Wealth inequality in Europe and the delusive egalitarianism of Scandinavian countries

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Abstract

Past sociological inequality research focused on (labor) market outcomes, while neglecting the even more important role of wealth. In our study we investigate the distribution of wealth among the elderly across Europe within the framework of Esping-Andersen's typology of welfare states. Using SHARE data, our analyses suggest (1) that there is strong variation in the distribution of wealth between European countries, and (2) that patterns of wealth inequality differ strongly from patterns of income inequality. Surprisingly high levels of wealth disparity were found in the social democratic welfare regimes commonly known as very egalitarian societies. We conclude that Esping-Andersen's scheme requires reconsideration because it is based on a one-sided understanding of social stratification not accounting for the central role of wealth in the stratification process.

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

1 Introduction

Ever since the beginning of sociology, describing social inequalities, explaining how they come into being, and elaborating their impact on individual life chances, class identification, and political behavior have been core subjects (Grusky, 2008). In recent years, international comparative research on social inequality has shown that modern societies exhibit very different and distinct patterns of inequality, and that its level and persistence depend strongly on national institutional settings. The work of Esping-Andersen Esping-Andersen (1990, 1999) has had a particularly strong influence on today's understanding of how country-specific institutions – above all, the level of public commitment to equal opportunities through elaborated welfare arrangements and concepts of social solidarity – shape social inequality structures. In this respect, past research has shown that the so-called social democratic welfare regimes of Scandinavia seem to be especially effective in reducing social inequalities by prioritizing publicly supported (full) employment, high taxation of incomes, and a comparatively high level of decommodification[2] for those who are not employed.

Nevertheless, a major drawback of this research is that social inequality and stratification are mainly analyzed by studying labor market processes (e.g., labor market access, level of integration into full employment, job mobility, social transfers) and income distributions (flow data). Such flow data are relevant in order to understand how the organization of work and welfare in a society is related to social class. More recently, some scholars (e. g. Spilerman, 2000) have stressed that social inequality research should also consider wealth because income is only one dimension of individuals' socio-economic position. Furthermore, studies only addressing income or labor market inequalities may paint a one-sided and even inaccurate picture of social inequalities. Indeed, diverse studies (e. g. Brzozowski et al., 2010; Jäntti, 2006; Keister and Moeller, 2000; Schlomann, 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 how intergenerational transfers serve as powerful social mechanisms that reproduce and intensify already existing social inequalities. Moreover, given the aging of industrialized societies along with the growing importance of private savings in the course of the most recent pension reforms all over Europe (European Commission, 2010) wealth will probably become an even more important source of individuals' well-being in modern societies, especially as an income substitute

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[2]"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.).

during the increasingly long phase of retirement due to growing life expectancy.

The aim of this article is to study (1) household wealth inequality compared to income inequality in European countries and (2) the relationship between wealth inequalities and welfare regimes. It is an open question whether different welfare regimes interact with specific patterns of wealth inequalities, and whether these patterns are similar or at least comparable to the social inequalities arising from the labor market. 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 will need to be reconsidered.

Up till now, our knowledge of wealth inequalities and their differences among European countries is very limited, mainly because of a lack of high-quality and internationally comparable data. However, new data from the "Survey of Health, Ageing and Retirement in Europe"(SHARE)[3] enable us to study wealth inequalities from a comparative perspective. SHARE is a longitudinal dataset from a representative sample of people aged 50 years and older. We draw on the second wave covering 13 European countries. With its strong harmonization of measures across countries, we believe that SHARE provides an excellent data base for an international comparison of wealth inequalities.

This article is organized as follows. Section 2 is devoted to the why and how of studying wealth inequalities. Section 3 contains our theoretical considerations and hypotheses. Data and methods are described in section 4; and in section 5 we present our empirical analyses and results. Finally, in section 6 we give a short summary and outlook.

2 Why and how to study wealth inequalities

Most social inequality research has studied inequalities by analyzing all kinds of outcomes of the labor market, such as income. However, in contrast to earned income that demands 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 in the accumulation of wealth through saving (Ring, 2000, p. 35) – indicating that earned income and wealth are closely interrelated.

Nonetheless, their empirical relationship might be much weaker than one might expect at first glance. For example, Schlomann (1992) found a correlation between income and wealth of only about .5 in Germany. For the United States, Keister and Moeller (2000) report a correlation coefficient of only .26 when financial assets are excluded and .5 when they are added. Brzozowski et al. (2010) calculated a correlation of .4 for Canada.

There are several reasons why wealth is a more appropriate measure for the overall economic well-being of individuals and households than income. Take the example of somebody who does not earn any income for a given period because of unemployment or illness. If income were the only indicator for economic well-being, this person would be assumed to be poor. Yet, if the same person has access to wealth to compensate her lack of income, this interpretation would be wrong (Elmelech, 2008). So, we have to take into account not only income, but also wealth. Moreover, income poverty often may only last for shorter periods of time in a job career, whereas poverty in wealth tends to be a long-term state in the life course (ibid.). Nonetheless, finding a clear distinction between wealth and income remains a challenging task.

