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Bequests and the Accumulation of Wealth in the Eurozone*

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Abstract

This paper empirically compares the contribution of the two major wealth accumulation factors – earned income and inheritances – to the net wealth position of households in the Eurozone. The elasticities of both wealth sources differ considerably across countries and are overly non-linear. Depending on the position in the wealth distribution, an increase of one percentile in the income distribution corresponds to 0.1-0.6 percentiles in the net wealth distribution. We find substantially stronger effects for inheritances vis-á-vis income. In Greece, Portugal, and Austria, households have to climb around three percentiles in the income distribution to compensate a one percentile increase in the inheritance distribution. The findings clearly suggest that bequests play a stronger role in wealth accumulation than earned income.

Keywords: Wealth distribution, household structure
JEL Classification: C21, D31

1 Introduction

In his path-breaking book "Capital in the Twenty-First Century", Piketty (2014) recites Balzac's novel *Le Père Goriot* and its penniless main character Eugéne de Rastignac, who is pondering how to become affluent. His shady companion Vautrin explains unmistakably that hard work is not paying off and marrying rich is the key. While this anecdote mirrors the social relations in the early nineteenth century in France, the quantitative importance of inherited wealth to the

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accumulation of life-cycle wealth has also been intensively discussed in past decades (Kotlikoff and Summers, 1981; Modigliani, 1988; Kotlikoff, 1988; Kessler and Masson, 1989; Gale and Scholz, 1994; Piketty et al., 2014). In essence, the question is whether bequests or self-made income facilitate social advancement to the top in the wealth distribution.

In modern western societies the opinion prevails that the willingness to work hard paves the way for material well-being and upward social mobility. In contrast, the role of inter vivos gifts and bequests for wealth accumulation is a controversial topic in the political discourse and also in social sciences. Empirical evidence shows that limited social mobility is strongly connected to wealth transfers between generations and there is a manifest nexus between social mobility and actual economic inequality (Corak, 2013; Clark and Cummins, 2015). This line of argument concludes that current inequalities in income and wealth transform into unequal intergenerational wealth transfers and consequently lead to constrained social mobility. In the same vein, recent research shows that inheritances add a substantial source of wealth heterogeneity among households even with similar lifetime earnings (De Nardi and Yang, 2014). However, there is also recent evidence from Scandinavian countries, which suggests that inheritances might reduce overall wealth inequality, although absolute values of inherited wealth are strongly correlated with pre-bequest wealth of heirs. This is due to the greater relative importance of bequests in lower parts of the distribution (Adermon et al., 2015; Elinder et al., 2015; Boserup et al., forthcoming 2016).

The role of wealth transfers becomes all the more important given the substantial rise in wealth concentration over the last decades (Piketty and Zucman, 2014; Saez and Zucman, 2016). Rising wealth inequality appears to correspond with imbalances of economic power, social privileges and influences on political decision processes to maintain social inequalities (Rehm and Schnetzer, 2015). Thus, the link between a skewed distribution of intergenerational wealth transfers and wealth concentration may entail considerable disparities in social, economic and political opportunities. The literature provides inconclusive results whether earnings or inheritances have a greater effect on wealth inequality since it varies from country to country (Semyonov and Lewin-Epstein, 2013; Arrondel et al., 2014). A closer look on the Eurozone countries shows that dispersion in bequests and inter vivos transfers have a stronger impact on wealth inequality than income differences (Leitner, 2016). Thus, the contributions to wealth accumulation from bequests or earnings is decisive for social cohesion and perceptions of fairness.

Households mainly acquire wealth from two sources: earned income (wages and earnings from self-employment) and inheritances (Gale and Scholz, 1994; Piketty et al., 2014). Both income channels allow for an increase in the relative wealth position conditional on the size of either component and the underlying circumstances of wealth accumulation. The former condition is trivial in its nature but subject to a number of constraints which may influence the magnitude of the contribution to net worth. These circumstances include a variety of socio-economic parameters, reaching from the arrangement of tax and welfare systems to cultural aspects shaping consumption and savings patterns (Fessler and Schürz, 2015). In addition to this aspect, earnings uncertainty may also have a significant impact upon the savings pattern over the lifecycle (Irvine and Wang,

2001).

Analyzing transfer wealth entails the challenge of conceptually defining transfers versus self-made wealth, which also caused a lively debate between Kotlikoff (1988) and Modigliani (1988). There is no consensus on whether returns to inherited wealth are counted as transfer wealth or as life-cycle wealth. In addition, inheritances and inter vivos gifts normally do not cover implicit gifts like appointing an offspring as an equal partner in a lucrative family business or paying the costs for college education. Moreover, meeting the costs of food and clothing for dependents is not considered a gift but as provisioning for the family.

In this paper, we pursue an econometric approach to assess the relative role of bequests and income for private household wealth. With harmonized survey data, we calculate cross-country estimates for the impact of inheritances on the likelihood of being at the top of the Eurozone wealth distribution. Similar calculations have been carried out by Fessler and Schürz (2015), however, merely by means of OLS estimations. We extend existing research using quantile regressions to calculate non-linear elasticities between the distribution of earned income (wages and earnings from self-employment) and inheritances, and the distribution of net household wealth. Section 2 therefore provides our methodological approach of multivariate quantile regressions. In section 3, we describe the survey data and address considerations concerning cross-country comparability of wealth data. We then present the results in section 4. First, we show how country shares in the Eurozone top wealth percentiles are associated with the receipt of bequests. Thereafter, the results of the quantile regressions allow to compare the influence of income versus inheritances on climbing in the net wealth distribution. Finally, section 5 draws some concluding remarks.

2 Methodological Approach: Quantile Regression

Linear regressions are useful to gain first insights into the data and the relationships between variables. Especially with wealth and income data these are, however, only rough approximations to the truth. This is due to the fact that the conditional mean is a bad approximation for very skewed distributions such as for wealth and income. One method commonly applied to model such responses is quantile regression, which was originally used as a robust method of estimation when the normality assumption was not strictly satisfied. This will especially be the case if *unobservable constituents* (Koenker and Bassett, 1978) influence the conditional distribution of the variable regressed on. In wealth regressions, this can be considered a severe problem, since the additional information included in micro datasets is often limited. This is true for, e.g., abstract concepts like power-relations, which arguably vary along the distribution and are hardly captured by additional regressors.

Quantile regression limits the influence of these effects since it regresses on the mean but conditionally on a given quantile, so that outliers have little effect on the estimate. In the context of wealth analyses, we apply this method to regress certain individual- and household-level characteristics on quantiles of the net wealth cumulative distribution function (CDF). Let Y be a

random variable with the cumulative distribution function,

$$F(y) = P(Y \leq y)$$

then we can write the quantile function for a quantile $\tau \in [0, 1]$ as an inverse function,

$$Q(\tau) = F^{-1}(\tau) = \inf(y : F(y) \geq \tau).$$

As proposed by Koenker and Bassett (1978), the τth quantile of such a random sample $\{y_1, y_2, ..., y_n\}$ can be calculated as

$$\min_{\xi \in \Re} \sum_{i=1}^{n} \rho_\tau(y_i - \xi) \tag{1}$$

where $\rho_\tau(\cdot)$ is a so-called *check function*. This function is based on the absolute deviations of the residuals $|y_i - \xi|$ which are weighted by τ if the term is positive and by $(1-\tau)$ if it is negative. Hence $\rho_\tau = \tau \cdot I(y_i > \xi) + (1 - \tau) \cdot I(y_i < \xi)$. Analogue to the estimation of the unconditional mean for a random sample which minimizes the sum of squared residuals, this applies to the linear conditional mean function $E(Y|X = x) = x'\beta$ by solving

$$\hat{\beta} = \arg\min_{\beta \in \Re^p} \sum_{i=1}^{n} (y_i - x_i'\beta)^2. \tag{2}$$

Given the linear conditional quantile function $Q(\tau|X = x) = x_i'\beta(\tau)$, we estimate

$$\hat{\beta}(\tau) = \arg\min_{\beta \in \Re^p} \sum_{i=1}^{n} \rho_\tau(y_i - x_i'\beta). \tag{3}$$

This implies that the estimator is a general case of Least Absolute Deviations estimator (LAD), which regresses on the median, shifted by a factor ρ_τ.

