

# Wealth Inequality in Europe and the Delusive Egalitarianism of Scandinavian Countries

Nora Mueller, Sandra Buchholz, Hans-Peter Blossfeld  
University of Bamberg, Germany

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## Abstract

Past social inequality research mainly focused on labor market processes and income distributions. We argue that in order to achieve a more profound picture of economic well-being analyzing wealth and not income seems to be more adequate because income is only one dimension to explain individuals' (economic) well-being. In our study we are investigating the distribution of wealth among the elderly across Europe drawing on Esping-Andersen's typology of welfare states. Our analyses based on data from the SHARE project suggest (1) a strong variation in the wealth distribution between European countries, and (2) that patterns in wealth inequality across European countries differ strongly from patterns of income inequality. Surprisingly high levels of wealth disparity found for social-democratic welfare regimes commonly being marked by a high level of egalitarianism. We conclude that Esping-Andersen's scheme should be reconsidered as it is based on a very one-sided understanding of social stratification, neglecting the central role of wealth in the stratification process.

*Keywords:* Inequality, wealth, net worth, income, SHARE, Gini, Theil, stratification, welfare state, Europe.

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# 1 Introduction

Describing social inequalities, explaining how they come into being and elaborating what results from them with regard to individual life chances, class identification, and political behavior are core subjects of sociology since its beginning (Grusky 2008). In the past years, international comparative social inequality research has shown that modern societies exhibit very different and distinct patterns of inequality, and that the level and persistence of inequalities strongly depend on national institutional settings. Especially the work of Esping-Andersen (1990, 1999) has influenced our today's understanding of how country-specific institutions - particularly the level of public commitment to equal opportunities through elaborated welfare arrangements and concepts of social solidarity - form and shape social inequality structures. In this respect, past research that was mainly based on income inequalities and neglected wealth has shown that especially the so-called social democratic welfare regimes of Scandinavia seem to be very effective in reducing social inequalities by giving priority to publicly supported (full) employment, high taxation of incomes, and a comparatively high level of decommodification<sup>2</sup> for those who are not employed.

Nevertheless a major drawback of this research is that social inequality and stratification was mainly analyzed by studying labor market processes (for example, labor market access, level of integration into full employment etc.) and income distributions. More recently scholars (e.g. Spilerman 2000) stressed that social inequality research needs to consider wealth, too, because income is only one dimension to explain individuals' (economic) well-being. Furthermore, studies merely addressing income or labor market inequalities may paint a one-sided, maybe even wrong picture of social inequalities. Indeed, diverse studies (e. g. Brzozowski et al. 2010, Jäntti 2006, Keister and Moeller 2000, Schломann 1992) show that the correlation between income and wealth is much weaker than one might expect and that wealth inequality exceeds income inequality.

Studying wealth becomes even more relevant when we consider intergenerational transfers as powerful social mechanisms to reproduce and intensify already existing inequalities. Moreover, given the ageing of industrialized societies and the growing importance of private savings with most recent pension reforms all over Europe (European Commission 2010) wealth will likely become an increasingly important source of individuals' well-being in modern societies, especially to substitute income during the phase of retirement which becomes ever longer with increasing life expectancy.

The aim of this contribution is to study (1) the distribution of household

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<sup>2</sup>“De-commodification occurs when a service is rendered as a matter of right and when a person can maintain a livelihood without reliance on the market” (Esping-Andersen 1990, p. 21f.).

wealth (compared to income) in European countries and (2) the relation between wealth inequalities and welfare regimes. It is an open question if different welfare regimes systematically produce specific patterns of wealth inequalities and whether these patterns are similar or at least comparable to social inequalities arising from labor market participation and labor market income on which most previous studies have focused on. If we find empirical evidence that income and wealth inequality structures in a country do not follow the same pattern, then our current typologies of welfare regimes have to be reconsidered as they cannot capture the central mechanisms producing wealth inequalities and consequently can only partially explain different levels of social stratification.

Up till now, our understanding of wealth inequalities and differences therein between European countries is very limited, mainly because high-quality and internationally comparable data was lacking. Yet, with the data from the “Survey of Health, Ageing and Retirement in Europe”<sup>3</sup> (SHARE), we are now able to study wealth inequalities from a comparative perspective. SHARE is a longitudinal dataset with a representative sample of people at the age of 50 years and older. We make use of the second wave that covers thirteen European countries. Due to its strong harmonization of measures, we are convinced that SHARE suits very well for an international comparison of wealth inequalities.

## 2 Why and how studying wealth inequalities

Social inequality research so far mostly relied on studying labor market inequalities by analyzing income. However, in contrast to earned income demanding time investments, efforts, and working ability from individuals, wealth offers access to capital and goods independently of individual investments and abilities (Elmelech 2008). Undoubtedly, earnings constitute a major mechanism to accumulate wealth by saving parts of it (Ring 2000, p. 35). Thus, earned income and wealth are at least theoretically closely interrelated. Still, studies have shown that their empirical relationship is much weaker than one might expect. For example, Schломann (1992) found a correlation between income and wealth of merely around 0.5 in Germany. For the United States, Keister and Moeller (2000) report a correlation coefficient of only 0.26 if financial as-

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<sup>3</sup>This paper uses data from SHARE release 2.4.0, as of March 17th 2011. The SHARE data collection has been primarily funded by the European Commission through the 5th framework programme (project QLK6-CT-2001- 00360 in the thematic programme Quality of Life), through the 6th framework programme (projects SHARE-I3, RII-CT- 2006-062193, COMPARE, CIT5-CT-2005-028857, and SHARELIFE, CIT4-CT-2006-028812) and through the 7th framework programme (SHARE-PREP, 211909 and SHARE-LEAP, 227822). Additional funding from the U.S. National Institute on Aging (U01 AG09740-13S2, P01 AG005842, P01 AG08291, P30 AG12815, Y1-AG-4553-01 and OGHA 04-064, IAG BSR06-11, R21 AG025169) as well as by various national sources is gratefully acknowledged (see <http://www.share-project.org> for a full list of funding institutions).

sets are excluded and 0.5 if financial assets are added. Brzozowski et al. (2010) calculated a correlation of 0.4 for Canada.

Compared to income wealth probably is a more precise measure for the overall economic well-being of individuals and households for several reasons. Take the example of somebody who does not earn any income for a given period because of unemployment or illness. If income was the only indicator for economic well-being, one has to assume this person to be poor. Yet, this would lead to a severe misinterpretation in case that the same person has access to wealth, for compensating her lack of income (Elmelech 2008). Moreover, income poverty may last very short or long periods of time while poverty in wealth rather tends to be a long-term state (ibid.). Still, finding a clear distinction between wealth and income is challenging.