The definition of wealth in empirical studies also depends strongly on which components of wealth have been measured in a study. The literature reveals a strong agreement that wealth can be characterized by three major aspects which distinguish it considerably from income (e. g. Claupein, 1990; Jenkins, 1990; Ring, 2000). First, wealth is a stock figure, whereas income is a flow figure. In other words, income can be captured only in relation to a period of time (e.g., per hour, month, year), whereas wealth is meaningful without being bound to a special period of time (Augustin and Sanga, 2002, p. 15).

The second aspect is the functions of wealth. In contrast to income that can be saved or consumed, wealth is far more versatile. For instance, it can function as income, mostly in the form of earned interest or dividends, and it can have a utility function derived from the personal use of nonfinancial assets, for example, when enjoying a ride on one's motorbike or looking at one's art collection. Wealth also has a security function and can serve as a buffer against income losses. It further has a power function because it can be used to assert one's will against that of others (Weber, 1984). Wealth additionally allows one to define and maintain a specific social status and prestige (function of social maintenance) and finance the upbringing and education of one's 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) (Ring, 2000; Frick and Grabka, 2009).

The third major difference between wealth and income is more "technical": the difficulties in measuring it. Whereas income can be measured quite easily

by asking for (gross and net) earnings, assessing a person's wealth is 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, or their market value. Of course, which of these values are used to estimate assets depends strongly on the research question.

Most existing studies (Christelis et al., 2005; Claus and Scobie, 2001; Kessler and Wolff, 1991) have distinguished between two types of wealth: nonfinancial assets and financial assets. Nonfinancial assets can be differentiated further into consumptive assets[4] and productive assets[5]. 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 last definition also used by SHARE and in the present article. Finally, it is important to distinguish between private (family) and public wealth; this study refers only to the former.

Empirical analyses of income and income inequality usually take the individual as the unit of analysis. For our purpose, the family or the household seems more appropriate, although individuals are the entities generating wealth. Many scholars (e. g. Barber, 1957; Spilerman, 2000) have argued that the family as a social institution is a major determinant of 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 facilities of individual benefit (cf. Becker, 1976). Married couples, for example, but also couples living in a steady relationship, often share their assets. If they have children, one can reasonably assume that they 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 well-known "life-cycle hypothesis", Modigliani and Brumberg (1954) assume a direct relation between age and wealth. In times of employment, meaning at younger ages, individuals tend to save their income (positive saving rate) in order to consume it during their times of retirement up to death (negative saving rate or "dissaving"). The expected

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[4]Consumptive assets cover commodities and consumer goods as well as real estates of private households.

[5]In contrast to consumptive assets, productive assets allow the realization of profits and income.

outcome would thus be a hump-shaped wealth profile. Nonetheless, empirical studies (Menchik and David, 1983; Poterba, 1994) have found repeatedly that dissaving in retirement is much lower than predicted, whereas it is the inheritance motive that is more important. Of course, further factors on the individual level – such as migration background, gender, household type, health – can also exert a strong influence on the accumulation of wealth in the life course. However, numerous researchers have assumed that age[6] and inheritance are the most influential ones (e. g. Azpitarte, 2008; Brandolini et al., 2004; Danziger et al., 1982; Semyonov and Lewin-Epstein, 2011; Spilerman, 2000). Due to the age pattern of the SHARE population mean wealth values should be rather high compared to the whole population as households already had time to accumulate assets.

Individual and household determinants are beyond the scope of this study. Our central interest is to understand how household wealth is distributed in European countries, to study the emergence of systematic patterns of wealth inequalities, and to see whether regime-specific patterns resemble the picture painted so far in international comparative research on social inequality. Over the past decades, research has shown that national institutional settings strongly shape social inequality structures (e.g. Blossfeld et al., 2009; DiPrete et al., 1997; Shavit et al., 2007). Because they mold the process of income and wealth accumulation over the life course, 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 regimes helps us to understand better the inequality structures in European societies. The most prominent classification of welfare regimes is without doubt Gosta Esping-Andersen's three worlds of welfare capitalism (Esping-Andersen, 1990, 1999), namely the liberal, conservative, and social democratic welfare states. In recent years, Esping-Andersen's typology has been 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 classifications are based on three main categories: (1) the degree of decommodification; (2) the degree of social stratification; and (3) the respective 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. Following the idea of "freedom on the highest

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[6]The main respondents of the SHARE study providing data for our analyses are aged 50 years and older. Hence, compared to the average population, households in our study should dispose of a quite high level of wealth because they have had more time to accumulate it, their debts are lower because, for example, homes have been paid off, and they have a higher chance of having already received an inheritance.

level", there is hardly any governmental intervention in the market process to reduce inequalities and to secure individual welfare. This is why the liberal welfare state is often also called the "workfare state". All in all, the degree of decommodification is rather low, and it is the (labor) market which produces individual welfare. In liberal countries, social inequality is usually high, particularly with respect to income differences (e.g. **?**Papatheodorou and Pavlopoulos, 2003).