3 The Household Finance and Consumption Survey

Research on wealth inequality in the Eurozone has gained momentum with the first wave of the Household Finance and Consumption Survey (HFCS) which was conducted in 2010. The rich data set covers 15 countries in the euro area and provides information on the balance sheets of private households. The total sample includes $62,521$ representative observations which are (methodically) comparable across countries. Additionally to a broad range of household financial variables, the data set also provides socio-economic information on an individual level such as income, social status, age, and education. Detailed information on the complex survey design and the data collection process can be found in Eurosystem Household Finance and Consumption

Network (2013).

While this data source provides a unique opportunity for research on wealth inequality and inheritances in the euro area, two major shortcomings need to be addressed in cross-country comparisons. First, variations in total wealth and its structure may be subject to differing institutional arrangements in each country. Social norms, welfare regimes, and the public provision of goods may influence the necessity for households to accumulate wealth. This issue is especially relevant for the household structure which is known to differ notably between continental and southern European countries (Fessler and Schürz, 2013). Second, different sampling strategies in the participating countries may lead to varying degrees of coverage, especially of high-wealth individuals. While this issue can be addressed through over-sampling of this particular group, such a strategy is not feasible for every country: there is no over-sampling for Austria, Malta, the Netherlands, Slovakia and Slovenia in the HFCS data. Therefore, the gap between the top in the actual wealth distribution and its representation in the survey may vary significantly by country (Tiefensee and Grabka, 2014).

The latter issue has been addressed in Vermeulen (2014) and can in general be mitigated by using imputation methods. For this study such an approach is, however, not feasible. While household wealth can be imputed using Pareto methods (Eckerstorfer et al., 2015; Bach et al., 2015), we would also need to consider a number of other household variables and individual characteristics that cannot be easily assigned. A sensible imputation approach would therefore need to impute all these variables in a multivariate way which is not the focus of this paper.

The HFCS provides total annual gross income for households. We make use of the household earned income which includes remuneration of employees, self-employment incomes, and income from pensions. Inheritances and substantial gifts are already collected on the household level in the HFCS. This variable captures the monetary value of all inheritances and gifts ever received by the household members, including money, dwellings, land, business, life insurances, and other valuables. It is worth noting that we do not account for implicit gifts as mentioned above (Kotlikoff, 1988). Transfer wealth should thus be regarded as seriously downward biased. For the analysis of the wealth distribution, we use total household net wealth (gross wealth less liabilities), including tangibles (main residence, vehicles, company stakes, etc.) and financial assets (savings, bonds, shares, etc.).

Since wealth data is subject to differential non-response (Vermeulen, 2014), the HFCS makes use of multiple imputations. The imputation of missing valid information on household wealth closely follows the guidelines provided by Little and Rubin (2002). To account for the inherent uncertainty of the imputation procedure, five values are chosen to replace the missing information, based on different random draws from the joint distribution of the collected data. Thereby, it is possible to partly reflect the uncertainty of the imputation process. All figures and calculations reported in this paper were derived with the use of 100 complex survey weights, all five multiple imputations, and the application of Rubin's rule.

Table 1: Descriptive Statistics

	Net wealth			Explanatories							
	P05	P50	P95	Income	Bequests		Female	Age	Tert. edu.	Retiree	Entrep.
	k€	k€	k€	μ (k€)	%	μ (k€)	%	μ	%	%	%
AT	-0.5	76.4	934.2	39.3	35.4	268.5	55.8	51.0	13.6	35.5	9.4
BE	0.3	206.7	1077.0	43.1	35.1	253.8	46.4	52.2	37.8	32.5	4.6
DE	-1.9	51.3	657.4	37.5	33.9	254.3	49.0	51.9	29.2	29.7	6.8
ES	0.2	182.5	878.3	27.5	30.4	356.2	49.4	52.7	25.7	20.7	8.3
FR	0.4	115.7	777.9	29.5	39.8	263.3	39.2	52.1	23.4	34.2	7.9
GR	0.0	102.0	471.1	26.4	30.5	95.4	59.3	49.9	20.3	27.9	14.8
NL	-36.1	103.1	579.8	40.6	8.4	107.7	36.7	51.9	33.6	21.3	3.9
PT	0.0	75.1	481.6	18.6	29.5	74.4	29.7	55.1	9.1	36.2	10.4
SI	0.2	99.6	432.2	20.9	40.2	186.6	58.2	51.2	22.5	40.6	3.5
SK	1.8	61.1	207.8	13.0	38.3	45.5	55.4	48.1	16.3	26.1	7.3

This table shows descriptive statistics of our dependent variable, ie. selected percentiles of net household wealth, and of our explanatory variables, ie. mean of households earned income, proportion of heir households, mean of received inheritances (capitalized with 3%), and several socioeconomic characteristics of the reference person (gender, age, education, labor status). Source: HFCS 2010, own calculations.

For this study, we utilize the whole data set excluding observations for Cyprus, Finland, Italy, Luxembourg, and Malta. These countries were either lacking information on the sex or age of household members apart from the reference person (CY and MT), did not provide data on intergenerational wealth transfers (FI & IT), or only offer anonymized information for a large number of observations (i.e, missing information on gender of additional household members for LU). Since this information is indispensable for our method to correct for differing household structures, these five countries were not included in our analysis. This leaves us with a reduced sample of $41,501$ household observations from Austria, Belgium, Germany, Spain, France, Greece, Netherlands, Portugal, Slovenia and Slovakia, which represent roughly 80% ($111,325,857$) of European households.

It has been argued that cross-country comparability of wealth data may be limited when survey designs differ between countries (Tiefensee and Grabka, 2014) or when the institutional setting influences population and household structures (Bover, 2010; Fessler and Schürz, 2013). An innovative approach to control for varying household structures has been presented in Fessler et al. (2014). The authors argue that per-country household wealth should be standardized using a counterfactual distribution based on the overall frequency of a single household type in the survey. This correction therefore purges wealth differences that arise from differing household structure. Our analysis adapts the proposed methodology and corrects the HFCS data for common household types with up to four members each. A sensitivity analysis reveals that this is a reasonable value, since it allows a large enough number of different households as controls on the one hand, but does not use very sparse types for the correction on the other hand.

Table 1 provides descriptive statistics for the countries and variables in use. First of all, the

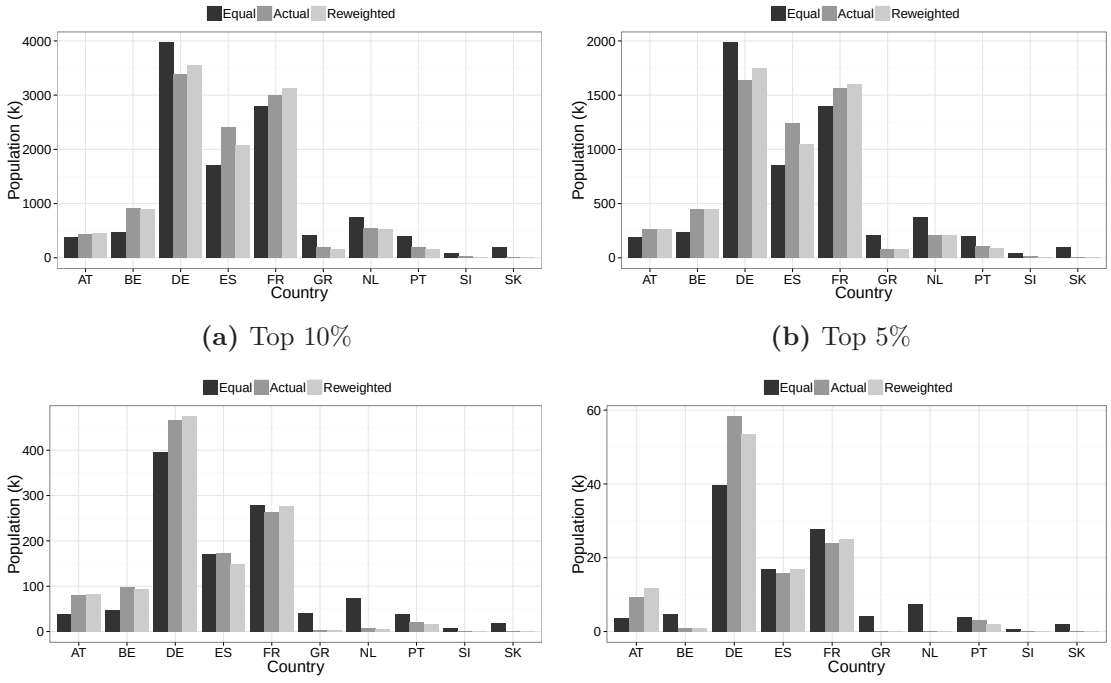
differences in the median wealth across the Eurozone countries are remarkable. While median net wealth in Germany amounts to slightly above €50,000, it is roughly €180,000 in Spain. However, the survey period in Spain was around 2008 when the real estate bubble boosted residential wealth, while most other countries started gathering data in 2010. There are also large differences in the average household income from employment and pensions. Slovakia exhibits the smallest value with an annual income of €13,000 while Belgium displays the highest income (€43,100). Concerning the share of households that have already inherited, the participation rates range between 29.5% in Portugal and 40.2% in Slovenia. The Netherlands seems to be an outlier with an exceptionally low rate of heirs (8.4%). It is worth noting that the Netherlands is the only country in the HFCS survey that conducted computer-assisted web interviews (CAWI) instead of personal interviews. This could explain part of the significant differences compared to the other countries, since information on private wealth collected with personal interviews is supposed to be more reliable than web inquiries. For instance, interviewers may persuade respondents to participate in the survey, increase response rates, and reduce the risk of response bias (Eurosystem Household Finance and Consumption Network, 2013). As already mentioned, the remaining socio-economic variables are based on the information of the reference persons.

