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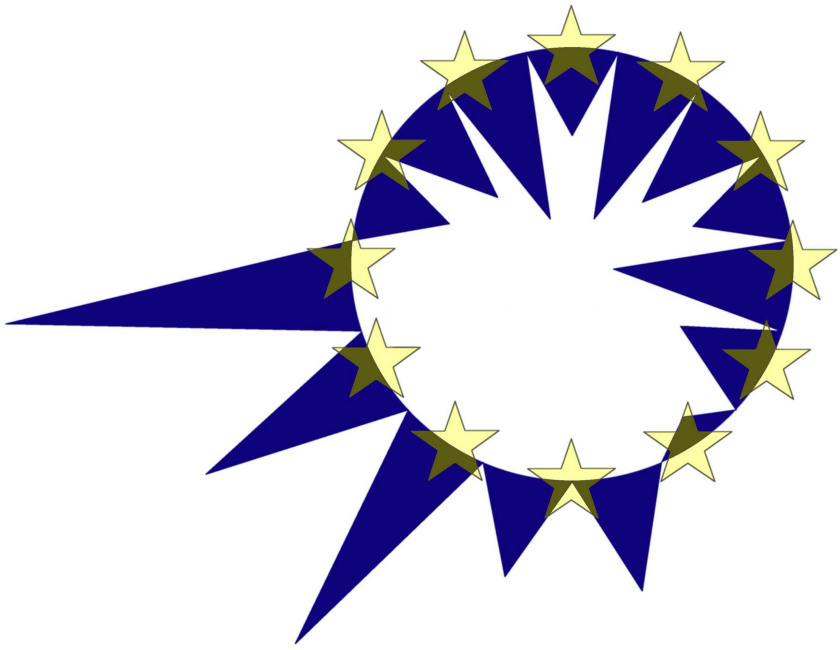

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FINANCING SOCIAL SECURITY - SIMULATING DIFFERENT WELFARE STATE SYSTEMS FOR GERMANY

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Financing Social Security - Simulating Different Welfare State Systems for Germany*

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* This paper uses EUROMOD version C13. EUROMOD is continually being improved and updated and the results presented here represent the best available at the time of writing. Any remaining errors, results produced, interpretations or views presented are the authors' responsibility. EUROMOD relies on micro-data from twelve different sources for fifteen countries. This paper uses data from the European Community Household Panel (ECHP) User Data Base made available by Eurostat; the public use version of the German Socio Economic Panel Study (GSOEP) made available by the German Institute for Economic Research (DIW), Berlin; the Greek Household Budget Survey by the National Statistical Service of Greece; and the Family Expenditure Survey (FES), made available by the UK Office for National Statistics (ONS) through the Data Archive. Material from the FES is Crown Copyright and is used by permission. Neither the ONS nor the Data Archive bears any responsibility for the analysis or interpretation of the data reported here. An equivalent disclaimer applies for all other data sources and their respective providers.

Financing Social Security - Simulating Different Welfare State Systems for Germany

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Abstract

In Germany, there is an ongoing debate about how to increase the efficiency of the social security system and especially its financing. The aim of this paper is to simulate different financing systems for Germany.

The introduction of a Liberal British or the Southern Greek financing system increases inequality and poverty, as well as labour supply incentives. The introduction of the Social-democratic Danish financing system decreases inequality of incomes, but does not necessarily lead to less poverty. Tax payments are extremely high, whereas social contribution payments are relatively low leading to mixed incentives effects.

JEL Classification: C81, D31, H24

Keywords: Social Security, Welfare States, comparative analysis, EUROMOD

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1 Introduction

In Germany, there is an ongoing debate about how to increase the efficiency of the social security system and especially its financing. Some economists argue that due to the open European markets a lot of downward pressure weighs on the social security system, which leads to a race to the bottom. The famous German economist Hans-Werner Sinn noted in an interview with the German newspaper 'Die Zeit'[1] that more financial means are needed for redistribution in order to compensate the losers of globalisation. But on the other hand, it is getting more and more difficult to raise funds. Some argue that more privatisation of the social insurance system is necessary to make the system financially viable. They refer to the economic growth and high labour market participation in Anglo-Saxon countries to point out the success of privatisation. Others argue that the financing of the welfare state is not a matter of financing per se but of the financing structure, pointing out that the Scandinavian countries with much higher tax burdens also display high growth rates, low unemployment and additionally less inequality of incomes.[2]

In this context, Germany's financing system of social security is often compared to other welfare state systems and their financing structures. Concerning the comparison of welfare state systems, there are mainly four types mentioned in the literature for the EU15 countries: the Conservative model based on social-contributions, the tax-financed Social-democratic welfare states with extensive public social security systems, the Liberal market-based model and the Southern model.

Comparing the German financing structure to the Scandinavian or to the British system, the argument arises that too much costs on labour are caused by social contributions, which increases unemployment. Apparently, the German system of financing welfare has many disadvantages. The Harvard economist Stefan Collignon even claimed in the above-mentioned article of 'Die Zeit' that the Conservative model of welfare provision has failed.

It seems as if Germany's European neighbours manage to finance their social insurance systems much better than the Germans and that a lot of progress is necessary to make the welfare state financially viable. Predominantly, these topics and the comparison of different financing structures are analysed on the macro-economic level, but what is happening on the micro-economic level?

In this paper, we analyse the effects of implementing three representative prototypes of different welfare state regimes in Germany. We use the microsimulation model EUROMOD, which provides the opportunity to implement different financing systems in Germany (policy swap). In doing so, the following questions will be raised: How are the income tax burden

[1] Cf. Rudzio and Uchatius (2005).
[2] Cf. Becker (2007).

and the social contributions payments distributed between the different households? What are the effects on inequality and poverty of different financing structures? How does the financing structure affect the labour costs and the work incentives of different households in terms of marginal and average effective tax rates? In this context, does the German welfare state manage to keep up with its European neighbours, in terms of financing social security?

The outline is as follows: The second section gives an overview of the comparative literature of European welfare states and presents the main characteristics of the different welfare state types. In section 3, the financing structure of the respective welfare states is displayed as well as the detailed financing systems of each respresentative country of the four clusters. Section 4 starts with an introduction to the microsimulation model EUROMOD and the methodology used for the calculations that follow. The substitution of the German financing system by the systems of the other three representative countries of the previous section, namely Denmark, the United Kingdom and Greece, is simulated in section 5. Subsequently, the effects of these simulations on the income distribution, on labour costs and on labour supply incentives are summarised. Section 6 concludes.

2 European Welfare States

2.1 Typologies of Welfare States - Literature Survey

In Europe, different welfare states with individual histories and developments have emerged. Their particular characteristics as well as their common grounds will be worked out in this section. Welfare state systems that have many common properties and objectives can be clustered.

Therefore criteria for categorisation need to be found. One possibility to group welfare states is according to their levels of social protection in terms of gross welfare expenses as a proportion of Gross Domestic Product (GDP). However, this approach only considers the relative amount of expenditure spent for welfare but not the allocation of resources. Therefore, it is also important to have a look at the structure of spending or the extent to which benefits paid are means-tested or paid on a contributory or universal basis.[3] To also account for the other side of the coin, the financing structure, constituting to which extent the spending is funded by taxation or social contributions, could have an impact on the welfare outcome and could be an important criterion for categorising. Another option to differentiate welfare systems is to look at the welfare outcome, for example, in terms of inequality of incomes before and after the intervention of government. The first part of this section will give a literary overview on the

[3]Cf. Cousins (2005), p. 115.

methodologies used to categorise welfare systems. The second part presents the different types of welfare states, their characteristics and the countries that can be attributed to a category.[4]

The most popular work in the context of typologies of welfare states is the book of Gøsta Esping-Andersen (1990) "The Three Worlds of Welfare Capitalism".[5] Esping-Andersen (1990) criticises that most comparisons of welfare states focus on comparing the quantity of welfare in terms of social spending as a proportion of GDP instead of comparing how the spending is actually done and which parts of the population profit. In his view, a government just providing generous transfers to a small group of the population could be ranked to the same level of welfare as a state in which the whole population is covered by the benefits. Furthermore, he does not consider a welfare state as the sum of social policies but as these policies being the implementation of a certain ideology or institutional direction that has developed throughout the history of a country. Esping-Andersen (1990) differentiates three types of welfare states: the Conservative, the Liberal and the Social-democratic one, by attributing certain characteristics to each type and by scaling the countries according to these characteristics. He uses two indices to categorise the countries' welfare state systems. First, he measures the degree of decommodification that is to which extent a welfare state loosens labour from the market mechanism; commodification meaning to which extent labour has the characteristics of a commodity; "...the concept refers to the degree to which individuals, or families, can uphold a socially acceptable standard of living independently of market participation."[6] The index of decommodification is composed of 1) the conditions of eligibility for social insurance benefits such as work experience, contributions or means-tests, 2) the strength of disincentives such as waiting days for cash benefits, 3) the maximum duration of entitlements and 4) the replacement rates net of taxes for average earning levels. Esping-Andersen (1990) compares the combined scores of the index of the different countries for pension, sickness, and unemployment benefits.[7] The second index he uses is the one of stratification. This index refers to the extent of supporting different social strata of people in a welfare state and the effects of government intervention on social stratification. The index is composed of variables that influence the stratification in the different regimes. The variable 'Corporatism' measures the number of distinct pension schemes in a welfare state and 'Etatism' measures the expenditure on government-employee pensions as a percentage of Gross Domestic Product. A high value of these two variables refers to a Conservative state with a high degree of status segregation and civil-service privileges.

[4] Although some Non-European Countries will be mentioned, the focus will be on the European countries.

[5] Titmuss (1998) already introduced two types of welfare states, namely the residual and institutional welfare states, on which Esping-Andersen's concepts are based.

[6] Cf. Esping-Andersen (1990), p. 37.

[7] The values of the index are based on SSIB (Society for the Study of Ingestive Behavior) data files of 1980. For more details on the exact composition of the decommodification index and for the different social policy programs, see table 1 and see pp. 48-49 and p. 54 of Esping-Andersen (1990).

In contrast to this, a Liberal state shows low values for these two variables but high values for other variables like the relative weight of means-tested poor relief and the importance of the private sector in pensions and health care. This is measured as the private share of total spending for pensions or health care. The key attributes of a socialist welfare state as a part of the stratification index are the degree of program universalism (calculated by the average percentage of population between 16 and 64 that is eligible for sickness, unemployment and pension benefits) and the degree of equality in the benefit structure (measured as an average ratio of the basic level of benefits to the legal maximum benefit possible for the three above-mentioned programs). By means of clustering, Esping-Andersen sorts the countries into the three regime types.[8]

Decommodification Index	**Stratification Index**
- replacement rate net of taxes	- corporatism
- standard pension replacement rate	- etatism
- number of years of contributions required to qualify	- means-tested poor relief as percentage of total social expenditure
- share of total pension financed by individuals	- private pensions as percentage of total pensions
- scores of first four variables added and weighted by the percentage of persons above pension age actually receiving a pension	- private health spending as percentage of total health spending
- benefits are scored double	- average universalism
(For sickness and unemployment benefits: net replacement rates for standard benefits, the number of waiting days to receive benefits and the benefit duration, but the share of individual financing is omitted.)	- average benefit equality

Table 1: Composition of Esping-Andersen's Indices
Source: Based on Esping-Andersen (1990).

Bonoli (1997) points out that although Esping-Andersen (1990) manages to account for the structure and the level of welfare provided within his decommodification index, his concept measures the degree of decommodification as the most important objective of social policy instead of concentrating on expenditure, "...it can be argued that this approach fails to reflect the substantial differences which exist in the way welfare is delivered."[9] Hence, Bonoli

[8]For more information on the scoring procedure for the stratification indices, see p. 77 of Esping-Andersen (1990).

[9]Bonoli (1997), p. 354.

(1997) introduces a two-dimensional approach to classify welfare states, one dimension being the quantity of welfare and the other representing a measure of relative size of what he defines as Bismarckian and Beveridgean provision. He distinguishes between Bismarckian social policy based on social insurance, with eligibility for earnings-related benefits depending on the contribution record and the Beveridgean social policy with flat-rate benefits provided universally, financed by taxation. The two types of social policies have different objectives: the objective of the Bismarckian system being income maintenance and the aim of the Beveridgean system being the prevention of poverty. For the categorisation, the quantity of welfare is determined by the social expenditures as a proportion of GDP whereas a high (low) degree of Bismarckian (Beveridgean) provision is measured by the percentage of social expenditure financed through contributions. In the resulting two-times-two matrix, 16 European countries are sorted into the four categories.

Leibfried (1992) distinguishes European poverty regimes typologically and historically to analyse the perspectives of a common European poverty regime. In this context, he differentiates between four different social policy regimes namely the Scandinavian, the 'Bismarck', the Anglo-Saxon and the 'Latin Rim' countries due to their system of subsistence in case of unemployment and poverty.

Ferrera (1996) criticises Esping-Andersen's work in matters of the inclusion of the South European countries, namely Italy, Spain, Greek and Portugal, into the concept of Conservative welfare states. He agrees that there are some common traits between the two types of countries but he focuses on four main differences that he considers sufficient to establish his own model of Southern welfare states. First, he describes the Southern income maintenance system as a dualistic one providing generous benefits to some and no benefits to other participants of the labour market. Then, he attributes the health services of the Southern welfare states to the Social-democratic model, and finally, he mentions the large influence of particularism and clientelism on the systems in the Southern countries.[10]

Katrougalos (1996) presents the historical development and constellation of the Greek welfare state system. Contrary to Ferrera (1996), he refers to Esping-Andersen's typologies and supports his point of view that the Mediterranean countries conform to the Conservative model and are just lagged behind in the development of their social protection systems but display similar social and family structures.

Korpi and Palme (1998) distinguish welfare states with different strategies of equality. Unlike Esping-Andersen (1990) and Leibfried (1992), they develop hypothetical welfare institutions instead of aligning the ideal types according to real systems. They differentiate their ideal-typical models of social insurance institutions pursuant to the variables 1) bases of entitlement

[10]The section 'Southern Welfare States' will go more into detail.

meaning contributions, citizenship or labour market participation, 2) the benefit level principle with the characteristic values being flat-rate or earnings-related and 3) the employer-employee cooperation in program governance which is a dummy variable. They introduce five ideal-typical models: the targeted, the voluntary state subsidized, the Corporatist, the basic security and the encompassing model. The targeted model is characterised by means-tested, minimum and similar benefits for those below the poverty line. In the voluntary state subsidised welfare regime mainly flat-rate insurance-related benefits are provided by mutual-benefit organisations supported by tax money. The Corporatist welfare state refers to the social insurance programs introduced by Bismarck, with eligibility for earnings-related benefits based on contributions and occupational category. By contrary, the basic security model represents the Beveridgean ideals of eligibility based on citizenship or contributions, flat-rate benefits or a low ceiling on earnings replacement. Finally, the encompassing model with eligibility based on contributions and citizenship provides universal programs covering all citizens.

Arts and Gelissen (2002) present an overview of the most important articles that followed Esping-Andersen's publication and state the most important criticisms. They support the approach of Esping-Andersen but agree with Bonoli (1997), Leibfried (1992), and Ferrera (1996) that there must be four clusters of welfare states, the Southern model being a category of its own and not being categorised as a rudimentary version of the Continental model. Likewise, Arts and Gelissen (2002) are of the opinion that Australia and New Zealand should not belong to the class of Liberal states but should rather represent a welfare concept of its own.[11] In addition, they criticise that Esping-Andersen's typologies do not take gender issues into consideration. Furthermore, they point out that every welfare state is a hybrid form of the ideal-types introduced. Thus, the states are just put into a category they have most in common with. In each cluster there are countries that implement a large amount of policies fitting to the ideal-type and other countries that could also be sorted into another category when focusing on other policies.

Kasza (2002) comes up with a more radical critique of the whole concept of welfare regimes and of the holistic view of Esping-Andersen's approach. Kasza (2002) suggests to concentrate on a specific domain of social policy because policy-specific comparisons are more significant. In his opinion, countries change their welfare state ideologies and systems over time, which results in incoherent welfare regimes:

> (1) each welfare policy tends to change incrementally over many years; (2) different welfare policies in the same country typically have different histories; (3) discrete sets

[11] Castles and Mitchell (1993) criticise Esping-Andersen's taxonomy concerning the inclusion of the Antipodean countries in the Liberal cluster and present an alternative categorisation with the Antipodes forming a separate Radical cluster.

> of policy actors are involved in the various fields of welfare policy; (4) variations in the policymaking process affect the substance of policy; (5) borrowing from foreign models introduces diverse practical and normative elements into each country's welfare package.[12]

After the huge wave of articles that followed Esping-Andersen's "The Three Worlds of Welfare Capitalism" (1990), Esping-Andersen (1999) responded to the criticisms that had come up. First, he underlines that every welfare typology is a static concept representing a certain point in time, not allowing for the description of future development of a welfare state and the contingent convergence towards another model. Second, he defends his concept explaining that the term of welfare regimes "refers to the ways in which welfare production is allocated between state, market, and households"[13] and that other authors as Leibfried (1992) or the articles on gender issues misunderstood his approach and present different concepts. The only aspect Esping-Andersen (1999) is reconsidering is the extension of his three regimes to four regimes excluding the Southern model from the Conservative regime. Running a multinomial logit regression to test the correlation of familialism[14] with Southern welfare states in comparison to the correlation with the Continental countries, he does not find evidence for this extension.[15] By means of logistic regression, he again presents the correlation between the Conservative regime and its characteristics of corporatism and familialism, and the correlation between de-familisation and the Social-democratic regimes.[16] The Liberal regime shows a low correlation with the variable corporatism and a high correlation with the percentage of private pensions. In addition to his old concept, Esping-Andersen (1999) introduces an alternative way to classify welfare regimes according to 1) the countries degree of regulating social risks within labour markets with the categories little, medium and strong regulation; 2) the type of welfare state, namely whether its system is residual, universal or social-insurance based and 3) the differentiation of familialist and non-familialist countries.

To sum up, criteria to categorise welfare states can be the conditions of entitlements to benefits or the financing structure of social spending. Concerning the conditions of entitle-

[12]Kasza (2002), p. 282.

[13]Esping-Andersen (1999), p. 73.

[14]According to Esping-Andersen (1999), in familialistic welfare regimes, the family should be the main carer. The state is therefore assigning most of the welfare services to the households, taking care only of those welfare services that cannot be produced by the households themselves. By contrast, discussing gender equality concerning employment possibilities in different types of welfare states, Orloff (2001) defines 'familialism', or 'familism' respectively, as women's dependency on family and marriage.

[15]He uses two independent variables for his regression: 1) high levels of welfare state servicing to families and 2) high levels of family welfare burdens. He codes the levels of spending of the countries according to the percentage of family services and benefits provided as well as other factors like the percentage of day-care coverage or home-help coverage. For more information on the method and the data used, see Esping-Andersen (1999), pp. 93-94.

[16]Cf. Esping-Andersen (1999), p. 84. These calculations are based on the calculations for the stratification index of Esping-Andersen (1990).

ments there can be means- or income-tests for social assistance, poor relief, earnings-related or other types of benefits with different degrees of restrictiveness and stringency. The transfers can be connected to varied regulations for the duration and the level of coverage. The way these benefits are financed is in most cases connected to the conditions of entitlements e.g. earnings-related benefits depend on prior contributions. In the following sections, the four above-mentioned types of welfare states will be introduced[17] and their main characteristics will be summed up.

2.2 Conservative/Corporatist Welfare States

Following Esping-Andersen (1990), the Conservative regimes have been strongly influenced by the Catholic Church, monarchical etatism, traditional corporatism and Bismarck's social insurance reforms. Their most important properties are therefore etatism, corporatism and family reliance. The strong Corporatist traits of these systems are represented by the status divisions as parts of the social security system subject to the different occupational schemes. Especially civil servants are privileged and receive higher occupational benefits. Social insurance benefits are based on compulsory contributions, thus they are based on employment. Non-working wives can only gain access to social insurance through the male bread-winner, thus insuring the stability of the traditional family. In terms of stratification there seems to be a tendency towards the maintenance of the original divergence of occupational status. The levels of benefits are high but entitlement rules are strict. Private provision of social insurance plays only a marginal role.

Another specific trait of the Conservative welfare state is the preservation of traditional familyhood. The ideal type is characterised by a medium degree of decommodification, because it is only high for the 'bread-winner' of a household and low for the youth and females because of the prevailing principle of subsidiarity defining that the family is responsible for its members in case of need. Only when the family's capability to assist its members is exhausted, the government intervenes. Esping-Andersen (1999) calls this Conservative residualism.[18] Unlike the Liberal regime, the government in the Conservative system will provide social assistance just in case of family failure and not for all that pass the means-test. Moreover, family benefits that encourage motherhood, day care or similar family services are underdeveloped. Active labour market or training policies are marginal. Since trade unions have a big influence, they fight for fixing high wages. This does not only result in lower employment opportunities for less productive workers but also in lower employment rates. European countries that can be

[17]Eastern European welfare states are not captured in the typologies listed here because they are not yet implemented in EUROMOD.