Additionally, the definition of wealth in empirical studies strongly depends on the measured components of wealth that are at hand in existing datasets. However, in the literature, there is strong agreement that wealth can be characterized by three major aspects making it considerably different to income (e. g. Claupein 1990, Jenkins 1990, Ring 2000). Firstly, wealth is a stock figure while income is a flow figure. In other words income can only be captured in relation to a period of time (e.g. hour, month, year), whereas wealth is meaningful without being bound to a special period of time (Baudelaire and Sanga 2002, p. 15).

The second aspect refers to the availability of wealth. In contrast to income which one may save or consume, wealth offers many more functions (Ring 2000, Frick and Grabka 2009). For instance, wealth can function as income, mostly in the form of earned interest or dividend. Furthermore, it can have a utility function that derives from the personal use of non-financial assets, for example when enjoying a ride on a motorbike or when enjoying arts. Wealth can also serve as a buffer against income losses; this is the so-called security function of wealth. The power function describes the ability of an individual using his wealth for achieving his will even against others' resistance (Weber 1984). Wealth additionally allows defining and maintaining a specific social status and prestige (function of social maintenance) as well as financing the upbringing and education of children (socialization function). Finally, in contrast to income, wealth can be used to secure the economic well-being of the next generation via inheritance (inheritance function).

The third major difference between wealth and income is a more "technical" one. It addresses the difficulties to measure wealth. While income can be measured quite easily by asking for earnings, assessing a person's wealth is by far more demanding. For example, in case of real assets (e.g. real estate or cars) one can distinguish between their original value, their replacement value,

their net value and their market value. Of course, it is strongly depending on the research question which of these values are taken into account to estimate assets.

Most existing studies (Christelis et al. 2005, Claus and Scobie 2001, Kessler and Wolff 1991) distinguish between two types of wealth: non-financial assets on the one hand, and financial assets on the other hand. In case of non-financial assets, one can further differentiate between consumptive assets<sup>4</sup> and productive assets<sup>5</sup>. Financial assets are defined as the value debt claim minus liabilities (Ring 2000). Finally, net worth is defined as the value of total assets (financial assets plus real assets) minus the total liabilities of an economic entity (cf. Claus and Scobie 2001, Keister and Moeller 2000). This is also the definition we will make use of in this study. Furthermore, it is important to differentiate between private (family) and public wealth, whereas in our contribution we are only referring to the first one.

Empirically analyzing income and income inequality usually the individual is taken as the unit of analysis. In contrast, for our purpose the family or the household seems to be the more appropriate unit, although individuals are the entities generating wealth. Many scholars (e. g. Barber 1957, Spilerman 2000) argue that it is the family as a social institution that determines to a large extent the cultural, social and economic status of its members. Therefore, the family has a central meaning for a society's social stratification. Furthermore, families or marital households can be understood as production facility of individual benefit (cf. Becker 1976). Married couples, for example, but also couples living in a steady relationship share their assets. If they have children, one can reasonably assume them to share their assets with their children as well.

### **3 Explaining differences in the distribution of wealth among households in Europe**

Undoubtedly, individual and household characteristics strongly influence wealth accumulation processes. For example, in their popular "life-cycle hypothesis" Modigliani and Brumberg (1954) assume a direct relation between age and wealth. In times of employment, meaning in younger age, individuals tend to save their income (positive saving rate) to consume it during their times of retirement up to death (negative saving rate or "dissaving"). The expected result would thus be a hump-shaped wealth profile. Nonetheless, empirical studies

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<sup>4</sup>Consumptive assets cover commodities and consumer goods as well as real estates of private households.

<sup>5</sup>In contrast to consumptive assets, productive assets allow the realization of profits and income.

(Menchik and David 1983, Poterba 1994) have repeatedly found dissaving in retirement to be much lower than predicted and the motive of inheritances to be more important as expected. Of course, also further factors on the individual level – such as migration background, gender, household type, health, etc. – can strongly effect the distribution of wealth in a society. However, plenty of researchers assume age<sup>6</sup> and inheritance to be the most influential ones (e. g. Azpitarte 2008, Brandolini et al. 2004, Danziger et al. 1982, Semyonov and Lewin-Epstein 2011, Spilerman 2000).

Yet, individual and household determinants are beyond the scope of our study. The central interest of our contribution is to understand how household wealth is distributed in European countries, to find out about the emergence of systematic patterns of wealth inequalities and, to see if these regime-specific patterns resemble the picture international comparative research on social inequality has painted so far. Over the past decades, research has shown that national institutional settings strongly shape social inequality structures (e.g. Blossfeld et al. 2008, DiPrete et al. 1997, Shavit et al. 2007). Since they mold the process of income and wealth accumulation to a large extend economic and institutional contexts as well as governmental instruments can be regarded as central driving forces for the social stratification of a society.

Classifying countries into distinct welfare regime categories helps to understand inequality structures in European societies. The most prominent and popular representative of welfare regime research is for sure Gøsta Esping-Andersen (1990, 1999) who differentiates “Three Worlds of Welfare Capitalism” (1990), namely liberal, conservative and social democratic welfare states. In recent years, Esping-Andersen’s typology was extended by a Southern European welfare regime (Ferrera 1996) and a post-socialist welfare regime (e.g. Beyer 2009, Blossfeld et al. 2005, Fenger 2007). This regime classification is based on three main: (1) the degree of decommodification, (2) the degree of social stratification and (3) the importance of the market, the state and the family for the production of individuals’ welfare.

In liberal welfare regimes individuals take care of their welfare by themselves on the (labor) market. Governmental intervention in reducing inequalities and securing individual welfare scarcely exists, following the idea of “freedom on the highest level”. For this reason, the liberal welfare state often is also named “workfare state”. All in all, the degree of decommodification is rather low in countries with a liberal welfare regime it is the market that produces individual

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<sup>6</sup>The main respondents of the SHARE study which we will use for our analyses are persons aged 50 years and older. Compared to the average population, the households of our study should thus dispose a quite high level of wealth because they had more time to accumulate wealth, their debts are lower as homes have been paid off, for example, and they have a higher chance of having already received an inheritance.

welfare. As a result, social stratification is usually high in liberal welfare states, in particular with respect to income (e.g. Korpi and Palme 1998, Papatheodorou and Pavlopoulos 2003).

In contrast, in social-democratic welfare states we find a high level of public commitment to offer equal opportunities and to secure individuals' well-being. In this regime, the state strongly intervenes in market processes and actively supports full employment (for example, by a strong public sector). Additionally, welfare programs are universalistic and comparatively generous. All in all, governments in social-democratic welfare states try to realize "equality on the highest level" in an overall sense, and strong emphasis is put on decommodification and the reduction of social inequalities (for example by high taxation of incomes to reduce income inequalities).

