

# **Wealth and Inheritances in Europe**

Anita Tiefensee

Dissertation submitted to the Hertie School of Governance in partial fulfillment of the requirements for the degree of Doctor rerum politicarum (Dr. rer. pol.) in the Doctoral Programme in Governance.

Berlin, 2016



# **Doctoral Committee**

## **First advisor and reviewer**

Prof. Dr. Henrik Enderlein  
*Professor of Political Economy*  
*Hertie School of Governance*  
*Berlin*

## **Second advisor and reviewer**

Prof. Dr. Timm Bönke  
*Assistant Professor of Public Economics*  
*Freie Universität Berlin*  
*Berlin*

## **Third advisor**

Prof. Dr. Gert G. Wagner  
*Executive Board Member, Vice Dean of Graduate Studies*  
*Professor of Empirical Economic Research and Economic Policy*  
*DIW & Technische Universität Berlin*  
*Berlin*



# Summary

The knowledge of the distribution of assets and liabilities as well as the key determinants of the distributions of private wealth represent an important basis for decision-making for social and political action like levying taxes. In the three papers, which make up this dissertation, I contribute to these aspects for several European countries.

In the first paper (with M.M. Grabka) the data quality of the Household Finance and Consumption Survey (HFCS) is investigated. The survey provides information and enables comparison of assets and liabilities held by households in the Euro area. We investigate potential methodological constraints regarding cross-country comparability and evaluate their impact on the surveyed net wealth (assets minus liabilities). In addition, we investigate item non-response patterns, a serious issue in wealth surveys. We find that the surveyed net wealth in Finland, the Netherlands, Italy and Slovakia is most likely not comparable with the other countries.

The second paper (with C. Westermeier) empirically investigates wealth transfers (inheritances and gifts) – a key determinant of household wealth. We analyze the percentages of households with a transfer as well as the capitalized present values of transfers received in households in core European (Austria, Belgium, France and (West) Germany) and Mediterranean countries (Cyprus, Greece, Portugal and Spain). Additionally, we tackle the question of how important transfers are for the current economic position of households in each country. We find that the relationship between the propensity to receive a transfer and the level of household income is stronger in the core European than in the Mediterranean countries, whereas the positive correlation between income position and the values of those transfers is high in all countries. However, considering the value of inheritances and gifts as a percentage of current net wealth we see some of the results reversed as the share is not positively correlated with income. In fact, the significance of transfers for household wealth decreases with higher income.

In the third paper I compare the effective tax rates of intergenerational wealth transfers between European countries and over time. Based on different preferences for distribution, I discuss how the taxation of transfers may look like for the different types of welfare state regimes. I analyze the United Kingdom, Germany and Sweden since the 1950s and calculate effective tax rates for typical households with different sizes and portfolios of intergenerational transfers to represent the whole wealth distribution. I find that the intergenerational transfer legislation and its changes are in line with the respective welfare state regimes in the United Kingdom and Germany, but not in Sweden. Changes over time are due to specific developments in each country and overall trends like tax competition, influence of interest groups and the median voter.



# Acknowledgements

Many people have supported me in writing this dissertation. First, I would like to thank my advisors Henrik Enderlein, Timm Bönke and Gert G. Wagner for their exceptional support. Henrik Enderlein provided the perfect mix of leaving me to do my thing and setting expectations and deadlines. He always asked the right questions and helped me to never lose the red thread in so many ways throughout my dissertation. I thank Timm Bönke for his timely feedback and excellent advice on so many issues. I would also like to thank Gert G. Wagner for his encouragement and for always being available when I had questions.

A special thanks is also due to my co-author Markus M. Grabka, whose mentoring and judgement was crucial for countless matters throughout this dissertation and beyond. I also owe gratitude to my other co-author Christian Westermeier, who helped me to dive deeper into the world of statistics.

The Hertie School of Governance and its Doctoral Programme in Governance provided me with the perfect international and interdisciplinary background for my dissertation. Over the years many people discussed my work with me and gave helpful advice. I want to thank in particular: Elias Brumm, Anne Cordes, Till Cordes, Sandra Engelbrecht, Sarah Förster, Christopher Gandrud, Patrick Gilroy, Mark Hallerberg, Anke Hassel, Alan Jacobs, Mark Kayser, Arndt Leininger, Janina Mangold, Julian Schumacher, Clemens Striebing, Krista Timeus, Christian Traxler, Armin von Schiller Calle and Dirk von Schneidmesser. I am also very grateful to Gabriele Brühl, Mirjam Schlechter, Kathrin Fey and the family Fuhrmann for their support and assistance.

I also want to thank the Hans-Böckler-Foundation. During the preparation of my dissertation I was employed in the research project “Wealth in Germany” which was financed by the Foundation. This background always encouraged me to also see the practical and political implications of my work.

Two other institutions, the seminars they offer and its people sustainably influenced my work in the last couple of years – the DIW Berlin (German Institute for Economic Research) and the FU Berlin (Free University). I would like to especially say thank you to: Charlotte Bartels, Anja Gaentzsch, Patricia Gallego Granados, Michael Neumann, Pia Rattenhuber, Maximilian Stockhausen and Marten von Werder.

I thank all the great teachers that I had over the years in school – especially my secondary school teacher Hartmut Meier. Without their encouragement I would have never even studied.

Finally, I wish to thank my friends and family for supporting me in so many ways. In particular I want to express my gratitude to Anselm Mattes, Kerstin Rothe, Anne Stadler, Christine Wosnitza and Lukas Wosnitza for walking with me through all valleys on the way and for celebrating every summit. Above all I want to thank my grandma, Herta Tiefensee and my partner, Hans Verbeek. Without her I would have never started this project and without him I would have never finished it.

Berlin, December 2016

Anita Tiefensee



# Table of Contents

|  |           |
|--|-----------|
| <b>LIST OF TABLES .....</b>  | <b>IX</b> |
| <b>LIST OF FIGURES.....</b>  | <b>XI</b> |
| <b>1. INTRODUCTION.....</b>  | <b>1</b>  |
| 1.1. Contributions and Main Findings .....                         | 4         |
| 1.2. Limitations and Further Research .....                        | 6         |
| References.....  | 8         |
| <b>2. COMPARING WEALTH – DATA QUALITY OF THE HFCS.....</b>         | <b>11</b> |
| 2.1. Introduction.....   | 11        |
| 2.2. Definition of Data Quality.....                               | 12        |
| 2.2.1. Institutional environment .....                             | 13        |
| 2.2.2. Relevance .....   | 13        |
| 2.2.3. Coherence .....   | 14        |
| 2.2.4. Timeliness.....   | 15        |
| 2.2.5. Accessibility .....   | 15        |
| 2.3. Comparability Issues of the HFCS .....                        | 16        |
| 2.3.1. Sampling, sampling frames and target population .....       | 16        |
| 2.3.2. Survey modes and interviewer training .....                 | 18        |
| 2.3.3. Unit non-response and weighting.....                        | 19        |
| 2.3.4. Oversampling .....  | 20        |
| 2.3.5. Item non-response and imputation .....                      | 22        |
| 2.3.6. Reference periods .....                                     | 23        |
| 2.3.7. Questionnaire and variable catalogue .....                  | 24        |
| 2.4. Accuracy .....  | 30        |
| 2.4.1. Item non-response in the HFCS.....                          | 30        |
| 2.4.2. Estimation strategy and results for item non-response ..... | 35        |
| 2.5. Conclusion .....  | 37        |
| References.....  | 39        |
| Appendix .....   | 43        |
| Part A: Figures .....  | 43        |
| Part B: Tables.....  | 44        |

|   |           |
|---|-----------|
| <b>3. COMPARING THE JOINT DISTRIBUTION OF INTERGENERATIONAL TRANSFERS, INCOME AND WEALTH ACROSS THE EURO AREA .....</b> | <b>51</b> |
| 3.1. Introduction .....   | 51        |
| 3.2. Literature.....  | 52        |
| 3.2.1. The role of inheritance and gifts in absolute terms.....   | 52        |
| 3.2.2. The role of inheritances and gifts in relative terms.....  | 53        |
| 3.3. Data, country selection and institutional environment.....   | 54        |
| 3.3.1. Data.....  | 54        |
| 3.3.2. Country selection and classification .....   | 54        |
| 3.3.3. Inheritance and gift taxation .....  | 56        |
| 3.4. Incidence and value of transfers and their share of wealth .....   | 58        |
| 3.4.1. Incidence and levels of past wealth transfers.....   | 60        |
| 3.4.2. Correlates of the incidence and value of past wealth transfers.....  | 64        |
| 3.4.3. Intergenerational wealth transfers and the distribution of wealth.....   | 69        |
| 3.4.4. Correlates of the relative value of wealth transfers .....   | 72        |
| 3.5. Conclusion .....   | 75        |
| References .....  | 76        |
| Appendix .....  | 79        |
| Part A: Table .....   | 79        |
| Part B: Robustness Checks .....   | 82        |
| <b>4. ESTATE AND INHERITANCE TAXATION .....</b>   | <b>89</b> |
| 4.1. Introduction .....   | 89        |
| 4.2. Theory, Hypotheses and Case Selection .....  | 90        |
| 4.2.1. Theory of optimal intergenerational transfer taxation and welfare state regimes.....                             | 91        |
| 4.2.2. Hypotheses on intergenerational transfer taxation preferences.....   | 93        |
| 4.2.3. Case Selection – countries and points in time .....  | 93        |
| 4.3. Legislation of estate, inheritance and gift taxation over time .....   | 96        |
| 4.3.1. Legislation in the United Kingdom.....   | 96        |
| 4.3.2. Legislation in Germany .....   | 99        |
| 4.3.3. Legislation in Sweden.....   | 101       |
| 4.3.4. Interim summary.....   | 103       |
| 4.4. Effective intergenerational transfer tax rates since the 1950s.....  | 104       |
| 4.4.1. Estimation strategy .....  | 104       |

|   |            |
|---|------------|
| 4.4.2. Effective intergenerational transfers tax rates in the United Kingdom..... | 107        |
| 4.4.3. Effective intergenerational transfers tax rates in Germany.....            | 109        |
| 4.4.4. Effective intergenerational transfers tax rates in Sweden.....             | 111        |
| 4.4.5. General trends.....  | 113        |
| 4.5. Conclusion .....   | 117        |
| References.....   | 118        |
| Appendix .....  | 122        |
| Part A: Figures .....   | 122        |
| Part B: Tables.....   | 126        |
| Part C: Additional Scenarios .....  | 141        |
| <b>COLLABORATION WITH CO-AUTHORS AND PRE-PUBLICATIONS.....</b>                    | <b>143</b> |



## List of Tables

|              |   |     |
|--------------|---|-----|
| Table 2.1:   | Oversampling strategies in the HFCS .....   | 22  |
| Table 2.2:   | Methodological differences across countries in the HFCS.....  | 26  |
| Table A.2.1: | Average marginal effects of the pooled logit estimations .....  | 44  |
| Table A.2.2: | Average marginal effects of the country logit estimations.....  | 45  |
| Table 3.1:   | Percentage of households with a transfer <sup>a</sup> .....   | 62  |
| Table 3.2:   | Mean present value of transfers received (in €1,000), in 2010 prices<br>and capitalized with $r = 3\%$ , recipients only <sup>a</sup> .....               | 63  |
| Table 3.3:   | Average marginal effects of the logit estimations for probability of<br>wealth transfer received .....  | 67  |
| Table 3.4:   | OLS regression for present value of wealth transfer received, in 2010<br>prices and capitalized with $r = 3\%$ , recipients only .....                    | 68  |
| Table 3.5:   | Present value of wealth transfers received as a percent of net wealth,<br>in 2010 prices and real interest rate = $3\%$ <sup>a</sup> .....                | 71  |
| Table 3.6:   | Fractional logit regressions for share of current wealth due to past<br>wealth transfers, recipients only.....  | 74  |
| Table A.3.1: | Taxation of inheritances and gifts: a European comparison.....  | 79  |
| Table B.3.1: | Present value of wealth transfers received as a percent of net wealth,<br>capitalized using country-specific yields of long-term government<br>bonds..... | 84  |
| Table B.3.2: | Present value of wealth transfers received as a percent of net wealth,<br>real interest rate = $1\%$ versus real interest rate = $5\%$ .....              | 85  |
| Table B.3.3: | Present value of wealth transfers received as a percent of net wealth,<br>real interest rate = $3\%$ versus wealth related interest rates .....           | 86  |
| Table B.3.4: | Mean per capita present value of transfers received (in €1,000), in<br>2010 prices and capitalized with $r = 3\%$ , recipients only <sup>a</sup> .....    | 87  |
| Table 4.1:   | Nominal private wealth per capita in the UK, Germany and Sweden in<br>2015* .....   | 106 |
| Table A.4.1: | Nominal private wealth per capita in the UK, Germany and Sweden in<br>1955, 1975, 1995 and 2014.....  | 126 |
| Table A.4.2: | Nominal GDP per capita (twice) in the UK, Germany and Sweden in<br>1955, 1975, 1995 and 2015.....   | 126 |
| Table A.4.3: | Estate legislation in the United Kingdom in 1955, 1975, 1995 and 2015 .....   | 127 |
| Table A.4.4: | Inheritance legislation in Germany in 1955, 1975, 1995/96 <sup>a</sup> and<br>2015/16 <sup>b</sup> .....  | 132 |
| Table A.4.5: | Inheritance legislation in Sweden in 1955, 1975/78 <sup>a</sup> , 1995 and 2015.....  | 137 |



## List of Figures

|               |   |     |
|---------------|---|-----|
| Figure 1.1:   | Household net wealth in the Euro Area .....   | 2   |
| Figure 2.1:   | Households' balance sheet in the HFCS .....   | 14  |
| Figure 2.2:   | Number of surveyed households in the HFCS by country (in total<br>62.521 households).....   | 17  |
| Figure 2.3:   | Initial response rates in the HFCS .....  | 20  |
| Figure 2.4:   | Reference periods for assets and liabilities in the HFCS: 2008-2011.....  | 24  |
| Figure 2.5:   | Relevance of imputation in the HFCS* .....  | 32  |
| Figure 2.6:   | Information from flag-variables for selected assets and liabilities – only<br>those holding the respective wealth/liability component ..... | 34  |
| Figure A.2.1: | Differences in variables collection .....   | 43  |
| Figure 3.1:   | Social expenditure <sup>a</sup> as percentage of gross domestic product (GDP) <sup>b</sup> .....  | 56  |
| Figure 3.2:   | Inheritance and gift tax revenue as percentage of GDP <sup>a</sup> .....  | 57  |
| Figure 4.1:   | Inheritance and gift flow as percent of national income* in the UK,<br>Germany and Sweden, 1910-2010** .....                                | 95  |
| Figure 4.2:   | Estate, inheritance and gift tax revenue as percent of GDP in the UK,<br>Germany and Sweden, 1965-2014* .....                               | 96  |
| Figure 4.3:   | Maximum estate tax rates and nil-rate bands in the UK, 1955-2015 .....  | 98  |
| Figure 4.4:   | Maximum inheritance tax rate and allowances for children in Germany,<br>1955-2015 .....   | 100 |
| Figure 4.5:   | Maximum inheritance tax rate and allowances for children in Sweden,<br>1955-2015* .....   | 102 |
| Figure 4.6:   | Effective estate tax rates in the UK in 1955, 1975, 1995 and 2015 .....   | 108 |
| Figure 4.7:   | Effective inheritance tax rates in Germany in 1955, 1975, 1995/96 and<br>2015/16 .....  | 110 |
| Figure 4.8:   | Effective inheritance tax rates in Sweden in 1955, 1975/78, 1995 and<br>2015.....   | 112 |
| Figure 4.9:   | Revenues from taxes on property as a percentage of total taxation*<br>the UK, Germany and Sweden, 1965-2014** .....                         | 114 |
| Figure 4.10:  | Changes in estate, inheritance and gift taxation and ruling party in the<br>UK, Germany and Sweden since the 1950s.....                     | 117 |
| Figure A.4.1: | Private wealth as percent of national income in the UK, Germany,<br>Sweden, 1940-2010.....  | 122 |
| Figure A.4.2: | Top 10 and 1 percent share in total wealth in the UK and Sweden,<br>1945-2005* .....  | 123 |

List of Figures

|  |     |
|--|-----|
| Figure A.4.3: Taxes and social security contributions as a percentage of total taxation in the UK Germany and Sweden, 1965-2014* ..... | 124 |
| Figure A.4.4: Components of taxes on property as a percentage of total taxation in the UK Germany and Sweden, 1965-2014* .....         | 125 |
| Figure A.4.5: Medium estate (real estate and shares) in the UK, Germany and Sweden in 1955, 1975, 1995 and 2015.....                   | 141 |



# 1. Introduction

Why should we care about the distribution of private wealth<sup>1</sup> in Europe? The material prosperity of individuals consists of the two main resources income and wealth. While especially the possession of wealth offers extended consumption options, can compensate a loss of income and secures the own pension (for example via owner-occupied housing), it also finances the education of children and is accumulated to make bequests. Thus wealth creates a financial independence and great wealth may be accompanied by economic and political power (Davies & Shorrocks 2000). Therefore the knowledge of the distribution and development of assets and liabilities as well as the key determinants for distributions of wealth represent an important basis for decision-making for social and political action.

In the course of the financial and economic crisis and the resulting sovereign debt crisis around the year 2010, (material) inequality between and within countries in the European Union came to the fore (McGrath 2015). Especially the book “Capital in the Twenty-First Century” by the economist Thomas Piketty fueled the broader public debate. He gathered and analyzed time series data (mainly from tax databases) on income, private and public wealth as well as inheritances for several (industrialized) countries; in some cases reaching back to the 19<sup>th</sup> century. His message in a nutshell: Inequality is on the rise again. In addition, many other researches contributed to the discourse, most notably Cingano (2014) from the Organisation for Economic Co-operation and Development (OECD) and Dabla-Norris, Kochhar, Suphaphiphat, Ricka & Tsounta (2015) from the International Monetary Fund (IMF). They published that (income) inequality hurts economic growth by undermining education opportunities for children from low-income households.<sup>2</sup>

Even though the findings from Piketty (2014) were also controversially discussed (see for example Góes 2016, Hudson & Tribe 2016), his data gathering is widely acknowledged (Bartels & Bönke 2015). However, the aggregated tax data cannot tell us something about the distribution of assets and debts on the level of households or individuals or between different socio-economic groups. This clearly is an advantage of survey data. Until recently, for many countries in Europe representative information about household wealth was not available or, if available, not comparable between countries.<sup>3</sup> This situation recently changed due to a new survey

---

<sup>1</sup> In this dissertation the term *wealth* refers to net wealth held by individuals or households, this means the value of (material) assets minus liabilities.

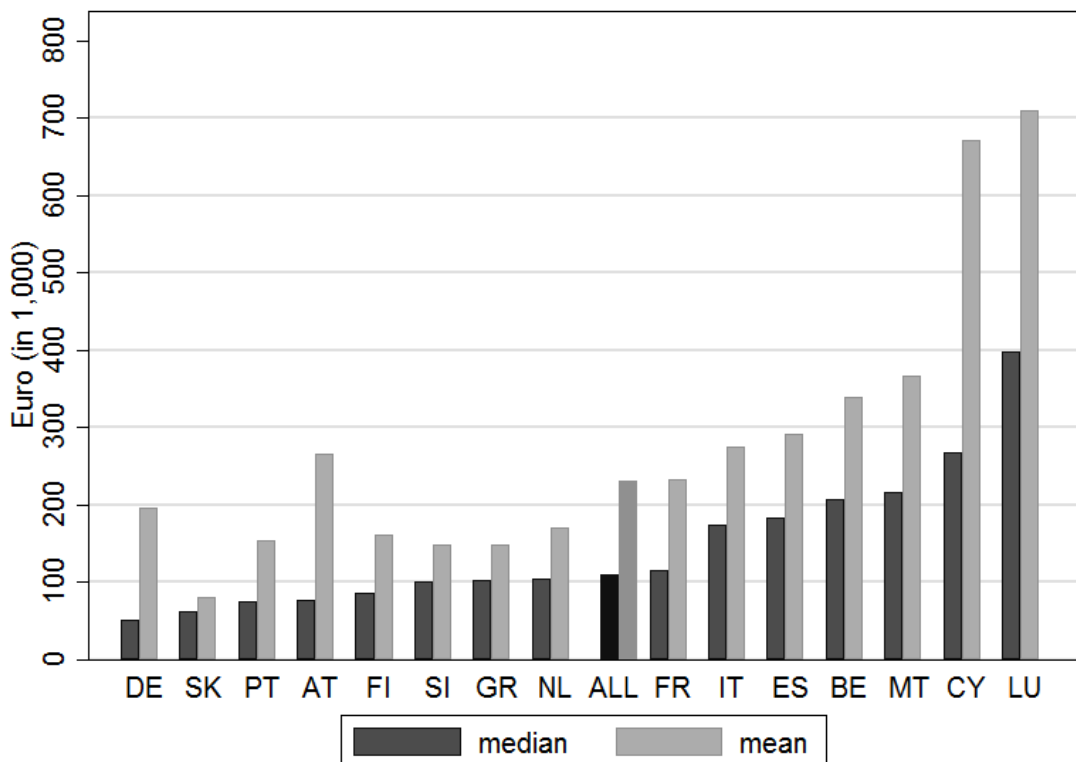
<sup>2</sup> Other recent popular contributions to the debate about (material) inequality are from Milanovic (2016), Fratzscher (2016), Atkinson (2015), Bourguignon (2015), Zucmann (2015) and Stiglitz (2012, 2015).

<sup>3</sup> The Luxembourg Wealth Survey (LWS) already tries to make independent wealth surveys comparable with each other via an ex-post harmonization for several years (LIS 2016). However, so far this

from the European central bank. The Household Finance and Consumption Survey (HFCS) provides information about household wealth, income and indicators of consumption and credit constraints from almost all Euro-countries<sup>4</sup> around the year 2010 (first wave). The second wave (in some countries partly a panel) will be made available soon and therefore the survey will not only allow comparisons between countries but also over time (ECB 2016).

The release of the data caused a lot of attention and was followed by several discussions as the differences between countries regarding wealth possession were larger and in some cases in a different order than expected. The data (see figure 1.1) shows that within the sample around the year 2010, the households in Luxemburg and Cyprus have the highest median wealth (397,800 Euro and 266,900 Euro) and German households the lowest (51,400 Euro), followed by Slovak households (61,200 Euro). The median over all surveyed Euro-countries is 109,200 Euro. The differences between median and average net wealth also point to an unequal distribution of wealth within many countries.

**Figure 1.1: Household net wealth in the Euro Area**



Source: HFCS (2010)

never completely worked. For example, in some cases the definitions of core variables do not fully overlap in the harmonized surveys.

<sup>4</sup> Current countries: Austria, Belgium, Cyprus, Finland, France, Greece, Germany, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia and Spain. Additional countries in the future: Estonia, Ireland and Latvia.

Part of the differences between the countries can be explained by structural differences like household size or age patterns (Fessler, Lindner & Segalla 2014). Other important sources are homeownership and house price dynamics (Arrondel, Bartiloro, Fessler, Lindner, Mathä, Rampazzi, Savignac, Schmidt, Schürz & Vermeulen 2014, Mathä, Porpiglia & Ziegelmeier 2014, Lindner 2015, Adam & Zhu 2015, Enderlein & Ständer 2016). The structure of the welfare state also plays an important role. Fessler & Schürz (2015) find that in countries with an effective and well developed welfare state households accumulate less private wealth, because they just do not have to as the (welfare) state takes over some of the securing functions that private wealth has, like compensating a loss of income. Another important source for differences between countries is based on methodological reasons (ECB 2013). This issue is investigated in the second chapter.

Another source for differences between and also within countries can be the way wealth is accumulated. This is basically done via savings out of income (labor or capital income) or wealth transfers, which means inheritances and gifts (Davies & Shorrocks 2000). Current research suggests that wealth transfers are (again) an important factor for household wealth in European countries (Semyonov & Lewin-Epstein 2013, Arrondel, Roger & Savignac 2014, Mathä et al. 2014, Fessler & Schürz 2015, Piketty & Zucman 2015, Humer, Moser & Schnetzer 2016). As inheritances and gifts can be seen as a way of accumulating wealth without effort some argue that this development may even pose a threat to democracy (Piketty 2014, Corneo, Bönke & Westermeier 2016). How much of the current net wealth in Europe is attributed to inheritances and gifts is analyzed in the third chapter.

One way for governments to decrease differences with regard to material resources within a country are taxes. They can directly influence the distribution of economic resources and in addition, tax revenues can be redistributed (Brunner 2014). As wealth transfers seem to be on the rise it would be interesting to know how they are taxed over time in different countries and if and why changes occurred. However, calculating effective wealth transfer tax rates is not that simple. Different tax rates, allowances, exemptions etc. for different amounts and types of wealth need to be taken into account. The current literature either just focus on single countries (Henrekson & Waldenström 2015, Du Rietz, Henrekson & Waldenström 2015) or one point in time for several countries (Scheffler & Spengel 2004, Heinemann, Spengel, Bräutigam & Evers 2015). In the fourth chapter this research gap is closed.

## 1.1. Contributions and Main Findings

In this dissertation I address empirically different aspects of the distribution of private wealth in Europe.<sup>5</sup> It consists of three research papers. In the first one (chapter 2) I investigate the data quality of the HFCS (co-authored with Markus M. Grabka). In the second paper (chapter 3) I analyze the role of intergenerational wealth transfers for European households' economic position (co-authored with Christian Westermeier). I conclude (chapter 4) with a comparison of different intergenerational wealth transfer tax systems between European countries and over time.

### *Chapter 2: Comparing Wealth – Data quality of the HFCS (with Markus M. Grabka)<sup>6</sup>*

The HFCS provides information about household wealth (real and financial assets as well as liabilities) from 15 Euro-countries around the year 2010. The survey will be the key dataset for this topic in the future. However, several aspects point to potential methodological constraints regarding cross-country comparability. Therefore the aim of the second chapter is to evaluate data quality of the first wave of this important data source. This will help users (including myself) to understand and interpret their results better. In addition, we make a contribution to improve data quality further. The framework for our analysis is the “Guidelines for Micro Statistics on Household Wealth” from the OECD (2013). We have two main focuses: First, we compare the sampling processes, the interview modes, the oversampling techniques, the unit and item non-response rates and how it is dealt with it via weighting and imputation as well as further points which might restrict cross-country comparability of net wealth. We classify the approach in each country and evaluate the impact on the surveyed net wealth. Second, we give a first insight in the selectivity of item non-response in a cross-national setting. We make use of logit models to identify differences in item non-response patterns across countries as well as between households within countries.

We find that net wealth is most likely not comparable with the other countries in the sample in Finland, the Netherlands and Italy due to deviating survey modes, the absence of various wealth components or the lack of oversampling. Researchers who are interested in subgroup analyses should also prescind from looking at Slovenia, Malta and Luxemburg due to rather small sample sizes. In addition, due to quota sampling the first wave from Slovakia should not be used. Regarding the non-response behavior we confirm the results from individual country

---

<sup>5</sup> I cite literature from a broad range of the field of political economy and beyond, leading from political science, sociology, law and statistics to economics. My main focus lies however on the economic literature.

<sup>6</sup> Content of the chapter is published in Tiefensee & Grabka (2016).

cases in the literature (Groves, Dillman, Eltinge & Little 2001, Frick, Grabka & Markus 2010). Moreover, we make suggestions for further improvements of data quality at the end of the chapter.

*Chapter 3: Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area (with Christian Westermeier)*

In the third chapter the role of wealth transfers for current households' wealth in Europe is empirically analyzed. The investigation is based on the HFCS, which provides comparable data for core European (Austria, Belgium, France and (West) Germany) and Mediterranean countries (Cyprus, Greece, Portugal and Spain). We also contribute an overview of the inheritance and gift taxation of each investigated country for the present and the most important changes over the last years.

The joint distribution of income and wealth transfers reveals that the relationship between income and the propensity to receive an inheritance or gift is higher in core Europe, whereas the correlation between income position and the capitalized present values of those transfers<sup>7</sup> is high across all countries. This means that high-income households have in the past inherited significantly higher amounts than low-income households. A series of country-specific multivariate regressions via logit and OLS confirm these findings and suggest that higher education levels also go along with higher absolute transfer values. Expectedly, the capitalized present transfer values monotonously increase with households' net wealth position.<sup>8</sup> Using recently established methods by Wolff & Gittleman (2014) and Piketty, Postel-Vinay & Rosenthal (2014) to analyze the capitalized present value of inheritances and gifts as a percentage of current net wealth sees some of the results reversed. Apparently, the relative importance of wealth transfers does not increase with the level of income or wealth. Using a fractional logit regression we find that for higher income quintiles the share of current net wealth due to past intergenerational transfers tends to be decreasing. Taken together we find that high income households seem to be able to build up wealth out of their own income as well as substantial inheritances and gifts. This can be seen as an indication for low intergenerational mobility.

---

<sup>7</sup> We calculate the present value of all past wealth transfers that a household received in 2010 prices and capitalize them using a real annual rate of return of three percent (base scenario).

<sup>8</sup> Due to endogeneity, net wealth is not used as an explanatory variable in our multivariate analyses.

*Chapter 4: Estate and inheritance taxation – Tax regimes and effective tax rates in Europe since the 1950s*

In the fourth chapter I compare the effective tax rates of intergenerational wealth transfers between countries and over time. I contribute to the literature in combining the optimal taxation literature on intergenerational transfers with the welfare state theory by Esping-Andersen (1990), which categorizes societies among other things by different preferences for redistribution. Based on that I argue how the taxation of intergenerational transfers may look like for the different types of welfare state regimes. However, comparing intergenerational transfer taxation between countries and over time is complex and usually just done for one country over time or for several countries at just one point in time. Different tax rates, allowances, exemptions etc. need to be taken into account. I do this and analyze the legislations in the United Kingdom, Germany and Sweden since the 1950s and calculate effective tax rates for typical households with different sizes and portfolios of intergenerational transfers to represent the whole wealth distribution. Therefore, I also tackle an empirical research gap.

I find that the intergenerational transfer legislation and its changes are in line with the respective welfare state regimes in the United Kingdom and Germany, but not in Sweden. Changes over time are due to individual country developments and overall trends. The following three trends are investigated: First, tax competition between countries increased due to a more globalized world. I find decreasing tax revenues from taxes on property or a shift of taxation towards less mobile assets. Second, theory implies that due to higher wealth concentration the influence of interest groups might have increased as well. However, the empirical proof with regard to estate and inheritance taxation in the investigated countries still needs to be made. Third, the influence of the median voter can also be seen, as he/she never had to pay (high) estate or inheritance taxes in the three countries. In addition, wealth transfer tax increases are more likely under a left government, while decreases are more likely under a right government.

## **1.2. Limitations and Further Research**

Research is never finished and knowledge is always in motion. By tomorrow today's truth might be outdated due to some new results. The research field of private wealth and also this dissertation are certainly no exception. After World War II private wealth was not a hot topic in Europe, as big parts were destroyed and people cared more about (tomorrow's) income. This was also reflected in academic work. After a couple of years this started to change and (mainly) theoretical work on private wealth got published (for an overview see Davies & Shor-

rocks 2000). In the last couple of years improved data availability and quality also enabled (quantitative) empirical work.

Of course researchers are always in need of new (or at least qualitatively better) information. However, in the case of private wealth the availability of data is still a challenge which should not be underestimated. What we know today about assets and liabilities in Europe is especially limited in two ways. In some countries (particularly those which are not part of the Euro area) either there is still no information about wealth (on a micro level) available at all, or it is not comparable with other countries. In countries where we can find (comparable) information about private wealth this often comes from survey data. The challenge with this sort of data is typically that it captures quite well who does not possess (much) wealth and we are also informed about the middle part of the distribution. However, regarding the upper part of the distribution and especially the top 1 percent, we still have to rely on approximate simulations as this part of the distribution is usually not represented well in surveys (for the HFCS see Vermeulen 2014). Therefore, we need more (reliable) data about the upper part of the distribution.<sup>9</sup> Of course this lack of data also had consequences for this dissertation. All estimations in chapter 2 and 3 are not representative for (at minimum) the top 1 percent of the wealth distribution. Due to the skewed distribution of private wealth this probably has some not measurable distorting effect.

Further research would be desirable with regard to the item non-response behavior in the HFCS (chapter 2). With additional paradata it could be possible to separate substantial cross-country differences from methodological distinctiveness. In addition, the second (and all following) waves have to be examined for comparability.

Another point which needs to be investigated further and where a causal relationship still needs to be proven is the indicated channel of low intergenerational mobility in chapter 3. In the future this might even be possible with the HFCS as some countries will survey panel data.

Clearly it would be helpful to have effective tax rates available for more countries and even over longer periods of time as presented in chapter 4. Certainly this information could also improve the overview of the inheritance and gift taxation of the investigated countries in chapter 3. For the UK an investigation of contemporary parliamentary prints as already done in

---

<sup>9</sup> A successful example is certainly the “Poverty and Wealth Report” from the German government. Since the 2000’s years each new government reports about the distribution of income and increasingly also about wealth. The report builds upon different academic studies which are specially designed for this purpose (BMAS 2016). For the next report (probably released in spring 2017) a survey about the “high-net-worth-individuals” (at least one million Euros financial assets) was conducted (Lauterbach, Ströing, Grabka & Schröder 2016). Even though this survey is not representative it goes into the right direction and can serve as an example for other countries.

Germany and Sweden would be informative. In addition, more research is needed with regard to the general causes of the tax changes – especially investigations about the influence of interest groups would be interesting.

## References

- Adam K & Zhu J (2015) Price level changes and the redistribution of nominal wealth across the euro area. Working Paper Series No 1853. European Central Bank, Frankfurt.
- Arrondel L, Bartiloro L, Fessler P, Lindner P, Mathä TY, Rampazzi C, Savignac F, Schmidt T, Schürz M & Vermeulen P (2014) How do households allocate their assets? Stylized facts from the HFCS. Working Paper Series No 1722. European Central Bank, Frankfurt.
- Arrondel L, Roger M & Savignac F (2014) Wealth and Income in the Euro Area – Heterogeneity in households' behavior? Working Paper Series. No 1709. European Central Bank, Frankfurt.
- Atkinson AB (2015) *Inequality: What Can Be Done*. Harvard University Press, Cambridge.
- Bartels C & Bönke T (2015) Die statistische Erfassung hoher Einkommen, Vermögen und Erbschaften in Deutschland. In Bofinger P, Horn G, Schmid K & van Treeck T (ed) *Thomas Piketty und die Verteilungsfrage – Analysen, Bewertungen und wirtschaftspolitische Implikationen für Deutschland*, SE Publishing. 156-188.
- BMAS (2016) <http://www.armuts-und-reichtumsbericht.de/DE/Startseite/start.html> (12.12.2016)
- Bourguignon F (2015) *Globalization of Inequality*. Princeton University Press, Princeton.
- Brunner JK (2014) Die Erbschaftsteuer - Bestandteil eines optimalen Steuersystems? *Perspektiven der Wirtschaftspolitik* 15(3). 199-218.
- Cingano, F. (2014) Trends in Income Inequality and its Impact on Economic Growth. *OECD Social, Employment and Migration Working Papers*, No. 163, OECD Publishing, Paris.
- Corneo G, Bönke T & Westermeier C (2016) Eigenleistung und Erbschaft im Vermögen der Deutschen: Eine Verteilungsanalyse. *Perspektiven der Wirtschaftspolitik* 17(1). 35-53.
- Dabla-Norris E, Kochhar K, Suphaphiphat N, Ricka F & Tsounta E (2015) Causes and Consequences of Income Inequality: A Global Perspective. *Staff Discussion Note 15/13*. IMF, Washington.
- Davies JB & Shorrocks AF (2000) The Distribution of Wealth. In Atkinson AB & Bourguignon F (ed) *Handbook of Income Distribution*. Elsevier Science, Amsterdam. 605-675.
- Du Rietz G, Henrekson M & Waldenström D (2015) Swedish Inheritance and Gift Taxation (1885-2004). *IFN Working Paper No. 936*.
- ECB (2013) *Methodological Report for the First Wave*. Statistics Paper Series No 1/April, European Central Bank, Frankfurt.
- ECB (2016) [http://www.ecb.europa.eu/pub/economic-research/research-networks/html/researcher\\_hfcn-faq.en.html](http://www.ecb.europa.eu/pub/economic-research/research-networks/html/researcher_hfcn-faq.en.html) (12.12.2016)
- Enderlein H & Ständer P (2016) Vermögenspreise in der Eurozone – Wie volatil sind Privatvermögen? *Policy Paper 179* Jacques Delors Institut Berlin.
- Esping-Andersen G (1990) *The Three Worlds of Welfare Capitalism*. Princeton.



- Fessler P & Schürz M (2015) Private Wealth across European Countries: The Role of Income, Inheritance and the Welfare State. Working Paper Series No 1847. European Central Bank, Frankfurt.
- Fessler P, Lindner P & Segalla E (2014) Net Wealth across the Euro Area - Why household structure matters and how to control for it. Working Paper Series No 1663. European Central Bank, Frankfurt.
- Fratzcher M (2016) Verteilungskampf: Warum Deutschland immer ungleicher wird. Carl Hanser Verlag GmbH & Co. KG, Leipzig.
- Frick JR, Grabka MM & Markus J (2010) Editing und multiple Imputation der Vermögensinformation 2002 und 2007 im SOEP. Data Documentation. DIW Berlin.
- Góes C (2016) Testing Piketty's Hypothesis on the Drivers of Income Inequality: Evidence from Panel VARs with Heterogeneous Dynamics. IMF Working Paper 16/160.
- Groves RM, Dillman DA, Eltinge JL & Little RJA (2001) Survey Nonresponse. John Wiley & Sons, New York City.
- Heinemann F, Spengel C, Bräutigam R & Evers MT (2015) Auswirkungen auf die effektive Erbschaftsteuerbelastung in Deutschland und internationaler Vergleich. Das Eckpunktepapier und der Referentenentwurf des BMF zur Erbschaftsteuer. ZEW.
- Henrekson M & Waldenström D (2015) Inheritance Taxation in Sweden, 1885–2004: The Role of Ideology, Family Firms and Tax Avoidance. IFN Working Paper No. 1032
- HFCS (2010) Household Finance and Consumption Survey. Data file edition from 2014. European Central Bank, Frankfurt.
- Hudson P & Tribe K (2016) The Contradictions of Capital in the Twenty-First Century: The Piketty Opportunity. Agenda Publishing, Newcastle upon Tyne.
- Humer S, Moser M & Schnetzer M (2016) Bequests and the Accumulation of Wealth in the Eurozone. INEQ Working Paper Series #1. WU, Wien.
- Lauterbach W, Ströing M, Grabka MM & Schröder C (2016) HViD – Hochvermögende in Deutschland. Abschlussbericht zu den Ergebnissen der Befragung. Universität Potsdam und DIW.
- Lindner P (2015) Factor decomposition of the wealth distribution in the euro area. *Empirica* 42. 291–322
- LIS (2016) The LWS database: user guide. LIS cross-national data center.
- Mathä TY, Porpiglia A & Ziegelmeyer M (2014) Household wealth in the euro area - The importance of intergenerational transfers, homeownership and house price dynamics. Working Paper Series No 1690. European Central Bank, Frankfurt.
- McGrath LF (2015) Inequality in Economic Perceptions within and between EU Member Countries. In Dawson M, Enderlein H, Joerges C (ed) *Beyond the Crisis – The Governance of Europe's Economic, Political and Legal Transformation*. Oxford University Press, Oxford. 235-252.
- Milanovic B (2016) *Global Inequality: A New Approach for the Age of Globalization*. Harvard University Press, Cambridge.
- OECD (2013) *OECD Guidelines for Micro Statistics on Household Wealth*. OECD Publishing, Paris.
- Piketty T (2014) *Capital in the Twenty-First Century*. Harvard University Press, Cambridge and London.

## Introduction

- Piketty T, & Zucman G (2015). Wealth and inheritance in the long run. In Atkinson A & Bourguignon F (ed) Handbook of Income Distribution, volume 2B. Elsevier, Amsterdam. 1303–1368.
- Piketty T, Postel-Vinay G & Rosenthal J-L (2014) Inherited vs self-made wealth: Theory & evidence from a rentier society (Paris 1872-1927). *Explorations in Economic History* 51. 21-40.
- Scheffler W & Spengel C (2004) Erbschaftsteuerbelastung im internationalen Vergleich. Baden-Baden: Nomos.
- Semyonov M & Lewin-Epstein N (2013) Ways to Richness: Determination of Household Wealth in 16 Countries. *European Sociological Review* 29(6). 1134-1148.
- Stiglitz JE (2012) Price of Inequality. Norton & Company, New York City.
- Stiglitz JE (2015) The Great Divide. Penguin Books, London.
- Tiefensee A & Grabka MM (2016) Comparing Wealth – Data Quality of the HFCS. *Survey Research Methods* 10(2). 119-142.
- Vermeulen P (2014) How fat is the top tail of the wealth distribution? Working Paper Series No 1692, European Central Bank, Frankfurt.
- Wolff E & Gittleman M (2014) Inheritances and the distribution of wealth or whatever happened to the great inheritance boom? *Journal of Economic Inequality* 12. 439-468.
- Zucman G (2015) The Hidden Wealth of Nations: The Scourge of Tax Havens. The University of Chicago Press, Chicago.

## 2. Comparing Wealth – Data quality of the HFCS<sup>10</sup>

### 2.1. Introduction

In spring 2013 the European Central Bank (ECB) released the Household Finance and Consumption Survey (HFCS 2010). The first wave of the HFCS provides information about household wealth, income and indicators of consumption and credit constraints from (nearly) all Euro-countries<sup>11</sup> around the year 2010. The survey is of general interest because for the first time it is possible to compare real and financial assets as well as liabilities on the household level between Euro-countries.<sup>12</sup> For several countries this was not even possible on a national level before. The survey will therefore be the central dataset in this topic in the future.

The release of the data caused a lot of attention and was followed by several discussions because the bigger picture drawn by the numbers was somehow surprising. The figures (all ECB 2013a) showed that in comparison with the other investigated countries the households in Luxemburg and Cyprus have the highest median wealth (397,800 Euro and 266,900 Euro). On the other side German households hold only 51,400 Euro, this is the lowest value, followed by Slovak households (61,200 Euro). The median over all surveyed Euro-countries is 109,200 Euro. The explanations of the ECB for these differences ranged from structural differences like household sizes or age patterns, over different macroeconomic dynamics to varying historical, cultural and institutional factors like intergenerational transfers, land ownership or allocation of household wealth between real and financial assets (ECB 2013b). The public debate quickly added additional explanations like wars, the German reunification, transition processes in eastern countries or tax systems (Fessler 2013). Furthermore the survey only collects private pension wealth while wealth accrued from public pension schemes is not provided by the HFCS. The latter may affect wealth accumulation dependent on the generosity of public pension systems (Fessler & Schürz 2015, OECD 2013).

Another important but not widely discussed source for differences between countries might be due to methodological reasons. A look into the data documentation (ECB 2013c) reveals further restrictions for comparison. Reference periods are not the same in all countries, only some countries oversampled the wealthy households, which for them can increase precision,

---

<sup>10</sup> Content of the chapter is published in Tiefensee & Grabka (2016).

<sup>11</sup> Current countries: Austria, Belgium, Cyprus, Finland, France, Greece, Germany, Italy, Luxemburg, Malta, the Netherlands, Portugal, Slovakia, Slovenia and Spain. Additional countries in the future: Estonia, Ireland and Latvia.

<sup>12</sup> Other projects like the Luxembourg Wealth Survey (LWS) try to make independent wealth surveys comparable with each other via an ex-post harmonization. The HFCS is intended for comparison from the start.

while those without oversampling may suffer from coverage errors. Some countries did not survey all mandatory variables and Finland estimated a lot of information from registers. Very low initial response rates in some countries are another challenge for cross-country comparability. Furthermore, the item non-response rate is a serious problem in lots of surveys especially if they deal with a sensitive and difficult subject like wealth (Frick, Grabka & Marcus 2010a, Kennickell 2011). The potential underlying selectivity of non-response needs to be considered in a proper imputation otherwise it influences survey estimates.

All of these aspects point to potential constraints when making cross-country analyses regarding wealth based on the HFCS. Therefore the aims of this paper are to get a better insight in the data quality of the first wave of this important data source to help users to understand and interpret their results better as well as to make a contribution to improve data quality further. We first define the term quality by applying the “Guidelines for Micro Statistics on Household Wealth” from the Organisation for Economic Co-operation and Development (OECD 2013). Then we go through the seven proposed criteria institutional environment, relevance, coherence, timeliness, accessibility, comparability and accuracy (section 2.2). The main focus will be on the last two points. Therefore we present a synopsis of cross-country differences which is the core of the paper (section 2.3). We compare the sampling processes, the interview modes, the sample sizes and the unit and item non-response rates and how it is dealt with them via weighting and imputation. In addition, we show which countries oversampled wealthy households based on which data, compare the survey periods as well as further points which might restrict country comparability. This part is mainly based on the documentations of the ECB and the national central banks; what we add is further literature on the individual topics to classify the individual country behavior and to evaluate the impact on net wealth and its components. Under the characteristic “accuracy” we focus on non-response and in particular on item non-response in a cross-national setting (section 2.4). We make use of logit models to identify differences in item non-response patterns for different wealth components across countries as well as between households within countries and thus give a first insight in the selectivity of item non-response in a cross-national setting. This approach is to our knowledge completely unique for this set of countries. In section 2.5 we summarize our results and make suggestions for improvements for the dataset.

## **2.2. Definition of Data Quality**

The framework for our analysis is the internationally agreed “Guidelines for Micro Statistics on Household Wealth” from the OECD (2013) which provides “guidelines on best practice methods of assessing quality” (OECD 2013, p. 191). There, in accordance with the International Or-

ganization for Standardization (ISO 9100), quality is defined as the “degree to which a set of inherent characteristics fulfills requirements” (OECD 2013, p. 191). Before this backdrop the OECD defines the following seven criteria to describe data quality: institutional environment, relevance, coherence, timeliness, accessibility, comparability, accuracy. Hereinafter we apply all these criteria to the HFCS.

### **2.2.1. Institutional environment**

Institutions producing the data should be “impartial, objective, independent from political and other institutional pressures and free of potential conflicts of interest” (OECD 2013, 192f). In addition, they need to be “adequately resourced to produce the statistics of interest” and have a “mandate to collect the relevant data” (OECD 2013, p. 202). In the case of the HFCS the survey is coordinated by the ECB and carried out by the national central banks and in three cases by the national statistical institutes (France, Finland and Portugal).<sup>13</sup> The main operational regulations of these institutions can be found in the Treaties of the European Union, the Statute of the European System of Central Banks as well as in the national bank acts/laws on national statistic institutes which ensure the required points.

### **2.2.2. Relevance**

Relevance defines the “degree to which statistics meet the needs of actual and potential users [...] thus it depends upon coverage of the required topics and the use of appropriate definitions or concepts” (OECD 2013, p. 193). The HFCS surveys an extensive balance sheet (see figure 2.1) and some variables about income, consumption and credit constraints. An extension to this balance sheet can be claims on public pension funds although there are discussions whether this should be a component of total private household wealth or not. The literature tends to recommend to analyze it not as standard component but alongside private net wealth (Davies & Shorrocks 2000, OECD 2013).<sup>14</sup>

---

<sup>13</sup> Together all these institutions build the Household Finance and Consumption Network (HFCN).

<sup>14</sup> Public pension funds are not tradable or acceptable as collateral (OECD 2013). Further, there is no standard market interest rate (such as interest and dividends from capital), limits to bequeathing (which goes beyond survivors pensions) as well as the issue of liquidation/immediate availability and finally pension wealth is not associated with economic power (as compared to high net wealth). The OECD (2013) recommends to exclude entitlements of all social security schemes, however, “primarily for practical reasons and to maintain consistency with the SNA [System of National Accounts] definition of financial assets” (OECD 2013, p. 71). In many countries reliable estimates may not be available (yet). However, they also acknowledge that in several countries claims on public pension funds are a highly relevant wealth element and “without some measurement of this asset, any estimate of total wealth is an underestimate of the true wealth of the household” (OECD 2013, p. 119). As Frick and Grabka (2013) have shown the net present value of all public pension entitlements for example in Germany nearly doubles standard aggregate net wealth and thereby significantly reduces wealth inequality.

**Figure 2.1: Households’ balance sheet in the HFCS**

| <b>Assets</b>   | <b>Liabilities</b>  |
|---|---|
| <p><b>Real assets:</b></p> <ul style="list-style-type: none"> <li>• Main residence</li> <li>• Other real estate property</li> <li>• Investments in self-employed businesses</li> <li>• Vehicles</li> <li>• Valuables</li> </ul> <p>+</p> <p><b>Financial assets:</b></p> <ul style="list-style-type: none"> <li>• Sight accounts</li> <li>• Savings deposits</li> <li>• Savings plans with building and loan associations</li> <li>• Life insurance policies</li> <li>• Mutual funds</li> <li>• Debt securities</li> <li>• Publicly traded stocks</li> <li>• Money owned to household</li> <li>• Other</li> </ul> | <p><b>Collateralized debt:</b></p> <ul style="list-style-type: none"> <li>• by main residence</li> <li>• by other real estate property</li> </ul> <p>+</p> <p><b>Uncollateralized debt:</b></p> <ul style="list-style-type: none"> <li>• Bank overdrafts</li> <li>• Credit card debt</li> <li>• Other uncollateralized loans</li> </ul> |
| ↓   | ↓   |
| <b>GROSS WEALTH</b>   | <b>DEBT</b>   |
| ↓   |   |
| <b>GROSS WEALTH minus DEBT = NET WEALTH</b>   |   |

Source: Based on Fessler, Mooslechner & Schürz (2012).

### 2.2.3. Coherence

Coherence concerns the “adequacy [that the data can] be reliably combined in different ways and for various uses” (OECD 2013, p. 199). Internal coherence refers to “coherence between different economic variables collected in the same cross-section or inferable from the longitudinal component of the survey” (OECD 2013, p. 199). So far for most countries in the HFCS only the first part is relevant. It is among other things achieved via the editing and imputation process as well as the survey mode CAPI (computer assisted personal interviews), which automatically recognizes inconsistencies (Banca d’Italia 2012). External coherence is related to the “coherence with external sources of information, such as the national accounts or population census” (OECD 2013, p. 199). Net wealth levels in the HFCS are lower than in the national accounts and range between 50 and over 90 percent. However, there exist significant differences between the two concepts related to methodology, coverage etc. (ECB 2013c).<sup>15</sup> In some coun-

<sup>15</sup> For example both reflect a different target population. Compared with the HFCS SNA also include non-profit institutions serving households, like churches, trade unions or political parties. In addition, they cover persons living in institutions (further details on that regarding the HFCS see table 2.2). This will certainly lead to higher wealth aggregates in the SNA. Another caveat for comparison is that in surveys the valuation of assets is based on the self-assessment of the households and in the SNA it is based on estimated market values (ECB 2013c).

tries another possibility is to check for external coherence through comparison with existing wealth surveys.<sup>16</sup>

#### 2.2.4. Timeliness

Timeliness is the “interval of time between publication and the period to which the data refer” (OECD 2013, p. 201). The ECB released the HFCS in spring 2013, before that, extensive data preparations were made. The reference periods of ten countries are between spring 2010 and summer 2011. For the other five they are however between the winters 2008 and 2009, thus a time-lag of five years can be on hand.

#### 2.2.5. Accessibility

Accessibility refers to the “degree to which users are able to use the data. The concept of accessibility spans physical requirements for access, structure of the data files, tools available for access, restrictions placed on accessing the data, adequacy of supporting documentation” (OECD 2013, p. 201). With an academic affiliation the micro data is accessible with a manageable effort.<sup>17</sup> The data is already multiple imputed and contains survey weighting factors as well as information for calculating the variance (bootstrap replicate weights, which contains for example sample design information). However, some variables like the geographical location of the households are not (centrally) available for all countries and have to be requested individually at each central bank. The ECB also provides files and explanations how to work with the individual files (household, personal etc.) and implicates (1-5).<sup>18</sup> Still, the data is quite complex to deal with. The ECB meanwhile tries to account for that for example via a google group.<sup>19</sup> Para data is in general not accessible.

---

<sup>16</sup> This is in principle possible in case of e.g. Germany. However, here too differences in concepts need to be considered. While in the Socio-Economic Panel (SOEP) information about the value of vehicles is not collected (Grabka & Westermeier 2014), the German Income and Expenditure Survey (EVS) provided by the Federal Statistical Office do not ask for business assets (Frick, Grabka & Hauser 2010b).

<sup>17</sup> Researchers have to fill in a form in which they explain the ECB who they are, what they want to do with the data, how they will store it and that they ensure confidentiality. After examination through the ECB the researcher will get a link for download of the data set (available formats: SPSS, Stata, ASCII).

<sup>18</sup> Further accompanying documents are the survey questionnaire, variables descriptions and a central methodological report. Here it would be nice to also have methodological reports (in English) for the individual countries, explaining their procedure in more detail (see for example OeNB 2012).

<sup>19</sup> <https://groups.google.com/forum/#!forum/hfcs-users> (02.02.2016).

## 2.3. Comparability Issues of the HFCS

Comparability refers to the “degree to which data can be compared over domains, across countries, and over time” (OECD 2013, p. 198). To get a better understanding which countries are comparable with each other in which dimensions or under which conditions regarding net wealth table 2.2 summarizes main comparability issues (ECB 2013c, 2013d). In addition, to the extensively methodological report of the ECB some countries reveal further more or less detailed information about their procedure (see Banca d’Italia 2012, Bover 2011, Caruana & Pace 2013, Mathä, Porpiglia & Ziegelmeier 2012, OeNB 2012, Statistics Finland 2015, Tzamourani 2012, von Kalckreuth, Eisele, Le Blanc, Schmidt & Zhu 2012).

### 2.3.1. Sampling, sampling frames and target population

In the first wave in total 62,521 households were surveyed (see figure 2.2). Slovenia has the smallest net sample size consisting of 343 households, which is therefore “not (be) deemed fully representative for the country” (ECB 2013c, p. 9), followed by Malta (843 households) and Luxembourg (950 households). In the last two countries analyses for small subgroups tend to be hindered due to the small sample size. On the other side France surveyed the most households (15,006) followed by Finland (10,989) and Italy (7,951). However, even for those countries analyses at a detailed regional level seem to be not reasonable. In general larger samples reduce sampling errors (see also section 2.4) (Fowler 2014) and allow more precision (lower variance) when estimating unknown population parameters.

All surveys except for Slovakia have a probabilistic design. This means each household in the sample frame has a positive probability of being drawn into the sample. However, Slovakia used a quota sampling for the first wave (based on the income distribution of EU-SILC). Therefore correct sampling and standard errors as well as confidence intervals are impossible to calculate (Fessler & Schürz 2013).<sup>20</sup> Types of sampling frames differ across countries. In most countries units were drawn from some sort of population or dwelling register; in Belgium from telephone register and in Cyprus from the customer register of the electricity authority. The stratification criteria as well as the number of stages also differ between the countries. The target population of the HFCS consists of all members of private households residing in the national territory at the time of data collection. Persons living in collective households and institutions as well as homeless are excluded in most of the countries. How well the sampling frames represent this target population is not clear for each country. In particular a telephone register may not cover the total population given that some households do not have a telephone or there are telephone numbers which are protected and thus not available (Häder,

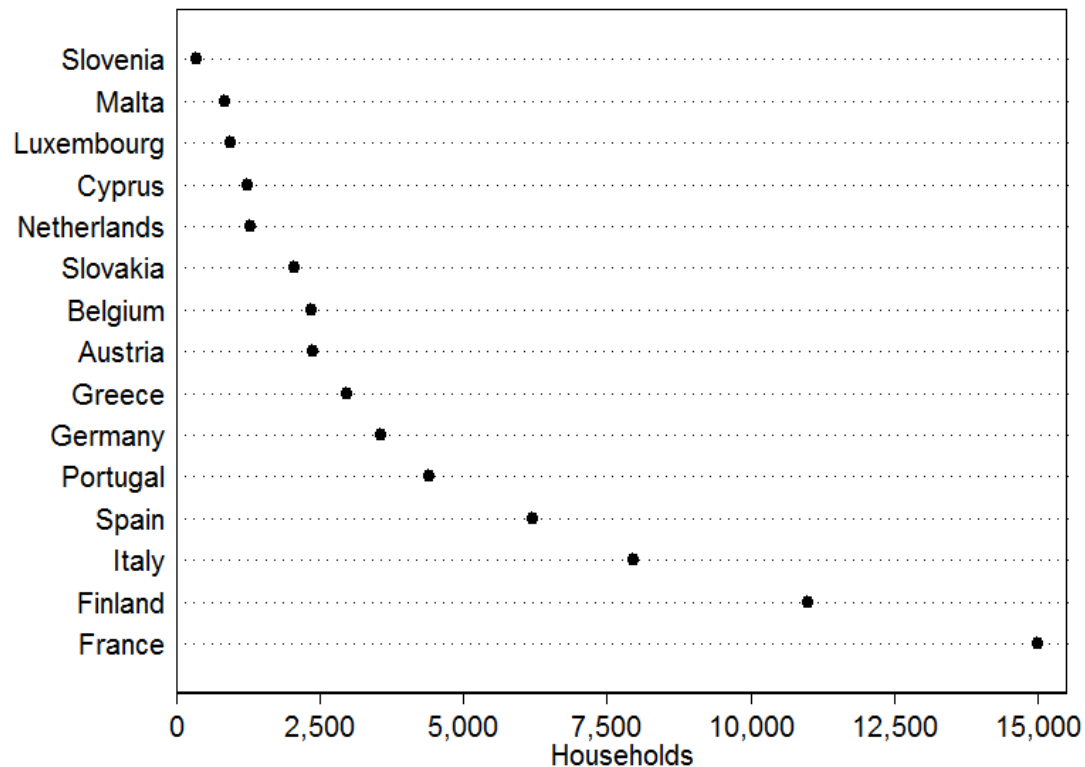
---

<sup>20</sup> Slovakia will have a probabilistic design from the second wave on.



Häder & Kühne 2012).<sup>21</sup> In the Netherlands people who do not speak Dutch and also blind people were excluded from the target population from the beginning, which most likely bias mean net wealth upwards, given that migrants' wealth is typically lower than average wealth (Cobb-Clark & Hildebrand 2006).<sup>22</sup> In Greece smaller villages were excluded (comprising about seven percent of the total number of households).<sup>23</sup>

**Figure 2.2: Number of surveyed households in the HFCS by country (in total 62.521 households)**



Source: Based on ECB (2013c).

<sup>21</sup> Unfortunately information about the existence of a telephone in the surveyed households is not available in the HFCS. Thus we make use of the SOEP to show effects on net wealth (Wagner, Frick & Schupp 2007). Those households in Germany who do not report to have a telephone have only one third of net wealth compared to those who have both a landline telephone and a mobile phone (59,000 Euro vs. 182,000 Euro in 2012). Thus it can be assumed, that ceteris paribus in Belgium net wealth most likely is significantly overestimated.

<sup>22</sup> Once again SOEP data can be used to give an idea about the relevance of such an assumption. Those migrants who state that they speak the national language only fairly bad or not at all show an individual net wealth which only achieves 22 percent of the net wealth of the total population. However, the affected population in Germany is rather small with a share of roughly 1 percent.

<sup>23</sup> Again one would expect an upward bias, given that the value of property wealth is usually lower in the countryside than in city regions. For Germany with SOEP data this presumption can be confirmed. Households living in small villages with less than 2,000 inhabitants, show a net wealth of nearly 90 percent of that of the total population.

### 2.3.2. Survey modes and interviewer training

The survey mode is consistent in most of the countries. They mainly used Computer Assisted Personal Interviews (CAPI) – only Cyprus, Finland and the Netherlands mainly/only used Paper-and Pencil Interview (PAPI), Computer Assisted Telephone Interviews (CATI) or Computer Assisted Web Interviews (CAWI). The literature shows that CAPI is the most reliable method for data collection (Honkkila & Kavonius 2013). Face to face surveys have notably higher response rates and lower item non-response rates than those without (Tourangeau, Rips & Rasinski 2000), but also construct more socially desirable answers (De Leeuw 1992, 2008). Therefore especially the (item) non-response behavior of the Netherlands which mainly used CAWI has to be investigated in more detail (see section 2.4).<sup>24</sup> Finland in addition drew a lot of information from registers or by a modeling process based on previous survey data (Statistics Finland 2015) which might be problematic with regard to cross-country comparability as has been stressed by Lohmann (2011). In general administrative register data have two major advantages, they usually cover the whole population and accuracy is typically ensured. Disadvantages are systematic error, which can occur for example from the modeling process based on previous survey data and conceptual differences for example due to a different definition of certain variables like in the case of business.<sup>25</sup> Furthermore in some cases (as for fiscal purposes) households have an incentive to minimize their values (OECD 2013). Unfortunately, the impact of different survey modes on net wealth cannot be analyzed with the HFCS. However, the so-called CHINTEX-project compared mean equivalence income for Finland using survey data and register data from the ECHP for the very same persons. Here the result was a significant underreporting in the survey data of nearly 8 percent for the total population in 1995 (Rendtel, Nordberg, Jäntti, Hanisch & Basic 2004). For the top income decile this underreporting further increases to almost 20 percent. If this finding is also true for wealth then the Finnish data of the HFCS tend to be systematically higher and may show less wealth inequality for the whole population than if the same survey mode had been used.<sup>26</sup>

Further differences are found regarding the length of interviewer training. In the majority of the countries it is at most eight hours. In France and Spain interviewers were trained almost 30

---

<sup>24</sup> It is also known from the experiences of EU-SILC that the use of different survey modes may influence data quality. E.g. Germany was the only country with self-administered interviews in EU-SILC while other EU-SILC countries performed predominantly CAPI. However, self-administered interviews with cover letters only in the local language tend to discourage in particular migrants to take part in such a survey which in fact happened in Germany (Hauser 2007).

<sup>25</sup> In Finland the variable “business” does not contain the value of non-self-employment not publicly traded businesses (ECB 2013c).