In contrast, social democratic welfare states have a high level of public commitment to offering equal opportunities and securing individuals' well-being. In this regime, the state strongly intervenes in the market process and actively supports full employment (e.g., through 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 they place a strong emphasis on decommodification and the reduction of social inequalities (e.g., through progressive taxation of incomes to reduce income inequalities).

The typical conservative welfare regime has a modest degree of decommodification. The most important factors in the production of welfare are the market and the family. Nonetheless, compared to the liberal welfare model, it does provide 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 can be located somewhere in the middle between liberal and social democratic countries. Indeed, empirical studies (e.g. **?**Papatheodorou and Pavlopoulos, 2003) have confirmed a more modest level of income inequality in countries with this type of welfare regime.

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

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

Esping-Andersen's welfare state typology defines social inequality strongly in terms of the labor market in at least two ways: first, when analyzing an individual's position in the labor market (for the degree of social stratification); and second, when measuring the degree of an individual's dependence on the labor market to maintain his or her livelihood (for the degree of decommodification). This also becomes visible in the empirical data forming the basis of his classification. Esping-Andersen's indicators relate almost exclusively 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, he neglects the central role of wealth and its distribution in the process of social stratification (cf. Elmelech, 2008, p. 6). This is why the following analyses attempt to study whether our current understanding of welfare regimes, which is based mostly on regime-specific differences on the labor market and earned income, also can be extended to cross-national differences in wealth inequalities in Europe.

Our central hypothesis is that the measured degree of income inequality is similar to the measured degree of wealth inequality. This means that the level of inequality in income would be closely related to the level of inequality in wealth. If that is true, the empirical 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 also be very pronounced. They should be intensified further by the almost complete lack of social security systems that could prevent the level of wealth inequality from becoming too high. On the other hand, these liberal welfare regimes strongly favor personal provision for old age via, for example, easy access to mortgages (cf. Elmelech, 2008, p. 75). In the conservative welfare states instead, we expect to find a modest level of wealth inequality. In this regime, all households have access to a minimum level of social security. At the same time, their general welfare and tax ideology is characterized by high status maintenance and moderate attempts to reduce the inequalities produced in the labor market. The government strongly protects families, enabling them to accumulate wealth via lower taxes or special savings contracts, and it tries to balance social inequalities via progressive income tax. In the social democratic welfare states, levels of wealth inequality should be rather low. In these countries, the government strongly tries to reduce income inequalities by, for example, high taxation of earnings, strong support for gender equality, and comparatively generous welfare state programs. Turning to Southern European welfare states, we expect wealth inequalities to be rather high because the government does not so much intervene in order to support the income poor and to ask the income rich to do more for social solidarity. In

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post-socialist states, the median net worth should be very low, because people did not have much time to accumulate wealth, and levels of wealth inequalities should be high, also mainly resulting from the socialist transformation (e.g. Henderson et al., 2004).

However, if we do not find empirical evidence for such a close relationship between income and wealth in our results, wealth will have to be treated as distinct dimension of social stratification. This would make it necessary to reconsider Esping-Andersen's typology.

4 Data and methods

Data

Our empirical analyses are based on 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 above. In the second wave, conducted in 2006/2007, a total of 33,281 persons in the following 13 EU member states were asked about their financial situation, their social life, and their health: Austria, Belgium, France, Germany, Netherlands (as conservative welfare states); Denmark, Sweden (as social democratic welfare states); Switzerland (originally as a liberal welfare state but today counted to the conservative welfare type); Greece, Italy, Spain (as Southern European welfare states); and the Czech Republic and Poland (as post-socialist welfare states). Respondents were private persons aged a minimum of 50 years and their spouses (regardless of their age) living in the same household.