[18]Cf. Esping-Andersen (1999), p. 83.

attributed to this category according to Esping-Andersen's decommodification index are Italy, France, Germany, Finland and Switzerland. With regard to stratification, Austria, Belgium, France, Germany, and Italy show the strongest degree of Conservatism.

According to Leibfried (1992), the "Bismarck" countries, namely Germany and Austria, are institutional welfare states giving a right to social security and supporting social citizenship with a focus on economic growth. They pursue a strategy of income compensation in case of social problems instead of stressing full employment.[19]

The Corporatist model developed by Korpi and Palme (1998) also refers to the social insurance programs introduced by Bismarck with eligibility for earnings-related benefits based on contributions and occupational category. Korpi and Palme (1998) classify the institutional structures of old-age pension and health insurance of five European countries as Corporatist: Austria, Belgium, France, Germany, and Italy. Concerning the inequality in terms of the Gini-coefficient and poverty of disposable income, they show that France and Germany as representatives of the Corporatist model are placed in-between the encompassing (social democratic) and the basic security (Liberal) representatives.[20] Most of the Corporatist countries mentioned by Korpi and Palme (1998), fall below the encompassing countries concerning the social benefit expenditures as percentage of GDP and again above the basic security ones.[21]

It can be concluded that although the different authors use different names and methodologies to describe the countries that mainly fall into Esping-Andersen's cluster of Conservative welfare states, they all tend to go into the same directions and the hegemonic features are similar: The Conservative model is characterised by the influence of the Catholic Church, the fostering of traditional family structures and the principle of subsidiarity coming to the fore. Income maintenance transfers are mainly financed through a social insurance system from which non-working women are excluded. The level of benefits depends on the history of paid contributions.

2.3 Social-Democratic Welfare States

Esping-Andersen (1990) identifies the properties of the Social-democratic regime as focus on employment, universalism, the comprehensiveness of risk coverage, and egalitarianism. Social rights are extended and based on citizenship and not on contributions.[22] The generous, universal benefits and the minimisation of market dependency are represented in the high degree of decommodification. The governments of the countries that are part of this cluster feature high

[19]Cf. Leibfried (1992), p. 252.
[20]Based on LIS data for 1985.
[21]Cf. Korpi and Palme (1998), p. 675.
[22]In this context social rights stand for the eligibility for benefits.

income-replacement rates across-the-board. This comprehensive socialisation of risks gives rise to a crowding-out of private welfare. The Social-democratic welfare states provide a large scale of services to their citizens such as income protection, health services and especially family support, for example, in terms of income support for working women. As a result, female participation in the labour market is much higher than in other regime types. Additionally, many resources are spent for active employment policies such as training, retraining or employment promotion programmes. Consequently, the employment rate is high. This broadens the tax base. This and the high tax rates cause the high tax revenue in these countries. These types of systems, therefore, put a lot of effort in redistributing and eliminating poverty. The provision of social services is mainly financed through taxation. Countries that belong to this group of Social democratic welfare regimes according to Esping-Andersen's decommodification index are mainly the Nordic or Scandinavian countries Sweden, Norway, and Denmark but also the Netherlands, Belgium, and Austria. Denmark, Finland, the Netherlands, Norway and Sweden exhibit a high degree of Socialism subject to the stratification index.

Leibfried (1992) only mentions the Scandinavian countries in this context. Following his approach, they emphasise "the right to work for everyone"[23] instead of gearing towards income compensation within the scope of their social policy strategies. A participation in the labour market is subsidised, especially for women.

The encompassing model of Korpi and Palme (1998) coincides with the Social-democratic one. It is characterised by eligibility for universal benefits for all citizens based on contributions or citizenship. They argue that this model has the biggest potential to reduce inequality of incomes because it allows for the government to attain a bigger budget. As countries belonging to this model, Korpi and Palme (1998) list Finland, Norway and Sweden. Presenting LIS data, they also show that these countries have the lowest Gini-coefficients and poverty rates of disposable income in 1985 and the highest social benefit expenditures as percentage of GDP.[24]

The characteristics of the Social-democratic system that coincide in the different literature are thus the focus on employment and on the universal system of social protection with generous benefits mainly financed through taxation. The comprehensive state provision causes a marginalisation of private welfare.

2.4 Liberal Welfare States

According to Esping-Andersen (1990), one of the most important characteristics of the Liberal regime is the predominant standing of the market in connection with a minimisation of state intervention. Strong individualistic self-reliance and reliance on the market with just a residual

[23] Leibfried (1992), p. 251.
[24] Cf. Korpi and Palme (1998), p. 675.

provision of social-assistance are prevailing, which is measured by a low degree of decommodification. Esping-Andersen (1999) sums up the main properties of his Liberal welfare regime already introduced in 1990: Residualism plays a major role with varied relevance. First, the Liberal welfare state is characterised by a very targeted form of social assistance with very strict eligibility rules, stringent means- or income-tests and then modest universal transfers for those who are eligible. As a result, the major part of the population is enjoying tax breaks and tax exemptions when purchasing private social insurances. This stratification within the population with just a minority of state dependents allows for comparatively low taxes to finance the transfers. Due to the low levels of benefits and strict eligibility criteria, women are encouraged to enter the labour market. Second, these types of welfare states are also residual in matters of risks covered by social policies. Only 'bad' risks, as Esping-Andersen (1999) calls them, such as those of the poor, are covered by the state, whereas all 'good' risks are self-reliant in the market. Especially two key measures, the importance of means-tested social assistance as a share of total social expenditure and the percentage of private pensions of total pensions represent these main characteristics of Esping-Andersen's Liberal welfare regime: the residualism on the one hand and the importance of market provision and encouragement of private welfare on the other hand. Considering the index of stratification, there is thus a large part of the population relying on private provision, whereas just a small proportion consists of state-welfare recipients. Furthermore, the system is mainly tax-financed and has modest social insurance plans. With the exception of civil-servants, there are no separate social-insurance schemes for different occupational groups. As a result of the incentives supporting a participation in the labour market, minimum-wages, if existent, are low and pension age is relatively high. The countries that can be put into this cluster according to Esping-Andersen (1990) and Esping-Andersen (1999) are mainly Anglo-Saxon countries.[25] For Europe, Ireland and the UK display a high degree of decommodification, but the UK shows a medium degree and Ireland just a low degree of Liberalism in terms of stratification. The countries that have a strong degree of Liberalism subject to this index are all Non-European.

According to Leibfried (1992) the English-speaking countries' welfare state system is a residual one concerning income transfers.[26]

Korpi and Palme (1998) introduce two variants: the basic security model that represents the Beveridgean ideals of eligibility 1) based on citizenship or 2) based on contributions. The very heterogeneous first group of countries with universal coverage and pensions for all citizens is built up of Canada, Denmark, the Netherlands, New Zealand and Switzerland. Ireland, United Kingdom, and the United States belong to the second group that is based on contributions

[25]He mentions Australia, Canada, Japan, Ireland, New Zealand, the US, and the UK.
[26]Cf. Leibfried (1992), pp. 252-253.

variant and provides less universal coverage. These countries have the lowest social benefit expenditures as percentage of GDP and the highest income inequality and poverty rates according to Korpi and Palme (1998).[27]

To sum up its main features, the Liberal type of welfare states provides modest and residual welfare. The strong reliance on the market prevailing in these countries causes a dual stratification with only a few state dependents receiving modest benefits that are subject to strict means-tests. The system is mainly tax-financed.

2.5 Southern Welfare States

Esping-Andersen (1990) does not regard the Southern European countries as a separate cluster of welfare states, but as an immature versions of the Conservative cluster.

Contrary to his point of view, Leibfried (1992) introduces a fourth model. His 'Latin Rim' or rudimentary countries are on the one hand also putting emphasis on residualism and on the force into the labour market in some specifications of their systems as the Liberal or Anglo-Saxon countries do. On the other hand, they have certain welfare structures that developed on the basis of traditions, such as those of the Catholic Church and that are completely different, especially with regard to their labour policies that cause disincentives for women to work and that often support agriculture.[28]

Following the approach of Bonoli (1997), the Southern welfare regimes are mainly financed through social-contributions (Bismarckian characteristics), and display a low level of welfare in terms of social expenses.

One of the most popular articles describing the Southern welfare states has been written by Ferrera (1996), as mentioned above. He criticises the neglecting of a Southern model in the main literature on the political economy of welfare states, including the work of Esping-Andersen (1990), and he reviews the treatment of the Southern model as a rudimentary immature Conservative model. He agrees to some parts of Esping-Andersen's concept that the Southern countries welfare systems are to some extent lacking behind. In addition, the Southern countries have also been influenced by Catholicism, they show a lot of Corporatist traits, and the traditional family still plays a major role. The systems of income maintenance as the pension system are mainly financed through contributions and the fragmented occupational status schemes are prevalent. However, unlike the Conservative system their income maintenance system reveals traits of dualism. On the one hand, there is a generous protection for those employed in the regular 'institutional' labour market and on the other hand support for those that are part of the irregular, non-institutional occupational sector is meagre. A national minimum

[27] Cf. Korpi and Palme (1998), pp. 674-675.
[28] Cf. Leibfried (1992), p. 253.

income scheme for individuals or families is missing. In the area of health insurance, the Southern countries even tried to approach the Social-democratic concept in terms of universalism and tax-financing. Although none of these countries managed to introduce the tax-financing, the national health services are almost universalistic with access for all citizens. Furthermore, Ferrera (1996) refers to the particularistic and clientelistic properties of the welfare state characterising another difference in comparison to the Conservative states. Particular groups have a strong influence on the allocation of benefits and on politics in general. Ferrera (1996) mainly describes and gives examples of the Italian system, but he also assigns Spain, Portugal, and Greece to the Southern welfare model.

Unlike Ferrera (1996), Katrougalos (1996), analysing the Greek welfare state system, points out that it belongs to the Conservative model. He agrees with Ferrera (1996) that the Mediterranean countries show some common institutional particularities. Notwithstanding, they have even more fundamental characteristics in common with the Continental countries: The countries are influenced by Catholicism. The traditional family plays a central part in the social care system. In contrast to the Social democratic model, social services such as child care are underdeveloped and need to be provided by the families. Katrougalos (1996) describes the Greek social protection system as a categorical and employment-based one. Within the framework of the Greek pension and unemployment system, the level of benefits is wage-related and determined on the base of paid contributions. Contrary to other countries in the EU, even family allowances depend on previous salaries. In common with some other Mediterranean countries, but unlike the Conservative countries, Greece does not have a minimum income support scheme which shows the countries less comprehensive and lagged-behind welfare system. Ferrera (1996) and Katrougalos (1996) both underline the disproportionate role that invalidity pensions play in the Southern countries as well as the agricultural sector as an important employer.

Esping-Andersen (1999) reconsidered his approach but he does not find evidence for a fourth cluster and persists on his three clusters. However, he does not consider any of the other features of the Southern model introduced by Ferrera (1996), except the one of familialism, which Ferrera (1996) also describes as a common feature of the Conservative and Southern regime.

To give a summary, the Southern countries can either represent a group of their own with common characteristics such as a rudimentary version of the Conservative welfare system with a lack of a minimum income scheme, a health system with universal traits and an important agricultural sector or they can be attached to the Conservative model as a subcategory. The Mediterranean and the Conservative countries have been influenced by the Catholic Church. Their social protection system is mainly work-focused; the level of benefits depending on previous paid contributions. Moreover, the social insurance system is occupationally segmented.

In both models, familialism comes to the fore with emphasis on the family as being a major part of the social care system.

2.6 Ideal-Typical Countries and Hybrids

The characteristics presented by different authors within each of the four regimes of the previous sections show many similarities. Many concepts seem to coincide and several countries have been put into the same categories. But still there are some countries that do not seem to fit into just one cluster. This section will give an overview of some empirical studies and present the countries that are close to the ideal-typical models and those that can be called hybrids.

As presented above, Esping-Andersen (1990) clustered the European countries in terms of decommodification and stratification as follows:

Decommodification

SOCIAL-DEMOCRATIC	CONSERVATIVE	LIBERAL
Sweden	Italy	Ireland
Norway	France	UK
Denmark	Germany	
Netherlands	Finland	
Belgium	Switzerland	
Austria		

Stratification

SOCIAL-DEMOCRATIC	CONSERVATIVE	LIBERAL
Denmark	Austria	None
Finland	Belgium	
Netherlands	France	
Norway	Germany	
Sweden	Italy	

Table 2: Esping-Andersen's Original Cluster
Source: Based on Esping-Andersen (1990).

Thus, Switzerland, Austria, Belgium and Finland cannot be attributed to just one cluster. Esping-Andersen (1999) illustrated an alternative approach, grouping the countries according to three criteria. The first criterion is the type of welfare provision, for which he differentiates between a residual, a universal and social-insurance type. In this context, the UK is attributed to the residual and the universal category. The other two other criteria are the degree of labour market regulation and the reliance on the traditional family as displayed with the corresponding countries in table 3.

Concerning the empirical validation of the Esping-Andersen's taxonomy, several surveys have been carried out to test the empirical robustness of Esping-Andersen's three categories. Many studies with different data and testing indices have been conducted by means of cluster, factor, component and BOOLEAN comparative analysis.[29] Most authors conclude that there are at least four categories of welfare states.

[29]See Kangas (1994), Ragin (1994), Shalev (1996), Wildeboer Schut et al. (2001), and Obinger and Wagschal (1998). For an overview of these studies and their main results, see Arts and Gelissen (2002) and Arcanjo (2006).

WELFARE STATE		
Residual	**Universalist**	**Social insurance**
UK	Denmark	Austria
	Finland	Belgium
	Netherlands	France
	Norway	Germany
	Sweden	Italy
	UK	Spain
LABOUR MARKET REGULATION		
Little	**Medium**	**Strong**
Denmark	Ireland	Austria
Switzerland	Netherlands	Belgium
UK	Finland	France
	Norway	Germany
	Sweden	Italy
		Spain
		Portugal

FAMILIALISM	
Familialist	**Non-Familialist**
Austria	Denmark
Belgium	Finland
France	Norway
Germany	Sweden
Italy	UK
Netherlands	
Portugal	
Spain	

Table 3: Welfare State Systems and Their Traits in Esping-Andersen (1999)
Source: Based on Esping-Andersen (1999).

Obinger and Wagschal (1998) make use of a cluster analysis with the original data to test Esping-Andersen's typologies with respect to his stratification index. The results yield five clusters: the Liberal, the European, the Conservative, the Social-democratic and the radical one. The most important difference to Esping-Andersen's clusters are, on the one hand, the radical countries Australia and New Zealand and, on the other hand, the European countries represented by Belgium, Germany, Finland, Ireland, the UK and the Netherlands that are supposed to be hybrids.

Wildeboer Schut et al. (2001) consider 58 features of eleven countries using a non-linear principal component analysis to examine the similarities and differences of countries included in Esping-Andersen's taxonomy. The study supports the three regimes, with the exception of the Netherlands being a hybrid model combining Social-democratic and Conservative traits in its welfare system.

Soede et al. (2004) used a principal components analysis by alternating least squares to analyse 85 characteristics of the social security arrangements in 23 countries based on data between 1998 and 2001 of the MISSOC and MISSCEEC-database of the European Commission. They define five regimes, the three regimes of Esping-Andersen (1990) with the exclusion of the Mediterranean countries and the additional Eastern European regime. Again the Netherlands are a special hybrid case. Furthermore Austria and Belgium are attributed to the Conservative

regime.

To conclude on the empirical robustness of Esping-Andersen's classification, Arts and Gelissen (2002) state that

> Summing up, Esping-Andersen's original three-worlds typology neither passes the empirical tests with flying colours, nor dismally fails them.[30]

Arcanjo (2006) compares the different approaches to measure und order welfare regimes that have been presented in the literary overview of Arts and Gelissen (2002). Just considering the twelve countries that were selected in common by all authors, she finds out that when considering three types of welfare regimes, six countries always have the same classification throughout the literature and when considering four typologies, fourteen out of twenty-two countries are attributed to the same category.

	Three Typologies	**Four Typologies**
Type I: SOCIAL-DEMOCRATIC	Norway and Sweden	Norway and Sweden
Type II: CONSERVATIVE/CORPORATIST	France and Germany	France, Germany, Luxembourg and Japan
Type III: LIBERAL	Ireland and UK	Ireland, UK, Canada, New Zealand and the USA
Type IV: SOUTHERN		Greece, Portugal and Spain

Table 4: Corresponding Welfare States in the Literature
Source: Based on Arcanjo (2006).

Thus, the countries in table 4 seem to be prototypes for the corresponding welfare regime or they provide a benchmark concerning the characteristics described in the literature, although, for example, Obinger and Wagschal (1998) consider Germany as a hybrid. Other countries, especially the Netherlands or Switzerland, but also Austria, Belgium, or Finland can be attributed to several types. Therefore, they are rather system mixes. The Southern countries Italy, Spain, Greece and Portugal can either be included in the Conservative cluster or represent a cluster of their own, depending on the chosen criterion of categorisation.

Based on these categorisations of welfare states, the following section will take a closer look at the financing systems of the four European welfare types. Thus the Southern countries are considered as a separate cluster.

3 Financing Systems in Europe

The previous section focused on clusters of European welfare states, which do not only differ in terms of social expenditure, but also in the financing of their social protection systems. In

[30] Arts and Gelissen (2002), p. 153.

comparison to Esping-Andersen (1990)'s holistic point of view on a welfare state, this section will follow Kasza (2002)'s advice to focus on a specific domain of the welfare state to compare the welfare state systems, which will be the financing structure. This section will present the design, structure and importance of social contributions and income taxation in the above-mentioned welfare state clusters and it will present these aspects in four countries, one of each cluster, to give a more detailed example and to introduce the parts of the financing systems that will be simulated for Germany later on.

The financing objectives of a welfare state are miscellaneous. Financing can have different functions such as distribution, allocation or stabilisation, whereas the ranking of the importance of these functions depends on the society's preferences as well as the mainly used sources of finance.[31] There are different means to finance a welfare state such as direct and indirect taxes, social insurance contributions or fees and charges. Some tax breaks or allowances are similar to transfers to the affected tax unit. Thus these instruments have a social expenditure function and have an influence on the resulting income distribution, especially when considering tax reforms. The way of finance and the balance between different financing instruments reveal who pays for welfare and, concerning the social security system, also how welfare is distributed. Tax revenue can be spent for different purposes, but compulsory contributions are intended to finance a specific purpose.

	Conservative	Social-democratic	Liberal	Southern
Level of Income Taxes	Intermediate	High	Low	Low/ Intermediate
Level of Social Contributions	High	Intermediate/ Low	Low	Intermediate
Main Financial Source of Public Social Insurance	Contributions	Taxes	Taxes	Contributions
Degree of Privatisation of Social Insurance	Intermediate	Low	High	Intermediate

Table 5: Financing of Social Insurance in Europe
Source: Based on Esping-Andersen (1999).

Bonoli (1997) focused on the financing structure of the welfare states and clustered the countries according to the level of social protection expenditure and the importance of social contributions in the financing mix. The resulting Bonoli-matrix, as shown in figure 1, considers, on the one hand, the level of welfare provided and, on the other hand, the financing structure of the welfare system.

The four clusters of welfare states can be differentiated in this manner: the Nordic cluster with a high level of welfare provision in terms of social expenditure and a low percentage of social expenditure financed through contributions, the Conservative countries featuring a high percentage of social contributions and a high percentage of social expenditure, the Liberal

[31] Cf. Musgrave and Musgrave (1989).

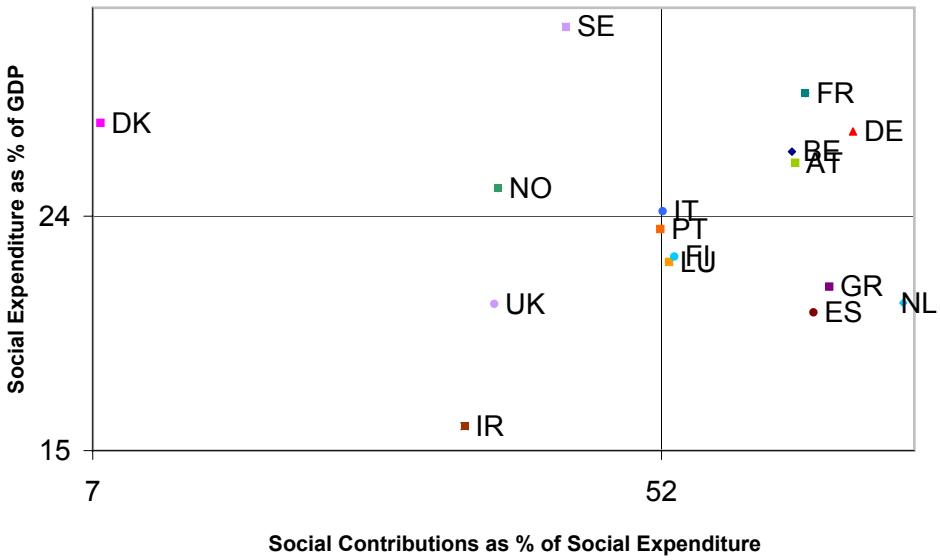

Figure 1: Bonoli-Matrix
Source: Recalculation of data from Eurostat and OECD for 2003.

cluster with low percentages for both dimensions and finally the Southern countries exhibiting a high level of social contributions like the Conservative countries, but a low level of social expenditure ascribed to their rudimentary state in the previous section.

