Inheritances in the Long Run

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Abstract

This paper introduces an novel algorithm, which allows to form expectations about future wealth transmissions and the associated tax revenues by combining recent micro-data on the wealth of private households with demographic projections on age-, gender- and education-specific mortality rates. The structure of the distribution of wealth among private households in Austria and demographic changes indicate a strong increase of aggregate capital transfers over the coming decades. Both the number of transfers and their average amount will increase substantially. On the basis of the performed projections, the sum of transferred assets increases from 8 billion € in 2010 up to 20 billion € by 2035. My simulations show that the combination of a comparatively high inheritance tax exemption threshold with significant marginal rates would have pronounced progressive effects. While the majority of the population would not suffer from the tax, total revenue inflow would be substantial.

1 Introduction

Wealth related taxes contribute only a small amount to overall tax revenues in Austria. In 2008, its aggregated value reached only 0.5% of the gross domestic product (GDP), which was undercut by only three member states of the OECD: the Czech Republic, Slovakia and Mexico (OECD, 2012). Within the OECD, the average contribution of wealth related taxes to overall tax revenues is around 2%, in the United States and Canada just over 3% and in the UK about 4%. Both national (Aiginger et al., 2010; Reiss and Köhler-Töglhofer, 2011) as well as international organizations (OECD, 2012; Verwiebe et al., 2013; IMF, 2013) have repeatedly stressed the unequal tax burden on labor versus capital, and argue for a shift in favor of a tax relief for earnings. In the light of current pressures on public finances as a result of the global financial and economic crisis, this requirement is further supported by statistical analyses conducted by OECD (2010) and Joumard, Pisu, and Bloch (2012). Wealth related taxes, more precisely taxes on inheritances and gifts, have according to these calculations the lowest growth-inhibiting effects since they hardly affect decisions about labor supply, investment and human capital formation. Following the arguments

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of the OECD, a budgetary neutral reform of the national budget's revenue side, which reduces the tax burden on income from employment and is refinanced by an increase of wealth-related taxes should have a positive effect on economic growth. However, a major question that arises in this context is how to predict the magnitude of revenues that can be expected from the rise in such wealth related taxes.

Concerning inheritance taxes, previously two different methods were used (Houben and Maiterth, 2013) to estimate the aggregate amount of inheritances and gifts. The so-called macro-based approach estimates the transferred volume based on aggregate assets and mortality rates (Bach and Bartholomai, 1996; Braun, Pfeiffer, and Thomschke, 2011). Alternatively, the micro-based approach is solely based on data relating to past inheritances obtained in household surveys (Houben and Maiterth, 2013). A comparison of the different estimation methods by Houben and Maiterth (2013) shows that the macro-based approach results in twice to four times higher estimates for aggregate wealth transmissions. In this paper, I will combine the advantages of both approaches. Based on the data of the Household Finance and Consumption Survey (HFCS), deaths and inheritances are simulated at the household level, and subsequently their net assets are subject to taxation. This approach thus solely relies on the high-quality micro data of the HFCS, and is able to map the non-negligible structural changes in the amount of inheritances due to demographic changes.

The remainder of this paper is structured as follows. In section 2, I describe the data and some of their key properties. Section 3 introduces my methodology to form expectations about the development of future inheritance flows. These and some illustrative examples of tax revenues are presented in section 4. Finally, section 5 provides some concluding remarks.

2 Data Description

The major source for the magnitude and distribution of wealth of private households used in this study originates from the first wave of the Household Finance and Consumption Survey (2010). The survey was conducted by the European Central Bank (ECB) with the aim to collect data on real and financial assets, as well as on liabilities of private households in the euro area. More than 62,000 households across twelve countries were interviewed, leading to a micro dataset, which is representative at the euro area and the member state level.

The survey units are private households (Albacete et al., 2012, p.64), defined as group of persons who live in the same dwelling and share the expenses of life. As a consequence of this household definition, which is not explicitly linked to the reported primary residence, the HFCS derives a different population and size of households compared to other surveys including the micro–census.

The random sample of households was drawn from a postal address register, the addresses were stratified based on geographical and community size classification. In this way, it was ensured that households are invited to participate in the survey from each stratum. Overall, the gross sample of HFCS in Austria included 4,436 households. In total 2,380 households participated in the survey, which represents a response rate of about 56 percent. All interviews were done personally in the form of *Computer Assisted Personal Interviews (CAPI).* Stock variables and socioeconomic characteristics were collected from September 2010 to May 2011. For the income-related information, the last full calendar year prior to the survey was used.

Since the allocation of assets to the individual household members is often not possible, the

ECB decided to completely omit such a splitting. Reported assets are therefore always the sum of the assets of people who are attributable to a specific household. For further information on methodological peculiarities of the Austrian HFCS data and some stylized facts see Albacete et al. (2012), Eurosystem Household Finance and Consumption Network (2013a), and Humer et al. (2013).