<sup>26</sup> A comparison of income inequality supports this assessment, given that the Finnish register data show a smaller Gini-coefficient and less income poverty than survey data (Rendtel et al. 2004, table 2.4).

hours. Taking into account that these countries continued preexisting wealth surveys it can be assumed that the interviewers in these countries are much more experienced than in others and might therefore have a positive impact on e.g. item non-response behavior and response quality in general.

### 2.3.3. Unit non-response and weighting

The response rates (see figure 2.3) in the 15 countries range from only 18.7 percent in Germany to almost 70 percent in France, where participation is compulsory like in Portugal (64.1 percent) “though participation is never enforced” (ECB 2013c, p. 41).<sup>27</sup> In Finland, France, Italy, the Netherlands and Spain a preexisting wealth survey was adjusted and continued.<sup>28</sup> The response rates for the countries with a preexisting panel component were on average higher because people are already used to the survey content and the interviewer. It is also well known that panel surveys are affected by learning effects (Haunberger 2011) and by selective panel attrition (Kroh 2014). Thus households from cross-sections may most likely differ from those of existing panel studies.<sup>29</sup>

Survey weights are used to adjust for the unit nonresponse behavior; which is assumed not to be random due to the sensitive topic of the survey (see for example Kennickell and Woodburn 1999 and section 2.4). Therefore nonresponse weights are calculated to reduce bias (Fessler & Schürz 2013). This is done in a similar way in each country. In a first step design weights are calculated as the inverse probability of being selected into the sample. In a second step the design weights are adjusted to coverage issues and non-response behavior and are calibrated to external sources. From the documentation of the ECB it is not completely clear in which ways the calculation processes differ between the countries. Information is available on calibration variables like age, gender, household size, region and some other variables – all from external sources – as well as on the existence of weight trimming or limitations for weight adjustment factors. However, just a few country documentations identify which information is available on non-respondents and/or if additional information collected from the interviewer is used. Therefore the quality of the weights cannot be judged with the available HFCS data here.

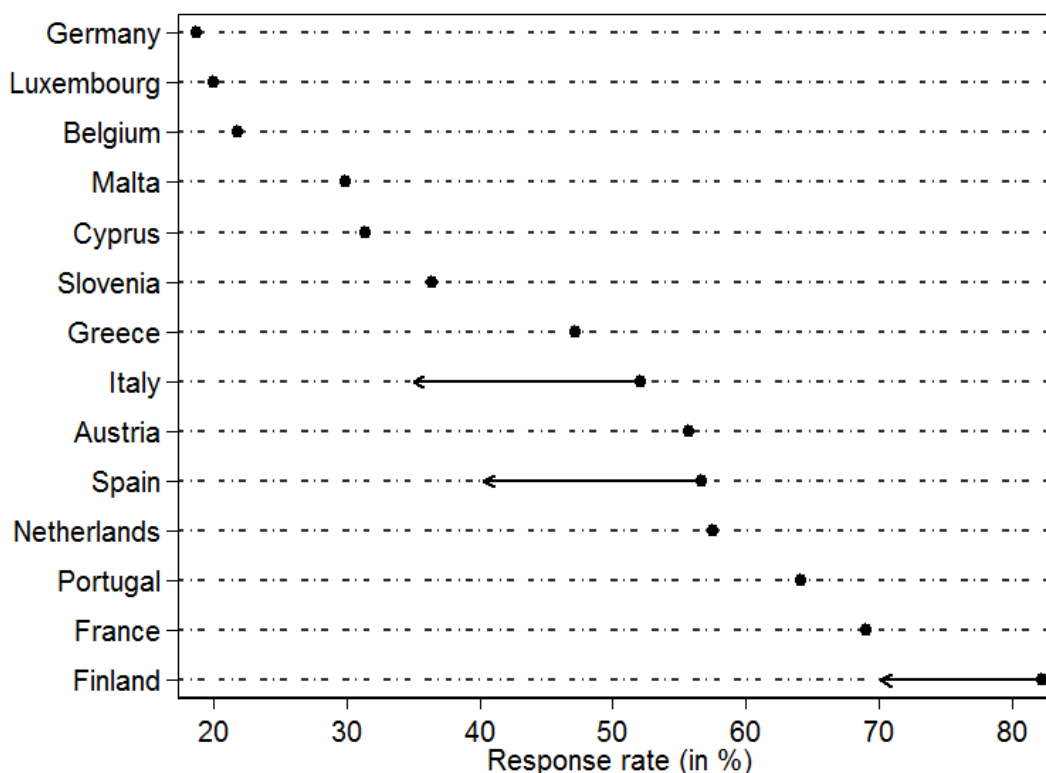
---

<sup>27</sup> Finland even has a higher response rate (82.2 percent), but due to the fact that Finland drew a lot of information from registers, it is not completely comparable.

<sup>28</sup> In Cyprus and Portugal an existing wealth survey was discontinued and replaced by the HFCS.

<sup>29</sup> Frick and Grabka (2005) have shown that first time respondents have a significantly higher share of item-non-response than panel participants from subsequent waves. The effect on net wealth then heavily depends on a proper imputation technique to control for this type of measurement error.

**Figure 2.3: Initial response rates in the HFCS**



Arrows point to response rate for households interviewed for the first time (countries with pre-existing panels only)  
 Source: Based on ECB (2013c).

### 2.3.4. Oversampling

The goal of oversampling is to increase precision of estimates for wealth in general and for those (financial) assets which are only owned by a small fraction of households (Fowler 2014, Kennickell 2007). Theoretically oversampling has no effect on the expected values of measured wealth. The empirical fact that countries without oversampling of the wealthy might be more likely to underestimate wealth (especially at the top) and wealth inequality (Bover 2011, Kennickell 2007) comes from the connection of how the oversampling is often practically implemented. As a priori information about the wealth distribution (or some correlated variable) is needed, countries with an accurate oversampling scheme mostly achieve higher coverage than those without. The method for oversampling as well as the range in which people were identified as wealthy was different in almost each country (see table 2.1). Spain and France oversampled wealthy households based on individual information about net wealth from a wealth tax register. Finland and Luxembourg used individual income information – Cyprus household information about the electricity bill. Greece, Belgium and Germany applied geographical information, in the first case regional real estate prices and in the two others regional-level in-

come information.<sup>30</sup> However, this can lead to increased estimation variance if variance within areas is high (OECD 2013). Austria, Portugal, Slovenia and also Germany oversampled big cities and Italy, Malta, the Netherlands and Slovakia did not oversample at all. It is obvious that pure regional information, income or electricity bills are only weak proxies to identify top wealth households. The effective oversampling rate demonstrates the degree to which the share of wealthy households in the sample exceeds their share in the population. The effective oversampling rate of the top ten percent (explanation see table 2.1) clearly shows that Spain and France have the highest values with 192 and 129 respectively (based on individual wealth information). Vermeulen (2014) tries to compensate the undercoverage of top wealth holders in the HFCS by a simulation of the respective population using information from the Forbes list. He showed that the wealth share hold by the top 1 percent significantly increase for those HFCS-countries who do not implement a proper oversampling. The strongest effect can be observed for Austria where this share increased from 23 percent to almost 36 percent. But even also in other countries this increase amounts to 9 percentage points in Germany, 8 for the Netherlands or 6 percentage points for Italy, while for Spain no effect of this simulation of top wealth holders has been shown. Therefore it can be expected that those surveys with a proper oversampling get a good coverage of the top wealth holders. For countries with no or weak oversampling it can be assumed that they underestimate the true degree of wealth inequality, wealth levels and aggregates.<sup>31</sup>

---

<sup>30</sup> In Germany this is only done for municipalities < 100,000 inhabitants. Big cities (> 100,000 inhabitants) were divided into wealthy sections and others based on information about the quality and type of the building and purchasing power indicators.

<sup>31</sup> The authors tried to approximate the degree of bias on wealth levels and inequality by excluding the top wealth holders of the oversample. However, the HFCS data do not provide any indicator variable to differentiate between “normal” sample members and those from the oversample. It would be helpful to find such a variable in a next release of the HFCS. In order to reflect the relevance of such an oversampling the SOEP can be used exemplary. In 2002 a top income sample was drawn to improve capturing wealthy households. When excluding this oversample mean net wealth would drop by more than 6 percent (based on own calculations).

**Table 2.1: Oversampling strategies in the HFCS**

| Country     | Oversampling wealthy households | Basis for oversampling                                     | effective oversampling rate of the top 10 % |
|-------------|---------------------------------|--|---|
| Spain       | Yes                             | individual information from taxable wealth                 | 192   |
| France      | Yes                             | individual information from net wealth                     | 129   |
| Finland     | Yes                             | individual information from income + socio-economic status | 68  |
| Luxembourg  | Yes                             | individual information from income                         | 55  |
| Cyprus      | Yes                             | household information from electricity bills               | 81  |
| Germany     | Yes                             | geographic income and other information                    | 117   |
| Belgium     | Yes                             | geographic income information                              | 47  |
| Greece      | Yes                             | geographic real estate price information                   | -2  |
| Slovenia    | Partly                          | geographic information (Ljubljana, Maribor)                | 22  |
| Portugal    | Partly                          | geographic information (Lisbon, Porto)                     | 16  |
| Austria     | Partly                          | geographic information (Vienna)                            | 1   |
| Netherlands | No                              | -  | 87  |
| Italy       | No                              | -  | 4   |
| Malta       | No                              | -  | -5  |
| Slovakia    | No                              | -  | -11   |

\* Explanation taken from ECB (2013c, p. 37): “if the share of rich households in the net sample is exactly 10%, the effective oversampling rate of the top 10% is 0. If the share of households in the wealthiest decile is 20%, the effective oversampling rate is 100, meaning that there are 100% more wealthy households in the sample than would be if all households had equal weights”.

Source: Based on ECB (2013c).

### 2.3.5. Item non-response and imputation

Another important issue of data quality is the share of item non-response (INR) and how it is dealt with (Bover 2010, Zagorsky 1999). The share of INR rates differ significantly between different assets and liabilities and also within one component between the countries (see section 2.4). Except for Finland and Italy all countries used multiple imputation by chained equations (MICE) to estimate the missing values (five implicates).<sup>32</sup> The number of covariates used for the multiple imputations greatly differs between countries as well as for assets and liabilities. The goal is not to use the same set of variables for all countries. From the literature we know that a more detailed set of covariates may better capture the selectivity of the non-response behavior than only a very limited set of covariates (Barceló 2008, Mathä et al. 2012). In Spain 239 covariates were used to impute missing values of the household main residence, Malta only used four, the Netherlands six. For the most important mortgage for the household main residence Greece used 154 variables, Slovenia only four. Which variables were used or how the INR patterns look like in the individual countries and for the wealth components or other indications for the imputation quality (such as trace plots or comparisons of the distribu-

<sup>32</sup> The same procedure is used in the Survey of Consumer Finances in the USA (Kennickell 1998) and in the Spanish Survey of Household Finances (Barceló 2006), which served as prototypes. The later one is now part of the HFCS.

tions of observed and imputed data values) are not documented for most of the countries.<sup>33</sup> Therefore the quality of the estimations and if “variance was traded against bias” or the other way around<sup>34</sup> cannot be judged completely (Fessler & Schürz 2013, p. 47).<sup>35</sup>

Single imputation provides only one value and does not reflect the uncertainty of the imputation. Therefore the standard error of the variable might be underestimated (Rubin 1987). Due to very low rates of INR two countries make use of single instead of multiple imputations. Finland estimated a lot of information from registers and Italy had a special agreement with the survey company, which only considers interviews below a certain level of INR as completed. On the one hand this approach may maximize superficial data quality. On the other hand it may influence the incentives of the interviewers or the respondents; in consequence they might report unreliable values. In addition, it can be assumed that such a precondition may yield to a selective sample of respondents and can lead to selectivity bias in the survey estimates (OECD 2013).<sup>36</sup>

### 2.3.6. Reference periods

The reference periods for the assets and liabilities also differ between the countries and thus impair cross-country comparability (see figure 2.4). They range from 2008 to 2011 (almost three years between the first and the last one), but for most countries they are between 2010 and 2011.<sup>37</sup> Especially for Spain comparability issues might occur due to the financial crisis and its effects. Here the reference period already starts in November 2008. Estimates from the OECD show that house prices declined by more than 10 percentage points (real) from 2008 to the beginning of 2011.<sup>38</sup> Considering the deteriorating house prices the mean of real estate in Spain would *ceteris paribus* only account to 221,000 Euro instead of 251,000 Euro and net

---

<sup>33</sup> It would be highly welcomed if this kind of documentation would be made available by the ECB.

<sup>34</sup> If variance is traded for bias, estimations will more often be significant “even though they may have larger true bias” (Fessler & Schürz 2013, p. 47). Fessler and Schürz (2013) provide more details about the bias variance trade off with regard to the HFCS.

<sup>35</sup> To estimate the effect of different imputation techniques on net wealth a simulation strategy would be necessary as has been used by e.g. Frick and Grabka (2005). They applied the very same imputation method to two different surveys and compared the effect on income levels and inequality to the original imputation strategy, finding significant differences.

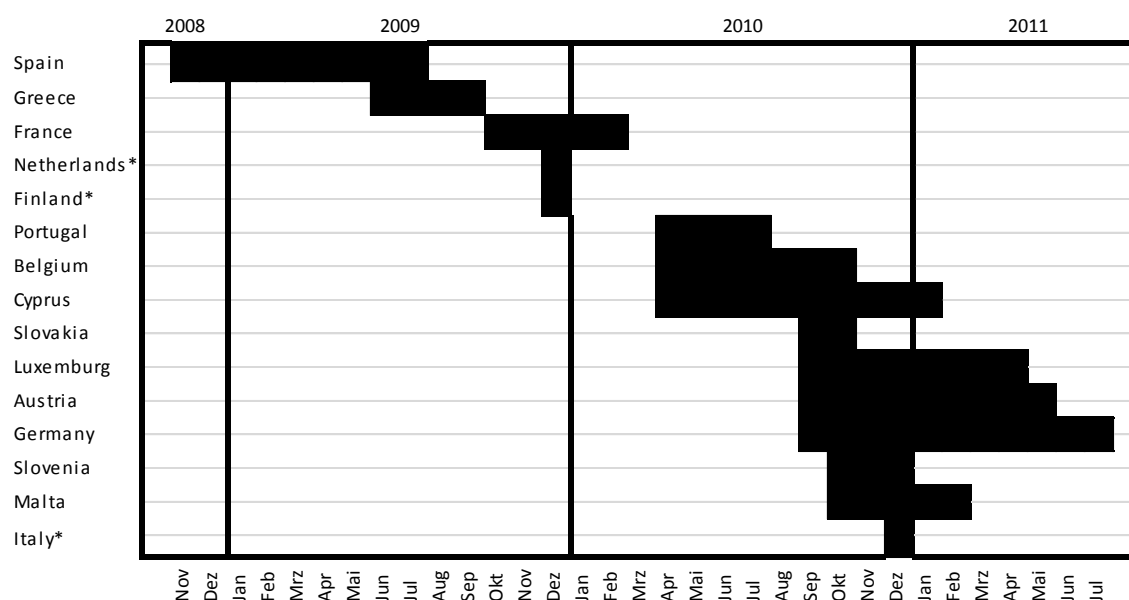
<sup>36</sup> For illustration: Austria and Italy have comparable average values for household main residences. In Austria the average value is 258,000 Euro and drops to 245,000 Euro if imputed values are not considered. This is significant to the five percent level.

<sup>37</sup> The reference periods will be further harmonized and will coincide from wave three onward (Tzamourani 2012).

<sup>38</sup> Information about house prices are used from OECD (doi: ~10.1787/hsprice-table-2014-1-en). House price indices are often based on current transaction prices and not on self-estimation like it is done in surveys. Therefore differences may accrue and the estimations can only be seen as an approximation.

wealth would then only amount to on average 252,000 Euro instead of 291,000 Euro (significant to the five percent level).<sup>39</sup> In addition, one should also account for inflation and the interest rate. Despite from Spain this should also be done in Greece and France where the reference periods also start before 2010. Another challenge is the long lasting collection periods in some countries. Sierminska and Medgyesi (2013) show that during the collection period in many countries the stock-market index fluctuated between 10 percent and 20 percent. The house-price index already changed by 11-18 percent within the collection period in Austria, Germany, Spain and Portugal. While financial assets are usually only hold by a minority of the households, housing makes up to two-third of the wealth portfolio. Summing up, a fixed reference point (e.g. the 31.12. of a given year as has been done in three countries) may improve cross-country comparability instead of rather long reference periods.

**Figure 2.4: Reference periods for assets and liabilities in the HFCS: 2008-2011**



\* Valuation date: December 31<sup>st</sup>

Source: Based on ECB (2013c).

### 2.3.7. Questionnaire and variable catalogue

The individual national banks agreed on a common blueprint questionnaire for the HFCS, which served as a basis for the national questionnaires. This means it is not directly translated (not input harmonized) to account for the diversity of (financial) institutions in Europe as well as to accommodate pre-existing wealth surveys (von Kalckreuth et al. 2012). The questionnaire is divided into three parts: (1) harmonized data, which is output harmonized and collected in every country (so called core variables), (2) harmonized data, which is also output harmonized

<sup>39</sup> Spain already surveyed the second wave of the HFCS in 2010. Maybe this will serve as a better basis to compare net wealth between the countries.



however not collected in every country (so called non-core variables) and (3) country specific data, which is not harmonized. Real and financial assets as well as liabilities fall into category (1). In each household a reference person<sup>40</sup> answered the very detailed and extensive questions about household's assets and liabilities as well as some information about intergenerational transfers, gifts and consumption patterns. Information about income, pensions and insurances policies as well as employment are available for each person in the household older than 16 years. Demographic characteristics (age, gender, country of birth, since when living in current country, relationship to the reference person) are available for all household members.

A closer look into the data documentation and the variable catalogue reveals nevertheless some comparability issues regarding the core variables (ECB 2013c, 2013d, 2013e). The biggest deviations are in Finland: Several core variables are not provided at all: valuables, non-self-employment not publicly traded business, additional assets in managed accounts, money owed to the household, other assets, outstanding credit line/overdraft balance and outstanding credit cards balance.<sup>41</sup> It is obvious that net wealth in Finland is biased downwards given these restrictions. The average share of these missing wealth components from total assets is in the other countries almost nine percent. For liabilities it is a bit over one percent. In consequence this would mean a significant increase of net wealth *ceteris paribus* from 161,500 Euro to 179,000 Euro in Finland. Other variables are only available in an "aggregated form". This means for example for mortgages on the household main residence Finland only provides one variable with all mortgages on the household main residence whereas all other countries asked for the first, the second, the third and all additional mortgages on the household main residence (all together maximal four variables per household). This practice is also applied in several other countries for some assets and liabilities categories (see figure A.2.1 in the appendix). Therefore the variables could be underestimated because people might tend to forget about a small for example mortgage if not asked separately for it. In addition, analysis with all countries cannot be done separately for all single components for example mortgages. Furthermore the variable "mutual funds" is not collected in a uniform way over the countries. Taken together researchers should check carefully depending on the individual research question if the chosen variables are really comparable between the countries.

---

<sup>40</sup> For selection criteria see ECB (2013c, pp. 16-17).

<sup>41</sup> The last liability is also not surveyed in France due to institutional differences (ECB 2013c, p. 83).

**Table 2.2: Methodological differences across countries in the HFCS**

| n                            | RR %   | Frame           | Sampling Design  |   | Mode   | Int. T <sup>a</sup> h   | Weighting       |                   | Basis | Oversampling Details  | Imputation <sup>c</sup>  |                   |      |     |
|------------------------------|--------|-----------------|--|---|--|-------------------------|-----------------|-------------------|-------|---|--|-------------------|------|-----|
|                              |        |                 | Strata   | Excl. Groups  |  |                         | Trim.           | Lim. <sup>b</sup> |       |   | Hmr  | Mort              | Save |     |
| <i>Austria</i>               | 2.380  | 56              | List of enumeration districts; register of post-box addresses  | NUTS III region, population of municipality                   | Homeless, all institutionalized population   | CAPI                    | 7               | No                | No    | Geographic areas  | some oversampling in Vienna because of higher expected non-response rate   | 104               | 51   | 133 |
| <i>Belgium</i>               | 2.364  | 22              | Telephone register and street register   | NUTS I region and average income by neighborhood of residence | Homeless, prisoners  | CAPI                    | 6               | No                | No    | Geographic information about average income                   | Neyman allocation, based on the standard deviation of income in stratum and stratum size   | 46                | 31   | 49  |
| <i>Cyprus<sup>d,e</sup></i>  | 1.237  | 31              | Customer register of the Electricity authority of Cyprus   | Census districts divided into urban and rural                 | Homeless, prisoners, population of the areas of Cyprus not under the effective control of the Government of Cyprus | CAPI (12 %) PAPI (88 %) | 5               | No                | No    | Household information about electricity bill                  | 61 % of the gross sample was drawn from households within the top 10 % according to electricity consumption                            | 50                | 38   | 48  |
| <i>Finland<sup>f,g</sup></i> | 10.989 | 82 <sup>h</sup> | Central population register using master sample of 50,000 persons 16+ and members living in the same household-dwelling unit | Socio-economic criteria of the highest income-earner          | All institutionalized population   | CAPI (3 %) CATI (97 %)  | 40 <sup>i</sup> | Yes               | Yes   | Individual information about income and socio-economic status | from population register (High-income employees, self-employed and farmers)  | Single Imputation |      |     |
| <i>France<sup>g</sup></i>    | 15.006 | 69 <sup>j</sup> | List of geographical units (based on Census); list of dwellings  | Region, regional population; socio-economic criteria          | All institutionalized population   | CAPI                    | 27              | No                | N.a.  | Individual information about net wealth                       | Four strata have been made. For each primary unit and each stratum, an allocation proportional to main residences is computed. Then, a | 17                | 12   | 21  |

| n  | RR<br>% | Frame  | Sampling Design<br>Strata  | Excl. Groups   | Mode | Int. T <sup>a</sup><br>h | Weighting |                   | Basis   | Oversampling<br>Details   | Imputation <sup>c</sup> |      |      |
|--|---------|--|--|--|------|--------------------------|-----------|-------------------|---|---|-------------------------|------|------|
|  |         |  |  |  |      |                          | Trim.     | Lim. <sup>b</sup> |   |   | Hmr                     | Mort | Save |
| systematic selection is made within each couple stratum-primary unit |         |  |  |  |      |                          |           |                   |   |   |                         |      |      |
| <i>Germany</i>   |         |  |  |  |      |                          |           |                   |   |   |                         |      |      |
| 3.565  | 19      | Clusters of addresses from municipalities (NSI); list of street sections, population registers of municipalities | Demographic size, average taxable income of municipalities; additionally wealth-related parameters of street sections for large municipalities | Homeless, all institutionalized population                                       | CAPI | 11                       | No        | Yes               | Geographic information about taxable income and other information | HH in smaller municipalities (<100,000 inhabitants) were oversampled using income tax statistics. A municipality is declared as “wealthy” if a share of more than a fixed percentage of taxpayers with a total taxable income was above a fixed threshold. In larger municipalities (>100,000 inhabitants) the oversampling of wealthy street sections was based on information about the quality and type of the building and purchasing power indicators. Knerr et al. (2012) | 84                      | 10   | 17   |
| <i>Greece</i>  |         |  |  |  |      |                          |           |                   |   |   |                         |      |      |
| 2.971  | 47      | List of municipalities (Census); random routing for secondary sampling units                                     | NUTS II region, degree of urbanization   | Homeless, all institutionalized population, smaller villages (comprising about 7 | CAPI | 8                        | No        | No                | Geographic information about real estate prices                   | The sampling rate for Athens and Thessaloniki is proportional to the  | 233                     | 154  | 49   |

Comparing Wealth – Data quality of the HFCS

| n                               | RR    | Frame           | Sampling Design  | Excl. Groups                                      | Mode  | Int. T <sup>a</sup><br>h | Weighting |                   | Basis | Oversampling   | Imputation <sup>c</sup>  |      |      |                               |
|---------------------------------|-------|-----------------|--|---|---|--------------------------|-----------|-------------------|-------|--|--|------|------|-------------------------------|
|                                 | %     |                 | Strata   |   |   |                          | Trim.     | Lim. <sup>b</sup> |       | Details  | Hmr  | Mort | Save |                               |
| <i>Italy</i> <sup>g,k</sup>     | 7.951 | 52 <sup>h</sup> | List of municipalities; resident lists from municipalities         | NUTS II region and population of the municipality |   |                          |           |                   |       |  |  |      |      |                               |
|                                 |       |                 |  | % of the total number of households)              | Homeless, all institutionalized population  | CAPI (85%)<br>PAPI (15%) | 8         | No                | No    | ---  | ---  |      |      | Single imp. (except save: 10) |
| <i>Luxembourg</i>               | 950   | 20              | Addresses of fiscal households from social security register       | Individual income, nationality, employment status | Diplomats, non-resident citizens, homeless, international civil servants and in general households where no individual is entitled to be registered in the social security register, all institutionalized population | CAPI                     | 6         | No                | Yes   | Individual information about personal income subject to social contributions | 20 % of the gross sample was drawn from the top income decile according to the social security register and the self-employed-headed fiscal household sub-population | 86   | 118  | 31                            |
| <i>Malta</i>                    | 843   | 30              | Dwelling register of the NSI                                       | Statistical region                                | Diplomats, non-resident citizens, armed forces, homeless, civilians living in military institutions, prisoners  | CAPI (81%)<br>PAPI (19%) | 9         | Yes               | Yes   | ---  | ---  | 4    | 10   | 14                            |
| <i>Netherlands</i> <sup>g</sup> | 1.301 | 58              | Postal addresses   | ---   | Blind people, people who do not speak Dutch, all institutionalized population   | CAWI                     | N.a.      | No                | No    | ---  | ---  | 6    | 7    | 7                             |
| <i>Portugal</i> <sup>e</sup>    | 4.404 | 64 <sup>j</sup> | List of geographical areas; list of private dwellings, from Census | NUTS II region                                    | All institutionalized population, homeless, people living in military area  | CAPI                     | 16        | No                | No    | Geographic areas   | Metropolitan areas of Lisbon and Porto oversampled, 50 % of gross sample drawn from these areas  | 16   | 23   | 17                            |

| n                            | RR<br>% | Frame           | Sampling Design<br>Strata  | Excl. Groups   | Mode   | Int. T <sup>a</sup><br>h | Weighting |                   | Basis | Oversampling<br>Details                     | Imputation <sup>c</sup>  |      |      |     |
|------------------------------|---------|-----------------|--|--|--|--------------------------|-----------|-------------------|-------|---|--|------|------|-----|
|                              |         |                 |  |  |  |                          | Trim.     | Lim. <sup>b</sup> |       |   | Hmr  | Mort | Save |     |
| <i>Slovakia</i> <sup>d</sup> | 2.057   | N.a.            | List of municipalities, households chosen by random walk                                       | NUTS III region, population of municipality. In each stratum, ten income quotas were prescribed, which interviewers had to fulfill | Homeless, all institutionalized population   | CAPI                     | 4         | No                | Yes   | ---   | ---  | 102  | 31   | 69  |
| <i>Slovenia</i> <sup>m</sup> | 343     | 36              | List of districts from Census; list of persons 16+ from population register                    | Population of the municipality, with adjustments for expected non-response   | All institutionalized population, diplomats, homeless, non-citizens, armed forces, civilians living in military area | CAPI                     | 7         | No                | Yes   | Geographic areas                            | Municipalities of Ljubljana and Maribor were oversampled, as higher non-response rates were expected | 47   | 4    | 14  |
| <i>Spain</i> <sup>g</sup>    | 6.197   | 57 <sup>h</sup> | Municipal census (list of addresses) supplemented by tax office information; list of addresses | Population of the municipality, taxable wealth   | All institutionalized population   | CAPI                     | 28        | No                | Yes   | Individual information about taxable wealth | Eight wealth strata were defined and were oversampled progressively at higher rates                  | 239  | 104  | 159 |

Note: Estonia, Ireland and Latvia are not part of the first.

a Interviewer Training

b Limits for weight adjustment factors

c Imputation technique: multivariate imputation by chained equations, MICE, unless otherwise noted. Number of covariates used for main variables: value of household main residence (hmr), outstanding amount of most important hmr mortgage (mort), value of savings accounts (save).

d Statement of the ECB: “The data for Cyprus appears not to be comparable with those for other Euro area coun-

tries in a number of dimensions and should therefore be interpreted with caution.” (ECB 2013c, p. 4)

e Existing wealth survey was discontinued and replaced by the HFCS.

f Register and estimated data.

g Preexisting wealth survey continued.

h Response rate for HH interviewed for the first time are as follows: Finland 70; Italy 35; Spain 40

i Includes general interviewer training modules of the NSI.

j Participation compulsory.

k Only interviews with a level of item non-response below a certain threshold were considered

l Quota sampling for the first wave; all other countries probabilistic design. In the second wave the country will adopt a probabilistic design.

m Reduced sample size; “not [be] deemed fully representative for the country” (ECB 2013c, p. 9)

Source: If not otherwise noted ECB (2013c, d).

## 2.4. Accuracy

Accuracy is linked to the “degree to which the data correctly allow estimation of the population characteristics they are designed to describe” (OECD 2013, p. 193). Usually it is described in terms of sources of errors. The total survey error (TSE) refers to the “accumulation of all errors that may arise in the design, collection, processing, and analysis of survey data” (OECD 2013, p. 193). The sources of error can be divided into sampling and non-sampling error. The first one refers to an “inaccuracy that arises because data is collected only from a sample that may not be fully representative of the total population of interest” (OECD 2013, p. 202). The second one “mainly relate[s] to measurement, data collection and processing” (OECD 2013, p. 193). It can be classified in specification error (relevant variables are missing or are only approximated), coverage error (sampling does not completely cover reference population) non-response error (households do not participate in the survey or do not answer all applicable questions), measurement error (errors made by the interviewer or the respondents) and processing error (inaccuracy during data entry, editing etc.). Typically accuracy can be improved more or less in every survey. A big challenge to data quality in cross-sectional surveys comes from the response process; it can induce bias to the estimates. Therefore we will focus in the following analysis on nonresponse and especially on item non-response in the HFCS.<sup>42</sup>

### 2.4.1. Item non-response in the HFCS

A common problem in population surveys and in particular in surveys dealing with wealth is the failure to collect complete information. While a refusal to the total questionnaire is named unit non-response (UNR), item non-response (INR) refers to single questions that are not answered. The UNR behavior can be adjusted for through weighting of the data and INR is typically corrected through imputation (also see section 2.3). A survey with a higher response rate is assumed to produce a better and less biased sample than one with lower rates (Fowler 2014). INR may be caused by a respondent’s reservation to answer a question that appears to be too sensitive, i.e. it affects confidentiality and privacy or simply from the fact that the correct answer is not known (given the underlying complexity of the surveyed construct). In general, simple demographic information such as gender, age or marital status is not very sensitive to ask for, leading to low incidence of INR. Wealth or income questions, however, are typically associated with higher rates of INR (see for example Grabka & Westermeier 2014, Riphahn & Serfling 2005). Furthermore the survey mode (self-administered vs. conducted by

---

<sup>42</sup> Another reason for our choice is that due to confidential reasons users of the HFCS are not able to use Para data or information about non-responding units etc. Therefore the possibilities of investigations are rather limited.

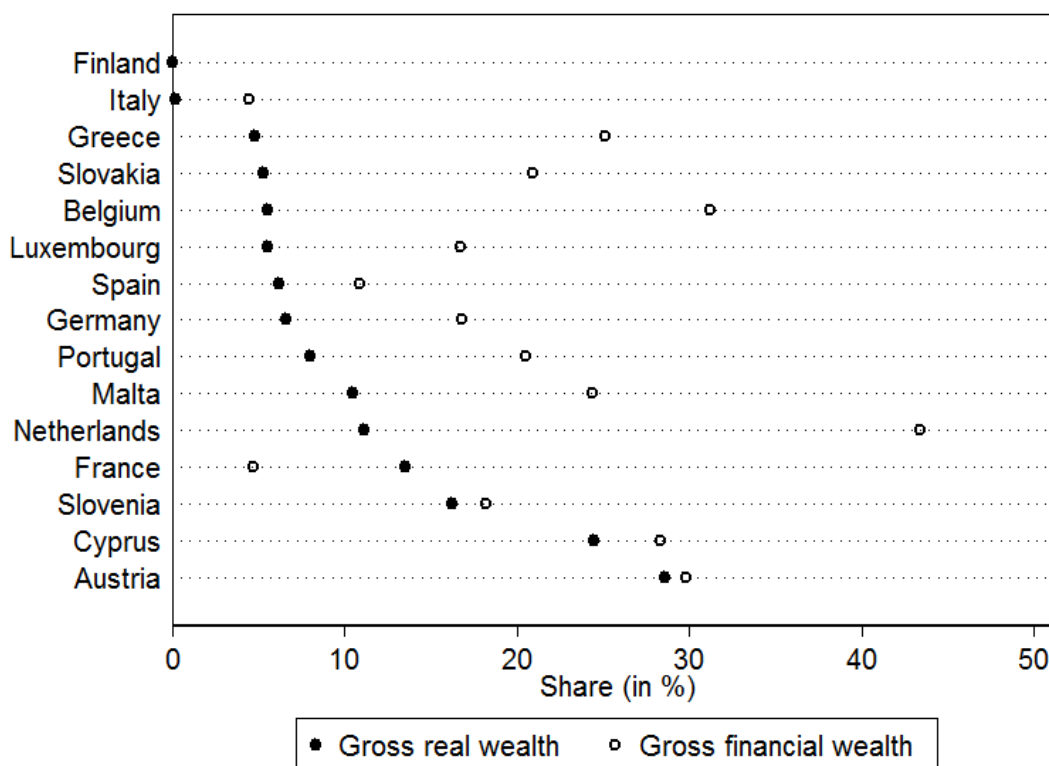
interviewers), the question structure (for example open-ended questions) and the interviewer's characteristics (like experience or character) can have an effect on INR (Groves, Dillman, Eltinge & Little 2001). There is increasing literature which explicitly acknowledges the INR phenomenon in micro-econometric research as a specific form of measurement error (see for example Cameron & Trivedi 2005, p. 193). Most importantly, INR on wealth questions has been found to be selective with respect to inequality (see for example Frick et al. 2010b) and thus can lead to biased results.

As long as the missing process of INR is completely missing at random (MCAR) the potential bias could be disregarded (see Rubin 1987). However, it is typically assumed that INR follows a missing at random process (MAR), which means that the missing data depend on observed information in a data set. Another type of missing data is called missing not at random (MNAR). Here the missing data cannot be explained by observed characteristics and may be for example dependent on missing values itself. The latter both missing mechanisms are non-ignorable and need to be carefully considered. In general older people and those with less education have a higher probability for INR (Groves et al. 2001). It has been shown for example in the SOEP that the probability for missing wealth information is lower for males, persons with higher education levels and civil servants. It is higher for self-employed (Frick et al. 2010a). A proper imputation has to consider the missing process and thus the underlying selectivity.

Based on the imputation method applied in the HFCS the relevance of the imputed values is almost 30 percent for gross real assets in Austria and more than 40 percent for gross financial assets in the Netherlands. For the other countries which make use of multiple imputation the respective shares vary between five and 30 percent (see figure 2.5). Hence INR and the respective imputation have a significant impact on wealth levels and inequality.

We will therefore analyze the INR patterns in the HFCS for selected assets and liabilities in all countries. We want to know, whether the selectivity of INR is uniform across countries or if there are structural differences – which one could interpret as cultural discrepancy of INR. As Couper and De Leeuw (2003) argue, non-response in cross-national studies has so far not been extensively researched and this is still the case. However, differential response rates and patterns between countries can threaten the validity of cross-national comparisons (Couper & De Leeuw 2003). In case of sensitive information such as wealth with rather high INR the problem of cross-country comparability may be of important relevance.

**Figure 2.5: Relevance of imputation in the HFCS\***



\* Weighted sum of all components of the aggregate that were imputed divided by the weighted sum of the aggregate variable.

Source: Based on ECB (2013c, p. 57).

In order to reduce complexity we will focus on assets and liabilities with a high incidence and those with a high quantitative relevance.<sup>43</sup> As assets we choose the variables “household main residence” (real asset) and “saving accounts” (financial asset); both have an incidence greater than 50 percent. Regarding relevance (measured by the mean) “business 1” (real asset) will be added; the variable has quite a high relevance and even incidence in some countries – especially in the southern part of Europe (Malta, Portugal, Cyprus, Italy). For the liabilities, the further investigation is based on “mortgage of the household main residence 1” and “non-collateralised loan 1” – they both have an incidence around 20 percent. Regarding relevance (measured by the mean) no additional variable is added.

The HFCS provides flag variables which give information about potential reasons for the non-response. In total 16 different values are available. There is a category for edited values and one for estimated ones. The imputed category has five different characteristics. One can dif-

<sup>43</sup> Regarding assets mutual funds and private pensions/life insurances are excluded from the analysis. The first one is further divided in subgroups in several countries however not in all and the second one is collected on an individual and not on household level. Finland and Slovenia will not be part of the analysis. The first one does not really have item non-response because of the use of register information and the second one has too few households to investigate.



ferentiate between the responses “Don’t know” and “No answer”. Furthermore the categories “Originally not collected due to missing answer to a previous question”, “Originally collected from a range or from brackets” and “Collected value deleted or value not collected due to a CAPI or interviewer error” can be identified. Furthermore there are different categories for missing values, which were not imputed.<sup>44</sup> In addition, one can see of course which variables were collected as complete observations and which were not applicable (recorded as missing). For the following analysis we will concentrate on the edited and imputed ones.

Figure 2.6 illustrates the share of INR as well as the reason for it for the selected assets and liabilities by country.<sup>45</sup> It is obvious that the shares differ not only significantly between the components but also between and within countries. Especially France and Italy have conspicuous response patterns compared with the other countries. In the case of France the value of household main residence and business 1 has been completely imputed. In the latter case respondents were only asked for a range, which is a slightly different approach than in the other countries where respondents were first asked for the “exact” value and in a second step, if they had difficulties answering the question, for a range. On the other side Italy has in almost all observed variables no imputed or edited data, which is due to the already mentioned agreement with the survey company. Relying on this information the percentage of imputed cases of the value of saving accounts above 50 percent is quite surprising. Malta and Austria have – compared with the other countries – quite high shares of INR. High numbers of imputed values introduce, given a proper imputation, broader confidence bands for these values and in consequence a poorer estimator. Countries with a general low rate of INR are Germany<sup>46</sup> and Portugal.

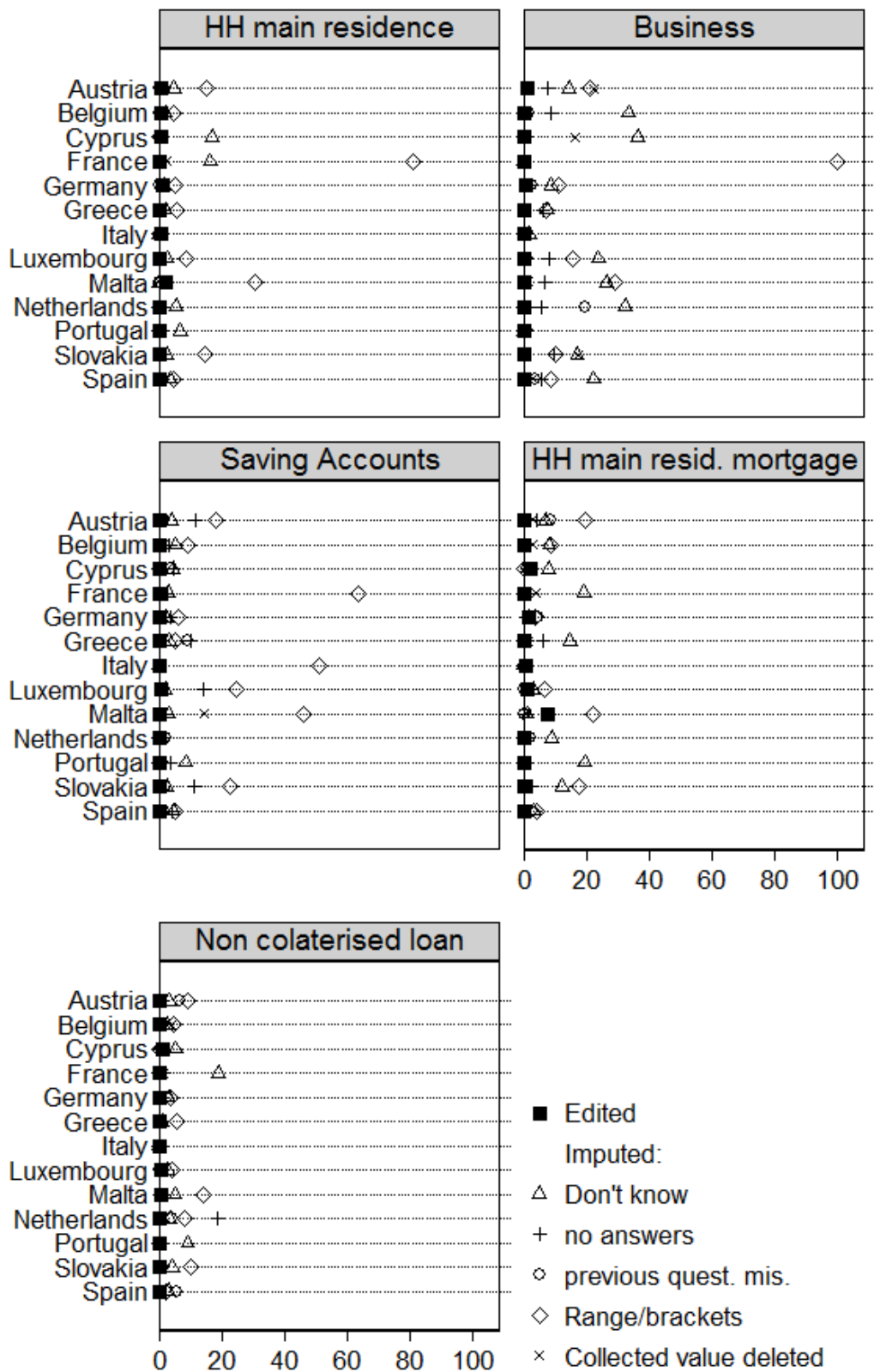
---

<sup>44</sup> They were not used extensively but only in some countries, which may be a hint of problems in cross-country comparability. However, the documentation gives no information for the rationale of this procedure.

<sup>45</sup> The variables refer to the question of the value of the respective wealth component not the holding of the asset or liability.

<sup>46</sup> The low item non-response rate might be a counterpart to the high unit non-response rate. The interviewed household were few but cooperative (von Kalckreuth et al. 2012).

Figure 2.6: Information from flag-variables for selected assets and liabilities – only those holding the respective wealth/liability component



Source: Own calculations based on HFCS (2010). The data for business in Belgium is based on a corrected version from the national Bank of Belgium

Looking at the different reasons for INR one finds that edited values are scarce. Imputations due to “previous question missing” (filter information whether a specific wealth component is held by the household) just play a minor role, although it arises more often in the Netherlands (especially for business 1). The category “Don’t know” is frequently filled for business 1, given that it is rather problematic for a respondent to give a precise valuation of their own enterprise. One can interpret a “No answer” as a strong refusal by the interviewees. However, the respective share is usually not much above 10 percent (exception: “non-collateralised loan 1” in the Netherlands).<sup>47</sup> Deleted and then imputed values (considered incorrect or unreliable) are also especially present for business 1.<sup>48</sup> Most of the imputed values are collected from a range or from brackets, which means that respondents do not know the exact amount of their asset or liability but subsequently unfolding brackets are offered to narrow the value down into ranges, which eases the imputation process. In addition, this procedure reduces complete item non-response (Heeringa, Hill & Howell 1995, Vazquez Alvarez, Melenberg & van Soest 2001). However, from a data user point of view, it yields to missing information which need to be handled carefully.

#### 2.4.2. Estimation strategy and results for item non-response

After the general descriptions of the different INR patterns for the chosen assets and liabilities as well as the differences between the countries we will now analyze the similarities and differences due to characteristics. The multivariate part consists of a logit model with the following equation:

$$p_j(w) = F(\alpha + \beta X_j + \varepsilon_i)$$

where  $p_j$  denotes INR probability of households in country  $j$  for a particular wealth component  $w$ ,  $\alpha$  is an intercept,  $\varepsilon_i$  a random error term.  $X_j$  is the matrix of all explanatory variables, which include predominately socio-demographic information: age, gender, work status and education of the reference persons, income of the household, the value of its assets and liabilities,<sup>49</sup> its size and if children under 14 years are present.<sup>50</sup> We will do this for the Euro-

---

<sup>47</sup> Studies confirm these findings: “questions that require more cognitive effort to be answered receive more don’t knows” (here: business) and “more sensitive questions get more refusals” (here: non-collateralised loan 1) (Shoemaker, Eichholz & Skewes 2000, p. 1).

<sup>48</sup> It is not fully clear on which basis this decision has been made. The ECB should provide more information why this has been done.

<sup>49</sup> It is assumed that with a higher value of assets and/or liabilities the wealth portfolio gets more complex therefore more questions have to be answered. The variables hence also serve as controls for complexity.

<sup>50</sup> More methodological variables which give information about the interview process (such as information about characteristics of the interviewer, given that there exist interviewer-interviewee re-

countries as a whole (pooled analysis) and for each country separately.<sup>51</sup> France, Italy and Portugal are not part of all regressions.<sup>52</sup>

The average marginal effects of the pooled logit estimations, which calculate INR probabilities for the selected assets and liabilities for the whole Euro area with dummy variables for the individual countries<sup>53</sup> (see table A.2.1 in the appendix) show that for all chosen wealth components men have a lower INR probability than women. These points into the direction that men tend to know on average their wealth portfolio better or are just more certain of it. The same holds for the liabilities of the household. The higher they are the less likely the household has INR and is therefore on average better informed about its wealth portfolio. The opposite is the case for the assets of the households (only for household main residences the assets follow the same pattern as for the liabilities). Four out of the five components show that people in the first and second income quintile (compared with the third) tend to have higher INR probabilities. In respectively two of the investigated cases the following holds: people over the age of 65 tend to have higher INR than middle aged ones; self-employed have on average higher non-response shares than employed. This seems intuitively right because in most countries they have to make provisions for their pensions on their own which makes their wealth portfolio more complicated. Persons with primary education tend to have higher probabilities for INR than those with secondary education. The more people live in a household the more complex a wealth portfolio usually is. Thus, the probability for INR for people in a two-person household is lower than for larger households.<sup>54</sup> In general the results found here follow the patterns described in the previous literature (see for example Frick et al. 2010a, Groves et al. 2001).

---

sponding effects, see Pickery, Loosveldt, & Carton 2001) are unfortunately not available. This could be a valuable extension of the HFCS data in the future.

<sup>51</sup> Code from the ECB (2013f) and OeNB (2012) has been used to merge the five data files together.

<sup>52</sup> In France the variables household main residence and business 1 are completely imputed. In Italy the variables household main residence, its most important mortgage and the most important loan do not have imputed values. In Portugal the variable business 1 has too few imputed values to be analyzed here.

<sup>53</sup> We choose Germany as a reference category. Slovenia has a very small sample size, Malta and Luxembourg have rather small ones as well. Slovakia used a quota sampling. Finland used register data. The Netherlands applied CAWI, Cyprus PAPI. France and Italy have for some variables 100 or 0 percent imputation. Portugal has for some variables too few imputed observations. We are left with: Austria, Belgium, Germany, Spain and Greece. From this countries Germany has on average the lowest INR-rates and a middle size sample size.

<sup>54</sup> The described results are significant at least at the 10 percent level. The estimations are done without weights. Including them only leads to minor changes in the values but not in sign.

Controlling for the various countries Austria, Malta and Slovakia show for all five considered wealth components positive effects compared with the reference category Germany.<sup>55</sup>

The effects for the separate country regressions do not show clear patterns (see table A.2.2 in the appendix). Significant effects on the Euro area level are not generally confirmed on the country level. This can be partly explained by small sample sizes at the country level. But we do also find opposing effects. This does apply for asset and liability levels when looking at the value of housing main residence. At the Euro area level these covariates point to a significantly lower probability for INR – which is confirmed for at least three HFCS countries – while Slovakia stands out with significant positive effects. When looking at saving accounts again Slovakia and Malta show opposite effects for asset levels.<sup>56</sup> A common pattern across countries however can be found for gender. Although this covariate is not significant in all HFCS countries, we find the general effect, that if women are the reference person they have a significantly higher probability for INR. We also confirm for several countries the effect for the household size. The more people are living in a household the more complex is the wealth portfolio and thus the higher is the probability for INR. Altogether there is not a harmonized item nonresponse pattern across the HFCS countries.<sup>57</sup> This implies the necessity for well aligned imputation models. But as indicated above the documentation is not very precise how and with which imputation models item non-response has been handled. In addition, further analyzes which take unit nonresponse patterns into account would be desirable, however are not possible with the user data set.

## 2.5. Conclusion

The HFCS micro dataset is a milestone for cross-country comparisons of private wealth in the Euro area. The core questionnaire and also the survey methodology was largely pre-harmonized, however there are significant differences across country surveys which impair cross-country comparability of net wealth and inequality and thus should be carefully taken into account by researchers. The aims of this paper are to get a better insight in the data quality of the first wave of this important data source to help users to understand and interpret their results better as well as to make a contribution to improve data quality further. Based on

---

<sup>55</sup> Further tests show that the differences between the single countries are in the majority of the cases significant. Further research especially with Para data is needed to analyze differences between countries further and to identify clear structures.

<sup>56</sup> Again contrarious effects can be found for Slovakia when considering liability levels for mortgages of household main residence.

<sup>57</sup> We also applied a decomposition method suggested by Fairlie (1999, 2005) to identify structural (cultural) differences in the item non-response missing process. However, we could not find unified structures. Results can be found in the Working Paper Tiefensee and Grabka (2014).

the “Guidelines for Micro Statistics on Household Wealth” from the OECD (2013) we defined the term quality. We then went through the seven criteria institutional environment, relevance, coherence, timeliness, accessibility, comparability and accuracy (with the main focus on the last two points) and checked how the HFCS implemented these points. We present a synopsis of methodological differences in the HFCS dataset to shed some light on cross-country comparability and thus on potential restrictions for wealth comparisons. We find that net wealth is most likely biased in Finland due to a deviating survey mode and more importantly the absence of various wealth components which may lead to an underestimation of assets (9 percent) and liabilities (1 percent). The Netherlands also deviates with respect to the survey mode, however a quantification of this effect is not possible here. For a wealth survey oversampling of rich households is crucial to reduce potential coverage error. As has been shown by Vermeulen (2014) the lack of oversampling, like in the Netherlands and Italy, lead to a systematic undervaluation of mean net wealth and the wealth share of the top 1 percent. When researchers are interested in subgroup analyses, they should prescind from looking at Slovenia, Malta and Luxemburg due to rather small sample sizes. Finally Slovakia should not be used so far, given that only a quota sample has been used to survey the population, which does not fulfill accepted quality requirements.

In addition, under the point accuracy incidence and selectivity of item non-response in a cross-national setting are investigated, which gives a first insight in different nonresponse patterns for the chosen assets and liabilities as well as for the individual countries. Strong refusals when respondents are not willing to give an answer are acceptably low in the HFCS with a share of less than roughly 10 percent, while UNR play a larger role in the HFCS. Nevertheless, imputation took place up to 100 percent for all those holding a wealth component in France for housing main residence and business assets. After controlling for demographic characteristics via a pooled and country specific logit regressions we in principle confirm the results from individual country cases in the literature, but cannot find harmonized item non-response patterns across countries. However, due to the lack of more methodological information (such as interviewer characteristics) or about the unit non-response process we are not able to investigate this aspect further.

Taken together the HFCS is at the moment the best dataset for cross country comparisons of wealth levels and inequality in the Euro area and it is definitely a first (big) step into the right direction. Nevertheless some improvements are very helpful. First, we would suggest publishing detailed methodological reports for all countries in English, in addition to the methodological report from the ECB. Second, methodological differences which are not based on country specific differences should be reduced or better even vanish. Desirable points to work on are

for example the full (output) harmonization of the collected and provided wealth and liability components (which is essential for cross-country comparability of wealth levels and inequality), the application of more harmonized sampling frames, the reduced sample size in Slovenia, the survey modes in Cyprus, the Netherlands and in Finland, a harmonization and shortening (in some cases) of the reference periods and even a more harmonized procedure with respect to the oversampling of top wealth households, given that these households have a pronounced effect when looking at the skewed wealth distribution. An oversample identifier could also ease analyses about the relevance of such a methodological add-on. Third, necessary country specific differences like in the case of weighting or imputation should be documented in more detail for example has Para data been used for the construction of weights and what covariates are used for the imputation, which would allow other researchers to go further than the study at hand to analyze the data quality of the HFCS. If it is not possible to make some information publicly available due to data protection, one could examine the possibility of a protected platform for data users. Additionally, countries with a very low initial response rate like Germany should make endeavors to raise the willingness of the respondents to take part in such a survey, not only to reduce potential bias in a cross sectional, but more importantly in a longitudinal sense. Further, exemptions such as Italy, that achieved very low INR by a special agreement with the survey company, to only consider interviews below a certain level of non-response as completed, should be avoided to ease comparability. The ECB should also reconsider to survey public pension entitlements in the HFCS and to provide this information in a separate variable to enable data users to decide whether this information might be considered in wealth analyses. Finally, it should be checked whether Para data could be made available for external researchers to better separate substantial cross-country differences from methodological distinctiveness for example for investigating INR patterns further.

## References

- Banca d'Italia. (2012). Household income and wealth in 2010. Supplements to the Statistical Bulletin, Banca d'Italia, Rome.
- Barceló C (2006). Imputation of the 2002 wave of the Spanish survey on household finances (eff). Documentos Ocasionales No 0603, Banco de España, Madrid.
- Barceló C (2008). The impact of alternative imputation methods on the measurement of income and wealth: evidence from the Spanish Survey of Household Finances. Documentos de Trabajo No 0829, Banco de España, Madrid.
- Bover O (2010). Wealth inequality and household structure. *Review of Income and Wealth*, 52, 259–290.
- Bover O (2011). The Spanish Survey of Household Finances (EFF). Description and methods of the 2008 wave. Documentos Ocasionales N. 1103, Banco de España, Madrid.

- Cameron A & Trivedi P (2005). *Micro-econometrics, methods and applications*. New York: Cambridge University Press.
- Caruana K & Pace C (2013). *HFCS in Malta: main results of 2010 exercise*. Valletta: Bank Centrali ta' Malta.
- Cobb-Clark D & Hildebrand V (2006). The wealth and asset holdings of US-born and foreign-born households: evidence from SIPP data. *Review of Income and Wealth*, 52. 17–42.
- Couper M & De Leeuw E (2003). Nonresponse in cross-cultural and cross-national surveys. In Harkness J, van de Vijver F & Mohler P (Eds.), *Cross-cultural survey methods*. Hoboken, New York: John Wiley & Sons. 157–177.
- Davies J & Shorrocks A (2000). The distribution of wealth. In Atkinson A & Bourguignon F (Eds.), *Handbook of income distribution* Amsterdam: Elsevier. 605–675.
- De Leeuw E (1992). *Data quality in mail, telephone and face to face surveys*. Amsterdam: TT-Publikaties.
- De Leeuw E (2008). *The effect of computer-assisted interviewing on data quality: a review of the evidence*. Department of Methodology and Statistics, Utrecht University.
- ECB. (2013a). *Statistical tables*. Frankfurt: European Central Bank.
- ECB. (2013b). *Results from the first wave*. Statistics Paper Series No 2/April, Frankfurt.
- ECB. (2013c). *Methodological report for the first wave*. Statistics Paper Series No 1/April. Frankfurt: European Central Bank.
- ECB. (2013d). *HFCS country surveys metadata information*. Frankfurt: European Central Bank.
- ECB. (2013e). *HFCS core variables catalogue*. Frankfurt: European Central Bank.
- ECB. (2013f). *Using the HFCS with Stata*. Frankfurt: European Central Bank.
- Fairlie R (1999). The absence of the African-American owned business – an analysis of the dynamics of self-employment. *Journal of Labor Economics*, 17. 80–108.
- Fairlie R (2005). An extension of the Blinder-Oaxaca decomposition technique to logit and probit models. *Journal of Economic and Social Measurement*, 30. 305–316.
- Fessler P (2013). *Eurosystem Household Finance and Consumption Survey – challenges with regard to cross country comparability*. Presentation in the Research Seminar in Economics, FU Berlin.
- Fessler P, Mooslechner P & Schürz M (2012). *Eurosystem Household Finance and Consumption Survey - first results for Austria*. Monetary Policy and the Economy Q3/12, Österreichische Nationalbank, Wien.
- Fessler P & Schürz M (2013). *Cross-country comparability of the Eurosystem Household Finance and Consumption Survey*. Monetary Policy & the Economy Q2/13, Österreichische Nationalbank, Wien.
- Fessler P & Schürz M (2015). *Private wealth across European countries: the role of income, inheritance and the welfare state*. Working Paper Series No 1847, European Central Bank, Frankfurt.
- Fowler F (2014). *Survey research methods*. Los Angeles: Sage.
- Frick J & Grabka MM (2005). Item-non-response on income questions in panel surveys: incidence, imputation and the impact on the income distribution. *Allgemeines Statistisches Archiv*, 89(1). 49–61.



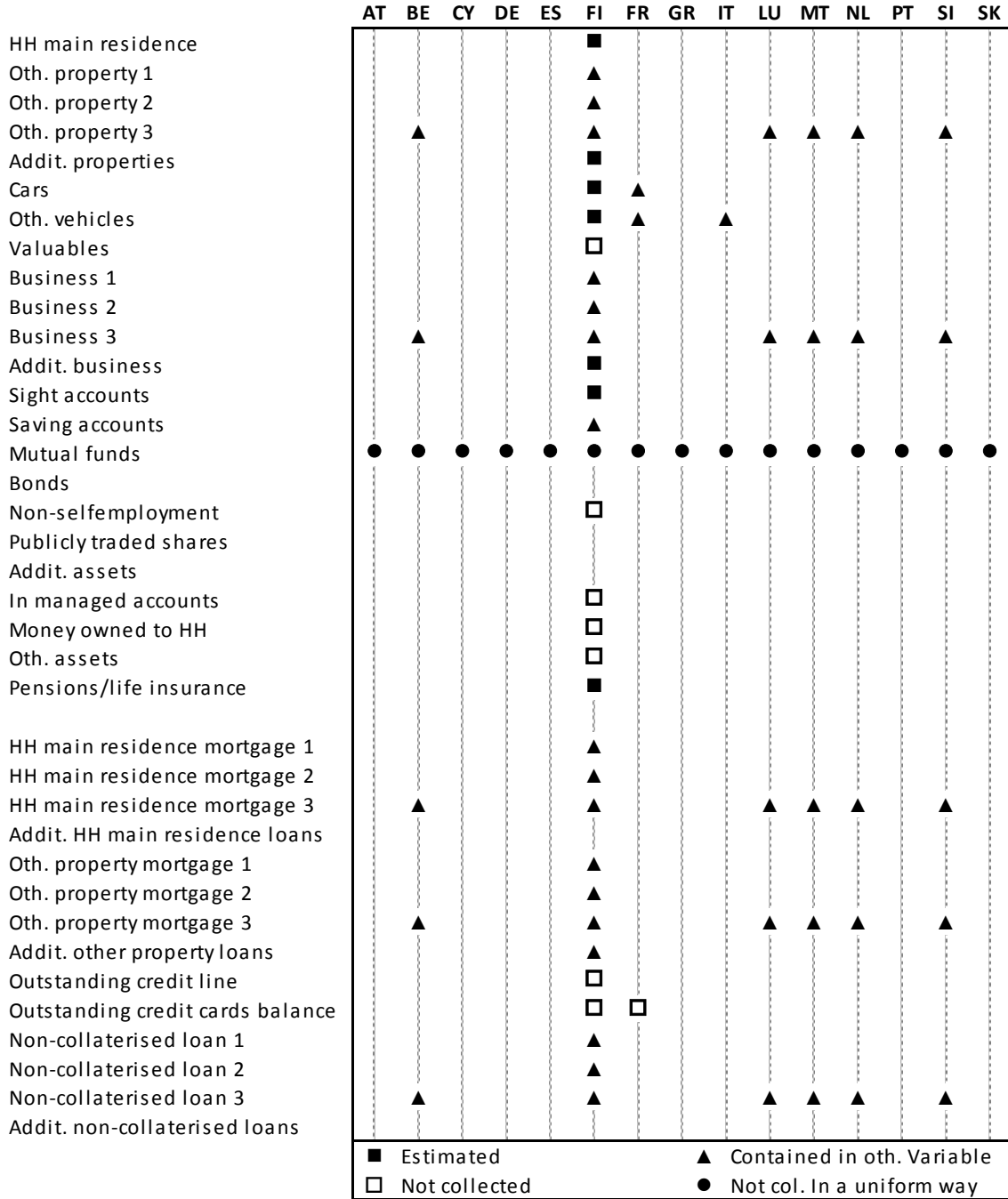
- Frick J & Grabka MM (2013). Public pension entitlements and the distribution of wealth. In Gornick JC & Jäntti M (Eds.), *Income inequality: economic disparities and the middle class in affluent countries*. Stanford University Press. 362–388.
- Frick J, Grabka MM & Marcus J (2010a). Editing und multiple Imputation der Vermögensinformation 2002 und 2007 im SOEP. *Data Documentation*. Berlin: DIW.
- Frick J, Grabka MM & Hauser R (2010b). Die Verteilung der Vermögen in Deutschland. *Empirische Analysen für Personen und Haushalte. Forschung aus der Hans-Böckler-Stiftung Nr. 118*. Berlin: Edition Sigma.
- Grabka MM & Westermeier C (2014). Anhaltend hohe Vermögensungleichheit in Deutschland. *DIW Wochenbericht 9/2014*, Berlin.
- Groves R, Dillman D, Eltinge J & Little R (Eds.). (2001). *Survey nonresponse*. New York: John Wiley & Sons.
- Häder S, Häder M & Kühne M (Eds.). (2012). *Telephone surveys in europe: research and practice*. Berlin, Heidelberg: Springer.
- Haunberger S (2011). *Teilnahmeverweigerung in Panelstudien*. Wiesbaden: VS Verlag für Sozialwissenschaften.
- Hauser R (2007). Probleme des deutschen Beitrags zu EU-SILC aus der Sicht der Wissenschaft – Ein Vergleich von EU-SILC, Mikrozensus und SOEP. *RATSWD working paper No. 3*, Berlin.
- Heeringa S, Hill D & Howell D (1995). Unfolding brackets for reducing item nonresponse in economic surveys. *PSID Technical Series Papers #95-01*. University of Michigan.
- HFCS (2010). *Household Finance and Consumption Survey. Data file edition from 2014*. European Central Bank, Frankfurt.
- Honkkila J & Kavonius I (2013). Micro and macro analysis on household income, wealth and saving in the Euro area. *Working Paper Series No 1619*, European Central Bank, Frankfurt.
- Kennickell A (1998). Multiple imputation in the Survey of Consumer Finances. *Proceedings of the Section on Survey Research Methods, Joint Statistical Meetings, Dallas*.
- Kennickell A (2007). The role of over-sampling of the wealthy in the Survey of Consumer Finances. *Survey of Consumer Finances Working Papers*, Federal Reserve Board, Washington, D.C.
- Kennickell A (2011). Look again: editing and imputation of SCF panel data. Prepared for the 2011 Joint Statistical Meeting, Miami.
- Kennickell A & Woodburn R (1999). Consistent weight design for the 1989, 1992 and 1995 SCFs, and the distribution of wealth. *Review of Income and Wealth*, 45. 193–215.
- Knerr P, Chudziak N, Gilberg R & Kleudgen M (2012). *Methodenbericht – Vermögenssurvey. Erste Erhebungswelle 2010/2011*. Infas.
- Kroh M (2014). Documentation of sample sizes and panel attrition in the 7th German Socio Economic Panel (SOEP) (1984 until 2012). *SOEP Survey Papers 177*, DIW Berlin.
- Lohmann H (2011). Comparability of EU-SILC survey and register data: the relationship among employment, earnings and poverty. *Journal of European Social Policy*, 21(1). 1–18.
- Mathä T, Porpiglia A & Ziegelmeier M (2012). The Luxembourg HFCS (LU-HFCS): introduction and results. *Working Paper No 73*, Banque Centrale du Luxembourg, Luxembourg.
- OECD (2013). *OECD guidelines for micro statistics on household wealth*. Paris: OECD Publishing.