As we are interested in the processes behind climbing the ladder to the top of the wealth distribution, we examine the households in the top percentiles by country in Figure 1. A priori, one would expect countries to be represented in the top wealth shares according to their population weights. Accordingly, a country with a population share of 20% in the total Eurozone population should also represent 20% in the top wealth shares. This is, however, not the case for the Eurozone, as Figure 1a depicts. Based on the roughly 111 million households in our sample, this figure displays the country-specific composition of the 11.1 million households in the Top 10% of the Eurozone net wealth distribution. The black bars show the hypothetical proportion of countries that is solely based on their population share, while the dark grey bars represent their actual shares in the high-wealth households. This simple illustration shows that conditional on the country of origin, rich countries like Germany seem to be underrepresented in the Top 10% (compared to their actual population share), while others are overrepresented (like Belgium, France, Spain). As mentioned before, this does not account for a number of factors which may influence cross-country comparisons, the most important being household structure. We correct for household heterogeneity by calibrating the survey weights, so that the households of each country are reweighted to represent the average household composition in the sample, which leads to the results displayed by the light grey bars. Compared to the *actual* scenario, the reweighting procedure results in substantial changes, especially for countries whose household structure is far off from the sample average. This is especially evident for Spain, and to a lesser extent also for Germany and France, whose respective household compositions seem to be very different from the sample average.

Figures 1b to 1d provide the same illustration for even higher top wealth shares. Comparing these figures, the most remarkable trend is probably given by Germany. As mentioned, the largest

Eurozone country is underrepresented by one tenth of its population in the Top 10%, but this is also true for the Top 5% even when accounting for differences in the household composition. The picture changes, when looking at the the Top 1% where Germany is overrepresented by a factor of 1.2, and particularly for the Top 0.1% where German households have a 35% higher occurrence compared to what their population share would imply.

A mirrored image of this process can be observed for Spain and France which are overrepresented by a factor of 1.22 and 1.12 in the Top 10% respectively (after reweighting). This gap diminishes in the Top 1%, where France is represented closely around its population share and Spain is already down 12% of the equal-occurrence scenario. Many smaller countries — Greece, Netherlands, Slovenia, Slovakia — disappear altogether starting from Top 1%. The results for Austria are striking, insofar as the catching-up process along this analysis is the most drastic. Already overrepresented in the Top 10% by a factor of 1.22, the share increases significantly to reach a factor of 2.4 in the Top 1% and an even higher value of 3.2 for the Top 0.1% compared to the Austrian population share in the Eurozone.



(a) Top 10%

(b) Top 5%

(c) Top 1%

(d) Top 0.1%

Figure 1: Country Representation: Population, Actual and Reweighted Share

4 Results

Our empirical application focuses on the propensity to *get rich* through the two main drivers of wealth accumulation: self-made income and inheritances. We have particular interest in the country-specific differences of the marginal contributions to household wealth in the Eurozone. Such differences could be motivated by a number of institutional settings, for example differing tax levels on both income sources or labor market characteristics and housing preferences which may facilitate saving and thus wealth accumulation.

As the above-mentioned literature has shown, inheritances can be a significant component of wealth accrual. Our empirical strategy will therefore rest on two pillars. First, we estimate logit regressions using country fixed-effects and dummies which indicate whether a household has received inheritances. This allows us to depict the overall importance of inheritances, for now leaving aside the issue that regressions on the mean may be a bad approximation to the overall distribution of net wealth. Second, we expand our regression design and estimate structural quantile regressions. These are conducted separately for each country with further control variables for other household characteristics. This method especially emphasizes the differing role of income and inheritances at various points of the distribution.

4.1 Disproportionately Rich: Logit Evidence

Using logit regressions we estimate a model of the form

$$I_{\text{topX}} = \beta_0 + \beta_1 \text{Country} + \beta_2 \text{Bequest}{>}0 \ , \tag{4}$$

where an indicator variable I_{topX}, which takes on the value of zero and one if a household belongs to the Top X% of the Eurozone's wealth distribution, is related to country dummies and an indicator that captures whether the household has received an inheritance. Based on these outcomes we derive the estimated share of households in the Top X% as predictions based on our logit regression and compare it to an equal representation of all countries at the top end of the wealth distribution.

Figure 2 presents the results for this exercise for the Top 10%, Top 5% and Top 1% of the Eurozone net wealth distribution. The black line of unity marks the position where the number of households in the top shares corresponds exactly to a country's population share in the Eurozone. Values above the black line denote overrepresentation while values below the black line display countries which are underrepresented in the top wealth shares. Stars indicate the actual estimated proportion, unconditional on having received an inheritance. For example, Germany is slightly underrepresented in the Top 10% (left panel), with an estimated value of 0.9 times its population share. Even in the Top 5%, there are still less German households than we would expect due to the population share, however the picture changes for the Top 1%, where German households are overrepresented.

These results of the logit estimation correspond to the light grey bars in Figure 1. Many countries are underrepresented – Greece, Netherlands, Portugal – or even represented not at all the further we move up the distributional ladder. Almost no Greek and Slovenian households are among the top wealthy, and there is not a single Slovakian household in the Top 1% share.

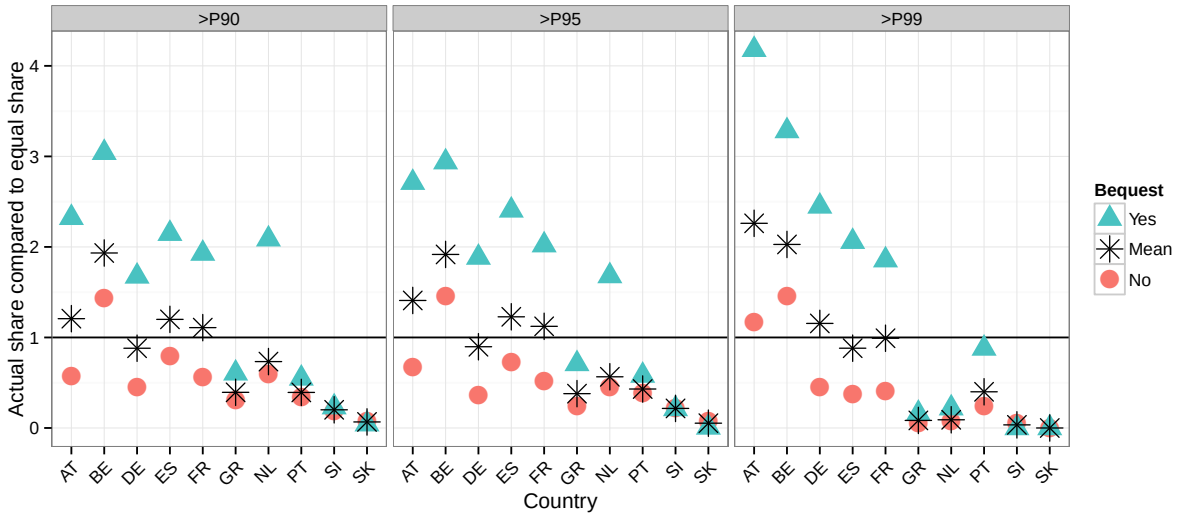


Figure 2: Logit Regression with Country and Inheritance Effects

To better understand the processes at work here, we further include a dummy variable indicating whether a household has inherited. Again, the findings are reported in Figure 2. Triangles depict the share of households that have inherited and circles indicate the proportion of non-heir households. A first observation follows from the descriptive statistics in Table 1: only a minority of households have already inherited at the time of the survey interview, so that the unconditional estimate is closer to the estimate for non-heir households for most countries. Furthermore, the results indicate that inheritances significantly improve a household's position in the wealth distribution. While households from Austria, Germany, Spain, and France are on average not or only slightly overrepresented in the Top 10%, this picture drastically changes for heir households. In most of these cases, the unconditional effect is a mixture of non-heir households which seem to appear more sparsely than an equal share would suggest, and heir households that are overrepresented by factors of two to three.