3.1 The Conservative Model of Financing

3.1.1 General Overview

The Conservative welfare states provide a high level of public support measured by the social expenditure. As shown before, the Conservative welfare states are characterised by the Bismarckian idea and are relying especially on contributions to finance social security. These contributions are paid to governmental institutions, which provide social security benefits, and can be either a fixed amount or a percentage of the wages. The entitlements for social insurance benefits are mainly conditional on the contribution record and on employment. For employees, a membership in the social insurance organisation is compulsory and contributions to the funds are mandatory and usually deducted from the payroll. Employers usually also have to pay additional percentages to the contributions of workers. The insurance funds are often augmented by government transfers from the budget. In the European context, the Conservative states are characterised by an intermediate tax burden. The total tax revenue in per cent of GDP in these countries is close to the EU average of about 40 per cent.[32] Concerning the progressivity,

[32]Cf. European Commission (2007a).

especially in Germany, Peichl and Schaefer (2008) show, taking social contributions and transfers additionally to the income tax system into consideration, that Germany, but also most other Conservative states, are ranked around the average of progressivity in Europe. Social insurance contributions are regressive due to the existence of ceilings, meaning that high income recipients have to pay relatively low contributions.[33] Contrarily, the progressivity of the income tax schedule of the Conservative countries can be ranked to a high or intermediate level in the EU. Thus, together with benefits paid, social insurance contributions reduce the progressivity of the income tax system.

3.1.2 The German Financing System

The German Income Tax In Germany, the taxable income includes salaries, wages, self-employment income, investment income, rental income, income from farming and forestry and other income sources. The German income tax system is a progressive system with rates ranging from 19.9 per cent to 48.5 per cent in 2003. The solidarity surcharge of 5.5 per cent of the income tax liability to finance special policies in East Germany due to the German Unification is included in the previous rates. 7,235 € per year are tax-exempt in 2003. The tax schedule is formula-based.[34] The income tax liability for married couples holds marital status tax relieves which are considered when applying the income splitting method.[35] Implemented in EUROMOD, there is a child tax allowance of 3,648 € per child in 2003 which is applied when the financial economies are higher than the child benefit.[36] Lone parents with children are entitled to an additional tax allowance of 2,340 € per year. Expenses that have been made to obtain the taxable income are deductible with some limitations. For individuals, this includes all the expenses that are necessary to earn and maintain the taxable income and those caused by the profession. In addition, some special expenses that are not considered as business or professional expenses are deductible. Some are fully deductible, i.e. church tax, tax consultant's fees and interest on taxes paid to tax authorities. And others, such as agreed regular payments to dependants, education costs or donations, are partly deductible.[37] All expenses incurred in provision for the future, i.e. social insurance contributions or expenses such as for life insurances, are partially deductible from the tax base up to a certain ceiling.

Social Contributions in Germany Unemployment benefits, health insurance, long-term-care benefits, disability benefits, old age pensions, and survivor benefits are financed through

[33] Cf. European Commission (2007a) and Peichl and Schaefer (2008), p. 12.

[34] For a definition of the formula to determine the tax liability, see OECD (2007), p. 229.

[35] The splitting method allows the following: To determine the tax liability of jointly assessed spouses, the income tax is calculated according to half of the joint taxable income and then it is doubled.

[36] Cf. Grabka (2001).

[37] Cf. Grabka (2001) and OECD (2007).

compulsory contributions which are paid half by the employer and half by the employee. The amount of total social security contributions is limited by a monthly or annual ceiling. Earnings that exceed this ceiling remain free of social contributions, which yields a regressive distribution of the burden. The ceiling amount in Eastern Germany is a bit lower than the Western German one.[38] The average health insurance contributions rates in 2005 amounted 13.3 per cent, of which 6.65 per cent were paid by the insured and the same percentage by the employer to finance benefits paid in case of sickness and maternity. The annual ceiling for these contributions was 42,750 €. In addition, the social security system is subsidised by the Federal Budget. In case of employment injuries or occupational diseases, financial support is paid by employer's contributions. Family allowances are financed through taxation. Contributions at a rate of 19.5 per cent to pensions and disability and 6.5 per cent to unemployment insurance are compulsory for an income above 400 € per month and are paid half by the employer and half employee, i.e. 9.75 per cent and 3.25 per cent by each. The contribution ceiling is set at the upper earnings threshold of 3,850 € for East and 4,600 € for West Germany per month. Under certain conditions, self-employed can opt out of the compulsory social insurance system. Self-employed artists and persons in related occupations such as publishing professions are subject to compulsory contributions paid to the Artists Social Welfare Fund. Membership in the health insurance and in the statutory long-term care insurance is compulsory for employees if their income does not exceed the upper limit of 3,450 € per month, above which no health contributions have to be paid. In addition, students, disabled, pensioners, unemployed, farmers and their families or children insured through their parents are compulsory members. Spouses and children whose income is below 400 € are also covered by the insurance of the bread-winner. Employees and employers each pay half of the health insurance and the statutory long-term care insurance contribution rate, i.e. 7.15 per cent and 0.85 per cent of the wage for each.

3.2 The Social-Democratic Model of Financing

3.2.1 General Overview

The Bonoli-matrix reflected the high level of social expenditure as percentage of GDP in the Scandinavian countries, which presumes a high level of financing. In 2005, Denmark and Sweden featured the highest shares of total tax revenue including social contributions in per cent of GDP in the EU. Denmark's share was 50.3 per cent and Sweden's 51.3 per cent. These two countries were the only ones exceeding a share of 50 per cent. The universal welfare states of the Scandinavian countries are mainly financed by general taxes in order to secure a minimum protection irrespective of a person's participation in the labour market. The Nordic countries

[38] Cf. Grabka (2001).

do not only exhibit the most elevated overall tax ratios but also do they show the highest personal income tax rates.[39] Denmark had a top rate of 59 per cent in 2006. Sweden followed with 56.6 per cent. Finland's top statutory personal income tax rate was 50.9 per cent. Only Norway was ranked between Germany and UK with 40 per cent.[40]

Concerning the progressivity of the Nordic income taxation, Peichl and Schaefer (2008) show that the tax payments of Denmark, Finland and Sweden are more equal than those of the other European countries. Using the Kakwani-Index[41], they compute a lower degree of progressivity for these three countries. The reasons for this result can be ascribed to the comparatively equal, even though high taxation which results not only from the tax rates, but also from the relatively equal income distribution before taxes and transfers. Analysing the design of the income tax, the lowest rates of the income tax schedule are already elevated compared to other European countries. In Sweden, the income tax of the lowest income tax bracket is 20 per cent levied by the state government plus 31.6 per cent on average levied by local government in 2007.[42] The numbers for Denmark for the local taxes are even higher at 33.2 per cent on average, but lower for the state tax at 6.25 per cent for 2001.[43] In addition, there are less tax brackets than in the Conservative countries.[44] From the results of Peichl and Schaefer (2008), it could be assumed that higher income tax levels are rather politically feasible, if a broader tax base and less progressivity of the tax schedule are implemented, which is the case in the Social-democratic countries.[45] Moreover, these high tax payments are compensated through the high level of universal social expenditures.

3.2.2 The Danish Financing System

The Danish tax structure stands out in several respects. In particular, the heavy reliance on direct income taxation in financing the public sector, while social contributions play a minor

[39]Not being implemented in EUROMOD, indirect taxation is neglected in this thesis, although it plays a major role in the financing structure of most European countries, especially in the Scandinavian countries.

[40]Cf. European Commission (2007a). However, the situation of Norway differs from the other Scandinavian countries due to the large amount of natural ressources.

[41]The Kakwani-Index is defined as the concentration (measured by a standard concentration index) of the tax payments minus the Gini-coefficient, thus the inequality, of the pre-tax income distribution. Cf. Kakwani (1976) and Verbist (2004).

[42]Cf. European Commission (2007b).

[43]The rates for Denmark are taken out of the EUROMOD schedule. Cf. Hansen (2004).

[44]In Sweden, there are just two and in Denmark there are three levels compared to Germany where there the tax rate is calculated by a formula and in Belgium where there are 5 or Luxembourg where there are even 16 levels.

[45]This does not mean that higher tax levels can easily be implemented in other welfare state types when broadening the tax base and reducing the progressivity. As mentioned in the previous section, the historical and political development and the society's preferences had an essential influence on the design of the income tax system.

role, is incisive.

The Danish Income Tax Although less than in other countries, as shown by Peichl and Schaefer (2008), the Danish tax system is a progressive one. The taxable income is the net income of personal and capital income, i.e. wages, company profits, fringe benefits, national pension, maintenance allowances (e.g. maternity or sickness benefits), early retirement pension, private pension, income from interest, and capital yields from a company minus all paid contributions, and allowances. Contributions to private insurances are deductible to give people an incentive to accumulate savings. All Danish residents have to pay income taxes and as in the UK, the income is taxed on an individual basis. Notwithstanding, spouses can transfer unused allowances to the partner. There are three taxation levels: the state, the county and the municipality level. Altogether, they establish a tax scheme. Low income earners only pay municipal taxes and bottom-bracket tax to the state, those with slightly higher incomes pay municipal tax, the bottom-bracket and the middle-bracket tax, and those with the highest incomes additionally pay the top-bracket tax on the upper part of their income. The local tax comprises county, municipality and church tax. The local tax rates are different across municipalities and counties. The average local tax rate in 2001 of 33.2 per cent included a church tax of 0.7 per cent. State taxes are paid on income that exceeds the respective tax allowance. There are three income brackets. In 2001 income from 4,486.59 € to 23,897.13 € is taxed at 6.25 per cent, income from 23,897.13 to 37,195.69 € is taxed at additionally 6 per cent and income above 37,195.69 € is taxed at 15 per cent on top. Taxes are levied on the income exceeding the respective tax allowance. In addition, income from shares, i.e. yield and profits, which have been held since at least three years, is taxed at a rate of 25 per cent for an income up to 5,171.67 €[46] and at a rate of 43 per cent above this amount. An unused threshold can also be transferred between partners. The taxation ceiling without church tax and taxes on income from shares is 59%.

Social Contributions in Denmark As mentioned above, social contributions in Denmark are the lowest in Europe as most welfare spending is financed out of general taxation, notably personal income taxation. However, some social insurances are additionally financed through contributions. There are two types of contributions, i.e. most importantly the general contributions from the insured employees and self-employed at a level of eight per cent of the salary or the gross earnings that go to the Labour Market Fund. Second, there are the contributions for special pension savings paid to the special saving scheme. There are in principle no deductions and no personal allowances for the general contributions. That means that everyone has to

[46]This amount has been calculated using the exchange rate of 2001 from Danish kroner to €.

pay the eight per cent irrespective of the person's income, i.e. employee and self-employment income.[47] In addition, employers pay two per cent. One per cent of the gross wages and taxable fringe benefits, excluding pensions, are paid for special pension savings. The contribution for the supplementary pension scheme (ATP[48]) paid by employees depends on the hours worked. For less than nine hours of work per week no contributions are paid. For a full time work with at least 27 hours per week the contribution was 120.09 € for the year.[49] Moreover, a membership in the unemployment insurance and early retirement scheme in Denmark is voluntary, but a membership in the early retirement insurance is not possible without paying the unemployment insurance as well. The amount for the latter was 378.81 € for the unemployment insurance and 552.90 € for the early retirement paid on an annual basis. As mentioned in the previous section, all social contributions are deductible in taxable income.

3.3 The Liberal Model of Financing

3.3.1 General Overview

Returning to the Bonoli-matrix, the residual character of the financing structure of the Liberal welfare states is shown by the low level of social expenditure in a Europe-wide comparison. The UK and Ireland are relying more on income taxation than on social contributions and they display low tax wedges between total labour costs to the employer and the corresponding net take-home pay at average earnings levels.[50] The total tax revenue of the UK for 2005 of 37 per cent falls slightly below the GDP-weighted EU average, whereas the Irish total tax revenue is much lower at 30.8 per cent in the respective year.[51] The Liberal tax schedules are simplified and transparent with a broad tax base and comparatively low tax rates on average. Concerning the top statutory personal income tax rate, the UK (40 per cent) and Ireland (42 per cent) are situated below the EU15 level but above the EU-25 average.

3.3.2 The British Financing System

The Income Tax in the UK The income tax system in the UK is an individual system. For married couples, each spouse is taxed independently. Every resident in the UK has a 'personal allowance' for tax purposes, the amount of taxable income allowed to earn or receive each year tax-free, which was 4,615 pounds (6,632 €) per year in 2003. For people aged over 65, the personal allowances is higher (6,610 pounds or 9,499 € in 2003) and even higher than

[47] Cf. Madsen (1999), Hansen (2004) and European Commission (2006a).
[48] ATP stands for Arbejdmarkedets TillaegsPension or Labour Market Supplementary Pension.
[49] For 9 to 18 hours 1/3 of 120.09 € and for 18 to 27 hours per week 2/3 of this amount have to paid.
[50] Cf. OECD (2007), pp. 11-14.
[51] Cf. European Commission (2007a), p. 4.

for those above the age of 75 (6,720 pounds or 9,657 € in 2003). As taxable income rises, the age additions are withdrawn. The tax system is characterised by a comparatively broad base. Taxable income includes earnings from employment, earnings from self-employment, most pension income, i.e. state, company and personal pensions, interest on most savings, income from shares (dividends), rental income and income paid from a trust. The tax schedule is unified and thus practical. It consists of three rate bands with the rates 10 per cent, 22 per cent and 40 per cent.

The Working Tax Credit (WTC) and the Child Tax Credit (CTC) are part of the British tax system, although they have the characteristics of benefits. The WTC is a tax credit for singles or couples who are employed or self-employed and work at least 16 hours per week.

The amount a person receives depends on the annual income. The person must be 16 or older to be able to claim for tax credits. The WTC consists of several elements: A basic adult element, i.e. 2,191.51 € converted with 2003 currency rates, which is paid if the above criteria are met. Additionally, extra elements are paid e.g. if one household member works a total of 30 hours or more a week or for childcare. If a person qualifies for the child care element of WTC, this will always be paid alongside payments of Child Tax Credit (CTC). The CTC is for families with at least one child. A family element is paid to any family responsible for a child. The baby element is the credit paid at a higher rate to families with at least one child under the age of one.[52]

Social Contributions in the UK Social contributions in the UK play only a minor role. In the UK there are overall contributions paid for different social insurances. These contributions are a financial source comprehensively for sickness and maternity, invalidity, old-age, survivors, and unemployment benefits. However, sickness and maternity are to a larger extent financed by taxation. Employment injuries and occupational diseases as well as family allowances are completely financed through taxes and also the unemployment insurance has additionally sources established by tax financing.[53] Social contributions in the UK, namely National Insurance contributions, consist of four classes. Class 1 contributions are payable by employees earning more than 89 pounds, i.e. 127.9 € per week in 2003. Self-employed are subject to Class 2 and class 4 contributions which only entitle to basic retirement pension but not to short-term benefits. The ceiling of 3,664.4 € per month for individuals that have to pay both self-employment and employment contributions is the same as for the employees. The classes differentiate between individuals that are contracted-out, i.e. who are privately insured, and those who are not. The Class 1 contribution rate is set at 11 per cent if contracted-in plus 12.8 per cent paid by the

[52]Cf. Sutherland and Gutierrez (2004).
[53]Cf. European Commission (2006c).

employers and at 9.4 per cent plus 9.3 per cent employer contributions if contracted out. Self-employed that are subject to Class 2 contributions pay 8 per cent. Class 3 contributions are paid on a voluntary base mainly by persons living abroad to keep their contribution record.[54]

3.4 The Southern Model of Financing

3.4.1 General Overview

Referring to the Bonoli-matrix , it can simplistically be said that the Southern model of financing is characterised by a comparatively low level of social expenditure mainly financed in the Bismarckian way through social contributions. Thus, the financial sources needed to finance the expenditures are also lower than in other European countries, which is displayed by lower tax and contribution payments. Concerning the progressivity of the income tax schedule in the Southern countries, Peichl and Schaefer (2008) computed very high values of the Kakwani-indices for Portugal, Greece and Spain, but a comparatively low value for Italy. The total tax revenue in percentage of GDP is rather low for the Southern countries. Portugal, Greece and Spain are all situated at about 35 per cent in comparison to the EU27 average of 39.6 per cent. Only Italy has a tax revenue of 40.6 per cent, which is slightly above the average. The Southern countries' level of the top statutory personal income tax rates lies between 39 and 45 per cent.

3.4.2 The Greek Financing System

The Greek Income Taxation In the Greek income tax system, the tax unit is the individual, and the spouse's income is taxed separately. However, there are some exceptions, i.e. several allowances and tax credits that are jointly assessed on the basis of a broader tax unit including the married couple and the dependent children. Social contributions are exempted from the tax base which covers taxable income minus various tax allowances. The tax schedule is graduated and progressive, including three tax bands with lower limits of 8,400 €, 13,400 € and 23,400 €. The respective tax rates are 15, 30 and 40 per cent. Additionally, the upper limit of the first tax bracket could be extended by 1600 € maximum for tax payers with income from employment earnings and retirement benefits. As mentioned before, the Greek tax system comprises a number of tax allowances. For the system in 2003, four of these exemptions are simulated by EUROMOD and will thus be briefly introduced: 1) The mortgage interest tax allowance enables the exemption of interest repayments of housing loans from taxable income under certain conditions. 2) Charitable donations above 100 € per year are completely exempted from the tax base. 3) The private insurance tax allowance is jointly assessed and admits the full exemption of an amount of 1,100 € per annum. 4) The level of the child tax

[54]Cf. Sutherland and Gutierrez (2004).

allowance in 2003 is set at a minimum of 1,000 € to a maximum of 13,000 € depending on the number of children. In addition, if the head of the household's taxable income is below the upper bound of the lowest tax band increased by the child tax allowance, the remaining child allowance can be transferred to the spouse. Moreover, there are several tax credits that can be deducted from the tax due. Eight of these are simulated in EUROMOD and will just be listed here:[55] Tax credits can be claimed for 1) medical expenditure, 2) education expenditure, 3) mortgage interest, rent, 4) household expenditure, 5) maintenance payments, 6) families with school children and 7) families in mountainous and remote areas.

Social Contributions in Greece In Greece, social insurance programmes are mainly funded by contributions. Before 1993 all social insurances were just financed by employees' and employers' contributions. Since 1993, some social insurance funds receive additional state subventions and social sources.[56] The unemployment insurance system and family allowances are completely financed by employees' and employers' contributions.[57] All individuals have to be a member of a social security organisation. The majority of employees and workers in the private sector are directly and compulsorily insured with IKA.[58] All members of IKA are subject to contributions at a flat rate of 15.9 per cent of their wages. In addition, employers pay 27.66 per cent of these earnings. For 'hazardous' workers, i.e. blue-collar workers who have to do heavy, unhealthy or dangerous work, extra contributions at 3.45 per cent of the workers' earnings are due, plus 2.15 per cent paid by the employer, because these workers are entitled to a pension five years earlier. For individuals that entered the labour market before 1993, a contribution ceiling of 1,960.25 € is set, whereas individuals first employed in 1993 or later (and their employers) are subject to contributions on the entire earnings. Civil servants and other public sector workers are covered by a separate scheme. Their contributions are set at a flat rate of 16.22 per cent. Pensioners have to pay a flat rate of four per cent for sickness insurance.[59]

Self-employed are covered by TEBE, the largest Greek social insurance organisation for the self-employed, and are subject to lump-sum contributions depending on the insurance class. In TEBE there are ten insurance classes that are applied for individuals first employed before 1993 and there are additional five classes for later entrants to the labour market, all according to the pre-estimated self-employment income. For all individuals active in agriculture or in related

[55]For more information on the exact design of these tax credits see Matsaganis and Tsakloglou (2004).

[56]The state gives subsidies to the social insurance institutions to finance sickness and maternity, invalidity, old-age benefits, benefits for survivors and benefits paid for persons being affected by employment injuries or occupational diseases.

[57]Cf. European Commission (2006b).

[58]IKA is the largest Social Insurance Organisation in Greece. It covers about 5.5 million workers and employees.