The conservative welfare regime typically is described as having a modest degree of decommodification. The most important factors in the production of welfare are the market and the family. Still, compared to the liberal welfare model, there are welfare programs and public social security systems. However, compared to the social-democratic model of welfare, conservative regimes display a high level of social stratification instead of a universal social policy ideology. Consequently, the level of social inequalities in the conservative regime can be located somewhere between the ones in liberal and social-democratic countries. Indeed, empirical studies (e.g. Korpi and Palme 1998, Papatheodorou and Pavlopoulos 2003) found the level of income inequality to be on a modest level within countries with this type of welfare regime.

The Southern European welfare regime Ferrera (1996), is characterized by displaying weak public institutions, a high importance of informal work, a comparatively weak system of social security additionally characterized by strong clientelism and an outstanding importance given to the family and the church in the production of welfare (Arts and Gelissen 2002, Ferrera 1996).

Finally, post-socialist welfare regimes strongly neglected social policy in favor of the economic development in the first years after the fall of the Iron Curtain. In the new millennium this regime displays very diverse socio-political ad-hoc activity to fight emerging problems like increasing unemployment and poverty (Sengoku 2004). Today most of the post-socialist countries have reached a high level of socio-political activity "to meet long-term fiscal and socio-demographic challenges" (ibid., p. 232). The state has withdrawn from the sector of public welfare and an institutionally pluralized welfare sector has been introduced (ibid.).

Unfortunately, in Esping-Andersen's welfare state typology social inequality is strongly and one-sidedly defined by the labor market in at least two ways: firstly, in analyzing an individual's position in the labor market (for the degree

of social stratification) and secondly, in measuring the degree of an individual's dependence on the labor market to maintain its livelihood (for the degree of decommodification). This becomes also visible in the empirical data that forms the basis of his classification. Esping-Andersen's indicators for his classification are almost exclusively related to the labor market, especially when he measures the degree of social stratification (Esping-Andersen 1990, p. 58). Consequently, and in line with most contemporary research on social inequality and social stratification, Esping-Andersen neglects the central role of wealth and its distribution in the process of social stratification (cf. Elmelech 2008, p. 6). In the following analyses, we therefore attempt to test if our current understanding of welfare regimes, which is mostly based on differences on the labor market and earned income, holds also true to explain cross-national differences in wealth inequalities in Europe.

*The null hypothesis of this study would therefore be that the measured degree of income inequality is similar to the measured degree of wealth inequality.* This would mean that the level of inequality in income turns out to be the adequate predictor for the level of inequality in wealth. In that case, the results of our study should be as follows: In the liberal welfare states the government does not intervene in the distribution of income and because income is a central source for the accumulation of wealth, wealth inequalities should be very pronounced, too. They should be further intensified by the fact that social security systems hardly exist that could buffer the level of wealth inequality to become too high. On the other hand, the liberal welfare regimes strongly favor personal provision for old-age for example via easy access to mortgages (cf. Elmelech 2008, p. 75). In the conservative welfare states we expect to find a modest level of wealth inequality. In this regime, all households can receive social securities on a minimum level. At the same time, the general welfare and tax ideology in these countries is characterized by high status maintenance and far less by trying to reduce inequalities produced on the labor market. The government strongly protects families, enabling them to accumulate wealth via lower taxes or special savings contracts and trying to balance social inequalities via its progressive income tax. Rather low levels of wealth inequality should be found in the social-democratic welfare states. In these countries the government strongly tries to reduce income inequalities, for example by high taxation of earnings, via a strong support of gender equalities and comparatively generous welfare state programs. In Southern European welfare states, we expect wealth inequalities to be rather high as the government does neither support the income poor, nor does it hold the income rich to account for solidarity. In post-socialist states, the median net worth should be very low, as people did not have much time to accumulate wealth and levels of wealth inequalities should be high, also mainly



resulting from the socialist era, where inequalities have been on a top level (e.g. Henderson et al. 2004).

However, if we do not find empirical evidence for such a close interrelation between income and wealth in our study, wealth then has to be treated as distinct dimension of social stratification. This then means that Esping-Andersen’s typology should be reconsidered as it cannot capture the central mechanisms producing inequalities in the distribution of wealth and consequently can only partially explain different levels of social stratification in modern societies.

## 4 Data and methods

### *Data*

For the empirical analyses we use the second wave of the “Survey of Health, Ageing and Retirement in Europe (SHARE)”. SHARE is an international, representative panel study of the population aged 50 years and more. In the second wave, conducted in 2006/2007, 33,281 persons in thirteen EU member states were asked about their financial situation, their social life and their health. The thirteen countries are: Austria, Belgium, France, Germany, Netherlands (conservative welfare states), Denmark, Sweden (social democratic welfare states), Switzerland (liberal welfare state), Greece, Italy, Spain (southern welfare states) and the Czech Republic and Poland (post-socialist welfare states). Respondents were private persons at the minimum age of 50 years and their spouses – regardless of their age – living in the same household.

A typical problem with questions about financial aspects is a high rate of item non-response (e. g. Riphahn and Serfling 2005). This holds especially true for the persons at the edges of the distribution, e.g. low and high earners. Loosing these cases due to missing values increases the risk of ending up in a biased probably highly selective sample (Kalwij and van Soest 2005). In order to solve this problem the SHARE team applies a multiple imputation strategy to fill up missing values, a method mainly developed by Rubin (1987). More precisely, for every missing value there are five values estimated. A more detailed description of the imputation method of the SHARE study can be found in Christelis (2011).

In the following, statistical results are calculated by taking the mean of values in the five datasets. The household is the unit of analyses, but only one person per household – that is the household respondent – was selected to be the main household respondent. However, this is valid since the values for the financial variables are the same for every person living in the same household. The final dataset contains 22,721 households. Table 1 illustrates the sample size

Table 1: Number of households per country (unweighted)

<b>Country</b>	<b>Total</b>	<b>Percent</b>	<b>Cum.</b>
Austria	987	4.34%	4.34%
Germany	1,698	7.47%	11.82%
Sweden	1,970	8.67%	20.49%
Netherlands	1,846	8.12%	28.61%
Spain	1,414	6.22%	34.84%
Italy	1,888	8.31%	43.15%
France	2,060	9.07%	52.21%
Denmark	1,759	7.74%	59.95%
Greece	2,172	9.56%	69.51%
Switzerland	1,076	4.74%	74.25%
Belgium	2,137	9.41%	83.65%
Czech Republic	1,943	8.55%	92.21%
Poland	1,771	7.79%	100.00%
<b>Total</b>	<b>22,721</b>	<b>100.00%</b>	

Own calculations based on the second SHARE wave.

per country. We analyze two central variables, that is household net income<sup>7</sup> and household net worth<sup>8</sup>.

