		
	All	Self-employed	employee	All	Self-employed	employee	All	Self-employed	employee	All	Self-employed	employee	All	Self-employed	employee	All	Self-employed	employee
Share of population (%)	100,0	11,1	88,9	100,0	8,6	91,4	100,0	14,4	85,6	100,0	27,8	72,2	100,0	29,6	70,4	100,0	11,6	88,4
Share of income (%)	100,0	13,4	86,6	100,0	7,0	93,0	100,0	13,3	86,7	100,0	30,0	70,0	100,0	30,5	69,5	100,0	13,8	86,2
Mean	55.286	66.778	53.850	215.781	176.984	219.423	161.309	149.657	163.260	41.430,	44.6956	40.1734	12.349	12.728	12.190	35.515	42.381	34.616
Median	50.242	59.599	49.390	209.145	173.658	213.925	137.095	109.800	141.728	35.154	33.834	35.466	12.349	9.778	10.648	29.656	33.832	29.207
<b>Distribution</b>																		
Gini	0,281	0,313	0,273	0,263	0,299	0,258	0,337	0,414	0,323	0,333	0,420	0,293	0,332	0,424	0,288	0,374	0,401	0,367
Atkinson Index																		
ε = 1	0,137	0,159	0,132	0,118	0,174	0,110	0,179	0,255	0,165	0,183	0,285	0,138	0,097	0,293	0,132	0,237	0,291	0,228
ε = 2	0,297	0,315	0,292	0,254	0,420	0,226	0,470	0,482	0,468	0,612	0,830	0,300	0,472	0,696	0,248	0,920	0,991	0,519
<b>Decile shares (%)</b>																		
1. Decile	3,1	2,6	3,2	3,4	1,9	3,6	2,8	2,3	2,9	2,7	1,7	3,3	2,7	1,5	3,6	1,8	1,5	1,9
2. Decile	5,2	4,2	5,4	5,2	4,4	5,2	4,2	3,4	4,4	4,6	3,3	5,1	4,6	3,3	5,2	3,6	3,3	3,7
3. Decile	6,5	5,6	6,6	6,2	6,1	6,2	5,4	4,4	5,6	5,7	4,6	6,1	5,9	4,5	6,3	4,9	4,6	5,0
4. Decile	7,5	7,3	7,6	7,4	7,6	7,4	6,6	5,3	6,8	6,6	5,5	7,0	6,9	5,8	7,3	6,2	5,9	6,3
5. Decile	8,6	8,3	8,7	8,9	9,1	9,0	7,8	6,6	8,0	7,8	6,9	8,1	7,9	7,0	8,2	7,6	7,2	7,7