- OeNB (2012). HFCS 2010 – methodological notes for Austria. Monetary Policy & The Economy Q3/12, Österreichische Nationalbank, Wien.
- Pickery J, Loosveldt G & Carton A (2001). The effects of interviewer respondent characteristics on response behavior in panel surveys. *Sociological Methods and Research*, 29, 509–523.
- Rendtel U, Nordberg L, Jäntti M, Hanisch J & Basic E (2004). Report on quality of income data. CHINTEX working paper #2.
- Riphahn R & Serfling O (2005). Item non-response on income and wealth questions. *Empirical Economics*, 30(2). 521–538.
- Rubin D (1987). *Multiple imputation for nonresponse in surveys*. New York: John Wiley & Sons.
- Shoemaker P, Eichholz M & Skewes E (2000). Item nonresponse: distinguishing between don't know and refuse. *International Journal of Public Opinion Research*, 14. 193–201.
- Sierminska E & Medgyesi M (2013). The distribution of wealth between households. Research Note 11/201, European Commission, Brussels.
- Statistics Finland. (2015). Retrieved from [http://www.stat.fi/meta/til/vtutk%5C\\_en.html](http://www.stat.fi/meta/til/vtutk%5C_en.html)
- Tiefensee A & Grabka MM (2014). Comparing wealth – data quality of the HFCS. DIW Discussion Papers 1427.
- Tourangeau R, Rips L & Rasinski K (2000). *The psychology of survey response*. New York: Cambridge University Press.
- Tzamourani P (2012). Coherence assessment of the Greek 2009 HFCS with comparable data sources. Athens: Bank of Greece.
- Vazquez Alvarez R, Melenberg B & van Soest A (2001). Nonparametric bounds in the presence of item nonresponse, unfolding brackets, and anchoring. ISSC Discussion Paper Series. University College Dublin.
- Vermeulen P (2014). How fat is the top tail of the wealth distribution? Working Paper Series No 1692, European Central Bank, Frankfurt.
- von Kalckreuth U, Eisele M, Le Blanc J, Schmidt T & Zhu J (2012). The PHF: a comprehensive panel survey on household finances and wealth in Germany. Discussion Paper No 13/2012, Deutsche Bundesbank, Frankfurt.
- Wagner G, Frick J & Schupp J (2007). The German Socio-Economic Panel Study (SOEP) – scope, evolution and enhancements. *Schmollers Jahrbuch*, 127, 139–169.
- Zagorsky J (1999). Young baby boomers' wealth. *Review of Income and Wealth*, 45. 135–156.

# Appendix

## Part A: Figures

**Figure A.2.1: Differences in variables collection**



Source: HFCS (2010).

## Part B: Tables

Table A.2.1: Average marginal effects of the pooled logit estimations

|   | HMR        |          | Business 1 |          | Saving account |          | HMR mortgage1 |          | Loan1      |          |
|---|------------|----------|------------|----------|----------------|----------|---------------|----------|------------|----------|
|   | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.         | Std.err. | Coeff.        | Std.err. | Coeff.     | Std.err. |
| Men                                     | -0.031 *** | 0.005    | -0.074 *** | 0.014    | -0.022 ***     | 0.006    | -0.036 ***    | 0.009    | -0.022 **  | 0.009    |
| Age group (reference: age 45-54)        |            |          |            |          |                |          |               |          |            |          |
| 16-34                                   | 0.020 **   | 0.009    | 0.029      | 0.023    | 0.009          | 0.010    | 0.020         | 0.014    | -0.017     | 0.015    |
| 35-44                                   | 0.015 *    | 0.008    | 0.030 *    | 0.018    | 0.003          | 0.009    | 0.014         | 0.012    | 0.000      | 0.013    |
| 55-64                                   | 0.012      | 0.008    | -0.003     | 0.018    | -0.011         | 0.009    | -0.019        | 0.015    | 0.009      | 0.014    |
| 65 plus                                 | 0.032 ***  | 0.010    | 0.000      | 0.028    | -0.010         | 0.012    | -0.038        | 0.027    | 0.045 **   | 0.022    |
| Employment status (reference: employed) |            |          |            |          |                |          |               |          |            |          |
| Self-employed                           | 0.031 ***  | 0.008    | -0.011     | 0.015    | 0.025 ***      | 0.009    | 0.002         | 0.012    | -0.004     | 0.013    |
| Unemployed/other                        | 0.008      | 0.008    | 0.048 **   | 0.024    | 0.000          | 0.010    | 0.005         | 0.015    | 0.004      | 0.014    |
| Retired                                 | 0.000      | 0.009    | 0.035      | 0.029    | -0.014         | 0.010    | 0.012         | 0.021    | -0.044 **  | 0.018    |
| Education (reference: secondary)        |            |          |            |          |                |          |               |          |            |          |
| Primary                                 | 0.007      | 0.007    | -0.013     | 0.019    | 0.013 *        | 0.007    | 0.018         | 0.012    | 0.025 **   | 0.011    |
| Tertiary                                | 0.010 *    | 0.006    | -0.003     | 0.015    | -0.015 **      | 0.007    | -0.010        | 0.010    | -0.014     | 0.011    |
| Income quintiles (reference: Third)     |            |          |            |          |                |          |               |          |            |          |
| First                                   | 0.026 ***  | 0.008    | 0.003      | 0.035    | 0.040 ***      | 0.010    | 0.050 **      | 0.020    | 0.010      | 0.018    |
| Second                                  | 0.009      | 0.007    | 0.056 **   | 0.027    | 0.003          | 0.009    | 0.030 *       | 0.016    | -0.005     | 0.015    |
| Fourth                                  | -0.007     | 0.007    | -0.021     | 0.021    | -0.004         | 0.008    | -0.004        | 0.013    | -0.019     | 0.013    |
| Fifth                                   | 0.002      | 0.007    | -0.023     | 0.020    | -0.002         | 0.008    | 0.007         | 0.013    | -0.013     | 0.013    |
| Log assets                              | -0.010 *** | 0.003    | 0.012 **   | 0.005    | 0.006 ***      | 0.002    | 0.019 ***     | 0.006    | 0.011 ***  | 0.003    |
| Log liabilities                         | -0.003 *** | 0.001    | -0.003 **  | 0.001    | -0.004 ***     | 0.001    | -0.024 ***    | 0.003    | -0.021 *** | 0.002    |
| Household size (reference: 2 persons)   |            |          |            |          |                |          |               |          |            |          |
| 1                                       | 0.001      | 0.007    | -0.051 **  | 0.024    | -0.048 ***     | 0.007    | 0.007         | 0.015    | -0.006     | 0.014    |
| 3                                       | 0.001      | 0.007    | 0.005      | 0.018    | 0.044 ***      | 0.008    | -0.009        | 0.014    | -0.006     | 0.013    |
| 4                                       | -0.001     | 0.008    | 0.009      | 0.019    | 0.059 ***      | 0.010    | 0.015         | 0.014    | 0.013      | 0.015    |
| 5 plus                                  | 0.025 **   | 0.010    | 0.019      | 0.023    | 0.075 ***      | 0.013    | 0.010         | 0.018    | 0.024      | 0.018    |
| HH with child. <14yrs.                  | -0.008     | 0.008    | -0.026     | 0.018    | -0.046 ***     | 0.009    | -0.016        | 0.012    | 0.004      | 0.013    |
| Mortgage                                | 0.008      | 0.009    |            |          |                |          |               |          |            |          |
| Country (reference: Germany)            |            |          |            |          |                |          |               |          |            |          |
| Austria                                 | 0.097 ***  | 0.010    | 0.272 ***  | 0.029    | 0.230 ***      | 0.013    | 0.214 ***     | 0.022    | 0.137 ***  | 0.029    |
| Belgium                                 | -0.035 *** | 0.012    | 0.132 ***  | 0.031    | 0.080 ***      | 0.015    | 0.084 ***     | 0.021    | 0.019      | 0.029    |
| Cyprus                                  | 0.079 ***  | 0.012    | 0.186 ***  | 0.027    | -0.048 *       | 0.029    | -0.002        | 0.026    | -0.060 *   | 0.034    |
| Spain                                   | -0.027 *** | 0.009    | 0.101 ***  | 0.021    | 0.004          | 0.016    | -0.052 **     | 0.022    | -0.024     | 0.023    |
| France                                  |            |          |            |          | 0.485 ***      | 0.009    | 0.115 ***     | 0.018    | 0.148 ***  | 0.019    |
| Greece                                  | -0.041 *** | 0.011    | -0.084 *** | 0.030    | 0.125 ***      | 0.039    | 0.076 ***     | 0.024    | -0.074 **  | 0.033    |
| Italy                                   |            |          | -0.478 *** | 0.035    | 0.315 ***      | 0.013    |               |          |            |          |
| Luxembourg                              | 0.034 **   | 0.014    | 0.146 ***  | 0.040    | 0.273 ***      | 0.017    | 0.014         | 0.029    | -0.034     | 0.036    |
| Malta                                   | 0.125 ***  | 0.012    | 0.218 ***  | 0.044    | 0.430 ***      | 0.018    | 0.143 ***     | 0.038    | 0.126 ***  | 0.040    |
| Netherlands                             | -0.052 *** | 0.017    | 0.219 ***  | 0.046    | -0.284 ***     | 0.035    | -0.038        | 0.027    | 0.333 ***  | 0.028    |
| Portugal                                | -0.055 *** | 0.011    |            |          | -0.025         | 0.016    | 0.074 ***     | 0.021    | -0.040     | 0.028    |
| Slovakia                                | 0.041 ***  | 0.011    | 0.187 ***  | 0.027    | 0.222 ***      | 0.019    | 0.158 ***     | 0.028    | 0.059 **   | 0.029    |
| N                                       | 19.959     |          | 4.618      |          | 29.353         |          | 8.479         |          | 8.99       |          |
| R <sub>p</sub> <sup>2</sup>             | 0.06       |          | 0.23       |          | 0.20           |          | 0.05          |          | 0.06       |          |

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1

Source: Own calculations based on HFCS (2010).

Table A.2.2: Average marginal effects of the country logit estimations

| HMR                                     | Austria   |          | Belgium  |          | Cyprus     |          | Germany    |          | Spain      |          |
|---|-----------|----------|----------|----------|------------|----------|------------|----------|------------|----------|
|   | Coeff.    | Std.err. | Coeff.   | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. |
| Men                                     | -0.062 ** | 0.026    | 0.001    | 0.013    | -0.082 *** | 0.025    | -0.049 *** | 0.014    | -0.030 *** | 0.009    |
| Age group (reference: age 45-54)        |           |          |          |          |            |          |            |          |            |          |
| 16-34                                   | 0.118 **  | 0.048    | 0.007    | 0.029    | -0.021     | 0.042    | 0.053 *    | 0.029    | 0.033      | 0.023    |
| 35-44                                   | 0.025     | 0.043    | -0.045   | 0.029    | 0.004      | 0.036    | 0.061 ***  | 0.023    | 0.001      | 0.018    |
| 55-64                                   | -0.069    | 0.047    | -0.004   | 0.023    | -0.016     | 0.044    | 0.021      | 0.022    | 0.009      | 0.014    |
| 65 plus                                 | -0.015    | 0.055    | 0.001    | 0.033    | -0.041     | 0.086    | 0.011      | 0.033    | 0.033 **   | 0.016    |
| Employment status (reference: employed) |           |          |          |          |            |          |            |          |            |          |
| Self-employed                           | 0.063     | 0.041    | 0.024    | 0.029    | 0.007      | 0.039    | 0.037 *    | 0.022    | 0.029 *    | 0.015    |
| Unemployed/other                        | 0.050     | 0.047    | 0.039 *  | 0.022    | 0.006      | 0.041    | 0.029      | 0.022    | -0.015     | 0.014    |
| Retired                                 | 0.036     | 0.049    | 0.006    | 0.028    | 0.111      | 0.077    | -0.008     | 0.029    | -0.007     | 0.015    |
| Education (reference: secondary)        |           |          |          |          |            |          |            |          |            |          |
| Primary                                 | 0.113 *** | 0.033    | -0.011   | 0.018    | -0.009     | 0.034    | -0.038     | 0.029    | 0.006      | 0.013    |
| Tertiary                                | -0.013    | 0.040    | 0.008    | 0.016    | -0.020     | 0.029    | 0.010      | 0.015    | 0.010      | 0.013    |
| Income quintiles (reference: Third)     |           |          |          |          |            |          |            |          |            |          |
| First                                   | 0.123 *** | 0.046    | 0.019    | 0.025    | 0.056      | 0.043    | 0.028      | 0.033    | 0.020      | 0.014    |
| Second                                  | -0.028    | 0.042    | 0.024    | 0.022    | -0.017     | 0.039    | 0.057 **   | 0.025    | 0.009      | 0.013    |
| Fourth                                  | -0.023    | 0.038    | 0.000    | 0.021    | -0.043     | 0.037    | -0.005     | 0.023    | -0.011     | 0.014    |
| Fifth                                   | -0.027    | 0.039    | 0.020    | 0.021    | -0.043     | 0.040    | -0.011     | 0.022    | -0.023     | 0.014    |
| Log assets                              | 0.016     | 0.016    | -0.004   | 0.009    | -0.046 *** | 0.014    | -0.001     | 0.008    | -0.003     | 0.005    |
| Log liabilities                         | 0.003     | 0.005    | -0.002   | 0.003    | -0.004     | 0.004    | -0.002     | 0.002    | -0.004 *** | 0.001    |
| Household size (reference: 2 persons)   |           |          |          |          |            |          |            |          |            |          |
| 1                                       | -0.054    | 0.035    | 0.009    | 0.018    | -0.104 **  | 0.046    | 0.047 **   | 0.020    | 0.001      | 0.011    |
| 3                                       | -0.029    | 0.042    | 0.038 *  | 0.021    | -0.027     | 0.041    | 0.027      | 0.021    | 0.010      | 0.012    |
| 4                                       | -0.008    | 0.049    | 0.014    | 0.026    | -0.018     | 0.043    | 0.017      | 0.026    | 0.002      | 0.015    |
| 5 plus                                  | 0.131 **  | 0.057    | 0.070 ** | 0.030    | -0.038     | 0.046    | 0.050      | 0.031    | 0.013      | 0.022    |
| HH with child. < 14 yrs.                | -0.035    | 0.048    | -0.044 * | 0.026    | 0.019      | 0.035    | 0.016      | 0.025    | -0.009     | 0.017    |
| Mortgage                                | 0.060     | 0.055    | -0.006   | 0.027    | 0.016      | 0.034    | 0.007      | 0.024    | 0.006      | 0.017    |
| N                                       | 1,181     |          | 1,708    |          | 984        |          | 2,013      |          | 5,387      |          |
| R2_P                                    | 0.05      |          | 0.03     |          | 0.10       |          | 0.05       |          | 0.03       |          |

| HMR                                     | Greece     |          | Luxembourg |          | Malta      |          | Netherlands |          | Portugal   |          | Slovakia  |          |
|---|------------|----------|------------|----------|------------|----------|-------------|----------|------------|----------|-----------|----------|
|   | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.      | Std.err. | Coeff.     | Std.err. | Coeff.    | Std.err. |
| Men                                     | -0.028 *   | 0.014    | 0.009      | 0.028    | -0.014     | 0.045    | -0.011      | 0.020    | -0.017     | 0.012    | -0.025    | 0.020    |
| Age group (reference: age 45-54)        |            |          |            |          |            |          |             |          |            |          |           |          |
| 16-34                                   | 0.002      | 0.026    | 0.004      | 0.055    | -0.132     | 0.088    | 0.020       | 0.030    | 0.077 **   | 0.032    | -0.025    | 0.031    |
| 35-44                                   | 0.023      | 0.024    | 0.036      | 0.042    | -0.013     | 0.065    | -0.016      | 0.026    | 0.062 **   | 0.025    | 0.000     | 0.031    |
| 55-64                                   | 0.074 ***  | 0.023    | 0.005      | 0.045    | 0.017      | 0.060    | -0.066 **   | 0.031    | 0.059 ***  | 0.021    | 0.075 **  | 0.035    |
| 65 plus                                 | 0.084 ***  | 0.028    | 0.033      | 0.059    | 0.049      | 0.071    | -0.087 **   | 0.040    | 0.062 **   | 0.024    | 0.094 *   | 0.057    |
| Employment status (reference: employed) |            |          |            |          |            |          |             |          |            |          |           |          |
| Self-employed                           | 0.026      | 0.022    | 0.059      | 0.043    | 0.198 ***  | 0.074    | -0.013      | 0.033    | 0.022      | 0.020    | -0.036    | 0.037    |
| Unemployed/other                        | 0.030      | 0.021    | 0.006      | 0.049    | 0.034      | 0.060    | -0.021      | 0.039    | 0.005      | 0.020    | 0.055     | 0.034    |
| Retired                                 | -0.011     | 0.025    | -0.033     | 0.051    | -0.032     | 0.067    | 0.073 **    | 0.036    | 0.025      | 0.019    | -0.035    | 0.044    |
| Education (reference: secondary)        |            |          |            |          |            |          |             |          |            |          |           |          |
| Primary                                 | -0.065 *** | 0.018    | 0.004      | 0.034    | -0.004     | 0.048    | 0.005       | 0.022    | -0.005     | 0.019    | 0.029     | 0.050    |
| Tertiary                                | 0.004      | 0.019    | 0.001      | 0.032    | -0.001     | 0.061    | 0.005       | 0.020    | 0.016      | 0.023    | 0.050 **  | 0.024    |
| Income quintiles (reference: Third)     |            |          |            |          |            |          |             |          |            |          |           |          |
| First                                   | 0.005      | 0.023    | 0.086 *    | 0.051    | -0.137 *   | 0.070    | 0.012       | 0.027    | 0.048 ***  | 0.017    | -0.068 *  | 0.040    |
| Second                                  | 0.002      | 0.021    | -0.046     | 0.052    | 0.000      | 0.060    | 0.000       | 0.024    | 0.030 *    | 0.017    | -0.022    | 0.031    |
| Fourth                                  | 0.016      | 0.022    | -0.027     | 0.042    | 0.145 **   | 0.059    | -0.048 *    | 0.026    | 0.003      | 0.019    | -0.027    | 0.030    |
| Fifth                                   | 0.046 ***  | 0.023    | 0.001      | 0.044    | 0.122 *    | 0.064    | -0.022      | 0.022    | 0.022      | 0.019    | 0.043     | 0.031    |
| Log assets                              | -0.014     | 0.009    | -0.007     | 0.020    | -0.084 *** | 0.025    | 0.007       | 0.016    | -0.018 *** | 0.005    | 0.037 **  | 0.015    |
| Log liabilities                         | -0.003     | 0.002    | -0.011 **  | 0.004    | -0.014 **  | 0.006    | 0.002       | 0.003    | -0.002     | 0.002    | 0.012 *** | 0.003    |
| Household size (reference: 2 persons)   |            |          |            |          |            |          |             |          |            |          |           |          |
| 1                                       | 0.025      | 0.018    | -0.041     | 0.040    | 0.083      | 0.060    | 0.024       | 0.023    | 0.003      | 0.014    | 0.022     | 0.034    |
| 3                                       | -0.036 *   | 0.020    | -0.054     | 0.045    | -0.128 **  | 0.058    | 0.044       | 0.029    | 0.009      | 0.015    | -0.037    | 0.030    |
| 4                                       | -0.057 **  | 0.024    | 0.018      | 0.044    | -0.124 *   | 0.064    | 0.037       | 0.031    | 0.016      | 0.020    | -0.038    | 0.035    |
| 5 plus                                  | -0.030     | 0.034    | -0.001     | 0.053    | -0.231 **  | 0.090    | 0.062 *     | 0.035    | 0.096 ***  | 0.023    | -0.051    | 0.047    |
| HH with child. < 14 yrs.                | -0.039     | 0.026    | -0.050     | 0.044    | 0.119 *    | 0.065    | -0.029      | 0.028    | -0.024     | 0.021    | 0.042     | 0.029    |
| Mortgage                                | 0.023      | 0.027    | -0.075     | 0.049    | -0.046     | 0.074    | 0.013       | 0.033    | 0.045 *    | 0.025    | 0.064 *   | 0.039    |
| N                                       | 1,986      |          | 664        |          | 642        |          | 855         |          | 2,958      |          | 1,581     |          |
| R2_P                                    | 0.07       |          | 0.05       |          | 0.06       |          | 0.07        |          | 0.10       |          | 0.03      |          |

\*\*\* p&lt;0.01, \*\* p&lt;0.05, \* p&lt;0.1, b: coefficient; SE: standard error.

Source: Own calculations based on HFCS (2010).

## Comparing Wealth – Data quality of the HFCS

| Business 1                              | Austria    |          | Belgium    |          | Cyprus    |          | Germany    |          | Spain     |          |
|---|------------|----------|------------|----------|-----------|----------|------------|----------|-----------|----------|
|   | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.    | Std.err. | Coeff.     | Std.err. | Coeff.    | Std.err. |
| Men                                     | -0.162 *** | 0.062    | -0.230 *** | 0.077    | -0.128 ** | 0.062    | -0.149 *** | 0.040    | -0.088 ** | 0.035    |
| Age group (reference: age 45-54)        |            |          |            |          |           |          |            |          |           |          |
| 16-34                                   | -0.022     | 0.107    | 0.161      | 0.131    | -0.012    | 0.098    | 0.108      | 0.077    | 0.110     | 0.073    |
| 35-44                                   | 0.038      | 0.083    | -0.057     | 0.115    | 0.015     | 0.072    | 0.039      | 0.058    | 0.052     | 0.048    |
| 55-64                                   | -0.004     | 0.090    | -0.031     | 0.118    | -0.001    | 0.089    | -0.051     | 0.055    | 0.011     | 0.039    |
| 65 plus                                 | -0.064     | 0.151    | 0.040      | 0.260    | 0.321     | 0.212    | -0.064     | 0.095    | 0.032     | 0.056    |
| Employment status (reference: employed) |            |          |            |          |           |          |            |          |           |          |
| Self-employed                           | 0.056      | 0.073    | 0.116      | 0.090    | -0.114 *  | 0.060    | -0.037     | 0.047    | 0.016     | 0.041    |
| Unemployed/other                        | 0.264      | 0.206    | 0.320 **   | 0.163    | 0.322     | 0.254    | 0.040      | 0.092    | 0.138 **  | 0.058    |
| Retired                                 | 0.091      | 0.146    | 0.266      | 0.222    | 0.184     | 0.219    | 0.005      | 0.099    | 0.064     | 0.065    |
| Education (reference: secondary)        |            |          |            |          |           |          |            |          |           |          |
| Primary                                 | 0.051      | 0.127    | 0.079      | 0.152    | -0.029    | 0.085    | -0.097     | 0.120    | -0.010    | 0.042    |
| Tertiary                                | -0.147 **  | 0.072    | 0.023      | 0.087    | -0.004    | 0.061    | 0.016      | 0.042    | -0.005    | 0.039    |
| Income quintiles (reference: Third)     |            |          |            |          |           |          |            |          |           |          |
| First                                   | -0.028     | 0.187    | 0.192      | 0.299    | 0.214     | 0.151    | 0.005      | 0.123    | -0.059    | 0.088    |
| Second                                  | -0.062     | 0.161    | -0.461 **  | 0.186    | 0.181 *   | 0.104    | 0.076      | 0.111    | 0.127 *   | 0.066    |
| Fourth                                  | -0.197 *   | 0.105    | -0.103     | 0.129    | 0.029     | 0.084    | -0.190 **  | 0.077    | 0.039     | 0.053    |
| Fifth                                   | -0.170 *   | 0.101    | -0.068     | 0.120    | 0.100     | 0.081    | -0.177 *** | 0.067    | 0.027     | 0.050    |
| Log assets                              | 0.048      | 0.029    | -0.008     | 0.037    | -0.027    | 0.025    | 0.037 **   | 0.015    | 0.001     | 0.012    |
| Log liabilities                         | -0.012 **  | 0.006    | -0.016 **  | 0.007    | 0.003     | 0.007    | -0.000     | 0.004    | -0.004    | 0.003    |
| Household size (reference: 2 persons)   |            |          |            |          |           |          |            |          |           |          |
| 1                                       | -0.229 **  | 0.097    | 0.085      | 0.132    | -0.092    | 0.154    | -0.082     | 0.083    | -0.044    | 0.059    |
| 3                                       | -0.054     | 0.090    | 0.085      | 0.124    | 0.017     | 0.109    | -0.012     | 0.061    | -0.028    | 0.039    |
| 4                                       | -0.132     | 0.097    | 0.110      | 0.127    | -0.092    | 0.107    | 0.076      | 0.064    | -0.014    | 0.044    |
| 5 plus                                  | 0.057      | 0.120    | 0.020      | 0.160    | -0.013    | 0.109    | 0.031      | 0.080    | 0.038     | 0.056    |
| HH with child. < 14 yrs.                | -0.028     | 0.100    | 0.025      | 0.123    | 0.017     | 0.071    | 0.013      | 0.062    | -0.039    | 0.044    |
| N                                       | 215        |          | 164        |          | 333       |          | 474        |          | 1,230     |          |
| R2_P                                    | 0.15       |          | 0.12       |          | 0.06      |          | 0.08       |          | 0.02      |          |

| Business 1                              | Greece |          | Italy  |          | Luxembourg |          | Malta      |          | Netherlands |          | Slovakia  |          |
|---|--------|----------|--------|----------|------------|----------|------------|----------|-------------|----------|-----------|----------|
|   | Coeff. | Std.err. | Coeff. | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.      | Std.err. | Coeff.    | Std.err. |
| Men                                     | -0.011 | 0.054    | 0.009  | 0.010    | -0.279 *** | 0.098    | 0.242      | 0.193    | -0.254      | 0.218    | -0.058    | 0.061    |
| Age group (reference: age 45-54)        |        |          |        |          |            |          |            |          |             |          |           |          |
| 16-34                                   | -0.066 | 0.072    | 0.014  | 0.020    | 0.292      | 0.221    | 0.060      | 0.211    | -0.041      | 0.261    | 0.054     | 0.080    |
| 35-44                                   | 0.011  | 0.063    | 0.016  | 0.015    | 0.049      | 0.133    | 0.273 *    | 0.157    | -0.012      | 0.239    | 0.064     | 0.081    |
| 55-64                                   | -0.013 | 0.087    | 0.014  | 0.014    | -0.068     | 0.155    | 0.078      | 0.151    | -0.388 *    | 0.233    | 0.092     | 0.108    |
| 65 plus                                 | -0.185 | 0.222    | 0.006  | 0.017    | 0.330      | 0.347    | -0.203     | 0.255    | -0.787 **   | 0.391    | 0.117     | 0.344    |
| Employment status (reference: employed) |        |          |        |          |            |          |            |          |             |          |           |          |
| Self-employed                           | -0.036 | 0.072    | 0.001  | 0.013    | 0.062      | 0.124    | -0.343 *   | 0.179    | -0.090      | 0.167    | -0.108    | 0.070    |
| Unemployed/other                        | 0.053  | 0.085    | -0.005 | 0.025    | 0.000      | 0.000    | 0.097      | 0.196    | 0.000       | 0.000    | -0.207 *  | 0.107    |
| Retired                                 | 0.034  | 0.154    | 0.024  | 0.016    | -0.333     | 0.292    | -0.213     | 0.235    | 0.125       | 0.326    | -0.085    | 0.212    |
| Education (reference: secondary)        |        |          |        |          |            |          |            |          |             |          |           |          |
| Primary                                 | -0.066 | 0.061    | -0.013 | 0.010    | -0.279     | 0.185    | -0.138     | 0.139    | 0.020       | 0.262    | -0.255    | 0.293    |
| Tertiary                                | 0.050  | 0.063    | -0.014 | 0.013    | 0.026      | 0.114    | 0.008      | 0.158    | -0.489 *    | 0.262    | 0.073     | 0.068    |
| Income quintiles (reference: Third)     |        |          |        |          |            |          |            |          |             |          |           |          |
| First                                   | 0.135  | 0.098    | 0.000  | 0.000    | 0.029      | 0.259    | -0.618 *   | 0.319    | 0.038       | 0.331    | -0.139    | 0.223    |
| Second                                  | 0.103  | 0.095    | -0.008 | 0.019    | -0.171     | 0.212    | 0.052      | 0.227    | 0.025       | 0.254    | 0.282 **  | 0.140    |
| Fourth                                  | 0.010  | 0.085    | -0.003 | 0.013    | -0.066     | 0.208    | -0.272     | 0.182    | 0.191       | 0.224    | -0.005    | 0.112    |
| Fifth                                   | 0.103  | 0.074    | -0.001 | 0.013    | -0.354 *   | 0.185    | -0.434 *** | 0.166    | 0.075       | 0.210    | -0.068    | 0.098    |
| Log assets                              | 0.014  | 0.025    | -0.000 | 0.004    | 0.138 ***  | 0.036    | 0.102      | 0.065    | 0.317 **    | 0.126    | 0.024     | 0.022    |
| Log liabilities                         | -0.007 | 0.005    | -0.000 | 0.001    | -0.015     | 0.010    | -0.006     | 0.011    | -0.026      | 0.022    | 0.006     | 0.007    |
| Household size (reference: 2 persons)   |        |          |        |          |            |          |            |          |             |          |           |          |
| 1                                       | -0.122 | 0.138    | 0.003  | 0.014    | 0.268 *    | 0.159    | -0.186     | 0.233    | -0.106      | 0.227    | -0.176 *  | 0.102    |
| 3                                       | -0.022 | 0.070    | -0.012 | 0.012    | 0.144      | 0.142    | 0.138      | 0.168    | -0.096      | 0.228    | 0.083     | 0.086    |
| 4                                       | 0.011  | 0.069    | -0.014 | 0.014    | 0.378 **   | 0.164    | -0.117     | 0.162    | -0.556 **   | 0.262    | 0.135     | 0.096    |
| 5 plus                                  | -0.000 | 0.086    | -0.001 | 0.017    | -0.018     | 0.217    | 0.075      | 0.187    | -0.794 *    | 0.421    | -0.034    | 0.118    |
| HH with child. < 14 yrs.                | -0.050 | 0.062    | -0.006 | 0.015    | 0.092      | 0.147    | 0.019      | 0.158    | 0.281       | 0.244    | -0.153 ** | 0.073    |
| N                                       | 319    |          | 1,290  |          | 82         |          | 76         |          | 53          |          | 297       |          |
| R2_P                                    | 0.05   |          | 0.06   |          | 0.27       |          | 0.24       |          | 0.14        |          | 0.07      |          |

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1, b: coefficient; SE: standard error.

Source: Own calculations based on HFCS (2010).

Comparing Wealth – Data quality of the HFCS

| Saving account                          | Austria    |          | Belgium    |          | Cyprus     |          | Germany    |          | Spain      |          | France     |          |
|---|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|------------|----------|
|   | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. | b          | Std.err. |
| Men                                     | -0.015     | 0.022    | -0.041 **  | 0.019    | -0.045     | 0.032    | -0.037 *** | 0.013    | -0.065 *** | 0.019    | -0.013     | 0.009    |
| Age group (reference: age 45-54)        |            |          |            |          |            |          |            |          |            |          |            |          |
| 16-34                                   | 0.024      | 0.036    | 0.042      | 0.038    | -0.020     | 0.062    | 0.014      | 0.023    | 0.142 ***  | 0.046    | -0.007     | 0.017    |
| 35-44                                   | 0.028      | 0.036    | 0.035      | 0.035    | 0.089 *    | 0.046    | 0.010      | 0.022    | 0.059      | 0.038    | -0.014     | 0.015    |
| 55-64                                   | -0.056     | 0.039    | -0.023     | 0.035    | 0.027      | 0.056    | -0.067 *** | 0.023    | 0.051 *    | 0.031    | 0.001      | 0.015    |
| 65 plus                                 | 0.018      | 0.046    | -0.057     | 0.050    | 0.276 **   | 0.109    | -0.068 **  | 0.034    | 0.077 **   | 0.035    | -0.023     | 0.020    |
| Employment status (reference: employed) |            |          |            |          |            |          |            |          |            |          |            |          |
| Self-employed                           | 0.077 **   | 0.037    | 0.070 *    | 0.042    | -0.041     | 0.050    | 0.022      | 0.023    | 0.033      | 0.030    | 0.018      | 0.013    |
| Unemployed/other                        | 0.058      | 0.037    | 0.049      | 0.032    | -0.014     | 0.059    | 0.030      | 0.022    | -0.012     | 0.029    | -0.040 **  | 0.017    |
| Retired                                 | 0.016      | 0.040    | 0.053      | 0.042    | -0.202 *   | 0.105    | 0.032      | 0.031    | 0.010      | 0.032    | -0.035 **  | 0.017    |
| Education (reference: secondary)        |            |          |            |          |            |          |            |          |            |          |            |          |
| Primary                                 | 0.034      | 0.030    | 0.024      | 0.026    | -0.036     | 0.049    | 0.006      | 0.023    | 0.015      | 0.025    | 0.001      | 0.011    |
| Tertiary                                | 0.009      | 0.032    | -0.027     | 0.022    | 0.096 **   | 0.038    | -0.025 *   | 0.014    | -0.003     | 0.025    | -0.030 *** | 0.011    |
| Income quintiles (reference: Third)     |            |          |            |          |            |          |            |          |            |          |            |          |
| First                                   | 0.083 **   | 0.037    | 0.025      | 0.036    | 0.064      | 0.061    | 0.024      | 0.028    | 0.044      | 0.035    | 0.046 ***  | 0.016    |
| Second                                  | -0.042     | 0.033    | -0.014     | 0.032    | 0.066      | 0.054    | 0.031      | 0.023    | 0.038      | 0.032    | 0.009      | 0.014    |
| Fourth                                  | -0.086 *** | 0.032    | 0.008      | 0.029    | -0.040     | 0.052    | -0.043 **  | 0.021    | 0.065 **   | 0.029    | 0.017      | 0.013    |
| Fifth                                   | -0.107 *** | 0.035    | 0.026      | 0.031    | -0.078     | 0.053    | -0.048 **  | 0.020    | 0.013      | 0.030    | 0.028 **   | 0.014    |
| Log assets                              | 0.033 ***  | 0.007    | 0.016 **   | 0.007    | 0.024 **   | 0.012    | 0.022 ***  | 0.005    | 0.012      | 0.008    | -0.003     | 0.003    |
| Log liabilities                         | -0.006 **  | 0.002    | -0.010 *** | 0.002    | -0.009 *** | 0.003    | -0.004 *** | 0.001    | -0.003     | 0.002    | -0.004 *** | 0.001    |
| Household size (reference: 2 persons)   |            |          |            |          |            |          |            |          |            |          |            |          |
| 1                                       | -0.085 *** | 0.028    | -0.012     | 0.026    | -0.018     | 0.060    | -0.029     | 0.019    | -0.015     | 0.025    | -0.067 *** | 0.011    |
| 3                                       | 0.079 **   | 0.036    | 0.030      | 0.032    | 0.086 *    | 0.049    | 0.031      | 0.021    | -0.016     | 0.025    | 0.060 ***  | 0.015    |
| 4                                       | 0.194 ***  | 0.042    | 0.015      | 0.038    | 0.026      | 0.056    | 0.037      | 0.025    | 0.036      | 0.029    | 0.085 ***  | 0.017    |
| 5 plus                                  | 0.139 **   | 0.056    | 0.067      | 0.047    | 0.037      | 0.059    | 0.060 *    | 0.032    | 0.115 ***  | 0.040    | 0.084 ***  | 0.021    |
| HH with child. < 14 yrs.                | -0.161 *** | 0.040    | -0.031     | 0.035    | -0.064     | 0.045    | -0.015     | 0.023    | -0.051     | 0.034    | -0.044 *** | 0.016    |
| N                                       | 2,085      |          | 1,841      |          | 461        |          | 2,906      |          | 1,947      |          | 13,082     |          |
| R2_P                                    | 0.04       |          | 0.02       |          | 0.13       |          | 0.03       |          | 0.03       |          | 0.01       |          |

## Comparing Wealth – Data quality of the HFCS

| Saving account                          | Greece |          | Italy  |          | Luxembourg |          | Malta  |          | Netherlands |          | Portugal |          | Slovakia |          |        |
|---|--------|----------|--------|----------|------------|----------|--------|----------|-------------|----------|----------|----------|----------|----------|--------|
|   | Coeff. | Std.err. | Coeff. | Std.err. | Coeff.     | Std.err. | Coeff. | Std.err. | Coeff.      | Std.err. | Coeff.   | Std.err. | Coeff.   | Std.err. |        |
| Men                                     | 0.010  | 0.085    | 0.036  | 0.024    | -0.090     | **       | 0.039  | -0.062   | 0.045       | -0.005   | 0.013    | -0.004   | 0.021    | -0.026   | 0.042  |
| Age group (reference: age 45-54)        |        |          |        |          |            |          |        |          |             |          |          |          |          |          |        |
| 16-34                                   | -0.066 | 0.149    | -0.050 | 0.058    | 0.050      |          | 0.066  | -0.113   | 0.086       | 0.028    | 0.024    | 0.012    | 0.043    | -0.002   | 0.061  |
| 35-44                                   | -0.050 | 0.131    | 0.011  | 0.042    | 0.109      | *        | 0.057  | -0.129   | *           | 0.069    | 0.034    | *        | 0.020    | -0.022   | 0.033  |
| 55-64                                   | 0.054  | 0.120    | -0.036 | 0.040    | -0.055     |          | 0.071  | -0.139   | **          | 0.058    | 0.006    | 0.019    | -0.000   | 0.027    | 0.132  |
| 65 plus                                 | -0.169 | 0.182    | -0.054 | 0.049    | 0.044      |          | 0.095  | -0.203   | ***         | 0.071    | 0.018    | 0.024    | 0.028    | 0.035    | 0.149  |
| Employment status (reference: employed) |        |          |        |          |            |          |        |          |             |          |          |          |          |          |        |
| Self-employed                           | 0.249  | **       | 0.106  | 0.018    | 0.042      |          | 0.077  | 0.058    | -0.046      | 0.080    | 0.029    | 0.019    | -0.037   | 0.029    | -0.044 |
| Unemployed/other                        | 0.339  | ***      | 0.119  | 0.073    | *          | 0.044    | 0.060  | 0.075    | -0.045      | 0.063    | -0.006   | 0.018    | -0.008   | 0.033    | 0.038  |
| Retired                                 | 0.082  |          | 0.160  | 0.045    | 0.042      |          | -0.040 | 0.078    | -0.023      | 0.064    | -0.019   | 0.022    | -0.024   | 0.029    | -0.203 |
| Education (reference: secondary)        |        |          |        |          |            |          |        |          |             |          |          |          |          |          |        |
| Primary                                 | 0.259  | **       | 0.104  | 0.019    | 0.028      |          | 0.025  | 0.051    | 0.016       | 0.048    | 0.004    | 0.015    | 0.052    | *        | 0.027  |
| Tertiary                                | 0.108  |          | 0.099  | 0.027    | 0.039      |          | 0.019  | 0.045    | -0.060      | 0.058    | -0.011   | 0.014    | 0.015    | 0.030    | 0.070  |
| Income quintiles (reference: Third)     |        |          |        |          |            |          |        |          |             |          |          |          |          |          |        |
| First                                   | 0.169  |          | 0.165  | -0.006   | 0.041      |          | -0.075 | 0.078    | 0.049       | 0.064    | 0.003    | 0.017    | 0.071    | **       | 0.029  |
| Second                                  | -0.193 |          | 0.187  | -0.015   | 0.038      |          | 0.026  | 0.068    | 0.014       | 0.057    | -0.025   | 0.019    | 0.011    | 0.028    | -0.128 |
| Fourth                                  | -0.164 |          | 0.133  | -0.036   | 0.037      |          | -0.108 | *        | 0.059       | 0.089    | 0.058    | -0.020   | 0.017    | -0.012   | 0.026  |
| Fifth                                   | -0.027 |          | 0.123  | -0.044   | 0.039      |          | -0.054 | 0.061    | 0.038       | 0.061    | -0.008   | 0.016    | -0.005   | 0.026    | 0.212  |
| Log assets                              | -0.020 |          | 0.039  | -0.009   | 0.009      |          | 0.035  | **       | 0.016       | -0.028   | *        | 0.014    | 0.010    | *        | 0.006  |
| Log liabilities                         | -0.022 | **       | 0.010  | -0.010   | ***        | 0.003    | -0.009 | **       | 0.004       | -0.003   | 0.005    | 0.001    | 0.001    | -0.002   | 0.002  |
| Household size (reference: 2 persons)   |        |          |        |          |            |          |        |          |             |          |          |          |          |          |        |
| 1                                       | -0.179 |          | 0.178  | 0.061    | *          | 0.034    | -0.070 | 0.056    | 0.007       | 0.057    | 0.037    | **       | 0.015    | -0.033   | 0.026  |
| 3                                       | 0.021  |          | 0.125  | 0.076    | **         | 0.034    | 0.113  | *        | 0.060       | -0.011   | 0.054    | 0.013    | 0.022    | 0.010    | 0.022  |
| 4                                       | 0.091  |          | 0.138  | 0.060    |            | 0.040    | 0.075  | 0.066    | 0.036       | 0.062    | -0.019   | 0.034    | 0.006    | 0.029    | -0.108 |
| 5 plus                                  | -0.152 |          | 0.253  | 0.079    |            | 0.058    | 0.027  | 0.078    | 0.052       | 0.085    | -0.000   | 0.035    | 0.011    | 0.044    | -0.016 |
| HH with child. < 14 yrs.                | 0.055  |          | 0.116  | -0.134   | ***        | 0.040    | -0.068 | 0.059    | -0.013      | 0.066    | -0.034   | 0.029    | -0.012   | 0.029    | 0.014  |
| N                                       | 118    |          | 2,029  |          | 707        |          | 705    |          | 1,016       |          | 1,902    |          | 554      |          |        |
| R2_P                                    | 0.22   |          | 0.02   |          | 0.04       |          | 0.04   |          | 0.11        |          | 0.04     |          | 0.06     |          |        |

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1, b: coefficient; SE: standard error.

Source: Own calculations based on HFCS (2010).



Comparing Wealth – Data quality of the HFCS

| HMR mortgage 1                          | Austria    |          | Belgium |          | Cyprus     |          | Germany    |          | Spain      |          | France     |          |
|---|------------|----------|---------|----------|------------|----------|------------|----------|------------|----------|------------|----------|
|   | Coeff.     | Std.err. | Coeff.  | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. |
| Men                                     | -0.151 *** | 0.048    | -0.050  | 0.033    | -0.096 *** | 0.029    | -0.071 *** | 0.023    | -0.074 *** | 0.020    | 0.017      | 0.021    |
| Age group (reference: age 45-54)        |            |          |         |          |            |          |            |          |            |          |            |          |
| 16-34                                   | 0.165 **   | 0.083    | -0.069  | 0.057    | 0.036      | 0.044    | 0.098 **   | 0.039    | 0.004      | 0.031    | -0.013     | 0.032    |
| 35-44                                   | 0.110      | 0.068    | -0.021  | 0.042    | -0.016     | 0.039    | 0.013      | 0.033    | -0.020     | 0.025    | -0.006     | 0.025    |
| 55-64                                   | 0.047      | 0.096    | -0.082  | 0.063    | 0.007      | 0.051    | 0.004      | 0.033    | -0.006     | 0.027    | -0.011     | 0.035    |
| 65 plus                                 | -0.014     | 0.135    | -0.080  | 0.118    | -0.051     | 0.140    | 0.001      | 0.056    | -0.007     | 0.044    | -0.103     | 0.071    |
| Employment status (reference: employed) |            |          |         |          |            |          |            |          |            |          |            |          |
| Self-employed                           | 0.108      | 0.073    | 0.056   | 0.057    | -0.066     | 0.051    | 0.011      | 0.032    | 0.056 **   | 0.026    | 0.002      | 0.024    |
| Unemployed/other                        | 0.073      | 0.090    | 0.066   | 0.055    | -0.065     | 0.056    | 0.010      | 0.039    | 0.025      | 0.023    | 0.019      | 0.049    |
| Retired                                 | -0.076     | 0.108    | 0.101   | 0.089    | 0.015      | 0.112    | 0.043      | 0.050    | 0.039      | 0.043    | 0.047      | 0.051    |
| Education (reference: secondary)        |            |          |         |          |            |          |            |          |            |          |            |          |
| Primary                                 | 0.074      | 0.076    | -0.027  | 0.058    | -0.006     | 0.053    | -0.055     | 0.056    | 0.006      | 0.023    | 0.048 *    | 0.026    |
| Tertiary                                | -0.044     | 0.069    | 0.022   | 0.037    | 0.054      | 0.034    | 0.036      | 0.024    | -0.012     | 0.024    | -0.023     | 0.022    |
| Income quintiles (reference: Third)     |            |          |         |          |            |          |            |          |            |          |            |          |
| First                                   | 0.118      | 0.131    | 0.070   | 0.071    | 0.129 **   | 0.057    | 0.078      | 0.065    | 0.028      | 0.039    | 0.033      | 0.046    |
| Second                                  | -0.074     | 0.092    | -0.023  | 0.071    | 0.066      | 0.051    | 0.081      | 0.056    | 0.011      | 0.030    | 0.024      | 0.038    |
| Fourth                                  | -0.089     | 0.074    | -0.069  | 0.052    | -0.008     | 0.048    | 0.053      | 0.044    | 0.014      | 0.025    | -0.000     | 0.029    |
| Fifth                                   | -0.022     | 0.074    | 0.024   | 0.049    | -0.016     | 0.050    | 0.045      | 0.042    | -0.031     | 0.028    | -0.002     | 0.030    |
| Log assets                              | -0.012     | 0.034    | 0.009   | 0.029    | -0.002     | 0.018    | 0.047 ***  | 0.015    | 0.031 ***  | 0.011    | -0.011     | 0.015    |
| Log liabilities                         | 0.018      | 0.015    | -0.018  | 0.015    | 0.021      | 0.017    | -0.041 *** | 0.007    | -0.026 *** | 0.004    | -0.025 *** | 0.009    |
| Household size (reference: 2 persons)   |            |          |         |          |            |          |            |          |            |          |            |          |
| 1                                       | -0.050     | 0.084    | 0.070   | 0.056    | -0.078     | 0.061    | 0.052      | 0.041    | -0.104 **  | 0.042    | 0.033      | 0.034    |
| 3                                       | -0.129 *   | 0.074    | 0.055   | 0.054    | -0.071     | 0.052    | 0.015      | 0.033    | -0.057 **  | 0.027    | 0.004      | 0.033    |
| 4                                       | -0.019     | 0.085    | -0.037  | 0.058    | -0.019     | 0.048    | 0.058 *    | 0.035    | -0.007     | 0.026    | 0.041      | 0.034    |
| 5 plus                                  | 0.022      | 0.104    | -0.025  | 0.068    | -0.006     | 0.051    | 0.019      | 0.047    | 0.015      | 0.033    | 0.028      | 0.041    |
| HH with child. < 14 yrs.                |            |          |         |          |            |          |            |          |            |          |            |          |
|   | -0.084     | 0.079    | 0.022   | 0.047    | -0.088 **  | 0.038    | 0.015      | 0.033    | -0.005     | 0.024    | -0.011     | 0.029    |
| N                                       | 392        |          | 646     |          | 548        |          | 838        |          | 1,190      |          | 2,185      |          |
| R2_P                                    | 0.06       |          | 0.04    |          | 0.09       |          | 0.17       |          | 0.11       |          | 0.02       |          |

| HMR mortgage 1                          | Greece   |          | Luxembourg |          | Malta   |          | Netherlands |          | Portugal |          | Slovakia  |          |
|---|----------|----------|------------|----------|---------|----------|-------------|----------|----------|----------|-----------|----------|
|   | Coeff.   | Std.err. | Coeff.     | Std.err. | Coeff.  | Std.err. | Coeff.      | Std.err. | Coeff.   | Std.err. | Coeff.    | Std.err. |
| Men                                     | -0.018   | 0.046    | 0.020      | 0.041    | 0.031   | 0.104    | -0.030      | 0.030    | -0.042   | 0.032    | 0.019     | 0.062    |
| Age group (reference: age 45-54)        |          |          |            |          |         |          |             |          |          |          |           |          |
| 16-34                                   | -0.033   | 0.065    | 0.147 **   | 0.070    | -0.010  | 0.193    | 0.007       | 0.050    | -0.040   | 0.050    | -0.204 ** | 0.101    |
| 35-44                                   | 0.009    | 0.057    | 0.119 **   | 0.059    | 0.001   | 0.177    | 0.019       | 0.038    | 0.027    | 0.035    | -0.065    | 0.099    |
| 55-64                                   | -0.058   | 0.087    | -0.022     | 0.088    | -2.922  | 239.007  | -0.006      | 0.038    | 0.004    | 0.042    | -0.084    | 0.174    |
| 65 plus                                 | -0.287 * | 0.165    | 0.041      | 0.157    | 0.000   | 0.000    | 0.043       | 0.059    | 0.009    | 0.072    | 0.000     | 0.000    |
| Employment status (reference: employed) |          |          |            |          |         |          |             |          |          |          |           |          |
| Self-employed                           | -0.088   | 0.058    | 0.041      | 0.064    | -0.467  | 0.315    | 0.041       | 0.042    | -0.040   | 0.042    | -0.036    | 0.103    |
| Unemployed/other                        | -0.080   | 0.058    | 0.011      | 0.077    | -0.125  | 0.141    | -0.088      | 0.058    | -0.019   | 0.049    | 0.288 **  | 0.112    |
| Retired                                 | 0.044    | 0.101    | 0.032      | 0.118    | 2.813   | 239.007  | -0.064      | 0.054    | 0.008    | 0.054    | 0.162     | 0.332    |
| Education (reference: secondary)        |          |          |            |          |         |          |             |          |          |          |           |          |
| Primary                                 | 0.010    | 0.054    | -0.011     | 0.057    | 0.163   | 0.135    | 0.006       | 0.032    | 0.041    | 0.034    | 0.000     | 0.000    |
| Tertiary                                | -0.086   | 0.058    | 0.033      | 0.050    | 0.233 * | 0.122    | -0.011      | 0.029    | -0.070   | 0.044    | 0.056     | 0.070    |
| Income quintiles (reference: Third)     |          |          |            |          |         |          |             |          |          |          |           |          |
| First                                   | -0.187   | 0.132    | 0.094      | 0.098    | 0.148   | 0.294    | 0.015       | 0.049    | 0.026    | 0.059    | 0.148     | 0.138    |
| Second                                  | 0.056    | 0.067    | 0.069      | 0.072    | 0.306   | 0.191    | 0.031       | 0.039    | 0.052    | 0.047    | 0.121     | 0.095    |
| Fourth                                  | -0.062   | 0.062    | -0.021     | 0.065    | 0.181   | 0.166    | -0.017      | 0.037    | 0.033    | 0.038    | 0.002     | 0.085    |
| Fifth                                   | 0.035    | 0.060    | -0.075     | 0.071    | 0.010   | 0.172    | 0.008       | 0.036    | 0.053    | 0.039    | 0.095     | 0.101    |
| Log assets                              | -0.035   | 0.038    | 0.063 *    | 0.034    | 0.124   | 0.088    | -0.041      | 0.029    | 0.047 ** | 0.022    | -0.069    | 0.056    |
| Log liabilities                         | -0.002   | 0.022    | -0.007     | 0.021    | -0.009  | 0.062    | -0.002      | 0.013    | 0.004    | 0.013    | 0.092 **  | 0.037    |
| Household size (reference: 2 persons)   |          |          |            |          |         |          |             |          |          |          |           |          |
| 1                                       | -0.185   | 0.133    | 0.039      | 0.066    | 0.040   | 0.223    | 0.000       | 0.035    | 0.061    | 0.048    | -0.018    | 0.134    |
| 3                                       | -0.039   | 0.068    | 0.114      | 0.077    | 0.111   | 0.210    | 0.018       | 0.042    | -0.021   | 0.039    | 0.004     | 0.104    |
| 4                                       | 0.063    | 0.066    | 0.041      | 0.083    | 0.153   | 0.198    | 0.010       | 0.046    | -0.005   | 0.043    | -0.090    | 0.112    |
| 5 plus                                  | -0.032   | 0.088    | 0.121      | 0.081    | 0.303   | 0.229    | 0.004       | 0.055    | 0.012    | 0.060    | -0.197    | 0.157    |
| HH with child. < 14 yrs.                |          |          |            |          |         |          |             |          |          |          |           |          |
|   | 0.027    | 0.054    | -0.100     | 0.063    | 0.001   | 0.182    | -0.008      | 0.044    | -0.021   | 0.035    | 0.031     | 0.086    |
| N                                       | 402      |          | 328        |          | 89      |          | 622         |          | 1,013    |          | 223       |          |
| R2_P                                    | 0.06     |          | 0.06       |          | 0.15    |          | 0.04        |          | 0.02     |          | 0.08      |          |

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1, b: coefficient; SE: standard error.

Source: Own calculations based on HFCS (2010).

## Comparing Wealth – Data quality of the HFCS

| Loan 1                                  | Austria |          | Belgium |          | Cyprus |          | Germany |          | Spain  |          | France |          |       |        |        |       |       |
|---|---------|----------|---------|----------|--------|----------|---------|----------|--------|----------|--------|----------|-------|--------|--------|-------|-------|
|   | Coeff.  | Std.err. | Coeff.  | Std.err. | Coeff. | Std.err. | Coeff.  | Std.err. | Coeff. | Std.err. | Coeff. | Std.err. |       |        |        |       |       |
| Men                                     | -0.001  | 0.055    | -0.017  | 0.037    | -0.097 | ***      | 0.031   | -0.066   | **     | 0.026    | -0.054 | ***      | 0.019 | 0.009  | 0.015  |       |       |
| Age group (reference: age 45-54)        |         |          |         |          |        |          |         |          |        |          |        |          |       |        |        |       |       |
| 16-34                                   | 0.077   | 0.083    | -0.007  | 0.063    | 0.006  |          | 0.049   | 0.005    |        | 0.038    | 0.013  |          | 0.034 | -0.064 | **     | 0.025 |       |
| 35-44                                   | 0.070   | 0.083    | -0.045  | 0.053    | 0.036  |          | 0.039   | 0.043    |        | 0.038    | -0.017 |          | 0.029 | -0.020 |        | 0.021 |       |
| 55-64                                   | 0.138   | 0.107    | -0.043  | 0.062    | 0.067  |          | 0.045   | 0.077    | **     | 0.039    | -0.004 |          | 0.026 | 0.028  |        | 0.024 |       |
| 65 plus                                 | 0.276   | **       | 0.137   | 0.022    | 0.124  | 0.104    | 0.099   | 0.047    |        | 0.071    | 0.025  |          | 0.033 | 0.049  |        | 0.038 |       |
| Employment status (reference: employed) |         |          |         |          |        |          |         |          |        |          |        |          |       |        |        |       |       |
| Self-employed                           | -0.110  | 0.130    | -0.121  | 0.130    | 0.042  |          | 0.035   | 0.030    |        | 0.044    | 0.051  | *        | 0.027 | -0.031 |        | 0.021 |       |
| Unemployed/other                        | -0.105  | 0.094    | 0.054   | 0.050    | -0.021 |          | 0.047   | 0.096    | ***    | 0.034    | 0.022  |          | 0.024 | -0.033 |        | 0.031 |       |
| Retired                                 | -0.146  | 0.117    | -0.004  | 0.107    | -0.089 |          | 0.097   | -0.012   |        | 0.061    | -0.004 |          | 0.035 | -0.079 | **     | 0.031 |       |
| Education (reference: secondary)        |         |          |         |          |        |          |         |          |        |          |        |          |       |        |        |       |       |
| Primary                                 | 0.068   | 0.074    | 0.010   | 0.050    | 0.031  |          | 0.041   | 0.071    | *      | 0.040    | -0.000 |          | 0.024 | 0.024  |        | 0.018 |       |
| Tertiary                                | 0.039   | 0.088    | 0.032   | 0.043    | 0.046  |          | 0.034   | 0.020    |        | 0.028    | 0.009  |          | 0.025 | -0.052 | ***    | 0.018 |       |
| Income quintiles (reference: Third)     |         |          |         |          |        |          |         |          |        |          |        |          |       |        |        |       |       |
| First                                   | -0.018  | 0.102    | -0.028  | 0.071    | -0.018 |          | 0.054   | -0.008   |        | 0.047    | 0.020  |          | 0.034 | 0.005  |        | 0.032 |       |
| Second                                  | 0.025   | 0.087    | -0.056  | 0.066    | -0.039 |          | 0.043   | -0.048   |        | 0.043    | -0.010 |          | 0.028 | 0.006  |        | 0.025 |       |
| Fourth                                  | -0.051  | 0.080    | -0.136  | **       | 0.057  | -0.078   | *       | 0.044    | -0.058 | 0.039    | -0.021 |          | 0.026 | -0.018 |        | 0.022 |       |
| Fifth                                   | -0.120  | 0.092    | -0.092  | *        | 0.053  | -0.079   | *       | 0.044    | -0.016 | 0.038    | -0.049 | *        | 0.028 | -0.014 |        | 0.023 |       |
| Log assets                              | 0.033   | **       | 0.016   | 0.007    | 0.011  | 0.004    |         | 0.010    | 0.023  | ***      | 0.008  | 0.044    | ***   | 0.007  | -0.003 | 0.005 |       |
| Log liabilities                         | -0.042  | ***      | 0.014   | -0.006   | 0.012  | -0.002   |         | 0.011    | -0.011 | *        | 0.006  | -0.030   | ***   | 0.003  | -0.011 | **    | 0.005 |
| Household size (reference: 2 persons)   |         |          |         |          |        |          |         |          |        |          |        |          |       |        |        |       |       |
| 1                                       | -0.029  | 0.073    | 0.091   | 0.066    | -0.058 |          | 0.087   | 0.037    |        | 0.038    | -0.023 |          | 0.033 | 0.007  |        | 0.023 |       |
| 3                                       | 0.057   | 0.094    | 0.141   | **       | 0.062  | -0.033   |         | 0.059    | 0.016  | 0.036    | -0.014 |          | 0.025 | -0.011 |        | 0.022 |       |
| 4                                       | -0.103  | 0.118    | 0.143   | **       | 0.065  | 0.070    |         | 0.047    | -0.114 | **       | 0.056  | -0.004   | 0.028 | 0.019  |        | 0.025 |       |
| 5 plus                                  | 0.120   | 0.136    | 0.212   | ***      | 0.077  | 0.098    | *       | 0.052    | -0.118 | *        | 0.066  | 0.039    | 0.033 | 0.002  |        | 0.030 |       |
| HH with child. < 14 yrs.                | -0.109  | 0.102    | -0.033  |          | 0.052  | -0.069   | *       | 0.037    | 0.075  | *        | 0.040  | 0.019    | 0.025 | 0.024  |        | 0.023 |       |
| N                                       | 252     |          | 382     |          | 405    |          | 697     |          | 1,287  |          | 4,130  |          |       |        |        |       |       |
| R2_P                                    | 0.10    |          | 0.07    |          | 0.12   |          | 0.08    |          | 0.20   |          | 0.01   |          |       |        |        |       |       |

| Loan 1                                  | Greece |          | Luxembourg |          | Malta  |          | Netherlands |          | Portugal |          | Slovakia |          |        |        |       |
|---|--------|----------|------------|----------|--------|----------|-------------|----------|----------|----------|----------|----------|--------|--------|-------|
|   | Coeff. | Std.err. | Coeff.     | Std.err. | Coeff. | Std.err. | Coeff.      | Std.err. | Coeff.   | Std.err. | Coeff.   | Std.err. |        |        |       |
| Men                                     | -0.030 | 0.033    | -0.094     | ***      | 0.036  | 0.136    | 0.113       | -0.020   |          | 0.095    | -0.046   | 0.030    | -0.043 | 0.048  |       |
| Age group (reference: age 45-54)        |        |          |            |          |        |          |             |          |          |          |          |          |        |        |       |
| 16-34                                   | -0.027 | 0.047    | 0.011      |          | 0.055  | -0.239   | 0.200       | 0.178    |          | 0.114    | 0.021    | 0.048    | -0.001 | 0.068  |       |
| 35-44                                   | 0.006  | 0.043    | -0.008     |          | 0.051  | 0.082    | 0.119       | 0.174    |          | 0.112    | -0.001   | 0.042    | 0.040  | 0.069  |       |
| 55-64                                   | -0.052 | 0.079    | -0.014     |          | 0.062  | -0.149   | 0.135       | -0.178   | *        | 0.099    | 0.006    | 0.044    | -0.124 | 0.167  |       |
| 65 plus                                 | -0.009 | 0.099    | -0.000     |          | 0.116  | -0.188   | 0.296       | -0.229   |          | 0.184    | -0.001   | 0.064    | -0.097 | 0.289  |       |
| Employment status (reference: employed) |        |          |            |          |        |          |             |          |          |          |          |          |        |        |       |
| Self-employed                           | -0.009 | 0.044    | 0.060      |          | 0.054  | -0.220   | 0.172       | -0.021   |          | 0.133    | 0.019    | 0.046    | 0.008  | 0.075  |       |
| Unemployed/other                        | 0.028  | 0.043    | 0.054      |          | 0.053  | 0.029    | 0.134       | 0.084    |          | 0.103    | -0.048   | 0.049    | 0.069  | 0.072  |       |
| Retired                                 | 0.023  | 0.089    | 0.058      |          | 0.076  | 0.171    | 0.170       | 0.211    |          | 0.168    | 0.019    | 0.050    | 0.270  | 0.209  |       |
| Education (reference: secondary)        |        |          |            |          |        |          |             |          |          |          |          |          |        |        |       |
| Primary                                 | -0.022 | 0.040    | 0.027      |          | 0.044  | 0.213    | *           | 0.119    | 0.250    | ***      | 0.089    | -0.003   | 0.039  | -0.115 | 0.182 |
| Tertiary                                | -0.050 | 0.048    | -0.005     |          | 0.045  | -0.074   | 0.146       | 0.033    |          | 0.088    | -0.054   | 0.058    | 0.069  | 0.059  |       |
| Income quintiles (reference: Third)     |        |          |            |          |        |          |             |          |          |          |          |          |        |        |       |
| First                                   | 0.018  | 0.059    | -0.048     |          | 0.080  | -0.298   | 0.227       | 0.213    |          | 0.142    | 0.098    | *        | 0.053  | 0.113  | 0.091 |
| Second                                  | -0.014 | 0.051    | 0.049      |          | 0.061  | -0.156   | 0.131       | 0.061    |          | 0.119    | 0.023    | 0.048    | -0.081 | 0.094  |       |
| Fourth                                  | 0.001  | 0.047    | -0.020     |          | 0.065  | -0.052   | 0.127       | 0.089    |          | 0.105    | 0.007    | 0.039    | 0.102  | 0.066  |       |
| Fifth                                   | 0.020  | 0.047    | 0.055      |          | 0.058  | -0.040   | 0.144       | 0.077    |          | 0.100    | 0.022    | 0.044    | 0.124  | *      | 0.071 |
| Log assets                              | 0.003  | 0.011    | -0.014     |          | 0.011  | -0.019   | 0.033       | 0.024    |          | 0.030    | 0.015    | 0.010    | -0.006 | 0.013  |       |
| Log liabilities                         | -0.020 | *        | 0.010      | 0.010    | 0.012  | 0.050    | 0.033       | 0.033    |          | 0.029    | -0.004   | 0.008    | 0.005  | 0.017  |       |
| Household size (reference: 2 persons)   |        |          |            |          |        |          |             |          |          |          |          |          |        |        |       |
| 1                                       | -0.075 | 0.061    | 0.027      |          | 0.065  | 0.259    | 0.216       | -0.115   |          | 0.100    | -0.007   | 0.049    | -0.000 | 0.108  |       |
| 3                                       | -0.080 | 0.049    | -0.141     |          | 0.097  | -0.021   | 0.166       | 0.190    |          | 0.119    | -0.013   | 0.039    | -0.027 | 0.075  |       |
| 4                                       | -0.037 | 0.047    | 0.065      |          | 0.056  | 0.151    | 0.157       | -0.046   |          | 0.119    | -0.019   | 0.048    | 0.017  | 0.082  |       |
| 5 plus                                  | -0.062 | 0.068    | 0.016      |          | 0.070  | 0.123    | 0.191       | -0.058   |          | 0.141    | 0.065    | 0.052    | 0.050  | 0.100  |       |
| HH with child. < 14 yrs.                | 0.011  | 0.041    | 0.004      |          | 0.051  | -0.032   | 0.122       | -0.194   | *        | 0.115    | -0.041   | 0.041    | 0.021  | 0.065  |       |
| N                                       | 381    |          | 292        |          | 103    |          | 214         |          | 554      |          | 293      |          |        |        |       |
| R2_P                                    | 0.06   |          | 0.14       |          | 0.18   |          | 0.10        |          | 0.04     |          | 0.07     |          |        |        |       |

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1, b: coefficient; SE: standard error.