### *Methods*

In a first step we will give a descriptive overview on the distribution of net worth among the elderly across European countries using simple measurements of statistical dispersion. In a second step, we will calculate rankings and measurements of inequality for both the distribution of income and wealth. In

<sup>7</sup>Total income is the sum of some incomes at the individual level and some at the household level. The basic definition used in the SHARE project reflects money income after taxes on a yearly base and includes only regular payments. Lump-sum payments and financial support provided by parents, relatives or other people are not included. The available data at the individual level include: income from employment; income from self-employment or work for a family business; income from (public or private) pensions or invalidity or unemployment benefits; income from alimony or other private regular payments; income from long-term care insurance (only for Austria and Germany). The available data at the household level include: income from household members not interviewed; income from other payments, such as housing allowances, child benefits, poverty relief, etc.; income actually received from secondary homes, holiday homes or real estate, land or forestry; capital income (interest from bank accounts, transaction accounts or saving accounts; interest from government or corporate bonds; dividend from stocks or shares; interest or dividend from mutual funds or managed investment accounts). For homeowners, the data at the household level also include imputed rent, based on the self-assessed home value minus the net residual value of the debt (payments for mortgages or loans). The interest rate used for imputed rents is fixed at 4% for all countries. The SHARE definition of income does not include home business and “other types of debts”: in the latter case we are not able to separate the amount of the debts on cars and other vehicles from the total amount of debts (Paccagnella and Weber 2005).

<sup>8</sup>Net worth contains: (1) Real assets, i.e. the ownership and value of the primary residence, of other real estate, of the share owned of own businesses and of owned cars; (2) Gross financial assets, i.e. the ownership and value of bank accounts, government and corporate bonds, stocks, mutual funds, individual retirement accounts, contractual savings for housing and life insurance policies; (3) Mortgages and financial liabilities (Christelis et al. 2005, p. 358f.).

order to put the distributions into a ranking list, different quantiles are used: the households are ranked in accordance with their net worth and allocated to particular sections of the distribution. In case of total equality, every section would share exactly the same proportion of the population's total net worth.

Measuring inequality the most popular and most frequently used measure in social sciences is the Gini index (Gini 1912). For income (wealth) as a discrete attribute Gini is calculated as follows:

$$G(y) = \left[ \frac{1}{2n^2\mu} \right] \sum_{i=1}^n \sum_{j=1}^n |y_i - y_j| \quad (1)$$

with inequality measured by the arithmetic average of the absolute values difference between all pairs of income/wealth and standardized by dividing it by the populations average income (wealth) so that Gini ranges from 0 (total equality) to 1 (total inequality). The overall inequality within a country is therefore defined by the relative position of each household compared to the relative position of each other household (cf. Milanović 2005, p. 98). Additional Gini is strongly influenced by the most frequently occurring incomes (wealth) (cf. Grabka 2000) as it is sensitive to changes around the median.

Despite its popularity various authors criticize the use of the Gini index as a measurement of inequality, especially when comparing different population groups or different nations. As Gini does not capture where in the distribution the inequality occurs, two very different distributions of income (wealth) can yield exactly the same Gini index. Hence we will work with Theil's entropy measure (Theil 1967) as an alternative measurement of inequality, which derives from information theory:

$$I_1 = \frac{1}{n} \sum_i \frac{y_i}{\mu} \ln \frac{y_i}{\mu} \quad (2)$$

with  $n$  the number of persons,  $y_i$  the income  $y$  of person  $i$  and  $\mu$  mean income. Theil ranges from 0 to  $\ln(n)$ , but can be standardized through dividing it by  $\ln(n)$ ; subsequently this measure also ranges from 0 to 1. However, the construction of the Theil index is substantially different from that of the Gini index. Theil compares the income (wealth) of each household with the mean income (wealth) of the population instead of comparing it with the income (wealth) of every other household. Thus the overall income (wealth) inequality within a country will be reduced by every household with income (wealth) below the mean and vice versa (cf. Milanović 2005, p. 98). In contrast to the Gini index Theil is sensitive to changes in the upper tail of the distribution (cf. Buhmann et al. 1998).

Neither Gini nor Theil can handle zero and negative values. In most cases

income is positive, but in a country's distribution of wealth negative and zero values are very likely to appear. We solve this problem by setting zero<sup>9</sup> and negative<sup>10</sup> values in a country's distribution of net worth to 0.01 Euro when calculating Gini and Theil indices.<sup>11</sup> Of course, using this approach we are losing information on the actual level of inequality. Hence there is a slight risk of biased estimates as the percentage of households with zero or negative values of net worth differs between the countries.<sup>12</sup>

Before the results will be presented, two further points remain to be discussed: the use of weights and the use of an equivalence scale. We use cross-sectional calibrated weights that "are calibrated to precisely reflect each country's age and gender proportions" (Börsch-Supan et al. 2005). These weights compensate for problems of unit nonresponse and sample attrition (cf. Mannheim Research Institute for Economics of Aging 2010).

Equivalence scales assume that each household type in the population has an assigned value in proportion to its needs. Factors usually taken into account for the development of an equivalence scale are household size and age of its members. Regarding income, equivalence scales are usually applied and this is also the strategy we follow. Unfortunately, the age of every household member is not known so that a very simple equivalence scale is used which accounts for the number of persons living in a household and for economies of scale. Every household's income is divided by the root of the number of persons living in the household. Regarding wealth the situation is more difficult. In the literature on the distribution of wealth "there is no standard or well-defined approach accounting for different needs [...]" (Sierminska and Smeeding 2005, p. 2). In this study we are mainly interested in the access to wealth by households – meaning in household wealth inequality – not in the access to wealth by the individuals within the households – meaning in actual consumption of household wealth (cf. Sierminska and Smeeding 2005, p. 4). Therefore we decided not to use an equivalence scale for household wealth so far.<sup>13</sup>

The results of the empirical analyses will be presented in the following.

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<sup>9</sup>Zero net worth can mean a) that the household doesn't possess neither any assets nor any liabilities or b) that the value of the household's assets equals the value of its liabilities.

<sup>10</sup>Negative net worth means that the value of a household's liabilities is larger than the value of its assets.

<sup>11</sup>Adding a constant (e.g. minimum wealth per country) to each value is not an appropriate procedure as it changes the distribution's characteristics. Giving for example 10,000 Euro to a household with a net worth of -5,000 Euros has another meaning than giving 10,000 Euro to a household with a net worth of 1,000,000 Euros.

<sup>12</sup>See Appendix B for an overview over the proportion of households with zero and negative net worth over countries.

<sup>13</sup>Nevertheless we also did our analyses with the use of an equivalence scale for net worth. Some countries changed their position in the ranking of inequality in net worth but the overall tendencies were all the same.