6. Decile	9,6	9,4	9,7	10,4	10,3	10,5	9,2	8,1	9,4	9,1	8,4	9,4	9,0	8,4	9,3	9,1	8,8	9,2
7. Decile	10,7	11,0	10,7	11,7	11,7	11,7	10,8	10,0	10,8	10,5	10,0	10,8	10,3	10,0	10,4	10,9	10,7	11,0
8. Decile	12,2	12,1	12,3	12,9	13,0	12,9	12,7	12,6	12,6	12,3	12,4	12,3	12,0	12,2	11,9	13,2	13,0	13,3
9. Decile	14,4	16,9	14,2	14,5	14,8	14,4	15,4	16,7	15,2	15,1	15,0	15,2	14,6	15,5	14,3	16,4	16,9	16,3
10. Decile	22,2	22,6	21,7	19,6	21,3	19,4	25,2	30,7	24,3	25,5	32,4	22,6	26,1	31,9	23,4	26,2	28,2	25,7
90/10 Relation	7,2	8,8	6,9	5,8	11,2	5,4	9,2	13,1	8,3	9,6	19,2	6,8	9,8	21,5	6,6	14,6	19,4	13,9
<b>Decomposition</b>																		
Theil Index	0,151	0,159	0,146	0,114	0,157	0,109	0,199	0,301	0,183	0,201	0,327	0,145	0,215	0,350	0,156	0,234	0,991	0,226
Within group inequality share (%) (I <sub>wg</sub> /I <sub>w</sub> *100)	100,0	14,4	85,6	100,0	9,8	90,2	100,0	20,2	79,8	100,0	49,2	50,8	100,0	49,6	50,4	100	16,1	83,9
Share of groups: within (%) (I <sub>w</sub> /I <sub>TOTAL</sub> )	98,3	-	-	98,6	-	-	99,8	-	-	99,4	-	-	99,9	-	-	99,0	-	-
between (%) (I <sub>B</sub> /I <sub>TOTAL</sub> )	1,7	-	-	1,4	-	-	0,2	-	-	0,6	-	-	0,1	-	-	1,0	-	-
<b>Re-distribution</b>																		
R (%)	-6,0	-10,6	-5,8	-3,8	-3,8	-3,8	-3,0	-5,4	-2,6	*	*	*	0,5	1,7	-0,6	-7,4	-8,4	-7,2
k (national currency)	-4.840	-9.372	-4.622	-11.818	-9.362	-12..052	-5.126	-8.834	-4.474	*	*	*	69	229	-81	-3.402	-4877	-3196
n	3.769	347	3.422	7.613	1.072	6.541	11.080	1.562	9.518	4.240	1.178	3.062	19.653	4.952	14.701	47.811	5.795	42.016
N (in 1.000)	19.556	2.171	17.385	2.037	174	1.862	22.705	3.255	19.449	4.174	1.160	3.014	18.404	5.446	12.958	83.667	9.686	73.980