A typical problem with questions addressing financial aspects is a high rate of item nonresponse (e. g. Riphahn and Serfling, 2005). This applies particularly to persons at the edges of the distribution (i.e., low and high earners). Loosing these cases due to missing values increases the risk of ending up with a biased and probably highly selective sample (Kalwij and van Soest, 2005). The SHARE team is tackling this problem by applying a multiple imputation strategy for filling in missing values that was formulated mainly by Rubin (1987). More precisely, five values are estimated for every missing value. A more detailed description of the imputation method used in the SHARE study can be found in Christelis (2011). We analyze two central variables: household net income[7]

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[7]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:

Table 1: Number of households per country (unweighted)

Country		Total	Percent	Cum.
Austria	AT	987	4.34%	4.34%
Germany	DE	1,698	7.47%	11.82%
Sweden	SE	1,970	8.67%	20.49%
Netherlands	NL	1,846	8.12%	28.61%
Spain	ES	1,414	6.22%	34.84%
Italy	IT	1,888	8.31%	43.15%
France	FR	2,060	9.07%	52.21%
Denmark	DK	1,759	7.74%	59.95%
Greece	GR	2,172	9.56%	69.51%
Switzerland	CH	1,076	4.74%	74.25%
Belgium	BE	2,137	9.41%	83.65%
Czech Republic	CZ	1,943	8.55%	92.21%
Poland	PL	1,771	7.79%	100.00%
Total		**22,721**	100.00%	

SHARE Wave 2, release 2.5.0, data unweighted, own calculations.
All analyses based on 5 sets of imputations. See text for details

and household net worth[8]. In the following, statistical results are calculated by taking the mean scores across the five datasets. The unit of analysis is the household, but only one person per household was selected as the main household respondent. This approach is valid, because 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 reports sample sizes per country.

Methods

We shall start by compiling 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 shall calculate rankings and measurements of inequality for both the distribution of income and wealth. We

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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).

[8]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, 358f.).

shall use different quantiles to rank the distributions: The households are then ranked according to their net worth and allocated to particular sections of the distribution. In a case of total equality, every section would share exactly the same proportion of the population's total net worth.

The most popular and most frequent way of measuring inequality in the social sciences is the Gini coefficient (Gini, 1921) which will also be used in this study. For income (wealth) as a discrete attribute Gini is calculated as follows:

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

with inequality measured by the arithmetic average of the absolute difference between all income (wealth) pairs and standardized by dividing it by the population's average income (wealth). As a result, the 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, 98). Gini is influenced strongly by the most frequently occurring incomes (wealth), because it is sensitive to changes around the median (cf. Grabka, 2000).

Apart from being the best known measure of inequality in social sciences Gini has a further big advantage for our purpose. That is, it is well defined for negative and zero values, as long as mean values are greater than one (which is the case in our study). Income in most cases is positive, but zeroZero net worth can mean (1) that the household possesses neither any assets nor any liabilities or (2) that the value of the household's assets equals the value of its liabilities. and negative[9] values are very likely to appear in a country's distribution of wealth.[10]

Before presenting the results, 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, 21). These weights compensate for problems of unit nonresponse and sample attrition (cf. Mannheim Research Institute for the Economics of Aging, 2010)

Equivalence scales assume that each household type in the population has an assigned value in proportion to its needs. They account for the number of persons living in a household and for economies of scale. Equivalence scales are usually applied for income, but regarding wealth, the situation is difficult.

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[9]Negative net worth means that the value of a household's liabilities is higher than the value of its assets.

[10]For net worth, 5.31% of all households had a zero or negative value; for net equivalized income, this was 1.2%. See Appendix B for an overview on the proportion of households with zero and negative net worth over countries.

The literature on the distribution of wealth reveals "no standard or well-defined approach accounting for different needs" (Sierminska and Smeeding, 2005, 2). In the present study, we are mainly interested in the access to wealth by households – that is, household wealth inequality – and not the access to wealth by individuals within the households – that is, the actual consumption of household wealth (ibid, 4). Therefore we decided not to use an equivalence scale neither for household wealth and for reasons of comparability nor for household income.

5 Empirical analyses and results

Comparing wealth and income inequalities across Europe
We first test our central hypothesis that the measured degree of income inequality will be similar to the measured degree of wealth inequality. We systematically compare a country's distribution of income to its distribution of wealth. Table 2 reports mean and median household net income and net worth across countries. As can be seen, mean and median net income are highest in Switzerland and the Netherlands and relatively low in Poland and the Czech Republic, followed by Greece and Spain. Comparing mean and median net income also reveals 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. Our results also show that wealth distributions are more right-skewed than 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. The lowest mean and median values for net worth are to be found in Poland and the Czech Republic.

In the next step, we investigate the share of total net worth held by different quantiles of households per country. The results, shown in Table 3, reveal two things: (1) Net worth seems to be distributed very unequally, and (2) this holds true for every country in the sample, because the share of total net worth of the households' poorest 20% ranges from -1%[11] (Switzerland) to only 1% (Italy, Greece, Belgium).[12] Looking at the bottom 50% of the households, these trends continue and the differences between countries become even larger: The share of total wealth now ranges from 6% (Poland) to 17% (Belgium). The same applies for the bottom 90%: The poorest 90% of households share between 38% (Poland) and 66% (Czech Republic) of total net worth. At this stage of our

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[11]Values can be negative because in this analysis debts are included. In the case of Switzerland the poorest 20% of the country's housholds share a net worth of - 4,925,720 Euros.