Source: Own calculations based on HFCS (2010).

### **3. Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area**

#### **3.1. Introduction**

Private wealth is a crucial factor of economic well-being for individuals and households. Research suggests that saving rates from income and wealth transfers (inheritances and gifts)<sup>58</sup> are two key determinants of wealth held by private households (for an overview see Davies & Shorrocks 2000; for more recent research see for example Semyonov & Lewin-Epstein 2013, Arrondel, Roger & Savignac 2014, Mathä, Porpiglia & Ziegelmeier 2014, Fessler & Schürz 2015). Since the 1980s a debate over which of the two determinants contributes more to the current net wealth of private households (Modigliani 1986, 1988 Kotlikoff & Summer 1981, Kotlikoff 1988) is ongoing. Research stresses that wealth transfers are a dominant factor (Piketty 2011, 2014, Piketty & Zucman 2015), thus fueling the discussion about the legitimacy of wealth without effort with some economists arguing that this development may even pose a threat to democracy (Piketty 2014, Corneo, Bönke & Westermeier 2016).

We investigate the current role of wealth transfers in the Euro area (Austria, Belgium, France, (West) Germany, Cyprus, Greece, Portugal and Spain). As the availability of data was limited, this is the first time that cross-country comparisons focusing on Europe are possible. We analyze the percentages of households with a transfer as well as the conditional present values of transfers received (absolute view). Additionally, we tackle the crucial question of how important are wealth transfers for the current distribution of household net wealth<sup>59</sup> in Europe, computed as the capitalized present values of transfers as a percent of net wealth (relative view). For both parts we observe different patterns along the distribution of wealth, income and age.

The paper is structured as follows: In section 3.2 we give an overview of the literature about wealth transfers in absolute and relative terms in developed countries. In section 3.3 we describe the data we are using, the Household Finance and Consumption Survey (HFCS), as well as our reasoning concerning the country selection. We also give an overview of the inheritance and gift taxation in each country (see also table A.3.1 in the appendix). In section 3.4 we present the distribution of wealth transfers in the Euro area in absolute terms and analyze the sociodemographic characteristic of heirs applying several regression analyses via logit and OLS.

---

<sup>58</sup> Periodical transfers are counted as income.

<sup>59</sup> Definition: Assets minus liabilities.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

Additionally, we analyze the role of past intergenerational transfers for current net wealth using recently established methods by Wolff & Gittleman (2014) and Piketty, Postel-Vinay & Rosenthal (2014) as well as a fractional logit model explaining the relative importance of transfers received. Section 3.5 summarizes and concludes.

## **3.2. Literature**

### **3.2.1. The role of inheritance and gifts in absolute terms**

Künemund & Vogel (2011) provide an overview of the studies for Germany (for example, works by Kohli, Künemund, Schupp, Schäfer & Vogel 2006; Kohli, Künemund, Vogel, Gilles, Heisig, Schupp, Schäfer & Hilbrich 2005), finding that transfers are positively correlated with education, income and wealth of both the donors as well as the recipients. For Germany it is well established that parents of children with higher education usually also hold a higher degree, which, in turn, results in higher income and therefore more possibilities to accumulate wealth which can be bequeathed (see for example Deutsches PISA-Konsortium 2001). In addition, the offspring also typically cash in on their higher education, profiting from higher earnings and savings. Szydlik & Schupp (2004) find that there are no differences between genders. Albuquerque (2014) describes a downward flow of monetary gifts from parents to their children for several countries in Europe, which may either be motivated by altruism, accident or in a strategic manner (Brunner 2014). In the first case parents gain utility from knowing that their children will enjoy their bequest. In the second it is assumed that lifetime is uncertain, thus, parents accidentally leave bequests if they die younger than expected. In the last case parents expect something from their children, such as visits, in exchange for a bequest.<sup>60</sup> For Austria, Schürz (2007) finds that workers receive wealth transfers less often than the average household; while entrepreneurs receive, on average, the highest transfers. Karagiannaki (2011) and Wolff & Gittleman (2014) report similar findings for the UK and the US, respectively.

Studies comparing several countries are rare: Semyonov & Lewin-Epstein (2013) report the percentage of households older than 50 that received inheritances for many European countries, Israel and the US. The data (for most countries SHARE) was collected between 2004 and 2007. The prevalence range between 46.2 percent in Switzerland, followed by Belgium with 42 percent, to 17 percent in Austria and 4.4 percent in the UK. Schürz (2007) and Fessler, Mooslechner & Schürz (2008) relate means and medians for heirs and non-heir households and come to the conclusion that the heir-households are better off with regard to their social situation. They use LWS data, which was surveyed around the year 2000.

---

<sup>60</sup> The motives are discussed in more detail in chapter 4.

### 3.2.2. The role of inheritances and gifts in relative terms

Analyzing inheritances and gifts in relative terms, meaning the capitalized present values of transfers as a percent of net wealth, requires decisions that imply methodological differences. Namely, Modigliani (1986, 1988) solely adjusts past wealth transfers for inflation to compute the present value of wealth transfers. Conversely, in Kotlikoff & Summer (1981) and Kotlikoff (1988), past wealth transfers are additionally capitalized, with the reasoning that transfers are usually invested in some kind of portfolio and are not held in cash. The first case results in quite low shares of current wealth due to past wealth transfers in the U.S. (at most 25 percent). The second approach yields shares that are considerably higher (45 to 80 percent of wealth due to past wealth transfers). However, both approaches have in common that the share of wealth transfers due to past wealth transfers can exceed 100 percent, as the summarized past transfers are not capped at a household's net wealth. Piketty et al. (2014) explicitly combine the two rival approaches (for details see section 3.4). However, as Piketty et al. use data from the late 19th and early 20th century, their results are only of historical interest and not immediately relevant to the 21st century. Wolff & Gittleman (2014) using the same method, find for the US in 2007 that the present value of transfers as a percent of net wealth varies between 20 and 25 percent. Corneo et al. (2016) analyze, in a study similar to this one, the role of inheritances and gifts for the total net wealth of (West) Germany in 2010. They conclude that one-third of wealth is the result of capitalized wealth transfers. Additionally, they compute that the share of wealth transfers on total net wealth for the richest one percent might exceed 80 percent.

Our analyzes in section 3.4, as well as the studies from Piketty et al. (2014) and Wolff & Gittleman (2014), are based on the joint distribution of wealth and capitalized wealth transfers, which we use to compute the relative importance of wealth transfers. Only a few studies use comparable data; some studies need additional assumptions in order to apply macroeconomic estimation techniques.<sup>61</sup> Reil-Held (2004) estimates that inheritances and gifts account for approximately 34 percent of Germany's total net wealth; another macroeconomic estimate, from Piketty & Zucman (2015), is considerably higher: 51 percent. For France, Kessler & Masson (1989) estimate that the share of wealth transfers is 35 percent. The value computed by Klevmarken (2004) for Sweden is 19 percent. To the best of our knowledge, cross-country analyses analyzing the impact of wealth transfers on the distribution of wealth in absolute and relative terms are not available yet.

---

<sup>61</sup> Note that the HFCS (which we use in this chapter) only surveys inheritances and gifts that are received from a person not living within the same household. Any macroeconomic estimate includes tax-relevant transfers within households (e.g. widowhood) and should be, logically, higher than results based on the HCFS for intergenerational transfers.

### 3.3. Data, country selection and institutional environment

#### 3.3.1. Data

The *Household Finance and Consumption Survey* (HFCS) contains information about households<sup>62</sup> net wealth, income and indicators of consumption and credit constraints from almost all Euro-countries<sup>63</sup> around the year 2010 (ECB 2013a, 2013b). In addition, it provides information about wealth transfers from outside the household – which therefore are probably in most cases transfers between generations. Each household's reference person<sup>64</sup> retrospectively answered a question about how many inheritances or substantial gifts the household received from any person who was not a member of the same household.<sup>65</sup> Consequently, the total number and amount of wealth transfers is underestimated because, among others, transfers due to the death of a partner who was part of the same household are not included. In addition, it affects the comparisons of countries with different household structures e.g. adult children still living with their parents. In the HFCS survey, the values of up to three wealth transfers were collected. In a separate module the mode of acquisition of the household main residence was collected; the choices include “inherited” and “gifted”.<sup>66</sup> The respondents sorted all transfers according to their subjective importance for their current financial situation.<sup>67</sup> It is also collected in which year the household received the transfer, what kind of assets the portfolio contained, if it was a gift or inheritance and from whom it was received.

#### 3.3.2. Country selection and classification

The HFCS “is a milestone for cross-country comparisons” and its data quality with regard to institutional environment, relevance, coherence, timeliness, accessibility, comparability and accuracy is quite high (Tiefensee & Grabka 2016, p. 137).<sup>68</sup> Nevertheless Tiefensee & Grabka

---

<sup>62</sup> Our unit of analysis is, therefore, the household and not the individual. However, we provide a robustness check applying a per (adult) capita definition for the total present value of transfers in the appendix part B (table B.3.4). In the multivariate analyzes we control for household structure.

<sup>63</sup> Austria, Belgium, Cyprus, Finland, France, Greece, Germany, Italy, Luxembourg, Malta, Netherlands, Portugal, Slovakia, Slovenia and Spain. Estonia, Ireland and Latvia will take part in the next wave.

<sup>64</sup> For selection criteria see ECB (2013a), pp. 16-17.

<sup>65</sup> As past wealth transfers are collected retrospectively, it is highly likely that the data is plagued by under-reporting problems and the estimates are biased downwards. This is even more probable the more members live in a household. We do not know, and it is hard to quantify, whether under-reporting varies systematically for different age classes or demographic characteristics of the respondents.

<sup>66</sup> In France household main residence is part of the wealth transfers module and not collected separately.

<sup>67</sup> This implies that the sorting does not generally reflect the absolute value of the transfer, but it should be closely related.

<sup>68</sup> For more information about the HFCS also see chapter 2.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

(2016) show that net wealth positions are not unlimitedly comparable between all countries due to methodological differences. Based on their analysis and the fact that not all countries surveyed wealth transfers, we include the following countries in our analysis: *Austria, Belgium, France, (West) Germany, Cyprus, Greece, Portugal and Spain*.<sup>69</sup>

Historic, economic and welfare state circumstances, as well as wealth and household structures, affect net wealth and consequently, the patterns of transfer reception in private households. Larger households tend to accumulate more wealth than smaller ones, which are more prevalent in core European countries (ECB 2013b). Furthermore, owner-occupied real estate, which is especially common in Mediterranean countries and usually represents the largest share of net wealth, is likely to be transferred as inheritance, while financial wealth might be passed on to the next generation as gifts. Fessler & Schürz (2015) show that welfare state spending is negatively correlated with household wealth. Though the effect on transfers is uncertain.<sup>70</sup>

To account for these differences, we divide our country selection into two groups. The core European countries (*Austria, Belgium, France, (West) Germany*) possess a generous welfare state regime with high social expenditures<sup>71</sup> at least since the 1980s and on average smaller households with similar structures (based on figure 3.1, ECB 2013b and Fessler, Lindner & Segalla 2014). The Mediterranean countries (*Cyprus, Greece, Portugal and Spain*) comprise the second group with, on average, larger households and less generous welfare state expenditures. In addition, these countries were without stable financial markets – and consequently, without comparable investment opportunities – due to e.g. civil wars and military dictatorships for several years following World War II.

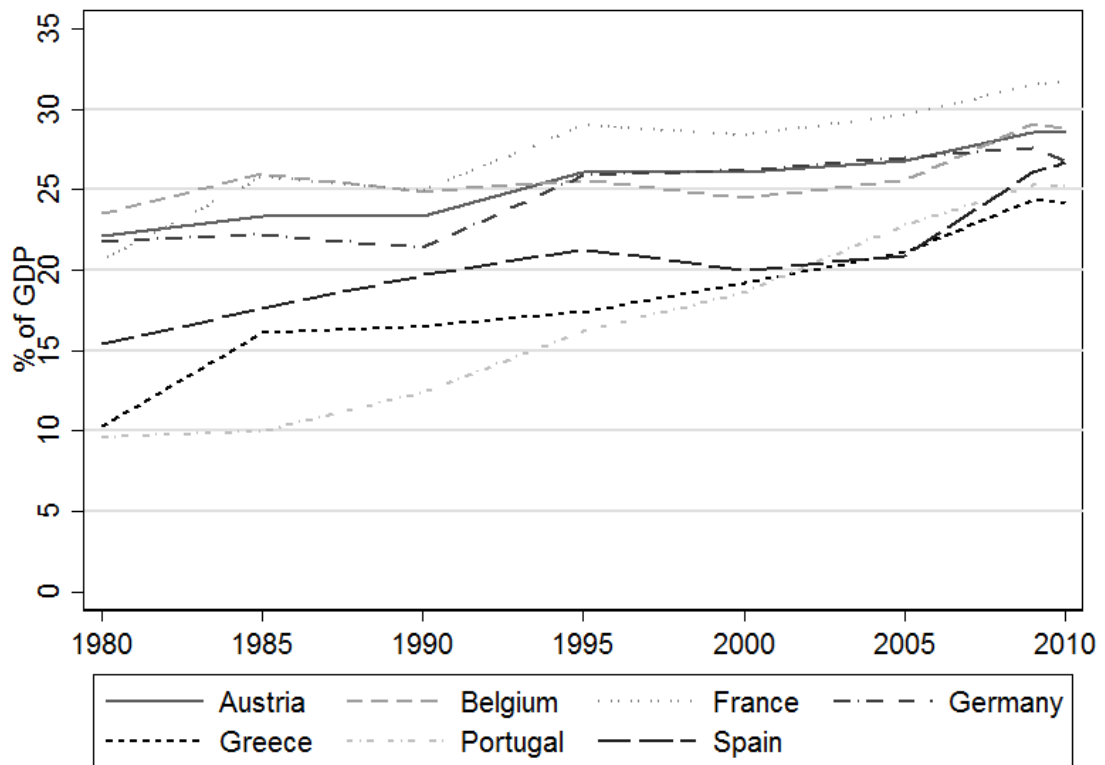
---

<sup>69</sup> For Germany, we base our analysis on the western part due to problems of capitalization for past intergenerational transfers that date from before the fall of the wall. For the rest of the analysis, we use Germany and (West) Germany as synonyms. We restrict the analysis to households with a head of at least 21 years of age. Additionally, not all countries in the HFCS oversample wealthy households. Therefore, our analysis for most countries is likely not representative for the very top (Vermeulen 2014). To account for missing values, the data is multiply imputed (five imputates) by the data providers (ECB 2013b). Our calculations are based on standard applications for multiply imputed data; we use the provided replicate weights and all standard errors are bootstrapped.

<sup>70</sup> The life-cycle theory suggests that households consume their wealth during retirement. Therefore one could conclude that this is particularly the case in countries with low social expenditures/old age provision. However, especially in Mediterranean countries one might factor in (adult) children living in the same household, who support their parents.

<sup>71</sup> This includes: public, mandatory and voluntary private social expenditure in the following fields: old age, survivors, incapacity-related benefits, health, family, active labor market programs, unemployment, housing, and other social policy areas.

**Figure 3.1: Social expenditure<sup>a</sup> as percentage of gross domestic product (GDP)<sup>b</sup>**



a This includes: public, mandatory and voluntary private social expenditure in the following fields: old age, survivors, incapacity-related benefits, health, family, active labor market programs, unemployment, housing, and other social policy areas.

b Data for Cyprus is not available from OECD.Stat.

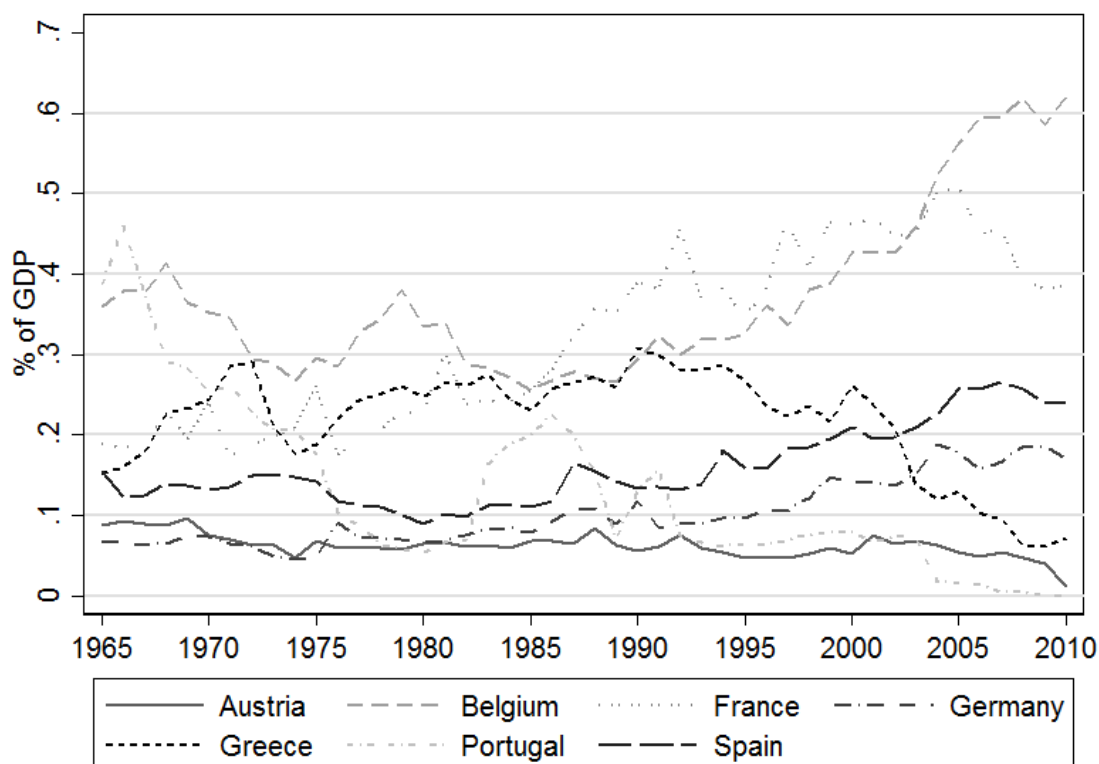
Source: OECD.Stat: [https://stats.oecd.org/Index.aspx?DataSetCode=SOCX\\_AGG](https://stats.oecd.org/Index.aspx?DataSetCode=SOCX_AGG) (10.10.2015)

### 3.3.3. Inheritance and gift taxation

The inheritance and gift taxation background is quite diverse for the different countries. Effective inheritance and gift tax rates depend on tax rates, allowances, exemptions etc. and are complex to calculate and not available for all countries over time. Based on the tax rates, the thresholds for the maximum tax rate, the maximal tax allowances (see table A.3.1 in the appendix) and the tax revenues (figure 3.2) we define three types of gift and inheritance taxation regimes: (1) no or low inheritance and gift tax; (2) moderate inheritance and gift tax with moderate or high allowances; and (3) high inheritance and gift tax with low or moderate allowances. As demonstrated by Piketty (2014) the wealth transfer flow collapsed following the shocks of 1914-1945, but again gained momentum starting in the 1990s in several European countries (namely France, Britain and Germany). In addition, figure 3.2 demonstrates that tax revenues diverged, particularly in the 2000s. Therefore, our analysis of the institutional backgrounds starts in 2000 and ranges through the time of the survey (year 2010). For a more thorough summary, we refer to table A.3.1 in the appendix, where all key information is provided in table form.



**Figure 3.2: Inheritance and gift tax revenue as percentage of GDP<sup>a</sup>**



<sup>a</sup> Data for Cyprus is not available from OECD.Stat.

Source: OECD.Stat: <http://stats.oecd.org/index.aspx?DataSetCode=REV> (10.10.2015).

The first group (no or low inheritance and gift tax) consists of Cyprus, Austria and Portugal. Cyprus and Austria abandoned the taxation of inheritances and gifts completely after 2000/2008, respectively, with only a land transfer tax levied, which is in the one-digit area. In Austria, before 2008 the taxation depended on the level of relationship between testator and heir, with moderate or high tax rates, but low tax allowances. In Portugal since 2004 only a stamp duty is levied on all wills. Transfers between spouses, or other immediate relatives, are largely exempt. Before the changes occurred, tax rates were moderate and tax allowances low.

The second group (moderate taxation of inheritances and gifts with moderate or high tax allowances) consists of Greece and Germany. In both countries the tax rate varies depending on the relationship and the value of the transfers received. The tax rates are lower in Greece, the tax allowances higher in Germany where they become usable again after 10 years.

The third group (high inheritance and gift tax with low or moderate tax allowances) consists of Spain, France and Belgium. In Spain the applicable tax rate varies not only depending on the relationship and the value of the transfers received, but it also takes into account the net wealth of the heir. However, since 2004 several regional governments factually abandoned the taxation of wealth transfers. The tax system in France is similar to that in Germany, but with

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

higher tax rates and lower allowances. In Belgium we observe varying gift taxes depending on the region, the relationship and the value since 2001; and for the inheritance tax since 2002. Another peculiarity in Belgium is a considerable difference between the taxes on inheritances and gifts.

Almost all countries we consider have more or less extensive exemption clauses applying to the transfer of businesses and owner-occupied property.

Taken together, the inheritance and gift tax regimes probably do not strongly influence the incidence of wealth transfers, because in all countries within the closer family tax rates never exceed 50 percent<sup>72</sup> and are accompanied by allowances and further exceptions. As for the levels of inheritances and gifts in the Mediterranean countries, they will probably be the highest in Cyprus (no inheritance and gift tax for several years) and the lowest in Spain. In the Core European countries they will be the lowest in Belgium and France.

### **3.4. Incidence and value of transfers and their share of wealth**

In the first step of our empirical analysis (sections 3.4.1 and 3.4.2) we give an overview of the distribution of wealth transfers<sup>73</sup> from outside the household (as defined by the HFCS questionnaire) for eight European countries. We first tabulate the incidence as well as the conditional mean values of inherited wealth. We calculate the present value of all past wealth transfers that a household received, in 2010 prices and capitalize the past wealth transfers using a real annual rate of return of three percent. In the second step we calculate the capitalized present value in prices of 2010 as a percent of the current net wealth on the household level (relative value of transfers). The whole analysis relies on the intertemporal budget constraint of private households as described by Piketty et al. (2014) in more detail. In short, the idea is as follows: for all households we observe the joint distribution of all past wealth transfers and net wealth at time  $y$ . Note that  $y = 2010$  on average for the surveyed households in our analysis. We capitalize the past wealth transfers using a real annual rate of return  $r$ , which yields the present value of wealth transfers  $PVWT_{yi}$  for all households  $i$  in any sample or subsample at time  $y$ . This deserves an explanation: we assume that at the point in time any household receives a wealth transfer it always has the option to make a secure investment yielding a real

---

<sup>72</sup> For Austria, Belgium, France and (West) Germany this is also already the case since the 1950s (Scheve & Stasavage 2012).

<sup>73</sup> Gifts and inheritances are analyzed together. If only looking at gifts, the sample sizes are quite small in some countries. This is probably due to missing tax incentives in these countries and different asset portfolios (e.g. if households mainly possess a household main residence it will be most likely be passed on after death).

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

rate of return  $r$ . Hence, similar to Wolff & Gittleman (2014), we calculate the present value of wealth transfers

$$(3.1) \quad PVWT_{yi} = \sum_{t=t_0}^y WT_{ti} * e^{r(y-t)}.$$

For each single household,  $i$ , in our sample we determine the actual sum of inheritances and gifts based on our assumptions: If a household's net wealth is larger than the present value of transfers, it follows that the household has real savings as high as the residual ( $W_{yi} - PVWT_{yi}$ ). If a household has a net wealth less than the present value of wealth transfers, we conclude that the household consumed part (or all) of the wealth transfer instead of choosing a secure financial market investment (or lost over time). The residual resulting from the secure investment is, therefore, interpreted as the household's savings, as it was the investment decision of the household to either invest differently (and potentially more risky) or consume the wealth transfer. The total present value of wealth transfers for any given country  $j$  in year  $y$  is then given by

$$(3.2) \quad TPVWT_y = \sum_i \min(PVWT_{yi}, w_{yi}).$$

Additionally, we are interested in calculating the total value of wealth transfers as a percent of positive net wealth, which, according to the literature, are computed at the aggregate level as the total inherited wealth divided by the total current wealth

$$(3.3) \quad \beta_y = \frac{TPVWT_y}{\sum_i w_{yi}} = \frac{TPVWT_y}{W_y}.$$

However, in our application we calculate the ratio on the household levels and average within countries or subpopulations, as this definition seems more useful with regard to the typing of households. In line with Piketty et al. (2014), any population can be divided into three groups of households. For those households that (1) never received a transfer or has negative net wealth,  $\beta_{yi}$  is always zero. For those households that (2) received a transfer and the present value falls below the net wealth,  $\beta_{yi}$  is the ratio of the present value to net wealth  $w_{yi}$ . For the third group of households that (3) received a transfer but the present value exceeds the net wealth in year  $y$ , it follows that  $\beta_{yi}$  is 100%, hence all of the net wealth can be attributed to the transfers, as the household consumed more than he could have afforded from its own labor or deviating investment decisions. Based on this reasoning we conclude that the residual that cannot be attributed to the inherited portion of the net wealth must be the result of a household's saving decision and attributed to the portion resulting from its own efforts.

The most arbitrary assumption in our analysis is the choice of the real rate of return  $r$ . The base rate we choose is  $r = 3\%$  in accordance to Wolff & Gittleman (2014). Very similar to Wolff & Gittleman, we add a few robustness checks (see appendix part B) in order to identify systemat-

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

ic changes, if we vary the real rate of return between  $r = 1\%$  and  $r = 5\%$ . Additionally, we check the variation of  $\beta_{yj}$  depending on a wealth related rate of return, as it seems reasonable that richer households are financially better educated, have the possibility to invest more diverse and therefore, might realize higher rates of return (these results are presented in the appendix part B). For some countries (Belgium, France and Germany) it would also be possible to use the yields of investments in long-term government bonds, as these investments are in line with our definition of a secure investment. As the time series are not available for all countries from the 1950s onward, we add the results to the appendix part B and note that the differences to a flat real interest rate of 3% are negligible.

### **3.4.1. Incidence and levels of past wealth transfers**

As shown in table 3.1, the incidence of transfers received varies slightly across the European countries we analyze. In Portugal, the share of households that received at least one wealth transfer is the lowest (27 percent), with the highest shares observed in (West) Germany (38 percent) and France (roughly 40 percent).

In the core European countries, we find that with increasing household income<sup>74</sup> the probability that a household already received a wealth transfer increases. Households finding themselves in the highest income quintile record double the incidence of transfers (more than 50 percent of all households) as compared to the first quintile. The Mediterranean countries on the other hand do not exhibit similar variation along the distribution of income. For instance, in Portugal the incidence varies independently of income around 25 percent. This can be, amongst other things, explained by the expansion of secondary and tertiary education since the 1960s, which has greatly improved the educational mobility for the current generation of heirs.

The higher the observed net wealth of a household is, the higher is the likelihood that it reports a wealth transfer. The picture is very similar for all countries in our analysis. For the population reporting a net wealth below 20,000 Euro it is well below 20 percent and then it quickly rises to 70 percent-75 percent in countries where this correlation seems to be the most pronounced (see Austria, France and (West) Germany).

---

<sup>74</sup> The current gross household income refers to the last 12 months / the last calendar year before the time of the survey and is composed of the following components: all earned income, pensions (public, occupational and private), unemployment benefits and other regular social transfers, regular private transfers, rental income, income from financial assets, income from private companies / partnerships plus additional other income.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

In general, the likelihood that a household<sup>75</sup> reports a wealth transfer increases with age.<sup>76</sup> However, in addition to the lifecycle, cohort effects can be identified. Due to lifecycle effects, the age classes between 45 and 64 have significantly higher percentages of households with a wealth transfers than the younger age classes, as their older relatives (especially parents and grandparents) more likely already deceased. The age classes over 65, on the other hand, have decreasing percentages of households that report a wealth transfer. Their older relatives, of which the majority is likely to be deceased already, presumably lived in much poorer conditions (e.g. due to the two World Wars) and did not bequest (large) fortunes. For instance, in Cyprus the effect is extremely pronounced, as the oldest cohort reports only half as many inheritances and gifts compared to the second oldest cohort. The patterns are very similar across Europe with a few exceptions. Some countries do not experience a drop for the oldest cohorts like Portugal and Belgium.

In the next step, we look at the capitalized conditional mean present value of wealth transfers across Europe (see table 3.2). Therefore, we limit the sample to all households reporting at least one transfer, adjusting the original values of transfers for inflation, capitalizing them and summing them up by households (see formula 3.1). Belgium and Greece are fairly close to each other (155,000 Euro and 152,000 Euro, respectively). The conditional mean present values in Austria and Germany are considerably higher (230,000 Euro and 193,000 Euro). Spain records 174,000 Euro and France 137,000 Euro. There are two outliers: Portugal at only 85,000 Euro and Cyprus at 274,000 Euro. Linking this to the inheritance and gift tax regimes, we find indeed that the present values are highest for Cyprus among the Mediterranean countries. However, they are significantly lower in Portugal than in Spain in spite of the much steeper taxation in Spain, this is probably because the overall wealth levels are much lower in Portugal for historical reasons. In addition, as expected based on the tax regimes, Belgium and France do have the lowest wealth transfer values among the core European countries.

With regard to the joint distribution of income, the capitalized present value is highest in the highest income quintile. This confirms the strong relationship between a household's income position and the expected wealth transfers from previous generations indicating low intergenerational mobility. While the incidence does vary less for Mediterranean countries, the absolute value does increase with income as in the core European countries.

---

<sup>75</sup> Most sociodemographic characteristics of the households are referring to its head. We use "household" and "household's head" synonymously.

<sup>76</sup> Age class according to the age of the head of the household as reported in the HFCS survey data. In the multivariate part we will investigate the last two age classes together due to the low numbers of cases.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

**Table 3.1: Percentage of households with a transfer<sup>a</sup>**

|                           | I. Core European countries |          |              |          |               |          |              |          | II. Mediterranean countries |          |              |          |              |          |              |          |
|---------------------------|----------------------------|----------|--------------|----------|---------------|----------|--------------|----------|-----------------------------|----------|--------------|----------|--------------|----------|--------------|----------|
|                           | Austria                    |          | Belgium      |          | France        |          | West Germany |          | Cyprus                      |          | Greece       |          | Portugal     |          | Spain        |          |
|                           | %                          | Std.err. | %            | Std.err. | %             | Std.err. | %            | Std.err. | %                           | Std.err. | %            | Std.err. | %            | Std.err. | %            | Std.err. |
| <b>All households</b>     | 35.7                       | 1.3      | 31.7         | 1.2      | 39.9          | 0.7      | 38.1         | 1.7      | 31.5                        | 1.7      | 30.7         | 1.5      | 26.7         | 1.3      | 30.1         | 1.1      |
| Income quintiles          |                            |          |              |          |               |          |              |          |                             |          |              |          |              |          |              |          |
| 1st quintile              | 26.2                       | 2.3      | 25.3         | 2.9      | 31.0          | 1.5      | 24.6         | 3.1      | 22.8                        | 3.7      | 28.3         | 3.0      | 26.5         | 2.2      | 32.9         | 2.0      |
| 2nd quintile              | 29.7                       | 2.7      | 32.5         | 3.2      | 33.8          | 1.6      | 32.2         | 3.8      | 30.8                        | 4.1      | 33.7         | 2.6      | 30.4         | 2.6      | 29.9         | 2.1      |
| 3rd quintile              | 34.3                       | 2.9      | 27.6         | 3.0      | 38.2          | 1.6      | 37.6         | 3.4      | 30.3                        | 3.8      | 31.4         | 2.7      | 26.6         | 2.6      | 25.2         | 2.6      |
| 4th quintile              | 38.0                       | 2.7      | 35.0         | 2.9      | 43.1          | 1.5      | 44.6         | 3.0      | 40.3                        | 4.0      | 29.2         | 2.9      | 26.2         | 2.3      | 29.8         | 2.4      |
| 5th quintile              | 50.3                       | 3.1      | 37.9         | 2.8      | 53.2          | 1.3      | 51.8         | 3.0      | 33.1                        | 3.8      | 31.0         | 2.8      | 24.1         | 1.9      | 32.9         | 2.3      |
| Wealth levels             |                            |          |              |          |               |          |              |          |                             |          |              |          |              |          |              |          |
| Under €20,000             | 11.6                       | 1.6      | 12.9         | 2.3      | 17.9          | 1.1      | 13.1         | 2.2      | 7.9                         | 2.8      | 4.1          | 1.1      | 11.8         | 1.3      | 7.9          | 1.7      |
| €20,000 - €99,999         | 31.3                       | 2.7      | 27.6         | 4.2      | 35.5          | 1.9      | 28.2         | 3.2      | 18.7                        | 4.4      | 34.8         | 2.9      | 28.1         | 2.1      | 24.8         | 2.7      |
| €100,000 - €249,999       | 45.8                       | 2.7      | 27.6         | 2.9      | 44.5          | 1.4      | 49.3         | 3.2      | 30.3                        | 3.8      | 39.4         | 2.2      | 34.9         | 2.2      | 27.4         | 1.8      |
| €250,000 - €499,999       | 54.4                       | 3.2      | 39.1         | 2.7      | 56.5          | 1.5      | 65.3         | 2.9      | 36.5                        | 4.3      | 37.5         | 3.9      | 34.1         | 3.5      | 39.2         | 2.5      |
| €500,000 - €999,999       | 71.6                       | 4.3      | 48.8         | 3.7      | 69.0          | 2.1      | 63.0         | 5.8      | 38.1                        | 4.9      | 42.7         | 5.6      | 33.4         | 4.3      | 46.4         | 3.9      |
| €1,000,000 or over        | 68.4                       | 6.8      | 51.3         | 5.0      | 75.1          | 2.3      | 69.7         | 5.8      | 51.7                        | 4.8      | 51.1         | 15.6     | 44.5         | 6.3      | 62.1         | 5.3      |
| Age classes               |                            |          |              |          |               |          |              |          |                             |          |              |          |              |          |              |          |
| 21-35                     | 22.9                       | 2.4      | 16.1         | 2.8      | 24.8          | 1.6      | 22.3         | 3.8      | 28.7                        | 4.0      | 22.5         | 1.9      | 12.9         | 2.3      | 16.0         | 2.3      |
| 35-44                     | 34.8                       | 3.1      | 25.3         | 2.9      | 32.0          | 1.5      | 36.1         | 3.0      | 31.0                        | 3.8      | 34.3         | 2.6      | 20.8         | 2.4      | 20.4         | 2.1      |
| 45-54                     | 38.6                       | 2.5      | 29.2         | 2.8      | 38.3          | 1.6      | 46.8         | 3.1      | 38.3                        | 3.6      | 33.8         | 2.8      | 28.0         | 2.3      | 33.0         | 2.2      |
| 55-64                     | 44.4                       | 2.4      | 43.0         | 3.1      | 51.7          | 1.7      | 46.2         | 3.4      | 33.3                        | 4.2      | 33.4         | 3.3      | 30.5         | 2.3      | 40.6         | 2.6      |
| 65-74                     | 37.1                       | 3.1      | 40.0         | 3.2      | 51.9          | 1.7      | 39.9         | 3.6      | 31.5                        | 4.7      | 30.4         | 3.0      | 29.9         | 2.3      | 40.7         | 2.3      |
| 75 and older              | 35.1                       | 4.5      | 42.2         | 3.4      | 46.1          | 1.9      | 33.5         | 4.2      | 17.2                        | 4.9      | 30.6         | 3.6      | 34.2         | 2.5      | 32.7         | 2.2      |
| <b>Sample size n</b>      | <b>2,337</b>               |          | <b>2,307</b> |          | <b>14,929</b> |          | <b>2,826</b> |          | <b>1,234</b>                |          | <b>2,915</b> |          | <b>4,393</b> |          | <b>6,188</b> |          |
| <b>Weighted in Mio. N</b> | <b>3.71</b>                |          | <b>4.66</b>  |          | <b>27.51</b>  |          | <b>28.64</b> |          | <b>0.30</b>                 |          | <b>4.06</b>  |          | <b>3.92</b>  |          | <b>16.97</b> |          |

<sup>a</sup>The figures record the proportion of households who indicate receiving a wealth transfer at any time before the time of the survey.

Source: Own computations based on HFCS (2010). Means over 5 implicates, standard errors bootstrapped.

**Table 3.2: Mean present value of transfers received (in €1,000), in 2010 prices and capitalized with  $r = 3\%$ , recipients only<sup>a</sup>**

|                            | I. Core European countries |          |         |          |        |          |              |          | II. Mediterranean countries |          |        |          |          |          |       |          |
|----------------------------|----------------------------|----------|---------|----------|--------|----------|--------------|----------|-----------------------------|----------|--------|----------|----------|----------|-------|----------|
|                            | Austria                    |          | Belgium |          | France |          | West Germany |          | Cyprus                      |          | Greece |          | Portugal |          | Spain |          |
|                            | mean                       | Std.err. | mean    | Std.err. | mean   | Std.err. | mean         | Std.err. | mean                        | Std.err. | mean   | Std.err. | mean     | Std.err. | mean  | Std.err. |
| Mean present value         | 230                        | 19       | 155     | 10       | 137    | 4        | 193          | 13       | 274                         | 23       | 152    | 8        | 85       | 7        | 174   | 11       |
| Median present value       | 110                        |          | 77      |          | 46     |          | 107          |          | 165                         |          | 113    |          | 38       |          | 77    |          |
| <b>A. Income quintiles</b> |                            |          |         |          |        |          |              |          |                             |          |        |          |          |          |       |          |
| 1st quintile               | 119                        | 28       | 116     | 26       | 73     | 6        | 97           | 21       | 157                         | 57       | 98     | 9        | 50       | 5        | 98    | 8        |
| 2nd quintile               | 140                        | 21       | 114     | 14       | 95     | 8        | 130          | 20       | 154                         | 26       | 119    | 10       | 60       | 6        | 126   | 14       |
| 3rd quintile               | 205                        | 27       | 142     | 18       | 95     | 8        | 158          | 20       | 266                         | 78       | 151    | 19       | 63       | 7        | 148   | 43       |
| 4th quintile               | 226                        | 34       | 173     | 22       | 113    | 7        | 194          | 21       | 344                         | 49       | 167    | 29       | 65       | 8        | 180   | 19       |
| 5th quintile               | 361                        | 47       | 208     | 28       | 252    | 11       | 304          | 33       | 389                         | 61       | 226    | 22       | 201      | 37       | 310   | 36       |
| <b>B. Wealth levels</b>    |                            |          |         |          |        |          |              |          |                             |          |        |          |          |          |       |          |
| Under €20,000              | 6                          | 1        | 6       | 1        | 5      | 0        | 6            | 1        | 6                           | 2        | 10     | 2        | 6        | 1        | 6     | 1        |
| €20,000 - €99,999          | 42                         | 3        | 34      | 5        | 31     | 2        | 33           | 3        | 47                          | 7        | 59     | 2        | 38       | 2        | 40    | 3        |
| €100,000 - €249,999        | 118                        | 6        | 98      | 9        | 73     | 3        | 116          | 5        | 133                         | 12       | 141    | 3        | 82       | 5        | 85    | 6        |
| €250,000 - €499,999        | 231                        | 13       | 135     | 12       | 143    | 5        | 204          | 12       | 199                         | 22       | 246    | 13       | 116      | 14       | 141   | 9        |
| €500,000 - €999,999        | 435                        | 33       | 220     | 23       | 256    | 14       | 414          | 29       | 277                         | 40       | 436    | 54       | 252      | 44       | 300   | 36       |
| €1,000,000 or over         | 904                        | 145      | 478     | 74       | 739    | 44       | 818          | 105      | 584                         | 79       | 931    | 278      | 696      | 198      | 734   | 108      |
| <b>C. Age classes</b>      |                            |          |         |          |        |          |              |          |                             |          |        |          |          |          |       |          |
| 21-35                      | 176                        | 48       | 60      | 15       | 45     | 5        | 116          | 38       | 244                         | 37       | 139    | 10       | 42       | 8        | 149   | 31       |
| 35-44                      | 197                        | 31       | 131     | 30       | 97     | 7        | 188          | 28       | 287                         | 42       | 152    | 9        | 81       | 13       | 164   | 24       |
| 45-54                      | 285                        | 28       | 136     | 19       | 133    | 9        | 196          | 18       | 296                         | 40       | 193    | 21       | 65       | 6        | 171   | 24       |
| 55-64                      | 239                        | 34       | 154     | 19       | 141    | 9        | 201          | 30       | 310                         | 79       | 191    | 28       | 83       | 19       | 190   | 25       |
| 65-74                      | 245                        | 51       | 170     | 18       | 176    | 13       | 233          | 23       | 242                         | 73       | 93     | 9        | 104      | 21       | 173   | 16       |
| 75 and older               | 181                        | 49       | 226     | 33       | 200    | 14       | 182          | 22       | 154                         | 36       | 109    | 18       | 104      | 18       | 185   | 48       |

<sup>a</sup>The figures show the present value of all wealth transfers as of the survey year which were received up to the time of the survey and capitalized at a real interest rate of 3 percent.

Source: Own computations based on HFCS (2010). Means over 5 implicates, standard errors bootstrapped.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

Not surprisingly, most countries experience a sharp rise in the conditional mean present value of transfers received from the second highest wealth level to the highest with household net wealth above 1 million Euros. For all countries the value at least doubles. Generally, the conditional present value of the transfers seems to increase monotonically with the wealth level. The wealth levels above 250,000 Euro show values in the six to seven-digit euros region, whereas for the lowest wealth level below 20,000 Euro the conditional value never exceeds 10,000 Euro.

Computing the conditional mean present value for age classes reveals that it is only for Belgium and France that it peaks for the oldest cohort aged 75 or older. In Portugal and Spain the variation across the age classes is rather low. In Austria we observe a spike for the age class 45 to 54 (285,000 Euro), in Germany it only increases slightly for cohorts older than 44. The rather liberal legislation concerning the taxation of gifts clearly left its mark in the distribution for younger households. Overall, Austria, Greece, (West) Germany and Cyprus all exhibit a reversely U-shaped pattern. This is in line with the observations of the percent of households with transfers, i.e. not only did the middle aged households report having received a wealth transfer considerably more often, those transfers were considerably higher as well. Presumably, this is the result of the cohort effect offsetting the life-cycle effect in wealth transfers in those countries.

As the observed patterns and especially mean and median present values, might strongly depend on the household size, we add a robustness check in the appendix part B (table B.3.4) and check for the variation in per (adult) capita wealth transfers instead. Using per capita transfers expectedly reduces the values, but does not change the patterns reported in this section.

### 3.4.2. Correlates of the incidence and value of past wealth transfers

We estimate a logit model characterized by the specification

$$(3.4) \quad p_j = F(\alpha + \beta X_j + \varepsilon_j),$$

with  $p_j$  denoting the probability of households in country  $j$  of having received a transfer,  $\alpha$  is an intercept,  $\varepsilon_j$  are unobservable variables.  $X_j$  is the matrix of all explanatory variables: age, education, work and marital status as well as gender of the reference person, income<sup>77</sup> of the household and its size.<sup>78</sup> Additionally, we estimate the following OLS specification:

---

<sup>77</sup> In the HFCS gross income was collected, usually referring to the calendar year prior to the survey year or the 12 months preceding the survey.

<sup>78</sup> Except for income, all explanatory variables relate to the time of the interview (around 2010). Due to endogeneity, net wealth is not used as an explanatory variable. Further information about the trans-



Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

$$(3.5) \quad y_j = \alpha + \beta X_j + \varepsilon_j$$

with  $y_j$  denoting the capitalized present value of all wealth transfer for households in country  $j$ . We sum up all capitalized past wealth transfers in prices of 2010.  $\alpha$  is the intercept and  $\varepsilon_j$  denotes unobservables.  $X_j$  is the matrix of all explanatory variables, which are the same as for the logit estimation.

The results regarding the probability of receiving a transfer in the individual countries are shown in table 3.3. Table 3.4 shows the results for the OLS regressions regarding the mean wealth transfer value (as log) in each country for the heir population only.

For the household income the following pattern emerges: The higher the income, the higher the probability that the household reports a wealth transfer. This is especially pronounced in the core European countries. Both findings also hold for the average amount of transfers a household receives: Households of higher income quintiles tend to report higher transfers. This is the case in the majority of our sample and the pattern is most salient at the edges of the income distribution. These findings are probably connected to those regarding education and intergenerational mobility: In the core European countries, we find for all countries that households with primary education had a smaller propensity to receive a transfer compared to those with secondary education. Households with tertiary education, on the other hand, are characterized by higher propensities. Interestingly, in Cyprus households with lower education had a higher chance to receive a transfer as compared to secondary education. This might be a hint that intergenerational mobility is still comparatively high. Considering the present values, the relationship between education levels and the value of transfers received is very pronounced in France, Portugal and Greece, i.e. those households that received a transfer expect a higher value if their head has tertiary education. Research suggests that children of parents with higher education usually also hold a higher degree, which in turn results in higher income and more possibilities to accumulate wealth to bequest (see for example Deutsches PISA-Konsortium 2001).

We also confirm part of our other findings from the descriptive part regarding the age of the household head. Again life-cycle effects are visible: With increasing age, the likelihood of losing family and friends and thus, receiving a wealth transfer is monotonically increasing for most countries. The age classes between 45 and 64 have, for almost all countries, significantly high-

---

fers cannot be used in the analysis due to the pooled estimation of the transfers. Information about the tax regimes are only available on the country level and can therefore not be considered due to the low number of cases. To use the household head as reported in the survey is standard in the literature. However, in an alternative specification we used the oldest person in the household as its head. The results suggest that the estimates are fairly robust (exact results are available upon request).

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

er probabilities of having already received a transfer than the younger ones. However, the cohort effects, decreasing transfers for old cohorts due to poorer living conditions, which are reported in table 3.1, are not visible or significant once we control for other sociodemographic variables. In Belgium, France and Spain the lifecycle patterns of transfer recipients are the most pronounced and significant. For the mean present value (table 3.4) of those who received a transfer, in many countries the 45 to 54 age cohort has received higher transfers than younger cohorts.

Looking at work status, we find that self-employed households (compared with employed ones) have, in the majority of the countries, a higher chance to receive a transfer and also a larger transfer. One explanation for this might be that the self-employed often inherit the business that they are working in. Compared with the status married, households led by widowed or divorced persons have smaller chances of having received an inheritance or gift. Keep in mind that the inheritance from the deceased spouse is not reported in the survey, if the spouse used to be part of the same household (see section 3.3). In the case of a divorce, it is logical that the incidence is reduced because high transfers mostly come from (grand-) parents(-in-law) and after a divorce the chances naturally halved for a household. Differences between genders are only significant in Austria, Germany, Cyprus and Spain. In these countries men have a smaller probability to receive a wealth transfer or the wealth transfers are lower than that for women.

Taken together the patterns we find for the probability to receive a transfer and the average transfer value for the heir population are quite similar over the countries. Specifically, the correlations between education and income with the present values of transfers received are high for all countries. The question arises, what exactly is the role of wealth transfers for the overall wealth situation of households in Europe? In the next section we explore household's net wealth and transfers simultaneously by computing the transfers received as a percent of observed net wealth, thereby obtaining an indicator for the impact of wealth transfers on the distribution of net wealth.

**Table 3.3: Average marginal effects of the logit estimations for probability of wealth transfer received**

| Logit                                   | I. Core European countries |          |            |          |            |          |                |          |            |          | II. Mediterranean countries |          |            |          |            |          |  |
|---|----------------------------|----------|------------|----------|------------|----------|----------------|----------|------------|----------|-----------------------------|----------|------------|----------|------------|----------|--|
|   | Austria                    |          | Belgium    |          | France     |          | (West) Germany |          | Cyprus     |          | Greece                      |          | Portugal   |          | Spain      |          |  |
|   | Coeff.                     | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.         | Std.err. | Coeff.     | Std.err. | Coeff.                      | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. |  |
| Income quintiles (reference: 3rd)       |                            |          |            |          |            |          |                |          |            |          |                             |          |            |          |            |          |  |
| 1st                                     | -0.090 *                   | 0.039    | -0.061     | 0.037    | -0.088 *** | 0.014    | -0.074 *       | 0.039    | -0.059     | 0.058    | -0.034                      | 0.029    | -0.033     | 0.025    | 0.006      | 0.023    |  |
| 2nd                                     | -0.042                     | 0.035    | 0.017      | 0.035    | -0.048 *** | 0.013    | -0.035         | 0.034    | -0.058     | 0.050    | 0.030                       | 0.026    | -0.001     | 0.023    | 0.008      | 0.022    |  |
| 4th                                     | 0.045 ***                  | 0.034    | 0.057 ***  | 0.034    | 0.031 ***  | 0.013    | 0.037          | 0.033    | 0.001      | 0.046    | -0.011                      | 0.030    | -0.014     | 0.027    | 0.050 ***  | 0.022    |  |
| 5th                                     | 0.106 ***                  | 0.034    | 0.093 ***  | 0.035    | 0.111 ***  | 0.012    | 0.048          | 0.030    | 0.033      | 0.046    | -0.004                      | 0.029    | 0.015      | 0.025    | 0.088 ***  | 0.020    |  |
| Age group (reference: age 45-54)        |                            |          |            |          |            |          |                |          |            |          |                             |          |            |          |            |          |  |
| 21-34                                   | -0.153 ***                 | 0.034    | -0.131 *** | 0.041    | -0.155 *** | 0.016    | -0.199 ***     | 0.039    | -0.223 *** | 0.047    | -0.085 ***                  | 0.028    | -0.122 *** | 0.034    | -0.191 *** | 0.033    |  |
| 35-44                                   | -0.056 **                  | 0.030    | -0.058 *   | 0.033    | -0.044 *** | 0.013    | -0.061 *       | 0.030    | -0.127 *** | 0.038    | 0.019                       | 0.025    | -0.058 **  | 0.024    | -0.121 *** | 0.022    |  |
| 55-64                                   | 0.097 ***                  | 0.034    | 0.171 ***  | 0.034    | 0.078 ***  | 0.014    | 0.056 *        | 0.029    | -0.077     | 0.050    | 0.034                       | 0.031    | 0.010      | 0.023    | 0.040 **   | 0.018    |  |
| 65 plus                                 | 0.059                      | 0.042    | 0.232 ***  | 0.051    | 0.101 ***  | 0.018    | 0.045          | 0.045    | 0.052      | 0.098    | 0.006                       | 0.040    | 0.041      | 0.029    | 0.062 ***  | 0.022    |  |
| Education (reference: secondary)        |                            |          |            |          |            |          |                |          |            |          |                             |          |            |          |            |          |  |
| Primary                                 | -0.042                     | 0.028    | -0.074 *** | 0.027    | -0.079 *** | 0.010    | -0.069 **      | 0.036    | 0.009      | 0.042    | 0.036 *                     | 0.021    | 0.006      | 0.022    | -0.027     | 0.017    |  |
| Tertiary                                | 0.083 ***                  | 0.030    | 0.063 ***  | 0.023    | 0.099 ***  | 0.010    | 0.096 ***      | 0.020    | -0.032     | 0.034    | -0.005                      | 0.024    | 0.021      | 0.029    | 0.023      | 0.017    |  |
| Employment status (reference: employed) |                            |          |            |          |            |          |                |          |            |          |                             |          |            |          |            |          |  |
| Self-employed                           | 0.155 ***                  | 0.034    | 0.066      | 0.044    | 0.100 ***  | 0.012    | 0.083 **       | 0.032    | 0.031      | 0.043    | 0.132 ***                   | 0.024    | 0.108 ***  | 0.023    | 0.159 ***  | 0.019    |  |
| Unemployed/ other                       | -0.020                     | 0.036    | -0.009     | 0.035    | 0.007      | 0.016    | 0.023          | 0.032    | 0.024      | 0.051    | 0.031                       | 0.025    | 0.012      | 0.025    | 0.046 ***  | 0.018    |  |
| Retired                                 | 0.025                      | 0.035    | -0.045     | 0.044    | 0.086 ***  | 0.016    | 0.005          | 0.040    | -0.182 **  | 0.087    | 0.038                       | 0.035    | 0.045 *    | 0.025    | 0.059 ***  | 0.021    |  |
| Marital status (reference: married)     |                            |          |            |          |            |          |                |          |            |          |                             |          |            |          |            |          |  |
| Single                                  | 0.017                      | 0.033    | -0.010     | 0.033    | -0.069 *** | 0.013    | 0.031          | 0.036    | -0.055     | 0.077    | -0.003                      | 0.029    | -0.028     | 0.028    | 0.124 ***  | 0.020    |  |
| Widowed                                 | 0.007                      | 0.043    | 0.028      | 0.038    | -0.087 *** | 0.017    | -0.111 ***     | 0.043    | -0.233 *** | 0.079    | 0.006                       | 0.036    | -0.069 **  | 0.028    | -0.019     | 0.022    |  |
| Divorced                                | -0.081 **                  | 0.036    | -0.048     | 0.036    | -0.083 *** | 0.015    | -0.047         | 0.036    | -0.056     | 0.064    | -0.008                      | 0.036    | -0.140 *** | 0.031    | -0.036     | 0.027    |  |
| Men                                     | -0.044 **                  | 0.020    | -0.010     | 0.020    | 0.011      | 0.009    | -0.056 **      | 0.020    | -0.022     | 0.032    | -0.009                      | 0.019    | 0.022      | 0.019    | -0.006     | 0.013    |  |
| Household size (reference: 2 persons)   |                            |          |            |          |            |          |                |          |            |          |                             |          |            |          |            |          |  |
| 1                                       | 0.051                      | 0.033    | -0.030     | 0.031    | 0.032 **   | 0.013    | -0.074 **      | 0.033    | 0.036      | 0.072    | -0.010                      | 0.031    | 0.050 **   | 0.024    | -0.018     | 0.021    |  |
| 3                                       | 0.116 ***                  | 0.032    | -0.040     | 0.032    | -0.062 *** | 0.013    | 0.029          | 0.029    | 0.039      | 0.049    | 0.004                       | 0.025    | -0.015     | 0.020    | 0.003      | 0.016    |  |
| 4                                       | 0.051                      | 0.037    | -0.047     | 0.036    | -0.038 *** | 0.014    | 0.058 *        | 0.033    | 0.053      | 0.049    | 0.043                       | 0.026    | -0.014     | 0.023    | 0.019      | 0.019    |  |
| 5 plus                                  | 0.189 ***                  | 0.046    | -0.049     | 0.045    | -0.085 *** | 0.017    | 0.066          | 0.045    | 0.026      | 0.051    | 0.068*                      | 0.036    | -0.022     | 0.032    | -0.049*    | 0.027    |  |
| Sample size (n)                         | 2,380                      |          | 2,296      |          | 15,004     |          | 2,828          |          | 1,220      |          | 2,971                       |          | 4,399      |          | 6,197      |          |  |
| Weighted in Mio. (N)                    | 3.77                       |          | 4.61       |          | 27.86      |          | 28.66          |          | 0.30       |          | 4.11                        |          | 3.93       |          | 17.02      |          |  |

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Own computations based on HFCS (2010). All 5 imputates are used, standard errors bootstrapped.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

**Table 3.4: OLS regression for present value of wealth transfer received, in 2010 prices and capitalized with  $r = 3\%$ , recipients only**

| OLS                                     | I. Core European countries |          |         |          |        |          |                |          |        |          | II. Mediterranean countries |          |          |          |        |          |          |         |        |        |        |       |       |       |
|---|----------------------------|----------|---------|----------|--------|----------|----------------|----------|--------|----------|-----------------------------|----------|----------|----------|--------|----------|----------|---------|--------|--------|--------|-------|-------|-------|
|   | Austria                    |          | Belgium |          | France |          | (West) Germany |          | Cyprus |          | Greece                      |          | Portugal |          | Spain  |          |          |         |        |        |        |       |       |       |
|   | Coeff.                     | Std.err. | Coeff.  | Std.err. | Coeff. | Std.err. | Coeff.         | Std.err. | Coeff. | Std.err. | Coeff.                      | Std.err. | Coeff.   | Std.err. | Coeff. | Std.err. |          |         |        |        |        |       |       |       |
| Income quintiles (reference: 3rd)       |                            |          |         |          |        |          |                |          |        |          |                             |          |          |          |        |          |          |         |        |        |        |       |       |       |
| 1st                                     | -0.677                     | **       | 0.263   | -0.612   | *      | 0.317    | -0.480         | ***      | 0.136  | -0.422   | 0.314                       | -0.0180  | 0.431    | -0.251   | **     | 0.119    | -0.253   | 0.242   | -0.577 | ***    | 0.213  |       |       |       |
| 2nd                                     | -0.356                     | *        | 0.201   | -0.413   | *      | 0.236    | -0.171         | 0.119    | -0.120 | 0.226    | -0.184                      | 0.403    | -0.204   | *        | 0.108  | 0.0641   | 0.196    | -0.103  | 0.212  |        |        |       |       |       |
| 4th                                     | -0.0106                    |          | 0.214   | 0.328    |        | 0.225    | 0.190          | *        | 0.100  | 0.337    | *                           | 0.203    | 0.605    | *        | 0.309  | 0.00263  | 0.163    | -0.0905 | 0.277  | 0.241  | 0.205  |       |       |       |
| 5th                                     | 0.313                      |          | 0.227   | 0.509    |        | 0.265    | 0.712          | ***      | 0.0905 | 0.634    | ***                         | 0.192    | 0.455    |          | 0.346  | 0.228    | *        | 0.128   | 0.475  | **     | 0.219  | 0.427 | **    | 0.210 |
| Age group (reference: age 45-54)        |                            |          |         |          |        |          |                |          |        |          |                             |          |          |          |        |          |          |         |        |        |        |       |       |       |
| 21-34                                   | -0.652                     | **       | 0.272   | -0.567   | *      | 0.342    | -0.968         | ***      | 0.160  | -0.534   | 0.361                       | 0.0316   | 0.328    | -0.253   | **     | 0.125    | -0.492   | **      | 0.246  | -0.460 | 0.332  |       |       |       |
| 35-44                                   | -0.480                     | **       | 0.202   | -0.450   |        | 0.281    | -0.324         | **       | 0.127  | 0.124    | 0.214                       | 0.0659   | 0.260    | -0.130   |        | 0.0799   | -0.00676 |         | 0.212  | -0.222 | 0.214  |       |       |       |
| 55-64                                   | 0.0404                     |          | 0.231   | -0.0545  |        | 0.297    | 0.148          |          | 0.126  | 0.135    | 0.194                       | 0.353    | 0.341    | -0.0532  |        | 0.165    | 0.0332   |         | 0.194  | 0.107  | 0.176  |       |       |       |
| 65 plus                                 | 0.116                      |          | 0.279   | 0.105    |        | 0.355    | 0.781          | ***      | 0.159  | 0.903    | ***                         | 0.269    | 0.397    |          | 0.648  | -0.319   | 0.210    | 0.380   |        | 0.257  | 0.174  | 0.252 |       |       |
| Education (reference: secondary)        |                            |          |         |          |        |          |                |          |        |          |                             |          |          |          |        |          |          |         |        |        |        |       |       |       |
| Primary                                 | 0.113                      |          | 0.212   | -0.206   |        | 0.224    | -0.350         | ***      | 0.0914 | -0.242   | 0.213                       | -0.363   | 0.278    | -0.192   | **     | 0.0951   | -0.619   | ***     | 0.199  | -0.229 | 0.172  |       |       |       |
| Tertiary                                | 0.00948                    |          | 0.166   | 0.208    |        | 0.154    | 0.334          | ***      | 0.0765 | 0.213    | 0.148                       | 0.176    | 0.215    | 0.299    | ***    | 0.108    | 0.530    | *       | 0.281  | 0.0562 | 0.195  |       |       |       |
| Employment status (reference: employed) |                            |          |         |          |        |          |                |          |        |          |                             |          |          |          |        |          |          |         |        |        |        |       |       |       |
| Self-employed                           | 0.632                      | ***      | 0.198   | 0.195    |        | 0.414    | 0.727          | ***      | 0.112  | 0.608    | ***                         | 0.193    | 0.368    |          | 0.291  | 0.0939   | 0.113    | 0.638   | ***    | 0.190  | 0.712  | ***   | 0.207 |       |
| Unemployed/ other                       | -0.363                     |          | 0.268   | -0.394   |        | 0.343    | -0.246         |          | 0.184  | -0.0712  |                             | 0.248    | -0.326   |          | 0.353  | 0.0603   | 0.0931   | 0.236   |        | 0.250  | 0.165  | 0.199 |       |       |
| Retired                                 | 0.0265                     |          | 0.256   | 0.594    | **     | 0.265    | 0.0697         |          | 0.129  | -0.0881  |                             | 0.227    | -0.429   |          | 0.623  | -0.00858 | 0.188    | 0.268   |        | 0.210  | 0.304  | 0.278 |       |       |
| Marital status (reference: married)     |                            |          |         |          |        |          |                |          |        |          |                             |          |          |          |        |          |          |         |        |        |        |       |       |       |
| Single                                  | -0.0362                    |          | 0.226   | -0.411   |        | 0.268    | -0.0772        |          | 0.118  | -0.259   |                             | 0.312    | -0.702   |          | 0.530  | -0.0802  | 0.112    | 0.0581  |        | 0.212  | 0.427  | **    | 0.210 |       |
| Widowed                                 | -0.512                     |          | 0.313   | -0.0266  |        | 0.313    | -0.261         |          | 0.162  | -0.217   |                             | 0.326    | -0.507   |          | 0.585  | -0.0101  | 0.143    | -0.122  |        | 0.237  | 0.145  | 0.216 |       |       |
| Divorced                                | -0.441                     |          | 0.306   | -0.145   |        | 0.274    | -0.379         | ***      | 0.130  | -0.361   |                             | 0.280    | -0.307   |          | 0.492  | -0.118   | 0.155    | 0.0700  |        | 0.334  | -0.177 | 0.264 |       |       |
| Men                                     | 0.162                      |          | 0.129   | -0.0346  |        | 0.160    | -0.113         |          | 0.0827 | -0.0907  |                             | 0.147    | -0.452   | **       | 0.209  | 0.0522   | 0.0814   | -0.0958 |        | 0.182  | -0.269 | **    | 0.132 |       |
| Household size (reference: 2 persons)   |                            |          |         |          |        |          |                |          |        |          |                             |          |          |          |        |          |          |         |        |        |        |       |       |       |
| 1                                       | -0.00521                   |          | 0.261   | -0.0127  |        | 0.245    | 0.123          |          | 0.118  | -0.135   |                             | 0.269    | 0.524    |          | 0.532  | -0.102   | 0.125    | 0.0299  |        | 0.245  | 0.0682 | 0.198 |       |       |
| 3                                       | 0.416                      | **       | 0.204   | 0.128    |        | 0.235    | -0.0553        |          | 0.117  | 0.0987   |                             | 0.173    | 0.427    |          | 0.278  | 0.0945   | 0.0874   | 0.286   | *      | 0.166  | 0.0523 | 0.166 |       |       |
| 4                                       | 0.481                      | **       | 0.239   | 0.0113   |        | 0.311    | 0.0489         |          | 0.135  | -0.194   |                             | 0.262    | 0.280    |          | 0.333  | 0.0680   | 0.111    | 0.188   |        | 0.216  | 0.0203 | 0.214 |       |       |
| 5 plus                                  | 0.989                      | ***      | 0.247   | -0.415   |        | 0.363    | -0.255         |          | 0.203  | 0.383    |                             | 0.367    | 0.108    |          | 0.353  | -0.0421  | 0.140    | 0.334   |        | 0.315  | -0.107 | 0.356 |       |       |
| Constant                                | 11.28                      | ***      | 0.269   | 10.86    | ***    | 0.285    | 10.38          | ***      | 0.147  | 11.01    | ***                         | 0.218    | 11.65    | ***      | 0.500  | 11.74    | ***      | 0.143   | 10.32  | ***    | 0.361  | 10.94 | ***   | 0.281 |
| Sample size (n)                         | 813                        |          | 777     |          | 6,663  |          | 1,251          |          | 410    |          | 844                         |          | 1,042    |          | 2,404  |          |          |         |        |        |        |       |       |       |
| Weighted in Mio. (N)                    | 1.30                       |          | 1.42    |          | 10.34  |          | 10.71          |          | 0.91   |          | 12.4                        |          | 1.01     |          | 5.09   |          |          |         |        |        |        |       |       |       |

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

Source: Own computations based on HFCS (2010). All 5 imputates are used, standard errors bootstrapped.