\* not available

Source: LIS-database, income (mean, median, k measures) in national currencies; own calculations

**Figure 5: Redistribution for self-employed**

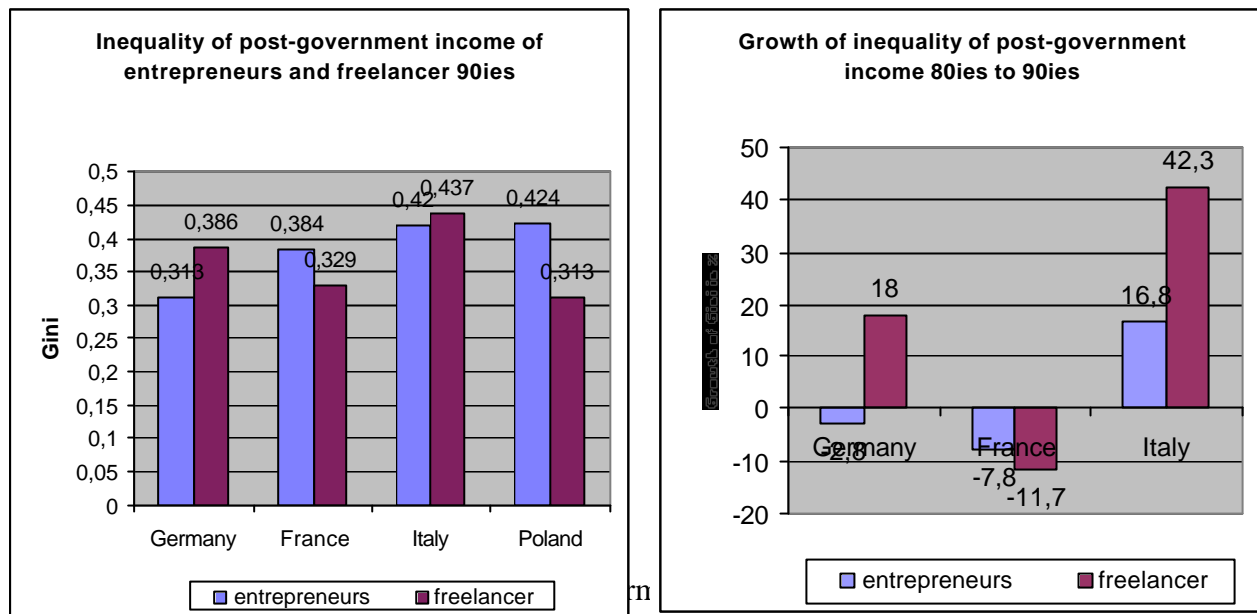
Source: LIS-Data, own computations

## 5.2 Self-employed: freelancers and entrepreneurs

Now let us have a deeper inspection of the income inequality situation of the self-employed as freelancers (liberal professions, 'Freiberufler') and entrepreneurs. As we already mentioned, a further division of the self-employed into freelancers and entrepreneurs (all non freelancer self-employed) is only possible within the LIS-database for Germany, Italy, France and Poland..

A first compressed and overall description of the income inequality situation is given by the respective Gini-coefficients. As to Figure 6 there is no unique picture in all of these countries: in the 90ies freelance compared to entrepreneurs post-government income inequality is greater in Italy (highest) and Germany (second highest). France and Poland show a similar inequality picture, however, with higher inequality for entrepreneurs.

The growth of inequality with the available Germany, France and Italy information is quite heterogeneous: Inequality has raised a lot in Italy (the Gini-coefficient increased by almost 40%!) followed by Germany with a Gini-coefficient increase of about 15%. In France, national regulations and the development of the economy inequality decreased by about 20%. In contrast, to that increase and decrease inequality growth of the freelancers, the self-employed post-government income increased in all that countries, the most in Italy, followed by France and finally Germany with almost no inequality changes.

**Figure 6: Freelancer and entrepreneur inequality**

### Post-government income inequality in the 90ies: freelancers and entrepreneurs

An in-depth inspection of the 90ies situation is given by Table 5. First, Italy is the land with the most freelancers (9,2% of all active people); all other countries have a freelance quota between 1,2% and 2,8%). In Germany and Italy the post-government income for freelancers are more unequal than the entrepreneurs' distribution. However and in contrast, in France and Poland the entrepreneurs income distribution is more unequal than the freelance's distribution.

The distributional spread measured by the mentioned 90/10 relation is most pronounced by Italy for both groups of the self-employed and in particular for freelancers: the ten percent richest freelancers in Italy earn 25 times as much as the lowest ten percent. The situation in France here is similar for freelancers and entrepreneurs (11,4%). In contrast to the dominant freelancer spread in Germany, Italy and France, in Poland the income spread of t entrepreneurs is by far more pronounced (90/10 relation of entrepreneurs: 22, 2; 90/10 relation of freelancers 8,8), where the richest 10% entrepreneurs earn 31,9% of overall entrepreneur post-government income.