[12]In case of equality in net worth the households poorest 20% should share exactly 20% of total net worth.

Table 2: Mean and median household net worth and net income (in 1.000 Euros, ppp-adjusted, weighted)

	Net Income			Net Worth		
	$\bar{\chi}$	χ_{med}	$\frac{\bar{\chi}}{\chi_{med}}$	$\bar{\chi}$	χ_{med}	$\frac{\bar{\chi}}{\chi_{med}}$
AT	26.95	21.94	1.23	189.44	133.39	1.42
DE	33.12	24.43	1.36	226.01	135.12	1.67
SE	31.98	26.22	1.22	276.61	129.63	2.13
NL	40.65	28.35	1.43	353.22	180.82	1.95
ES	23.69	14.82	1.60	372.78	222.00	1.68
IT	24.25	18.65	1.30	281.32	195.45	1.44
FR	37.61	26.54	1.42	394.54	233.56	1.69
DK	29.56	24.28	1.22	297.42	165.55	1.80
GR	21.04	14.52	1.45	218.14	135.50	1.61
CH	42.23	31.97	1.32	457.03	216.10	2.11
BE	31.80	21.77	1.46	333.99	244.43	1.37
CZ	16.47	13.01	1.27	110.45	77.20	1.43
PL	11.40	8.20	1.39	97.42	37.18	2.62

SHARE Wave 2, release 2.5.0, data weighted, own calculations. All analyses based on 5 sets of imputations. For abbreviations, see Table 1.

analyses, it seems to be difficult to find any clear country pattern in the distribution of net worth. This impression becomes even stronger when looking at the wealthiest households. The greatest inequalities in net worth seem to emerge in Poland, the Netherlands, and Switzerland in which the households' richest 10% share more than one-half or even more than two-thirds of the households' total net worth (54% or 64%) and the richest 5% still share more than or almost one-half of total net worth (53% or 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 to 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). This means that in Sweden, for example, the richest 10% of households exceed the distribution median seven times. The highest values for the 90/10-percentiles are found in Denmark and France; the lowest, in Spain and Greece.

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)

Country	Total Net Worth	Bottom 20%	Bottom 50%	Bottom 90%	Top 10%	Top 5%	p90/50	p90/10
AT	181,143	0%	11%	62%	38%	26%	3	186
DE	401,366	0%	9%	57%	43%	30%	4	257
SE	559,414	0%	8%	49%	51%	37%	7	158
NL	673,711	0%	8%	46%	54%	42%	4	322
ES	484,542	0%	14%	58%	42%	31%	3	16
IT	538,929	1%	14%	61%	39%	27%	3	185
FR	790,540	0%	11%	53%	47%	36%	3	226
DK	527,391	0%	9%	55%	45%	32%	4	327
GR	496,518	1%	14%	58%	42%	29%	3	37
CH	492,572	-1%	7%	46%	54%	42%	4	98
BE	694,053	0%	17%	65%	37%	24%	3	61
CZ	198,237	0%	14%	66%	34%	21%	3	*
PL	173,253	0%	6%	38%	62%	53%	4	*

SHARE Wave 2, release 2.5.0, data weighted, own calculations. All analyses based on 5 sets of imputations. For abbreviations, see Table 1.
*Because the upper wealth margin of the poorest 10% of the Czech and Polish households equals zero, the 90/10-percentile could not be calculated.

Table 4: Gini for net income (NI) & net worth (NW) (in 1.000 Euros, ppp-adjusted, weighted)

|	$G(\textbf{NI})$	$G(\textbf{NW})$	$\frac{G_{NW}}{G_{NI}}$
AT	.36	.56	1.57
DE	.44	.63	1.44
SE	.36	.67	1.85
NL	.42	.69	1.57
ES	.51	.59	1.16
IT	.42	.56	1.32
FR	.45	.61	1.35
DK	.37	.63	1.71
GR	.47	.55	1.17
CH	.41	.69	1.67
BE	.45	.51	1.13
CZ	.38	.54	1.42
PL	.43	.75	1.71

SHARE Wave 2, release 2.5.0, data weighted, own calculations. All analyses based on 5 sets of imputations. For abbreviations, see Table 1.

Table 4 reports Gini (G) coefficients for net worth and net income as well as the ratios for Gini of net worth and net income. The lowest Gini coefficients for income inequality emerge in Austria, Sweden, Denmark, and the Czech Republic. The highest Gini coefficients for income inequality appear in Spain followed by Greece. 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 show the lowest Gini coefficients in Belgium, the Czech Republic, and Greece. The highest wealth inequalities according to the Gini Index emerge in Poland followed by the Netherlands, Sweden, and Switzerland. Finally, analyzing the ratios for net income and net worth, in other words, the discrepancies between inequality in income and net worth, we can state, first of all, that, in line with recent research in all countries, the level of wealth inequality exceeds the level of income inequality (all ratios are greater than one). The biggest discrepancies are to be found in Sweden, Denmark an Poland.