### 3.4.3. Intergenerational wealth transfers and the distribution of wealth

In the previous section, we find that the prevalence of transfers received differs greatly between socio-economic groups. In addition, some households have not yet received a gift or inheritance, while others may never receive (a significant) one. In this section, we investigate past wealth transfers as a percent of net wealth (see table 3.5).

Overall there are basically two tiers of countries. The first consists of the core European countries Austria and (West) Germany and the Mediterranean country Greece. For these countries, the share is around 31 percent, meaning the share of inheritances and gifts is just under one-third in those countries. Rather low shares are computed for the second tier: Belgium, Portugal, Spain and Cyprus. In Portugal both the percent of households with a transfer and the conditional present values of those transfers tend to be lower than in the core European countries, resulting in an overall lower share (15 percent). In Spain the mean present values tend to be on par with the rest of Europe (table 3.2), however, households receive the wealth transfers later in their lifecycle. In combination with an overall higher net wealth level for Spanish households, the result is a rather low share of wealth transfers.<sup>79</sup> In Cyprus, the low share of wealth transfers is the result of a very high mean and median of net wealth (ECB 2013b, c); the capitalized values of the transfers are rather low in comparison. The result for Belgium is surprisingly similar to most of the Mediterranean countries and differs greatly from France and Germany, which deserves an explanation. For one, the percentage of households with a transfer is significantly lower than in Germany or France, especially for the households with a net wealth above 1 million Euros. Since those households account for a great share of the wealth transfers in Germany and France and the overall wealth level in Belgium is rather high — the median net wealth of all households is almost four times as high as in Germany (see ECB 2013b, c) — this results in an overall small fraction of the total Belgian net wealth that can be attributed to capitalized wealth transfers.

The correlations between the relative importance of transfers received and the income position are the following: Even though the present value significantly increases with income, a household's opportunities to save wealth from income flows are increasing as well, which results in a lack of variation, once we compare wealth transfers as a percent of net wealth for several income quintiles (see Austria, Belgium and France). In (West) Germany, for the highest income quintile the percentage drops by about 17 percentage points as compared to the second highest. Overall, the high-income households receive significantly higher wealth transfers,

---

<sup>79</sup> Keep in mind that at the time the survey was conducted in Spain, the aftermath of the financial crisis was not yet fully in effect; housing prices were still high. A repetition of the survey with more up-to-date data presumably would reveal another pattern.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

but are equally capable of saving significant amounts, resulting in a decreasing relevance of inheritances and gifts for their wealth position.

The analysis of the relative importance of transfers along the distribution of wealth reveals two sets of countries. In Austria and (West) Germany the share of capitalized wealth transfers is highest for the wealth level 500,000 Euro to 1 million Euros and quickly decreases for the net wealth above 1 million Euros. Cyprus exhibits a similar picture, albeit on an overall lower level. On the other hand in Belgium, France, Portugal and Spain the shares do not vary a lot between the wealth levels and stay approximately at their overall level. In Greece we observe a pronounced U-shaped pattern. We conclude that, as in most applications, the relative importance of wealth transfers does not significantly increase with the level of wealth. For the core European countries plus Cyprus it even decreases with a net wealth higher than 1 million Euros. This observation presents a stark contrast to the observations in the first part (tables 3.1 and 3.2) – whereas the percentages of households with a transfer as well as the conditional present value of those transfers are increasing with the wealth level – the value of transfers as a percent of net wealth drops for the wealthiest households. On the one hand, this result might show that those households accumulated a lot more of their large fortunes through their own efforts, independent of transfers. On the other hand, financially educated persons tend to have better options for investment, are less risk averse and realize higher rates of return on their investment. The assumed real rate of return (3 percent) might be too low for those households. However, as can be seen in appendix part B the patterns are largely robust against both overall higher interest rates and wealth-related interest.

Transfers as a percent of net wealth are steadily increasing over the lifecycle in Belgium and France, as well as in Portugal and Spain. This is in line with the result that the cohort effect does not offset the lifecycle effect in those countries (see tables 3.3 and 3.4). As expected from those same results, the connection is less clear in Austria and Germany, for the older cohorts the transfers as a percent of net wealth is varying at around one-third. The younger cohorts exhibit rather high shares of transfers as well, but gifts drive them: more than 50 percent of the transfers received are gifts. The high shares for younger generations hardly come as a surprise in Germany with rather generous tax exempt amounts (since 2009, 400,000 Euro per child for a gifts from each parent every ten years are free of tax, up from already 205,000 Euro before).

**Table 3.5: Present value of wealth transfers received as a percent of net wealth, in 2010 prices and real interest rate = 3%<sup>a</sup>**

|                            | I. Core European countries |          |         |          |        |          |                |          |        |          | II. Mediterranean countries |          |          |          |       |          |
|----------------------------|----------------------------|----------|---------|----------|--------|----------|----------------|----------|--------|----------|-----------------------------|----------|----------|----------|-------|----------|
|                            | Austria                    |          | Belgium |          | France |          | (West) Germany |          | Cyprus |          | Greece                      |          | Portugal |          | Spain |          |
|                            | %                          | Std.err. | %       | Std.err. | %      | Std.err. | %              | Std.err. | %      | Std.err. | %                           | Std.err. | %        | Std.err. | %     | Std.err. |
| Mean present value         | 30.9                       | 4.2      | 14.4    | 1.0      | 23.2   | 0.8      | 31.4           | 2.6      | 12.8   | 1.5      | 31.4                        | 1.8      | 14.8     | 1.4      | 18.0  | 1.1      |
| <b>A. Income quintiles</b> |                            |          |         |          |        |          |                |          |        |          |                             |          |          |          |       |          |
| 1st quintile               | 41.4                       | 7.6      | 18.7    | 4.1      | 26.8   | 2.2      | 39.3           | 9.4      | 13.3   | 5.7      | 36.8                        | 4.1      | 19.5     | 2.3      | 22.6  | 1.8      |
| 2nd quintile               | 30.6                       | 9.1      | 14.7    | 2.4      | 26.8   | 2.1      | 36.1           | 5.6      | 14.5   | 4.0      | 40.1                        | 3.9      | 21.5     | 2.5      | 20.8  | 2.3      |
| 3rd quintile               | 34.0                       | 7.6      | 12.4    | 2.0      | 23.0   | 1.9      | 39.6           | 4.4      | 19.2   | 6.5      | 33.9                        | 4.1      | 15.2     | 2.1      | 15.8  | 3.7      |
| 4th quintile               | 30.3                       | 6.6      | 15.8    | 2.3      | 21.5   | 1.5      | 37.7           | 5.0      | 19.5   | 3.7      | 30.1                        | 4.6      | 12.5     | 1.7      | 18.5  | 2.1      |
| 5th quintile               | 29.2                       | 5.0      | 13.3    | 1.8      | 22.7   | 1.3      | 25.4           | 3.5      | 8.0    | 1.9      | 26.1                        | 3.0      | 13.2     | 2.6      | 16.7  | 1.9      |
| <b>B. Wealth levels</b>    |                            |          |         |          |        |          |                |          |        |          |                             |          |          |          |       |          |
| Under €20,000              | -                          |          | -       |          | -      |          | -              |          | -      |          | -                           |          | -        |          | -     |          |
| €20,000 - €99,999          | 25.8                       | 2.8      | 16.6    | 3.5      | 21.0   | 1.6      | 17.5           | 2.5      | 14.7   | 4.3      | 34.5                        | 3.1      | 18.4     | 1.5      | 16.3  | 2.0      |
| €100,000 - €249,999        | 31.6                       | 2.6      | 15.5    | 2.3      | 18.8   | 0.9      | 34.8           | 2.9      | 23.4   | 3.4      | 35.1                        | 2.0      | 18.2     | 1.4      | 13.7  | 1.5      |
| €250,000 - €499,999        | 36.1                       | 2.7      | 14.8    | 1.6      | 23.1   | 1.1      | 38.5           | 2.7      | 20.4   | 3.5      | 27.2                        | 2.9      | 11.8     | 1.6      | 15.9  | 1.5      |
| €500,000 - €999,999        | 45.9                       | 4.6      | 16.0    | 2.3      | 25.6   | 1.6      | 39.2           | 4.5      | 14.9   | 2.8      | 27.3                        | 5.1      | 12.1     | 2.8      | 20.1  | 3.2      |
| €1,000,000 or over         | 23.9                       | 6.7      | 12.2    | 2.0      | 24.5   | 2.1      | 22.6           | 4.6      | 10.0   | 2.0      | 34.9                        | 13.6     | 12.8     | 4.6      | 21.4  | 3.5      |
| <b>C. Age classes</b>      |                            |          |         |          |        |          |                |          |        |          |                             |          |          |          |       |          |
| 21-35                      | 35.7                       | 8.4      | 8.9     | 2.4      | 16.3   | 2.2      | 34.5           | 8.1      | 23.4   | 3.8      | 32.1                        | 3.0      | 8.5      | 2.1      | 16.5  | 3.9      |
| 35-44                      | 24.0                       | 7.1      | 12.6    | 3.0      | 15.9   | 1.3      | 36.7           | 3.9      | 13.3   | 2.4      | 33.1                        | 2.8      | 13.2     | 2.7      | 15.3  | 2.3      |
| 45-54                      | 28.0                       | 5.4      | 10.7    | 1.8      | 18.6   | 1.3      | 34.5           | 3.0      | 11.6   | 2.9      | 35.3                        | 3.6      | 12.2     | 1.5      | 16.4  | 2.0      |
| 55-64                      | 34.9                       | 6.8      | 15.1    | 2.0      | 21.0   | 1.8      | 24.2           | 5.3      | 11.2   | 3.0      | 31.3                        | 4.8      | 11.0     | 2.6      | 17.5  | 2.6      |
| 65-74                      | 37.3                       | 6.3      | 13.6    | 1.9      | 27.7   | 1.7      | 32.1           | 4.0      | 12.3   | 5.0      | 21.2                        | 2.8      | 18.9     | 3.8      | 21.4  | 1.8      |
| 75 and older               | 34.8                       | 9.6      | 21.9    | 3.2      | 38.5   | 2.3      | 31.7           | 5.1      | 11.5   | 4.0      | 30.2                        | 4.7      | 25.7     | 3.9      | 22.3  | 4.6      |

<sup>a</sup> The figures show the present value of all wealth transfers as of the survey year which were received up to the time of the survey and accumulated at a real interest rate of 3.0% as a ratio to the respective net wealth in the overall population or subpopulations.

Source: Own computations based on HFCS (2010). All 5 implicates are used, standard errors bootstrapped.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

In several countries young households have a comparably high share, because of low initial savings levels. The shares are also high again for old households because of high absolute values of the capitalized wealth transfers. For middle-aged households the value of their own savings tends to be higher than their relative low absolute transfer value. The differences between the age classes are minimal though. In Belgium, France and Portugal (as well as in Spain) the share increases with age and peaks for the oldest cohort. In Austria, (West) Germany, Cyprus and Greece the share of transfers as a percent of net wealth is surprisingly high for some or all young cohorts. One of the reasons why the share is not substantially higher for older cohorts might be the Second World War and its aftermath, resulting in a situation where there simply was not much to inherit by heirs of the war generation.

#### **3.4.4. Correlates of the relative value of wealth transfers**

Using a fractional logit model we further investigate the share of current wealth due to past wealth transfers for those who received a transfer. The advantage of this model is that it explicitly accounts for proportions in the (0, 1) interval. We estimate the following equation:

$$(3.6) \quad q_j = F(\alpha + \beta X_j + \varepsilon_j)$$

where  $q_j$  denotes the sum of past wealth transfers as a percent of current net wealth for households, which received a transfer in country  $j$ . In addition to the inflation adjustment we capitalize transfers as a percentage of net wealth – with a cap at 100%, i.e. the sum of capitalized wealth transfers within a household cannot be possibly higher than the net wealth of a household.  $\alpha$  is an intercept,  $\varepsilon_j$  denotes unobservables.  $X_j$  is the matrix of all explanatory variables: age, education, work and marital status as well as gender of the reference person, income of the household and its size.

Table 3.6 shows the results for the fractional logit regressions analyzing capitalized inherited wealth in prices of 2010 as a percent of current household wealth. We look at all households that received at least one gift or inheritance. The income of the household matters: Compared with the third income quintile, the first and second quintiles show a positive relationship and the fourth and fifth a negative one. This means that with increasing income, wealth transfers exhibit a decreasing impact on inherited wealth as a percent of net wealth. Naturally, with higher incomes it is easier to save from it and accumulate wealth, thus, even though the absolute present value of transfers is higher for high income households, their relative importance is decreasing along the distribution of income.

With regard to the age classes, the results do not reveal a unified pattern. It seems like the households over 65 have higher shares of current wealth due to transfers in comparison with



Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

the middle aged ones (45 to 54). However, this finding is only significant in France and Portugal. For the households under 45 the coefficients point into both directions, no matter if they are located in core or Mediterranean countries. Positive correlations give a hint that in Belgium and Spain younger households have already received large fortunes. So far they have had less time to accumulate wealth off their own income. Hence, transfers have a much higher impact on their financial situation than for older cohorts.

Self-employed households have lower shares of current wealth due to past wealth transfers than employees (except for Spain). However, in the analysis it is assumed that all accumulated wealth exceeding the capitalization is due to own efforts, if business owners inherited their business and consistently generate a higher rate of return, the resulting wealth is defined as savings. For the self-employed population, an initial transfer might be the reason for the latter wealth though. In the majority of the countries studied, singles have a higher share of current wealth due to past wealth transfers compared to households led by married person. For households led by a widowed or divorced person the share of past wealth transfers also tend to be higher, it seems that a divorce or widowhood is diminishing the possibilities to increase savings and accumulate wealth. The gender of the household head does matter significantly, especially in the southern European countries and France. Men have a smaller share of wealth transfers as a percent of net wealth than women. As is shown in the first part, there are not many significant differences for absolute present value of transfers between men and women, resulting in the overall conclusion that, all things equal, men tend to accumulate more wealth.

Taken together many results from the absolute investigation are reversed. Especially the finding that the share of current wealth due to past wealth transfers is decreasing with income needs to be emphasized. Remember from the first part of this empirical analysis that those households with higher income have higher chances of receiving inheritances and gifts while also receiving larger transfers in absolute terms. This points into the direction that these households are able to build up wealth out of both their annual income as well as substantial inheritances and gifts.<sup>80</sup>

---

<sup>80</sup> Keep in mind that the income variable is only a proxy for life-time earnings, as it does refer to the calendar year prior to the survey year (or the 12 months preceding the survey).

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

**Table 3.6: Fractional logit regressions for share of current wealth due to past wealth transfers, recipients only**

| Fractional Logit                        | I. Core European countries |          |            |          |            |          |                |          |           |          | II. Mediterranean countries |          |           |          |            |          |  |  |
|---|----------------------------|----------|------------|----------|------------|----------|----------------|----------|-----------|----------|-----------------------------|----------|-----------|----------|------------|----------|--|--|
|   | Austria                    |          | Belgium    |          | France     |          | (West) Germany |          | Cyprus    |          | Greece                      |          | Portugal  |          | Spain      |          |  |  |
|   | Coeff.                     | Std.err. | Coeff.     | Std.err. | Coeff.     | Std.err. | Coeff.         | Std.err. | Coeff.    | Std.err. | Coeff.                      | Std.err. | Coeff.    | Std.err. | Coeff.     | Std.err. |  |  |
| Income quintiles (reference: 3rd)       |                            |          |            |          |            |          |                |          |           |          |                             |          |           |          |            |          |  |  |
| 1st                                     | 0.457 *                    | 0.279    | 0.271      | 0.237    | 0.621 ***  | 0.079    | 0.006          | 0.211    | 1.059 *** | 0.365    | 0.208                       | 0.349    | 0.545 *** | 0.209    | 0.382 ***  | 0.128    |  |  |
| 2nd                                     | 0.105                      | 0.237    | -0.004     | 0.200    | 0.342 ***  | 0.072    | 0.120          | 0.192    | 0.419     | 0.314    | 0.222                       | 0.289    | 0.266     | 0.187    | 0.123      | 0.133    |  |  |
| 4th                                     | -0.038                     | 0.226    | 0.083      | 0.187    | -0.001     | 0.068    | -0.265 **      | 0.152    | 0.211     | 0.260    | -0.184                      | 0.302    | -0.280    | 0.208    | -0.019     | 0.126    |  |  |
| 5th                                     | -0.295                     | 0.214    | -0.174     | 0.196    | -0.158 *** | 0.062    | -0.670 ***     | 0.136    | -0.393 *  | 0.275    | -0.147                      | 0.306    | -0.277    | 0.195    | -0.349 *** | 0.114    |  |  |
| Age group (reference: age 45-54)        |                            |          |            |          |            |          |                |          |           |          |                             |          |           |          |            |          |  |  |
| 21-34                                   | -0.092                     | 0.265    | 0.468 *    | 0.267    | 0.059      | 0.105    | -0.608 **      | 0.229    | 0.216     | 0.281    | -0.684 **                   | 0.338    | 0.069     | 0.310    | 0.035      | 0.216    |  |  |
| 35-44                                   | -0.244                     | 0.209    | -0.059     | 0.212    | -0.066     | 0.072    | 0.018          | 0.149    | -0.133    | 0.205    | -0.526 **                   | 0.274    | 0.286     | 0.209    | 0.199 *    | 0.133    |  |  |
| 55-64                                   | -0.051                     | 0.224    | 0.068      | 0.201    | -0.045     | 0.070    | -0.069         | 0.140    | -0.042    | 0.302    | 0.071                       | 0.351    | 0.140     | 0.189    | -0.079     | 0.102    |  |  |
| 65 plus                                 | 0.256                      | 0.268    | 0.463      | 0.286    | 0.502 ***  | 0.090    | 0.232          | 0.211    | 0.440     | 0.595    | 0.140                       | 0.463    | 0.661 *** | 0.243    | 0.173      | 0.125    |  |  |
| Education (reference: secondary)        |                            |          |            |          |            |          |                |          |           |          |                             |          |           |          |            |          |  |  |
| Primary                                 | 0.162                      | 0.225    | 0.031      | 0.159    | 0.138 ***  | 0.051    | 0.026          | 0.202    | -0.084    | 0.239    | 0.326                       | 0.241    | -0.275    | 0.195    | -0.116     | 0.104    |  |  |
| Tertiary                                | 0.159                      | 0.214    | -0.103     | 0.134    | 0.156 ***  | 0.049    | -0.177         | 0.096    | 0.110     | 0.191    | 0.055                       | 0.280    | -0.310    | 0.255    | -0.137     | 0.102    |  |  |
| Employment status (reference: employed) |                            |          |            |          |            |          |                |          |           |          |                             |          |           |          |            |          |  |  |
| Self-employed                           | -0.176                     | 0.209    | -0.401     | 0.250    | -0.477 *** | 0.060    | -0.079         | 0.157    | -0.275    | 0.254    | -0.727 **                   | 0.280    | -0.274    | 0.189    | 0.186 *    | 0.109    |  |  |
| Unemployed/other                        | -0.190                     | 0.242    | 0.023      | 0.222    | 0.196 *    | 0.097    | -0.025         | 0.159    | 0.123     | 0.313    | -0.510                      | 0.296    | -0.367 *  | 0.216    | 0.099      | 0.111    |  |  |
| Retired                                 | 0.029                      | 0.228    | -0.221     | 0.239    | -0.073     | 0.076    | -0.247         | 0.189    | -0.074    | 0.584    | -0.040                      | 0.407    | 0.225     | 0.211    | 0.075      | 0.121    |  |  |
| Marital status (reference: married)     |                            |          |            |          |            |          |                |          |           |          |                             |          |           |          |            |          |  |  |
| Single                                  | 0.005                      | 0.210    | 0.448 **   | 0.206    | 0.188 **   | 0.073    | 0.291          | 0.193    | -0.075    | 0.629    | 0.728 *                     | 0.344    | 0.466     | 0.257    | 0.435 ***  | 0.124    |  |  |
| Widowed                                 | 0.080                      | 0.370    | 0.729 ***  | 0.235    | 0.118      | 0.089    | 0.288          | 0.242    | -0.449    | 0.583    | 0.726 *                     | 0.408    | -0.075    | 0.250    | 0.216 *    | 0.133    |  |  |
| Divorced                                | 0.054                      | 0.260    | 0.609 ***  | 0.221    | 0.116      | 0.083    | 0.420 **       | 0.181    | 0.726     | 0.440    | 0.616                       | 0.437    | 0.210     | 0.292    | 0.114      | 0.152    |  |  |
| Men                                     | -0.178                     | 0.143    | -0.095     | 0.119    | -0.108 **  | 0.046    | -0.044         | 0.100    | -0.331    | 0.181    | -0.478 **                   | 0.217    | -0.421 ** | 0.179    | -0.170 **  | 0.081    |  |  |
| Household size (reference: 2 persons)   |                            |          |            |          |            |          |                |          |           |          |                             |          |           |          |            |          |  |  |
| 1                                       | -0.027                     | 0.242    | 0.035      | 0.206    | 0.126 *    | 0.073    | -0.028         | 0.186    | -0.206    | 0.565    | -0.696 **                   | 0.372    | 0.253     | 0.221    | -0.030     | 0.127    |  |  |
| 3                                       | 0.145                      | 0.228    | 0.211      | 0.192    | -0.058     | 0.067    | 0.012          | 0.136    | -0.216    | 0.291    | 0.054                       | 0.299    | 0.259 *   | 0.165    | 0.069      | 0.096    |  |  |
| 4                                       | 0.000                      | 0.333    | 0.188      | 0.227    | -0.006     | 0.074    | -0.212         | 0.154    | 0.116     | 0.287    | 0.041                       | 0.292    | 0.355 *   | 0.201    | 0.031      | 0.110    |  |  |
| 5 plus                                  | 0.103                      | 0.339    | -0.125     | 0.290    | 0.035      | 0.095    | 0.034          | 0.220    | 0.009     | 0.336    | 0.164                       | 0.391    | 0.882 *** | 0.285    | 0.229      | 0.162    |  |  |
| Constant                                | 0.688 **                   | 0.279    | -0.703 *** | 0.233    | -0.394 *** | 0.088    | 0.747 ***      | 0.181    | -0.003    | 0.391    | 2.363 ***                   | 0.391    | 0.260     | 0.332    | -0.204     | 0.161    |  |  |

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Own computations based on HFCS (2010). All 5 imputates are used, standard errors bootstrapped.

### 3.5. Conclusion

We conduct a detailed investigation of the distribution of wealth transfers in eight countries in the Euro area (Austria, Belgium, France, (West) Germany, Cyprus, Spain, Greece and Portugal). Our main finding is that high-income households in European countries have, in the past, inherited significantly higher amounts than low-income households. Using a series of country-specific regressions, we confirm these findings and additionally discover that high education levels strongly correlate with both the probability of receiving a transfer and the value of those transfers. At the same time, capital transfers seem to be less relevant to the current wealth position for high-income households. Through their strong income positions and persistently low intergenerational mobility, these households are presumably able to build wealth both from their own regular incomes and from inheritances and gifts.

Overall we observe quite similar patterns in all European countries included in our sample. The share of households that received at least one wealth transfer varies between 27 percent (Portugal) and roughly 40 percent (France). The capitalized conditional mean present value of wealth transfers lies between 274,000 Euro (Cyprus) and 85,000 Euro (Portugal). Expressing the mean present value of transfers in relative terms, as a percent of current net wealth, it never exceeds 32 percent and shares are lower in the Mediterranean countries (Greece deviates from the other Mediterranean countries, as does Belgium compared to the rest of core Europe). In most countries the percentages of households with a transfer as well as the mean present value of those transfers is expectedly increasing along the distribution of net wealth. However, the importance of those transfers for the current net wealth level does not increase with the level of wealth. In addition, we find that self-employed households tend to have a higher incidence, compared with employees, to have received a transfer and those transfers tend to be higher than those of employees.

Overall inheritances and gifts may be considered as a channel through which the existing inequality of opportunity and the resulting economic inequality are amplified. However, in Austria, Cyprus, Portugal and some regions of Spain, inheritance and gift tax has been de facto abolished or abandoned. In other countries like Germany large general allowances or exemptions for business assets are granted.<sup>81</sup> We observe the pattern that households from higher income quintiles are able to accumulate more wealth through an increased capacity to save on their own. In addition, once high income households report an inheritance or gifts, the values are substantially higher than for low income households, therefore increasing the gap between

---

<sup>81</sup> See more on this point in chapter 4.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

rich and poor households. If policy-makers aim to reduce wealth inequality and more generally, economic inequality, they must therefore revisit the strong link between high incomes and high expected values of wealth transfers.

## References

- Albuquerque PC (2014) Intergenerational private transfers: Portugal in the European context. *European Journal of Ageing* 11(4). 301-312.
- Arrondel L, Roger M & Savignac F (2014) Wealth and Income in the Euro Area – Heterogeneity in households' behavior? Working Paper Series. No 1709. European Central Bank, Frankfurt.
- Brunner JK (2014) Die Erbschaftsteuer - Bestandteil eines optimalen Steuersystems? *Perspektiven der Wirtschaftspolitik* 15(3). 199-218.
- Corneo G, Bönke T & Westermeier C (2016) Eigenleistung und Erbschaft im Vermögen der Deutschen: Eine Verteilungsanalyse. *Perspektiven der Wirtschaftspolitik* 17(1). 35-53.
- Davies JB & Shorrocks AF (2000) The Distribution of Wealth. In Atkinson AB, Bourguignon F (ed) *Handbook of Income Distribution*. Elsevier Science, Amsterdam. 605-675.
- Deutsches PISA-Konsortium (Baumert J, Klieme E, Neubrand M, Prenzel M, Schiefele U, Schneider W, Stanat P, Tillmann K-J & Weiß M) (2001) PISA 2000 – Basiskompetenzen von Schülerinnen und Schülern im internationalen Vergleich. Leske + Budrich, Opladen.
- ECB (2013a) Methodological Report for the First Wave. Statistics Paper Series No 1 / April. European Central Bank, Frankfurt.
- ECB (2013b) Results from the first wave. Statistics Paper Series No 2 / April. European Central Bank. Frankfurt.
- ECB (2013c) Statistical Tables. European Central Bank, Frankfurt.
- EY (2014) Cross-country Review of Taxes on Wealth and Transfers of Wealth. Revised Final report for the European Commission, Brussels.
- Fessler P, Lindner P & Segalla E (2014) Net Wealth across the Euro Area - Why household structure matters and how to control for it. Working Paper Series No 1663. European Central Bank, Frankfurt.
- Fessler P, Mooslechner P & Schürz M (2008) How Inheritances Relate to Wealth Distribution? - Theoretical Reasoning and Empirical Evidence on the Basis of LWS Data. LWS Working Paper Series No 6.
- Fessler P & Schürz M (2015) Private Wealth across European Countries: The Role of Income, Inheritance and the Welfare State. Working Paper Series No 1847. European Central Bank, Frankfurt.
- HFCS. (2010). Household Finance and Consumption Survey. Data file edition from 2014. European Central Bank, Frankfurt.
- Karagiannaki E (2011) Recent trends in the size and the distribution of inherited wealth in the UK. CASE/146.
- Kessler D & Masson A (1989) Bequest and Wealth Accumulation: Are Some Pieces of the Puzzle Missing? *Journal of Economic Perspectives* 3 (3). 141-152.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

- Klevmarcken N (2004) On the Wealth Dynamics of Swedish Families 1984-1998. *Review of Income and Wealth* 50(4). 469-491.
- Kohli M, Künemund H, Schäfer A, Schupp J & Vogel C (2006) Erbschaften und ihr Einfluss auf die Vermögensverteilung. *Vierteljahreshefte für Wirtschaftsforschung* 75. 58-76.
- Kohli M, Künemund H, Vogel C, Gilles M, Heisig JP, Schupp J, Schäfer A & Hilbrich R (2005) Zusammenhänge und Wechselwirkungen zwischen Erbschaften und Vermögensverteilung. Bundesministerium für Gesundheit und Soziale Sicherung, Bonn.
- Kotlikoff L (1988) Intergenerational transfers and savings. *Journal of Economic Perspectives* 2 (2). 41-58.
- Kotlikoff L & Summers L (1981) The role of intergenerational transfers in aggregate capital accumulation. *Journal of Political Economy* 89. 706-732.
- Künemund H & Vogel C (2011) Erbschaften und Vermögensungleichheit. Vortrag zur Frühjahrstagung 2011 der Sektion Wirtschaftssoziologie.
- Modigliani F (1986) Life cycle, individual thrift and the wealth of nations. *American Economic Review* 76 (3). 297-313.
- Modigliani F (1988) The role of intergenerational transfers and lifecycle savings in the accumulation of wealth. *Journal of Economic Perspective* 2 (2). 15-40.
- Mathä TY, Porpiglia A & Ziegelmeier M (2014) Household wealth in the euro area – The importance of intergenerational transfers, homeownership and house price dynamics. Working Paper Series. No 1690. European Central Bank, Frankfurt.
- Mennel A & Förster J (2014) *Steuern in Europa, Amerika und Asien*. NWB: Hamm.
- Piketty T (2011) On the Long-Run Evolution of Inheritance - France 1820-2050. *Quarterly Journal of Economics* 126(3). 1071-1131.
- Piketty T (2014) *Capital in the Twenty-First Century*. Harvard University Press, Cambridge.
- Piketty T, Postel-Vinay G & Rosenthal J-L (2014) Inherited vs self-made wealth: Theory & evidence from a rentier society (Paris 1872-1927). *Explorations in Economic History* 51. 21-40.
- Piketty T & Zucman G (2015) Wealth and Inheritance in the Long Run. In Atkinson AB, Bourguignon F (ed) *Handbook of Income Distribution, Volume 2B*. Elsevier Science, Amsterdam. 1303-1368.
- Reil-Held A (2004) Die Rolle intergenerationaler Transfers in Einkommen und Vermögen älterer Menschen in Deutschland, *meaStudies* 02.
- Scheve K & Stasavage D (2012) Democracy, War, and Wealth: Lessons from Two Centuries of Inheritance Taxation. *American Political Science Review* 106(1). 81-102.
- Schupp J & Szydlik M (2004) Erbschaften und Schenkungen in Deutschland. *DIW-Wochenbericht* 5/2004. 59-65.
- Schürz M. (2007) Erbschaften und Vermögensungleichheit in Österreich. *Wirtschaft und Gesellschaft*. 33(2). 231-254.
- Semyonov M & Lewin-Epstein N (2013) Ways to Richness: Determination of Household Wealth in 16 Countries. *European Sociological Review* 29(6). 1134-1148.
- Szydlik M & Schupp J (2004) Wer erbt mehr? Erbschaften, Sozialstruktur und Alterssicherung. *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 56(4): 609-629.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

Tiefensee A & Grabka MM (2016) Comparing Wealth - Data Quality of the HFCS. *Survey Research Methods* 10(2). 119-142.

Vermeulen P (2014) How fat is the top tail of the wealth distribution. Working Paper Series. No 1692. European Central Bank, Frankfurt.

Wolff E & Gittleman M (2014) Inheritances and the distribution of wealth or whatever happened to the great inheritance boom? *Journal of Economic Inequality* 12. 439-468.

## Appendix

### Part A: Table

**Table A.3.1: Taxation of inheritances and gifts: a European comparison**

| Country            | Reference period:<br>2000-2010 | Tax rate depending on level of relation (1)                        | Max. tax rate threshold | Max. tax allowance (renewed)            | Exemptions/special regulations |                                    |
|--------------------|--------------------------------|--|-------------------------|---|--------------------------------|------------------------------------|
| Cyprus             | since 2000                     | <b>(1) No or low inheritance &amp; gift tax</b>                    |                         |   |                                | business transfers within families |
|                    |                                | <b>No inheritance or gift tax, but land transfer tax for gifts</b> |                         |   |                                |                                    |
|                    |                                | Spouses & Children   | 3-8%                    | €170,860 (since 2008, € 100.000 before) | ---                            |                                    |
| Austria            | since 2008                     | <b>No inheritance or gift tax, but land transfer tax</b>           |                         |   |                                | business transfers                 |
|                    |                                | Spouses & Children   | 2%                      | ---                                     | €1,100                         |                                    |
|                    | Other Persons                  | 2-3.5%   |                         |   |                                |                                    |
|                    | before 2008                    | <b>Moderate inheritance &amp; gift tax with low allowances</b>     |                         |   |                                | business transfers                 |
| Spouses & Children |                                | 2-15%  | €4,380,000              | €2,200 (10 yrs.)                        |                                |                                    |
|                    |                                | Other Persons  | 4-60%                   | €110/440/2,200 (10 yrs.)                |                                |                                    |

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

| Country  | Reference period:<br>2000-2010 | Tax rate depending on level of relation (1)   | Max. tax rate threshold              | Max. tax allowance (renewed) | Exemptions/special regulations   |  |
|----------|--------------------------------|---|--------------------------------------|------------------------------|--|--|
| Portugal | since 2004                     | <b>Stamp duty</b>   |                                      |                              |  | business transfers (tax rate 25%)                |
|          |                                | Spouses & Children  | 0% inheritance<br>0.8% property gift |                              |  |  |
|          | before 2004                    | <b>Moderate inheritance &amp; gift tax with low allowances</b>  |                                      |                              |  |  |
|          |                                | Spouses & Children  | 3-24%                                | €355,343                     | €3,641 tax free, children under age tax free (never)   |  |
| Greece   | since 2010                     | <b>(2) Moderate inheritance &amp; gift tax rate with moderate or high allowances inheritance &amp; gift tax</b>   |                                      |                              |  | primary residence, shares and business transfers |
|          |                                | Spouses & Children  | 1-10%                                | €600,000                     | €400,000 if inheritance - married at least 5 years, only children under age €6,000-€30,000 from this amount on taxes are due, depending on level of relation |  |
|          | before 2010                    | Other Persons   | 1-40%                                | €267,000                     |  | shares and business transfers                    |
|          |                                | <b>Numerous changes, e.g. tax allowances (2004: €19,076 spouses &amp; children), tax rates (2004: 5-25% and up to 60% for other persons, 2008: depending on asset: for spouses &amp; children property max. 1%, shares max. 0.6%)</b> |                                      |                              |  |  |
| Germany  | since 2010                     | <b>inheritance &amp; gift tax</b>   |                                      |                              |  | owner-occupied property, business transfers      |
|          | before 2010                    | Spouses & Children  | 7-30%                                | €26,000,000                  | €500,000, €400,000 for children, (10 yrs.)   |  |
|          |                                | Other Persons   | 7-50%                                |                              | €20,000/100,000/200,000 (10 yrs.)  | business transfers                               |
|          | before 2010                    | <b>less exemptions, lower tax allowances, thresholds in tax brackets lower, lower tax rate for some "other persons"</b>   |                                      |                              |  |  |



Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

| Country   | Reference period:<br>2000-2010                             | Tax rate depending on level of relation (1)  | Max. tax rate threshold   | Max. tax allowance (renewed)   | Exemptions/special regulations  |
|---|--|--|---|--|---|
| <b>(3) High or moderate inheritance &amp; gift tax rate with low or moderate allowances</b> |  |  |   |  |   |
| Spain   | since 2010   | <b>inheritance &amp; gift tax (on national level, regional differences)</b>  |   |  |   |
|   |  | Spouses & Children<br>7.65-34% + multiplier: 1-1.2%*   | €797,555, multiplier depending on heir's wealth (max. threshold €4,020,770) | €15,956, €47.858 for children under age (3 yrs.)<br>€0/7.993/15,956 (3 yrs.) | business transfers, property  |
|   | before 2010  | * The corresponding tax rate (amount of transfer relevant) is applied to the taxable amount. The resulting balance is then multiplied with the corresponding multiplier (results from the existing assets of the heir and the degree of relationship).<br><b>hardly changes (e.g. lower allowances), but regional governments may deviate from national legislation since 2004, this resulted in tax exemptions of up to 99% of estate value</b> |   |  |   |
| France  | since 2000#  | <b>inheritance &amp; gift tax</b>  |   |  |   |
|   |  | Spouses & Children<br>5-45% (except for spouses since 2008)  | €1,805,677  | €156,956 (10 yrs.)   | business transfers, tax reduced if three children under age             |
|   | Other Persons<br>5-60%                                     | €0-1,805,677   | €1,520-€156,359 (10 yrs.)   |  |   |
|   |  | # only slight adjustments of the allowances and the limit for the maximum tax rates  |   |  |   |
| Belgium   | since 2010   | <b>inheritance tax (regional differences)</b>  |   |  |   |
|   |  | Spouses & Children<br>3-30%  | €250,000-€500,000   | €15,000-€25,000, €65,000-75.000 for children under age (3 yrs.)              | owner-occupied property, business assets and others depending on region |
|   |  | Other Persons<br>3-80%   | €75,000-€500,000  | €620-1,250/€15,000-25,000 (3 yrs.)   |   |
|   | since 2010   | <b>gift tax (regional differences)</b>   |   |  |   |
|   | Spouses & Children<br>1-30% (max. 7.7% for movable assets) | €500,000   | ---   | owner-occupied property, business assets and others depending on region      |   |
|   | Other Persons<br>1-80% (max. 7.7% for movable assets)      | €75,000-€500,000   | ---   |  |   |
|   | before 2010  | <b>Regional legislation of gift tax possible since 2001, inheritance tax since 2002</b>  |   |  |   |

(1) In some countries spouses and partners have the same legal rights. This is not documented here.

Sources: Legal texts from individual countries, Menzel & Förster (2014), Schupp & Szydlak (2004) und EY (2014).

## Part B: Robustness Checks

In table 3.5 we assume that the time invariant interest rate on the investment of all wealth transfers is 3 percent for all households. In order to check the impact of this assumption on the relative importance of wealth transfers for the net wealth along the distribution, we conduct a series of robustness checks. Additionally, as the wealth transfers received are not independent of the number of adults in a household, we check by how much the present value of transfers would change, if we apply a per capita definition of transfers.

### *Long-term interest rates on government bonds*

In section 3.4 we argue that a secure investment would be in line with a rate of return of three percent ( $r = 3\%$ ), as this is a capitalization rate quite common in the literature (for example Wolff & Gittleman 2014). Alternatively, one might assume that the most secure investment a citizen may choose is a long-term investment in government bonds (cf. Corneo et al. 2016). The nominal rate of return then is the (yearly average) nominal yield of such an investment. The data does not allow us to compute the resulting capitalized values of inheritances and gifts, as the time series are not entirely available for any of the Mediterranean countries. However, they are available for Belgium, France and Germany from the 1950s onward. In table B.3.1 the results are shown for a capitalization of past inheritances and gifts using the nominal yields of long-term government bonds.<sup>82</sup>

This change of method would have almost no effect on the overall inheritances and gifts as a percent of net wealth, the maximum deviation would be in France with +0.9 percent. For the individual wealth classes all changes are below one percent, no patterns are visible. For household income this change would affect lower quintiles slightly more, but again the changes are negligible. The shares are somewhat higher for the older cohorts, probably due to higher interest rates on government bonds in the 1970s and 1980s as compared to a real interest rate of 3 percent. The variation for both the conditional mean and median value of transfers received is below 5,000 Euro. In summary, applying government bonds instead of a flat real interest rate hardly affects the outcomes for the countries where time series are available.

### *Real interest rate $r = 1\%$ versus $r = 5\%$*

The second robustness check assesses the impact of a flat low versus a flat high interest rate. We compare the different outcomes of  $r = 1\%$  and  $r = 5\%$  on the wealth transfers received as a

---

<sup>82</sup> Extracted from the OECD database on long-term interest rates, which refer to government bonds maturing in ten years. Available online: <https://data.oecd.org/interest/long-term-interest-rates.htm> (10.02.2016).

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

percent of net wealth and conditional mean and median present values (table B.3.2). Most importantly, the general patterns we observe along the distribution of wealth are largely independent of the chosen real interest rate, even though the higher wealth classes are affected more by a higher rate of return. For the income quintiles there are no changes of the patterns visible either. The overall increase of share is the lowest in Portugal (3.9 percentage points) and highest in Austria (9.5 percentage points). However, in most countries the increase is spread almost equally among the income quintiles. Only in Belgium the lowest quintile seems to be affected slightly more. In (West) Germany and Cyprus the middle income classes are experiencing a slightly sharper surge. The conditional mean values are varying considerably between low and high interest rates: in Cyprus the mean is up by about 121,000 Euro, in Greece and Portugal it is affected the least (around +25,000 Euro). For the remaining country the difference varies between 47,000 Euro and 71,000 Euro.

#### *Wealth related interest rates*

However, assuming that the interest rate is the same no matter the position along the distribution of wealth may not seem reasonable. It is more likely that households with a higher level of wealth are better informed about financial markets and investment opportunities. In addition, they hold enough money to be able to divide it into different investments; consequently they might take higher risks and realize higher rates of returns than the middle class or households from the bottom half. Hence, in this step we assume that the real interest rate correlates with the net wealth position: The wealth class below 20,000 Euro includes a significant number of net borrower and zero wealth observations and is excluded from the analysis. The next class realizes an interest rate of 3 percent, which then is increasing with every wealth class by 1 percent, thus leading to an interest rate of 7 percent for households with net wealth higher than 1 million Euros. We then compare the results for the assumption that all realize the same real interest rate (3 percent) to the wealth related interest rate in table B.3.3.

As expected, the changes in percentage points are highest for the highest wealth class. In comparison to a flat real interest rate the changes vary between 2.8 percentage points in Portugal and 10.8 in Greece. In the core countries Germany, Austria and Belgium and in Cyprus the second wealthiest class stays ahead of the top class after adjusting to a wealth related interest rate, only in France we observe a change, albeit the difference is not statistically significant. As for the Mediterranean countries, compared to a real annual interest rate of 3 percent we do not observe any considerable structural differences. The conclusion that there is relatively small variation in the importance of inheritances and gifts for net wealth between

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

the wealth classes is still viable. We conclude that this observation is not the result of an arbitrarily chosen interest rate.

#### *Per capita present value*

Computing the per capita wealth transfers (table B.3.4) instead of the total present values per household (table 3.2), yields a similar picture, albeit on an expectedly lower level. Mean and median values are depending on the household sizes, which are somewhat higher in some Mediterranean countries. The patterns we observe do not change: the present values are increasing with the level of wealth, exhibit various patterns depending on the age class and are again highest for the highest income quintile. We conclude that choosing per capita transfers would have reduced the numbers, but not changed the outcomes of our study.

**Table B.3.1: Present value of wealth transfers received as a percent of net wealth, capitalized using country-specific yields of long-term government bonds**

|                                     | Belgium |          | France  |          | (West) Germany |          |
|-------------------------------------|---------|----------|---------|----------|----------------|----------|
|                                     | %       | Std.err. | %       | Std.err. | %              | Std.err. |
| All households                      | 14.7    | 1.0      | 24.1    | 0.8      | 31.9           | 2.7      |
| Cond. mean present value in €1000   | 158,412 | 10,140   | 142,615 | 4,205    | 196,039        | 13,096   |
| Cond. median present value in €1000 | 79,177  |          | 46,665  |          | 106,981        |          |
| Wealth levels                       |         |          |         |          |                |          |
| Under €20,000                       | -       |          | -       |          | -              |          |
| €20,000 - €99,999                   | 16.3    | 3.4      | 21.3    | 1.7      | 17.5           | 2.5      |
| €100,000 - €249,999                 | 15.5    | 2.3      | 19.2    | 0.9      | 35.0           | 2.8      |
| €250,000 - €499,999                 | 15.3    | 1.7      | 23.9    | 1.1      | 39.0           | 2.7      |
| €500,000 - €999,999                 | 16.4    | 2.3      | 26.4    | 1.6      | 39.3           | 4.5      |
| €1,000,000 or over                  | 12.6    | 2.0      | 25.8    | 2.2      | 23.5           | 4.9      |
| Income quintiles                    |         |          |         |          |                |          |
| 1st quintile                        | 19.3    | 4.0      | 27.9    | 2.3      | 39.9           | 9.5      |
| 2nd quintile                        | 15.7    | 2.5      | 28.0    | 2.2      | 36.6           | 5.6      |
| 3rd quintile                        | 12.8    | 2.1      | 23.8    | 1.9      | 40.1           | 4.5      |
| 4th quintile                        | 15.9    | 2.3      | 22.1    | 1.5      | 38.0           | 5.0      |
| 5th quintile                        | 13.4    | 1.8      | 23.6    | 1.3      | 26.0           | 3.7      |
| Age classes                         |         |          |         |          |                |          |
| 21-35                               | 19.3    | 4.0      | 27.9    | 2.3      | 39.9           | 9.5      |
| 35-44                               | 15.7    | 2.5      | 28.0    | 2.2      | 36.6           | 5.6      |
| 45-54                               | 12.8    | 2.1      | 23.8    | 1.9      | 40.1           | 4.5      |
| 55-64                               | 15.9    | 2.3      | 22.1    | 1.5      | 38.0           | 5.0      |
| 65-74                               | 13.4    | 1.8      | 23.6    | 1.3      | 26.0           | 3.7      |
| 75 and older                        | 19.3    | 4.0      | 27.9    | 2.3      | 39.9           | 9.5      |

<sup>a</sup> The figures show the present value of all wealth transfers as of the survey year which were received up to the time of the survey and accumulated at a nominal interest rate of long-term government bonds as a ratio to the respective net wealth in the overall population or subpopulations.

Source: Own computations based on HFCS (2010). Standard errors are shown in parentheses. All 5 implicates are used, standard errors bootstrapped.

**Table B.3.2: Present value of wealth transfers received as a percent of net wealth, real interest rate = 1% versus real interest rate = 5%**

|                                     | I. Core European countries |        |         |        |        |        |                |        | II. Mediterranean countries |        |        |        |          |        |        |        |
|-------------------------------------|----------------------------|--------|---------|--------|--------|--------|----------------|--------|-----------------------------|--------|--------|--------|----------|--------|--------|--------|
|                                     | Austria                    |        | Belgium |        | France |        | (West) Germany |        | Cyprus                      |        | Greece |        | Portugal |        | Spain  |        |
|                                     | r = 1%                     | r = 5% | r = 1%  | r = 5% | r = 1% | r = 5% | r = 1%         | r = 5% | r = 1%                      | r = 5% | r = 1% | r = 5% | r = 1%   | r = 5% | r = 1% | r = 5% |
| All households                      | 25.3                       | 34.8   | 11.7    | 17.2   | 19.2   | 27.2   | 26.3           | 35.8   | 10.2                        | 15.9   | 28.5   | 33.7   | 12.7     | 16.6   | 14.5   | 21.4   |
| Cond. mean present value in €1000   | 188                        | 259    | 125     | 185    | 114    | 161    | 162            | 220    | 218                         | 339    | 138    | 164    | 73       | 95     | 141    | 207    |
| Cond. median present value in €1000 | 94                         | 130    | 58      | 94     | 37     | 56     | 89             | 125    | 114                         | 199    | 104    | 119    | 31       | 42     | 60     | 97     |
| <b>A. Wealth levels</b>             |                            |        |         |        |        |        |                |        |                             |        |        |        |          |        |        |        |
| Under €20,000                       | -                          | -      | -       | -      | -      | -      | -              | -      | -                           | -      | -      | -      | -        | -      | -      | -      |
| €20,000 - €99,999                   | 23.6                       | 27.6   | 15.5    | 17.5   | 18.6   | 23.0   | 15.2           | 19.5   | 12.0                        | 15.3   | 33.4   | 35.0   | 16.8     | 19.6   | 14.3   | 17.6   |
| €100,000 - €249,999                 | 28.2                       | 34.1   | 13.3    | 17.0   | 15.8   | 21.5   | 31.0           | 38.0   | 20.2                        | 25.8   | 33.0   | 36.4   | 15.8     | 20.0   | 11.4   | 15.9   |
| €250,000 - €499,999                 | 31.0                       | 39.6   | 12.3    | 17.4   | 19.0   | 26.8   | 32.8           | 43.5   | 16.8                        | 23.7   | 23.7   | 30.1   | 9.8      | 14.0   | 13.1   | 18.5   |
| €500,000 - €999,999                 | 38.1                       | 50.7   | 12.6    | 19.2   | 21.4   | 29.9   | 33.4           | 42.8   | 11.1                        | 18.7   | 23.6   | 30.4   | 9.6      | 14.0   | 16.1   | 23.8   |
| €1,000,000 or over                  | 17.9                       | 28.4   | 9.5     | 15.5   | 19.9   | 29.6   | 17.5           | 27.9   | 8.0                         | 13.0   | 28.7   | 41.8   | 10.6     | 14.3   | 16.8   | 26.5   |
| <b>B. Income quintiles</b>          |                            |        |         |        |        |        |                |        |                             |        |        |        |          |        |        |        |
| 1st Quintile                        | 35.9                       | 46.6   | 14.6    | 22.8   | 22.5   | 30.8   | 36.0           | 41.6   | 9.9                         | 15.4   | 34.1   | 38.1   | 16.6     | 22.1   | 18.1   | 26.1   |
| 2nd Quintile                        | 25.9                       | 34.2   | 11.1    | 18.2   | 22.4   | 31.1   | 30.9           | 40.9   | 11.1                        | 18.4   | 37.5   | 42.3   | 18.7     | 24.3   | 17.7   | 23.8   |
| 3rd Quintile                        | 28.8                       | 37.4   | 9.7     | 15.1   | 19.5   | 26.4   | 33.6           | 43.8   | 15.5                        | 23.8   | 31.2   | 35.7   | 13.1     | 17.3   | 12.6   | 19.4   |
| 4th Quintile                        | 25.6                       | 34.0   | 13.3    | 18.3   | 17.5   | 25.1   | 32.0           | 42.1   | 15.8                        | 23.7   | 28.0   | 32.0   | 10.9     | 13.9   | 15.1   | 21.0   |
| 5th Quintile                        | 22.9                       | 33.4   | 11.2    | 15.7   | 18.7   | 26.9   | 20.7           | 30.0   | 6.4                         | 10.2   | 22.5   | 29.3   | 11.1     | 14.5   | 13.2   | 20.5   |

<sup>a</sup> The figures show the present value of all wealth transfers as of the survey year which were received up to the time of the survey and accumulated at a real interest rate either  $r = 1\%$  or  $r = 5\%$ .

Source: Own computations based on HFCS (2010). All 5 implicates are used, standard errors bootstrapped.

Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area

**Table B.3.3: Present value of wealth transfers received as a percent of net wealth, real interest rate = 3% versus wealth related interest rates**

| Wealth levels                          | I. Core European countries |         |        |                | II. Mediterranean countries |        |          |       |   |
|--|----------------------------|---------|--------|----------------|-----------------------------|--------|----------|-------|---|
|  | Austria                    | Belgium | France | (West) Germany | Cyprus                      | Greece | Portugal | Spain |   |
| <b>A. real interest rate = 3%</b>      |                            |         |        |                |                             |        |          |       |   |
| Under €20,000                          | -                          | -       | -      | -              | -                           | -      | -        | -     | - |
| €20,000 - €99,999                      | 25.8                       | 16.6    | 21.0   | 17.5           | 14.7                        | 34.5   | 18.4     | 16.3  |   |
| €100,000 - €249,999                    | 31.6                       | 15.5    | 18.8   | 34.8           | 23.4                        | 35.1   | 18.2     | 13.7  |   |
| €250,000 - €499,999                    | 36.1                       | 14.8    | 23.1   | 38.5           | 20.4                        | 27.2   | 11.8     | 15.9  |   |
| €500,000 - €999,999                    | 45.9                       | 16.0    | 25.6   | 39.2           | 14.9                        | 27.3   | 12.1     | 20.1  |   |
| €1,000,000 or over                     | 23.9                       | 12.2    | 24.5   | 22.6           | 10.0                        | 34.9   | 12.8     | 21.4  |   |
| <b>B. wealth related interest rate</b> |                            |         |        |                |                             |        |          |       |   |
| Under €20,000                          | -                          | -       | -      | -              | -                           | -      | -        | -     | - |
| €20,000 - €99,999                      | 25.8                       | 16.6    | 21.0   | 17.5           | 14.7                        | 34.5   | 18.4     | 16.3  |   |
| €100,000 - €249,999                    | 32.9                       | 16.3    | 20.2   | 36.6           | 24.7                        | 35.8   | 19.2     | 14.8  |   |
| €250,000 - €499,999                    | 39.6                       | 17.4    | 26.8   | 43.5           | 23.7                        | 30.1   | 14.0     | 18.5  |   |
| €500,000 - €999,999                    | 52.6                       | 20.8    | 31.9   | 44.3           | 20.1                        | 31.8   | 14.7     | 25.4  |   |
| €1,000,000 or over                     | 32.7                       | 18.9    | 34.3   | 31.7           | 16.7                        | 45.6   | 15.5     | 30.6  |   |

<sup>a</sup> The figures show the present value of all wealth transfers as of the survey year which were received up to the time of the survey and accumulated at a real interest rate either  $r = 3\%$  or wealth related, i.e. from €100,000 onwards the interest rate is increasing in steps of one, yielding an interest rate of  $r = 7\%$  for the highest wealth level.

Source: Own computations based on HFCS (2010). All 5 implicates are used, standard errors bootstrapped.