### Decomposition

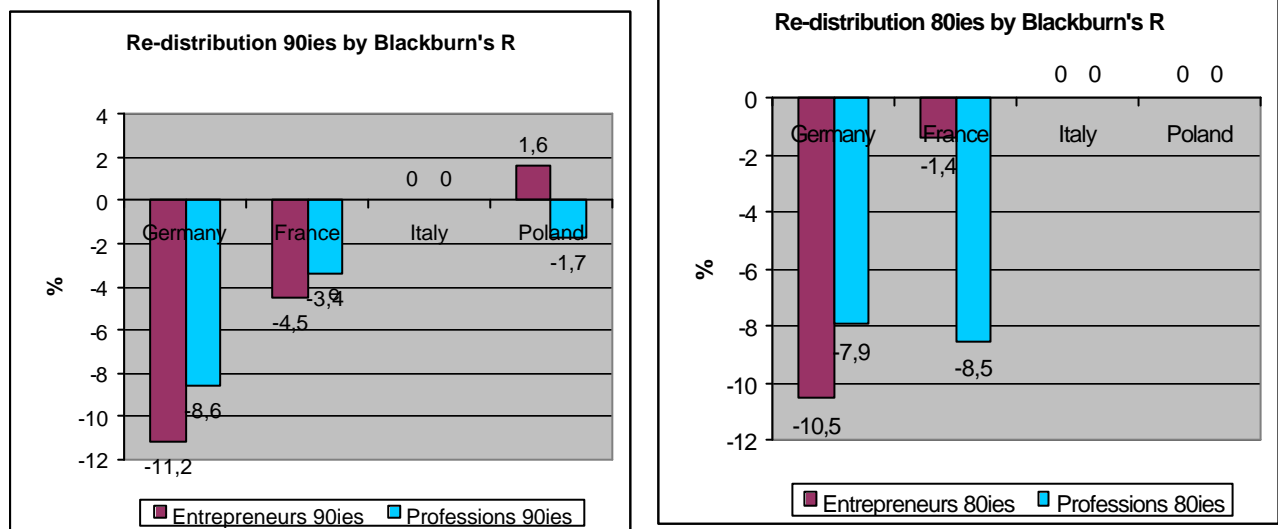
The within group inequality shares out of Shorrocks' decomposition of the Theil inequality measure in Table 5 show that the entrepreneurs' contribution to the over all self-employed inequality profile is dominant over the freelance's contribution for all countries regarded. Remarkably, this dominance is by far more pronounced in Poland (98,1%) and France (84,9%). One of the underlying reasons for this result is the respective number of persons in each of the groups.

### Re-distribution

The strongest re-distributional impact in the 90ies is seen for Germany with Blackburn R measures of 11,2% for entrepreneurs and 8,6% for freelancers of the pre-government mean income. Accordingly Blackburn the progressive tax and transfer system in Germany acts as 9.709 DM is transferred from the above median population to the below median population (freelancers: 8.047 DM). The lowest re-distribution in the 90ies is seen for Poland. Though low, remarkably, indicated by a *positive* R. the tax and transfer system in Poland acts as a re-distribution from the below median to the above median group.

The development of re-distribution from the 80ies to the 90ies finally shows Figure 7 for the available country information for Germany and France. Re-distribution remarkably changes in France, where in particular in the 80ies the re-distributional impact is  $R=-16,6\%$  compared to the 90ies with  $R=-3,2\%$ .

**Figure 7: Redistribution for freelancer**



Source: LIS-Data, own computations

To summarize: the distributional picture within the self-employed is quite heterogeneous with respect to the sub-division in entrepreneurs and freelancers and with respect to their country specific situation.

**Table 5: Post-government income – inequality measures in the 90ties; Germany, Italy, France, Poland; entrepreneurs and freelancer**