Additionally, this picture intensifies the further we move up in the distribution. Austrian households, which are the most dramatic case, increase in overrepresentation along the three top wealth shares. However, this effect is mainly driven by heir households with factors ranging from 2 to 4 when moving from the top decile to the top percentile. A similar point can be made for other countries such as Belgium, Germany, Spain, and France. Interestingly, Portuguese heir households can be found to be exactly their population share in the Top 1%, while their non-heir counterparts are consistently underrepresented.

4.2 Getting Rich, Percentile by Percentile

The results presented above provide useful insights into the effects of inheritances on the propensity of a household to be among the richest European households. An in-depth analysis of the factors that lead to a higher position in the net wealth distribution takes a more holistic view on the topic. For this reason, we explicitly model the whole distribution in order to consider varying effects of income, bequests, and other covariates along the distribution. Previous studies have shown that such an approach needs to incorporate the non-linear nature of wealth data in the modelling procedure (Humer et al., 2015).

In this setup, we utilize quantile regressions and estimate two equations of the form,

$$\begin{aligned} \text{CDF}_{netwealth} = \beta_0 + \beta_1 \text{Bequest} + \beta_2 \text{CDF}_{Income} + \beta_3 \text{Gender} + \beta_4 \text{Age} + \beta_5 \text{Age}^2 \\ + \beta_5 \text{Tertiary Education} + \beta_7 \text{Retiree} + \beta_8 \text{Entrepreneur} + \varepsilon \end{aligned} \tag{5}$$

with

$$\text{Bequest} = \begin{cases} \text{Dummy}_{Bequest} & \text{(5a)} \\ \text{CDF}_{Bequest} & \text{(5b)} \end{cases}$$

We are primarily interested in the effect of bequests and self-made income on a household's position in the net wealth distribution, measured by the coefficients β_1 and β_2. With regard to inheritances, we estimate one specification with a dummy variable for the receipt of bequests (equation 5a) and one with the household's position in the distribution of bequests (equation 5b). The latter is based on the capitalized value of inheritances assuming a fixed interest rate of 3% per annum. As a sensitivity check, we also varied the rate between 1% and 5% without causing substantial changes to our findings. These results are available upon request. Furthermore, both specifications control for a number of standard socio-economic characteristics for each household, which may affect the wealth position apart from income and inheritances. Since socio-economic variables are collected on an individual level in the HFCS, we assign the values of the survey reference persons to the households. These are gender, age, and tertiary education. We further include a quadratic age effect to test the permanent income hypothesis. Finally, our specification tries to capture two very distinct groups in the data, retirees and entrepreneurs. Since the specific coefficient estimates of these controls are not at the center of our analysis, we refrain from interpreting them in detail and refer the interested reader to tables A.1 and A.2 in the Appendix. In short, conditionally on being statistically significant all estimates match the expected sign.

The estimation procedure follows a split-sample approach where we estimate individual regressions for each country. This approach facilitates the comparison of coefficients between countries, since we avoid the need for purchasing-power corrections for wealth, income or inheritances and

instead only rely on the internal (within-country) consistency of these variables. Furthermore, the focus on the CDF position for wealth, income and inheritances simplifies the interpretation of results, especially when addressing the relation of these factors to each other. Following the empirical literature, we exclude the bottom and top 1% to make our analysis more robust (Koenker, 2005).

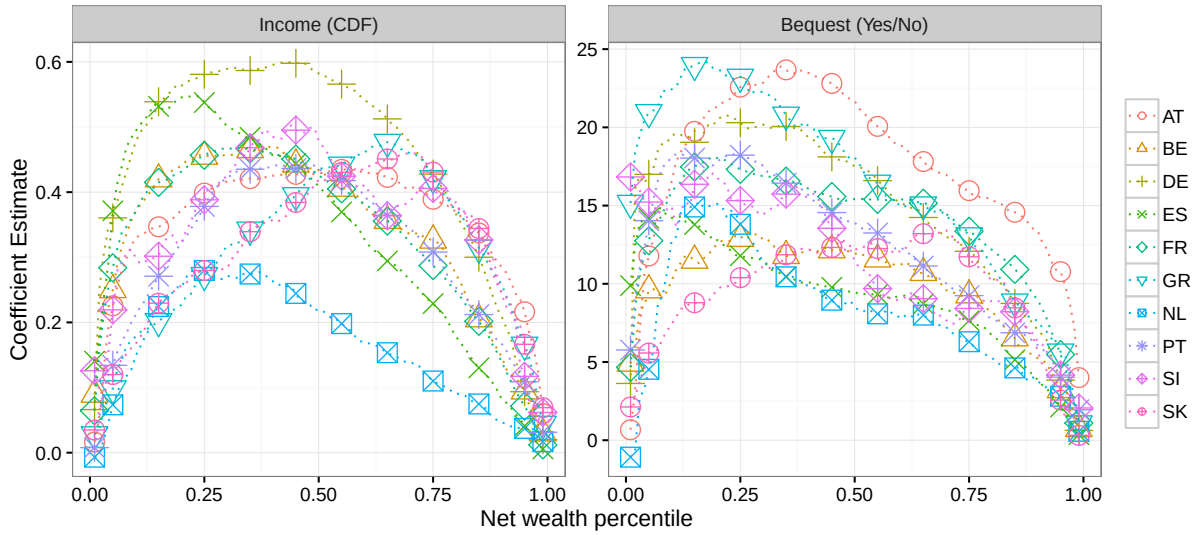


Figure 3: Quantile Regression: Income CDF and Bequest Dummy

Figure 3 illustrates the parameters of interest of specification 5a, ie. the income CDF and the inheritance dummy across the distribution for all countries in our sample. Table A.1 in the Appendix provides the regression results for all variables for the baseline OLS estimation and selected quantiles of the quantile regression approach. With regard to the income distribution, the rise of one percentile in the income distribution is associated with OLS estimates of mostly around 0.4 percentiles in the wealth CDF (with the exception of the Netherlands), which is similar to the results of Fessler and Schürz (2015). The quantile regression approach reveals gains between 0.1 and 0.6 percentiles in the net wealth distribution. We observe an inverted "U" shape pattern which is consistent in all countries, however, the position and the shape of the "U" vary. This shape indicates that earned income contributes most to wealth accumulation in the broad middle of the net wealth distribution.

The results in Table A.1 reveal that the maximum contribution of income to the wealth position is reached in different quantiles across countries. While some countries, like Germany, Austria, Portugal or Slovenia reach the maximum around the median, we also find clearly diverging patterns. A group of countries, namely the Netherlands, France, and Spain peaks around the bottom quartile of the distribution, so that income gains in the lower part of the distribution are connected with the highest gains in net wealth (in terms of the CDF). Contrary to this picture, some countries reach their highest contribution in the upper half of the distribution. Notably Greece and Slovakia approach the highest estimate of above 0.4 around the 75^{th} percentile. Interestingly,

the estimates for the Netherlands are consistently lower than for all other countries and partly even insignificant.

Concerning the bequest dummy variable, the effect on the net wealth position of households is considerably larger. The estimates almost reach values of a 25 percentile gain for heir households in Greece and Austria. As can be seen, the influence of inheritances varies considerable between countries and net wealth percentiles. For the bottom quartile, the effect of bequests ranges from roughly 10 to 23 percentiles in the net wealth distribution, in the top quartile the spread is 5 to 15 percentiles. Austria displays the strongest positive coefficients for the upper 70% of the distribution, thus receiving bequests is most beneficial for social advancement in Austria compared to other Eurozone countries.