Classifying wealth and income inequalities in Europe
Figures 1 and 2 illustrate these findings in scatterplots. Whereas Figure 1 displays the grouping of countries as we expect it to be, according to our theoretical reasoning and hypothesis, Figure 2 contains our actual findings. In both figures the x-axis represents the Gini Index for net worth; the y-axis for net income.

Figure 1: Scatterplot - Expected Gini coefficients for net income and net worth
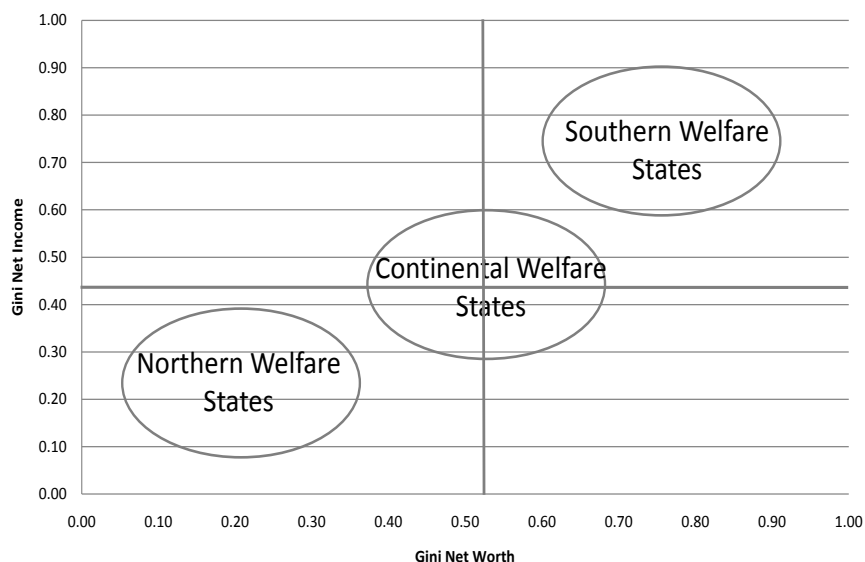
The thick lines are the median levels of inequality in net worth (y-axis) and net income (x-axis) over all countries. They span a coordinate system with four quadrants. Looking at the scatterplots, we can first state that the expected (Figure 1) and actual (Figure 2) groupings of countries differ a lot. According to our main hypothesis the levels of income and wealth inequality should be similar within the different countries. This would mean, that the Southern European welfare states should cluster in the quadrant with both income and wealth inequalities above the median level, whereas the social democratic welfare states should be located in the opposite quadrant with both levels of inequality below the median level. The conservative welfare states finally should cluster around the median levels of income and wealth inequality. For the post-socialist countries we did not have any clear predictions.

Looking at Figure 2 our expectations are only fulfilled for two countries. These are France and Germany, two conservative welfare state representatives, that indeed cluster around the median levels of income and wealth inequality. Apart from this, we find a pattern that is very different from our expectations. The countries are spread evenly over all quadrants. For income inequality, the median Gini coefficient is .42 and for wealth inequality it is .61. As expected, the median level of wealth inequality exceeds the median level of income inequality for all countries studied.

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Figure 2: Scatterplot - Actual Gini Coefficients for net income and net worth
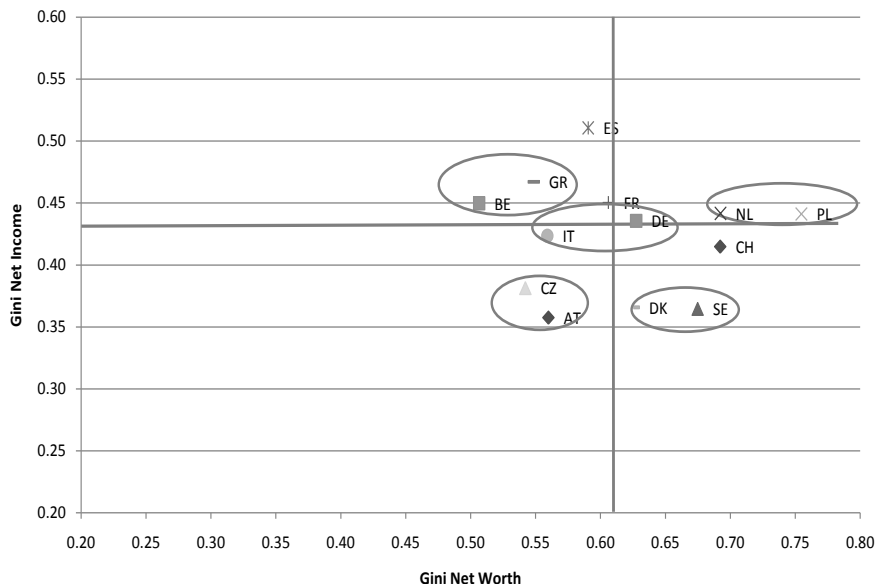
SHARE Wave 2, release 2.5.0, data weighted, own calculations. All analyses based on 5 sets of imputations. For abbreviations, see Table 1.