	Germany		Italy		France		Poland	
	entrepreneurs	freelancer	entrepreneurs	freelancer	entrepreneurs	freelancer	entrepreneurs	freelancer
Share of population (%)	8,3	2,8	18,6	9,2	13,3	1,2	27,6	2,0
Share of Income (%)	74,4	25,6	63,7	36,3	79,9	20,1	96,1	3,9
Mean	66.293	68.225	42.498	49.154	133.149	370.517	13.089	7.615
Median	59.628	58.431	31.963	37.016	102.559	320.000	10.133	6.730
<b>Distribution</b>								
Gini	0,282	0,386	0,409	0,437	0,384	0,329	0,424	0,313
Atkinson Index								
$\varepsilon = 1$	0,129	0,242	0,272	0,307	0,224	0,177	0,295	0,157
$\varepsilon = 2$	0,260	0,442	0,862	0,607	0,447	0,343	0,710	0,306
<b>Decile shares (%)</b>								
1. Decile	3,2	2,0	1,8	1,3	2,5	2,3	1,4	2,6
2. Decile	5,1	2,2	3,5	3,1	3,7	4,0	3,2	4,4
3. Decile	5,3	4,5	4,6	4,5	4,7	5,9	4,5	5,9
4. Decile	8,2	5,1	5,7	5,6	5,8	7,4	5,8	7,0
5. Decile	8,1	6,3	6,6	7,1	7,0	7,7	7,1	8,4
6. Decile	9,8	10,9	8,4	7,7	8,5	9,6	8,4	9,6
7. Decile	10,7	12,0	10,6	9,5	10,3	10,8	10,1	10,7
8. Decile	12,7	13,6	12,7	10,9	12,8	12,7	12,1	12,8
9. Decile	12,8	16,4	15,6	16,3	16,4	14,1	15,6	15,3
10. Decile	24,0	26,9	30,5	33,9	28,3	25,7	31,9	23,2
90/10 Relation	7,6	13,3	16,9	25,1	11,4	11,4	22,2	8,8
<b>Dekomposition</b>								
Theil Index	0,130	0,241	0,299	0,370	0,258	0,182	0,350	0,163
Within group inequality share % ( $I_w/I_w * 100$ )	61,1	-	58,6	-	84,9	-	98,1	-
<b>Redistribution</b>								
R (%)	-11,2	-8,6	-	-	-4,6	-3,4	1,6	-1,7
k (national currency)	-9.709	-8.047	-	-	-6.575	-14.650	220	-142
n	284	63	769	409	1.438	139	4.618	334
N (in 1.000)	1.626	545	777	383	3.016	273	5.087	359

Source: LIS-database, income (mean, median, k measures) in national currencies; own calculations

## 6 Concluding remarks

The empirical results for the income-distribution of self-employed show that there is no common trend of growing inequality all over Europe. While inequality declined in Germany, France and Sweden, it increased in Italy. Further on, we can conclude with a stylized and proven fact that the self-employed have the highest level of income-inequality amongst all occupational groups.

According to the relationship of regimes of welfare-states and the income-distribution of self-employed the empirical results partly back the theory (Table 6). We find the highest level of inequality in the liberal (USA), post-authoritarian (Poland) and some conservative regimes (Italy, France). As expected the lowest level exists in the social democratic regime (Sweden).

**Table 6: Distributional and re-distributional impacts of regimes of welfare states on the income of self-employed**

Regime of Welfare-State	Level of Inequality		Re-distribution	
	Expected	Results	Expected	Results
Liberal welfare state	High	High	Low	High
Conservative welfare state	Medium	Medium/High	Medium	High
Social democratic welfare state	Low	Low	High	Low
Post-authoritarian	High	High	Low	Low

The empirical results for the re-distributional impact oppose the theory. The strongest effects are found in liberal (USA) and conservative welfare states (Germany). The social democratic welfare state regime has a weak impact on re-distribution among the self-employed.

For the freelancers post-government income inequality increased in Germany and Italy while it declined in France. The level of inequality is higher for the freelancers in comparison with the self employed in Germany and Italy. The re-distributional impact differ from the period we look at. In the 80ies the strongest re-distributional effect are localized in France, for the 90ties in Germany.

Though there is need for further research in particular to the self-employed situation in different countries when a more or less official definition is not available, the results strongly indicates, that not only with regard to many further dimensions, the income situation and distribution is distinct different within the group of self-employed for freelancers and entrepreneurs.

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## Appendix

Table A1: Pre-government income – inequality measures 90ties; Germany, Sweden, France, Italy, Poland, USA; All, self – employed and employees