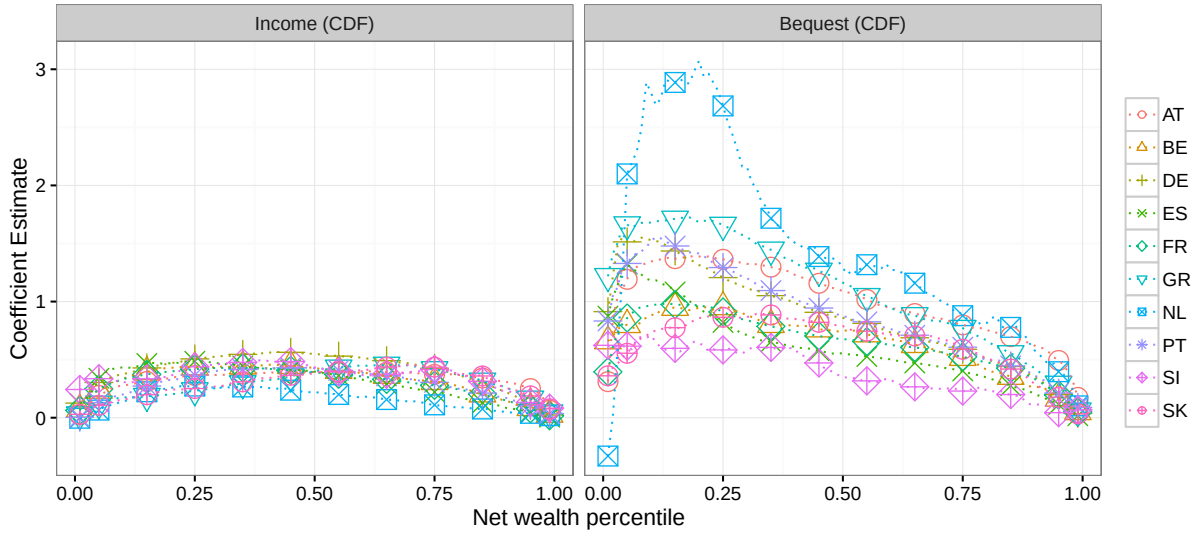


Figure 4: Quantile Regression: Income CDF and Bequest CDF

Figure 4 presents results for specification 5b, where both income and bequests are included in terms of their CDF. For better comparability, the scale of the ordinate in both panels correspond in this graph. Again, the coefficients of the income CDF show the inverted "U" shape and are in general robust across both specifications, as can be seen in Table A.2.

However, the effect of the inheritance CDF on the net wealth position shows a different pattern. Overall we can note, that climbing one percentile in the distribution of inheritances contributes significantly more to household wealth than gaining one percentile in the income CDF. At the median, the coefficients for the income CDF range between 0.22 and 0.55, the significant estimates for the bequest CDF vary between 0.55 and 1.16 percentiles in the net wealth distribution. Furthermore, it can be observed that the estimated coefficients in almost all countries display a decreasing trend, meaning that inheritances matter more at the bottom end of the net wealth distribution. Some countries showing higher contributions of income are at the lower end of the bequest estimates, like Slovenia and Spain. Others, like the Netherlands, Greece, Austria, and Portugal, continuously outperform other countries with regard to the contribution of inheritances

to net wealth.

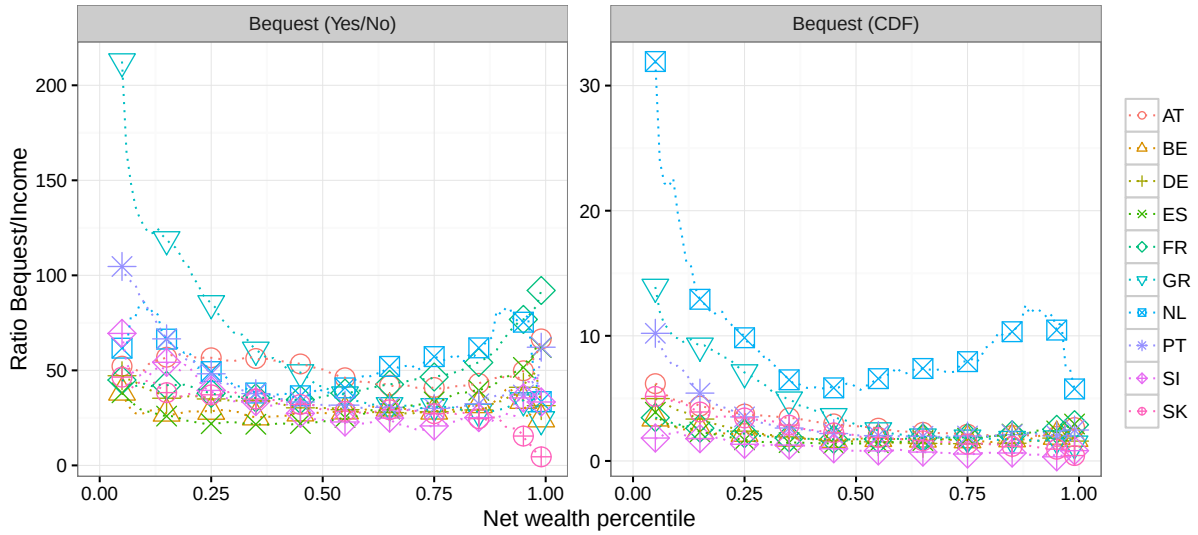


Figure 5: Quantile Regression: Ratio of Bequest to Income CDF Percentile Gain

The nature of the regression specifications allows us to easily compare the estimates for income and inheritances. The left panel of Figure 5 shows the relevance of inheritances as compared with the earned income. The values in this figure indicate how many percentiles a household would have to climb in the income CDF in order to compensate for the receipt of bequests. Greece exhibits the most extreme numbers, particularly in the lower part of the wealth distribution: households at the bottom would need to jump more than 200 percentiles in the income distribution to compensate an inheritance (see also Table A.3). In most countries, the ratios level off at coefficient ratios of well below 50 in the middle of the distribution. However, a value of 50 still means that a household would need to move up half of the income distribution to make up for the receipt of a bequest.

In the right panel of Figure 5, we compare the coefficients of income and bequests both expressed in terms of the CDF. Since both estimates return the change in net wealth quantiles given a change in the CDF position, the relative representation provides insights into how many income percentiles a household needs to compensate for a one percentile increase in the inheritance CDF. The figure therefore gives the relative importance of income and inheritances in each country based on a common measurement scale. A value of one would therefore mean that bequests and earned income have an equally strong effect on the net wealth position, a value larger than one again attributes more importance to inheritances.

Below the 75^{th} percentile, these ratios show a declining trend in the relative importance of inheritances versus earnings on a household's position in the net wealth distribution for most countries. Slightly above the net wealth median, higher inheritances can be more easily compensated by higher incomes, since both have similar effects on the wealth CDF. However, as we approach the top of distribution, the relative importance of bequests gains momentum again. This is a major advantage of our methodological approach, as compared to the study of Fessler

and Schürz (2015): Only by relaxing the assumption of parameter homogeneity across wealth percentiles, we are able to identify these diverse trends in the relative importance of bequests and income at different points in the wealth distribution.

In the lower part of the distribution, the countries with the highest ratios are the Netherlands (which arguably may be treated as an outlier in the analysis), Greece and Portugal, followed by Austria. In these countries the wealth position increase from inheritances is much stronger than that of an improvement of the income position. This heterogeneity in the ratio decreases (with the exception of the Netherlands) along the distribution, so that starting from the median there are only small between-country differences. Summarizing, for most countries the ratio between the inheritance CDF and the income CDF gains is well above one throughout the distribution. However, there are two exceptions. For Slovakia the ratio approaches unity in the top decile, in Slovenia the ratio is already below one in the 44^{th} percentile, meaning that an increase in income from employment is even more important than an increase in bequests. However, the Eastern European countries have developed market-based economies only rather recently as compared to other countries in the sample. Therefore, the very distinct accumulation patterns we find for these countries have to be interpreted cautiously.

5 Conclusion

This paper analyzes the role of inheritances and earned income for the accumulation of wealth in the Eurozone. For a consistent analysis, HFCS data are adjusted for country-specific differences in the household structure and we control for socio-economic idiosyncrasies in the estimations. We use logit and quantile regression specifications to single out the effects of bequests and income on the households' relative position in the net wealth distribution. With regard to our results, we are able to provide insights that address following questions: Which households are at the top of the Eurozone wealth distribution? How do inheritances affect the probability of getting to the top? What is the role of bequests and income from employment for wealth accumulation? How do these processes differ between the Eurozone countries?