Table 2: Mean and Median Household Net Worth and Net Equivalized Income (in 1.000 Euros, ppp-adjusted, weighted)

	Net Income			Net Worth		
	$\bar{\chi}$	$\chi_{med}$	$\frac{\bar{\chi}}{\chi_{med}}$	$\bar{\chi}$	$\chi_{med}$	$\frac{\bar{\chi}}{\chi_{med}}$
<b>AT</b>	19.72	17.04	1.16	189.39	132.77	1.43
<b>DE</b>	23.35	17.44	1.34	219.34	128.40	1.71
<b>SE</b>	22.14	18.59	1.19	255.77	115.60	2.21
<b>NL</b>	29.06	20.54	1.42	342.66	177.19	1.93
<b>ES</b>	14.86	9.52	1.56	363.83	211.30	1.72
<b>IT</b>	15.98	12.47	1.28	273.03	184.32	1.48
<b>FR</b>	26.33	19.42	1.36	372.84	219.68	1.70
<b>DK</b>	21.55	18.25	1.18	299.19	164.23	1.82
<b>GR</b>	14.30	10.75	1.33	225.70	136.89	1.65
<b>CH</b>	29.99	23.28	1.29	448.35	209.19	2.14
<b>BE</b>	22.53	16.02	1.41	331.98	241.72	1.37
<b>CZ</b>	11.20	9.05	1.24	108.88	75.56	1.44
<b>PL</b>	7.07	5.26	1.35	97.29	35.33	2.75

Own calculations based on the second SHARE wave.

## 5 Empirical analyses and results

### *Comparing wealth and income inequalities across Europe*

In the first step, we want to test our central hypothesis, which is, that the measured degree of income inequality is similar to the measured degree of wealth inequality. For this purpose, we will now systematically compare a country's distribution of income to its distribution of wealth. Table 2 presents mean and median household net income and net worth.

As can be seen, mean and median net income are highest in Switzerland and the Netherlands and relatively low in the Czech Republic and Poland, followed by Greece and Spain. Comparing mean and median net income, it becomes additionally clear that income distributions tend to be right skewed, a quite typical finding (cf. Neal and Rosen 2000). However, it has to be noted that the differences between mean and median are rather low. As our results also show wealth distributions are more right-skewed compared to income distributions (see also Davies and Shorrocks 2000). The biggest differences between mean and median net worth emerge in Poland, Sweden and Switzerland, followed by Denmark; a rather unexpected result. Mean net worth is highest in Switzerland and France, whereas median net worth is highest in Belgium. Lowest mean and median values for net worth are to be found in the Czech Republic and Poland.

In the next step, we investigate the share of total net worth held by different quantiles of households per country. The results are shown in Table 3 which allows us to notice two things:

Table 3: Share of Total Net Worth held by poorest (net worth) 20%, 50%, 90% and richest (net worth) 10%, 5% of Households per Country (in 1.000 Euros, ppp-adjusted, weighted)

<b>Country</b>	<b>Total Net Worth</b>	<b>Bottom 20%</b>	<b>Bottom 50%</b>	<b>Bottom 90%</b>	<b>Top 10%</b>	<b>Top 5%</b>	<b>p90/50</b>	<b>p90/10</b>
<b>AT</b>	181,646	0%	11%	62%	38%	26%	3	186
<b>DE</b>	401,366	0%	9%	57%	43%	30%	4	270
<b>SE</b>	559,414	0%	8%	49%	51%	37%	7	203
<b>NL</b>	673,711	0%	8%	46%	54%	42%	4	312
<b>ES</b>	484,542	0%	14%	58%	42%	31%	3	17
<b>IT</b>	536,794	1%	14%	61%	39%	27%	3	286
<b>FR</b>	790,734	0%	11%	53%	47%	36%	3	407
<b>DK</b>	527,391	0%	9%	55%	45%	32%	4	500
<b>GR</b>	496,518	1%	14%	58%	42%	29%	4	38
<b>CH</b>	492,572	-1%	7%	46%	54%	42%	4	98
<b>BE</b>	694,053	1%	17%	65%	37%	24%	3	54
<b>CZ</b>	198,237	0%	14%	66%	34%	21%	3	*
<b>PL</b>	173,253	0%	6%	38%	62%	53%	4	*

Own calculations based on the second SHARE wave.

\*As the upper wealth margin of the poorest 10% of the Czech and Polish households equals zero, the 90/10-percentile could not be calculated.

(1) net worth seems to be distributed very unequally and (2) this holds true for every country in the sample as the share of total net worth of the households' poorest 20% ranges from -1% (Switzerland)<sup>14</sup> to only 1% (Italy, Greece, Belgium). Looking at the bottom 50% of the households the aforementioned trends continue and the differences between the countries become even bigger: the share of total wealth now ranges from 6% (Poland) up to 17% (Belgium). The same applies for the bottom 90%: the poorest 90% of the households share between 38% (Poland) and 66% (Czech Republic) of total net worth. At this point of our analyses, finding any clear country pattern in the distribution of net worth seems to be difficult. This impression becomes even more apparent when looking at the wealthiest households. The greatest inequalities in net worth can be observed in Poland, the Netherlands and Switzerland, where the households' richest 10% share more than half or even more than two thirds of the households total net worth (54% respectively 64%) and the richest 5% still share more than or almost a half of total net worth (53% respectively 42%).

Additional measures of distribution are the 90/50- and the 90/10-percentiles. They relate the lowest wealth margin of the richest 10% of a country's households with the upper margin of wealth of the poorest 50%, respectively 10% of this country's households. The values of the 90/50-percentiles range from 3 (Austria, Spain, Italy, France, Belgium, Czech Republic) up to 7 (Sweden). Meaning that in Sweden, for example, the richest 10% of the households exceed the distribution median by 7 times. The highest values for the 90/10-percentiles can be found in Denmark and France, the lowest values in Spain and Greece.

Gini ( $G$ ) and Theil ( $I_1$ ) coefficients for net worth and net income as well as the ratios of both measurements for net worth and net income are listed in Table 4. As outlined above we now set zero and negative values<sup>15</sup> to a value of 0.01 Euro. The lowest Gini coefficients for income inequality emerge in Austria, Sweden, Czech Republic and Denmark. Regarding Theil we find the same trends. The highest Gini and Theil coefficients for income inequality appear in Spain followed by France, Greece and Poland. These trends are in line with the trends in income inequality for the overall population in the analyzed countries shown in Table 5 (Appendix A) although income inequality seems to have increased over time. For net worth the data shows the lowest Gini coefficients in Belgium, Czech Republic and Greece. This pattern slightly changes when looking at the Theil indices: they are lowest in Italy. The highest wealth inequalities according to our measurements emerge in Poland followed by the Netherlands, Sweden and Switzerland. Finally analyzing the ratios for

<sup>14</sup>Values can be negative because in this analysis debts are included. In the case of Switzerland the poorest 20% of the country's households share a net worth of - 4,925,720 Euros.