**Table B.3.4: Mean per capita present value of transfers received (in €1,000), in 2010 prices and capitalized with  $r = 3\%$ , recipients only<sup>a</sup>**

|                            | I. Core European countries |          |         |          |        |          |                |          | II. Mediterranean countries |          |        |          |          |          |       |          |
|----------------------------|----------------------------|----------|---------|----------|--------|----------|----------------|----------|-----------------------------|----------|--------|----------|----------|----------|-------|----------|
|                            | Austria                    |          | Belgium |          | France |          | (West) Germany |          | Cyprus                      |          | Greece |          | Portugal |          | Spain |          |
|                            | mean                       | Std.err. | mean    | Std.err. | mean   | Std.err. | mean           | Std.err. | mean                        | Std.err. | mean   | Std.err. | mean     | Std.err. | mean  | Std.err. |
| Mean present value         | 122                        | 10       | 98      | 8        | 86     | 3        | 105            | 7        | 131                         | 14       | 73     | 4        | 41       | 3        | 88    | 5        |
| Median present value       | 58                         |          | 41      |          | 27     |          | 59             |          | 72                          |          | 52     |          | 17       |          | 36    |          |
| <b>A. Wealth levels</b>    |                            |          |         |          |        |          |                |          |                             |          |        |          |          |          |       |          |
| Under €20,000              | 5                          | 1        | 5       | 1        | 5      | 0        | 6              | 1        | 6                           | 2        | 11     | 1        | 7        | 1        | 7     | 1        |
| €20,000 - €99,999          | 42                         | 2        | 32      | 3        | 27     | 1        | 38             | 2        | 45                          | 4        | 48     | 1        | 29       | 1        | 30    | 2        |
| €100,000 - €249,999        | 105                        | 6        | 67      | 6        | 66     | 2        | 97             | 5        | 91                          | 10       | 117    | 4        | 67       | 5        | 68    | 5        |
| €250,000 - €499,999        | 203                        | 15       | 129     | 12       | 141    | 7        | 205            | 14       | 153                         | 22       | 192    | 26       | 146      | 26       | 157   | 12       |
| €500,000 - €999,999        | 448                        | 52       | 232     | 37       | 281    | 18       | 357            | 49       | 170                         | 43       | 429    | 117      | 174      | 49       | 245   | 26       |
| €1,000,000 or over         | 552                        | 161      | 483     | 122      | 787    | 77       | 501            | 92       | 436                         | 109      | 786    | 485      | 1097     | 403      | 909   | 255      |
| <b>B. Income quintiles</b> |                            |          |         |          |        |          |                |          |                             |          |        |          |          |          |       |          |
| 1st quintile               | 90                         | 19       | 90      | 16       | 62     | 5        | 84             | 20       | 97                          | 29       | 72     | 7        | 38       | 4        | 78    | 8        |
| 2nd quintile               | 100                        | 13       | 85      | 11       | 71     | 6        | 100            | 17       | 80                          | 15       | 68     | 6        | 32       | 3        | 70    | 9        |
| 3rd quintile               | 132                        | 19       | 98      | 16       | 68     | 8        | 90             | 12       | 157                         | 57       | 70     | 11       | 30       | 4        | 76    | 21       |
| 4th quintile               | 110                        | 18       | 100     | 16       | 68     | 4        | 98             | 11       | 152                         | 24       | 71     | 14       | 26       | 3        | 81    | 9        |
| 5th quintile               | 156                        | 23       | 114     | 23       | 136    | 7        | 137            | 14       | 153                         | 28       | 85     | 7        | 87       | 15       | 131   | 15       |
| <b>C. Age classes</b>      |                            |          |         |          |        |          |                |          |                             |          |        |          |          |          |       |          |
| 21-35                      | 100                        | 28       | 33      | 8        | 28     | 3        | 65             | 20       | 142                         | 22       | 74     | 7        | 29       | 6        | 75    | 18       |
| 35-44                      | 99                         | 16       | 65      | 13       | 57     | 5        | 92             | 13       | 157                         | 25       | 76     | 5        | 36       | 5        | 84    | 12       |
| 45-54                      | 132                        | 15       | 66      | 9        | 66     | 5        | 96             | 10       | 97                          | 13       | 73     | 10       | 27       | 3        | 82    | 13       |
| 55-64                      | 128                        | 15       | 98      | 15       | 83     | 5        | 106            | 15       | 140                         | 40       | 83     | 10       | 35       | 6        | 86    | 9        |
| 65-74                      | 150                        | 34       | 100     | 10       | 114    | 8        | 137            | 13       | 150                         | 68       | 53     | 5        | 56       | 11       | 89    | 8        |
| 75 and older               | 115                        | 26       | 186     | 32       | 147    | 11       | 129            | 18       | 100                         | 32       | 73     | 12       | 58       | 9        | 114   | 25       |

<sup>a</sup> The figures show the per adult capita present value of all transfers as of the survey year which were received up to the time of the survey in prices of 2010 using country specific inflation rates.

Adults are all persons in a household aged 16 and older.

Source: Own computations based on HFCS (2010). Standard errors are shown in parentheses. Means over 5 implicates, standard errors bootstrapped.





## 4. Estate and inheritance taxation

### Tax regimes and effective tax rates in Europe since the 1950s

#### 4.1. Introduction

Wealth levels and inequality declined in Europe during and between the two World Wars and in the first decades afterwards. However, since the 1980s both started to rise again in several countries (Piketty & Zucman 2015). Intergenerational wealth transfers<sup>83</sup> are a key determinant of wealth (Davies & Shorrocks 2000) and also gained again importance since the 1990s (Piketty & Zucman 2015). These two phenomena are linked, which means that part of the accumulated wealth is passed on to the next generation via inheritances or gifts. However, the chances of getting a (high) wealth transfer are unequally distributed (Davies & Shorrocks 2000) and also positively correlated with education and income of the receiving households (Tiefensee & Westermeier 2016). Nevertheless, transfers reduce relative wealth inequality<sup>84</sup> (Elinder, Erixson & Waldenström 2016, Wolff & Gittleman 2014, Bossmann, Kleiner & Wälde 2007, Kohli, Künemund, Schäfer, Schupp & Vogel 2006) because even small transfers are more important for household wealth at the bottom of the distribution than large transfers for households at the upper edge of the distribution. However, the literature also finds that absolute wealth inequality increases due to transfers (Elinder et al. 2016, Künemund & Vogel 2011, Kohli et al. 2006).

One instrument for governments to reduce monetary inequality in a society are taxes; in this case especially estate, inheritance and gift taxes. Depending on their structure they can reduce the transferred (net) wealth and in addition the tax revenue can be redistributed (Brunner 2014). The following questions arise: Do countries tax intergenerational wealth transfers differently? Did taxation change over time? For both cases holds: If yes, why? Theory finds that the optimal intergenerational transfer tax depends among others things on the preference for redistribution in a society (Piketty & Saez 2013) and therefore for different tax regimes. Esping-Andersen (1990) elaborated three categories for developed countries: liberal, conservative and social democratic welfare state regimes. Derived from these theories I argue how the taxation of intergenerational transfers may look like for the different types of welfare states. I investigate the United Kingdom, Germany and Sweden as typical representatives of these different

---

<sup>83</sup> The focus in this chapter is on transfers between generations and not within e.g. between spouses. Intergenerational wealth transfers include inheritances and gifts. Estate means the whole amount of wealth that donors hold at their death. Inheritances and bequests are used as synonyms for the transfers of (parts of the) estate from donors to donees.

<sup>84</sup> Relative inequality is about ratios and absolute inequality about differences (Cowell 2011).

welfare state regimes since the 1950s. I calculate effective tax rates for typical households with different sizes and portfolios of intergenerational transfers to represent the whole wealth distribution.

Comparing estate, inheritance and gift taxation between countries and over time is not that simple. Different tax rates, allowances, exemptions etc. for different amounts and types of wealth need to be taken into account. So far, studies regarding effective intergenerational transfer tax rates either just focus on single countries (Henrekson & Waldenström 2015, Du Rietz, Henrekson & Waldenström 2015) or one point in time for several countries (Scheffler & Spengel 2004, Heinemann, Spengel, Bräutigam & Evers 2015). Some even only consider the top tax rates (Cole 2015, Scheve & Stasavage 2012, Ohlsson 2011), which can be misleading, for example due to different allowances and exemptions for real estate or businesses. Those studies which claim to look at both (several countries and over time) do this for only one very special wealth portfolio which is bequeathed (AGN International 2015) and therefore do not represent the whole wealth distribution.

My contribution to the existing literature is therefore two folded: I combine the optimal intergenerational transfer tax theory with the theory of Esping-Andersen (1990) on welfare capitalism. In addition, I close an empirical research gap on effective intergenerational transfer tax rates between countries and over time for the whole wealth distribution. Neither was to my knowledge done before.

In section 4.2 I present summaries of the optimal intergenerational transfer taxation theory as well as for the welfare state theory by Esping-Andersen (1990) and form hypotheses how the intergenerational transfer taxation therefore may look like in the different regimes. In addition, I explain the reasoning concerning my country selection. In section 4.3 I describe the development of the estate, inheritance and gift taxation in the United Kingdom, Germany and Sweden. Next I derive effective intergenerational transfer tax rates to compare the taxation regimes among them and over time (section 4.4). Furthermore, I look into and explain specific country trends over time and in addition I discuss general trends for tax changes in all countries based on the current literature. In section 4.5 I summarize my findings and derive a conclusion.

## **4.2. Theory, Hypotheses and Case Selection**

The recent theory of optimal taxation considers the effects of taxes on economic activities, like income generation, consumption or saving as well as the necessity of a government to raise taxes to finance government spending (Brunner 2014). Furthermore a tax always needs to

been seen in the context of the whole tax system. The general appropriateness of a tax system revolves around the social welfare function in an economy, which represents the aggregate of all utility positions of each household in this economy. In the basic model of the optimal taxation theory differences between households are only based on different wage rates, which represent different productivity levels (Mirrlees 1971). Based on that Atkinson & Stiglitz (1972, 1976) find in an extended model, with more than one consumption good, that for an optimal tax system an income tax is sufficient.

#### **4.2.1. Theory of optimal intergenerational transfer taxation and welfare state regimes**

In the discussion about intergenerational transfer taxation the following trade-off is extensively debated: On the one hand each individual should have *equal opportunities* and therefore transfers should be highly taxed and redistributed. On the other hand the individuals accumulating the wealth should decide what will happen with it even after death due to the *protection of liberty and property* (Brunner 2014, Beckert 2013). Furthermore, (high) taxes might dampen incentives to accumulate wealth, cause tax evasion and avoidance behaviors (Henrekson & Waldenström 2015). Central aspects for the analyses of the intergenerational transfer taxation<sup>85</sup> are the motives why people give transfers. They have effects on welfare and behavior of households and can help to further disentangle the outlined trade-off. The following motives can be found: *altruism and warm glow, accidental giving and exchange* (Brunner 2014, Kopczuk 2013). It can be assumed that wealth transfers within a society are given on the basis of a mixture of these motives (Cremer & Pestieau 2011).

In the first two cases (altruism and warm glow) givers (usually the parents) gain utility from transferring gifts and inheritances to the receivers (usually their children). In the case of altruism parents decide not only for themselves but also for all their offsprings (the whole dynasty) how much each of them will work and consume. The consumption from their offsprings – which is partly financed via transfers – is therefore an additional consumption good of the parents. In the case of the warm glow motive parents only decide for themselves how much they will work and consume and therefore just want to give a certain (net) wealth transfer to the next generation (which can be seen as an additional consumption good). If only different levels of productivity are taken into account in both cases the findings from Atkinson & Stiglitz (1972, 1976) are confirmed: an optimal income taxation is sufficient, inheritance taxes do not

---

<sup>85</sup> Inheritances and gifts are assumed to be taxed in the same way here. For an overview of the literature on gifting see Kopczuk (2013). Note that other forms of capital taxation like taxes on (net) wealth or capital income can be substitutes for an intergenerational transfer tax. The exact connections between the different forms of these taxes still need to be outlined (Brunner 2014).

increase welfare and should therefore not be levied. On the contrary, subsidization can under some circumstances be useful.<sup>86</sup> In the case of accidental giving a person dies earlier than expected. In this case the optimal taxation theory suggests a tax rate of 100 percent (including a reduction in income taxes) because the behavior of the households is not influenced and therefore no efficiency loss occurs. In the case of the exchange motive parents exchange (future) transfers against some sort of performance from their children (which can range from dropping by each Sunday for coffee to providing nursing care). The optimal tax can either be relatively low or high, depending on the responsiveness of donor and donee (Boadway, Chamberlain & Emmerson 2010). Taken together so far the optimal transfer taxation theory finds, depending on the bequest motives, tax rates from 0 or even negative rates to 100 percent.

The conclusions change, if the extended models account not only for different wage rates but also for received inheritances, hence for different (initial) endowments in the generation of the parents. In this case an inheritance taxation (including a reduction in income taxes) seems in general rational (Brunner & Pech 2012a, b, 2013).<sup>87</sup> Piketty & Saez (2013) account for different wage rates and different preferences for inheritances. They also find that the “optimal tax rate is positive and quantitatively large if the elasticity of bequests to the tax rate is low, bequest concentration is high, and society cares mostly about those receiving little inheritance” (Piketty & Saez 2013, p. 1). Therefore, intergenerational transfers can be an efficient component of a tax system. The height of the tax rates (and the progressivity) depends on the preferences for redistribution within a society (Brunner 2014).

“The three worlds of welfare capitalism” by Esping-Andersen (1990) does not explicitly address estate, inheritance and gift taxation. However, his theory captures preferences for redistribution and tax systems in general and can therefore serve as a framework for classification. Esping-Andersen (1990) defines three types of welfare state regimes: *liberal*, *conservative and social democratic*. In the first one the producer of welfare is the market, in the second the family and in the third the state. Decommodification, which means the protection against market forces and income losses, is minimal in the liberal, moderate (in line with the previous status) in the conservative and high in the social democratic regime. Stratification is the division of a society in different layers. In the liberal regime existing inequality will be increased. In the con-

---

<sup>86</sup> Donor and donee both gain utility from giving/receiving a wealth transfer. Therefore, the utility from the transfer is counted twice in the social welfare function – once in the utility function of the donors and once in that of the donees. This causes a positive external effect, which is not noticed by the decision of the donors and therefore needs to be subsidized. In the literature this is known as “double-counting” and discussed controversially (Brunner 2014).

<sup>87</sup> This holds under the empirically confirmed assumption that the lowest income groups only get very low inheritances. The models take the altruism or warm glow motive into account and also differentiate between exogenous and endogenous (initial) endowments in the generation of the parents.

servative regime existing differences in status will be consolidated. The social democratic regime strives for equalization. The redistribution capacity via the tax system (degree of progressivity) and the equality of (high) benefits is strong in the social democratic regime and weak in the two others. In the liberal regime only (means-tested) basic benefits are paid which are mainly financed via taxes. If further protection is wanted, it can be secured on a private basis via the market. In the conservative regime high benefits are paid to those who paid high taxes or levies and contributions and the other way round – therefore average benefits are on a medium level. Furthermore conservative regimes usually require that the family has to secure basic benefits before the state does (principle of subsidiarity).

#### 4.2.2. Hypotheses on intergenerational transfer taxation preferences

Before this backdrop it can be assumed that the debate between equal opportunity vs. protection of liberty and property is solved differently in each welfare state regime. The social democratic regime is more in favor of the first argument as it strives for equalization and is therefore for redistribution in the case here of (transferred) wealth. The conservative regime goes more for the second argument and wants to keep ownership as it is – especially regarding transfers within the family. For the liberal regime the theory from Esping-Andersen (1990) suggests that the protection of liberty and property will get the upper hand. However, the liberal regime also propagates the concept of equal opportunity at birth for each individual (Beckert 2004, 2013) and therefore it is not clear which view will get the upper hand. Before this backdrop I argue:

- (1) In a *liberal welfare state regime* intergenerational transfer taxation is
  - (1.1) low and not progressive or
  - (1.2) high as well as progressive.
- (2) In a *conservative welfare state regime* intergenerational transfer taxation is low and especially lower within the family than outside and progressivity is low as well.
- (3) In a *social democratic welfare state regime* intergenerational transfer taxation is high as well as progressive.

#### 4.2.3. Case Selection – countries and points in time

I choose three countries, which are all typical representative of one of the three welfare states regimes (Esping-Andersen 1990).<sup>88</sup> These countries are: the *United Kingdom* (liberal regime),

---

<sup>88</sup> Arts & Gelissen (2002, p.1) find “that real welfare states are hardly ever pure types”. However, they also confirm that the classification from Esping-Andersen (1990) can be a good starting point.

*Germany*<sup>89</sup> (conservative regime) and *Sweden* (social democratic regime). In terms of inhabitants they are all the biggest representative for their regime in Europe – today and over time.<sup>90</sup> The gross domestic product (GDP) per capita is comparable between all chosen countries – today and over time.<sup>91</sup> In all three countries intergenerational transfer taxes are the same for all regions within the countries. However, in the United Kingdom (UK) an estate tax is in place and in Germany and Sweden an inheritance tax. In the first case the transfer is taxed all together, based on the transfer value and then distributed among the heirs (tax subject: donor). In the two other countries the transfer is distributed among the heirs and then taxed separately (tax subject: donees) – usually with different rates depending on the value of the transfer and the relationship to the donor.

Wealth levels and inequality declined during and between the World Wars and the first decades afterwards in the UK, Germany and Sweden. However, since the 1980s both started to rise again in all countries (see figures A.4.1 and A.4.2 in the appendix).<sup>92</sup> Intergenerational wealth transfers also gained again importance since the 1980s (see estimations for inheritances and gifts in figure 4.1) – part of the accumulated wealth is passed on to the next generation via inheritances or gifts. However, revenues from gift and inheritance taxation developed differently (see figure 4.2), which is an indication that legislations changed. Estate, inheritance and gift revenue is generated by tax rate multiplied by the tax base. This implies that high revenues can be due to high effective tax rates and/or high tax bases. In Sweden revenues more or less stayed the same (around 0.1 percent of GDP) until the mid-2000s, when they dropped to zero. In the UK revenues dropped dramatically at the end of the 1960s/the beginning of the 1970s (from a maximum of 0.9 to about 0.2 percent of GDP). Since then they are more or less around 0.2 percent of GDP. In Germany revenue rose in the middle of the 1970s to around 0.1 percent and then to a little bit under 0.2 percent of GDP since the end of the 1990s.<sup>93</sup>

---

<sup>89</sup> I cover the Federal Republic of Germany (FRG) before the reunification in 1990. After the reunification the inheritance and gift taxation of the German Democratic Republic (GDR) was abolished. For an overview of the taxation in the GDR see Duda (2010).

<sup>90</sup> Based on data of the UN (total population, both sexes): <https://esa.un.org/unpd/wpp/Download/Standard/Population/> (26.08.2016).

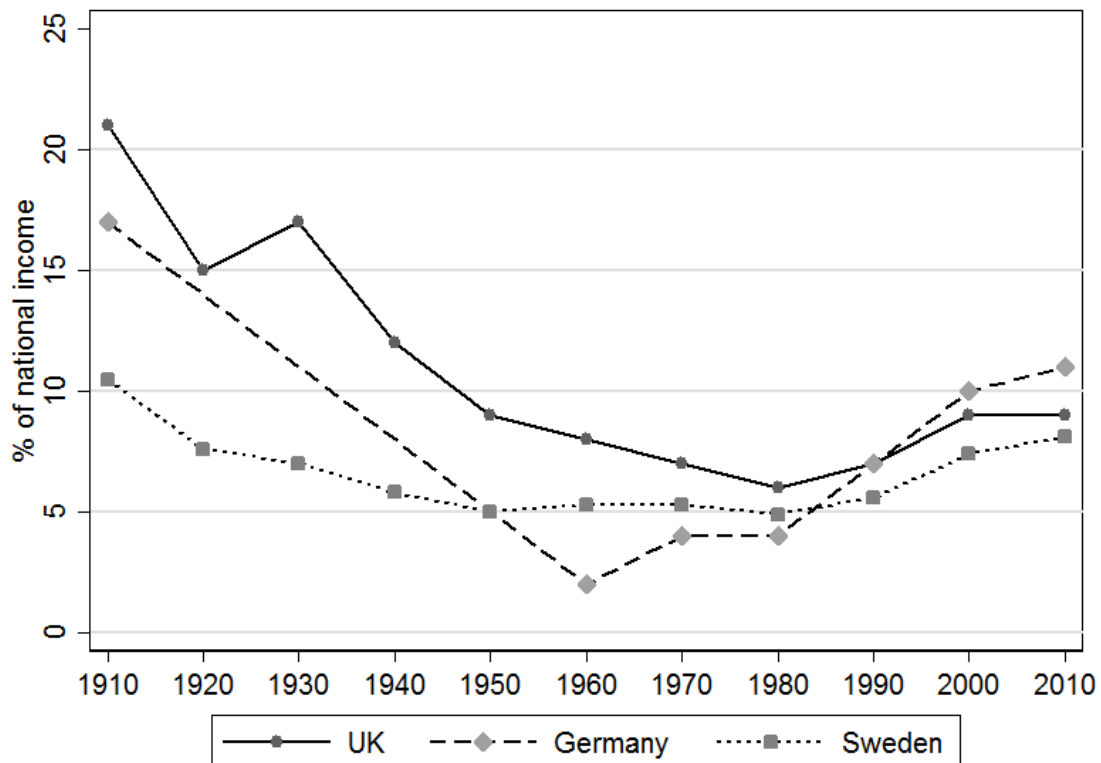
<sup>91</sup> Based on data of the OECD (GDP per capita, USD, constant prices, 2010 PPPs): [https://stats.oecd.org/Index.aspx?DataSetCode=PDB\\_LV#](https://stats.oecd.org/Index.aspx?DataSetCode=PDB_LV#) (26.08.2016).

<sup>92</sup> In Germany the rise of the levels already started earlier which is probably connected to higher damages due to the wars. There is no comparable long term data available on wealth inequality for Germany.

<sup>93</sup> A presentation of the gift and inheritance taxes as a percent of total taxation leads to the same trends (see figure A.4.4 in the appendix). Data before 1965 is not available for estate, inheritance and gift tax revenue.

As I am interested in the big changes of the estate, inheritance and gift taxation over time I do not look at every single legislative change. I describe the general changes for each country and look more closely on four points in time. The first one covers the legislation after the end of World War II. As it took some time to get back to a “normal” government flow, especially in Germany, my first point in time is around<sup>94</sup> the year 1955. The second one is around the year 1975. As described before, estate, inheritance and gift revenues have changed in two of the three countries around that year. The third point in time is 1995. In all three countries the inheritance flow rose since the 1980s. However, the tax revenue stayed more or less the same – a hint that taxation has changed. The last point in time is around 2015 which stands for the present.

**Figure 4.1: Inheritance and gift flow as percent of national income\* in the UK, Germany and Sweden, 1910-2010\*\***



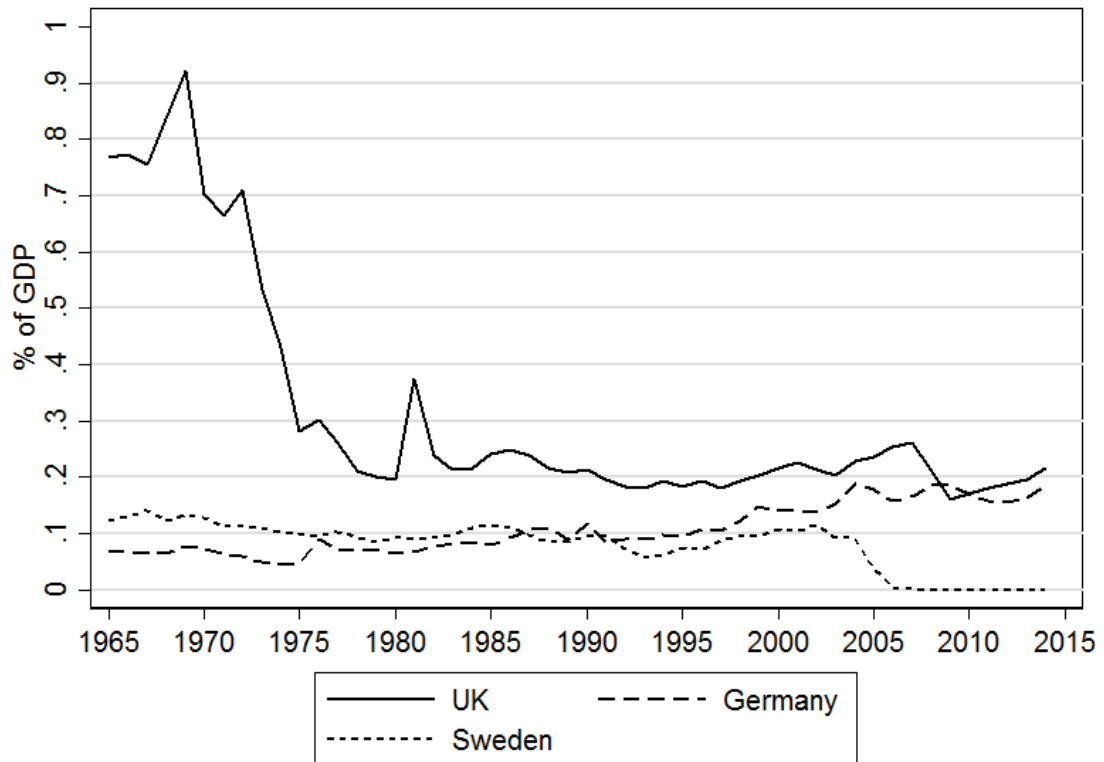
\* national income = GDP – capital depreciation + net foreign factor income

\*\* Estimations based on mortality multiplier approach.

Source: Based on Ohlsson, Roine & Waldenström (2014) and data appendix of Piketty & Zucman (2015): <http://gabriel-zucman.eu/> (29.03.2016)

<sup>94</sup> “Around” means that I check for significant legislative changes directly before or after the respective time points.

**Figure 4.2: Estate, inheritance and gift tax revenue as percent of GDP in the UK, Germany and Sweden, 1965-2014\***



\* Not available before 1965.

Source: Based on OECD.Stat (2016)

### 4.3. Legislation of estate, inheritance and gift taxation over time<sup>95</sup>

#### 4.3.1. Legislation in the United Kingdom

The United Kingdom introduced in 1894 an estate tax between 1 and 7 percent based on the value of the total estate. It replaced a number of different inheritance taxes, which dated back until 1694. Family relationships usually do not play a role for an estate tax – the estate is taxed all together and then distributed among the heirs. From the beginning the revenue belonged completely to the state. First it was possible to avoid the tax by handing on gifts during the

<sup>95</sup> I describe the facts relevant for gifting and inheritance in direct line (spouses, children, grandparents and grandchildren) with a focus on the rules for children. The information regarding the indirect line (other relatives and third parties) can be found in tables A.4.3-5 in the appendix. I take into account the rules for transferred money, (family) business as well as shares in a corporation and real estate. For simplicity reasons I do not take into account the rules for agricultural and forestry assets, transfers to (family) trusts, institutions and foundations or to charitable organizations as well as specific-purpose transfers and insurance claims. I have the assumption that donor and heir are natural persons who are nationals of the respective country, with residence in the respective country and unlimited tax liability. The inherited or gifted wealth is located within the respective country. If not explicitly noted otherwise the rules apply for inheritances and also for gifts.



lifetime of the donor. This led to summation rules starting with one year. This means all gifts made within one year before death are added to the estate lot and taxed accordingly. Until World War I the top tax rate was several times modestly increased. After the war it doubled from 20 to 40 percent. During World War II it increased further up to 80 percent in the 50s (Butler 2016, Atkinson 2013, Scheve & Stasavage 2012, Boadway et al. 2010).

#### *Legislation in 1955, 1975, 1995, 2015*

In 1955 an estate duty was still in force, in 1975 it was replaced by a capital transfer tax and in the 80s an inheritance tax was implemented (for details on all aspects see table A.4.3 in the appendix). However, the basic principle that the lot is taxed all together and then distributed among the heirs has never changed. Therefore tax classes based on family relationship do not exist in the UK.

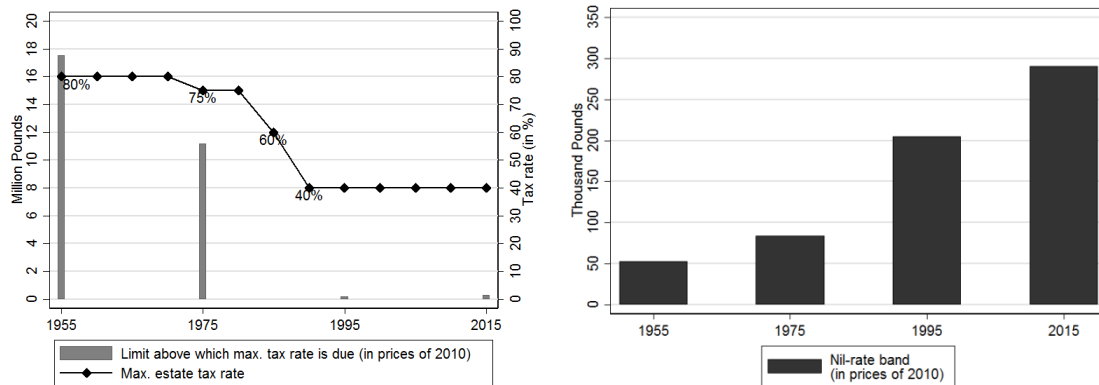
In 1955 estates were taxed with a maximum rate of 80 percent (applicable for amounts above £ 1,000,000/£ 17,543,860 in prices of 2010<sup>96</sup>). The estate is taxed completely with the maximum tax rate applicable to the total amount (e.g. £ 33,000 would be taxed at 21 percent).<sup>97</sup> Gifts within five years before death of a person are counted to the estate and taxed. Gifts dating back longer than five years were not taxed. In 1975 tax rates ranged between 10 and 75 percent (maximum tax rate applicable to amounts above £ 2,000,000/£ 11,173,184 in prices of 2010) for estates and gifts within three years before death.<sup>98</sup> Gifts over three years before death were taxed between 5 and 75 percent (again maximum tax rate applicable to amounts above £ 2,000,000). Now tax rates were cumulative (e.g. the first £ 15,000 of the £ 33,000 would be taxed with nil, the next £5 000 with 10 percent and so on). At the third time point (1995) estates above £ 154,000 (£ 205,060 in prices of 2010) were taxed with a flat tax of 40 percent. Gifts are again tax free, if the donor lives for another seven years. If the donor dies before, the tax rates vary between 8 and 40 percent – depending on the years between transfer and death. In 2015 the same system still applied with the difference that the estate/gift is now taxed if it lies above £ 325,000 (£ 290,698 in prices of 2010). Taken together the maximum tax rate decreased over the years and transferred into a flat tax. The limit above which it is due also decreased (in prices of 2010).

---

<sup>96</sup> Price adjustment is done via the consumer price index (cpi) due to the lack of an asset price index for the whole time period and country selection (see for an example for the period since 2000 Enderlein & Ständer 2016). The usage of the cpi can also be justified on the basis that assets can be liquidated for consumption.

<sup>97</sup> Exceptions if acquisition is just above the next value limit (small margins rule).

<sup>98</sup> Gifts over three years before death are taken into account to determine the rate of tax (Chown 1975).

**Figure 4.3: Maximum estate tax rates and nil-rate bands in the UK, 1955-2015**

Source: Own presentation based on legislation in the UK.

Each donor has a tax free amount the so called nil-rate band. For the first time point the following applies: If the acquisition is below the taxable limit, no tax has to be paid. If the acquisition is above it, the entire lot is taxed (Harding 1958). For the other time points the rules changed: Below the threshold no tax has to be paid, everything above is taxed with the respective tax rate. The nil-rate band was £ 3,000 in 1955, £ 15,000 in 1975, £ 154,000 in 1995 and £ 325,000 in 2015, which also corresponds to a real increase (£ 53,000, £ 84,000, £ 205,000 and £ 291,000 in prices of 2010 – see also figure 4.3). As described above gifts are exempt from the tax (except for one time period) if the donor still lives for several years. Therefore with some tax planning estate tax can be avoided – at least to some extent. Expenditures out of normal income are generally exempt, like Christmas or birthday presents. Also wedding gifts are tax free depending on value and relationship. In addition, there are small but annually renewed amounts which can be gifted (which increased modestly over time). Since 1975 the transfers between spouses (and nowadays also civil partners) are completely exempt. In 2015 the not used nil-rate band can be transferred to the husband's, wife's or civil partner's estate when they die.

The valuation is based on market values for all assets and liabilities over the whole time period with only minor exceptions. In 1955 the valuation of shares in some companies took place by reference to the value of the assets of the company. Also in that time period reduced rates of duty (appropriate tax rate reduced by 45 percent) applied for industrial hereditaments, plant and machinery used in business.<sup>99</sup> In 1975 no such exemptions were in force. In 1995 and 2015 (shares in) businesses are 50 or 100 percent exempt from tax – depending on the business purpose<sup>100</sup> and some other achievable requirements<sup>100</sup> like the one that the donor must have

<sup>99</sup> As it depends on the individual asset composition of each company I make the assumption that in general half of the business estate is applicable to the reduction.

<sup>100</sup> Exemptions are not applicable if the company mainly deals with securities, stocks or shares, land or buildings, or in making or holding investments.

been owner for a minimum of two years before the transfer. If the transfer was a gift the donee must keep the business until the donor dies to keep the relief. However, then (which means also in the case of an inheritance) the business can be sold – with the requirement that the business will be carried on.

### 4.3.2. Legislation in Germany

Germany introduced an inheritance and gift tax in 1906. It was based on the Prussian law from 1873. One third of the revenue went to the federal states. The tax rates differed depending on the relationship to the deceased and were slightly progressive. Wealth transfers between spouses and to children were exempt, this corresponded to estimated 80 percent of the wealth transfers. In 1919 tax rates were raised and transfers from spouses and children taxed. The already existing wealth from heirs was considered for taxation, which means that wealthier heirs were taxed with higher rates. In addition an estate tax was introduced. Most of these changes were already withdrawn in 1922. The estate tax was abolished, most spouses were again exempt from the tax (exception: marriages younger than five years and spouses with age differences over 20 years) and progression was reduced. In 1923 the consideration of the already existing wealth from heirs was also abolished. Transfers in childless marriages were taxed from 1925 on. Between 1946 and 1948 the allied control council law regulated the inheritance and gift taxation. During that period only one tax class (including spouses and children) with rates from 14 to 60 percent existed (all Beckert 2004).

#### *Legislation in 1955, 1975, 1995/96, 2015/16<sup>101</sup>*

Since the two World Wars the tax revenue from inheritance and gift tax is completely entitled to the federal states (Houben & Maiterth 2011). It can be distinguished between five different tax classes in 1955. There are still four different ones in 1975 and in 1995/96 and 2015/16 three tax classes exist. The first class always contains the spouses and children of the donor. However, nowadays this also includes civil partners as well as children born outside of marriages. This was not the case in the 50s (for details on all aspects see table A.4.4 in the appendix). The lower the tax class the higher the degree of relationship between donor and donee. Abolished tax classes were included into lower ones.

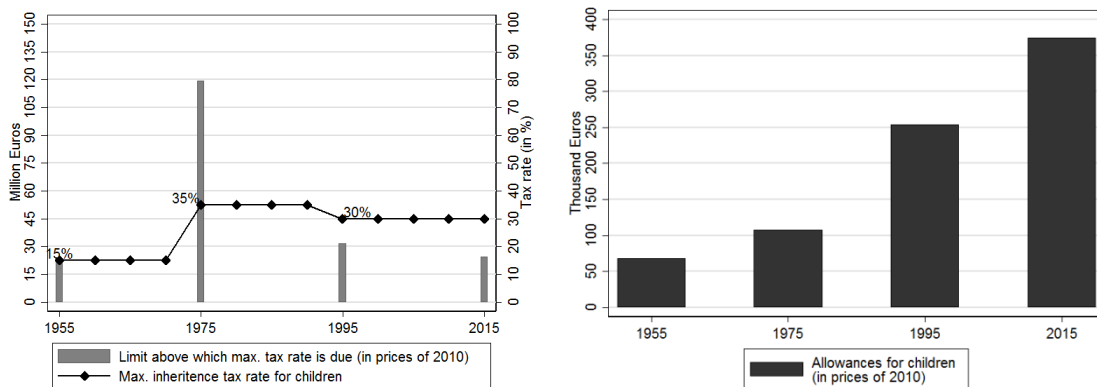
Tax rates are identical for inheritances and gifts and increase with the received amount and also with tax classes. This means that closer relatives are taxed at lower rates. The transfer is

---

<sup>101</sup> Due to decisions of the federal constitutional court in 1995/2014 the legislation (especially for valuation rules / for business and shares) was changed in 1996/2016. Therefore I report the legislation in 1996/2016.

taxed completely with the maximum tax rate applicable to the total transferred amount.<sup>102</sup> In 1955 tax rates were at maximum 15 percent in tax class one (for acquisitions over 5,112,919 Euro/22,724,084 Euro in prices of 2010). In 1975 the maximum tax rate was 35 percent in tax class one (for acquisitions over 51,129,188 Euro/119,460,720 Euro in prices of 2010). In the third phase it had declined to 30 percent (for acquisitions higher than 25,564,594 Euro/31,757,260 Euro in prices of 2010). This did not change much until today: 30 percent in tax class one (for acquisitions over 26,000,000 Euro/24,321,796 Euro in prices of 2010). The maximum and even the minimum tax rates for the other classes were higher at all time points. Taken together the maximum tax rate doubled over the years. The limit above which it is due first increased and then decreased again (in prices of 2010).

**Figure 4.4: Maximum inheritance tax rate and allowances for children in Germany, 1955-2015**



Source: Own presentation based on legislation in Germany.

Allowances (usable for inheritances and/or gifts) are granted every ten years and are higher for close family members. They also steadily increased over time – for children from 15,339 Euro over 46,016 Euro and 204,517 Euro to 400,000 Euro (plus care allowances depending on the age of the heir in case of inheritance for the last three time points), which also corresponds to a real increase (from 68,173 Euro over 107,514 Euro and 254,058 Euro to 374,181 Euro in prices of 2010 – see also figure 4.4). At all time points spouses where applicable to allowances which were higher than that for children, but they were never completely exempted from the tax. The valuation changed several times. In the 50s and 70s unit values were used for real estate and business property. In the 90s for these types of assets earning values were used. Both valuations yield a lower rating than market value – depending on the time point only 20-70 percent of the market value were due to taxation (applicable proportion increased over time – see table A4 in the appendix). For all other asset types (except for business assets) market values were used. In several judgments the federal constitutional court complained about

<sup>102</sup> Exceptions if acquisition is just above the next value limit (Härteausgleich).

this unequal treatment (Bundesverfassungsgericht 1976 I BvR 360/74, 1995 2 BvR 552/91 BStBl 1995 II p. 671, 2006 1 BvL 10/02), which led to the outlined changes. Nowadays assets are supposed to be valued at market prices.

Business assets get a preferable treatment due to a public interest (e.g. preservation of jobs), which is to a certain extent allowed by the federal constitutional court (Bundesverfassungsgericht 2014 1 BvL 21/12). Business assets were/are valued below market value. Guide values for this undervaluation are only available for 1995/96 and 2015/16 (Sureth, Müller, Houben & Maiterth 2008, Scholz & Truger 2016). Since the 90s, business assets get further preferential treatment. First an allowance of 255,646 Euro was granted and 40 percent of the value of the business was exempt if it was continued for at least five years. Today business assets can be completely exempt under certain circumstances, like holding the company for at least another seven years and aggregate wages must not fall below 700 percent of the average wages paid per year before transferring the company with more than 16 employees.<sup>103</sup> This applies for business valued below 26 million Euros; no exemptions are granted if transfer is 90 million Euros or more; in between the exemptions decrease steadily. Some minor exemptions for household goods are granted already since the 50s. In 2015/16 also owner-occupied property can be exempt if the spouse/civil partner or the children are living in it for at least 10 years (and in the case of children if the property size is smaller than 200m<sup>2</sup>). The value of rented property is only subjected to tax with 90 percent of market value.

### 4.3.3. Legislation in Sweden

Different kinds of fees and duties on estates, inheritances and wills existed in Sweden since 1698. A stamp ordinance, which means that a single (estate) tax – the stamp – is due on the total estate value, was introduced in 1884. Since then the tax revenue goes completely to the state. For direct heirs the tax rate amounted to 0.5 percent (Du Rietz et al. 2015). In 1895 a progressive tax schedule was laid down, which is “considered to be the first modern inheritance tax” (Du Rietz et al. 2015, p. 8). It contained three tax classes and the maximum tax rate for children, spouses and descendants was 1.5 percent. In 1910 the progressivity of the tax schedule was increased. Maximum tax rate amounted to 4 percent for direct heirs. From 1914 on the taxation also included gifts. In 1918 and then again in 1933 the tax rates were drastically increased. The maximum tax rate for direct heirs was first 8 percent and then 20 percent (Du Rietz et al. 2015).

---

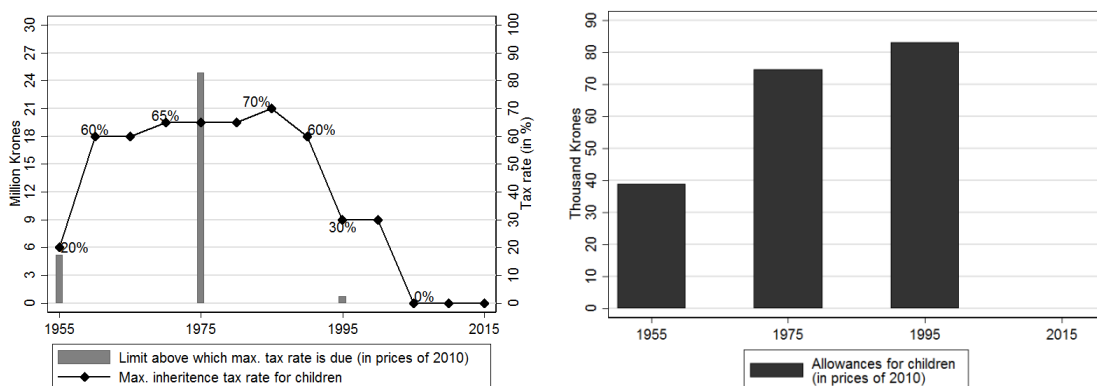
<sup>103</sup> I use the lower regular exemption of 85 percent of the transferred value. Here the holding period is only five years and the aggregate wages must not fall below 400 percent of the average wages paid per year before transferring the company with more than 16 employees. The number of employees is only relevant for the rule regarding the wages.

*Legislation in 1955, 1975/78,<sup>104</sup> 1995, 2015*

In 1955 four different tax classes were available – for the second and third time point (1975/78 and 1995) three. The first class always contains spouse, children and descendants, the second one parents and siblings and the third one non-profit organizations. The fourth class in the 50s contained the other heirs and was later included into the second class (for details on all aspects see table A5 in the appendix).

Like in Germany the closer relatives are taxed at lower rates and the tax rates increase with the received amount. In 1955 acquisitions higher than SEK 400,000 (SEK 5,194,805 in prices of 2010) were taxed with 20 percent (maximum tax rate). In addition an estate tax was levied on inheritances and gifts (Ohlsson 2011). In practice the whole estate was first taxed via the estate tax between 5 and 50 percent (starting at SEK 50,000 up to over SEK 5,000,000). The tax payment was conducted from the estate, which was then distributed among the heirs and then taxed via the inheritance tax. At the second time point (1975/78) the maximum tax rate in class one was 65 percent (for acquisitions higher than SEK 5,000,000/SEK 24,875,621 in prices of 2010). At the third time point (1995) only three different tax rates were applicable: 10, 20 and 30 percent. In tax class one the maximum tax rate was due by acquisitions over SEK 600,000 (SEK 711,743 in prices of 2010). Taken together the maximum inheritance tax rate first increased and then decreased over the years. The limit above which it is due followed the same trend (in prices of 2010).

**Figure 4.5: Maximum inheritance tax rate and allowances for children in Sweden, 1955-2015\***



\*In 1955 also an estate tax was in place (maximum tax rate: 50 percent).

Source: Own presentation based on legislation in Sweden.

In 1955 no allowances but taxable limits were granted. This means that no tax has to be paid, if the acquisition is below the taxable limit, but the entire lot is taxed, if the acquisition is above

<sup>104</sup> The valuation for some assets was elementarily changed in 1974 and then again in 1978. Both imply a reduction of the tax base. The reform from 1978 goes further. Therefore I report the legislation in 1978.

the taxable limit (Henrekson & Waldenström 2015). For children they amounted to SEK 3,000 (SEK 38,961 in prices of 2010). For the estate tax an allowance of SEK 50,000 was granted and for a surviving spouse half of the estate was exempt. In 1975/78 children were granted an allowance of SEK 15,000 (SEK 74,627 in prices of 2010). At the third point (1995) they got an allowance of SEK 70,000 (SEK 83,037 in prices of 2010), which also corresponds to a real increase – see also figure 4.5. Summation rules for inheritances and gifts from the same person amount up to four years for the whole period under analysis.

Assets and liabilities are valued at market value at the time of the death of the deceased (Du Rietz et al. 2015). However, exceptions for several asset types are granted. For the whole analysis period real estate was valued at the tax-assessed value in the year before the death of the deceased (this corresponds to about 75 percent of the market value). Businesses were valued at the sales value estimated by trustees. Since time point two (1975/78) businesses taxable net worth was at most 30 percent of book value. Listed shares were subjected to tax with only 75 percent of market value. Unlisted shares with only 30 percent of quoted or book value.

The inheritance and gift tax was abolished in Sweden at the end of the year 2004 – the last time point (2015) covers this decision.

#### **4.3.4. Interim summary**

This overview of the most important legislations of estate, inheritance and gift taxation over time in the UK, Germany and Sweden already shows that countries tax intergenerational transfers differently and that a link can be drawn to the welfare state theory by Esping-Andersen (1990). In the UK (liberal regime) the nil-rate band is for every estate the same, the transfer is taxed all together, based on the transfer value (not on any kind of (family) relationship) and then distributed among the heirs. Progressivity decreases over time, but the flat-tax of 40 percent is still on a medium level. The inheritance and gift taxation in Germany (conservative regime) shows a “family-oriented conception of property” (Beckert 2004, p. 275). The transfer is distributed among the heirs and then taxed separately – (close) family members get higher allowances and face lower tax rates as other (family) heirs.<sup>105</sup> Before abolishing the taxation, the system in Sweden (social democratic regime) was comparable to that in Germany, but with higher maximum tax rates – at least until the 1990s.

---

<sup>105</sup> In Germany and Sweden close family members can claim an obligatory share of the estate (Beckert 2010, Bogdan 2001). In the UK this is also the case in Scotland but not in England and Wales (Schmeilzl 2016). This also supports the hypothesis for the conservative regime.

## 4.4. Effective intergenerational transfer tax rates since the 1950s

### 4.4.1. Estimation strategy

To calculate the effective intergenerational transfer tax rates I focus on two child heirs<sup>106</sup> who will inherit equal shares from one of their parent with the other parent already dead. I analyze the default situation, how the estate is transferred in each country, if the deceased has not left a will. In all three investigated countries the intestate succession requires, that all children inherit equal shares of the whole estate if their parents are already both dead and no will exists.<sup>107</sup> No gifts have been received before.<sup>108</sup> The effective tax rate is calculated as follows:

$$effective\ tax\ rate_{t,s,p} = \frac{\left(\frac{estate_{t,s,p}}{2} - allowances_{t,s,p} - exemptions_{t,s,p}\right) * tax\ rate_{t,s,p} * 2}{estate_{t,s,p}}$$

Comment: In the case of the UK the estate in the numerator is not divided by two and the whole numerator is also not multiplied by two.

Allowances are subtracted from the estate and exemptions are accounted for to calculate the tax base at time point  $t$ , for the size of estate  $s$  and the portfolio of estate  $p$ . Then the tax base is multiplied with the respective tax rate and the value is put in relation to the untaxed estate.<sup>109</sup> In the case of Germany and Sweden the estate is divided by two (children) before calculating the tax base and then the payable tax amount is multiplied by two before putting it into relation to the untaxed estate. In the UK the number of heirs does not play a role for calculating the effective tax rate. Therefore neither the estate in the numerator is divided by two nor is the whole numerator multiplied by two.

<sup>106</sup> The birth rate per woman was on average 2.06 children between the years 1960 and 2014 (there is no data before and after these years available) in all three countries together (Worldbank, fertility rate: <http://data.worldbank.org/indicator/SP.DYN.TFRT.IN>, 12.07.2016). Therefore I split each estate in two equal halves. For Germany and Sweden this has the consequence that the effective tax rates are lower as if the estate would not have been shared due to lower tax rates for lower values and allowances which can be used twice etc. In addition, the heirs do not encounter the whole progressivity of the inheritance tax, as (close) family members face lower tax rates as other heirs.

<sup>107</sup> If the other parent is still alive it depends if they were married. If yes in Sweden the spouse (later also the civil partner) will inherit the whole estate if only joint children are left. In Germany and the UK the spouse (later also the civil partner) will only inherit part of the estate and part will already be distributed among the children (for further details see table A.4.3-5 in the appendix). These rules apply, if not stated otherwise in a will by the deceased.

<sup>108</sup> Especially for large estates the effective tax rates payable in reality are probably smaller as in all countries at most of the time points taxes can be (in part) avoided with some tax planning via gifting.

<sup>109</sup> I do not account for the indirect capital gains tax which would be due in the UK and Sweden at several time points if heirs (have to) sell off part of their inheritance (e.g. real estate, business, shares) to pay the estate or inheritance tax.



Comparable to Henrekson & Waldenström (2015)<sup>110</sup> I investigate typical households with different sizes and portfolios of estates to represent the whole wealth distribution:

- **Small estate:** Equivalent to nominal<sup>111</sup> average wealth per capita<sup>112</sup> in the respective country and at the respective time point.
- **Medium estate:** Equivalent to 10 times nominal average wealth per capita in the respective country and at the respective time point.
- **Large estate:** Equivalent to 100 times nominal average wealth per capita in the respective country and at the respective time point.
- **Top estate:** Equivalent to 1000 times nominal average wealth per capita in the respective country and at the respective time point.

The small estate consists of money. The medium, large and top estate consist in in three different scenarios either of money or a (family) business or shares in a listed corporation with more than 50 percent of the voting rights.<sup>113</sup>

To get an impression of the sizes of the transferred estates, table 4.1 shows the values for 2015 and table A.4.1 in the appendix for the other time points. For example in Germany in the year 2015 the small estate is worth 131,630 Euro which implies an inheritance for each child worth almost 66,000 Euros. According to simulations from Bach & Thiemann (2016) the median inheritance is below 50,000 Euro between 2011 and 2020 in Germany. In the UK regarding to the inheritance tax statistics the average estate was around £ 300,000 in 2013/14 (HM Revenue & Customs 2016) – which is twice the amount of the small estate defined in this paper for 2015. However, the inheritance tax statistics does not include the estates from all deaths – especially not the low ones. Therefore the average and median estate for all donors was lower.

---

<sup>110</sup> Henrekson & Waldenström (2015) use multiples of average worker's annual salary as an approximation of estates of different sizes. I use nominal average wealth per capita in the respective country and at the respective time point instead as estates consist of the wealth of a dead person and therefore only indirectly of his/her salary (one source of wealth is savings out of income). In an alternative scenario of my estimations I use GDP per capita (as a proxy for income) as a base (2 times GDP per capita for the small estate, 10 times the small estate for the top estate, 100 times the small estate for the large estate, 1000 times the small estate for the medium estate, see table A.4.2 in the appendix). The effective average tax rates differ in some cases in level, but the overall picture that will be described hereafter does not change (exact results are available upon request).

<sup>111</sup> I argue that politics directs decision on tax rates, allowances etc. based on nominal values, therefore I do not adjust for inflation.

<sup>112</sup> Data is based on the systems of national accounts (SNA). The survey concept of the SNA also takes wealth of the non-profit institutions serving households, like churches, trade unions or political parties, into account (SNA 2008). Therefore average wealth per capita might be a little bit overestimated as a proxy for average estates. However, it is not possible to prove that for all time points and countries due to a lack of data.

<sup>113</sup> Medium wealth typically predominantly consists of real estate. Therefore I investigate this case in an additional scenario in the appendix part C. Shares in a listed corporation with less than 25 percent of the registered share capital are taxed in the same way as money in the UK and Germany, but not in Sweden. This case is also covered in an additional scenario for the medium estate in the appendix part C.

For Sweden inheritance tax statistics are only accessible for the years 2001 to 2005. Before that period the information is not available centrally and after that period no inheritance tax was levied anymore (Elinder, Erixson, Escabor & Ohlsson 2014). Taken together it can be assumed that the majority of the population will leave a small or at maximum a medium sized estate.

For Germany Bach & Thiemann (2016) also find that one third of the total transmission volume is shared by only 1.5 percent of all heirs. As it is well known that wealth is highly concentrated in all investigated countries this perfectly fits into the picture (for Germany: Deutsche Bundesbank 2016, for the UK: Crawford, Innes & O'Dea 2016, for Sweden: Lundberg & Waldenström 2016). Therefore it can be also suggested that the large and top estate are only relevant for a very small part of the population but that they stand for a significant part of the transferred estate volume. In addition, it can be said that these estates consist more often than the other two estate types of (family) businesses or large shares in a corporation (Bach & Thiemann 2016, HM Revenue & Customs 2016).

**Table 4.1: Nominal private wealth per capita in the UK, Germany and Sweden in 2015\***

| 2015           | Small estate                 | Medium estate                   | Large estate                      | Top estate                           |
|----------------|------------------------------|---------------------------------|-----------------------------------|--------------------------------------|
| United Kingdom | £ 151,780<br>(€ 176,500)     | £ 1,517,800<br>(€ 1,765,000)    | £ 15,178,000<br>(€ 17,650,000)    | £ 151,780,000<br>(€ 176,500,000)     |
| Germany        | € 131,630                    | € 1,316,300                     | € 13,163,000                      | € 131,630,000                        |
| Sweden         | SEK 1,569,460<br>(€ 164,000) | SEK 15,694,600<br>(€ 1,640,000) | SEK 156,946,000<br>(€ 16,400,000) | SEK 1,569,460,000<br>(€ 164,000,000) |

\* Data is actually from 2014.

Source: Based on data appendix of Waldenström (2016): <http://www.uueconomics.se/danielw/SNWD.htm>, ONS national balance sheet: <https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/bulletins/nationalbalancesheet/2016estimates>, ONS population: <http://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/2015-06-25>, Deutsche Bundesbank & Destatis (2015), Destatis population: [https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/Bevoelkerung/Bevoelkerungsstand/Tabellen\\_/lrbev03.html](https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/Bevoelkerung/Bevoelkerungsstand/Tabellen_/lrbev03.html) (all 28.08.2016).

The estates consist of net values – which means possible liabilities are already deducted. In general the valuation of transferred assets and liabilities is based on market values in all countries at all time points. However, there exist deviating valuation rules for business and real estate assets especially in Germany and Sweden (for details see last section and tables A.4.3-5 in the appendix). In both countries real estate assets are valued below market price (at some time points). There is literature available, estimating the average share of this undervaluation (Du Rietz & Henrekson 2015, Bach & Bartholmai 2002, AGN Europe 2008). In the case of business assets rules are closely tied to special circumstances like the income of a company or the

composition of assets types within a company. Average values for this undervaluation are not available for all time points in Germany and can therefore not be taken into account here.<sup>114</sup>

#### **4.4.2. Effective intergenerational transfers tax rates in the United Kingdom**

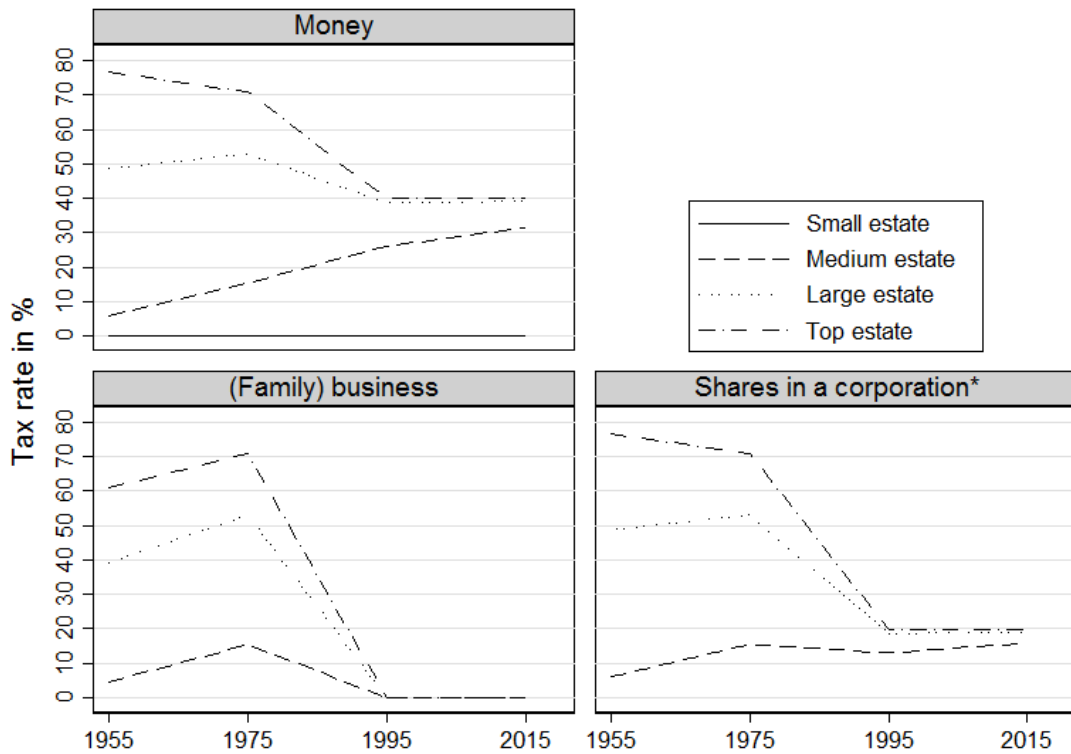
In the UK the maximum effective tax rates for all three estate portfolios (money, (family) business and shares in a corporation) were over 60 percent after World War II. However, the effective tax rate for a small estate is 0 for all time points. Medium estates consisting of money are effectively higher taxed over time – starting at 6 percent in 1955 and increasing to a little bit over 31 percent in 2015. Large money estates started at almost 50 percent in the 1950s, experienced a slight increase from the first to the second time point, then decreased and then stayed the same at a little bit below 40 percent. For the top money estate the rate started at almost 77 percent and already decreased from the first to the second time point and then further to the third and then also stayed the same at almost 40 percent. Due to the flat tax the effective tax rates for large and top estates are (almost) the same for the last two time points. The slight difference arises due to the nil-rate band which is the same for all estates. Progressivity therefore decreased at the upper end of the distribution as large and especially top money estates experienced tax relieves over time. Whereas medium money estates were taxed with higher rate (see figure 4.6).

The (family) business estate shows exactly the same development for all three estates sizes, just on different levels: first an increase and then a decrease to 0 for the last two time points. The tax rates in the 1970s are the same as for the money estate – at all other time points tax relieves were available. The effective tax rates for the shares in a corporation estate are the same as for the money estate for the first two time points. For the last two time points the effective tax rates for the large and top estate are on half of the level (almost 20 percent) due to exemptions for shares in a corporation. The tax burden for the medium estate first increases and then more or less stays the same until today – almost 16 percent in 2015. Therefore progressivity decreased dramatically for (family) business and shares in corporation estates. Deductions for (family) business are always higher than for shares in a corporation (for the same estate size).

---

<sup>114</sup> The literature so far also only accounts for this issue when looking at one time point (Scheffler & Spengel 2004) and therefore leaves room for future research.

**Figure 4.6: Effective estate tax rates in the UK in 1955, 1975, 1995 and 2015**



\* Shares in a listed corporation with >50 percent of the voting rights.

Source: Own calculation based on legislation in the UK.

Taken together it can be said that for the first and second time point the effective tax rates were quite high for all estate portfolios (over 60 percent for top estates) as well as progressivity. Therefore, the concept of equal opportunity clearly had the upper hand. For the last two time points the story changes – the concept of protection of liberty and property gained influence: Progressivity decreases (due to the nil rate band it cannot vanish), but the introduced flat tax is still on a medium level. Due to the flat tax, deductions are given for all large and top estates. In addition, exemptions for (family) businesses and shares in a corporation estate are available. The medium money estates experienced an increase in taxation. However, small estates and therefore probably a large portion of estates are not taxed over the whole time frame.

Scheve & Stasavage (2012) look for reasons why inherited wealth is significantly taxed and also capture the UK (as well as Germany and Sweden). They test via a difference-in-differences estimation two main arguments: Significant tax rates are due to (1) the extension of suffrage and (2) mass mobilization for war. They do not find strong support for their first hypothesis in their data set covering 19 countries from 1816-2000 (only maximum inheritance tax rates are captured). However, the second is strongly supported. Reasons might be that poorer individuals are more likely to fight in the war and therefore demand a comparable sacrifice from

wealthier individuals. It could also be that wealthier individuals profit via their companies from the war consumption and again poorer individuals demand compensation. Furthermore, they argue that high taxation will continue for some time after the war due to increased debt. This seems to perfectly fit to the developments in the UK. However, it could also be argued that the introduction of the flat tax in 1988 was due to the general decrease of taxation under M. Thatcher as prime minister (for an overview of her reforms see Rhodes 2000).

#### **4.4.3. Effective intergenerational transfers tax rates in Germany**

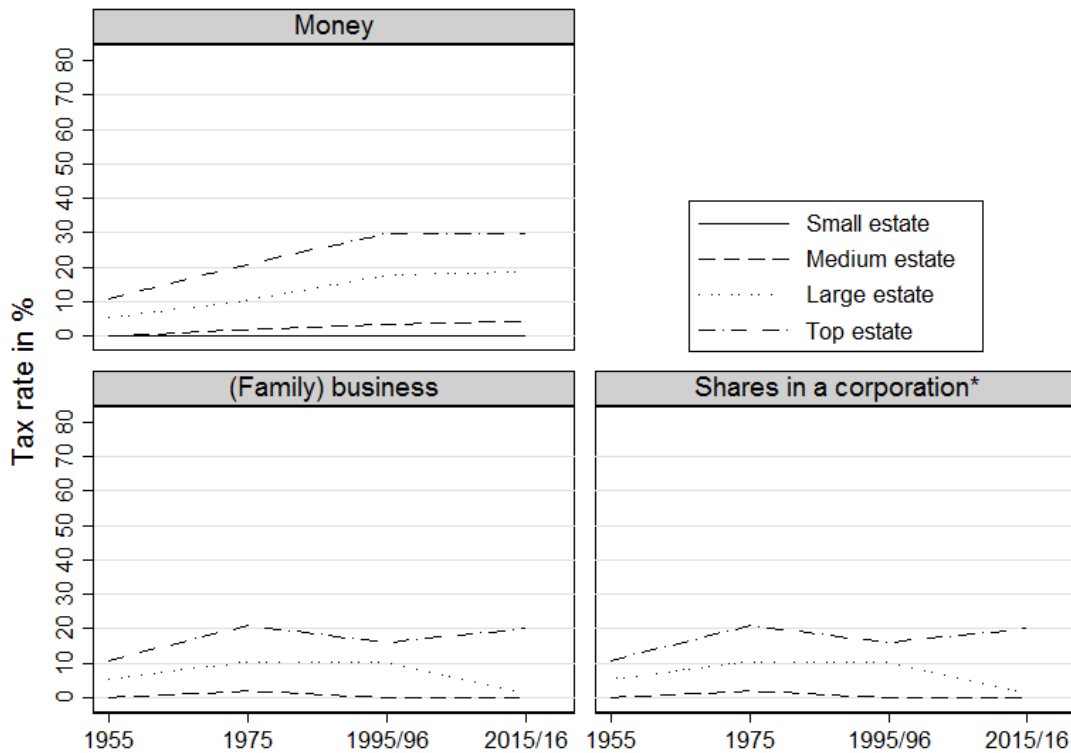
In Germany the effective tax rate for a small estate is like in the UK 0 over the whole time. However, all other effective tax rates are in the majority of the cases lower than the ones in the UK. The tax burden for transfers from parents to children never exceeded 30 percent since the 1950s. The effective tax rates of all sizes of the money estate increased steadily until the 1990s – since then no further increase for the top estate and only small increases for the other two. Progressivity also slightly increased over time and more for the upper part of the distribution (see figure 4.7).