Answering these research questions, we find that households from Austria, Belgium, and Germany are overrepresented in the top 1% of the Eurozone net wealth distribution according to their actual population share. While Spain and France are roughly represented closely around their population shares, smaller countries like Greece, Slovenia, and Slovakia are practically non-existent in the richest percentile. This implies that countries are by no means represented according to their population share. And even if a country is not overrepresented as a whole, this is only true on average but mostly not for heir households.

Furthermore, inheritances significantly increase the chance of ending up in the top wealth shares. While some countries are already overrepresented at the top, heir households are even more so by factors two to four. In the top 1%, Austrian heir households appear four times more often than their population share would suggest. Similarly, heir households from Belgium, Germany, Spain,

and France are significantly overrepresented compared to their non-heir counterparts. These results give a sense of the importance of bequests for wealth accumulation and the chances of being admitted into the circle of the rich.

We extend existing research with the application of quantile regressions to investigate whether the importance of income and inheritances differs along the wealth distribution. The results suggest that inheritances play a different role for building up wealth in top percentiles compared to the bottom of the distribution. While a gain of one percentile in the income distribution on average means an increase of roughly 0.4 percentiles in the net wealth distribution across countries, quantile regressions show the non-linear behaviour of this relation. Depending on the position in the wealth distribution, the contribution of income ranges between 0.1 and 0.6 percentiles, whereas receiving an inheritance means as much as a 20 percentile hike. Both income and inheritances follow a inverted "U" shape pattern that differs in skewness and magnitude across countries.

We employ two measures for bequests, a dichotomous bequest indicator and the relative position in the inheritance distribution, which may serve as robustness check. Our particular interest lies in the relative importance of bequests and income from employment. By relating the contribution estimates for income CDF and inheritances CDF to each other, we assess the relative importance of both factors in each country. As it turns out, the differences between countries are manifest. In Greece, Portugal, and Austria, households have to climb around three percentiles in the income distribution to compensate a one percentile increase in the inheritance distribution. In Germany, this value is 2.4. In Slovakia (1.5) and Slovenia (1.3) the estimations are much lower and in the topmost quantiles, income from employment is even more important than bequests.

The findings of this paper emphasize the outstanding role of inheritances for the accumulation of wealth and the positioning within the net wealth distribution of households. These results correspond with other research focusing on the strong contribution of bequests to total wealth inequality (Leitner, 2016).

Eurozone cross-country analyses have been made possible by the harmonized HFCS survey. The unique opportunity to investigate wealth-related questions will be improved with the second survey wave in 2016. Future research therefore may be able to check our cross-country results for consistency over time. However, following Piketty (2014), inheritances will be even more important than earned income for wealth accumulation in the future. This will also pose a major challenge for economic policy, since self-made wealth is generally legitimized while transfer wealth is often perceived as an obstacle for equality of opportunity.

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Appendix A: Quantile Regressions

Table A.1: Quantile Regression Coefficients — Bequest (Yes/No)

	AT	BE	DE	ES	FR	GR	NL	PT	SI	SK
Income (CDF)										
OLS	**0.37**	**0.37**	**0.48**	**0.40**	**0.38**	**0.36**	**0.15**	**0.34**	**0.43**	**0.36**
P0.01	0.02	*0.09*	0.07	**0.14**	*0.06*	0.03	-0.01	0.01	*0.13*	*0.03*
P0.05	**0.23**	**0.25**	**0.36**	**0.37**	**0.28**	**0.10**	0.07	**0.13**	*0.22*	**0.12**
P0.25	**0.40**	**0.45**	**0.58**	**0.54**	**0.46**	**0.27**	**0.28**	**0.38**	**0.39**	**0.28**
P0.50	**0.43**	**0.43**	**0.58**	**0.41**	**0.43**	**0.43**	**0.22**	**0.44**	**0.48**	**0.42**
P0.75	**0.39**	**0.33**	**0.43**	**0.23**	**0.29**	**0.42**	**0.11**	**0.31**	**0.41**	**0.43**
P0.95	**0.22**	**0.09**	**0.09**	**0.04**	**0.07**	**0.17**	0.04	**0.11**	0.12	**0.17**
P0.99	0.06	*0.03*	0.02	*0.01*	*0.01*	*0.04*	0.02	*0.03*	0.06	**0.07**
Bequest (Yes/No)										
OLS	**18.18**	**10.23**	**18.88**	**11.83**	**13.32**	**15.19**	**9.72**	**13.12**	**14.49**	**6.64**
P0.01	0.67	*4.91*	3.63	**9.89**	**4.66**	**15.16**	-1.08	**5.77**	**16.83**	*2.13*
P0.05	**11.78**	**9.60**	**17.00**	**14.19**	**12.75**	**20.96**	4.53	**14.03**	**15.23**	**5.58**
P0.25	**22.57**	**12.88**	**20.30**	**11.79**	**17.31**	**23.23**	*13.81*	**18.22**	**15.32**	**10.39**
P0.50	**21.69**	**11.97**	**17.52**	**9.50**	**15.43**	**18.08**	*8.53*	**13.91**	*11.45*	**12.15**
P0.75	**15.96**	**9.27**	**12.08**	**7.65**	**13.36**	**13.09**	**6.30**	**9.24**	*8.42*	**11.73**
P0.95	**10.78**	*3.21*	**3.85**	**2.13**	**5.48**	**5.66**	*2.81*	**4.03**	4.16	2.57
P0.99	*4.01*	0.73	0.63	*0.36*	*1.10*	1.07	0.57	**1.95**	2.06	0.31
Age										
OLS	**1.39**	**1.98**	0.34	**2.27**	**1.47**	**1.61**	**2.22**	**1.59**	**1.56**	**1.85**
P0.01	-0.12	0.57	-0.32	0.24	-0.07	*-0.34*	-0.32	0.01	**2.56**	0.14
P0.05	0.34	*0.92*	0.06	*1.39*	**0.78**	-0.29	0.90	*0.58*	1.20	0.45
P0.25	*0.56*	**1.76**	0.58	**2.59**	**1.41**	**0.76**	*2.93*	**1.65**	1.74	*1.10*
P0.50	**1.14**	**2.34**	0.40	**2.53**	**1.79**	**1.35**	**2.69**	**1.93**	0.31	**2.19**
P0.75	**2.05**	**2.81**	**1.41**	**1.64**	**2.51**	**2.14**	**2.08**	**1.91**	-0.01	*1.76*
P0.95	*1.13*	**0.96**	0.45	*0.33*	**1.25**	*0.54*	**1.04**	*0.78*	-0.20	-0.13
P0.99	0.34	0.25	0.01	0.03	0.30	0.04	0.35	0.12	0.18	-0.28
Age2										
OLS	**-0.01**	**-0.01**	0.00	**-0.02**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	*-0.01*
P0.01	*0.00*	0.00	0.00	0.00	0.00	**0.00**	0.01	0.00	**-0.02**	0.00
P0.05	0.00	*-0.01*	0.00	-0.01	*0.00*	0.00	0.00	*0.00*	-0.01	0.00
P0.25	0.00	**-0.01**	0.00	**-0.02**	**-0.01**	*-0.01*	*-0.02*	**-0.01**	-0.01	0.00
P0.50	**-0.01**	**-0.02**	0.00	**-0.02**	**-0.01**	*-0.01*	*-0.02*	**-0.01**	0.00	*-0.01*
P0.75	**-0.02**	**-0.02**	*-0.01*	**-0.01**	**-0.02**	**-0.02**	*-0.01*	**-0.01**	0.00	-0.01
P0.95	*-0.01*	*-0.01*	0.00	0.00	**-0.01**	0.00	*-0.01*	0.00	0.00	0.00
P0.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Female										
OLS	**-3.26**	**-3.80**	-0.25	1.70	**-2.19**	-1.00	**-11.30**	**-6.28**	-1.49	-1.15
P0.01	0.27	-2.57	-1.31	0.63	-0.07	-1.02	-0.87	*-1.97*	-1.92	0.34
P0.05	-1.53	**-4.68**	-3.89	-0.61	-1.19	-1.00	-2.06	**-4.45**	-1.45	0.05
P0.25	-2.22	*-5.11*	-0.83	-1.13	**-3.08**	-0.04	*-10.26*	**-9.74**	-3.24	1.01
P0.50	*-2.50*	**-5.02**	-1.17	0.38	**-3.49**	-0.61	*-12.85*	**-6.89**	2.19	-0.69
P0.75	*-3.00*	-1.45	0.06	-0.01	*-2.13*	-2.00	*-8.99*	**-5.35**	1.57	-2.02
P0.95	-1.39	-0.60	1.21	-0.37	-0.49	*-2.42*	-2.07	-1.38	-0.59	1.04
P0.99	0.25	0.04	0.33	-0.15	0.02	-1.10	-0.70	-0.62	-0.47	-0.87

Source: HFCS 2010, own calculations. The table shows the parameter estimates of OLS and quantile regressions at the 5th, 25th, 50th, 75th and 95th percentile. Estimates with an associated p–value below 0.01 are depicted in bold, values below 0.05 in italics. Insignificant estimates (p–value above 0.05) are given in gray.