Located in the quadrant where we expected to find the Southern European welfare states, we actually find Poland (post-socialist welfare state) and the Netherlands (conservative welfare state), whereas the latter one is still located close to the median levels of income and wealth inequalities. In the quadrant where the social democratic welfare states were expected to cluster, we surprisingly find the Czech Republic (post-socialist welfare state) and Austria but also Italy, though located close to the median lines for income and wealth inequalities. We also find countries in the quadrant with income inequality above and wealth inequality below the median level. These are the Southern European welfare states Greece and Spain (as an outlier with by far the highest level of income inequality) but also Belgium (conservative welfare state). Finally, and most surprising to us, we find the two social democratic welfare states Sweden and Denmark to cluster in the quadrant with low levels of income inequality but high levels of wealth inequality. Located in the same quadrant is also Switzerland, that today is seen as a representative for the conservative type of welfare states.

In sum, there is one robust clear-cut relationship between a country's wealth distribution and its type of welfare state: Wealth inequalities are surprisingly high in the social democratic welfare states known for their high level of egalitarianism. Our classification contains several unexpected findings that run counter

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to our current understanding of welfare regimes, mostly based on regime-specific differences on the labor market and earned income. Rather surprisingly, the Czech Republic and Poland are located far apart, with very low levels of income and wealth inequality in the Czech Republic and very high ones in Poland. Sengoku (2004) offers one hint that might explain these different levels of income inequality found in the two post-socialist welfare type countries: "[...] 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).

However, the most unexpected finding is the high levels of wealth inequality in the social democratic welfare states Sweden and Denmark. Up to now, the social democratic regime has been described as aiming toward reducing social inequalities. While these welfare states are apparently relatively successful in reducing income inequalities (flow data), for example, by progressive taxation of earnings and comparatively generous welfare state programs, they are less successful in reducing wealth inequalities. Perhaps it is even these countries' attempts to reduce income inequalities that cause a comparatively high level of wealth inequality: On the one hand, the strong public equalization of income via taxation hinders the accumulation of wealth. This systematically reduces the chances of improving one's situation and achieving upward mobility in wealth. On the other hand, those who are wealthy in these countries pay hardly any additional taxes and this systematically reduces downward mobility in the very rich. Thus, a paradoxical result of the equalizing income and labor market policies in the social democratic regime would seem to be strong and persistent wealth inequalities.

Another mechanism that might explain this unexpected finding is that a large part of the population may strongly rely on the social security system in these countries. The individuals do not consider it necessary or important to accumulate wealth, because the government will care for them if they get ill and when they retire. Feldstein (1974) published a popular study claiming that social security reduces personal savings by even 30 to 50%. But this "sensational" result was disproved some years later by Leimer and Lesnoy (1982) who showed that a high level of social security can lead to both reduced and increased personal savings. One study supporting our finding, especially for Sweden, was carried out by Roine and Waldenström (2009): They have reported that the wealth concentration in Sweden increased dramatically after 1980, 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 that a large proportion of Swedish wealth is held by a few family firms. Whatever the case, most studies on wealth inequalities do not report this dramatic increase in Swedish wealth inequality. This is because they generally work with data from official tax statistics that capture neither foreign wealth nor the wealth of family firms (because of their entrepreneurial activity, they pay only low taxes). Because the SHARE data is survey data, it is quite plausible that, in contrast 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.

No clear pattern can be found for either the conservative or the Southern European welfare states. In sum, our main result is that the wealth inequality situation is not similar to the income inequality situation among the elderly in Europe, and that Esping-Andersen's typology cannot account for the distribution of wealth. We found no clear empirical evidence for our main hypothesis that the measured degree of income inequality would be similar to the measured degree of wealth inequality.

6 Summary and outlook

In this contribution, we have tried to shed light on some questions that are still relatively unexplored, namely, how is wealth distributed among the elderly across Europe, and does Esping-Andersen's typology of welfare states provide an appropriate explanation for not only the distribution of income but also the distribution of wealth in modern societies. The main findings are: (1) The distribution of net worth varies strongly between different European countries; and (2) patterns in wealth inequality (stock data) across European countries differ strongly from patterns of social inequality (flow data) derived from labor market processes. Most surprisingly, there are very high levels of wealth disparity in the social democratic welfare regime that is commonly described as being marked by a high level of egalitarianism. Hence, our hypothesis that the measured degree of income inequality will be similar to the measured degree of wealth inequality has to be rejected.