<sup>15</sup>For net worth 5.29% of all households had a zero or negative values, for net equivalized income it is 1.1%.

Table 4: Gini & Theil (standardized) for Net Equivalized Income (NI) & Net Worth (NW) (in 1.000 Euros, ppp-adjusted, weighted)

	Net Income		Net Worth		Ratio	
	$G$	$I_1$	$G$	$I_1$	$\frac{G_{NW}}{G_{NI}}$	$\frac{I_{NW}}{I_{NI}}$
<b>AT</b>	0.31	0.03	0.56	0.08	1.77	3.20
<b>DE</b>	0.41	0.05	0.63	0.10	1.52	2.24
<b>SE</b>	0.32	0.02	0.67	0.12	2.09	4.95
<b>NL</b>	0.42	0.05	0.69	0.14	1.64	3.06
<b>ES</b>	0.50	0.07	0.57	0.10	1.14	1.44
<b>IT</b>	0.40	0.04	0.56	0.04	1.40	1.94
<b>FR</b>	0.43	0.05	0.62	0.11	1.44	2.35
<b>DK</b>	0.33	0.03	0.62	0.10	1.92	4.04
<b>GR</b>	0.43	0.04	0.55	0.08	1.28	1.77
<b>CH</b>	0.39	0.04	0.67	0.14	1.73	3.44
<b>BE</b>	0.42	0.05	0.50	0.06	1.20	1.34
<b>CZ</b>	0.32	0.03	0.54	0.07	1.67	2.50
<b>PL</b>	0.43	0.05	0.76	0.27	1.79	5.44

Own calculations based on the second SHARE wave.

net income and net worth, in other words the discrepancies between inequality in income and net worth, we first can state that, in line with recent research in all countries the level of wealth inequality exceeds the level of income inequality.

#### *Classifying wealth and income inequalities in Europe*

Figure 1 illustrates these findings in scatterplots. The x-axis represents the index for net worth, the y-axis for net income (either measured by Gini or Theil). The thick lines are the median levels of inequality in net worth (y-axis) and net income (x-axis) over all countries. They span a coordinate system with four quadrants. Looking at the scatterplots we can first maintain that the countries evenly spread over all quadrants. For income inequality the median Gini coefficient is 0.41 and the median Theil coefficient is 0.04. For wealth inequality the median Gini coefficient is 0.62 and the median Theil coefficient is 0.10.

Both scatterplots show us a similar picture but also contain some differences. Each time we can create four groups in dependence of their position in a two-dimensional coordinate system. Beginning with the Gini indices, a first group with a high level of both income and wealth inequality is formed by the



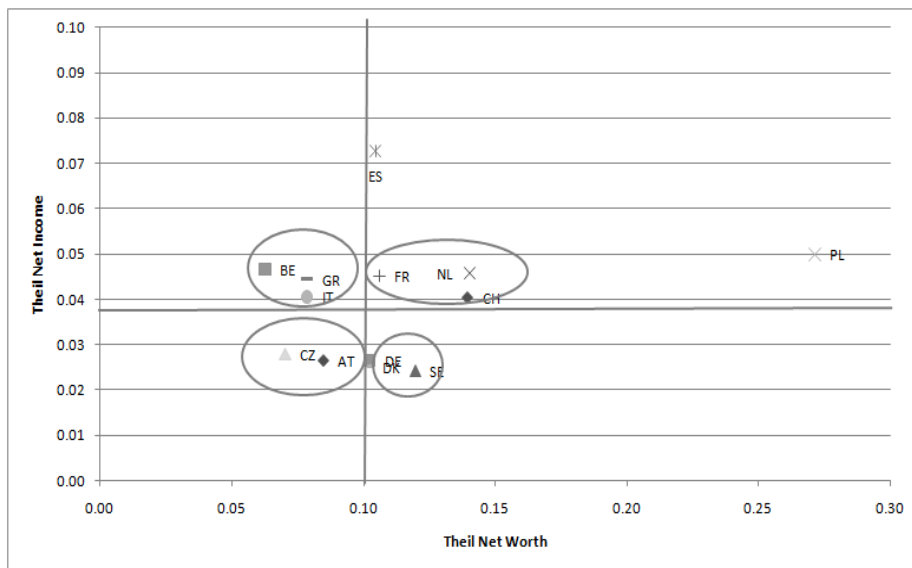
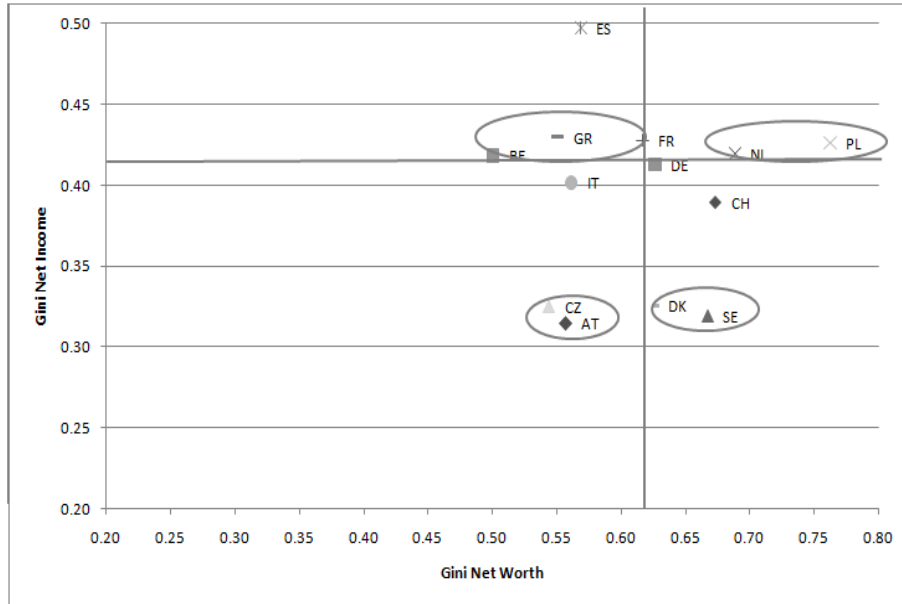
Netherlands, a representative of the conservative welfare state and Poland, belonging to the post-socialist type of welfare state. A second group with income inequality below and wealth inequality above the median level is consisting of the social-democratic welfare states Sweden and Denmark. Located in the same quadrant but very close to the median lines are also Germany and Switzerland. The group located in the third quadrant, characterized by both income and wealth inequalities below the median level, is formed by Austria (conservative welfare state) and the Czech Republic (post-socialist welfare state). Italy is to be found in this quadrant as well, but pretty close to the median line of income inequality. Finally the fourth group, with income inequality above and wealth inequality below the median level is consisting of Greece, France and Belgium, all located very close to the median lines. Outlying but located in the same quadrant as well is Spain, with an extraordinary high level of wealth inequality.