The effective tax rates for (family) businesses and the shares in a corporation estate are the same for all time points and never much more than 20 percent.<sup>115</sup> The tax burdens first increase and then decrease again for all estate sizes (the large estates stagnate). The developments from the 1990s to today are different for all sizes: the medium one stays at 0, the large one decreases and the top one increases.

---

<sup>115</sup> Effective tax rates for (family) businesses and shares in a corporation can be seen as maximum levels here. Special valuation rules existed over the whole time frame which imply that business assets were not valued at market price (due to missing information on the extend of undervaluation this cannot be accounted for here). Furthermore for the last time point the large (but not the top) estate levels for (family) businesses and the shares in a corporation estate could also be tax free.

**Figure 4.7: Effective inheritance tax rates in Germany in 1955, 1975, 1995/96 and 2015/16**



\* Shares in a listed corporation with >50 percent of the voting rights.

Source: Own calculation based on legislation in Germany.

Taken together it can be seen that there have been changes on the intergenerational transfer taxation system, but compared to the UK and Sweden less pronounced ones. Probably the majority of inheritances is not taxed in Germany since World War II – due to the tax free small estate. Within an estate type higher estates values always involve higher effective tax rates – however, they never exceed 30 percent (for inheritances from parents to children). Furthermore, tax rates are lower within the family than outside. This confirms the established hypothesis on the conservative welfare state. In addition, deductions are given to (family) businesses and shares in a corporation – in Germany large and top estates (nowadays) predominantly consist of these two kinds of assets (Bach & Thiemann 2016). This preferential treatment is justified (even by the federal constitutional court) as these estate portfolios bring along a higher level of responsibility for others (e.g. jobs in transferred businesses).

Beckert (2004) investigates changes in the Germany inheritance law by evaluating in detail contemporary parliamentary print since the 19<sup>th</sup> century until the turn of the millennium. He also finds that the changes since the two World Wars were rather moderate but all served different priorities. He shows that the system is based on a “family-oriented conception of property” (Beckert 2004, p. 275). In the 1950s the law from the 1920s is carried over – imple-

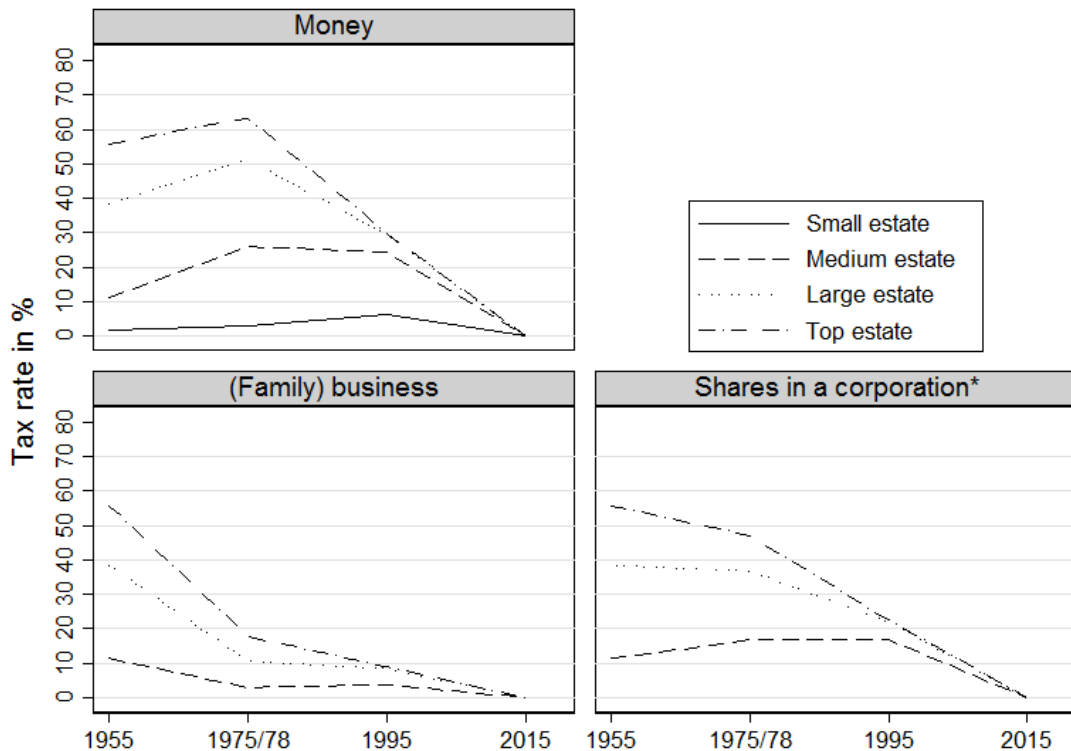
menting a low taxation. In the parliamentary debate about the changes (e.g. increase of taxation at the upper end) implemented in the 1970s the social democratic speakers (who were in government together with the liberals) mainly named the argument of social justice. The changes in the 1990s reversed those from the 1970s. However, the government argued to increase tax revenue: High inheritances were taxed less but the sharper valuation rules (especially for real estate) would compensate that. The speakers from the coalition (conservatives and liberals) predominantly named stimulation of economic growth and securing of jobs in the debate (especially for the exemptions for businesses). Beckert (2010) investigates the changes since the turn of the millennium and finds a continuation of the family orientation also with regard to business – which is in addition again justified with economic reasons. The work from Beckert (2004) can also be seen as an indication that the mass mobilization hypothesis by Scheve & Stasavage (2012) does not capture the (full) story for Germany.

#### **4.4.4. Effective intergenerational transfers tax rates in Sweden**

In Sweden the inheritance and gift tax was abolished at the end of 2004. Therefore the last time point is of course always 0. Before that the small and medium estates for all types faced higher effective tax rates in Sweden than in Germany and in many cases also higher ones than in the UK. For the large and top estate for the majority of the cases the UK had larger tax rates than Sweden – which had larger or comparable tax rates to Germany.

Different than in the other two regimes small inheritances were taxed before the abolishment. The tax burden even increased over time – from almost two percent to over 6 percent. For the medium estate consisting of money the effective tax rate first grew and then stagnated (around 25 percent). For the large and top estate they also first grew but then already decreased (to a little bit less than 30 percent). Therefore, regarding progressivity it can be said that higher estate values were taxed with higher effective tax rates. However, the differences decreased sharply for the third time point and for the large and top estate even almost vanished (see figure 4.8).

For (family) businesses and shares in a corporation estates tax reliefs were introduced in the 1970s. The effective tax rates therefore fell (dramatically) for all these estates sizes from the first to the second time point (exception: medium shares in a corporation estate). The reductions for (family) businesses were larger than the ones for the shares in a corporation. The further decrease from the second to the third time point – especially for the shares in a corporation estates – was due to the general reduction of tax rates for all estate types.

**Figure 4.8:** Effective inheritance tax rates in Sweden in 1955, 1975/78, 1995 and 2015

\* Shares in a listed corporation with >50 percent of the voting rights.

Source: Own calculation based on legislation in Sweden.

Taken together it can be said that the effective tax rates were quite high after World War II (over 50 percent for all top estates), even the small estate was taxed (at a low level) and progressivity was high for all estate portfolios. This confirms the established hypothesis on the social democratic welfare state. However, already the changes in the 1970s reduced redistribution as (family) business and shares in a corporation estates got tax exemptions. Since the 1990s all large and top estates got tax deductions. Therefore, the tax burden for the upper edge of the distribution decreased over time and even increased for the lower part – until the abolishment of the tax.

Henrekson & Waldenström (2015) examine possible determinants for these changes. They start with the mass mobilization hypothesis by Scheve & Stasavage (2012) and demonstrate that the largest tax changes took place between or after the world wars (their investigation period already starts at the end of the 19<sup>th</sup> century) and are therefore only part of the story. In addition, they find in contemporary parliamentary prints that politicians “explicitly stated that the wartime events did not affect inheritance tax policy” (Henrekson & Waldenström 2015, p. 17). The high effective tax rates seem rather to be motivated by an ideology for redistribution in the Social-Democratic Party and its political power after World War II. One possible explanation from Henrekson & Waldenström (2015) for the tax deductions since the 1970s is tax



avoidance. They investigate newspapers articles about legal avoidance strategies like debt expansion in the 1970s. Possibilities further increased after the deregulation of credit markets in the 1980s and are also reported in the press. They also cite interviews with emigrated people and name wealthy business owners who name as a major emigration decision (inheritance) taxation. In the 1990s the tax rates for small estates even increased and further decreased for the upper part of the distribution. In addition, the housing and stock market boomed, which had the consequence that many middle-class heirs had to pay inheritance tax on the received wealth transfer. Henrekson & Waldenström (2015, p. 23) also name “the removal of foreign exchange controls in 1989 and EU membership in the mid-1990s” as further opportunities for tax avoidance for wealthy heirs. They argue that due to these developments the inheritance tax lost its legitimacy and in the end was abolished.

#### **4.4.5. General trends**

Altogether intergenerational transfer taxation rather decreased since World War II – especially for the upper part of the distribution. Besides the individual country developments (described in the last sections) some general trends can be identified which also lead to this development: tax composition and competition, influence of interest groups and the median voter.

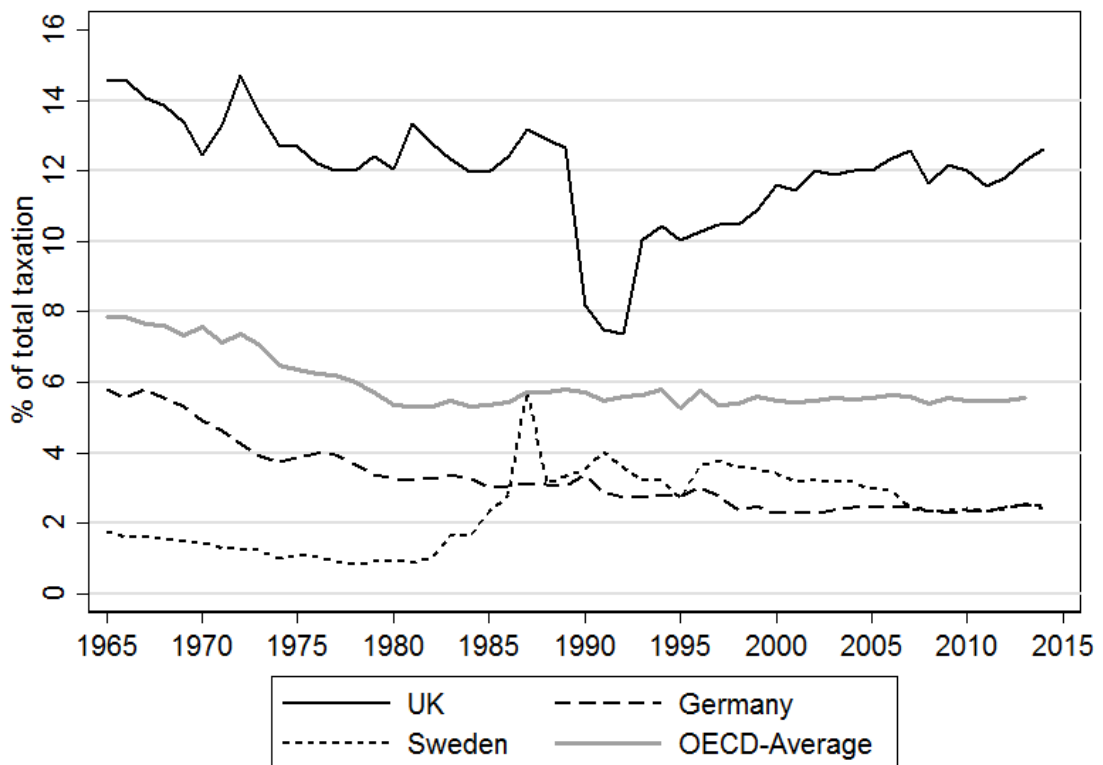
##### **4.4.5.1. Tax (revenue) composition and competition**

To get a complete picture on the taxation of intergenerational transfers all other taxes and their changes also have to be taken into account – especially other forms of property taxation. It would be optimal to compare effective tax rates for all taxes in all countries over time – which are not available. Therefore, tax revenues serve as an approximation.

Taxes on personal income, goods and services and the social security contributions are in general the most important components of total tax revenue (see figure A.4.3 in the appendix). Over time the composition of total tax revenue changed. It is an overall trend in all three countries that the importance of revenue from direct taxes like the income tax decreased since the 1970s and revenue from indirect taxes like taxes on goods and services and social security contributions increased. In general it can be said that this tends to decrease the tax burden on high incomes and increases it on poor incomes (European Commission 2006). One reason for this shift is probably that tax avoidance and evasion are less likely with indirect taxes. Both got easier over time due to the stronger tax competition as a result of globalization (Cremer & Pestieau 2011, Remeur 2015).

Taxes on property and therefore also taxes on intergenerational transfers are direct taxes. The relevance of the tax revenue of taxes on property<sup>116</sup> as a percentage of total taxation is different for each country (see figure 4.9). In the UK it is more important than in the other two, but decreased over time. In Germany revenue also decreased and in Sweden it increased and then decreased again. Therefore, it does not seem as if the decreasing revenue from estate, inheritance and gift taxes in the UK and Sweden was compensated by other taxes on property.

**Figure 4.9: Revenues from taxes on property as a percentage of total taxation\* the UK, Germany and Sweden, 1965-2014\*\***



\* This includes: recurrent taxes on immovable property, recurrent taxes on net wealth, other recurrent taxes on property, estate, inheritance and gift taxes, taxes on financial and capital transactions and non-recurrent taxes on property.

\*\* Not available before 1965.

Source: Based on OECD.Stat (2016)

In the UK the most important component of revenues from taxes on property are recurrent taxes on immovable property (see figure A.4.4 in the appendix). They also gained importance in Sweden since the 1980s and are the most important ones since the 1990s. In Germany they

<sup>116</sup> This includes depending on the country in different combinations (see also figure A.4.4 in the appendix): recurrent taxes on immovable property, recurrent taxes on net wealth, other recurrent taxes on property, estate, inheritance and gift taxes, taxes on financial and capital transactions and non-recurrent taxes on property.

are rather stable. However, another change is visible: recurrent taxes on net wealth<sup>117</sup> steadily decreased and then even vanished. The same happened in Sweden, but on a lower level.<sup>118</sup> All these developments strengthen the globalization argument – taxation on property shifts from movable to immovable assets.

With regard to intergenerational transfer taxation this also makes sense: The tax burden especially decreased for the upper part of the distribution (where assets are more mobile) in all three countries. With some tax planning assets (future estates) can be shifted to countries with lower or even no taxation (see Tiefensee & Westermeier 2016 for an overview for the EU). However, in some cases also habitual residence has to be shifted (EY 2016).

#### **4.4.5.2. Influence of interest groups**

Wealth concentration and therefore probably also estate concentration increased in the UK and Sweden since the 1950s (see figure A.4.2 in the appendix) – for Germany the development over time is empirically unknown, but wealth and inheritance concentration is also high at the present (Deutsche Bundesbank 2016, Bach & Thiemann 2016). Therefore, a relatively small group of individuals with more or less homogenous interests – in the case here this would be reducing/abolishing intergenerational transfer taxation – might influence public opinion (e.g. via the media)<sup>119</sup> and politics to their advantage.

On the theoretical front this issue started to get tackled in the literature on wealth transfers. De Donder & Pestieau (2015, p. 389) formulate „an analytical model, together with numerical simulations, where agents bequeathing large estates make monetary contributions to play up the salience of the encroachment aspects of estate taxation on family decisions and to decrease its political support“. However, so far there is no general empirical proof available and especially none for the three investigated countries how far the influence of interest groups in the case of the estate, inheritance and gift taxation really reaches (especially in the case of exemptions for (family) businesses and shares in corporation estates – which are given in all three countries over time).

---

<sup>117</sup> These consisted of a general wealth tax (all private assets minus liabilities) which was abolished in 1997 (Schratzstaller 2013).

<sup>118</sup> The wealth tax for unlisted corporate equity was abolished in 1991 and the wealth tax for all others in 2007 (Henrekson & Stenkula 2015).

<sup>119</sup> Corneo (2006) shows that with high wealth concentration, media reporting favors a small elite.

#### **4.4.5.3. Influence of the median voter**

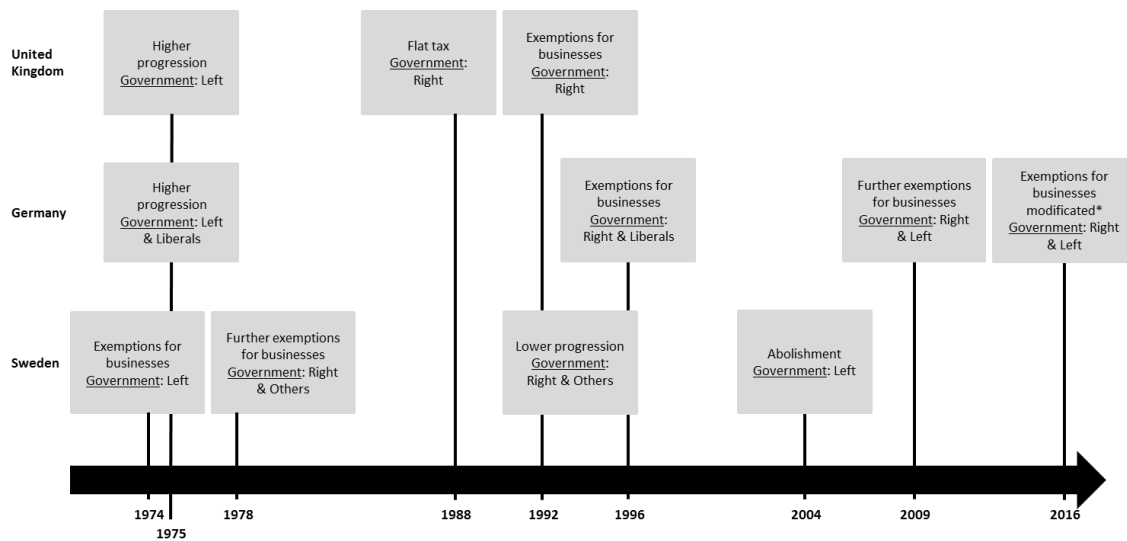
The opposite of interest group models is the median voter theorem – which was spread by Downs (1957) and applied to redistribution issues (of income) by Metzler & Richard (1981).<sup>120</sup> The theory says that in a majority rule voting system the median voter's interest will be served. If only looking at the case of wealth transfer taxation one could therefore argue that the median voter acts against its own interest. As the majority of the population receives only a small inheritance they could impose high taxes on the upper part of the distribution and benefit from redistribution. Why this is not the case leaves room for further research. What can be seen is that the median voter at least makes sure that he/she does not have to pay (high) estate, inheritance or gift taxes himself/herself. This shows the 0 effective tax rates for small estates in the UK and Germany. In Sweden the small estate was taxed (on a low level) and the system was abolished when the small estate was taxed the highest over the whole period under analysis.

Furthermore, it can now be argued that as individuals below the median favor tax increases and more redistribution they should therefore vote for left parties. Individuals above the median voter favor on the contrary tax decreases and less redistribution and therefore should vote for right parties. Looking into the country cases this is actually a rational decision. It can be seen that in the UK and Germany tax increases with regard to intergenerational transfers always took place under left governments and decreases under right ones (see figure 4.10). Sweden again is a special case, but at least partially confirms the theory. Therefore, it can be stated that in the case of wealth transfer taxation it does matter who you vote for.

---

<sup>120</sup> For a scarce recent overview (also on the empirical findings) see Corneo & Neher (2015).

**Figure 4.10: Changes in estate, inheritance and gift taxation and ruling party in the UK, Germany and Sweden since the 1950s**



\*2016: less exemptions for the top estate.

Source: Own presentation and Schröder (2010), Recker (2009), Tuchtenhagen (2008).

## 4.5. Conclusion

In this paper I answer the following questions: Do countries tax intergenerational wealth transfers differently? Did taxation change over time? For both cases holds: If yes, why? I investigate the United Kingdom, Germany and Sweden since the 1950s and calculate effective tax rates for typical households with different sizes and portfolios of intergenerational transfers. I argue and prove that each intergenerational transfer taxation system for the individual countries is based on different preferences for redistribution (based on the theory by Esping-Andersen 1990).

In the UK (liberal welfare state regime) the general redistribution capacity over the tax system is rather low. However, in the case of wealth transfers the argument of equal opportunities at the beginning of life is strong and therefore transfers are highly taxed over the whole investigation period. Though, over time progressivity increases and deductions are given to the upper part of the estate distribution. In Germany (conservative welfare state regime) the argument of protection of liberty and property is strong – ownership should stay as it is (within the family). Indeed taxation (within the closer family) is rather low since the 1950s. Over time deductions are given to business owners, who represent the upper part of the estate distribution in Germany. In Sweden (social democratic welfare state regime) transfer taxation was strong and redistributive after the World Wars and therefore in line with the argument of equal opportunities. However, the tax burden for the upper part of the estate distribution decreased over time and even increased for the lower part – in the end the tax was abolished.

The changes over time are on the one hand based on developments in each country. On the other hand some overall trends can be noted. First, tax (revenue) composition changed in general due to higher (tax) competition between the countries, which came from a more globalized world. As assets and therefore also future estates, especially at the upper part of the distribution, got more mobile, policy makers adopted property taxes (including estate, inheritance and gift taxes). This implies decreasing tax burdens or a shift towards less mobile assets. Second, another important aspect with regard to wealth and estate concentration is the influence of interest groups. However, even though the topic is already tackled on a theoretical front, the empirical proof with regard to estate and inheritance taxation in the investigated countries still needs to be made. Third, what can be seen is, that the median voter never had to pay (high) estate or inheritance taxes in the investigated countries. In addition, wealth transfer tax increases are more likely under a left government, while decreases are more likely under a right government.

## References

- AGN Europe (2008) Inheritance Tax – 2008. <http://www.agn-europe.org/html/firm/news/ttf/index.htm> (21.03.2014)
- AGN International (2015) Gift and Inheritance Tax 2015 – European Comparison. [http://www.agn.org/AGN\\_Shared\\_Content/Publications/EU/2015GiftInheritanceTax.pdf](http://www.agn.org/AGN_Shared_Content/Publications/EU/2015GiftInheritanceTax.pdf) (10.05.2016)
- Arts W & Gelissen J (2002) Three worlds of welfare capitalism or more? A state-of-the-art report. *Journal of European Social Policy* 12(2). 137-158.
- Atkinson AB & Stiglitz JE (1972) The structure of indirect taxation and economic efficiency. *Journal of Public Economics* 1. 97-119.
- Atkinson AB & Stiglitz JE (1976) The design of tax structure: direct versus indirect taxation. *Journal of Public Economics* 6. 55-75.
- Atkinson AB (2013) Wealth and inheritance in Britain from 1896 to the Present. Centre for Analysis of Social Exclusion LSE No. 178.
- Bach S & Bartholmai B (2002) Perspektiven der Vermögensbesteuerung in Deutschland. Endbericht. Forschungsprojekt im Auftrag der Hans-Böckler-Stiftung.
- Beckert J (2004) Unverdientes Vermögen. *Soziologie des Erbrechts*. Reihe Theorie und Gesellschaft. Frankfurt a.M.: Campus.
- Beckert J (2013) Erben in der Leistungsgesellschaft. Reihe Theorie und Gesellschaft. Frankfurt a.M.: Campus.
- Boadway R, Chamberlain E & Emmerson C (2010) Taxation of Wealth and Wealth Transfers. In: Mirrlees JA et al. (ed.). *Dimensions of tax design: The Mirrlees Review*. 737-814.
- Bogdan M (2001) Schwedisches Erbrecht. Zusammenfassung des Vortrags, gehalten auf der Frühjahrstagung der Deutsch-Nordischen Juristenvereinigung in Bergen. <http://www.dnjv.org/se-erb.htm> (06.11.2016).

- Bossmann M, Kleiner C & Wälde K (2007) Bequests, taxation and the distribution of wealth in a general equilibrium model. *Journal of Public Economics* 91(7-8). 1247-1271.
- Brunner JK & Pech S (2012a) Optimal taxation of bequests in a model with initial wealth. *Scandinavian Journal of Economics* 114(4). 1368-1392.
- Brunner JK & Pech S (2012b) Optimal taxation of wealth transfers when bequests are motivated by joy of giving. *The B.E. Journal of Economic Analysis & Policy (Topics)* 12(1). Article 8.
- Brunner JK & Pech S (2013) Taxing bequests and consumption in the steady state. Working Paper Nr. 1315. Institut für Volkswirtschaftslehre Universität Linz.
- Brunner JK (2014) Die Erbschaftsteuer - Bestandteil eines optimalen Steuersystems? *Perspektiven der Wirtschaftspolitik* 15(3). 199-218.
- Butler S (2016) Inheritance tax: a brief history of death duties. <https://www.theguardian.com/money/2016/apr/10/inheritance-tax-a-brief-history-of-death-duties> (08.07.2016)
- Chown J (1975) *A Guide to Capital Transfer Tax*. London: Kogan Page Limited.
- Cole A (2015) Estate and Inheritance Taxes around the World. <http://taxfoundation.org/article/estate-and-inheritance-taxes-around-world> (10.05.2016)
- Corneo G (2006) Media capture in a democracy: The role of wealth concentration. *Journal of Public Economics* 90(1-2). 37-58.
- Corneo G & Neher F (2015) Democratic redistribution and rule of the majority. *European Journal of Political Economy* 40. 96-109.
- Cowell F (2011) *Measuring Inequality*. OUP: Oxford.
- Crawford R, Innes D & O'Dea C (2016) Household Wealth in Great Britain: Distribution, Composition and Changes 2006–12. *Fiscal Studies* 37(1). 35-54.
- Cremer H & Pestieau P (2011) The Tax Treatment of Intergenerational Wealth Transfers. *CESifo Economic Studies* 57(2). 365-401.
- Davies JB & Shorrocks AF (2000) The Distribution of Wealth. In A.B. Atkinson and F. Bourguignon. *Handbook of Income Distribution*. Elsevier Science. Amsterdam. 605-675.
- De Donder P & Pestieau P (2015) Lobbying, family concerns and the lack of political support for estate taxation. *Economics & Politics* 27(3). 389-403.
- Destatis (2016) *Volkswirtschaftliche Gesamtrechnungen – Bruttoinlandsprodukt, Bruttonationaleinkommen, Volkseinkommen Lange Reihen ab 1925*. Statistisches Bundesamt.
- Deutsche Bundesbank & Destatis (2015) *Sektorale und gesamtwirtschaftliche Vermögensbilanzen*. Statistisches Bundesamt.
- Deutsche Bundesbank (2016) *Vermögen und Finanzen privater Haushalte in Deutschland: Ergebnisse der Vermögensbefragung 2014*. Monatsbericht.
- Downs A (1957) An Economic Theory of Political Action in a Democracy. *The Journal of Political Economy* 65(2). 135-150.
- Du Rietz G & Henrekson M (2015) Swedish Wealth Taxation (1911-2007). In Henrekson, M. and M. Stenkula. *Swedish taxation*. 267-302. US: palgrave macmillan.
- Du Rietz G, Henrekson M & Waldenström D (2015) Swedish Inheritance and Gift Taxation (1885-2004). IFN Working Paper No. 936.
- Duda S (2010) *Das Steuerrecht im Staatshaushaltssystem der DDR*. Internationaler Verlag der Wissenschaften: Frankfurt am Main.

- Elinder M, Erixson O & Waldenström D (2016) Inheritance and Wealth Inequality: Evidence from Population Registers. IZA Discussion Paper No. 9839.
- Elinder M, Erixson O, Escabor S & Ohlsson H (2014) Estates, bequests, and inheritances in Sweden - A look into the Belinda databases. Uppsala University Working Paper 2014:14.
- Enderlein H & Ständer P (2016) Vermögenspreise in der Eurozone – Wie volatil sind Privatvermögen? Policy Paper 179 Jacques Delors Institut Berlin.
- Esping-Andersen G (1990) The Three Worlds of Welfare Capitalism. Princeton.
- EY (2016) Worldwide Estate and Inheritance Tax Guide. Ernst & Young.
- Harding CD (1958) Green's Death Duties. Fourth Edition. London: Butterworth & Co.
- Heinemann F, Spengel C, Bräutigam R & Evers MT (2015) Auswirkungen auf die effektive auf die effektive Erbschaftsteuerbelastung in Deutschland und internationaler Vergleich. Das Eckpunktepapier und der Referentenentwurf des BMF zur Erbschaftsteuer. ZEW.
- Henrekson M & Stenkula M (2015) Swedish Taxation since 1862: An Introduction and Overview. In Henrekson, M. and M. Stenkula. Swedish taxation. 1-33. US: palgrave macmillan.
- Henrekson M & Waldenström D (2015) Inheritance Taxation in Sweden, 1885–2004: The Role of Ideology, Family Firms and Tax Avoidance. IFN Working Paper No. 1032
- HM Revenue & Customs (2016) Inheritance Tax Statistics 2013-14. National Statistics.
- Houben H & Maiterth R (2011) Erbschaftsteuer und Erbschaftsteuerreform in Deutschland – Eine Bestandsaufnahme, Vierteljahrshefte zur Wirtschaftsforschung 80, DIW Berlin. 161-188.
- Kohli M, Künemund H, Schäfer A, Schupp J & Vogel C (2006) Erbschaften und ihr Einfluss auf die Vermögensverteilung. Vierteljahrshefte für Wirtschaftsforschung 75. 58-76.
- Kopczuk W (2013) Taxation of intergenerational transfers and wealth. In: Auerbach AJ, Chetty R & Saez A (ed.). Handbook of Public Economics 5. 329-390.
- Künemund H & Vogel C (2011) Erbschaften und Vermögensungleichheit. Vortrag zur Frühjahrstagung 2011 der Sektion Wirtschaftssoziologie.
- Lundberg J & Waldenström D (2016) Wealth inequality in Sweden: What can we learn from capitalized income tax data? Workingpaper.
- Meltzer AH & Richard SF (1981) A rational Theory of the Size of Government. The Journal of Political Economy 89(5). 914-927.
- Mirrlees J (1971) An exploration in the theory of optimum income taxation. Review of Economic Studies 38. 175-208.
- OECD (2016) <http://stats.oecd.org/index.aspx?DataSetCode=REV> (28.08.2016)
- Ohlsson H (2011) The legacy of the Swedish gift and inheritance tax, 1884–2004. European Review of Economic History. 15. 539-569.
- Ohlsson H, Roine J & Waldenström D (2014) Inherited wealth over the path of development: Sweden, 1810–2010. Working Paper.
- Piketty T & Saez S (2013) A theory of optimal inheritance taxation. Econometrica 81(5). 1851-1886.
- Piketty T & Zucman G (2014) Capital is Back - Wealth-Income Ratios in Rich Countries 1700-2010. Quarterly Journal of Economics 129(3). 1155-1210.
- Piketty T & Zucman G (2015) Wealth and Inheritance in the Long Run. In A.B. Atkinson and F. Bourguignon. Handbook of Income Distribution, Volume 2B. Elsevier Science. Amsterdam. 1303-1368.

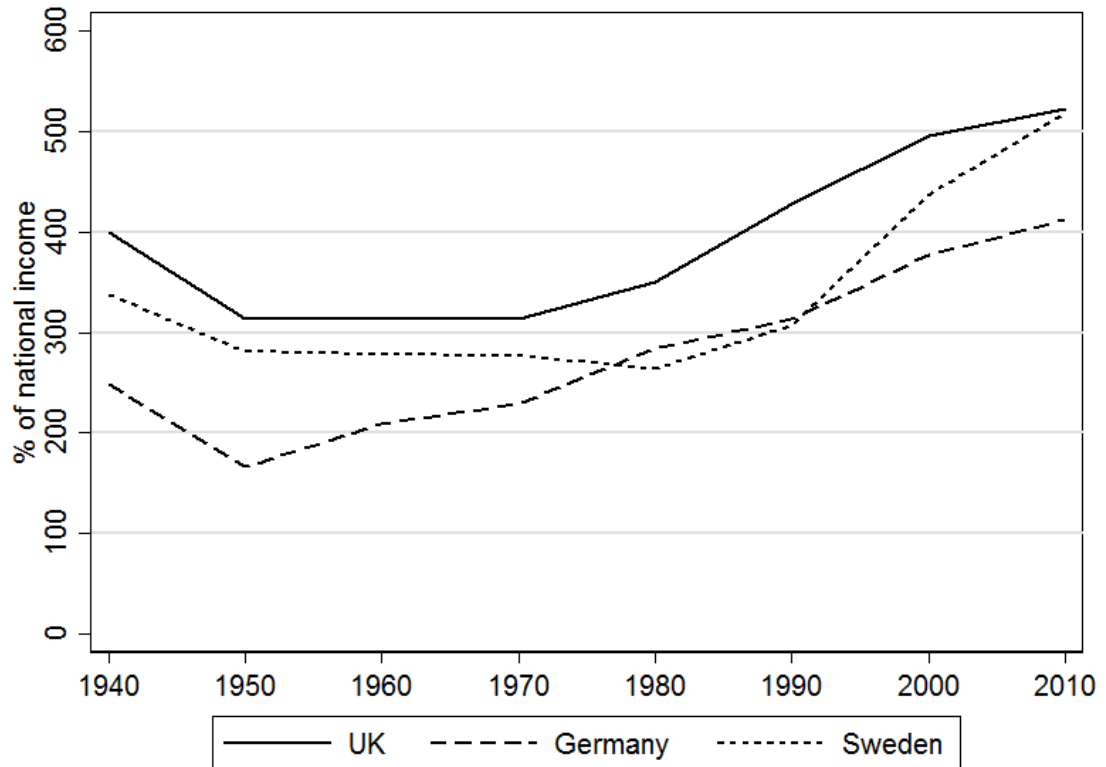


- Piketty T (2014) *Capital in the Twenty-First Century*. Harvard University Press.
- Recker ML (2009) *Geschichte der Bundesrepublik Deutschland*. München: C.H.Beck.
- Rhodes M (2000) *Restructuring the British Welfare State: Between Domestic Constraints and Global Imperatives*. In: Scharpf FW & Schmidt VA (ed.). *Welfare and Work in the Open Economy Vol II*. 19-68.
- Scheffler W & Spengel C (2004) *Erbschaftsteuerbelastung im internationaler Vergleich*. Baden-Baden: Nomos.
- Scheve K & Stasavage D (2012) *Democracy, War, and Wealth - Lessons from Two Centuries of Inheritance Taxation*. *American Political Science Review*. 106(1). 81-102.
- Schmeilzl B (2016) *Schottland ist nicht England: Vorsicht im Erbrecht und Familienrecht*. <http://www.cross-channel-lawyers.de/schottland-ist-nicht-england-vorsicht-im-erbrecht-und-familienrecht/> (06.11.2016)
- Scholz B & Truger A (2016) *Erbschaftsteuer-Reform 2016: Eine Aktualisierung der Fallbeispiele nach dem Kompromiss im Vermittlungsausschuss*. Kurzexpertise im Auftrag von Campact.
- Schratzstaller M (2013) *Vermögensbezogene Steuern – Ansatzpunkte, internationaler Vergleich und Optionen für Deutschland*. WIFO.
- Schröder H-C (2010) *Englische Geschichte*. München: C.H.Beck.
- SNA (2008) *System of National Accounts 2008*. EU, IMF, OECD, UN, WB.
- Spiegel (1970) *Einheitswert – Faust im Nacken*. *Der Spiegel* Nr. 18.
- Sureth C, Müller J, Houben H & Maiterth R (2008) *Auswirkungen einer Reform des Erbschaft- und Schenkungsteuergesetzes auf das Steueraufkommen unter besonderer Berücksichtigung einer verkehrswertorientierten Bewertung von Unternehmens- und Grundvermögen*. In: Oestreicher A, (ed.). *Unternehmensbesteuerung 2008: Neue Wege gehen*. 183-200.
- Tiefensee A & Westermeier C (2016) *Intergenerational transfers and wealth in the Euro area - The relevance of inheritances and gifts in absolute and relative terms*. *DIW Discussion Paper* 1556.
- Tuchtenhagen R (2008) *Kleine Geschichte Schwedens*. München: C.H.Beck
- Waldenström D (2016) *The National Wealth of Sweden, 1810-2014*. *Scandinavian Economic History Review* 64(1). 36-54.
- Wolff E & Gittleman M (2014): *Inheritances and the distribution of wealth or whatever happened to the great inheritance boom?* *Journal of Economic Inequality* 12, 439-468.

## Appendix

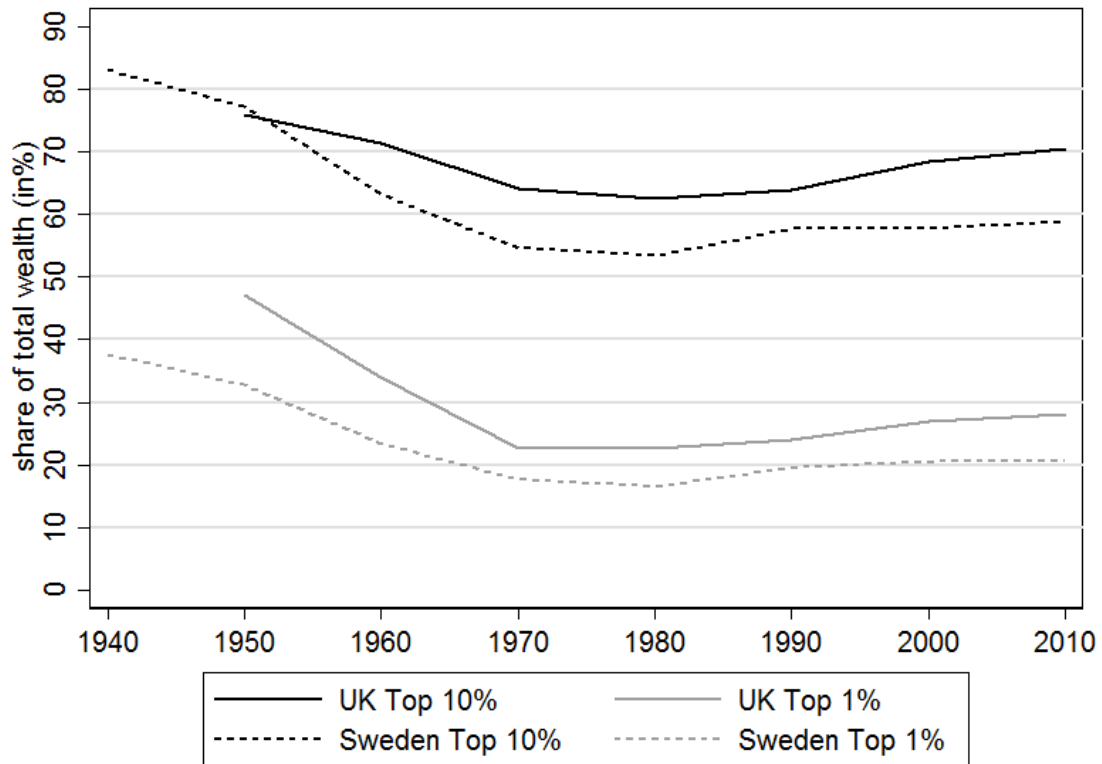
### Part A: Figures

Figure A.4.1: Private wealth as percent of national income in the UK, Germany, Sweden, 1940-2010



Source: Based on data appendix of Piketty & Zucman (2014): <http://piketty.pse.ens.fr/fr/capitalisback> and Waldenström (2016): <http://www.uueconomics.se/danielw/SNWD.htm> (both 29.03.2016)

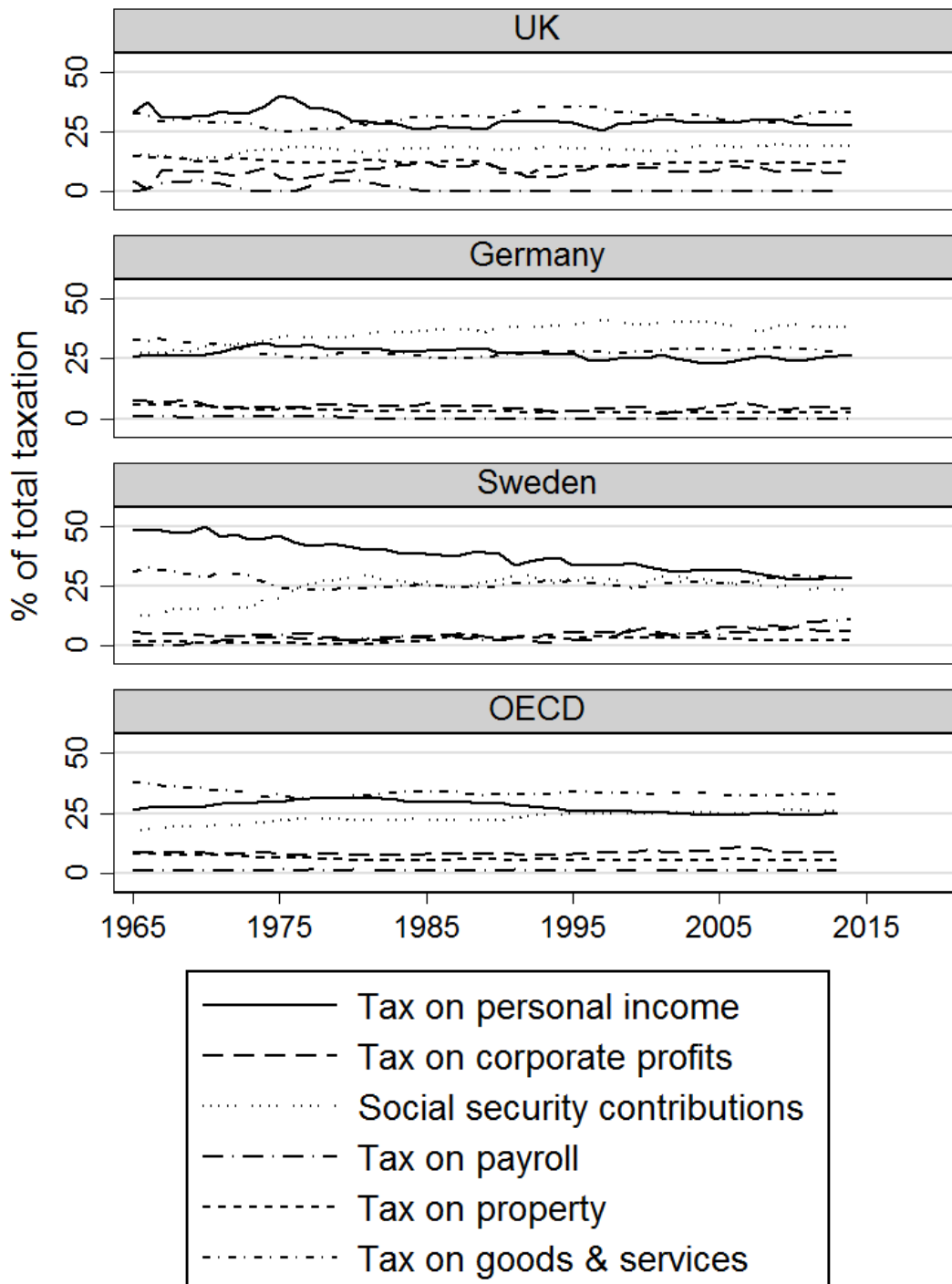
Figure A.4.2: Top 10 and 1 percent share in total wealth in the UK and Sweden, 1945-2005\*



\* Data not available for Germany.

Source: Based on data appendix of Piketty (2014): <http://piketty.pse.ens.fr/en/capital21c2> (29.03.2016)

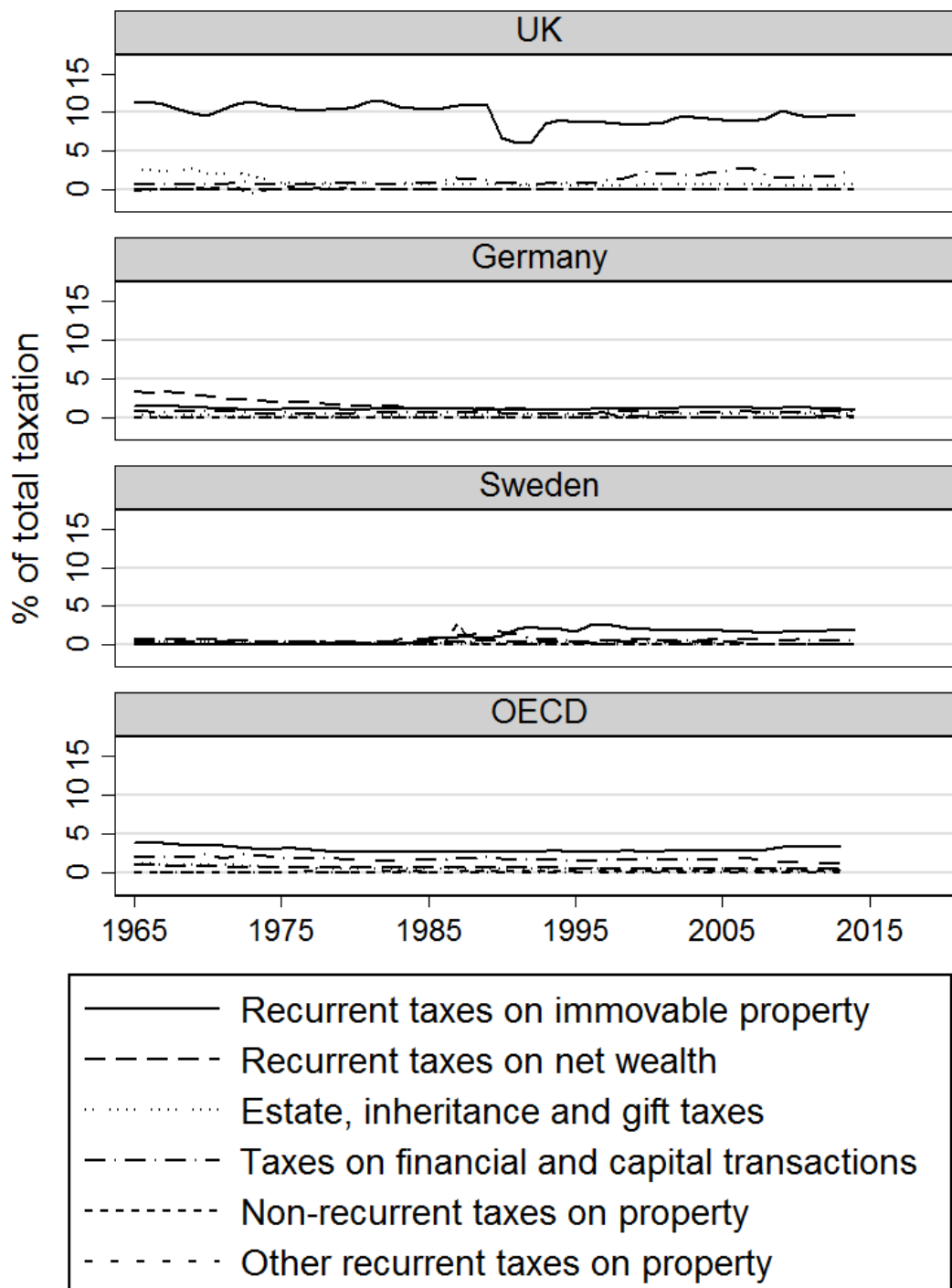
Figure A.4.3: Taxes and social security contributions as a percentage of total taxation in the UK Germany and Sweden, 1965-2014\*



\* Not available before 1965.

Source: Based on OECD.Stat (2016)

Figure A.4.4: Components of taxes on property as a percentage of total taxation in the UK Germany and Sweden, 1965-2014\*



\* Not available before 1965.

Source: Based on OECD.Stat (2016)

## Part B: Tables

**Table A.4.1: Nominal private wealth per capita in the UK, Germany and Sweden in 1955, 1975, 1995 and 2014**

|                |        | 1955   | 1975   | 1995    | 2014*     |
|----------------|--------|--------|--------|---------|-----------|
| United Kingdom | Pounds | 1,070  | 4,990  | 44,380  | 151,783   |
| Germany        | Euro   | 2,820  | 17,910 | 59,620  | 131,631   |
| Sweden         | Kronen | 14,730 | 68,040 | 396,040 | 1,569,457 |

\* 2015 not available

Source: Based on data appendix of Waldenström (2016): <http://www.uueconomics.se/danielw/SNWD.htm>, Piketty & Zucman (2014): <http://piketty.pse.ens.fr/fr/capitalisback>, ONS national balance sheet: <https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/bulletins/nationalbalancesheet/2016estimates>, ONS population <http://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/2015-06-25>, Deutsche Bundesbank & Destatis (2015), Destatis population: [https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/Bevoelkerung/Bevoelkerungsstand/Tabellen\\_/Irbev03.html](https://www.destatis.de/DE/ZahlenFakten/GesellschaftStaat/Bevoelkerung/Bevoelkerungsstand/Tabellen_/Irbev03.html) (all 28.08.2016)

**Table A.4.2: Nominal GDP per capita (twice) in the UK, Germany and Sweden in 1955, 1975, 1995 and 2015**

| Year           |        | 1955  |        | 1975   |        | 1995    |         | 2015    |         |
|----------------|--------|-------|--------|--------|--------|---------|---------|---------|---------|
|                |        | 1     | 2      | 1      | 2      | 1       | 2       | 1       | 2       |
| United Kingdom | Pounds | 379   | 758    | 1,943  | 3 886  | 13,516  | 27,032  | 28,644  | 57,288  |
| Germany        | Euro   | 1,868 | 3,736  | 8,912  | 17,824 | 23,354  | 46,708  | 37,130  | 74,260  |
| Sweden         | Kronen | 8,000 | 16,000 | 41,419 | 82,838 | 213,388 | 426,776 | 427,000 | 854,000 |

Source: OECD: [http://stats.oecd.org/index.aspx?DatasetCode=PDB\\_LV](http://stats.oecd.org/index.aspx?DatasetCode=PDB_LV), ONS: <http://webarchive.nationalarchives.gov.uk/20160105160709/http://www.ons.gov.uk/ons/datasets-and-tables/data-selector.html?coid=IHXT&dataset=ukeya&table-id=X11>, Destatis (2016), SCB: [http://www.scb.se/en\\_/Finding-statistics/Statistics-by-subject-area/National-Accounts/National-Accounts/National-Accounts-quarterly-and-annual-estimates/#c\\_li\\_377031](http://www.scb.se/en_/Finding-statistics/Statistics-by-subject-area/National-Accounts/National-Accounts/National-Accounts-quarterly-and-annual-estimates/#c_li_377031) (all 29.08.2016)

**Table A.4.3: Estate legislation in the United Kingdom in 1955, 1975, 1995 and 2015**

|   | 1955 (estate duty)   | 1975 (capital transfer tax)                               | 1995 (inheritance tax)   | 2015 (inheritance tax) |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
|---|--|---|--------------------------|------------------------|-------|-----|--|-------|---|-------|-------|---|-------|-------|---|-------|--------|---|-------|--------|---|--------|--------|---|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--------|----|--------|--|------------------|------------------|-------|--------------------------|---|--------|---|-----|--------|--------|---|----|--------|--------|-----|----|--------|--------|-------|----|--------|--------|-------|----|--------|--------|-------|----|--------|--------|-------|----|--------|--------|--------|----|--------|---------|--------|----|---------|---------|--------|----|---------|---------|--------|----|---------|---------|--------|----|---|----------------------------------|---|------------------------|-----|-----|----|-----|----|----|-----|----|----|-----|----|----|-----|----|---|----|---|---|--|
| <b>Tax classes</b>  | not applicable   | not applicable  | not applicable           | not applicable         |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| <b>Tax rates</b>  | <p>Inheritance and gifts within five years before death from one person are accumulated to one estate:</p> <table border="1"> <thead> <tr> <th>Value of the taxable acquisition up to and including £...</th> <th>Rate of tax in percent</th> <th>Small margins levels</th> </tr> </thead> <tbody> <tr><td>3,000</td><td>Nil</td><td></td></tr> <tr><td>4,000</td><td>1</td><td>3,030</td></tr> <tr><td>5,000</td><td>2</td><td>4,040</td></tr> <tr><td>7,500</td><td>3</td><td>5,051</td></tr> <tr><td>10,000</td><td>4</td><td>7,578</td></tr> <tr><td>12,500</td><td>6</td><td>10,212</td></tr> <tr><td>15,000</td><td>8</td><td>12,771</td></tr> <tr><td>17,500</td><td>10</td><td>15,333</td></tr> <tr><td>20,000</td><td>12</td><td>17,897</td></tr> <tr><td>25,000</td><td>15</td><td>20,705</td></tr> <tr><td>30,000</td><td>18</td><td>25,914</td></tr> <tr><td>35,000</td><td>21</td><td>31,139</td></tr> <tr><td>40,000</td><td>24</td><td>36,381</td></tr> </tbody> </table> | Value of the taxable acquisition up to and including £... | Rate of tax in percent   | Small margins levels   | 3,000 | Nil |  | 4,000 | 1 | 3,030 | 5,000 | 2 | 4,040 | 7,500 | 3 | 5,051 | 10,000 | 4 | 7,578 | 12,500 | 6 | 10,212 | 15,000 | 8 | 12,771 | 17,500 | 10 | 15,333 | 20,000 | 12 | 17,897 | 25,000 | 15 | 20,705 | 30,000 | 18 | 25,914 | 35,000 | 21 | 31,139 | 40,000 | 24 | 36,381 | <p>Inheritances and gifts within three years before death from one person are accumulated to one estate (gifts over three years before death are taken into account to determine the starting point of the rate of tax):</p> <table border="1"> <thead> <tr> <th>Lower limit in £</th> <th>Upper limit in £</th> <th>Tax £</th> <th>+ Rate of tax in percent</th> </tr> </thead> <tbody> <tr><td>0</td><td>15,000</td><td>0</td><td>Nil</td></tr> <tr><td>15,000</td><td>20,000</td><td>0</td><td>10</td></tr> <tr><td>20,000</td><td>25,000</td><td>500</td><td>15</td></tr> <tr><td>25,000</td><td>30,000</td><td>1,250</td><td>20</td></tr> <tr><td>30,000</td><td>40,000</td><td>2,250</td><td>25</td></tr> <tr><td>40,000</td><td>50,000</td><td>4,750</td><td>30</td></tr> <tr><td>50,000</td><td>60,000</td><td>7,750</td><td>35</td></tr> <tr><td>60,000</td><td>80,000</td><td>11,250</td><td>40</td></tr> <tr><td>80,000</td><td>100,000</td><td>19,250</td><td>45</td></tr> <tr><td>100,000</td><td>120,000</td><td>28,250</td><td>50</td></tr> <tr><td>120,000</td><td>150,000</td><td>38,250</td><td>55</td></tr> <tr><td>150,000</td><td>500,000</td><td>54,750</td><td>60</td></tr> </tbody> </table> | Lower limit in £ | Upper limit in £ | Tax £ | + Rate of tax in percent | 0 | 15,000 | 0 | Nil | 15,000 | 20,000 | 0 | 10 | 20,000 | 25,000 | 500 | 15 | 25,000 | 30,000 | 1,250 | 20 | 30,000 | 40,000 | 2,250 | 25 | 40,000 | 50,000 | 4,750 | 30 | 50,000 | 60,000 | 7,750 | 35 | 60,000 | 80,000 | 11,250 | 40 | 80,000 | 100,000 | 19,250 | 45 | 100,000 | 120,000 | 28,250 | 50 | 120,000 | 150,000 | 38,250 | 55 | 150,000 | 500,000 | 54,750 | 60 | <p>Inheritances:<br/>above £ 154,000: 40 percent</p> <p>Gifts (without reservation of benefit):</p> <ul style="list-style-type: none"> <li>- Gifts are tax free, if the donor lives for another seven years</li> <li>- If donor dies before and all transfers sum up to more than £ 154,000, for the amount above the threshold the following percentage apply:</li> </ul> <table border="1"> <thead> <tr> <th>Years between transfer and death</th> <th>Percentage of the rate for inheritances</th> <th>Rate of tax in percent</th> </tr> </thead> <tbody> <tr><td>0-3</td><td>100</td><td>40</td></tr> <tr><td>3-4</td><td>80</td><td>32</td></tr> <tr><td>4-5</td><td>60</td><td>24</td></tr> <tr><td>5-6</td><td>40</td><td>16</td></tr> <tr><td>6-7</td><td>16</td><td>8</td></tr> <tr><td>7+</td><td>0</td><td>0</td></tr> </tbody> </table> <p>Inheritance Tax Act 1984, s. 7 and schedule 1, Finance Act 1986 schedule 19, para. 2(1)(b), para. 2(4)</p> | Years between transfer and death | Percentage of the rate for inheritances | Rate of tax in percent | 0-3 | 100 | 40 | 3-4 | 80 | 32 | 4-5 | 60 | 24 | 5-6 | 40 | 16 | 6-7 | 16 | 8 | 7+ | 0 | 0 | <p>Inheritances:<br/>above £ 325,000: 40 percent</p> <p>Gifts (without reservation of benefit):</p> <p>---<sup>a</sup></p> <ul style="list-style-type: none"> <li>- If donor dies before and all transfers sum up to more than £ 325,000, for the amount above the threshold the following percentage apply:</li> </ul> <p>---<sup>a</sup></p> <p>Inheritance Tax Act 1984, s. 7 and schedule 1, Finance Act 1986 schedule 19, para. 2(1)(b), para. 2(4), Finance Act 2007 (c. 11), s. 4</p> |
| Value of the taxable acquisition up to and including £... | Rate of tax in percent   | Small margins levels                                      |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 3,000   | Nil  |   |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 4,000   | 1  | 3,030   |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 5,000   | 2  | 4,040   |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 7,500   | 3  | 5,051   |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 10,000  | 4  | 7,578   |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 12,500  | 6  | 10,212  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 15,000  | 8  | 12,771  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 17,500  | 10   | 15,333  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 20,000  | 12   | 17,897  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 25,000  | 15   | 20,705  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 30,000  | 18   | 25,914  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 35,000  | 21   | 31,139  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 40,000  | 24   | 36,381  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| Lower limit in £  | Upper limit in £   | Tax £   | + Rate of tax in percent |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 0   | 15,000   | 0   | Nil                      |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 15,000  | 20,000   | 0   | 10                       |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 20,000  | 25,000   | 500   | 15                       |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 25,000  | 30,000   | 1,250   | 20                       |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 30,000  | 40,000   | 2,250   | 25                       |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 40,000  | 50,000   | 4,750   | 30                       |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 50,000  | 60,000   | 7,750   | 35                       |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 60,000  | 80,000   | 11,250  | 40                       |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 80,000  | 100,000  | 19,250  | 45                       |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 100,000   | 120,000  | 28,250  | 50                       |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 120,000   | 150,000  | 38,250  | 55                       |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 150,000   | 500,000  | 54,750  | 60                       |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| Years between transfer and death                          | Percentage of the rate for inheritances  | Rate of tax in percent                                    |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 0-3   | 100  | 40  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 3-4   | 80   | 32  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 4-5   | 60   | 24  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 5-6   | 40   | 16  |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 6-7   | 16   | 8   |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |
| 7+  | 0  | 0   |                          |                        |       |     |  |       |   |       |       |   |       |       |   |       |        |   |       |        |   |        |        |   |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |        |    |        |  |                  |                  |       |                          |   |        |   |     |        |        |   |    |        |        |     |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |   |                                  |   |                        |     |     |    |     |    |    |     |    |    |     |    |    |     |    |   |    |   |   |  |