[59]Cf. European Commission (2006b) and Matsaganis and Tsakloglou (2004) and OECD (2007).

sectors such as fishing that are residents in rural areas[60], a membership in the agricultural social insurance organisation OGA is compulsory. The OGA scheme is applied to employees and self-employed. Contributions are set according to seven different levels of theoretical income. The amount of contributions for the different classes was defined at about 8.5 of theoretical income, which included 7 per cent for pension insurance and 1.5 per cent for sickness insurance. Since contributors could choose their insurance class themselves, more than 75 per cent were in the first category in 2003.[61]

To sum up some aspects of this section, figure 2 displays the taxes, employee social contributions and benefits that would lead to a disposable income of 100 € in the four countries that have been presented in detail. Concerning the quantity of welfare that is provided and the amounts that are levied from the original income, Denmark is in front, followed by Germany and then Greece. The financing structure of Germany and Greece is characterised by a large proportion of social contribution payments. Contrarily, the system of the UK and Denmark rely more on income taxation.

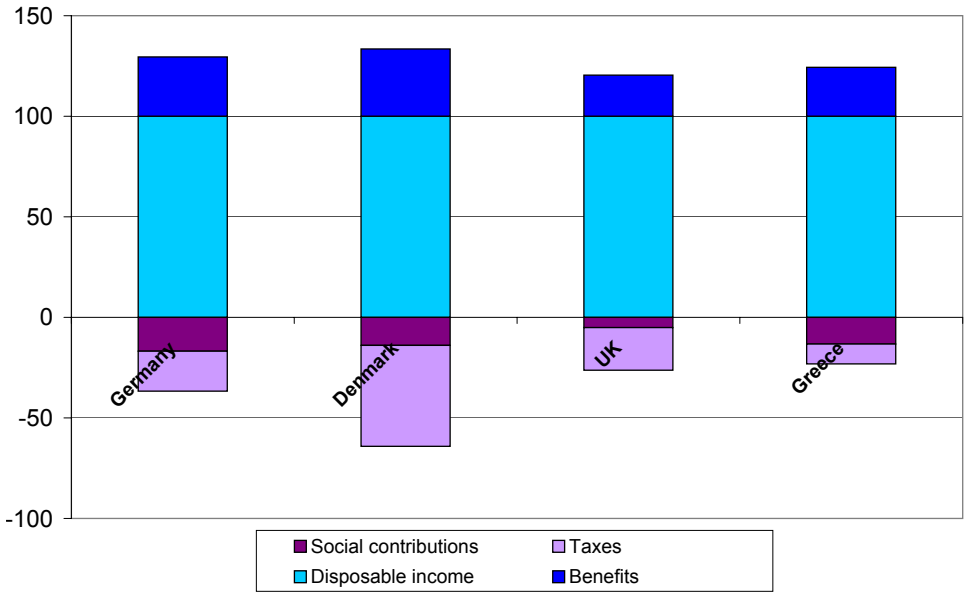

Figure 2: Composition of 100 Euros Disposable Income, Average
Source: EUROMOD data for 2001.

Figure 3 presents the distribution of tax and social contribution payments for different deciles, sorted according to the disposable income of the households. The high level of these payments in Denmark is incisive, especially for the last deciles. These high payments can first of all be attributed to the Danish financing system, but in addition, they are due to the

[60]Rural areas are defined as settlements with less than 2000 inhabitants.
[61]Cf. Matsaganis and Tsakloglou (2004) and OECD (2007).

high market incomes in Denmark. Germany displays the second highest payments followed by the UK. The low level of the Greek payments results not only from the tax and contribution schedule but also from the lower level of wages paid in Greece.

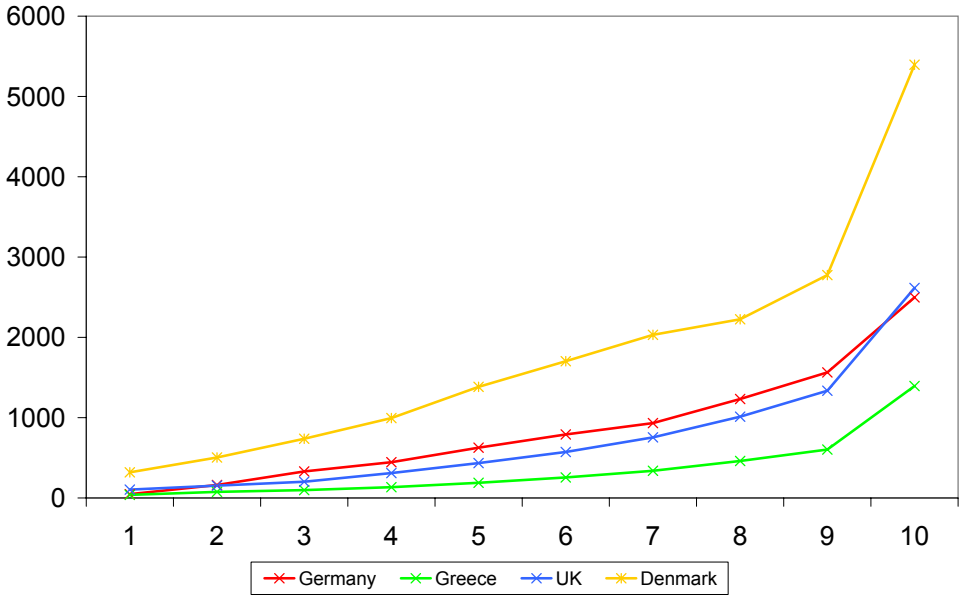

Figure 3: Taxes and Social Contributions paid by Deciles
Source: Recalculation of EUROMOD data for 2003 and for 2001 for Denmark.

4 Data and Methodology

4.1 Microsimulation with EUROMOD

EUROMOD is a static tax-benefit microsimulation model covering the EU15 countries. The model can be used for a wide range of applications, such as the exploration of the effects of different prospective or hypothetical changes in social and fiscal policy on the income distribution and on labour incentives, in terms of marginal and average tax rates. Policies that have an immediate effect depending on current income can be analysed, as well as the effects of hypothetical changes of tax or benefit arrangements on the distribution of benefits and taxes paid and thus on disposable income. In addition, the costs of reforms can be computed.[62]

The model produces micro-variables at the household level, the main output being household disposable income, which is determined as presented in table 6.

Parts of the income elements, such as employee earnings used for the calculation, are taken from the survey data, whereas other components, i.e. taxes and benefits, are simulated by the

[62]Cf. Sutherland (2001).

Household Disposable Income
- wage and salary income excluding employer social insurance contributions including sick pay paid by the government
plus
- self-employment income
plus
- property income in terms of rent, dividends, interest but not imputed rent from owner-occupation
plus
- other cash market income and occupational pension income such as regular private transfers, alimony and child maintenance but one-off lump sum incomes are excluded
plus
- cash benefit payments such as social insurance, disability, universal and social assistance benefits including state pension payments and near-cash benefits
minus
direct taxes and social contributions without employer contributions

Table 6: Computation of Household Disposable Income
Source: Based on Sutherland (2001).

model. Summary statistics that include the distribution of the income elements according to decile groups and inequality and poverty indices can be generated. The decile groups are formed by ranking the households depending on equivalised disposable income. The equivalence scale used is the OECD modified equivalence scale that assigns a weight of 1 to the household head, a weight of 0.5 to each additional adult member and a weight of 0.3 to each child.[63]

Data sources of EUROMOD are the European Community Household Panel (ECHP) and National Panels such as the German Socio-Economic Panel (GSOEP).

One of the main ideas of EUROMOD is the comparability of the effects of social policies across nations within a common framework. However, the model is limited to simulating policies that are part of the database.

Concerning the usage of EUROMOD, there are some shortcomings: The model is static. Therefore it does not allow for the computation of dynamic or long-term changes in policy instruments such as pension policy. Moreover, information on social contribution histories is not present in the underlying database. According to this, only a partial simulation of social benefits that are contributory is possible. EUROMOD does not incorporate the effects of behavioural changes or substitution effects, since no reaction functions are included in the model. Thus, the computation of effective tax rates is based on the assumption that the labour market stays in a given equilibrium.[64]

There are three types of policies addressed by the model: first, there are income elements

[63]This scale was first proposed by Hagenaars and Zaidi (1994).
[64]Cf. Mantovani and Lietz (2006).

that are covered by the model for which the values are just copied from the dataset, e.g. income from property, second, there are income elements that are modified or partially simulated by the model e.g. unemployment benefits, and third, there are elements that are fully simulated such as income tax.[65]

4.2 Methodology

EUROMOD offers the possibility to simulate a policy swap, which means that parts of a country's tax and benefit system can be implemented in another country to simulate the results of an introduction of the underlying policy. Concerning the financing structure, the different countries within each type of welfare state have a lot of characteristics in common, but it is difficult to build an ideal-type for each welfare type in matters of financing. Therefore, representatives of each cluster will be taken, whose financial structure are noticeably different from the German one. Denmark, the UK and Greece have been chosen, because they display comparatively large distances from the German financing system in the Bonoli-matrix.[66] Denmark with its large proportion of tax financing is outstanding. The UK represents the typical Liberal European welfare state and Greece is chosen because it is less developed than other Southern European welfare states, and thus represents a more rudimentary welfare state. This might seem to be a very simplified approach, but the aim of the simulation will not be to make general assumptions about the establishment of a different welfare system in Germany, but to see some tendencies and effects of changes in the financing system, which are derived from the respective countries and thus another welfare state type.

The comparability of the effects of the financing structure in varied countries on the income distributions is limited, due to different market incomes and different compositions of the population. Therefore, the systems have been simulated with German data instead of just comparing the systems in the respective countries to see 1) what the effects are for the German population and not for the ones of the respective countries, and 2) what happens if just implementing another country's financing system without introducing its benefit system.[67]

The simulated reform scenarios are not revenue-neutral. To establish revenue-neutral scenarios, some parameters would need to be changed in the original system, which would change

[65]For the instruments that are simulated or not in all countries see Sutherland (2001), p. 34. In some countries, there may be exceptions concerning the inclusion of instruments in the simulations, which is summed up in detail in each Country Report available on http://www.iser.essex.ac.uk/msu/emod/documentation/countries/.

[66]Ireland could have been chosen instead of the UK, but since it is often argued that Ireland is just a lacked-behind-system, and since the UK are always considered as the main representative of the Liberal welfare states in Europe, the UK seemed to be more adequate.

[67]This approach was chosen to see the separate effects of different financing systems. It has to be kept in mind that the tax and transfer systems often interact in reality. Atkinson (1999) analyses the effects of transfer programs on economic growth and employment.

the original structure of the respective financing system. Moreover, there are many possibilities to build a revenue-neutral scenario, e.g. the tax rates could be changed or the tax base could be broadened. Therefore, the financing systems are left in their original structure for the simulation.

4.2.1 Modifications Made in EUROMOD

The first simulation is the one of the German system of 2003 (GE-2003), which provides the baseline scenario all the other simulated systems are compared with.[68] The other simulations are done with the same data, the German 2003 database.

To be able to implement another financing system in Germany, first, all German financing policies, i.e. the German income tax and all the social insurance contribution policies paid by employees and employers, have to be switched off.

The proceeding of the modifications that are required for the computations with EUROMOD is the same for every system[69]: 1) The policies of the respective country have to be inserted in the German system.[70] 2) The German income lists have to be adapted so that they also cover the new income components and neglect the 'old' German ones that have been substituted. The tax units have to be modified, changing the definitions of the tax unit to the ones of the 'new' tax system. If necessary, new income list and tax units have to be established[71]. 3) Country-specific variables in the modules that are not defined for Germany have to be substituted by adequate German or common variables, or the module has to be modified, so that the relevant variable is not required anymore.[72]

As a second step, the British financing system of 2003 is simulated with German data (UK-Sim.). The policies introduced are the UK income tax, the UK general social contributions and the working families' and child tax credit.

The third step is the simulation of the Danish financing system of 2001 with German data (DK-Sim.). In this context, the following difficulties came up: The Danish special pension savings contributions are not paid by disabled people, which is measured in the Danish system by a variable declaring the degree of disability of a person that is also needed for the eligibility

[68]For some basic instructions on how to use EUROMOD, see Levy (2006a), Lietz (2006c), Paulus et al. (2006), Mantovani and Lietz (2006), Levy (2006b), Lietz (2006d), and Lietz and Levy (2006).

[69]For some information on how to conduct a microsimulation with EUROMOD, see Lietz (2006a).

[70]The relevant policies, i.e. the ones of the income tax system and all social contribution policies, have to be listed in the German spine in EUROMOD and they have to be added to the other policy sheets.

[71]For some information on how to do this, see Lietz (2006b).

[72]This can be done by describing the former variable by a number of eligibility rules or other circumscriptions. If none of these two options is possible, values for the not-defined variable have to be inserted after doing a sensitivity check with extreme values to get an idea about the quantitative effects of this approach. If the variable is part of a module with no quantitative importance or if it is no at all computable with the German database, the module has to be switched off.

condition for disability benefits. Since the occupational accident insurance is not yet included in EUROMOD for Germany, there is no equivalent German variable.[73] Therefore, the condition is just neglected, assuming that there are not too many disabled individuals in the dataset.

In the fourth step, i.e. the simulation of the Greek financing system of 2003 with German Data (GR-Sim.), the following adaptations have been made: First, since the economic status in Greece is lower than in Germany, e.g. in terms of wages, much more individuals pass certain income threshold when simulating the Greek system with German data than with the original data. Despite these distortions, the thresholds of the Greek system are kept to show the effects of the simulation of the original system in Germany.[74]

4.2.2 Illustration of the Results in the Summary Statistics

The results of the simulations are summarised in statistics that are all listed in appendix C. These statistics display the income components of the average individual within each decile. For the comparison of the simulated systems in section 4.3, decile groups are formed by ranking the households according to original income, to keep the same ranking for every simulated scenario, and to avoid reranking due to tax, contribution or benefit payments.[75] Inequality is measured by the Gini-coefficient[76], and poverty is determined by a headcount index that displays the percentage of people with an equivalised disposable income below the poverty line of 60 per cent of the median.[77] Both measures are calculated on the basis of equivalised individual data. The inequality and poverty measures calculated by EUROMOD are based on disposable income without accounting for the employer contributions. Therefore, they are also computed by including the employer contributions in the calculation, as presented in the following section. In addition, the poverty indices that account for employer contributions have been computed, 1) with the poverty line of the German system of 2003 fixed for all systems, and 2) with poverty lines adapted to the respective systems. Since the poverty measures depend on the set poverty line, they are overestimated in case of a higher average disposable income and vice versa. The fixed poverty line on the other hand does not account for cleavages of income of a society with

[73] Cf. Grabka (2001), p. 23.

[74] As argued in the previous section, the intention here is the analysis of the effects of a simulation of the financing system of a less developed welfare state. Since the major difference of the Southern welfare systems and the Conservative ones is just the level of welfare and financing and not the structure, the thresholds are kept.

[75] The decile groups of the summary statistics of the original systems are formed according to the disposable household income as they are computed with EUROMOD. In addition, the statistics of the German system of 2003 and the simulated systems are listed in appendix C, with decile groups formed according to disposable and original income.

[76] For the definition and computation of the Gini-coefficient, see Gini (1921).

[77] Cf. EUROMOD (2007a) and EUROMOD (2007b) where these measures are used. For the measurement of poverty, see Foster et al. (1984) and Atkinson (1997).

a higher disposable income on average.

4.2.3 Definition of Disposable Income

The disposable income of the simulated systems is compared using two different definitions of disposable income. The first definition is the one of the standard computation of EUROMOD for the disposable household income as presented in table 6:

$$\begin{aligned} HH\_DisposableY &= HH\_OriginalY - HH\_EESIC \\ &\quad -HH\_Tax + HH\_Ben \end{aligned} \tag{1}$$

where $HH\_DisposableY$ is the disposable household income, $HH\_OriginalY$ is the original household income, and HH_EESIC are the employee contributions, HH_Tax the taxes paid, and HH_Ben the benefits received by the household.

The second definition accounts for the employer contributions of the different financing systems as they are part of the labour costs:[78]

$$\begin{aligned} HH\_DisposableY(ERSIC) &= LabourCosts - HH\_ERSIC - HH\_EESIC \\ &\quad -HH\_Tax + HH\_Ben \end{aligned} \tag{2}$$

where $HH\_DisposableY(ERSIC)$ is the disposable household income accounting for the employer contributions, and the values of $LabourCosts$ are computed adding the original employers contributions to the original income of the German system of 2003.

4.2.4 Computation of the Average and Marginal Effective Tax Rates

The average effective tax rate (AETR) measures the tax burden on total labour income as a fraction of the tax base. For the calculation of the AETR, only employees in the working age, i.e. between 16 and 64, are considered to compare the labour costs of the different systems. Self-employment incomes are excluded, because they are by their nature part labour income and part income from capital. In addition, the quality of the self-employment variables, especially the tax and contribution payments, is not sufficient.[79] Social insurance payments of employees and employers are included in the tax burden. Immervoll (2004) argues that the social contributions

[78] This exercise is done to account for changing employers SIC under the assumption that the labour costs shall remain unchanged.

[79] Cf. Immervoll (2004) and Immervoll (2002).

should be included because: 1) They are compulsory, 2) Although they are supposed to serve as payments for insurance coverage in comparison to taxes which have functions such as the raising of revenue or redistribution, there are cross subsidies in public finance that ease this strict distinction.[80] Since the tax burden on total labour income should be computed, the employer contributions also have to be included in the numerator and denominator. Thus, the computation of the AETRs is:

$$AETR = (EESIC + ERSIC + Taxes)/(TaxableY + ERSIC) \tag{3}$$

where $EESIC$ are the employee contributions, $ERSIC$ the employer contributions, and $Taxes$ the income taxes paid by the individual. $TaxableY$ is the taxable income set in EUROMOD. Hence, the AETR is a measure for the tax and contribution wedge on total labour income. The higher the AETR, the higher the payment burden that is loaded on the respective labour income. Moreover, the AETR reflects the decision of a worker with a potential income of the respective decile to enter the labour market at all. These decisions are called labour supply responses along the extensive margin (the decision about participation into the labour force).[81]

The marginal effective tax rate (METR) serves as a measure of labour supply incentives for the increase of work intensity. It takes all benefits, taxes and social contributions into account that are paid by the individual. Benefits are also included, because they affect a person's current cash disposable income and are accounted for, when the person decides to extent working hours. Employer contributions are neglected, since they do not affect intensive labour supply responses.[82] Similar to the computation of the AETRs, the METRs are only computed for employees. Consequently, the work incentives only refer to economically active persons with an employment status. The METRs are computed as follows:

$$METR = 1 - (\triangle DisposableY/\triangle OriginalY) \tag{4}$$

where $\triangle DisposableY$ is the change of disposable income, i.e. the change of post-tax-benefit income, and $\triangle OriginalY$ is the margin by which the original income increases. The margin chosen here is an additional three per cent of employment income. Thus the METR measures the work incentives of a three per cent rise in gross employment income due to additional hours of working. The higher the METR, the lower will be the incentives of the employee to work more. These decisions are called labour supply responses along the intensive margin (the

[80] Cf. Immervoll (2004), p. 9.
[81] Cf. Saez (2002).
[82] Cf. Immervoll (2004) and Immervoll (2002).

decision about the intensity of work on the job).[83]

The average and median AETRs and METRs are computed for each decile group ranked by the original income. In this manner, the individuals belong to the same deciles for each system. The analysis mainly focuses on the median effective tax rates, because they are less sensitive to extreme values. For the interpretation of the AETRs and METRs later on, it should be kept in mind that they result from simulated systems, which are combinations of the German benefit system and the financing systems of the respective countries, and cannot be compared to the rates of the real systems.

5 Simulating Different Financing Scenarios for Germany

5.1 Effects on the Income Distribution

Having presented the methodology used, the next two sections analyse the major results. As explained above, the simulated scenarios are not revenue-neutral, which needs to be kept in mind when analysing the outcome of each scenario. The revenue of each simulated system (per month) is displayed in table 7. The revenue of GE-2003 is much higher than the revenue of the other systems. In Denmark, a lot of revenue is generated through indirect and direct taxes. In DK-Sim., only direct taxes are included which explains the comparatively low revenue. In DK-Sim., the tax revenue is the highest of all systems at 30.43 billion €. The low level of the British revenue points out the residualism of the British welfare state and the importance of private social insurance. Due to the low income thresholds of GR-Sim., as explained in section 4.2.1, the level of the revenue components is distorted.

	GE-2003	DK-Sim.	UK-Sim.	GR-Sim.
Revenue				
Taxes	18,36	30,43	16,49	19,12
Employee Contributions	14,96	7,09	9,78	10,41
Employer Contributions	14,96	1,55	7,59	13,03
Total	48,28	39,07	33,86	42,56
Expenditure				
Benefits	26,32	26,16	26,13	26,20

Table 7: National Budget of the Computations with EUROMOD, Values in Billion Euros
Source: Own calculations with EUROMOD and Stata.

One aim of a financing system can be the achievement of a more equitable income distribution.[84] It is often assumed that social contributions have a tendency to create more unequal

[83] Cf. Saez (2002).