Table A.1: *(continued)*

	AT	BE	DE	ES	FR	GR	NL	PT	SI	SK
Entrepreneur										
OLS	**19.43**	**13.99**	**9.55**	**12.06**	**22.63**	**8.73**	7.01	**13.37**	**25.10**	*6.44*
P0.01	1.38	8.11	-0.42	6.45	*12.73*	-2.59	-0.33	5.45	**24.14**	*2.85*
P0.05	*12.07*	6.47	6.50	**13.33**	**20.74**	*3.42*	0.20	**9.71**	*13.92*	0.34
P0.25	**16.60**	**13.97**	**8.22**	**12.75**	**22.72**	**9.76**	7.72	**14.65**	8.42	1.51
P0.50	**17.11**	**13.65**	**8.08**	**12.23**	**21.32**	**11.17**	6.75	**14.44**	13.67	*9.66*
P0.75	**14.80**	**15.10**	**8.41**	**9.74**	**20.50**	**6.92**	9.93	**13.61**	26.31	*6.44*
P0.95	**10.71**	**7.45**	**4.73**	**2.74**	**9.00**	1.90	4.93	**5.31**	10.41	2.34
P0.99	2.89	1.10	1.16	0.33	*2.18*	1.16	2.34	*2.28*	3.00	-0.40
Tertiary Education										
OLS	-0.14	**7.90**	**3.98**	**6.73**	**5.73**	**5.41**	**6.73**	**10.07**	**14.33**	**9.84**
P0.01	0.11	*4.20*	-1.31	4.43	1.27	0.68	1.42	0.61	**11.32**	1.43
P0.05	2.13	**7.37**	2.30	*11.35*	**8.32**	2.16	4.63	**10.76**	*13.37*	1.40
P0.25	0.87	*7.07*	3.06	**14.57**	**6.38**	3.24	*9.31*	**19.20**	**19.87**	*8.25*
P0.50	1.17	**7.35**	2.26	**10.85**	**5.48**	**7.04**	*7.72*	**13.31**	*15.19*	**12.77**
P0.75	-1.70	*5.56*	1.88	**7.40**	**4.43**	**6.35**	**6.45**	**9.91**	*9.34*	**10.62**
P0.95	-1.59	*2.65*	*1.57*	**1.96**	**3.33**	*3.03*	**3.01**	**5.92**	5.14	*3.41*
P0.99	1.70	0.61	0.59	*0.38*	*1.11*	1.21	1.34	*1.54*	*3.84*	1.10
Retiree										
OLS	1.63	*6.73*	*3.45*	*2.61*	**5.15**	*4.47*	-4.62	0.32	**20.36**	-3.22
P0.01	-0.09	1.32	3.87	-0.10	0.55	-0.62	-1.52	-1.21	**10.11**	-0.37
P0.05	1.39	7.13	7.81	-1.75	0.98	-0.92	-0.49	0.73	*11.29*	0.20
P0.25	2.18	**14.37**	3.28	3.97	**8.70**	3.84	2.34	-1.54	*14.63*	*-12.04*
P0.50	3.87	*6.11*	4.44	*3.50*	**6.25**	*7.03*	-3.06	1.91	*18.63*	-1.77
P0.75	1.16	2.51	*4.74*	1.78	2.15	1.98	-1.28	1.69	2.90	1.78
P0.95	0.65	2.15	1.32	0.13	0.61	-0.47	-0.59	-1.15	-0.21	-2.99
P0.99	0.28	2.15	0.24	0.05	0.09	-1.52	0.62	*-1.19*	-1.24	-3.42

Source: HFCS 2010, own calculations. The table shows the parameter estimates of OLS and quantile regressions at the 5th, 25th, 50th, 75th and 95th percentile. Estimates with an associated p–value below 0.01 are depicted in bold, values below 0.05 in italics. Insignificant estimates (p–value above 0.05) are given in gray.

Table A.2: Quantile Regression Coefficients — Bequest (CDF)

	AT	BE	DE	ES	FR	GR	NL	PT	SI	SK
Income (CDF)										
OLS	**0.35**	**0.37**	**0.45**	**0.39**	**0.37**	**0.35**	**0.15**	**0.34**	**0.42**	**0.36**
P0.01	0.02	0.07	*0.13*	**0.12**	*0.06*	0.03	0.00	0.00	**0.24**	0.03
P0.05	**0.19**	**0.23**	**0.30**	**0.34**	**0.25**	**0.12**	0.07	**0.13**	**0.34**	**0.11**
P0.25	**0.36**	**0.44**	**0.51**	**0.49**	**0.42**	**0.23**	**0.27**	**0.37**	**0.44**	**0.25**
P0.50	**0.39**	**0.43**	**0.55**	**0.40**	**0.39**	**0.40**	**0.22**	**0.43**	**0.43**	**0.38**
P0.75	**0.37**	**0.31**	**0.43**	**0.22**	**0.28**	**0.42**	**0.11**	**0.30**	**0.42**	**0.44**
P0.95	**0.25**	**0.09**	**0.11**	**0.05**	**0.08**	**0.16**	0.04	**0.11**	0.13	**0.19**
P0.99	0.07	*0.03*	0.02	0.01	**0.02**	*0.04*	0.02	*0.04*	0.08	**0.08**
Bequest (CDF)										
OLS	**0.99**	**0.67**	**1.09**	**0.85**	**0.68**	**1.05**	**1.93**	**0.99**	**0.56**	**0.53**
P0.01	0.31	**0.66**	*0.91*	**0.87**	**0.39**	**1.22**	-0.33	**0.83**	**0.62**	**0.36**
P0.05	**1.19**	**0.80**	**1.51**	**1.32**	**0.86**	**1.66**	2.10	**1.33**	**0.62**	**0.56**
P0.25	**1.36**	**0.95**	**1.21**	**0.82**	**0.91**	**1.66**	*2.68*	**1.29**	*0.58*	**0.86**
P0.50	**1.09**	**0.75**	**0.86**	**0.55**	**0.68**	**1.16**	*1.29*	**0.87**	0.35	**0.79**
P0.75	**0.80**	**0.52**	**0.59**	**0.40**	**0.52**	**0.77**	**0.88**	**0.61**	0.23	**0.59**
P0.95	**0.49**	**0.17**	**0.20**	**0.11**	**0.20**	**0.29**	*0.40*	**0.21**	0.04	**0.18**
P0.99	0.18	*0.05*	0.04	*0.02*	**0.05**	0.06	0.10	*0.09*	0.07	0.03
Age										
OLS	**1.30**	**1.93**	0.34	**2.14**	**1.45**	**1.53**	**2.21**	**1.52**	**1.59**	**1.79**
P0.01	-0.15	0.18	-0.70	0.04	-0.09	-0.32	-0.36	-0.02	0.48	0.12
P0.05	0.17	*0.85*	-0.10	0.94	**0.80**	*-0.38*	0.80	*0.48*	0.72	0.50
P0.25	*0.39*	**1.70**	0.28	**2.31**	**1.10**	0.42	*2.77*	**1.55**	*1.92*	0.84
P0.50	**1.09**	**2.39**	0.46	**2.45**	**1.91**	**1.31**	**2.75**	**1.91**	0.45	**1.97**
P0.75	**1.98**	**2.67**	**1.24**	**1.66**	**2.53**	**2.21**	**2.05**	**1.99**	0.10	*1.73*
P0.95	*1.10*	**1.04**	0.43	*0.32*	**1.27**	*0.61*	**1.08**	*0.78*	-0.14	-0.18
P0.99	0.29	0.24	0.01	0.04	*0.33*	0.00	0.42	0.16	-0.07	-0.33
Age2										
OLS	**-0.01**	**-0.01**	0.00	**-0.01**	**-0.01**	**-0.01**	**-0.01**	**-0.01**	*-0.01*	*-0.01*
P0.01	0.00	0.00	0.01	0.00	0.00	*0.00*	0.01	0.00	0.00	0.00
P0.05	0.00	*-0.01*	0.00	0.00	*-0.01*	*0.00*	0.00	0.00	-0.01	0.00
P0.25	0.00	**-0.01**	0.00	**-0.01**	**-0.01**	0.00	*-0.02*	**-0.01**	-0.02	0.00
P0.50	**-0.01**	**-0.02**	0.00	**-0.01**	**-0.01**	*-0.01*	*-0.02*	**-0.01**	0.00	-0.01
P0.75	**-0.01**	**-0.02**	*-0.01*	**-0.01**	**-0.02**	**-0.02**	*-0.01*	**-0.01**	0.00	-0.01
P0.95	*-0.01*	**-0.01**	0.00	0.00	**-0.01**	0.00	*-0.01*	0.00	0.00	0.00
P0.99	0.00	0.00	0.00	0.00	*0.00*	0.00	0.00	0.00	0.00	0.00
Female										
OLS	**-2.77**	*-3.64*	-0.18	1.46	**-2.07**	-1.12	**-11.17**	**-6.44**	-1.45	-0.81
P0.01	0.15	-0.78	-3.36	0.07	-0.36	-0.93	-1.08	*-1.62*	-4.73	0.67
P0.05	-1.22	*-3.30*	-3.22	-0.78	-1.24	-1.46	-1.91	**-4.67**	-0.98	0.34
P0.25	-1.93	*-5.26*	-1.06	-1.15	**-2.91**	-0.01	*-10.19*	**-9.57**	-2.88	1.02
P0.50	-2.02	*-4.38*	-1.18	0.12	**-3.04**	0.22	*-12.51*	**-7.80**	2.44	0.07
P0.75	-2.45	-1.49	0.12	-0.35	*-2.09*	-2.15	*-9.13*	**-5.32**	1.03	-1.13
P0.95	-1.41	-0.63	1.24	-0.46	-0.45	-2.19	-1.96	-1.31	1.94	1.29
P0.99	0.08	-0.16	0.28	-0.10	0.09	-0.79	-0.42	-0.32	-0.19	-0.61