Estate and inheritance taxation

| 1955 (estate duty)  |    |           |  | 1975 (capital transfer tax)          |                  |           |                       | 1995 (inheritance tax) |  | 2015 (inheritance tax) |  |
|---|----|-----------|--|--------------------------------------|------------------|-----------|-----------------------|------------------------|--|------------------------|--|
| 45,000  | 28 | 42,222    |  | 500,000                              | 1,000,000        | 264,750   | 65                    |                        |  |                        |  |
| 50,000  | 31 | 46,956    |  | 1,000,000                            | 2,000,000        | 589,750   | 70                    |                        |  |                        |  |
| 60,000  | 35 | 53,076    |  | 2,000,000                            |                  | 1,289,750 | 75                    |                        |  |                        |  |
| 75,000  | 40 | 65,000    |  | Gifts over three years before death: |                  |           |                       |                        |  |                        |  |
| 100,000   | 45 | 81,814    |  |                                      |                  |           |                       |                        |  |                        |  |
| 150,000   | 50 | 110,000   |  |                                      |                  |           |                       |                        |  |                        |  |
| 200,000   | 55 | 166,666   |  |                                      |                  |           |                       |                        |  |                        |  |
| 300,000   | 60 | 225,000   |  |                                      |                  |           |                       |                        |  |                        |  |
| 500,000   | 65 | 342,857   |  |                                      |                  |           |                       |                        |  |                        |  |
| 750,000   | 70 | 583,333   |  |                                      |                  |           |                       |                        |  |                        |  |
| 1,000,000   | 75 | 900,000   |  |                                      |                  |           |                       |                        |  |                        |  |
| over 1,000,000  | 80 | 1,250,000 |  |                                      |                  |           |                       |                        |  |                        |  |
| <p>Exceptions if acquisition is just above the next value limit (max small margins levels see above): The upper limit applicable to the next lower rate is taxed with the lower rate and the amount exceeding this upper limit is added. This is the tax payable.</p> <p>Finance Act 1949, s. 28(1) and schedule 7 and Finance Act 1954, s. 32(1), Finance Act 1914, s. 13(1)</p> |    |           |  |                                      |                  |           |                       |                        |  |                        |  |
|   |    |           |  | Lower limit in £                     | Upper limit in £ | Tax £     | + Rate of tax Percent |                        |  |                        |  |
|   |    |           |  | 0                                    | 15,000           | 0         | Nil                   |                        |  |                        |  |
|   |    |           |  | 15,000                               | 20,000           | 0         | 5                     |                        |  |                        |  |
|   |    |           |  | 20,000                               | 25,000           | 250       | 7.5                   |                        |  |                        |  |
|   |    |           |  | 25,000                               | 30,000           | 625       | 10                    |                        |  |                        |  |
|   |    |           |  | 30,000                               | 40,000           | 1,125     | 12.5                  |                        |  |                        |  |
|   |    |           |  | 40,000                               | 50,000           | 2,375     | 15                    |                        |  |                        |  |
|   |    |           |  | 50,000                               | 60,000           | 3,875     | 17.5                  |                        |  |                        |  |
|   |    |           |  | 60,000                               | 80,000           | 5,625     | 50                    |                        |  |                        |  |
|   |    |           |  | 80,000                               | 100,000          | 15,625    | 22.5                  |                        |  |                        |  |
|   |    |           |  | 100,000                              | 120,000          | 20,125    | 27.5                  |                        |  |                        |  |
|   |    |           |  | 120,000                              | 150,000          | 25,625    | 35                    |                        |  |                        |  |
|   |    |           |  | 150,000                              | 200,000          | 36,125    | 42.5                  |                        |  |                        |  |



|                   | 1955 (estate duty)   | 1975 (capital transfer tax)   | 1995 (inheritance tax)  | 2015 (inheritance tax)   |        |    |         |         |        |    |         |         |         |    |         |           |         |    |           |           |         |    |           |  |           |    |  |  |
|-------------------|--|---|---|--|--------|----|---------|---------|--------|----|---------|---------|---------|----|---------|-----------|---------|----|-----------|-----------|---------|----|-----------|--|-----------|----|--|--|
|                   |  | <table border="1"> <tr> <td>200,000</td> <td>250,000</td> <td>57,375</td> <td>50</td> </tr> <tr> <td>250,000</td> <td>300,000</td> <td>82,375</td> <td>55</td> </tr> <tr> <td>300,000</td> <td>500,000</td> <td>109,875</td> <td>60</td> </tr> <tr> <td>500,000</td> <td>1,000,000</td> <td>229,875</td> <td>65</td> </tr> <tr> <td>1,000,000</td> <td>2,000,000</td> <td>554,875</td> <td>70</td> </tr> <tr> <td>2,000,000</td> <td></td> <td>1,254,875</td> <td>75</td> </tr> </table> <p>Finance Act 1975, s. 37, Chown (1975), p 16</p> | 200,000   | 250,000  | 57,375 | 50 | 250,000 | 300,000 | 82,375 | 55 | 300,000 | 500,000 | 109,875 | 60 | 500,000 | 1,000,000 | 229,875 | 65 | 1,000,000 | 2,000,000 | 554,875 | 70 | 2,000,000 |  | 1,254,875 | 75 |  |  |
| 200,000           | 250,000  | 57,375  | 50  |  |        |    |         |         |        |    |         |         |         |    |         |           |         |    |           |           |         |    |           |  |           |    |  |  |
| 250,000           | 300,000  | 82,375  | 55  |  |        |    |         |         |        |    |         |         |         |    |         |           |         |    |           |           |         |    |           |  |           |    |  |  |
| 300,000           | 500,000  | 109,875   | 60  |  |        |    |         |         |        |    |         |         |         |    |         |           |         |    |           |           |         |    |           |  |           |    |  |  |
| 500,000           | 1,000,000  | 229,875   | 65  |  |        |    |         |         |        |    |         |         |         |    |         |           |         |    |           |           |         |    |           |  |           |    |  |  |
| 1,000,000         | 2,000,000  | 554,875   | 70  |  |        |    |         |         |        |    |         |         |         |    |         |           |         |    |           |           |         |    |           |  |           |    |  |  |
| 2,000,000         |  | 1,254,875   | 75  |  |        |    |         |         |        |    |         |         |         |    |         |           |         |    |           |           |         |    |           |  |           |    |  |  |
| <b>Allowances</b> | <p>Inheritance (nil-rate band, taxable limit): £ 3,000</p> <p>If the acquisition is below the taxable limit, no tax has to be paid. If the acquisition is above the taxable limit, the entire lot is taxed.</p> <p>Gifts:</p> <ul style="list-style-type: none"> <li>- Exempt if donor lives for another five years, if not see tax rates</li> <li>- No tax on individual gifts worth up to £ 100 each (£ 500 in special cases). Normal expenditure out of income. No tax on wedding gifts.</li> </ul> <p>Harding (1958), p. 193, Finance Act 1954, s. 32(1), Finance (1909-10) Act 1910, s. 59(2), Finance Act 1949, s. 33(1)</p> | <p>Inheritance (nil-rate band): £ 15,000</p> <p>Gifts:</p> <ul style="list-style-type: none"> <li>- Generally exempt: £ 1,000 each year. Leftover annual exemption can be carried over from one tax year to the next – maximum exemption £ 2,000. No tax on individual gifts worth up to £ 100 each. Normal expenditure out of income. No tax on wedding gifts depending on value and relationship.</li> </ul> <p>All transfers between spouses are exempt.</p> <p>Chown (1975), pp. 14-15, Finance Act 1975, s. 6, 37</p>                  | <p>Inheritance (nil-rate band): £ 154,000</p> <p>Gifts:</p> <ul style="list-style-type: none"> <li>- Exempt if donor lives for another seven years, if not see tax rates for gifts.</li> <li>- Generally exempt: £ 3,000 each year. Leftover annual exemption can be carried over from one tax year to the next – maximum exemption £ 6,000. No tax on individual gifts worth up to £ 250 each. Normal expenditure out of income. Wedding gifts tax free depending on value and relationship.</li> </ul> <p>All transfers between spouses are exempt.</p> <p>Inheritance Tax Act 1984, s. 7, 8A, 18, 19, 20, 21, 22 and schedule 1, Finance Act 1986 Sch. 19, para. 2(1)(b)</p> | <p>Inheritance (nil-rate band): £ 325,000</p> <p>Gifts:</p> <p>---<sup>a</sup></p> <p>---<sup>a</sup></p> <p>All transfers between spouses and civil partners are exempt. The not used nil-rate band (up to £ 325,000) can be transferred to the husband's, wife's or civil partner's estate when they die.</p> <p>Inheritance Tax Act 1984, s. 7, 8A, 18, 19, 20, 21, 22 and schedule 1, Finance Act 1986 schedule 19, para. 2(1)(b), The Tax and Civil Partnership Regulations 2005 (S.I. 2005/3229), Finance Act 2007 (c. 11), s. 4, Finance Act 2008 (c. 9), s. 10, schedule 4 para. 2</p> |        |    |         |         |        |    |         |         |         |    |         |           |         |    |           |           |         |    |           |  |           |    |  |  |
| <b>Valuation</b>  | <p>Guideline: market value</p> <p>Act of 1894, s. 7(5)</p> <p>Shares in a company controlled by not more than five persons, where the deceased himself had the control / was beneficially interested in more than half of the aggregated</p>   | <p>Guideline: market value</p> <p>Finance Act 1975, s. 38</p>   | <p>Guideline: market value</p> <p>Inheritance Tax Act 1984, s. 160</p>  | <p>---<sup>a</sup></p>   |        |    |         |         |        |    |         |         |         |    |         |           |         |    |           |           |         |    |           |  |           |    |  |  |

## Estate and inheritance taxation

|                             | 1955 (estate duty)  | 1975 (capital transfer tax)   | 1995 (inheritance tax)   | 2015 (inheritance tax)   |
|-----------------------------|---|---|--|--|
|                             | <p>dividends and debenture interest / in at last one-half of the nominal capital: valued by reference to the value of the company's assets.</p> <p>Harding (1958), p. 13</p>  |   |  |  |
| <b>Exemptions</b>           | <p>Industrial hereditaments, plant and machinery used in businesses: appropriate tax rate is reduced by 45 percent.</p> <p>Finance Act 1949, s. 28(1) and schedule 7 and Finance Act 1954, s. 32(1)</p>   |   | <p>Business / shares (depending on business purpose etc. e.g. not applicable if the company mainly deals with securities, stocks or shares, land or buildings, or in making or holding investments):</p> <ul style="list-style-type: none"> <li>- 100 percent relief on a business or interest in a business; shares in an unlisted company which secured control over the company</li> <li>- 50 percent relief on shares controlling more than 50 percent of the voting rights in a listed company; land, buildings or machinery owned by the deceased and used in a business they were a partner in or controlled</li> </ul> <p>Requirements:</p> <ul style="list-style-type: none"> <li>- donor was owner two years before transfer</li> <li>- Inheritance: In case of sale it must be to a company that will carry on the business and the estate will be paid mainly in shares of that company.</li> <li>- Gift: Recipient must keep business property or assets as a going concern until the death of the donor if they want to keep the relief.</li> </ul> <p>Inheritance Tax Act 1984, s. 104, 105, 106, Finance (No. 2) Act 1992 (c. 48), s. 73, schedule 14 para. 1(a, b), 8, 9.</p> | --- <sup>a</sup>   |
| <b>Intestate succession</b> | <p>If the deceased was survived by a spouse they will take:</p> <ul style="list-style-type: none"> <li>- without issue (legitimate children, grandchildren and remoter descendants): the statutory legacy that applies and half of the residue. The other half share goes to surviving parents or other relatives</li> </ul> <p><i>England &amp; Wales</i></p> <ul style="list-style-type: none"> <li>- with issue: The personal chattels, the statutory legacy that applies and a life interest in half the residue. The issue take</li> </ul> | <p>---<sup>a</sup></p> <p>Illegitimate children have the right to inherit on the death of a parent.</p> <p>Family Law Reform Act 1969</p> <p>Adopted children have the same rights as natural children.</p> <p>Adoption Act 1976, s. 39 (in force since 1976)</p> | <p>---<sup>a</sup></p> <p>Illegitimate children have the right to inherit on the death of a sibling.</p> <p>Family Law Reform Act 1987</p>   | <p>---<sup>a</sup></p> <p>If the deceased is survived by a spouse they will take:</p> <ul style="list-style-type: none"> <li>- without issue (children, grandchildren and remoter descendants): the whole intestate estate.</li> </ul> <p><i>England &amp; Wales</i></p> <ul style="list-style-type: none"> <li>- with issue: --- and an absolute</li> </ul> |

|  | 1955 (estate duty)   | 1975 (capital transfer tax) | 1995 (inheritance tax) | 2015 (inheritance tax)  |
|--|--|-----------------------------|------------------------|---|
|  | <p>the other half share on statutory trust.</p> <p><i>Scotland</i></p> <p>- with issue: If there are legitimate children then they will be entitled to the residue of the estate after payment of any prior and legal rights to the spouse.</p> <p><i>Northern Ireland</i></p> <p>- with issue: The personal chattels, the statutory legacy that applies and a share of residue (when one legitimate child survives, half the residue absolutely, or when more than one child survives, one third of the residue absolutely).</p> <p>If there was no surviving spouse but the deceased had legitimate children the estate will be distributed amongst them.</p> <p>If there is no surviving spouse and no legitimate children the estate will be distributed amongst the deceased's other relatives (in the following order: decedents of children, parents, siblings or their descendants, half siblings or their descendants, grandparents, uncles/ants and their descendants, half uncles/ants and their descendants).</p> <p>If no living relatives can be found the estate will pass to the Crown as bona vacantia.</p> <p>IHTM12111 ff., IHTM 12161 ff., IHTM12141 ff.</p> |                             |                        | <p>interest in one half of the residue.</p> <p>IHTM12111 ff., IHTM 12161 ff., IHTM12141 ff.</p> <p>Civil partners are equal to spouses.</p> <p>Civil Partnership Act 2004</p> |

a --- means „nothing substantially changed compared with the last time point“.

Sources: Finance Acts, Inheritance Tax Acts, Inheritance Tax Manual (IHTM), Family Law Reform Acts, Adoption Act, Civil Partnership Act, Chown (1975), Harding (1958)

**Table A.4.4: Inheritance legislation in Germany in 1955, 1975, 1995/96<sup>a</sup> and 2015/16<sup>b</sup>**

|  | 1955  | 1975   | 1995/96  | 2015/16  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
|--|---|--|--|--|----|--|--|---|----|-----|----|---|-------|---|---|---|---|----|--------|-----|---|-----|----|----|--------|---|---|---|----|----|--------|-----|---|------|----|----|--------|---|---|----|----|----|--------|-----|---|------|----|----|--------|---|----|----|----|----|--|--|-----------------------------|--|--|--|---|----|-----|----|--------|---|---|----|----|--------|-----|---|------|----|--------|---|---|----|----|--------|-----|---|------|----|--------|---|----|----|----|---------|-----|----|------|----|---------|---|----|----|----|--|--|-----------------------------|--|--|---|----|-----|--------|---|----|----|---------|----|----|----|---------|----|----|----|-----------|----|----|----|------------|----|----|----|------------|----|----|----|-----------------|----|----|----|--|--|-----------------------------|--|--|---|----|-----|--------|---|----|----|---------|----|----|----|---------|----|----|----|-----------|----|----|----|------------|----|----|----|------------|----|----|----|-----------------|----|----|----|
| <b>Tax classes</b>   | <p>(I)<br/>spouse, legitimate or adopted children and step children, illegitimate children in case of acquisition from the mother, in case of acquisition from the father only if he has acknowledged paternity</p> <p>(II)<br/>descendants from all children named under (I) – exceptions for adopted children</p> <p>(III)<br/>parents, grandparents and other forefathers, step-parents, full and halfblooded siblings</p> <p>(IV)<br/>children in-law, parents in-law, descendants of the first degree from siblings</p> <p>(V)<br/>all others and special-purpose allocations</p> <p>§ 9 ErbStG</p>  | <p>(I)<br/>spouse, legitimate and illegitimate or adopted children and step children, descendants from dead children – exceptions for adopted children</p> <p>(II)<br/>descendants from living children and step-children – exceptions for adopted children</p> <p>(III)<br/>parents and forefathers, adoptive parents, siblings, descendants of the first degree of siblings, stepparents, children in-law, parents in-law, divorced spouse</p> <p>(IV)<br/>all others and special-purpose allocations</p> <p>§ 15 ErbStG</p> | <p>(I)<br/>spouse, children and step children, descendants from children and step children, parents and forefathers by acquisition upon death</p> <p>(II)<br/>parents and forefathers if not in tax class (I), siblings, descendants of the first degree of siblings, stepparents, children in-law, parents in-law, divorced spouse</p> <p>(III)<br/>all others and special-purpose allocations</p> <p>§ 15 ErbStG</p> | <p>(I)<br/>spouse / civil partner, children and step children, descendants from children and step children, parents and forefathers by acquisition upon death</p> <p>(II)<br/>parents and forefathers if not in tax class (I), siblings, descendants of the first degree of siblings, stepparents, children in-law, parents in-law, divorced spouse / civil partner of a repealed partnership</p> <p>(III)<br/>all others and special-purpose allocations</p> <p>§ 15 ErbStG</p> |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| <b>Tax rates</b>   | <table border="1"> <thead> <tr> <th rowspan="2">Value of the taxable acquisition up to and including ... Euro<sup>c</sup></th> <th colspan="5">Percentage in the tax class</th> </tr> <tr> <th>I</th> <th>II</th> <th>III</th> <th>IV</th> <th>V</th> </tr> </thead> <tbody> <tr> <td>5,113</td> <td>2</td> <td>4</td> <td>6</td> <td>8</td> <td>14</td> </tr> <tr> <td>10,226</td> <td>2.5</td> <td>5</td> <td>7.5</td> <td>10</td> <td>16</td> </tr> <tr> <td>15,339</td> <td>3</td> <td>6</td> <td>9</td> <td>12</td> <td>18</td> </tr> <tr> <td>20,452</td> <td>3.5</td> <td>7</td> <td>10.5</td> <td>14</td> <td>20</td> </tr> <tr> <td>25,565</td> <td>4</td> <td>8</td> <td>12</td> <td>16</td> <td>22</td> </tr> <tr> <td>51,129</td> <td>4.5</td> <td>9</td> <td>13.5</td> <td>18</td> <td>24</td> </tr> <tr> <td>76,694</td> <td>5</td> <td>10</td> <td>15</td> <td>20</td> <td>26</td> </tr> </tbody> </table> | Value of the taxable acquisition up to and including ... Euro <sup>c</sup>   | Percentage in the tax class  |  |    |  |  | I | II | III | IV | V | 5,113 | 2 | 4 | 6 | 8 | 14 | 10,226 | 2.5 | 5 | 7.5 | 10 | 16 | 15,339 | 3 | 6 | 9 | 12 | 18 | 20,452 | 3.5 | 7 | 10.5 | 14 | 20 | 25,565 | 4 | 8 | 12 | 16 | 22 | 51,129 | 4.5 | 9 | 13.5 | 18 | 24 | 76,694 | 5 | 10 | 15 | 20 | 26 | <table border="1"> <thead> <tr> <th rowspan="2">Value of the taxable acquisition (§ 10) up to and including ... Euro</th> <th colspan="4">Percentage in the tax class</th> </tr> <tr> <th>I</th> <th>II</th> <th>III</th> <th>IV</th> </tr> </thead> <tbody> <tr> <td>25,565</td> <td>3</td> <td>6</td> <td>11</td> <td>20</td> </tr> <tr> <td>38,347</td> <td>3.5</td> <td>7</td> <td>12.5</td> <td>22</td> </tr> <tr> <td>51,129</td> <td>4</td> <td>8</td> <td>14</td> <td>24</td> </tr> <tr> <td>63,911</td> <td>4.5</td> <td>9</td> <td>15.5</td> <td>26</td> </tr> <tr> <td>76,694</td> <td>5</td> <td>10</td> <td>17</td> <td>28</td> </tr> <tr> <td>102,258</td> <td>5.5</td> <td>11</td> <td>18.5</td> <td>30</td> </tr> <tr> <td>127,823</td> <td>6</td> <td>12</td> <td>20</td> <td>32</td> </tr> </tbody> </table> | Value of the taxable acquisition (§ 10) up to and including ... Euro | Percentage in the tax class |  |  |  | I | II | III | IV | 25,565 | 3 | 6 | 11 | 20 | 38,347 | 3.5 | 7 | 12.5 | 22 | 51,129 | 4 | 8 | 14 | 24 | 63,911 | 4.5 | 9 | 15.5 | 26 | 76,694 | 5 | 10 | 17 | 28 | 102,258 | 5.5 | 11 | 18.5 | 30 | 127,823 | 6 | 12 | 20 | 32 | <table border="1"> <thead> <tr> <th rowspan="2">Value of the taxable acquisition (§ 10) up to and including ... Euro</th> <th colspan="3">Percentage in the tax class</th> </tr> <tr> <th>I</th> <th>II</th> <th>III</th> </tr> </thead> <tbody> <tr> <td>51,129</td> <td>7</td> <td>12</td> <td>17</td> </tr> <tr> <td>255,646</td> <td>11</td> <td>17</td> <td>23</td> </tr> <tr> <td>511,292</td> <td>15</td> <td>22</td> <td>29</td> </tr> <tr> <td>5,112,919</td> <td>19</td> <td>27</td> <td>35</td> </tr> <tr> <td>12,782,297</td> <td>23</td> <td>32</td> <td>41</td> </tr> <tr> <td>25,564,594</td> <td>27</td> <td>37</td> <td>47</td> </tr> <tr> <td>over 25,564,594</td> <td>30</td> <td>40</td> <td>50</td> </tr> </tbody> </table> | Value of the taxable acquisition (§ 10) up to and including ... Euro | Percentage in the tax class |  |  | I | II | III | 51,129 | 7 | 12 | 17 | 255,646 | 11 | 17 | 23 | 511,292 | 15 | 22 | 29 | 5,112,919 | 19 | 27 | 35 | 12,782,297 | 23 | 32 | 41 | 25,564,594 | 27 | 37 | 47 | over 25,564,594 | 30 | 40 | 50 | <table border="1"> <thead> <tr> <th rowspan="2">Value of the taxable acquisition (§ 10) up to and including ... Euro</th> <th colspan="3">Percentage in the tax class</th> </tr> <tr> <th>I</th> <th>II</th> <th>III</th> </tr> </thead> <tbody> <tr> <td>75,000</td> <td>7</td> <td>15</td> <td>30</td> </tr> <tr> <td>300,000</td> <td>11</td> <td>20</td> <td>30</td> </tr> <tr> <td>600,000</td> <td>15</td> <td>25</td> <td>30</td> </tr> <tr> <td>6,000,000</td> <td>19</td> <td>30</td> <td>30</td> </tr> <tr> <td>13,000,000</td> <td>23</td> <td>35</td> <td>50</td> </tr> <tr> <td>26,000,000</td> <td>27</td> <td>40</td> <td>50</td> </tr> <tr> <td>over 26,000,000</td> <td>30</td> <td>43</td> <td>50</td> </tr> </tbody> </table> | Value of the taxable acquisition (§ 10) up to and including ... Euro | Percentage in the tax class |  |  | I | II | III | 75,000 | 7 | 15 | 30 | 300,000 | 11 | 20 | 30 | 600,000 | 15 | 25 | 30 | 6,000,000 | 19 | 30 | 30 | 13,000,000 | 23 | 35 | 50 | 26,000,000 | 27 | 40 | 50 | over 26,000,000 | 30 | 43 | 50 |
| Value of the taxable acquisition up to and including ... Euro <sup>c</sup> | Percentage in the tax class   |  |  |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
|  | I   | II   | III  | IV   | V  |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 5,113  | 2   | 4  | 6  | 8  | 14 |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 10,226   | 2.5   | 5  | 7.5  | 10   | 16 |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 15,339   | 3   | 6  | 9  | 12   | 18 |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 20,452   | 3.5   | 7  | 10.5   | 14   | 20 |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 25,565   | 4   | 8  | 12   | 16   | 22 |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 51,129   | 4.5   | 9  | 13.5   | 18   | 24 |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 76,694   | 5   | 10   | 15   | 20   | 26 |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| Value of the taxable acquisition (§ 10) up to and including ... Euro       | Percentage in the tax class   |  |  |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
|  | I   | II   | III  | IV   |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 25,565   | 3   | 6  | 11   | 20   |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 38,347   | 3.5   | 7  | 12.5   | 22   |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 51,129   | 4   | 8  | 14   | 24   |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 63,911   | 4.5   | 9  | 15.5   | 26   |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 76,694   | 5   | 10   | 17   | 28   |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 102,258  | 5.5   | 11   | 18.5   | 30   |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 127,823  | 6   | 12   | 20   | 32   |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| Value of the taxable acquisition (§ 10) up to and including ... Euro       | Percentage in the tax class   |  |  |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
|  | I   | II   | III  |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 51,129   | 7   | 12   | 17   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 255,646  | 11  | 17   | 23   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 511,292  | 15  | 22   | 29   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 5,112,919  | 19  | 27   | 35   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 12,782,297   | 23  | 32   | 41   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 25,564,594   | 27  | 37   | 47   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| over 25,564,594  | 30  | 40   | 50   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| Value of the taxable acquisition (§ 10) up to and including ... Euro       | Percentage in the tax class   |  |  |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
|  | I   | II   | III  |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 75,000   | 7   | 15   | 30   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 300,000  | 11  | 20   | 30   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 600,000  | 15  | 25   | 30   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 6,000,000  | 19  | 30   | 30   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 13,000,000   | 23  | 35   | 50   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| 26,000,000   | 27  | 40   | 50   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
| over 26,000,000  | 30  | 43   | 50   |  |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |
|  |   |  | Exceptions if acquisition is just above the next value   | Exceptions if acquisition is just above the next value   |    |  |  |   |    |     |    |   |       |   |   |   |   |    |        |     |   |     |    |    |        |   |   |   |    |    |        |     |   |      |    |    |        |   |   |    |    |    |        |     |   |      |    |    |        |   |    |    |    |    |  |  |                             |  |  |  |   |    |     |    |        |   |   |    |    |        |     |   |      |    |        |   |   |    |    |        |     |   |      |    |        |   |    |    |    |         |     |    |      |    |         |   |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |  |  |                             |  |  |   |    |     |        |   |    |    |         |    |    |    |         |    |    |    |           |    |    |    |            |    |    |    |            |    |    |    |                 |    |    |    |

|                   | 1955  |     |    |      |    |    | 1975  |     |    |      |    | 1995/96                                |  | 2015/16   |  |
|-------------------|---|-----|----|------|----|----|---|-----|----|------|----|--|--|---|--|
|                   | 102,258   | 5.5 | 11 | 16.5 | 22 | 28 | 153,388   | 6.5 | 13 | 21.5 | 34 | limit (Härteausgleich).<br>§ 19 ErbStG | limit (Härteausgleich).<br>§ 19 ErbStG |   |  |
|                   | 153,388   | 6   | 12 | 18   | 24 | 30 | 204,517   | 7   | 14 | 23   | 36 |  |  |   |  |
|                   | 204,517   | 6.5 | 13 | 19.5 | 26 | 32 | 255,646   | 7.5 | 15 | 24.5 | 38 |  |  |   |  |
|                   | 255,646   | 7   | 14 | 21   | 28 | 34 | 306,775   | 8   | 16 | 26   | 40 |  |  |   |  |
|                   | 306,775   | 7.5 | 15 | 22.5 | 30 | 36 | 357,904   | 8.5 | 17 | 27.5 | 42 |  |  |   |  |
|                   | 357,904   | 8   | 16 | 24   | 32 | 38 | 409,034   | 9   | 18 | 29   | 44 |  |  |   |  |
|                   | 409,034   | 8.5 | 17 | 25.5 | 34 | 40 | 460,163   | 9.5 | 19 | 30.5 | 46 |  |  |   |  |
|                   | 460,163   | 9   | 18 | 27   | 36 | 42 | 511,292   | 10  | 20 | 32   | 48 |  |  |   |  |
|                   | 511,292   | 9.5 | 19 | 28.5 | 38 | 44 | 1,022,584   | 11  | 22 | 34   | 50 |  |  |   |  |
|                   | 1,022,584   | 10  | 20 | 30   | 40 | 46 | 1,533,876   | 12  | 24 | 36   | 52 |  |  |   |  |
|                   | 2,045,168   | 11  | 21 | 32   | 42 | 48 | 2,045,168   | 13  | 26 | 38   | 54 |  |  |   |  |
|                   | 3,067,751   | 12  | 22 | 34   | 44 | 51 | 3,067,751   | 14  | 28 | 40   | 56 |  |  |   |  |
|                   | 4,090,335   | 13  | 23 | 36   | 46 | 54 | 4,090,335   | 16  | 30 | 43   | 58 |  |  |   |  |
|                   | 5,112,919   | 14  | 24 | 38   | 48 | 57 | 5,112,919   | 18  | 33 | 46   | 60 |  |  |   |  |
|                   | over 5,112,919  | 15  | 25 | 40   | 50 | 60 | 12,782,297  | 21  | 36 | 50   | 62 |  |  |   |  |
|                   | Exceptions if acquisition is just above the next value limit (Härteausgleich).<br>§ 10 ErbStG |     |    |      |    |    | 25,564,594  | 25  | 40 | 55   | 64 |  |  |   |  |
|                   |   |     |    |      |    |    | 51,129,188  | 30  | 45 | 60   | 67 |  |  |   |  |
|                   |   |     |    |      |    |    | over 51,129,188   | 35  | 50 | 65   | 70 |  |  |   |  |
|                   |   |     |    |      |    |    | Exceptions if acquisition is just above the next value limit (Härteausgleich).<br>§ 19 ErbStG                                   |     |    |      |    |  |  |   |  |
| <b>Allowances</b> | Spouse: €127,823 but only if the couple has children<br>(All others in I) €15,339             |     |    |      |    |    | Spouse: €127,823 (+ care allowances of €127,823 in case of inheritance)<br>(All others in I) €46,016 (+ care allowances between |     |    |      |    |  |  | Spouse: €306,775 (+ care allowances of €255,646 in case of inheritance)<br>Children as in §15 (1) no 2 and children of dead chil- |  |

## Estate and inheritance taxation

|                   | 1955   | 1975   | 1995/96   | 2015/16  |
|-------------------|--|--|---|--|
|                   | <p>(II) €10,226<br/>(III &amp; IV) €1,534<br/>(V) €511</p> <p>Each allowance is usable every 10 years.</p> <p>§§ 13, 17a,b ErbStG</p>  | <p>€25,565 and €5,113 in case of inheritance for all children until the age of 27)</p> <p>(II) €25,565<br/>(III) €5,113<br/>(IV) €1,534</p> <p>Each allowance is usable every 10 years.</p> <p>§§ 14, 16, 17 ErbStG</p>  | <p>dren: €204,517 (+ care allowances between €51,129 and €10,226 in case of inheritance for all children until the age of 27)</p> <p>(All others in I): €51,129<br/>(II): €10,226<br/>(III) €5,113</p> <p>Each allowance is usable every 10 years.</p> <p>§§ 14, 16, 17 ErbStG</p>  | <p>dren: €400,000 (+ care allowances between €52,000 and €10,300 in case of inheritance for all children until the age of 27)</p> <p>Grandchildren and step grandchildren: €200,000</p> <p>Parents and grandparents by acquisition upon death: €100,000</p> <p>All others: €20,000</p> <p>Each allowance is usable every 10 years.</p> <p>§§ 14, 16, 17 ErbStG</p>   |
| <b>Valuation</b>  | <p>Guideline: market value (gemein Wert, Verkehrswert)</p> <p>§ 22 ErbStG, §§ 10, 12, 13, 14 RBewG</p> <p>Real estate / business property: unit value from 1935 (Einheitswert); this depends on the tax valuation, I take 20 percent of the market value as an approximation<sup>d</sup></p> <p>business assets: last unit value (Einheitswert)</p> <p>§ 22 ErbStG, § 66 RBewG, Spiegel (1970), p. 123</p> | <p>Guideline: market value (gemein Wert, Verkehrswert)</p> <p>§ 12 ErbStG, §§ 9, 10, 11, 12 BewG</p> <p>Real estate / business property: unit value from 1964 (Einheitswert); this depends on the tax valuation, I take 28 percent of the market value as an approximation<sup>e</sup></p> <p>business assets: last unit value (Einheitswert)</p> <p>§ 12 ErbStG, §§ 109, 121a BewG, Bach &amp; Bartholmai (2002), p. 31</p> | <p>Guideline: market value (gemein Wert, Verkehrswert)</p> <p>§ 12 ErbStG, §§ 9, 10, 11, 12 BewG</p> <p>Real estate / business property: earnings value (Ertragswert); this depends on the tax valuation, on average this is 70 percent of the market value</p> <p>§ 12 ErbStG, AGN Europe (2008), p.3</p> <p>business assets: tax balance sheet value (Steuerbilanzwert), special valuation rule depending on the total property and the income of the company<sup>f</sup></p> <p>§ 12 ErbStG, § 109 BewG, AGN Europe (2008), p.3</p>    | <p>Guideline: market value (gemein Wert, Verkehrswert)</p> <p>§ 12 ErbStG, §§ 9, 10, 11, 12, 151 BewG</p> <p>business assets: simplified earnings value method (vereinfachtes Ertragswertverfahren), on average 77 percent of market value</p> <p>§ 109 BewG, Scholz &amp; Truger (2016), p.3</p>  |
| <b>Exemptions</b> | <p>Household goods:</p> <p>(I &amp; II) in the value of max. €10,226 + tangible movable property in the value of max. €2,556<br/>(III &amp; IV) in the value of max. €2,556 + tangible movable property in the value of max. €1,023<br/>(all others) in the value of max. €2,556</p> <p>§ 18 ErbStG</p>  | <p>Household goods:</p> <p>(I &amp; II) in the value of max. €20,452 + tangible movable property in the value of max. €2,556<br/>(III &amp; IV) in the value of max. €5,113 + tangible movable property in the value of max. €1,023</p> <p>§ 13 ErbStG</p>   | <p>Businesses / shares in stock corporations (&gt;25 percent of the registered share capital): allowances of €255,646, + 40 percent of value exempt, applicable if business is continued / shares are hold for at least five years. For all heirs tax rates from tax class I apply.</p> <p>§§ 13a, 19a ErbStG</p> <p>Household goods:</p> <p>(I) in the value of max. €40,093 + tangible movable property in the value of max. €10,226<br/>(II &amp; III) + tangible movable property in the value of max. €10,226</p> <p>§ 13 ErbStG</p> | <p>Businesses / shares in stock corporations (&gt;25 percent of the registered share capital):<sup>g</sup></p> <ul style="list-style-type: none"> <li>- 85 percent of value exempt if transfer max. €26 million (transfer &gt; €26 million and &lt; €90 million: 85 percent -1 percent for each €750,000 above €26 millionen), business is continued / shares are hold for at least five years, during that period wages must not fall below 400 percent of the average wages paid per year before transferring the company (&gt;16 employees<sup>h</sup>) of the starting wages.</li> <li>- complete exemption if transfer max. €26 million (transfer &gt; €26 million and &lt; €90 million: 100 percent - 1 percent for each €750,000 above €26 millionen), business is continued / shares are hold for at least seven years, during that period wages must not fall below 700 percent of the average wages paid per year</li> </ul> |

|                             | 1955  | 1975   | 1995/96                | 2015/16   |
|-----------------------------|---|--|------------------------|---|
|                             |   |  |                        | <p>before transferring the company (&gt;16 employees<sup>h</sup>) of the starting wages</p> <p>- no exemption if transfer &gt;= €90 million</p> <p>For all heirs tax rates from tax class I apply.</p> <p>§§ 13 a,b, c, 19a ErbStG</p> <p>Owner-occupied property:</p> <p>spouse / civil partner: complete exemption if heir is living in it at least for 10 years<br/> children and step children, children of own children if they are already dead: complete exemption if heir is living in it at least for 10 years and max. size 200m<sup>2</sup></p> <p>§ 13 ErbStG</p> <p>Rented property: only 90 percent of value are subject to tax</p> <p>§ 13c ErbStG</p> <p>Household goods:</p> <p>(I) in the value of max. € 41,000 + tangible movable property in the value of max. €12,000<br/> (II &amp; III) + tangible movable property in the value of max. €12,000</p> <p>§ 13 ErbStG</p> |
| <b>Intestate succession</b> | <p>Relatives are called to succession in the following order:</p> <p>(I. degree) descendants of the testator. Children (not illegitimate) inherit in equal shares.</p> <p>The surviving spouse of the deceased inherits next to relatives of the first order a quarter, next to relatives of the second degree or beside grandparents half of the inheritance. If none of them is still alive the spouse inherits everything.</p> <p>(II. degree) parents of the deceased and their descendants</p> <p>(III. degree) grandparents of the deceased and their descendants</p> | <p>---<sup>i</sup></p> <p>Illegitimate children can claim an inheritance substitute claim at the value of their theoretical share in the inheritance. (Erbersatzanspruch)</p> <p>§ 1934a BGB</p> <p>Adopted (underage) children have the same rights as natural children.</p> <p>§ 1754 f. BGB (in force since 1977)</p> | <p>---<sup>i</sup></p> | <p>---<sup>i</sup></p> <p>Both legitimate and illegitimate children have the same rights.</p> <p>§ 1 Erbgleichstellungsgesetz</p> <p>Civil partners are equal to spouses.</p> <p>§ 10 Lebenspartnerschaftsgesetz</p>  |

## Estate and inheritance taxation

|  | 1955  | 1975 | 1995/96 | 2015/16 |
|--|---|------|---------|---------|
|  | (IV. degree) great-grandparents of the deceased and their descendants<br>(V. degree) all other relatives<br>A relative is not called to succession, as long as a relative of a previous order exists.<br>§ 1924, 1925, 1926, 1928, 1929, 1930, 1931 BGB |      |         |         |

a Due to a decision of the federal constitutional court in 1995 the legislation (especially for valuation rules) was changed elementarily in 1996. Therefore I report the legislation in 1996.

b Due to a decision of the federal constitutional court in 2014 the legislation for businesses / shares was changed in 2016. Therefore I report the legislation in 2016.

c Values before 2001 in DM, the official exchange rate applies: 1,95583.

d The unit values from 1935 are at the beginning of the 70s at most 20 percent of market value (Spiegel 1970).

e § 121a BewG requires to apply 140 percent of the unit value from 1964 (Einheitswert). Bach & Bartholmai (2002) cite a survey from the Federal Court of Auditors which finds that at the end of the 80s units values from 1964 where on average between 10 and 20 percent of market value. I will take the upper limit as a base for the unit value.

f Sureth et al. (2008) estimate that tax values of sole proprietorship and partnership amounted on average to about 50 percent of market value, shares in non-listed corporations amounted to 70 percent.

g Only the most important rules are reported. For more details see ErbStG or Scholz & Truger (2016).

h The number of employees is only relevant for the rule regarding the wages.

i --- means „nothing substantially changed compared with the last time point“.

Source: Erbschaftsteuer- und Schenkungsteuergesetz (ErbStG), Reichsbewertungsgesetz, Bewertungsgesetz, Bürgerliches Gesetzbuch (BGB), Erbgleichstellungsgesetz, Lebenspartnerschaftsgesetz



Table A.4.5: Inheritance legislation in Sweden in 1955, 1975/78<sup>a</sup>, 1995 and 2015

|                    | 1955  | 1975/1978  | 1995  | 2015   |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
|--------------------|---|--|---|--|-----|------|--|-----------------|-----------------|---------|-----|---------|-----|---|-------|---|---|---|---|-------|-------|----|---|----|---|-------|-------|----|---|-----|---|-------|--------|----|---|-----|---|--------|--------|-----|---|-----|----|--------|--------|-----|---|-------|----|--------|--------|-------|---|-------|----|--------|--------|-------|---|-------|----|--------|--------|-------|---|-------|----|--|-------------|--|-----|--|-----------------|-----------------|---------|-----|---|--------|---|---|--------|--------|-------|----|--------|--------|-------|----|--------|---------|-------|----|---------|---------|--------|----|---------|---------|--------|----|---------|---------|--------|----|---------|---------|--------|----|---------|-----------|---------|----|-----------|-----------|---------|----|--|-------------|--|-----|--|-----------------|-----------------|---------|-----|---|---------|---|----|---------|---------|--------|----|---------|---|--------|----|-------------|--|------|--|-----------------|-----------------|---------|-----|---|--------|---|----|--------|---------|-------|----|---------|---|--------|----|
| <b>Tax classes</b> | (I)<br>spouse, children and descendants<br><br>(II)<br>parents and siblings<br><br>(III)<br>non-profit organizations <sup>b</sup><br><br>(IV)<br>others<br><br>SFS 1941:416, 780–782  | (I)<br>spouse, children and descendants<br><br>(II)<br>parents, siblings and others<br><br>(III)<br>non-profit organizations<br><br>SOU 1977:91, 236–237 | (I)<br>spouse / civil partner, children and descendants<br><br>(II)<br>parents, siblings and others<br><br>(III)<br>non-profit organizations<br><br>Du Rietz et al. (2015), p. 48 | No inheritance and gift tax since 01.01.2005. Inheritances and gifts between 17.-31.12.2004 are also already exempt due to the Tsunami disaster in Southeast Asia.<br><br>SFS 2004:1340-1348, (SFS 2005:194) |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| <b>Tax rates</b>   | <u>Inheritance and gift tax</u><br><br><table border="1"> <thead> <tr> <th colspan="2">Taxable lot</th> <th colspan="2">(I)</th> <th colspan="2">(II)</th> </tr> <tr> <th>Lower limit SEK</th> <th>Upper limit SEK</th> <th>Tax SEK</th> <th>+ %</th> <th>Tax SEK</th> <th>+ %</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1,000</td> <td>0</td> <td>1</td> <td>0</td> <td>2</td> </tr> <tr> <td>1,000</td> <td>3,000</td> <td>10</td> <td>1</td> <td>20</td> <td>4</td> </tr> <tr> <td>3,000</td> <td>6,000</td> <td>30</td> <td>2</td> <td>100</td> <td>6</td> </tr> <tr> <td>6,000</td> <td>12,000</td> <td>90</td> <td>3</td> <td>280</td> <td>8</td> </tr> <tr> <td>12,000</td> <td>20,000</td> <td>270</td> <td>4</td> <td>760</td> <td>10</td> </tr> <tr> <td>20,000</td> <td>30,000</td> <td>590</td> <td>5</td> <td>1,560</td> <td>12</td> </tr> <tr> <td>30,000</td> <td>40,000</td> <td>1,090</td> <td>6</td> <td>2,760</td> <td>15</td> </tr> <tr> <td>40,000</td> <td>50,000</td> <td>1,690</td> <td>7</td> <td>4,260</td> <td>18</td> </tr> <tr> <td>50,000</td> <td>60,000</td> <td>2,390</td> <td>8</td> <td>6,060</td> <td>18</td> </tr> </tbody> </table> | Taxable lot  |   | (I)  |     | (II) |  | Lower limit SEK | Upper limit SEK | Tax SEK | + % | Tax SEK | + % | 0 | 1,000 | 0 | 1 | 0 | 2 | 1,000 | 3,000 | 10 | 1 | 20 | 4 | 3,000 | 6,000 | 30 | 2 | 100 | 6 | 6,000 | 12,000 | 90 | 3 | 280 | 8 | 12,000 | 20,000 | 270 | 4 | 760 | 10 | 20,000 | 30,000 | 590 | 5 | 1,560 | 12 | 30,000 | 40,000 | 1,090 | 6 | 2,760 | 15 | 40,000 | 50,000 | 1,690 | 7 | 4,260 | 18 | 50,000 | 60,000 | 2,390 | 8 | 6,060 | 18 | <table border="1"> <thead> <tr> <th colspan="2">Taxable lot</th> <th colspan="2">(I)</th> </tr> <tr> <th>Lower limit SEK</th> <th>Upper limit SEK</th> <th>Tax SEK</th> <th>+ %</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>25,000</td> <td>0</td> <td>5</td> </tr> <tr> <td>25,000</td> <td>50,000</td> <td>1,250</td> <td>10</td> </tr> <tr> <td>50,000</td> <td>75,000</td> <td>3,750</td> <td>15</td> </tr> <tr> <td>75,000</td> <td>100,000</td> <td>7,500</td> <td>22</td> </tr> <tr> <td>100,000</td> <td>150,000</td> <td>13,000</td> <td>28</td> </tr> <tr> <td>150,000</td> <td>250,000</td> <td>27,000</td> <td>33</td> </tr> <tr> <td>250,000</td> <td>350,000</td> <td>60,000</td> <td>38</td> </tr> <tr> <td>350,000</td> <td>500,000</td> <td>98,000</td> <td>44</td> </tr> <tr> <td>500,000</td> <td>1,000,000</td> <td>164,000</td> <td>49</td> </tr> <tr> <td>1,000,000</td> <td>2,000,000</td> <td>409,000</td> <td>53</td> </tr> </tbody> </table> | Taxable lot |  | (I) |  | Lower limit SEK | Upper limit SEK | Tax SEK | + % | 0 | 25,000 | 0 | 5 | 25,000 | 50,000 | 1,250 | 10 | 50,000 | 75,000 | 3,750 | 15 | 75,000 | 100,000 | 7,500 | 22 | 100,000 | 150,000 | 13,000 | 28 | 150,000 | 250,000 | 27,000 | 33 | 250,000 | 350,000 | 60,000 | 38 | 350,000 | 500,000 | 98,000 | 44 | 500,000 | 1,000,000 | 164,000 | 49 | 1,000,000 | 2,000,000 | 409,000 | 53 | <table border="1"> <thead> <tr> <th colspan="2">Taxable lot</th> <th colspan="2">(I)</th> </tr> <tr> <th>Lower limit SEK</th> <th>Upper limit SEK</th> <th>Tax SEK</th> <th>+ %</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>300,000</td> <td>0</td> <td>10</td> </tr> <tr> <td>300,000</td> <td>600,000</td> <td>30,000</td> <td>20</td> </tr> <tr> <td>600,000</td> <td>-</td> <td>90,000</td> <td>30</td> </tr> </tbody> </table><br><table border="1"> <thead> <tr> <th colspan="2">Taxable lot</th> <th colspan="2">(II)</th> </tr> <tr> <th>Lower limit SEK</th> <th>Upper limit SEK</th> <th>Tax SEK</th> <th>+ %</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>70,000</td> <td>0</td> <td>10</td> </tr> <tr> <td>70,000</td> <td>140,000</td> <td>7,000</td> <td>20</td> </tr> <tr> <td>140,000</td> <td>-</td> <td>21,000</td> <td>30</td> </tr> </tbody> </table> | Taxable lot |  | (I) |  | Lower limit SEK | Upper limit SEK | Tax SEK | + % | 0 | 300,000 | 0 | 10 | 300,000 | 600,000 | 30,000 | 20 | 600,000 | - | 90,000 | 30 | Taxable lot |  | (II) |  | Lower limit SEK | Upper limit SEK | Tax SEK | + % | 0 | 70,000 | 0 | 10 | 70,000 | 140,000 | 7,000 | 20 | 140,000 | - | 21,000 | 30 |
| Taxable lot        |   | (I)  |   | (II)   |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| Lower limit SEK    | Upper limit SEK   | Tax SEK  | + %   | Tax SEK  | + % |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 0                  | 1,000   | 0  | 1   | 0  | 2   |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 1,000              | 3,000   | 10   | 1   | 20   | 4   |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 3,000              | 6,000   | 30   | 2   | 100  | 6   |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 6,000              | 12,000  | 90   | 3   | 280  | 8   |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 12,000             | 20,000  | 270  | 4   | 760  | 10  |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 20,000             | 30,000  | 590  | 5   | 1,560  | 12  |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 30,000             | 40,000  | 1,090  | 6   | 2,760  | 15  |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 40,000             | 50,000  | 1,690  | 7   | 4,260  | 18  |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 50,000             | 60,000  | 2,390  | 8   | 6,060  | 18  |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| Taxable lot        |   | (I)  |   |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| Lower limit SEK    | Upper limit SEK   | Tax SEK  | + %   |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 0                  | 25,000  | 0  | 5   |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 25,000             | 50,000  | 1,250  | 10  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 50,000             | 75,000  | 3,750  | 15  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 75,000             | 100,000   | 7,500  | 22  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 100,000            | 150,000   | 13,000   | 28  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 150,000            | 250,000   | 27,000   | 33  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 250,000            | 350,000   | 60,000   | 38  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 350,000            | 500,000   | 98,000   | 44  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 500,000            | 1,000,000   | 164,000  | 49  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 1,000,000          | 2,000,000   | 409,000  | 53  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| Taxable lot        |   | (I)  |   |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| Lower limit SEK    | Upper limit SEK   | Tax SEK  | + %   |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 0                  | 300,000   | 0  | 10  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 300,000            | 600,000   | 30,000   | 20  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 600,000            | -   | 90,000   | 30  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| Taxable lot        |   | (II)   |   |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| Lower limit SEK    | Upper limit SEK   | Tax SEK  | + %   |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 0                  | 70,000  | 0  | 10  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 70,000             | 140,000   | 7,000  | 20  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |
| 140,000            | -   | 21,000   | 30  |  |     |      |  |                 |                 |         |     |         |     |   |       |   |   |   |   |       |       |    |   |    |   |       |       |    |   |     |   |       |        |    |   |     |   |        |        |     |   |     |    |        |        |     |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |        |        |       |   |       |    |  |             |  |     |  |                 |                 |         |     |   |        |   |   |        |        |       |    |        |        |       |    |        |         |       |    |         |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |           |         |    |  |             |  |     |  |                 |                 |         |     |   |         |   |    |         |         |        |    |         |   |        |    |             |  |      |  |                 |                 |         |     |   |        |   |    |        |         |       |    |         |   |        |    |

Estate and inheritance taxation

| 1955  |                 |         |     |        |    |  | 1975/1978       |                 |           |     | 1995                          | 2015 |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
|---|-----------------|---------|-----|--------|----|--|-----------------|-----------------|-----------|-----|-------------------------------|------|-----------------|-----------------|-----------------------------|-----|-------|-------|----|----|-------|-------|-----|----|-------|--------|-----|----|--------|--------|-------|----|--------|--------|-------|----|--------|---|-------|----|--|--|--|--|-------------|--|------|--|-----------------|-----------------|---------|-----|---|--------|---|---|--------|--------|-----|----|--------|--------|-------|----|--------|--------|-------|----|--------|--------|--------|----|--------|---------|--------|----|---------|---------|--------|----|---------|---------|--------|----|---------|---------|--------|----|---------|-----------|---------|----|-----------|---|---------|----|--|--|
| 60,000  | 75,000          | 3,190   | 9   | 7,860  | 21 |  | 2,000,000       | 5,000,000       | 939,000   | 58  | Du Rietz et al. (2015), p. 48 |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 75,000  | 100,000         | 4,540   | 10  | 11,010 | 21 |  | 5,000,000       | -               | 2,679,000 | 65  |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 100,000   | 150,000         | 7,040   | 12  | 21,510 | 24 |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 150,000   | 200,000         | 13,040  | 14  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 200,000   | 300,000         | 20,040  | 16  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 300,000   | 400,000         | 36,040  | 18  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 400,000   | -               | 54,040  | 20  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| <table border="1"> <thead> <tr> <th colspan="2">Taxable lot</th> <th colspan="2">(IV)</th> </tr> <tr> <th>Lower limit SEK</th> <th>Upper limit SEK</th> <th>Tax SEK</th> <th>+ %</th> </tr> </thead> <tbody> <tr> <td>1,000</td> <td>3,000</td> <td>40</td> <td>10</td> </tr> <tr> <td>3,000</td> <td>6,000</td> <td>200</td> <td>15</td> </tr> <tr> <td>6,000</td> <td>12,000</td> <td>690</td> <td>20</td> </tr> <tr> <td>12,000</td> <td>20,000</td> <td>1,890</td> <td>25</td> </tr> <tr> <td>20,000</td> <td>40,000</td> <td>3,890</td> <td>30</td> </tr> <tr> <td>40,000</td> <td>-</td> <td>9,890</td> <td>35</td> </tr> </tbody> </table> |                 |         |     |        |    |  | Taxable lot     |                 | (IV)      |     |                               |      | Lower limit SEK | Upper limit SEK | Tax SEK                     | + % | 1,000 | 3,000 | 40 | 10 | 3,000 | 6,000 | 200 | 15 | 6,000 | 12,000 | 690 | 20 | 12,000 | 20,000 | 1,890 | 25 | 20,000 | 40,000 | 3,890 | 30 | 40,000 | - | 9,890 | 35 | <table border="1"> <thead> <tr> <th colspan="2">Taxable lot</th> <th colspan="2">(II)</th> </tr> <tr> <th>Lower limit SEK</th> <th>Upper limit SEK</th> <th>Tax SEK</th> <th>+ %</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>10,000</td> <td>0</td> <td>8</td> </tr> <tr> <td>10,000</td> <td>20,000</td> <td>800</td> <td>16</td> </tr> <tr> <td>20,000</td> <td>30,000</td> <td>2,400</td> <td>24</td> </tr> <tr> <td>30,000</td> <td>50,000</td> <td>4,800</td> <td>32</td> </tr> <tr> <td>50,000</td> <td>70,000</td> <td>11,200</td> <td>40</td> </tr> <tr> <td>70,000</td> <td>100,000</td> <td>19,200</td> <td>45</td> </tr> <tr> <td>100,000</td> <td>150,000</td> <td>32,700</td> <td>50</td> </tr> <tr> <td>150,000</td> <td>200,000</td> <td>57,700</td> <td>56</td> </tr> <tr> <td>200,000</td> <td>500,000</td> <td>85,700</td> <td>61</td> </tr> <tr> <td>500,000</td> <td>1,000,000</td> <td>268,700</td> <td>67</td> </tr> <tr> <td>1,000,000</td> <td>-</td> <td>603,700</td> <td>72</td> </tr> </tbody> </table> |  |  |  | Taxable lot |  | (II) |  | Lower limit SEK | Upper limit SEK | Tax SEK | + % | 0 | 10,000 | 0 | 8 | 10,000 | 20,000 | 800 | 16 | 20,000 | 30,000 | 2,400 | 24 | 30,000 | 50,000 | 4,800 | 32 | 50,000 | 70,000 | 11,200 | 40 | 70,000 | 100,000 | 19,200 | 45 | 100,000 | 150,000 | 32,700 | 50 | 150,000 | 200,000 | 57,700 | 56 | 200,000 | 500,000 | 85,700 | 61 | 500,000 | 1,000,000 | 268,700 | 67 | 1,000,000 | - | 603,700 | 72 |  |  |
| Taxable lot   |                 | (IV)    |     |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| Lower limit SEK   | Upper limit SEK | Tax SEK | + % |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 1,000   | 3,000           | 40      | 10  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 3,000   | 6,000           | 200     | 15  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 6,000   | 12,000          | 690     | 20  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 12,000  | 20,000          | 1,890   | 25  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 20,000  | 40,000          | 3,890   | 30  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 40,000  | -               | 9,890   | 35  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| Taxable lot   |                 | (II)    |     |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| Lower limit SEK   | Upper limit SEK | Tax SEK | + % |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 0   | 10,000          | 0       | 8   |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 10,000  | 20,000          | 800     | 16  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 20,000  | 30,000          | 2,400   | 24  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 30,000  | 50,000          | 4,800   | 32  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 50,000  | 70,000          | 11,200  | 40  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 70,000  | 100,000         | 19,200  | 45  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 100,000   | 150,000         | 32,700  | 50  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 150,000   | 200,000         | 57,700  | 56  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 200,000   | 500,000         | 85,700  | 61  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 500,000   | 1,000,000       | 268,700 | 67  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| 1,000,000   | -               | 603,700 | 72  |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| <p>SFS 1933:431, 755–756; SFS 1941:416, 780–782; SFS 1952:246, 455-456; SOU 1957:48, 56, 57</p> <p><u>Estate tax</u></p> <table border="1"> <thead> <tr> <th>Lower limit SEK</th> <th>Upper limit SEK</th> <th>Tax SEK</th> <th>+ %</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table>  |                 |         |     |        |    |  | Lower limit SEK | Upper limit SEK | Tax SEK   | + % |                               |      |                 |                 | <p>SOU 1977:91, 236–237</p> |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
| Lower limit SEK   | Upper limit SEK | Tax SEK | + % |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |
|   |                 |         |     |        |    |  |                 |                 |           |     |                               |      |                 |                 |                             |     |       |       |    |    |       |       |     |    |       |        |     |    |        |        |       |    |        |        |       |    |        |   |       |    |  |  |  |  |             |  |      |  |                 |                 |         |     |   |        |   |   |        |        |     |    |        |        |       |    |        |        |       |    |        |        |        |    |        |         |        |    |         |         |        |    |         |         |        |    |         |         |        |    |         |           |         |    |           |   |         |    |  |  |

|                   | 1955  |           |           |    | 1975/1978   | 1995  | 2015 |
|-------------------|---|-----------|-----------|----|---|---|------|
|                   | 50,000  | 70,000    | 0         | 5  |   |   |      |
|                   | 70,000  | 100,000   | 1,000     | 10 |   |   |      |
|                   | 100,000   | 200,000   | 4,000     | 15 |   |   |      |
|                   | 200,000   | 300,000   | 19,000    | 20 |   |   |      |
|                   | 300,000   | 500,000   | 39,000    | 25 |   |   |      |
|                   | 500,000   | 1,000,000 | 89,000    | 30 |   |   |      |
|                   | 1,000,000   | 2,000,000 | 239,000   | 35 |   |   |      |
|                   | 2,000,000   | 5,000,000 | 589,000   | 40 |   |   |      |
|                   | 5,000,000   | -         | 1,789,000 | 50 |   |   |      |
|                   | SFS 1947:581; SFS 1952:412, 728; SFS 1957:107; SOU 1957:48, 57  |           |           |    |   |   |      |
| <b>Allowances</b> | <p><u>Inheritance and gift tax</u> (taxable limit):</p> <p>Spouse: SEK 25,000</p> <p>Children: SEK 3,000</p> <p>Parents, siblings and other heirs: SEK 1,000</p> <p>If the acquisition is below the taxable limit, no tax has to be paid. If the acquisition is above the taxable limit, the entire lot is taxed.</p> <p>Summation rules for gifts: four years</p> <p><u>Estate tax</u> (allowance): SEK 50,000</p> <p>SFS 1957:107; Henrekson &amp; Waldenström 2015, p.8, SOU 1957:48, 9-11, 56, 57, Du Rietz et al. (2015), p. 4</p> |           |           |    | <p>Spouse: SEK 3,000 plus a taxable limit of SEK 40,000 and phasing in rules of marginal tax rates (tax rate was three percent in the bracket SEK 6,000-12,000 and rose gradually; in the bracket above SEK 5,000,000 the tax rate was 60 percent).</p> <p>Children: SEK 15,000</p> <p>Other heirs: SEK 3,000</p> <p>Summation rules for gifts: four years</p> <p>SOU 1969:54, 70, SOU 1977:91, 236–237, Du Rietz et al. (2015), p. 4</p> | <p>Spouse / civil partner: SEK 280,000</p> <p>Children: SEK 70,000 (children and descendants of children: exemption of SEK 10,000 for every year remaining until the age 18)</p> <p>Other heirs: SEK 21,000</p> <p>Summation rules for gifts: four years</p> <p>Du Rietz et al. (2015), pp. 4, 48</p> |      |
| <b>Valuation</b>  | <p>Guideline: market value</p> <p>Business: sales value estimated by trustees based on the book net equity value.</p> <p>Real estate: tax-assessed value in the year before the death, this corresponds</p>   |           |           |    | ---   | ---   |      |

## Estate and inheritance taxation

|                             | 1955   | 1975/1978   | 1995  | 2015   |
|-----------------------------|--|---|---|--|
|                             | <p>to about 75 percent of the market value.</p> <p>Co-operative building society flats: members' share of wealth of the society are subjected to taxation.</p> <p>Du Rietz et al. (2015), pp. 5-6, Du Rietz &amp; Henrekson (2015), p. 268</p>   |   |   |  |
| <b>Exemptions</b>           | <p><u>Estate tax</u></p> <p>Half of the estate is exempt in the case of a surviving spouse</p> <p>Du Rietz et al. (2015), pp. 5, 11</p>  | <p>Business / shares:</p> <ul style="list-style-type: none"> <li>- Private business / unlisted shares: only 30 percent of quoted or book value are subjected to taxation</li> <li>- Shares registered on a stock exchange: only 75 percent of market value are subjected to taxation</li> </ul> <p>Du Rietz et al. (2015), pp. 5, 7</p> | --- <sup>c</sup>  |  |
| <b>Intestate succession</b> | <p>If the deceased is survived by a spouse, he/she inherits before joint children or other relatives.</p> <p>Exemption: The deceased spouse has separate legitimate children. They immediately inherit their legal share.</p> <p>Joint children inherit an equal share of one have of the estate of the total share (legal share) after the death of the surviving spouse.</p> <p>If there is no surviving spouse and no illegitimate children the estate will be distributed amongst the deceased's other relatives.</p> <p>SFS 1958: 637</p> | <p>---</p> <p>Both legitimate and illegitimate children have the same rights.</p> <p>SFS 1969:621</p> <p>Adopted children have the same rights as natural children.</p> <p>SFS: 1976:612</p>  | <p>---</p> <p>Civil partners are equal to spouses.</p> <p>Lag 1994:1117</p> | <p>---</p> <p>Civil partners are spouses before the law.</p> <p>SFS 2009:253</p> |

a The valuation for some assets was elementarily changed in 1974 and then again in 1978. Both imply a reduction of the tax base. The reform from 1978 goes further. Therefore I report the legislation in 1978.

b Tax rates, allowances and exemptions for non-profit organizations are not reported.

c --- means „nothing substantially changed compared with the last time point“.

Source: Svensk författningssamling (SFS), Statens offentliga utredningar (SOU), Du Rietz et al. (2015), Henrekson & Waldenström 2015, Mennel & Förster (2015)

### Part C: Additional Scenarios

Figure A.4.5 shows the tax rates for the medium estate if it would be solely consist of real estate or shares in a listed corporation with less than 25 percent of the registered share capital. Real estate gets a preferably treatment in Sweden for all time points and in Germany for the first three. Shares get a preferably treatment in Sweden over the whole time frame – in the UK and in Germany exemptions are not available (for details on all aspects also see table A.4.3-5).

**Figure A.4.5: Medium estate (real estate and shares) in the UK, Germany and Sweden in 1955, 1975, 1995 and 2015**



Source: Own calculation based on legislation in the UK, Germany and Sweden.



## Collaboration with co-authors and pre-publications

This dissertation includes an introduction (chapter 1) as well as three research papers (Chapters 2 to 4). Chapter 2 and 3 are co-authored. Chapter 4 is single-authored.

### *Chapter 2: Comparing Wealth – Data quality of the HFCS*

This chapter is co-authored with Markus M. Grabka. It is published as a working paper and in addition in the Journal *Survey Research Methods*.

- Tiefensee A & Grabka MM (2014) Comparing Wealth - Data Quality of the HFCS. DIW Discussion Papers 1427.
- Tiefensee A & Grabka MM (2016) Comparing Wealth - Data Quality of the HFCS. Survey Research Methods 10(2). 119-142.

### *Chapter 3: Comparing the joint distribution of intergenerational transfers, income and wealth across the Euro area*

This chapter is co-authored with Christian Westermeier. It is published as a working paper.

- Tiefensee A & Westermeier C (2016) Intergenerational transfers and wealth in the Euro-area - The relevance of inheritances and gifts in absolute and relative terms. DIW Discussion Paper 1556.
- Tiefensee A & Westermeier C (2016) Intergenerational transfers and wealth in the Euro-area - The relevance of inheritances and gifts in absolute and relative terms. FU Discussion Paper Economics Nr. 4/2016.

### *Chapter 4: Estate and inheritance taxation – Tax regimes and effective tax rates in Europe since the 1950s*

This chapter is single-authored and not published yet.