[84] Cf. Musgrave and Musgrave (1989). The distributional impacts of taxes and social contributions are not

income distributions than income taxes because they are, in general, more regressive. In addition, only people with a job are covered by the social insurance based on contributions, and when considering employer's contributions, a discrimination against labour in favour of capital results. But the distributional effects also depend on the design of the social contribution system. The closer the system is to the system of general taxation in terms of progressivity, the more similar the distributional consequences will probably be.

In the next sections, the three simulated systems are compared with the baseline system of Germany 2003.

5.1.1 Implementing the Danish Financing System

Figure 4 presents the tax payments per decile for the baseline and the simulated systems. In DK-Sim., the deciles five to ten pay much higher taxes than in every other system. Due to the high Danish tax rates, i.e. e.g. a top rate of 60.45 per cent, a household pays 309 € more on average taxes than in the baseline system GE-2003 and the last decile even pays 927 € more per month. Also the lower income deciles pay higher taxes but the absolute growth of the tax payments from the baseline to the simulated Danish system DK-Sim. is especially high for the upper deciles as shown in figure 5 On average, the taxes increase by 65.75 per cent. The change of tax payments shows that more redistribution takes place in the tax system of DK-Sim.

the only effects of taxation. Although efficiency aspects will not be addressed in this thesis, they have to be kept in mind, especially because they can be in opposition to equity effects as well as to administrative simplicity. To guarantee administrative feasibility, a system needs to be intelligible and provide low option for abuse, which is in conflict with horizontal equity and tax systems trying to take factors like age or family size into account, cf. Barr (1992). To be able to evaluate the functioning of a welfare state system, all its objectives have to be considered, which is not the incentive of this work.

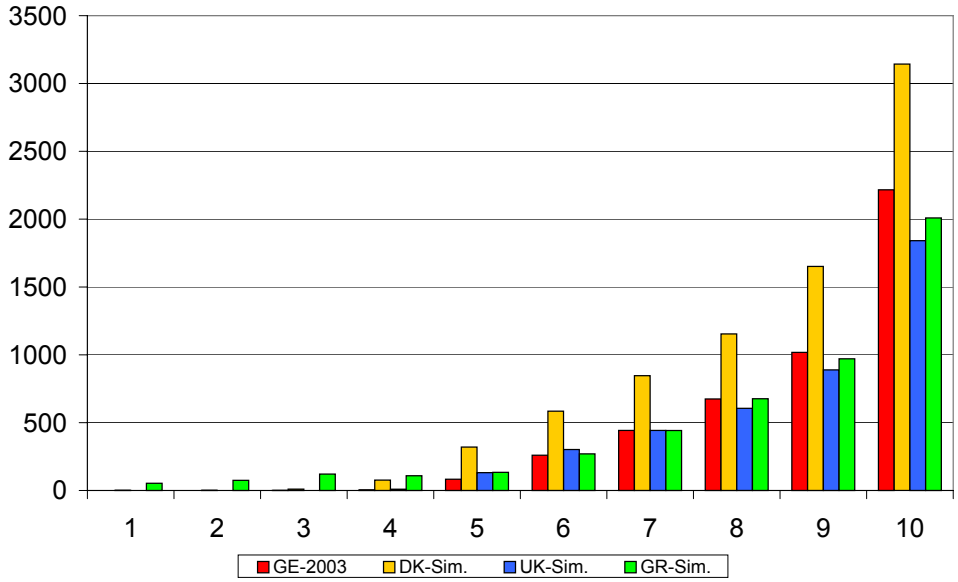

Figure 4: Income Taxes per Decile

Source: Own illustration.

These results can be ascribed to the high tax rates applied to high and low income earners on the one hand, and to the low tax-free amount of the Danish system, on the other hand. The tax-exempt amount is 4,487 €, compared to 7,235 € in the German system. The Danish tax rate of the lowest bracket is 39.45 per cent, whereas the German one constitutes 19.9 per cent.

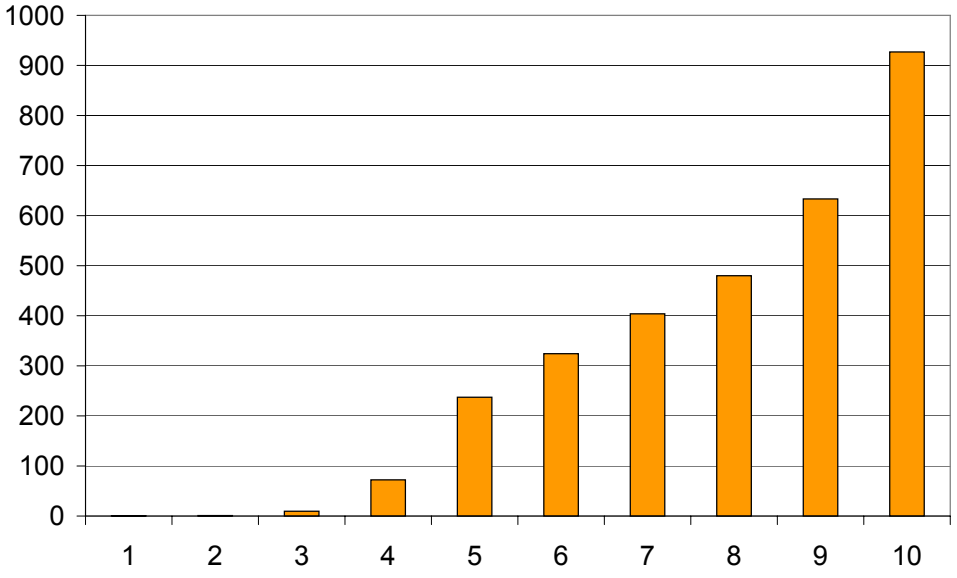

Figure 5: Absolute Change of Tax Payments per Decile from GE-2003 to DK-Sim.

Source: Own illustration.

Considering the employee social contributions paid per decile in figure 6 completely changes the picture. The amount of contributions an average household has to pay in the baseline system (383 €) is more than twice as high as in the Danish system (181 €). The low rate of the Danish general contributions of eight per cent yields almost no contribution payments for the lower income deciles, although there is no income threshold in DK-Sim., below which no contributions have to be paid. Contrarily, in GE-2003, employees pay 21 per cent of their employment income.

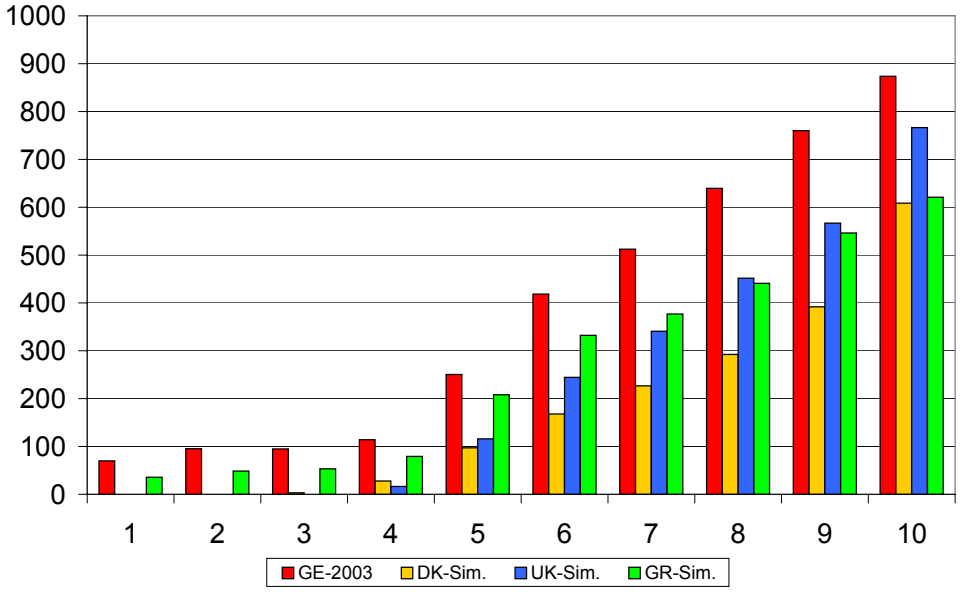

Figure 6: Employee Social Contributions per Decile
Source: Own illustration.

In DK-Sim., almost no employer contributions have to be paid, i.e. just 40 € on average, compared to 383 € in GE-2003, which results from the very low rate of two per cent, whereas in GE-2003 again 21 per cent are levied.

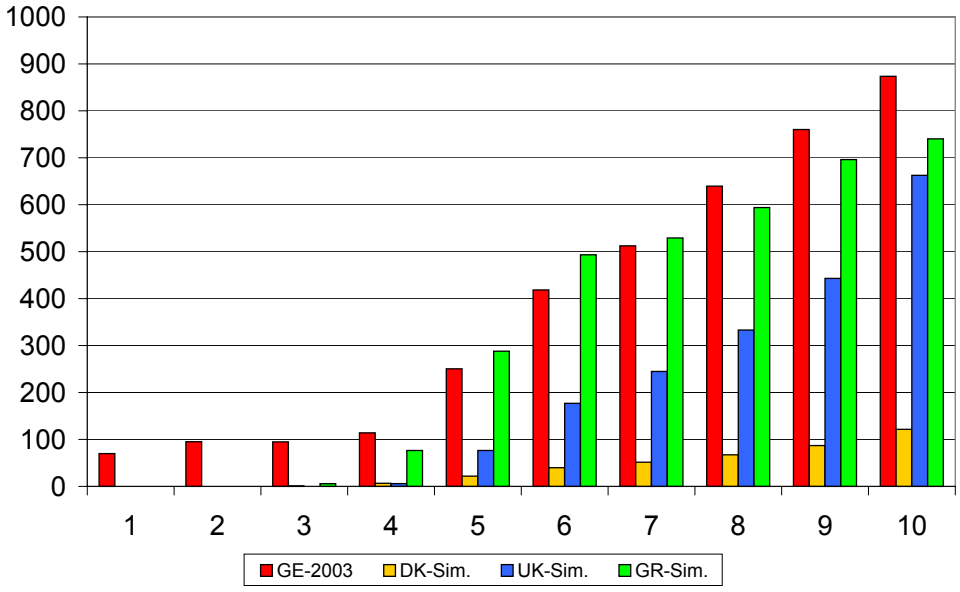

Figure 7: Employer Social Contributions per Decile
Source: Own illustration.

The distribution of the disposable incomes in figure 8 and 9 shows that a lot of redistribution takes place in DK-Sim.: Despite the lower revenue generated in DK-Sim., the disposable income of the upper deciles is comparatively low. Without accounting for the employer contributions, it is even lower than in GE-2003 and in figure 9, it is just slightly above the disposable income of GE-2003. Independent of the employer contributions, the disposable income of the lower deciles is higher in DK-Sim.

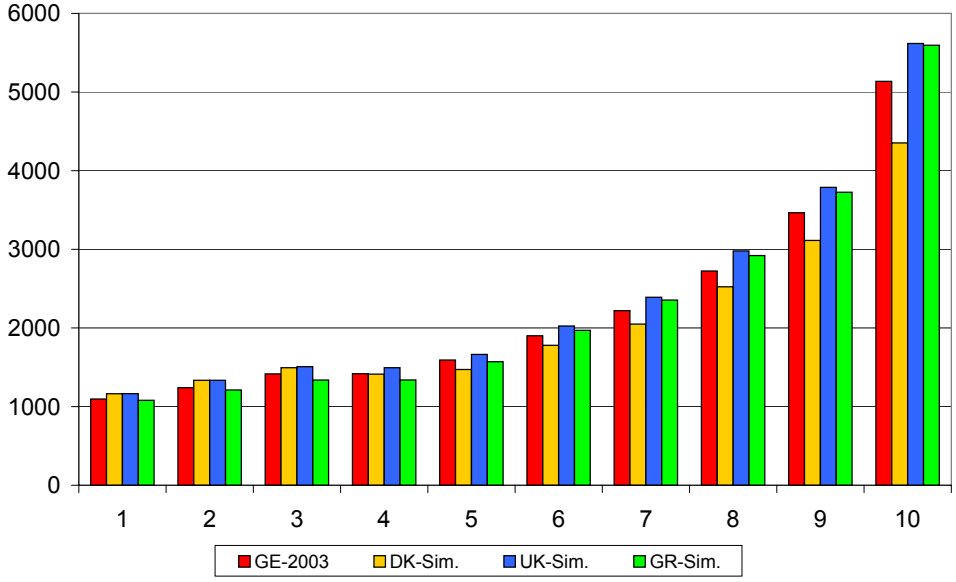

Figure 8: Disposable Income per Decile Without Accounting for Employer Contributions
Source: Own illustration.

Greve (1996) argued that a welfare state financed out of general taxation seems to have the best possibility in achieving the goal of greater equity.[85] This argument can be supported referring to the Gini-coefficient of the disposable income listed in table 8 and 9, which is lower for the Danish system compared to the baseline scenario. Surprisingly, introducing the Danish system leads to greater poverty. The German benefit system does not compensate for the high taxation of the lower income groups, which is done by the Danish benefit system. The same argument holds for the high child poverty rate. Especially families with low incomes are affected by the high rates of the lowest tax bracket and are not compensated within the German benefit system. The poverty rate of the elderly decreases from 15.8 per cent in the baseline to 12 per cent in table 8 This can be attributed to the exemption of pension incomes in the Danish taxable income. In Denmark, just private pensions are part of the tax base to increase the advantages of public social security. Contrarily, German pensioners have to pay contributions for the public health and the statutory long-term care insurance.[86]

[85] Cf. Greve (1996), p. 67.

[86] Accounting for the employer contributions and keeping the poverty line fixed yields an even lower poverty rate for the elderly and lower poverty rates for all simulated systems. This effect results from the higher disposable income of the simulated systems, although they also realise smaller revenue. On the other hand, adapting the poverty line to the higher disposable incomes overestimates the poverty rates, especially in DK-Sim., where almost no employer contributions have to be paid. This increases the disposable incomes and thus the poverty line even more.

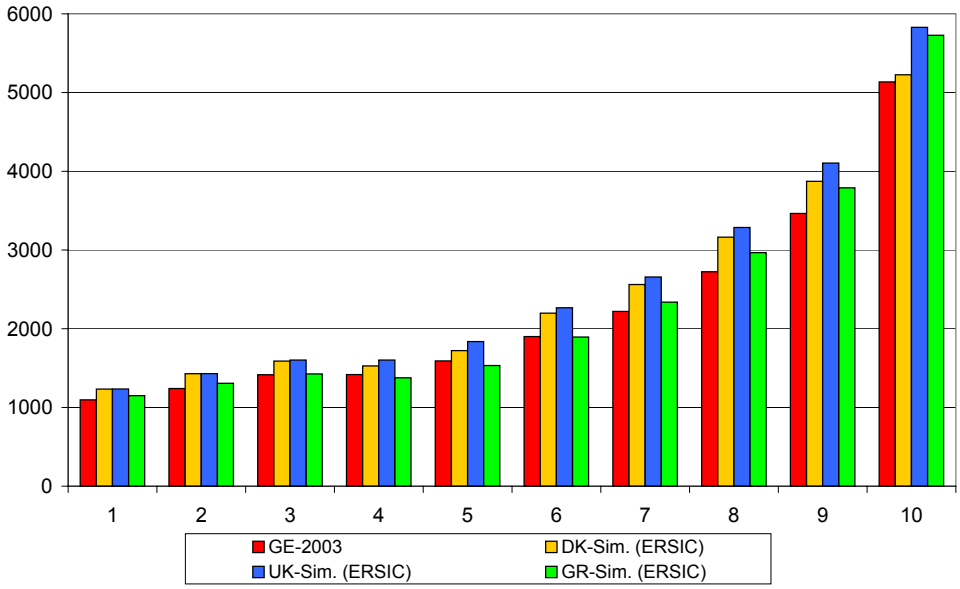

Figure 9: Disposable Income per Decile Accounting for Employer Contributions
Source: Own illustration.

The implementation of a Danish benefit system would be combined with high costs, which becomes obvious when considering the disposable income especially of the richer households of the simulated Danish system. In the EUROMOD tables of 2001, an average Danish household receives benefits at a level of 874 € per month, which is far above the EU15 average of 630 € and the highest level of all EU countries listed in these tables.[87] Greve (1996) underlines that a universal welfare state such as the Scandinavian model will have more difficulties in the future due to open borders, market competition and the resulting pressure put on high-tax-countries. Madsen (1999) alludes to potentially resulting internal problems for the Danish welfare state that also exist in other welfare states, but could be worse in Denmark due to the high tax burden, such as tax evasion, tax resistance and incentives for the black economy. He also mentions that the increased mobility of goods, services and factors of production could lead to fiscal pressure due to the mobility of the tax base, and towards a harmonisation of tax rates across borders among the EU countries.

To sum up, in DK-Sim., more redistribution takes place than in GE-2003, due to the importance of tax payments in the revenue structure. The upper decile pay much more taxes, which reduces inequality of incomes measured by the Gini-coefficient. Contributions paid in DK-Sim. are comparatively low, especially employer contributions, which reduces the redistributive effect.

[87] Cf. EUROMOD (2007a).

5.1.2 Implementing the British Financing System

In UK-Sim., the first four deciles pay almost no taxes as in GE-2003. For the fifth and sixth decile, tax payments are higher than in GE-2003, which is the other way around for the last deciles. These results can be ascribed to the more progressive tax schedule of GE-2003.[88] The taxes paid by an average household in UK-Sim. are 48 € lower than in GE-2003. The composition of the national budget of UK-Sim. points out the relative importance of the taxes in the financing structure. Despite the much lower total revenue of UK-Sim., the revenue generated through taxes is almost as high as in GE-2003.

The average employee contributions paid decrease by 35 per cent. Referring to the much lower contribution rates of eleven per cent paid in UK-Sim. in contrast to 21 per cent in GE-2003, this result was foreseeable, even though the contribution rates of UK-Sim. and thus the payments are overestimated.[89] Contrarily to the contributions paid in GE-2003, the lowest four deciles almost pay no contributions, due to the higher income threshold of 127.9 € per week which corresponds to 548 € per month, below which no contributions are levied. This amount is always exempt from contributions irrespective of a persons' income. In the German system, an income below 400 € a month is free of contributions, but on every income above this allowance, the flat-rate contributions are levied on every single €, which increases the payments of the poor.

Figure 6 shows that the relative increase of contribution payments of the upper five deciles is higher than in GE-2003. This increase can be attributed to the fact that the self-employed in GE-2003 do not have to pay contributions, whereas in UK-Sim. they have to, and many self-employed are high income earners.

The distribution of the employer contributions in UK-Sim. is quite similar, except that the increase of contributions paid by the upper deciles is not as high as for the employee contributions, since there are no employers contributions for the self-employed.

The disposable income in UK-Sim. has risen in comparison to the baseline system and is not much below the original income. The lower tax and contribution payments and the high benefits received by an average household give rise to a high disposable income. The residual UK welfare state provides fewer benefits on average than the German one and thus needs less financing. For the average British earner in 2003 the average benefits were 564 € per month, compared to 673 € for the German 2003 system. Figure 10 presents the absolute change of the disposable incomes per decile after the introduction of UK-Sim. The disposable income increases especially with the upper deciles compared to GE-2003.

[88] For a comparison of progressivity measures across EU countries, see Peichl and Schaefer (2008).

[89] See section 4.2.1. All employees pay the higher contribution rate of 11 per cent.

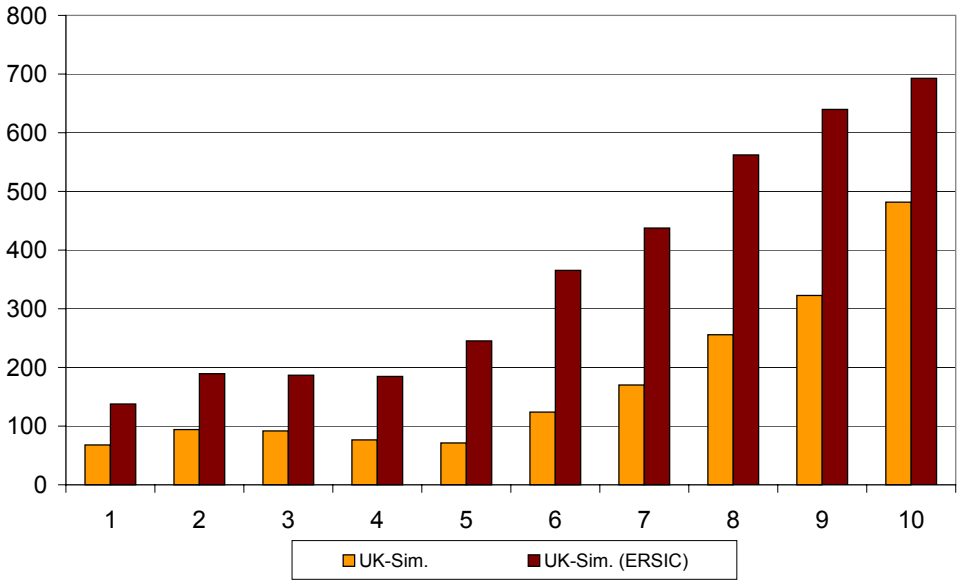

Figure 10: Absolute Increase of Disposable Income per Decile in UK-Sim.
Source: Own illustration.