The scatterplot for the Theil indices shows the same tendencies but also some considerable deviations from the one above. France and Switzerland now crossed over to the first group, together with the Netherlands. Poland, though still located in the first quadrant, is now outlying with by far the highest level of wealth inequality. Germany, still located in the second quadrant is now also part of the second group of countries, together with the social democratic countries. The third group is exactly the same as before but Italy now crossed over from the third to the fourth quadrant, forming one joint group with Belgium and Greece. Spain is still outlying with the highest level of income inequality, but according to Theil also exceeds the median level of wealth inequality. As we have seen, our typologies depend to a certain degree on the measurement of inequality that is used. The reason for this lies in the different definition of Gini and Theil indices (see chapter 4).

All results considered, there is only one robust clear-cut relationship between a country's wealth distribution and its type of welfare state. That is, in the social democratic welfare states, known for its high level of egalitarianism, wealth inequalities are surprisingly high. Our classification contains several unexpected findings, differing from Esping-Andersen's scheme. Rather surprising to us is that the Czech Republic and Poland are located that far from each other, with very low levels of income and wealth inequality in the Czech Republic and very high ones in Poland. A hint for explaining these different levels of income inequality in the two post socialist welfare type countries can be found in Sengoku (2004): "[...] while the welfare systems of the Czech Republic have kept some characteristics of the universal, social democratic model, in Poland social-policy institutions with liberal characteristics have been gradually introduced in recent years" (p. 237).

Yet, the most unexpected finding is the high levels of wealth inequality in

Figure 1: Scatterplot - Gini Coefficient & Theil Index for Net Income and Net Worth (Wave 2)



Own calculations based on the second SHARE wave.

the social democratic welfare states Sweden and Denmark. So far, the social-democratic regime is often described as aiming at reducing social inequalities. Whilst these welfare states are apparently relatively successful in reducing income inequalities, for example by high taxation of earnings and comparatively generous welfare state programs, they are not successful in reducing wealth in-

equalities. Maybe a comparatively high level of wealth inequality is caused by these countries' attempts to reduce income inequalities. On the one hand, the strong public equalization of income via taxation in social-democratic countries hinders to accumulate wealth. Thus, the chances of improving one's situation (i.e. upward mobility in wealth) are systematically reduced. On the other hand, those who are wealthy in these countries are hardly charged – i.e. downward mobility of the very rich is systematically reduced, too. Thus, the paradox result of the equalizing income and labor market policies in the social-democratic regime would be that wealth inequalities should be strong and also persistent.

Another mechanism that might explain this unexpected finding is that in these countries a large part of the population may strongly rely on the performance of the social security system and therefore does not consider it necessary or important to accumulate wealth as the government will care for them in case of illness as well as in times of retirement. A popular study claiming that social security reduces personal savings by even 30 to 50 percent was published by Feldstein (1974). But this “sensational” result was disproved six years later by Leimer and Lesnoy (1982). In fact, they could show that a high level of social security can both lead to reduced as well as to increased personal savings. A study supporting our finding, especially for Sweden, has been carried out by Roine and Waldenström (2009). The two authors report that after 1980, wealth concentration in Sweden dramatically increased due to “Sweden’s financial liberalization in 1989” (p. 170) together with “dramatic increases in stock returns at the Stockholm Stock Exchange between 1980 and 2000” (p. 169). Because of the high taxation of wealth (until 2008) and the reduced costs of “avoiding wealth taxes by moving wealth abroad” (p. 171) many Swedes began to hold their wealth in foreign countries. Another reason for the high concentration of wealth in Sweden may be due to the fact that a large proportion of Swedish wealth is held by few family firms. Anyhow the majority of the studies on wealth inequalities does not report this dramatic increase in Swedish wealth inequality. The reason for this is that most of these studies are working with data from official tax statistics. Neither foreign wealth nor wealth of family firms (because of their entrepreneurial activity they pay only few taxes) is captured by these statistics. As the SHARE data is survey data it is quite plausible that in contrary to other studies we find a higher level of wealth inequality in Sweden. And this may also account for the high level of wealth inequality in Denmark. A look at the composition of net worth in the countries analyzed (see Appendix C) supports our assumption. Denmark shows the highest proportion of financial assets on total net worth (32%). In Sweden the percentage of financial assets amounts to 24%, a rather high proportion as well.

Neither for the conservative nor for the southern welfare states a clear pattern

can be found. Surprising though is that in the second scatterplot (Theil indices) Germany is to be found in one group together with Denmark and Sweden. Future studies will have to take this finding into further consideration.

Summing up, our main result is that the situation in wealth inequality among the elderly in Europe is not similar to the situation in income inequality and Esping-Andersen's typology thus cannot account for explaining the distribution of wealth. For our main hypothesis – the measured degree of income inequality is similar to the measured degree of wealth inequality – no clear empirical evidence was found.

## 6 Summary and outlook

To finally come to a conclusion, in this contribution we tried to shed some light into the so far pretty unexplored questions, namely how wealth is distributed among the elderly across Europe and if Esping-Andersen's typology of welfare states is applicable not only to appropriately explain the distribution of income in modern societies, but also the distribution of wealth. The main findings can be summarized as follows. (1) The distribution of net worth strongly varies between different European countries. (2) The patterns in wealth inequality across European countries strongly differ from patterns of social inequality derived from labor market processes. Most surprising to us is the very high levels of wealth disparity in the social-democratic welfare regime which is commonly described to be marked by a high level of egalitarianism. Hence our null hypothesis which was that *the measured degree of income inequality is similar to the measured degree of wealth inequality* has to be rejected.

Esping-Andersen's welfare regime typology is not able to explain the unequal distribution of net worth in different European societies. Indeed, our results suggest that his classification of welfare regimes is a very one-sided approach, strongly relying on only one source of social stratification, that is "one's position in the production system, as reflected by labor market outcomes" (Semyonov and Lewin-Epstein 2011). In contrast to the distribution of income, however, for the distribution of wealth in Europe obviously other mechanisms than the individuals' positions in the production system need to be considered. This also supports the assumption that wealth has to be treated as separate dimension of social stratification. Especially in the light of the growing importance of wealth as an income substitute in older age and during retirement, stratification research should be interested in studying wealth inequalities in order to appropriately describe the 'real' level of social inequalities in modern societies. In our view, it would be promising if future research focuses on in-depth country-specific analyses in order to find out more about the mechanisms

generating wealth inequalities and to better understand the distinct connection between income and wealth in different countries. A central question which should be addressed is if net worth is mainly generated via personal income or via inheritance and if we find differences therein in various countries.