	Germany			Sweden			France			Italy			Poland			USA		
	All	Self-employed	employees	All	Self-employed	employees	All	Self-employed	employees	All	Self-employed	employees	All	Self-employed	employees	All	Self-employed	employees
Share of population	100,0	11,1	88,9	100,0	8,6	91,4	100,0	14,4	85,6	100,0	27,8	72,2	100,0	29,6	70,4	100,0	11,6	88,4
Share of Income %	100,0	13,4	86,6	100,0	7,0	93,0	100,0	13,3	86,7	100,0	30,0	70,0	100,0	30,5	69,5	100,0	13,8	86,2
Mean	80.662	88.418	79.693	311.009	246.363	317.146	170.871	163.585	172.0923	41.430	44.696	40.174	14.129	13.471	14.407	45.971	58.056	44.388
Median	71.594	75.360	71.380	291.675	235.278	298.588	142.200	114.111	145.556	35.154	33.834	35.466	12.055	10.453	12.543	36.015	43.000	35.332
Gini	0,311	0,366	0,302	0,282	0,318	0,277	0,352	0,441	0,336	0,333	0,420	0,293	0,330	0,415	0,291	0,411	0,443	0,403
Atkinson Index																		
ε = 1	0,169	0,211	0,163	0,132	0,190	0,124	0,193	0,284	0,177	0,183	0,420	0,138	0,184	0,289	0,134	0,279	0,340	0,267
ε = 2	0,365	0,393	0,361	0,274	0,429	0,245	0,483	0,481	0,484	0,612	0,830	0,300	1,000	1,000	0,253	0,952	0,994	0,809
<b>Decile shares</b>																		
1. Decile	2,6	2,3	2,7	3,2	1,8	3,4	2,6	2,080	2,8	2,7	1,7	3,3	2,7	1,5	3,5	1,5	1,2	1,6
2. Decile	4,9	3,6	5,1	5,1	4,0	5,1	4,1	3,162	4,3	4,6	3,3	5,1	4,6	3,3	5,2	3,2	2,8	3,2
3. Decile	6,1	4,9	6,3	6,1	5,9	6,1	5,2	4,073	5,5	5,7	4,6	6,1	5,9	4,6	6,3	4,4	4,0	4,5
4. Decile	7,1	6,0	7,2	7,1	7,4	7,1	6,4	4,987	6,6	6,6	5,5	7,0	6,9	5,9	7,2	5,7	5,3	5,8
5. Decile	8,2	6,9	8,4	8,6	9,0	8,7	7,7	6,232	7,9	7,8	6,9	8,1	8,0	7,1	8,2	7,1	6,6	7,2
6. Decile	9,5	10,1	9,5	10,1	10,1	10,1	9,0	7,648	9,2	9,1	8,4	9,4	9,1	8,5	9,3	8,7	8,3	8,8
7. Decile	10,6	10,3	10,7	11,4	11,4	11,4	10,6	9,690	10,7	10,5	10,0	10,8	10,4	10,1	10,4	10,6	10,2	10,7
8. Decile	12,2	12,8	12,2	12,7	13,0	12,6	12,5	12,375	12,5	12,3	12,3	12,3	12,1	12,2	12,0	13,0	12,8	13,1
9. Decile	14,6	16,2	14,4	14,5	15,0	14,5	15,4	16,547	15,2	15,1	15,0	15,1	14,7	15,5	14,4	16,6	17,1	16,6
10. Decile	24,2	26,8	23,7	21,3	22,6	21,1	26,4	33,207	25,4	25,5	32,4	22,6	25,7	31,2	23,6	29,3	31,8	28,5
90/10 Relation	9,1	11,7	8,8	6,7	12,8	6,2	10,1	15,965	9,1	9,6	19,2	6,8	9,7	20,5	6,7	19,1	26,3	18,0
<b>Decomposition</b>																		
Theil Index	0,201	0,229	0,196	0,134	0,178	0,128	0,222	0,358	0,200	0,201	0,830	0,145	0,209	0,335	0,159	0,289	0,335	0,277
Within group inequality share % (I <sub>wg</sub> /I <sub>w</sub> *100)	100	13,938	86,062	100	9,258	90,742	100	22,230	77,770	100	49,151	50,849	100	45,459	54,541	100,0	17,185	82,815
Share of groups:																		
within % (I <sub>w</sub> /I <sub>TOTAL</sub> )	99,720	-	-	98,361	-	-	99,930	-	-	99,414	-	-	99,778	-	-	98,541	-	-
between % (I <sub>B</sub> /I <sub>TOTAL</sub> )	0,028	-	-	1,639	-	-	0,070	-	-	0,586	-	-	0,222	-	-	1,459	-	-
<b>Re-distribution</b>																		
R (%)	-6,0	-10,6	-5,8	-3,8	-3,8	-3,8	-3,0	-5,4	-2,6	-	-	-	0,4	1,8	-0,6	-7,4	-8,4	-7,2
k (national currency)	-4840	-9372	-4622	-11818	-9362	-12052	-5126	-8834	-4474	-	-	-	5662	243	-86	-3402	-4877	-3196
n	3.769	347	3.422	7.613	1.072	6.541	11.080	1.562	9.518	4.240	1.178	3.062	19.653	4.952	14.701	47.811	5.795	42.016
N (in 1000)	19.556	2.171	17.385	2.037	174	1.862	22.705	3.255	19.449	4.174	1.160	3.014	18.404	5.446	12.958	83.667	9.686	73.980