These increases in disposable income yield a much higher Gini-coefficient of UK-Sim. (0.2779 and 0.2711) than of the baseline system GE-2003 (0.2682). Thus inequality has increased due to the British financing system. Similarly, poverty has augmented from 13 to 15.7 per cent (or 16.2 per cent, when accounting for employers contributions) of the population having an equivalised disposable income of less than 60 per cent of the median. Especially child poverty has increased from 15.5 to 20.6 per cent. These effects are due to the lower social contribution and tax payments made on average in UK-Sim. This results in higher disposable incomes and therefore a higher median and a higher poverty threshold. However, these effects can also be attributed to the higher progressivity of the financing system of GE-2003.[90]

[90]Cf. Peichl and Schaefer (2008). They do not only measure a higher progressivity of the tax schedule, but also accounting for social contributions.

Poverty (Headcount)	GE-2003	DK-Sim.	UK-Sim.	GR-Sim.
Population	13,0%	13,9%	15,7%	15,3%
Children	15,5%	18,4%	20,6%	19,6%
Working Age (WA)	11,5%	13,1%	14,0%	13,5%
WA Econ. Act.	7,2%	9,6%	9,4%	8,9%
Elderly	15,8%	12,0%	16,3%	16,9%
Inequality (Gini)	**GE-2003**	**DK-Sim.**	**UK-Sim.**	**GR-Sim.**
Original Income	0,4936	0,4936	0,4936	0,4936
Disposable income	0,2682	0,2496	0,2779	0,2816

Table 8: Poverty and Inequality of the Baseline and the Simulated Systems Without Accounting for Employer Contributions

Source: Own calculations with EUROMOD.

Poverty (Headcount), Fixed Poverty Line	GE-2003	DK-Sim.	UK-Sim.	GR-Sim.
Population	13,0%	11,1%	9,8%	14,3%
Children	15,5%	14,2%	12,8%	19,4%
Working Age (WA)	11,5%	10,3%	8,7%	13,4%
Elderly	15,8%	10,8%	10,4%	12,0%
Poverty (Headcount), Adapted Poverty Line	**GE-2003**	**DK-Sim.**	**UK-Sim.**	**GR-Sim.**
Population	13,0%	16,4%	16,2%	16,5%
Children	15,5%	20,9%	21,1%	22,2%
Working Age (WA)	11,5%	14,9%	14,1%	15,3%
Elderly	15,8%	16,9%	18,2%	14,6%
Inequality (Gini)	**GE-2003**	**DK-Sim.**	**UK-Sim.**	**GR-Sim.**
Original Income	0,4936	0,4936	0,4936	0,4936
Disposable income	0,2682	0,2600	0,2711	0,2884

Table 9: Poverty and Inequality of the Baseline and the Simulated Systems Accounting for Employer Contributions

Source: Own calculations with EUROMOD.

As mentioned in section 2, the Liberal welfare states just provide a residual public social security. Their approach of social insurance is more market-based, and less income is distributed from the rich to the poor by the public system. Thus, the introduction of a Liberal financing system enhances inequality and poverty.

5.1.3 Implementing the Greek Financing System

As already mentioned in previous sections, the quantity of welfare provided by the Greek system is low compared to other European countries. Just considering the financial part of the welfare

system and keeping the German benefits thus results in a high disposable income that is close to the original income.

Surprisingly, the tax payments in the simulated Greek system are even slightly higher, and they are almost similarly distributed among the deciles as those of GE-2003. Referring to the comparatively low tax payments of the original Greek system of 2003 presented in table 19 of the annex to this section, this outcome was not predictable. Only the tenth decile pays lower taxes because of the higher top rate in GE-2003.

The simulation of the Greek financing system, based on German data, changes the structure of the system completely. Average social contribution payments in the original Greek system of 2003 are much higher (207 €) than the average tax payments (147 €). Due to the German population, average contributions of 274 € are higher in GR-Sim., but lower than the average tax payment of 486 €. One minor reason for the high tax payments might be the inclusion of pension in the Greek tax base, but the major reason is the lower standard of living in Greece. The tax schedule, being adjusted to the lower level of wages in Greece, sorts more households into the upper tax brackets, when realised on the basis of German data. The opposite distortions as to the tax schedule apply to the social contribution schedule.

The social contributions of the Greek financing system, implemented in Germany, are comparatively low, which can be ascribed to three causes: 1) The employee contribution rate of GR-Sim. is lower than the German one. A Greek employee has to pay 16 per cent plus 3.45 per cent for hazardous workers. These are blue collar workers in certain occupations which are less represented in the German than in the Greek database. Therefore, in GR-Sim., more people just pay the 16 per cent than in GR-2003, in which 40 per cent of the employees contribute 19.45 per cent.[91] 2) The income ceiling for the assessment of contributions in GR-Sim. is far below the ceiling in GE-2003, i.e. 1,960.25 € in GR-Sim., and 3,450 € in Germany for the health insurance, and even 3,850 € Eastern German and 4,600 € Western German income ceiling for the pension and disability insurance. Due to the lower market incomes of the Greek population,[92] less burden is loaded on the Greek population. In particular the Greek social contribution schedule is adapted to the lower economic status of the population. In GE-2003, the average market income is much higher. Thus, the richer households now have to pay less contributions and only on income up to the lower ceiling.[93] 3) Contributions paid by the self-

[91]Cf. Matsaganis and Tsakloglou (2004), p. 33. The amount of hazardous workers in GR-Sim. is a bit underestimated, because not all German households are labelled with the International Standard Classification of Occupations (ISCO) number. The social contributions paid by the lower income households are therefore a little bit underestimated.

[92]See GR-2003 displayed in table 19 in the annex to section 4.

[93]It could be considered as a drawback that the structure of the Greek financing system has not been adopted to German standards, but this has not been done on purpose. As mentioned in previous sections, the Southern countries feature a financing structure that is close to the structure of the conservative countries, but they provide a lower level of welfare. Therefore the system has been implemented with all its default values.

employed in GR-Sim. are comparatively high and the number of self-employed and farmers in the German population is low compared to the Greek one. There are 1,916 self-employed in the Greek database and 514 in the German one. The distribution of the employee contribution payments is quite similar to the distribution of GE-2003. The increase of contribution for the upper deciles is just slightly lower due to the lower income ceiling in the GR-Sim..

Considering the distribution of the employer contributions, unlike in GE-2003, no contributions are paid by the lower deciles. The employer contributions paid in the GE-2003 are those for the health insurance paid by the pension fund. The distribution of the employer contributions in the upper deciles in GR-Sim. has a more concave trend because of the lower income ceiling and the higher contribution rate of 28 per cent plus 3.15 for hazardous workers compared to 21 per cent in GE-2003.

The Gini-coefficient in the simulated Greek system is the highest of all four systems. Regarding the change of disposable income from GE-2003 to GR-Sim., gives the explanation. The lower income earners are the losers and the upper income earners the winners in terms of disposable income. Therefore, the richer households save more money now, which is mainly due to the lower rate and lower income ceiling for the contribution payments. Less redistribution takes place which yields to higher inequality.

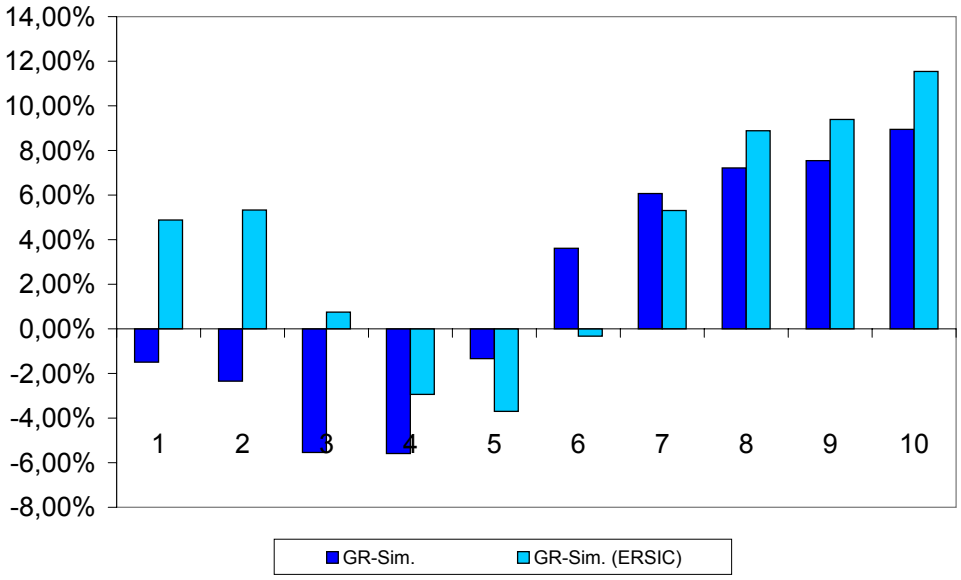

Figure 11: Absolute Change of Disposable Income of GR-Sim.
Source: Own illustration.

Table 9 shows an increase of the overall poverty from 13 to 16.1 %. The same explanations as for the growth of inequality are valid to explain this result. In addition, due to the higher

disposable incomes, the poverty threshold has risen, which also explains the higher tax amount paid by the poor.[94] Especially the poverty rate of the elderly has grown which results from the different tax base. In Germany, only civil servants' pensions are part of the taxable income, whereas the Greek system levies taxes on all pensions.

Concerning the revenue generated by GR-Sim., it should be kept in mind that for the lower level of welfare provided in the Southern welfare states, in terms of benefits granted, less financing is needed. However, it is much too low to finance German benefits.

Regarding the shares of social contributions and taxes paid per decile in each system, as presented in figure 12, shows that there are some tendencies concerning the distribution of shares according to whether a system relies more on taxes or social contributions. The shares of the Bismarckian systems of GE-2003 and GR-Sim. are comparatively higher for the lower deciles and lower for the upper deciles. This could lead to the conclusion that concerning the financing structure, Beveridgean systems such as DK-Sim. and UK-Sim. have more potential to redistribute. However, because of the low tax and contribution rates, and the lower revenue generated, inequality increases in UK-Sim.

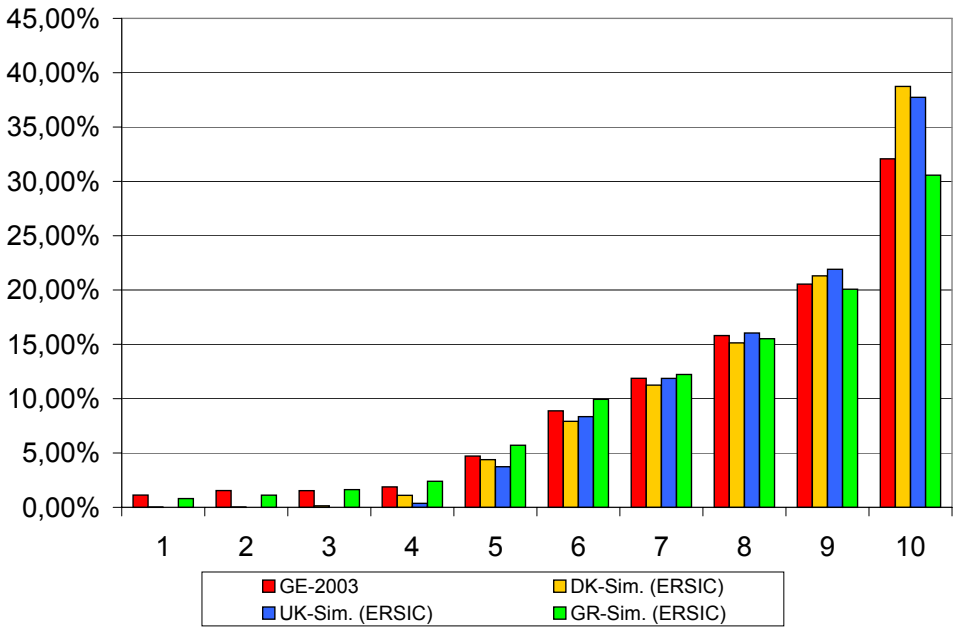

Figure 12: Share of Social Contributions and Taxes Paid per Decile

Source: Own illustration.

[94] See table 13 and 25 of the annex of this section.

5.2 Effects on Labour Costs and on Labour Supply Incentives

After having analysed the distributional effects of the three simulated reform scenarios, the effects on labour costs measured by the AETRs and on intensive labour supply incentives in terms of the METRs are evaluated for the simulated financing systems.[95] The evaluation of the effective tax rates will mainly focus on the median rates since they are less sensitive to extreme values. Similar to the analysis above, the results of the simulated systems are compared to the baseline system GE-2003.

5.2.1 AETRs and METRs of the Danish Financing System

The overall median AETR of DK-Sim. is by eleven percentage points lower than the one of GE-2003, although the tax payments of the Danish system are significantly higher, as displayed in figure 4. The high level of the average German AETR can be attributed to the higher contributions paid by the employees and the employers in Germany, which imposes higher costs on labour than the Danish income tax just paid by the employees. The difference of the median AETRs of the two systems is much bigger for the lower than for the upper income deciles. For the first two deciles, the AETRs of GE-2003 are three times higher than the Danish ones. This result supports the point of view of many economists that especially low income receivers are charged by the high tax and contribution wedge in Germany.[96] Whether the high labour costs affect labour demand is often discussed. Leibfritz et al. (1997) argue that labour costs, in particular social contributions paid by employers, have a strong influence on labour demand and thus unemployment. Notwithstanding, the results of the empirical study of Bauer and Riphahn (2002) indicate low effects of social contributions on labour demand. It can be concluded that DK-Sim. imposes lower labour costs on lower income workers and increases their incentive to participate in the labour market. Due to the high top income tax rate of DK-Sim., the median AETR of the last decile is higher than in GE-2003. Since in DK-Sim., a lower revenue is realised, it can be assumed that the AETRs would be higher in general, if considering a revenue-neutral reform scenario.

Regarding the intensive labour supply incentives in terms of the METRs changes the picture somewhat. The overall median METR of DK-Sim. (0.46) is almost the same as the METR of GE-2003 (0.46).[97] Taking a closer look at the distribution along the deciles reveals that the

[95] The median and average effective tax rates of each system are listed in the annex to this section. There will always be behavioural reactions when introducing new taxes, or elevating, or lowering, existing ones. These reactions should not be underestimated and it has to be kept in mind that they are not covered by EUROMOD. Moreover, it has to be kept in mind that the simulated systems are not revenue-neutral.

[96] Cf. Sinn (2005b) or Sinn (2005a) and Schröder (2006).

[97] Homburg (2003) presents some reform options for the often discussed problem that low income earnings are confronted with high marginal tax rates in Germany and shows analytically that these options do not have the desired impact on welfare.

deciles nine and ten of DK-Sim. are confronted with much higher METRs, i.e. 0.65, than the respective deciles of GE-2003 (0.49 and 0.47). Consequently, an additional hour of work leaves an high-income employee in DK-Sim. with less additional disposable income than in GE-2003. This results from the fact that the Danish financing system mainly relies on income taxation, whereas in the German system social contributions play a major role. In DK-Sim., high-income earners have to pay additional taxes on the marginal increase of their wage. Contrarily, social insurances in GE-2003 are only paid up to an income ceiling and thus have a regressive schedule. The first two deciles are also affected by an increase of the METRs due to the high tax rate of 39.45 per cent of the lowest tax bracket of DK-Sim. To sum up, the financing system DK-Sim., relying more on income taxation, reduces the labour costs, but lowers labour supply incentives, especially of the upper and lower deciles.

Overall Median AETR			
GE-2003	DK-Sim.	UK-Sim.	GR-Sim.
0,52	0,41	0,33	0,39
Overall Median METR			
GE-2003	DK-Sim.	UK-Sim.	GR-Sim.
0,47	0,46	0,38	0,40

Table 10: Overall Median Effective Tax Rates
Source: Own calculations with EUROMOD.

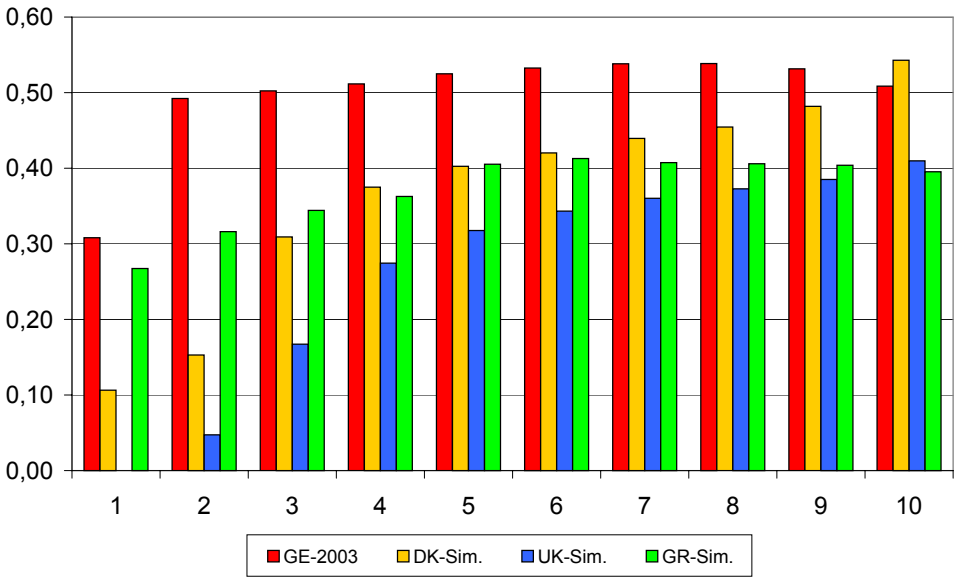

Figure 13: Median Average Effective Tax Rates per Decile
Source: Own illustration.

5.2.2 AETRs and METRs of the British Financing System

The simulation of the British financing system yields the lowest overall median AETRs and METRs. Due to the low social contribution payments and the low tax payments of the employees in UK-Sim., the labour costs, i.e. the extensive labour supply incentives, are on a low level compared to the other systems. As a result of the high tax-exempt income and the relatively high contribution-free amount, labour costs are especially low for the low-income earners. For the same reason, the intensive labour supply incentives are very high for the lowest two deciles. The AETRs increase slightly with the higher deciles. The median METRs vary a bit between the different deciles but remain almost on the average level of 38 per cent. Thus, the incentives for an employee to augment hours of working are almost the same for every income earner. Consequently, the decision to work more is not distorted between different wage levels. The intensive labour supply incentives are especially high for the first two deciles and slightly lower for the last decile compared to the constant level of the METRs of the deciles four to nine.

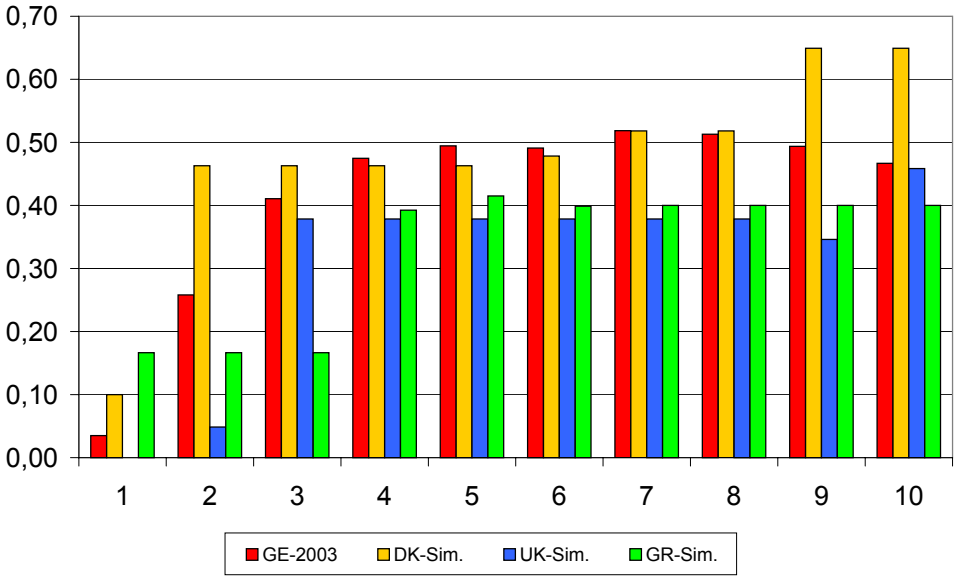

Figure 14: Median Marginal Effective Tax Rates per Decile
Source: Own illustration.

5.2.3 AETRs and METRs of the Greek Financing System

On the basis of the higher wage level in the German population, the relation of tax and contribution payments in GR-Sim. has distorted the structure of the original Greek financing system. This leads to AETRs and METRs that are just partially comparable with the effective tax rates of those that would result from the original Greek system. The comparatively low

level of AETRs mainly results from the lower level of financing that takes place in GR-Sim. Despite these drawbacks, it is interesting to see how a drastic reduction of social contribution payments affects the labour costs.