Esping-Andersen's welfare regime typology is unable to capture the unequal distribution of net worth in different European societies. Indeed, our results suggest that his classification is a very one-sided approach relying strongly 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, 935). In contrast to the distribution of income, however, the distribution of wealth in Europe seems to require the consideration of other mechanisms than the individuals' positions in the production system. This also supports the assumption that wealth has to be treated as separate dimension of social stratification. Especially in light of the growing importance of wealth as an income substitute in older age and during retirement, stratification research should study wealth inequalities in order to gain an appropriate understanding of the "real" level of social inequalities in modern societies. In our view, it would be promising for future research to focus 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 for future research is whether net worth is generated mainly via personal income or via inheritance, and whether this also reveals differences between countries. In sum, we claim that our study provides a good overview on the distribution of wealth among the elderly in Europe and could show not only that the degree of wealth inequality varies strongly between the analyzed European countries but also that one should be cautious about making any direct inferences from a country's distribution of income to its distribution of wealth. Our most robust finding is that wealth is distributed very unequally 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 for finding out how wealth is generated and transmitted within the countries across Europe that will encourage further research on the living conditions of elderly Europeans.
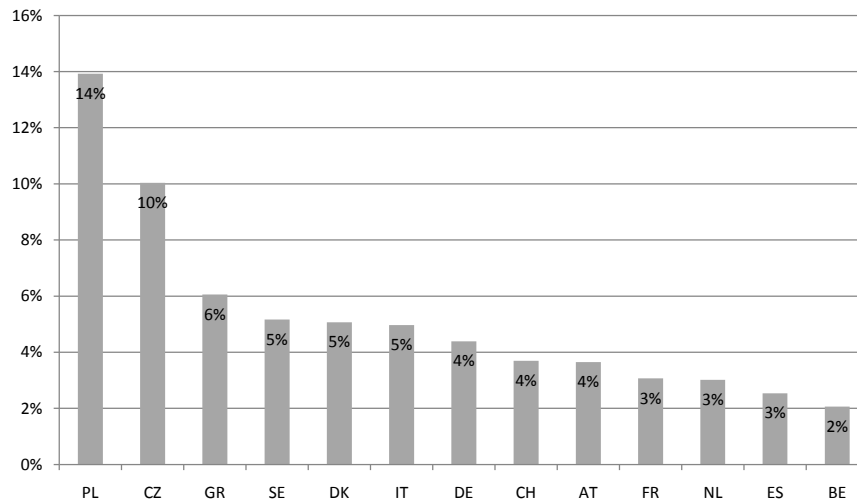
A Appendix

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

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

Sources: Eurostat (2010); OECD (2010); World Bank (2010).
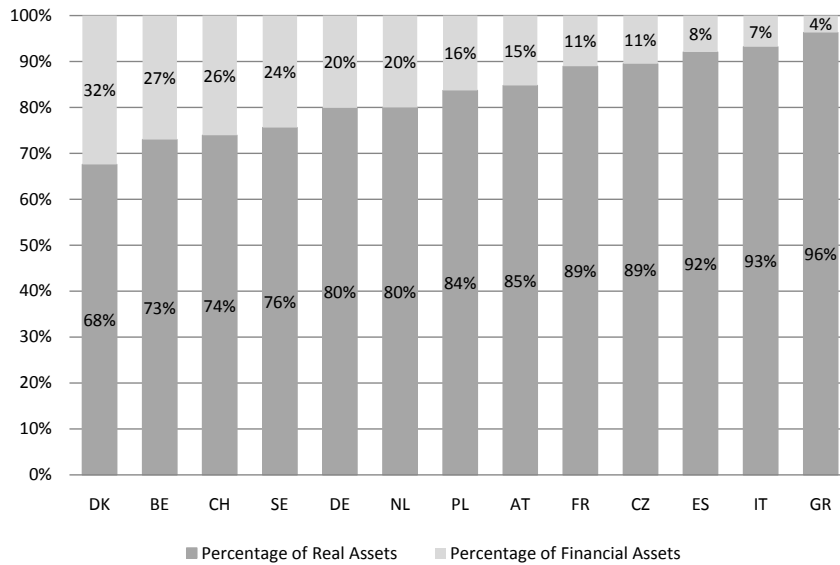
B   Appendix

Figure 3: Percentage of households with zero or negative net worth over countries (in 1.000 Euros, ppp-adjusted, weighted)

SHARE Wave 2, release 2.5.0, data weighted, own calculations.
All analyses based on 5 sets of imputations. For abbreviations, see Table 1.

C   Appendix

Figure 4: Composition of net worth across countries (in 1.000 Euros, ppp-adjusted, weighted)

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