After all, we claim that our study provides a good overview about the distribution of wealth among the elderly in Europe and could show that the degree of wealth inequality not only strongly varies between the analyzed European countries but also that one should be cautious to directly infer from a country's distribution of income to its distribution of wealth. Our most robust finding is that wealth is very unequally distributed in the "egalitarian" social democratic welfare countries. Thus, Esping-Andersen's typology of welfare regimes has to be reconsidered. Our study hopefully serves as a good starting point in order to find out how wealth is generated and transmitted within the countries across Europe, and as an animation to find out more about the living conditions of elderly Europeans.

## A Appendix

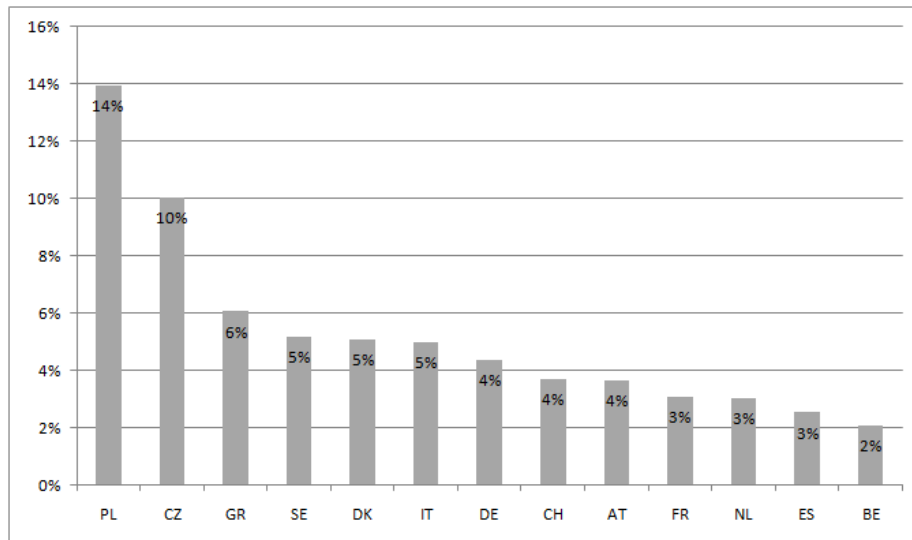
Table 5: Gini for equivalized household net income (total population)

	<b>OECD</b>		<b>Eurostat</b>		<b>World Bank</b>	
	Gini	Year	Gini	Year	Gini	Year
<b>OECD total</b>	0.31	<i>mid-2000s</i>	-	-	-	-
<b>EU-15</b>	-	-	0.30	<i>2008</i>	-	-
<b>EU-25</b>	-	-	0.30	<i>2008</i>	-	-
<b>AT</b>	0.27	<i>mid-2000s</i>	0.26	<i>2008</i>	0.29	<i>2000</i>
<b>DE</b>	0.30	<i>mid-2000s</i>	0.30	<i>2008</i>	0.28	<i>2000</i>
<b>SE</b>	0.23	<i>mid-2000s</i>	0.24	<i>2008</i>	0.25	<i>2000</i>
<b>NL</b>	0.27	<i>mid-2000s</i>	0.28	<i>2008</i>	0.31	<i>1999</i>
<b>ES</b>	0.32	<i>mid-2000s</i>	0.31	<i>2008</i>	0.35	<i>2000</i>
<b>IT</b>	0.35	<i>mid-2000s</i>	0.31	<i>2008</i>	0.36	<i>2000</i>
<b>FR</b>	0.28	<i>mid-2000s</i>	0.28	<i>2008</i>	0.33	<i>1995</i>
<b>DK</b>	0.23	<i>mid-2000s</i>	0.25	<i>2008</i>	0.25	<i>1997</i>
<b>GR</b>	0.32	<i>mid-2000s</i>	0.33	<i>2008</i>	0.34	<i>2000</i>
<b>CH</b>	0.28	<i>mid-2000s</i>	-	-	0.34	<i>2000</i>
<b>BE</b>	0.27	<i>mid-2000s</i>	0.28	<i>2008</i>	0.33	<i>2000</i>
<b>CZ</b>	0.27	<i>mid-2000s</i>	0.25	<i>2008</i>	0.26	<i>1996</i>
<b>PL</b>	0.37	<i>mid-2000s</i>	0.32	<i>2008</i>	0.33	<i>2000</i>

Sources: OECD (2010), Eurostat (2010), World Bank (2010).

## B Appendix

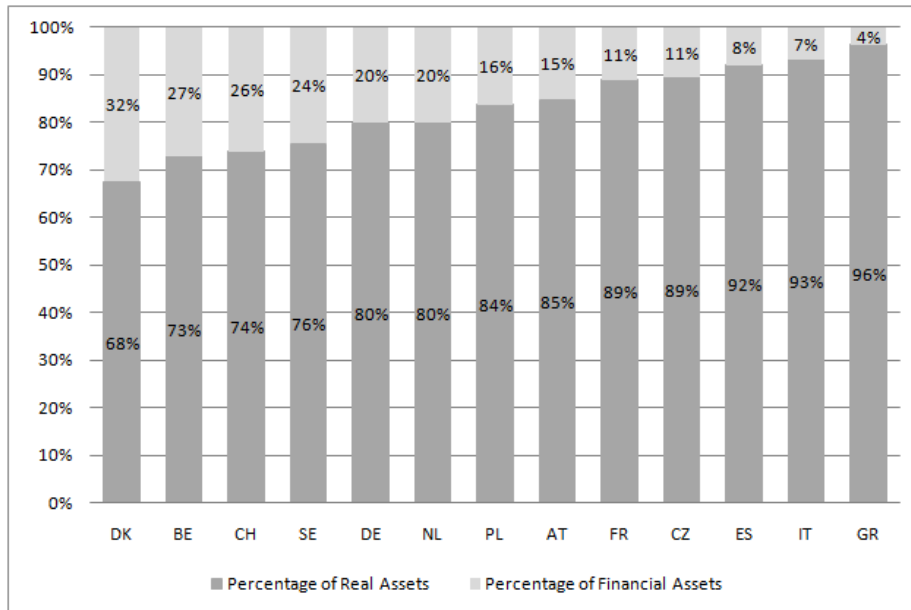
Figure 2: Percentage of households with zero or negative net worth over countries (in 1.000 Euros, ppp-adjusted, weighted)



Own calculations based on the second SHARE wave.

## C Appendix

Figure 3: Composition of net worth across countries (in 1.000 Euros, ppp-adjusted, weighted)



Own calculations based on the second SHARE wave.



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