The structural distribution of the AETRs of GR-Sim. is similar to the AETRs of GE-2003, but on a lower level. Only the deciles two and three show larger differences between the labour costs because of the lower tax-exempt amount of GE-2003 and the higher tax rate of the first tax bracket.

The intensive labour supply incentives are on a constant level for the first three decile groups because of the high tax-exempt income amount of GR-Sim., which explains the large step between decile three and four. The following deciles are also confronted with additional tax payments when extending working hours. Compared to GE-2003, the first decile of GR-Sim. is confronted with a higher METR and thus fewer incentives to work more, which results from the fact that in GR-Sim. social insurance contributions have to be paid already on the first € earned.

To sum up, the labour costs in terms of the AETRs in the original German system are the highest on average, and they are especially high for the lower income deciles. A reduction of social contribution payments yields lower labour costs, in particular for the lower income earners. A high level of income taxation as in DK-Sim. reduces overall labour costs on the one hand, but increases the METRs for the lower and upper deciles. The simulated Liberal British financing system displays the lowest labour costs and gives the highest incentives to labour supply to increase working hours, but it also generates the lowest revenue of all the simulated systems.

Concerning the distribution of the AETRs, their level is lower for the lower deciles in a financing system relying more on income taxation, i.e. DK-Sim. and UK-Sim., and it increases more for the upper deciles than in the Bismarckian systems GE-2003 and GR-Sim.

Regarding the distribution of the METRs, there seems to be a tendency that the Beveridgean systems DK-Sim. and UK-Sim. provide comparatively low rates for the lower income deciles but higher rates for the upper deciles. However, considering the Danish case, for which the METRs of the lower deciles are elevated, this effect also depends strongly on the tax-exempt amount and the lowest tax rate.

6 Conclusion

The aim of this paper was the analysis of different simulated financing systems for Germany. Section 2 gave an overview of typologies of welfare states in the technical literature for Europe. The four most often mentioned welfare states types, namely the Conservative, the Social-democratic, the Liberal, and the Southern model, and their characteristics have been described. In section 3, the financing systems of the respective models have been worked out. Moreover, for each of the four models, a representative country has been chosen, whose income tax system and social contribution system have been presented in detail. Section 4 briefly introduced the microsimulation model EUROMOD and illustrated the methodology used. Afterwards, the results of the simulated Danish, British and Greek financing system for Germany, keeping the German benefit system, have been analysed. More precisely, the previous section presented the effects on the income distribution and on labour supply incentives by these simulations.

However, several drawbacks of the presented results should be kept in mind: First, the simulated reform scenarios are not revenue-neutral, thus not comparable one-by-one. Second, the benefit side of the welfare state, which might enhance or dampen these effects, has been neglected. Third, the simulated systems do not account for behavioural reactions of the economic agents, such as tax evasion, and for adjustment processes. Fifth, tax competition could put pressure on the level of income taxes. Sixth, distortionary effects associated with company taxation or capital taxation are not considered. Thus, the above-listed results have to be evaluated cautiously, keeping these restrictions in mind.[98] Despite these constraints the following conclusions can be drawn:

The introduction of the Social-democratic Danish financing system decreases inequality of incomes, but does not necessarily lead to less poverty. Tax payments are extremely high, whereas social contribution payments are relatively low. As a result, the distribution of the household disposable income shows comparatively high levels for the lower deciles and low levels for the upper deciles. These results demonstrate the strong redistributive effects of the Danish financing structure. The labour costs measured in terms of AETRs decrease, especially for low-income earners, but are higher for the last decile. Contrarily, the intensive labour supply incentives, displayed by the high level of the METRs, decrease for low and high-income earners. The higher METRs the lower deciles are confronted with result from the high tax rates of the lowest bracket.

The introduction of a Liberal British financing system reduces equality and increases poverty. The revenue generated by this system is the lowest of all simulated systems. Since the Liberal welfare states heavily rely on private insurance, social contributions paid are comparatively

[98] A reform within a welfare state system must additionally to the effect of the financing (and benefit) levels and structures on the income distribution consider efficiency and sustainability.

low. The extensive labour supply incentives are high on average (low AETRs) and especially for the lower deciles. The intensive labour supply incentives are almost constant and on a comparatively high level, except for the first two deciles where they are extremely high, and for the last decile, where they are slightly lower (higher METR).

The introduction of the Southern Greek system yields higher inequality and poverty due to the low income thresholds, which lead to higher disposable incomes of the rich and lower disposable incomes of the poor. The average extensive and intensive labour supply incentives are higher for the simulated Greek system than for the original German one, which can be ascribed to the lower revenue generated by the Greek financing system. The distributional structure of the effective tax rates along the deciles shows similarities to the original German system just on lower levels.

In general, some tendencies can be seen, which result from the financing structure: The share of contribution and tax payments is higher for the upper decile groups and lower for the first deciles in the systems relying more on income taxation, i.e. the Danish and British Beveridgean systems, in comparison to the Bismarckian financing systems of Germany and Greece. They thus seem to have more potential to redistribute, but, as it can be seen in the case of the British financing system, the level of redistribution also depends strongly on the level of payments. Concerning the distribution of the AETRs, their level is higher for the lower deciles in the Bismarckian systems, and it increases less for the upper deciles than in the Beveridgean systems. According to this, fewer extensive labour supply incentives for the lower income groups prevail in the Conservative and Southern financing systems. Regarding the distribution of the METRs, there seems to be a tendency that the Beveridgean systems provide comparatively high rates for the upper deciles compared to the Bismarckian systems. Due to the fact that tax schedules are progressive and social contribution schedules are linear or even regressive, changing a financing system towards more income taxation increases the extra payments of the richest of the population for an additional hour of work.

The simulation results do not support Stefan Collignon's point of view that the Conservative welfare state completely failed. Taking the level of welfare and the level of inequality and poverty into account that are achieved by these types of welfare states, their systems seem to be quite successful. On the other hand regarding labour costs and labour supply incentives, the structure of the financing system has deficits. It is certain that reforms are needed, not only on the financing, but also on the benefit side of the welfare state to be able to cope with the challenges of the present and the future.

References

Arcanjo, M. (2006). Ideal (and Real) Types of Welfare State, Working Paper, Department of Economics at the School of Economics and Management (ISEG), Technical University of Lisbon.

Arts, W. and Gelissen, J. (2002). Three Worlds of Welfare Capitalism or More? A State-of-the-Art Report, *Journal of European Social Policy* **12 (2)**: 137–158.

Atkinson, A. B. (1997). Measurement of Trends in Poverty and the Income Distribution, *Cambridge Working Papers in Economics* **9712**.

Atkinson, A. B. (1999). *The Economic Consequences of Rolling Back the Welfare State*, The MIT Press, Cambridge, Massachusetts.

Barr, N. (1992). Economic Theory and the Welfare State: A Survey and Interpretation, *Journal of Economic Literature* **XXX**: 741–803.

Bauer, T. and Riphahn, R. T. (2002). Employment Effects of Payroll Taxes - An Empirical Test for Germany, *Applied Economics* **34**: 865–876.

Becker, U. (2007). The Scandinavian Model: Still an Example for Europe?, *Internationale Politik und Gesellschaft* **4**: 41–47.

Bonoli, G. (1997). Classifying Welfare States: A Two-Dimension Approach, *Journal of Social Policy* **26**: 351–372.

Castles, F. G. and Mitchell, D. (1993). Worlds of Welfare and Families of Nations, *in* F. G. Castles (ed.), *Families of Nations: Patterns of Public Policy in Western Democracies*, Dartmouth Publishing Company, Aldershot.

Cousins, M. (2005). *European Welfare States - Comparative Perspectives*, SAGE Publications, London.

Esping-Andersen, G. (1990). *The Three Worlds of Welfare Capitalism*, Blackwell Publishers Ltd., Oxford.

Esping-Andersen, G. (1999). *Social Foundations of Postindustrial Economies*, Oxford University Press, New York.

EUROMOD (2007a). Distribution and Decomposition of Disposable Income in the European Union - Tax-Benefit System: 2001, `http://www.iser.essex.ac.uk/msu/emod/statistics/docs/DecompStats01{_}D1.pdf` [accessed on 02/01/2008, at 14.10].

EUROMOD (2007b). Distribution and Decomposition of Disposable Income in the European Union - Tax-Benefit System: 2003, http://www.iser.essex.ac.uk/msu/emod/statistics/docs/DecompStats03{_}D1.pdf [accessed on 02/01/2008, at 14.10].

European Commission (2006a). MISSOC - Comparative Tables - Part 1: Belgium, Czech Republic, Denmark, Germany, Estonia, http://ec.europa.eu/employment{_}social/missoc/2007/tables{_}part{_}1{_}en.pdf [accessed on 03/08/2008, at 12.40].

European Commission (2006b). MISSOC - Comparative Tables - Part 2: Greece, Spain, France, Ireland, Iceland, http://ec.europa.eu/employment{_}social/missoc/2007/tables{_}part{_}2{_}en.pdf [accessed on 03/08/2008, at 12.40].

European Commission (2006c). MISSOC - Comparative Tables - Part 6: Slovakia, Finland, Sweden, United Kingdom, http://ec.europa.eu/employment{_}social/missoc/2007/tables{_}part{_}6{_}en.pdf[accessed on 03/08/2008, at 12.40].

European Commission (2007a). Taxation Trends in the European Union - Data for the EU Member States and Norway, http://ec.europa.eu/taxation{_}customs/resources/documents/taxation/gen{_}info/economic{_}analysis/tax{_}structures/Structures2007.pdf [accessed on 03/08/2008, at 10.36].

European Commission (2007b). Taxes in Europe Database, http://ec.europa.eu/taxation{_}customs/taxinv/ [accessed on 03/08/2008, at 10.50].

Ferrera, M. (1996). The 'Southern Model' of Welfare in Social Europe, *Journal of European Social Policy* **6 (1)**: 17–37.

Foster, J., Greer, J. and Thorbecke, E. (1984). A Class of Decomposable Poverty Measures, *Econometrica* **3**: 761–766.

Gini, C. (1921). Measurement of Inequality of Income, *Economic Journal* **31**: 22–43.

Grabka, M. M. (2001). EUROMOD Country Report - Germany, http://www.iser.essex.ac.uk/msu/emod/documentation/countries/germany/crge901.pdf [accessed on 03/16/2008, at 11.45].

Greve, B. (1996). Comparative Welfare Systems: The Scandinavian Model in a Period of Change, *Ways of Financing the Welfare State and Their Distributional Consequences*, St. Martin's Press, Inc., New York, pp. 67–86.

Hagenaars, A., K. d. V. and Zaidi, M. (1994). Poverty Statistics in the Late 1980s: Research Based on Micro-data, Office for Official Publications of the European Communities, Luxembourg.

Hansen, H. (2004). EUROMOD Country Report - Denmark (2001 Tax-Benefit System), `http://www.iser.essex.ac.uk/msu/emod/documentation/countries/denmark/cr01dk0205.pdf` [accessed on 03/16/2008, at 16.56].

Homburg, S. (2003). Arbeitslosigkeit und soziale Sicherung, *Vierteljahreshefte zur Wirtschaftsforschung* **72**: 68–82.

Immervoll, H. (2002). The Distribution of Average and Marginal Effective Tax Rates in European Union Member States, *EUROMOD Working Paper* **No. EM2/02**.

Immervoll, H. (2004). Average and Marginal Tax Rates Facing Workers in the EU. A Micro-Level Analysis of Levels, Distributions and Driving Factors, *EUROMOD Working Paper* **No. EM6/04**.

Kakwani, N. (1976). Measurement of Tax Progressivity, *The Economic Journal* **87**: 71–80.

Kangas, O. E. (1994). The Politics of Social Security: On Regressions, Qualitative Comparisons, and Cluster Analysis, *in* T. Janoski and A. M. Hicks (eds), *The Comparative Political Economy of the Welfare State*, Cambridge UP, Cambridge, pp. 346–364.

Kasza, G. J. (2002). The Illusion of Welfare 'Regimes', *Journal of Social Policy* **31**: 271–287.

Katrougalos, G. S. (1996). The South European Welfare Model: The Greek Welfare State, in Search of an Identity, *Journal of European Social Policy* **6 (1)**: 39–60.

Korpi, W. and Palme, J. (1998). The Paradox of Redistribution and Strategies of Equality: Welfare State Institutions, Inequality, and Poverty in the Western Countries, *American Sociological Review* **63**: 661–687.

Leibfried, S. (1992). Towards a European Welfare State? On Intergrating Poverty Regimes into the European Community, *in* Z. Ferge and J. E. Kolberg (eds), *Social Policy in a Changing Europe*, Campus Verlag, Frankfurt am Main, chapter 16, pp. 245–279.

Leibfritz, W., Thornton, J. and Bibbee, A. (1997). Taxation and Economic Performance, *OECD Economics Department Working Paper* **176**.

Levy, H. (2006a). Euromod Recipe: EMRec06_01 - Multiplying Monetary Parameters by a Single Factor, `http://www.iser.essex.ac.uk/msu/emod/documentation/recipes/EMRec06{_}01.pdf` [accessed on 02/01/2008, at 14.10].

Levy, H. (2006b). Euromod Recipe: EMRec06_05 - Implementing a Simple Reform: Completely Universalising and Income-testing Child Benefits, http://www.iser.essex.ac.uk/msu/emod/documentation/recipes/EMRec06{_}05.pdf[accessed on 02/01/2008, at 14.14].

Lietz, C. (2006a). EUROMOD Manual - Running EUROMOD and Basic Concepts.

Lietz, C. (2006b). EUROMOD Manual - The Base-derived Machanism - Making Changes in EUROMOD Transparent.

Lietz, C. (2006c). Euromod Recipe: EMRec06_02 - Producing EUROMOD Summary Statistics, http://www.iser.essex.ac.uk/msu/emod/documentation/recipes/EMRec06{_}02.pdf [accessed on 02/01/2008, at 14.10].

Lietz, C. (2006d). Euromod Recipe: EMRec06_06 - Implementing a Minimum Income Scheme, http://www.iser.essex.ac.uk/msu/emod/documentation/recipes/EMRec06{_}06.pdf [accessed on 02/01/2008, at 14.10].

Lietz, C. and Levy, H. (2006). Euromod Recipe: EMRec06_07 - Importing policies, http://www.iser.essex.ac.uk/msu/emod/documentation/recipes/EMRec06{_}07.pdf [accessed on 02/01/2008, at 14.10].

Madsen, P. K. (1999). Denmark: Flexibility, Security and Labour Market Success, *ILO Employment and Training Papers* **53**.

Mantovani, D. and Lietz, C. (2006). Euromod Recipe: EMRec06_04 - Running EUROMOD: Fiscal Drag, http://www.iser.essex.ac.uk/msu/emod/documentation/recipes/EMRec06{_}04.pdf [accessed on 02/01/2008, at 14.12].

Matsaganis, M. and Tsakloglou, P. (2004). EUROMOD Country Report Greece (2001 Tax-Benefit System), http://www.iser.essex.ac.uk/msu/emod/documentation/countries/greece/cr01gr0205.pdf [accessed on 03/16/2008, at 15.20].

Musgrave, R. and Musgrave, P. (1989). *Public Finance in Theory and Practice*, McGraw-Hill, New York.

Obinger, H. and Wagschal, U. (1998). Das Stratifizierungskonzept in der Clusteranalytischen Überprüfung, *Welten des Wohlfahrtskapitalismus: Der Sozialstaat in vergleichender Perspektive*, Campus Verlag, Frankfurt am Main, pp. 109–135.

OECD (2007). Taxing Wages 2006-2007, OECD - Organisation for Economic Co-operation and Development.

Orloff, A. S. (2001). Equality, Employment, and State Social Policies: A Gendered Perspective, *What Future for Social Security?*, Kluwer Law International, The Hague, The Netherlands, pp. 69–85.

Paulus, A., Mantovani, D. and Levy, H. (2006). Euromod Recipe: EMRec06_03.doc - Producing EUROMOD Budget Constraint Charts, `http://www.iser.essex.ac.uk/msu/emod/documentation/recipes/EMRec06{_}03.pdf` [accessed on 02/01/2008, at 14.12].

Peichl, A. and Schaefer, T. (2008). Wie progressiv ist Deutschland? Das Steuer- und Transfersystem im europäischen Vergleich.

Ragin, C. (1994). A Qualitative Comparative Analysis of Pension Systems, *in* T. Janoski and A. M. Hicks (eds), *The Comparative Political Economy of the Welfare State*, Cambridge UP, Cambridge, pp. 320–345.

Rudzio, K. and Uchatius, W. (2005). Der wankende Staat, *Die Zeit* **22/2005**.

Saez, E. (2002). Optimal Income Transfer Programs: Intensive versus Extensive Labor Supply Responses, *Quarterly Journal of Economics* **117**: 1039–1073.

Schröder, C. (2006). Industrielle Arbeitskosten im internationalen Vergleich, *IW-Trends - Vierteljahresschrift zur empirischen Wirtschaftsforschung* **3/2006**.

Shalev, M. (1996). *The Privatization of Social Policy? Occupational Welfare and the Welfare State in America, Scandinavia and Japan*, Macmillan, London.

Sinn, H.-W. (2005a). *Die Basar-Ökonomie: Deutschland, Exportweltmeister oder Schlusslicht?*, Econ, Berlin.

Sinn, H.-W. (2005b). *Ist Deutschland noch zu retten?*, Ullstein Buchverlage GmbH, Berlin.

Soede, A. J., Vrooman, J. C., Ferraresi, P. M. and Segre, G. (2004). *Unequal Welfare States. Distributive Consequences of Population Ageing in Six European Countries*, Social and Cultural Planning Office of the Netherlands, The Hague.

Sutherland, H. (2001). Final Report - EUROMOD: An Integrated European Benefit-Tax Model, EUROMOD Working Paper No. EM9/01.

Sutherland, H. and Gutierrez, R. (2004). EUROMOD Country Report - United Kingdom (2001 Tax-Benefit System), `http://www.iser.essex.ac.uk/msu/emod/documentation/countries/uk/cr01uk0704.pdf` [accessed on 03/16/2008, at 14.15].

Titmuss, R. (1998). *Essays on the Welfare State*, Allen and Unwin, London.

Verbist, G. (2004). Redistributive Effect and Progressivity of Taxes: An International Comparison Across the EU Using EUROMOD, *EUROMOD Working Paper* **No. EM5/04**.

Wildeboer Schut, J. M., Vrooman, J. and de Beer, P. (2001). *On Worlds of Welfare. Institutions and Their Effects in Eleven Welfare States*, Social and Cultural Planning Office of the Netherlands, The Hague.