Source: HFCS 2010, own calculations. The table shows the parameter estimates of OLS and quantile regressions at the 5th, 25th, 50th, 75th and 95th percentile. Estimates with an associated p–value below 0.01 are depicted in bold, values below 0.05 in italics. Insignificant estimates (p–value above 0.05) are given in gray.

Table A.2: *(continued)*

	AT	BE	DE	ES	FR	GR	NL	PT	SI	SK
Entrepreneur										
OLS	**17.29**	**13.47**	**6.88**	**10.72**	**21.47**	**8.48**	6.45	**13.52**	**26.29**	*5.76*
P0.01	1.08	5.88	-6.35	4.51	*11.42*	-1.34	-0.27	5.00	**16.53**	2.82
P0.05	*8.45*	4.60	5.12	*11.61*	**19.58**	*3.74*	0.12	**8.96**	8.39	1.72
P0.25	**10.29**	**12.20**	*5.72*	**10.92**	**18.66**	**8.23**	8.99	**14.88**	5.79	1.29
P0.50	**14.42**	**13.73**	**7.18**	**11.61**	**21.26**	**11.30**	7.06	**15.55**	13.03	8.37
P0.75	**14.33**	**14.29**	**7.63**	**8.68**	**20.20**	**6.84**	9.68	**13.97**	24.30	*6.27*
P0.95	**10.53**	*6.92*	**4.75**	**2.92**	**9.15**	2.12	4.76	**5.55**	15.53	2.28
P0.99	2.92	1.07	1.32	0.37	**2.50**	1.29	2.63	*2.09*	6.76	-0.06
Tertiary Education										
OLS	-0.01	**7.45**	**3.49**	**6.11**	**4.46**	**4.59**	**6.64**	**9.77**	**14.52**	**9.70**
P0.01	-0.23	3.77	-2.41	3.62	1.26	0.73	1.46	0.26	2.95	0.13
P0.05	2.89	**5.65**	1.06	*10.57*	**6.30**	1.60	4.33	**11.60**	8.81	1.77
P0.25	1.83	*6.32*	1.66	**11.43**	**3.87**	2.46	*9.22*	**17.48**	*18.60*	*7.67*
P0.50	1.16	*6.09*	1.84	**10.20**	**3.09**	*5.54*	*7.74*	**12.94**	*16.76*	**11.99**
P0.75	-2.20	**5.78**	1.51	**6.88**	**3.26**	**6.17**	**6.36**	**10.37**	*9.27*	**9.91**
P0.95	-0.99	*2.87*	1.50	**1.78**	**2.74**	*2.85*	**3.01**	**5.42**	5.21	3.54
P0.99	1.75	1.05	0.46	*0.40*	*1.11*	1.48	1.18	1.23	*5.31*	1.35
Retiree										
OLS	1.95	*5.77*	*3.53*	*2.73*	**5.53**	**4.67**	-4.56	0.58	**20.18**	-2.90
P0.01	-0.52	1.98	5.69	0.17	0.93	-0.50	-1.70	-1.00	*12.69*	-0.24
P0.05	1.55	6.57	*8.80*	-0.98	0.99	0.14	-0.76	-0.10	*13.71*	0.08
P0.25	2.15	**12.67**	3.35	2.55	**8.11**	4.13	3.07	-0.34	*13.40*	*-11.29*
P0.50	3.53	*7.06*	4.56	*3.36*	**5.39**	*6.83*	-2.69	3.05	*15.93*	-2.85
P0.75	0.48	0.73	3.87	1.38	*2.53*	1.87	-1.27	2.33	5.50	0.58
P0.95	-0.16	*3.95*	1.37	0.08	0.75	-0.21	-0.51	-0.82	0.41	-1.94
P0.99	0.03	2.12	0.19	0.03	0.15	-1.59	0.53	*-1.22*	-0.84	-3.78

Source: HFCS 2010, own calculations. The table shows the parameter estimates of OLS and quantile regressions at the 5th, 25th, 50th, 75th and 95th percentile. Estimates with an associated p–value below 0.01 are depicted in bold, values below 0.05 in italics. Insignificant estimates (p–value above 0.05) are given in gray.

Table A.3: Ratios between inheritance and income coefficients

	AT	BE	DE	ES	FR	GR	NL	PT	SI	SK
Bequest (Yes/No)										
OLS	49.1	27.4	39.7	29.6	34.9	42.7	65.1	38.7	33.9	18.3
P01	40.8	55.0	54.9	70.3	72.3	542.1	158.0	748.7	133.7	60.9
P05	52.2	38.4	47.2	38.2	44.9	212.5	61.7	104.7	69.4	46.5
P25	56.6	28.3	35.0	21.9	37.9	85.2	49.3	48.2	39.5	37.1
P50	50.5	27.6	30.1	23.2	36.2	41.7	38.8	31.9	23.9	29.0
P75	41.0	28.5	28.2	33.4	46.5	31.1	57.2	30.0	20.8	27.2
P95	49.8	34.1	41.1	51.6	76.8	34.2	75.3	37.0	35.5	15.4
P99	66.6	24.3	31.4	62.0	92.0	24.2	33.6	62.2	33.4	4.5
Bequest (CDF)										
OLS	2.8	1.8	2.4	2.2	1.8	3.0	13.0	2.9	1.3	1.5
P01	12.8	9.4	7.3	7.1	6.3	44.9	76.2	228.4	2.6	12.2
P05	6.2	3.4	5.0	3.9	3.5	13.9	31.9	10.2	1.8	5.2
P25	3.8	2.2	2.4	1.7	2.2	7.1	9.8	3.5	1.3	3.4
P50	2.8	1.7	1.6	1.4	1.7	2.9	5.9	2.0	0.8	2.1
P75	2.1	1.7	1.4	1.8	1.9	1.9	7.9	2.0	0.6	1.4
P95	2.0	2.0	1.8	2.4	2.5	1.8	10.5	2.0	0.3	0.9
P99	2.7	1.8	1.6	3.0	2.9	1.4	5.8	2.5	0.8	0.4

Source: HFCS 2010, own calculations. The table shows the ratios of inheritance and income parameter estimates of OLS and quantile regressions at the 1st, 5th, 25th, 50th, 75th, 95th and 99th percentile.