- not available

Source: LIS-database, income in national currencies; own calculations

**Table A2: Pre-government income – inequality measures in the 90ties; Germany, Italy, France, Poland; entrepreneurs and freelancer**

Income in national currencies; share in percentage

	Germany		Italy		France		Poland	
	entrepreneurs	freelancer	entrepreneurs	freelancer	entrepreneurs	freelancer	entrepreneurs	freelancer
Share of population	8,3	2,8	18,6	9,2	13,3	1,2	27,6	2,0
Mean	86.691	93.572	42.498	49.154	142932	419778	13.822	8467
Median	75.360	67.600	31.963	37.016	106007	329411	10775	7646
<b>Distribution Measures</b>								
Gini	0,338	0,429	0,409	0,437	0,406	0,346	0,416	0,321
Atkinson Index								
$\epsilon = 1$	0,180	0,295	0,272	0,307	0,248	0,193	0,292	0,167
$\epsilon = 2$	0,340	0,516	0,862	0,607	0,437	0,374	1,0	0,329
1. Dezil	2,5	1,4	1,8	1,4	2,3	1,8	1,5	2,4
2. Dezil	4,2	2,0	3,5	3,1	3,5	4,2	3,3	4,3
3. Dezil	5,5	3,6	4,6	4,5	4,5	5,4	4,6	5,7
4. Dezil	6,6	5,0	5,7	5,6	5,5	6,6	5,9	6,9
5. Dezil	6,0	6,6	6,6	7,1	6,7	7,7	7,1	8,1
6. Dezil	11,1	8,5	8,4	7,7	8,1	8,6	8,5	9,8
7. Dezil	10,5	12,5	10,6	9,5	10,1	10,8	10,1	11,0
8. Dezil	12,1	8,9	12,7	10,9	12,6	13,6	12,1	12,5
9. Dezil	15,5	22,1	15,6	16,3	16,6	16,3	15,5	15,8
10. Dezil	26,0	29,4	30,5	33,9	30,1	24,9	31,3	23,5
90/10 Relation	10,4	21,6	16,9	25,1	12,9	13,7	21,0	9,6
<b>Dekomposition</b>								
Theil Index	0,199	0,313	0,299	0,370	0,309	0,194	0,336	0,170
Inequality Share %	61,0	39,0	41,4	58,6	87,1	12,9	97,9	2,1
Share of groups:								
within %	99,9	-	99,3	-	83,6	-	98,1	-
between %	0,1	-	0,7	-	16,4	-	1,9	-
<b>Redistribution</b>								
R (%)	-11,2	-8,6	-	-	-4,6	-3,4	1,6	-1,6
k (DM)	-9709	-8047	-	-	-6575	-14650	221	-135
n	284	63	769	409	1.438	139	4.618	334
N	1.626	545	777	383	3.016	273	5.087	359

- not available

Source: LIS-database, income in national currencies; own calculations

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