A Annex to Section 2

A.1 Overview of Typologies

Author	Typologies	Criteria	Characteristics of each type	Countries
Esping-Andersen (1990)	Socio-democratic	decommodification, stratification	high degree of decommodification	Sweden, Norway, Denmark
	Liberal		low degree of decommodification	Ireland, United Kingdom
	Conservative		medium degree of decommodification	Germany, France, Austria
Leibfried (1992)	Scandinavian	poverty regime	system of universalism, focus on employment	Sweden, Norway, Denmark and Finland
	Bismarck		system of income compensation and social security, focus on growth	Germany, Austria
	Anglo-Saxon		residualism, focus on growth, force to work through market	USA, Australia, New Zealand, England
	Latin Rim		rudimentary, to some parts residual, influence of Catholic Church in the labour market	Spain, Portugal, Italy, Greece, France
Korpi and Palme (1998)	Targeted	strategies of equality: eligibility, benefit level principle	means-test, minimum and similar benefits for those below the poverty line	Australia
	Voluntary State Subsidized		mutual-benefit organisations supported by tax money provide insurances, mainly flat-rate benefits	None
	Corporatist		eligibility for earnings-related benefits based on contributions and occupational category	Austria, Belgium, France, Germany, Italy
	Basic Security		eligibility based on citizenship or contributions, flat-rate benefits or a low ceiling on earnings replacement	Canada, Denmark, the Netherlands, New Zealand, Switzerland and Ireland,United Kingdom, USA
	Encompassing		eligibility based on contributions and citizenship, universal programs covering all citizens	Finland, Norway, Sweden
Boloni (1997)	Anglo-Saxon	percentage of social expenditure financed through contributions, expenditure as percentage of GDP	low percentage of contributions (Beveridge), low expenditure level	United Kingdom, Ireland
	Continental		high percentage of contributions (Bismarck), high expenditure level	Germany, France, Belgium, Luxembourg, Netherlands
	Nordic		low percentage of contributions (Beveridge), high expenditure level	Sweden, Finland, Denmark, Norway
	Southern		high percentage of contributions (Bismarck), low expenditure level	Italy, Spain, Greece, Portugal, Switzerland
Ferrera (1996)	Anglo-Saxon	eligibility criteria, financing structure, organisational structure and lobbyism	social assistance based on means-tests, mixed financing system	UK, Irland
	Bismarck		social entitlements depend on employment and family state, benefits areproportional to income and financed through contributions, strong influence of unions and employer organisations on insurance schemes	Germany, France, Belgium, Luxembourg, Netherlands, Austria, Switzerland
	Scandinavian		universal coverage with generous benefits financed through fiscal revenues	Sweden, Denmark, Norway, Finland
	Southern		fragmented and dualistic system of income maintenance depending on employment state, no minimum income scheme, financing through contributions, universal health insurance, clientelism and particularism,	Italy, Spain, Greece, Portugal

Table 11: Overview of Typologies and Methodologies Used in the Literature
Source: Based on Arts and Gelissen (2002)

B Annex to Section 3

B.1 Financing Systems

	Germany	Denmark	United Kingdom	Greece
Tax System				
Lowest Tax Rate	19,9	39,45	10	15
Highest Tax Rate	48,5	60,45	40	40
Number of Tax Brackets	formula	3	3	3
Tax-exempt Amount	7235 € per year	4487 € per year	6632 € per year	8400 € per year
Taxable Income	Employment and self-employment income	Employment and self-employment income	Employment and self-employment income, pensions	Employment and self-employment income, pensions
Social Contributions				
Basis for Assessment	Employment income and pensions (just health insurance)	Employement income, self-employment income, unemployment allowances	Employement and self-employment income	Employment and self-employment income, pensions
Lowest Income Limit below which no Payment	400 €	-	548,14 €	-
Income Ceiling above which no Payments	3450 € for health insurance, 4600 € (3850 € for Eastern Germany) for pension and unemployment insurance	-	3.664,50 €	1.960,25 €
Employees	21 % on total	8% as general contributions	11%	16% plus 3.45% for hazardous workers
Employers paying for their Employees	21 % on total	2% as general contributions	12,8%	28% plus 3.15% for hazardous workers
Self-employed	Voluntarily	8% as general contributions	8%	53 € per month in the pre-1993 system and 62 € on average for the post-1993 system
Civil-servants	Do not pay	No seperate contributions	No seperate contributions	16,22%
Farmers	Special farmer's pension fund, public health insurance	No seperate contributions	No seperate contributions	Amount should be equal to 8.5%

Table 12: Financing Systems of Germany, Denmark, the UK and Greece
Source: Own illustration based on EUROMOD data.

C Annex to Section 4

C.1 Summary Statistics

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	745	232	186	560	1	46
2	1.162	622	561	703	23	139
3	1.457	1.066	1.007	721	83	247
4	1.687	1.357	1.304	776	138	307
5	1.970	1.829	1.757	766	231	395
6	2.157	2.242	2.156	706	326	465
7	2.390	2.621	2.514	700	432	500
8	2.803	3.406	3.277	629	635	597
9	3.324	4.231	4.062	657	929	635
10	4.736	6.671	6.153	562	1.912	586
All	**2.221**	**2.400**	**2.269**	**673**	**470**	**383**
Poor*	811	282	232	589	3	57

Table 13: Mean of Income and Income-Components per Decile Group According to Disposable Income, GE-2003

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	4,1%	1,2%	1,0%	10,2%	0,0%	1,5%
2	5,5%	2,7%	2,6%	11,0%	0,5%	3,8%
3	6,3%	4,3%	4,3%	10,3%	1,7%	6,2%
4	7,2%	5,4%	5,5%	11,0%	2,8%	7,6%
5	8,0%	6,8%	6,9%	10,2%	4,4%	9,3%
6	9,1%	8,7%	8,9%	9,8%	6,5%	11,4%
7	10,5%	10,7%	10,8%	10,2%	9,0%	12,8%
8	12,3%	13,8%	14,0%	9,1%	13,1%	15,1%
9	14,8%	17,4%	17,7%	9,6%	19,5%	16,4%
10	22,3%	29,0%	28,3%	8,7%	42,5%	16,0%
Poor*	5,7%	1,8%	1,6%	13,6%	0,1%	2,3%

Table 14: Share of Income and Income-Components received/paid by each Decile Group According to Disposable Income, GE-2003

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	950	377	335	892	264	55
2	1.416	522	452	1.397	436	68
3	1.742	1.021	951	1.458	602	135
4	2.118	1.920	1.839	1.192	767	228
5	2.539	2.935	2.852	987	1.047	337
6	2.851	3.780	3.691	775	1.272	431
7	3.147	4.623	4.488	555	1.522	509
8	3.360	5.101	5.007	484	1.666	559
9	3.798	6.199	6.069	375	2.123	653
10	5.699	10.831	9.794	263	4.405	990
All	**2.611**	**3.413**	**3.240**	**874**	**1.312**	**364**
Poor*	945	375	335	886	261	56

Table 15: Mean of Income and Income-Components per Decile Group According to Disposable Income, DK-2001

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	5,0%	1,5%	1,4%	14,1%	2,8%	2,1%
2	6,9%	1,9%	1,8%	20,2%	4,2%	2,4%
3	7,4%	3,3%	3,2%	18,4%	5,1%	4,1%
4	7,8%	5,4%	5,5%	13,1%	5,6%	6,0%
5	8,4%	7,4%	7,6%	9,8%	6,9%	8,0%
6	9,1%	9,2%	9,5%	7,4%	8,1%	9,9%
7	10,1%	11,4%	11,6%	5,3%	9,7%	11,7%
8	11,5%	13,4%	13,9%	5,0%	11,4%	13,8%
9	13,4%	16,8%	17,3%	4,0%	14,9%	16,6%
10	20,4%	29,6%	28,2%	2,8%	31,3%	25,4%
Poor*	4,8%	1,5%	1,4%	13,6%	2,7%	2,1%

Table 16: Share of Income and Income-Components received/paid by each Decile Group According to Disposable Income, DK-2001

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	903	181	104	826	101	3
2	1.280	509	390	925	134	20
3	1.458	768	587	892	168	34
4	1.753	1.274	1.047	789	245	65
5	2.060	1.862	1.529	632	334	100
6	2.431	2.433	2.086	571	431	142
7	2.820	3.195	2.708	380	570	185
8	3.349	4.090	3.623	271	762	250
9	4.015	5.159	4.661	190	1.009	326
10	6.231	8.706	7.778	141	2.202	413
All	**2.628**	**2.816**	**2.451**	**564**	**599**	**153**
Poor*	1.023	274	186	865	109	8

Table 17: Mean of Income and Income-Components per Decile Group According to Disposable Income, UK-2003

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	3,8%	0,7%	0,5%	16,0%	1,8%	0,2%
2	4,7%	1,8%	1,6%	16,0%	2,2%	1,3%
3	5,8%	2,8%	2,5%	16,5%	2,9%	2,3%
4	6,5%	4,4%	4,2%	13,7%	4,0%	4,2%
5	7,7%	6,5%	6,1%	10,9%	5,4%	6,3%
6	8,8%	8,2%	8,1%	9,6%	6,8%	8,8%
7	10,6%	11,2%	10,9%	6,6%	9,4%	1,9%
8	12,3%	14,1%	14,3%	4,6%	12,3%	15,8%
9	15,1%	18,1%	18,8%	3,3%	16,6%	21,0%
10	24,8%	32,3%	33,2%	2,6%	38,4%	28,2%
Poor*	6,6%	1,6%	1,3%	1,3%	3,1%	0,8%

Table 18: Share of Income and Income-Components received/paid by each Decile Group According to Disposable Income, UK-2003

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	351	200	173	189	0	38
2	705	475	430	307	1	75
3	845	540	494	404	5	93
4	1.000	716	661	418	10	124
5	1.238	975	908	452	30	159
6	1.459	1.224	1.156	491	51	205
7	1.703	1.548	1.481	493	82	256
8	1.975	1.904	1.833	533	149	312
9	2.334	2.372	2.285	565	227	376
10	3.609	4.365	4.172	639	923	471
All	**1.502**	**1.411**	**1.339**	**445**	**147**	**207**
Poor*	509	322	286	243	1	54

Table 19: Mean of Income and Income-Components per Decile Group According to Disposable Income, GR-2003

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	2,6%	1,6%	1,4%	4,6%	0,0%	2,0%
2	4,6%	3,3%	3,1%	6,7%	0,1%	3,5%
3	6,0%	4,1%	3,9%	9,7%	0,4%	4,8%
4	7,2%	5,5%	5,3%	10,1%	0,8%	6,4%
5	8,1%	6,8%	6,7%	10,0%	2,0%	7,6%
6	9,1%	8,2%	8,1%	10,4%	3,2%	9,3%
7	10,5%	10,2%	10,3%	10,3%	5,2%	11,4%
8	12,4%	12,7%	12,9%	11,2%	9,5%	14,2%
9	15,2%	16,5%	16,7%	12,4%	15,1%	17,8%
10	24,3%	31,3%	31,6%	14,5%	63,7%	23,0%
Poor*	6,9%	4,6%	4,3%	11,0%	0,1%	5,3%

Table 20: Share of Income and Income-Components received/paid by each Decile Group According to Disposable Income, GR-2003

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	718	393	323	434	76	26
2	1.141	772	720	613	173	58
3	1.464	1.318	1.260	614	344	101
4	1.628	1.438	1.385	708	381	111
5	1.855	1.823	1.751	721	517	140
6	2.084	2.197	2.116	737	642	169
7	2.278	2.666	2.573	684	820	206
8	2.636	3.246	3.094	732	1.037	248
9	2.902	3.940	3.764	671	1.341	301
10	3.961	6.002	5.538	821	2.333	443
All	**2.069**	**2.400**	**2.269**	**669**	**779**	**181**
Poor*	799	435	369	486	85	30

Table 21: Mean of Income and Income-Components per Decile Group According to Disposable Income, DK-Simulation

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	4,2%	2,0%	1,7%	7,8%	1,2%	1,7%
2	5,5%	3,2%	3,1%	9,1%	2,2%	3,1%
3	6,3%	4,9%	5,0%	8,2%	4,0%	5,0%
4	7,5%	5,7%	5,8%	10,0%	4,7%	5,8%
5	8,4%	7,1%	7,2%	10,1%	6,2%	7,2%
6	9,4%	8,6%	8,7%	10,3%	7,7%	8,7%
7	10,7%	10,8%	11,0%	9,9%	10,2%	11,0%
8	12,2%	12,9%	13,1%	10,5%	12,8%	13,1%
9	14,8%	17,4%	17,6%	10,6%	18,2%	17,6%
10	21,0%	27,4%	26,8%	13,5%	32,9%	26,8%
Poor*	6,2%	2,9%	2,6%	11,7%	1,8%	2,6%

Table 22: Share of Income and Income-Components received/paid by each Decile Group According to Disposable Income, DK-Simulation

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	771	259	207	534	9	12
2	1.184	629	571	663	54	54
3	1.533	1.021	959	735	118	105
4	1.794	1.339	1.281	775	174	146
5	2.108	1.723	1.650	814	236	194
6	2.336	2.203	2.118	712	323	257
7	2.625	2.615	2.507	723	409	304
8	3.080	3.387	3.249	639	561	385
9	3.553	4.123	3.952	651	757	464
10	5.022	6.635	6.159	504	1.524	593
All	**2.396**	**2.400**	**2.269**	**669**	**422**	**250**
Poor*	885	368	314	562	21	24

Table 23: Mean of Income and Income-Components per Decile Group According to Disposable Income, UK-Simulation

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	3,8%	1,3%	1,1%	9,4%	0,3%	0,6%
2	5,2%	2,8%	2,6%	10,4%	1,4%	2,3%
3	6,1%	4,1%	4,1%	10,5%	2,7%	4,0%
4	7,1%	5,3%	5,4%	11,1%	3,9%	5,6%
5	8,0%	6,5%	6,6%	11,1%	5,1%	7,0%
6	9,1%	8,5%	8,7%	9,9%	7,1%	9,5%
7	10,5%	10,5%	10,6%	10,4%	9,3%	11,7%
8	12,2%	13,4%	13,6%	9,1%	12,6%	14,6%
9	15,0%	17,4%	17,6%	9,9%	18,2%	18,8%
10	22,9%	30,2%	29,7%	8,2%	39,5%	25,9%
Poor*	6,6%	2,8%	2,5%	15,1%	0,9%	1,7%

Table 24: Share of Income and Income-Components received/paid by each Decile Group According to Disposable Income, UK-Simulation

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	742	257	208	546	18	43
2	1.146	589	532	705	46	102
3	1.460	920	853	804	109	154
4	1.699	1.201	1.131	870	179	193
5	1.984	1.581	1.491	903	261	239
6	2.241	2.068	1.968	818	351	293
7	2.563	2.665	2.522	731	473	360
8	2.932	3.342	3.215	649	645	414
9	3.473	4.445	4.270	430	931	471
10	5.030	7.060	6.634	325	1.842	513
All	**2.310**	**2.400**	**2.269**	**670**	**486**	**274**
Poor*	849	343	289	586	23	58

Table 25: Mean of Income and Income-Components per Decile Group According to Disposable Income, GR-Simulation

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	3,8%	1,3%	1,1%	9,6%	0,4%	1,9%
2	5,3%	2,6%	2,5%	11,1%	1,0%	3,9%
3	6,2%	3,7%	3,7%	11,7%	2,2%	5,5%
4	7,1%	4,9%	4,8%	12,6%	3,6%	6,8%
5	8,0%	6,2%	6,1%	12,6%	5,0%	8,2%
6	9,0%	8,0%	8,1%	11,4%	6,7%	10,0%
7	10,4%	10,5%	10,5%	10,3%	9,2%	12,3%
8	12,2%	13,4%	13,6%	9,3%	12,8%	14,5%
9	15,0%	18,5%	18,8%	6,4%	19,1%	17,2%
10	23,0%	31,0%	30,8%	5,1%	40,0%	19,8%
Poor*	6,4%	2,5%	2,2%	15,3%	0,8%	3,7%

Table 26: Share of Income and Income-Components received/paid by each Decile Group According to Disposable Income, GR-Simulation

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Disposable Income (ERSIC)	Original Income	All Benefits incl.Pub.Pen.	All Taxes	Employee Social Ins. Contrib.	Employer Social Ins. Contrib.
1	1.096	1.096	1	1.166	0	70	70
2	1.241	1.241	21	1.316	0	95	95
3	1.416	1.416	141	1.370	0	95	95
4	1.418	1.418	569	967	4	114	114
5	1.592	1.592	1.386	538	83	250	250
6	1.901	1.901	2.198	381	260	418	418
7	2.220	2.220	2.905	270	443	512	512
8	2.724	2.724	3.760	278	674	639	639
9	3.465	3.465	4.999	244	1.018	760	760
10	5.135	5.135	8.023	202	2.216	874	874
All	**2.221**	**2.221**	**2.400**	**673**	**470**	**383**	**383**

Table 27: Mean of Income and Income-Components per Decile Group According to Original Income, GE-2003

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Disposable Income (ERSIC)	Original Income	All Benefits incl.Pub.Pen.	All Taxes	Employee Social Ins. Contrib.	Employer Social Ins. Contrib.
1	1.163	1.233	1	1.164	1	0	0
2	1.334	1.429	21	1.315	1	0	0
3	1.494	1.589	141	1.367	10	3	1
4	1.413	1.528	569	956	76	28	7
5	1.472	1.722	1.386	525	320	97	22
6	1.779	2.198	2.198	373	584	168	40
7	2.049	2.561	2.905	269	846	227	52
8	2.524	3.163	3.760	278	1.154	292	67
9	3.113	3.873	4.999	244	1.652	392	87
10	4.353	5.226	8.023	203	3.143	609	122
All	**2.069**	**2.452**	**2.400**	**669**	**779**	**181**	**40**

Table 28: Mean of Income and Income-Components per Decile Group According to Original Income, DK-Simulation

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Disposable Income (ERSIC)	Original Income	All Benefits incl.Pub.Pen.	All Taxes	Employee Social Ins. Contrib.	Employer Social Ins. Contrib.
1	1.164	1.234	1	1.163	0	0	0
2	1.335	1.430	21	1.314	0	0	0
3	1.508	1.602	141	1.367	0	0	0
4	1.494	1.602	569	952	9	16	6
5	1.663	1.837	1.386	524	132	116	76
6	2.025	2.266	2.198	373	302	244	177
7	2.390	2.658	2.905	269	443	341	245
8	2.980	3.287	3.760	278	606	452	333
9	3.787	4.105	4.999	244	889	567	443
10	5.617	5.828	8.023	201	1.841	766	663
All	**2.396**	**2.585**	**2.400**	**669**	**422**	**250**	**194**

Table 29: Mean of Income and Income-Components per Decile Group According to Original Income, UK-Simulation

Source: Own calculations with EUROMOD.

Decile Group	Disposable Income	Disposable Income (ERSIC)	Original Income	All Benefits incl.Pub.Pen.	All Taxes	Employee Social Ins. Contrib.	Employer Social Ins. Contrib.
1	1.080	1.150	1	1.168	53	36	0
2	1.212	1.307	21	1.315	75	49	0
3	1.337	1.426	141	1.371	121	53	6
4	1.339	1.376	569	958	109	79	77
5	1.570	1.533	1.386	526	134	208	288
6	1.969	1.895	2.198	374	270	332	493
7	2.355	2.338	2.905	269	442	377	529
8	2.921	2.966	3.760	278	676	441	594
9	3.726	3.790	4.999	244	970	546	696
10	5.595	5.728	8.023	201	2.009	621	740
All	**2.310**	**2.351**	**2.400**	**670**	**486**	**274**	**342**

Table 30: Mean of Income and Income-Components per Decile Group According to Original Income, GR-Simulation

Source: Own calculations with EUROMOD.

C.2 Average and Marginal Effective Tax Rates

Decile	Mean	Median
1	0,44	0,31
2	0,48	0,49
3	0,49	0,50
4	0,49	0,51
5	0,50	0,52
6	0,49	0,53
7	0,49	0,54
8	0,49	0,54
9	0,49	0,53
10	0,49	0,51
Total	0,49	0,52

Table 31: Average Effective Tax Rates, GE-2003
Source: Own calculations with EUROMOD.

Decile	Mean	Median
1	0,16	0,11
2	0,19	0,15
3	0,30	0,31
4	0,37	0,38
5	0,40	0,40
6	0,41	0,42
7	0,43	0,44
8	0,45	0,45
9	0,48	0,48
10	0,54	0,54
Total	0,37	0,41

Table 32: Average Effective Tax Rates, DK-Sim.
Source: Own calculations with EUROMOD.

Decile	Mean	Median
1	0,00	0,00
2	0,03	0,05
3	0,17	0,17
4	0,27	0,27
5	0,31	0,32
6	0,34	0,34
7	0,35	0,36
8	0,37	0,37
9	0,38	0,39
10	0,41	0,41
Total	0,26	0,33

Table 33: Average Effective Tax Rates, UK-Sim.
Source: Own calculations with EUROMOD.

Decile	Mean	Median
1	0,26	0,27
2	0,27	0,32
3	0,31	0,34
4	0,35	0,36
5	0,39	0,41
6	0,40	0,41
7	0,39	0,41
8	0,39	0,41
9	0,39	0,40
10	0,39	0,40
Total	0,35	0,39

Table 34: Average Effective Tax Rates, GR-Sim.
Source: Own calculations with EUROMOD.

Decile	Mean	Median
1	0,17	0,04
2	0,39	0,26
3	0,42	0,41
4	0,46	0,47
5	0,48	0,49
6	0,48	0,49
7	0,50	0,52
8	0,50	0,51
9	0,50	0,49
10	0,45	0,47
Total	0,44	0,47

Table 35: Marginal Effective Tax Rates, GE-2003
Source: Own calculations with EUROMOD.

Decile	Mean	Median
1	0,22	0,10
2	0,41	0,46
3	0,50	0,46
4	0,47	0,46
5	0,46	0,46
6	0,49	0,48
7	0,51	0,52
8	0,53	0,52
9	0,62	0,65
10	0,65	0,65
Total	0,49	0,46

Table 36: Marginal Effective Tax Rates, DK-Sim.
Source: Own calculations with EUROMOD.

Decile	Mean	Median
1	0,07	0,00
2	0,21	0,05
3	0,38	0,38
4	0,38	0,38
5	0,38	0,38
6	0,38	0,38
7	0,37	0,38
8	0,38	0,38
9	0,34	0,35
10	0,46	0,46
Total	0,33	0,38

Table 37: Marginal Effective Tax Rates, UK-Sim.
Source: Own calculations with EUROMOD.

Decile	Mean	Median
1	0,14	0,17
2	0,24	0,17
3	0,27	0,17
4	0,35	0,39
5	0,40	0,42
6	0,37	0,40
7	0,41	0,40
8	0,41	0,40
9	0,42	0,40
10	0,40	0,40
Total	0,34	0,40

Table 38: Marginal Effective Tax Rates, GR-Sim.
Source: Own calculations with EUROMOD.