Knowledge about the distribution of wealth is essential for any discussion about the height of marginal tax rates and exemption brackets. Andreasch et al. (2012) and Fessler, Mooslechner, and Schürz (2012) analyze the wealth distribution and its components and come to the conclusion that wealth inequality is pronounced in Austria. While the distribution of income appears relatively egalitarian in an international comparison (Atkinson, 2008; OECD, 2008; Verwiebe et al., 2013), the Austrian wealth distribution seems to be considerably unequal by international standards (Eurosystem Household Finance and Consumption Network, 2013b). However, the interpretation of these results might pose challenges, as the heterogeneity among countries is significant and can hardly be sensibly summarized in one single measure or figure (Fessler and Schürz, 2013). Nevertheless, it should be noted that in international comparison, the concentration of wealth in the hands of few households is especially pronounced, whereas at the same time the revenues from property taxes are negligible.

The private households' total stock of assets reached approximately 1000 bn. € in 2010 and thus mounted to 3.5 times the economic performance of the country.[1] While the lower half of households owns 3% of total wealth, the wealthiest 5% hold approximately 48% of all assets. Eckerstorfer et al. (2013) and Vermeulen (2014) argue that these values underestimate the concentration in reality, because the richest households are under represented in sample surveys. Two explanations for this phenomenon can be found in the literature. The number of the so-called *super-rich* is rather small, therefore the a priori probability that such a household is selected into the random sample is already relatively low. In addition, they also differ in their response behaviors. In particular, for various reasons the rate of *unit non–response* is significantly higher at the upper end of the distribution. Using assumptions about the functional form of the distribution function, it is possible to correct for the missing observations. Based on such calculations, the asset share of the top 5% increases to 58%, while the top one percent alone holds 37% of the total wealth (see Eckerstorfer et al., 2013, p. 26).

Figure 1 shows the average of the key wealth components, namely real and financial assets as well as liabilities, along the distribution of net assets. The bottom 40% thus have hardly any significant wealth at all. This applies both to gross– and net wealth figures. Concerning the households to the right in the graph, wealth is steadily increasing, but the clearest jump is recorded in the upmost decile. Furthermore, it appears that real assets such as real estate and companies make up the majority of the assets across all quantiles. Interestingly, the average level of debt changes relatively little across the distribution of wealth.

By its design, HFCS is a complex sample survey. In order to derive statements that are representative for the sample of Austrian households on the basis of 2,380 observations, the special properties of the survey design must be considered in all calculations. First and foremost, the importance of sampling weights should be emphasized. Roughly, these weights can be interpreted as the number of households in the population of private households in Austria, which share the same properties as the specific observation from the sample. Most sample weights take a value between 1,000 and 2,000 (see figure 2). More specifically, each observation in the sample represents

[1] GDP in 2010: 285 bn. €(Statistics Austria)

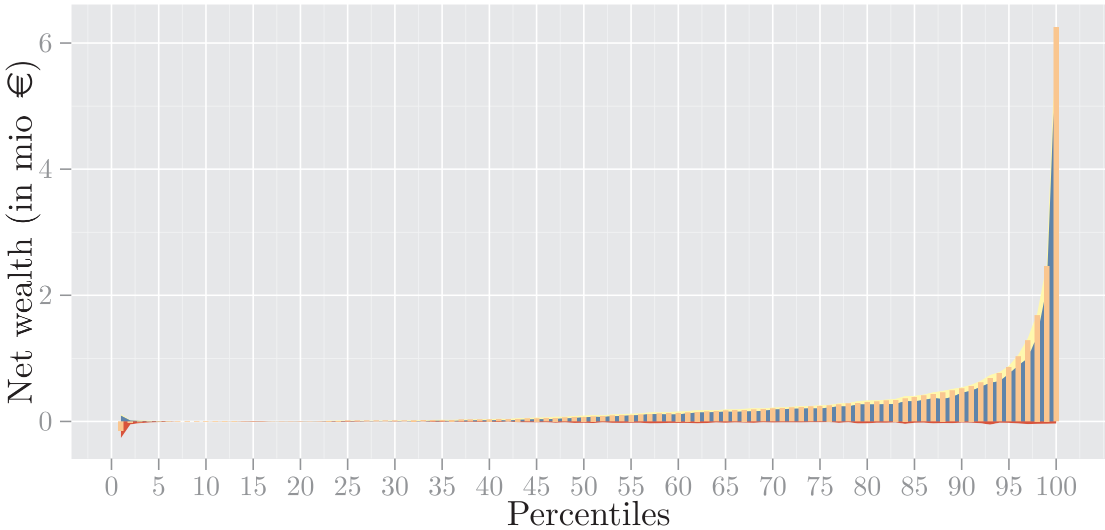

Figure 1: Average of wealth components per quantile
Blue: real assets, Yellow: financial assets, Red: Liabilities, Orange: Net wealth. Source: HFCS 2010, own illustration

on average 1,586 households in the population. The sum of the weights gives the total population, which consists in this specific case of 3,773,956 households.

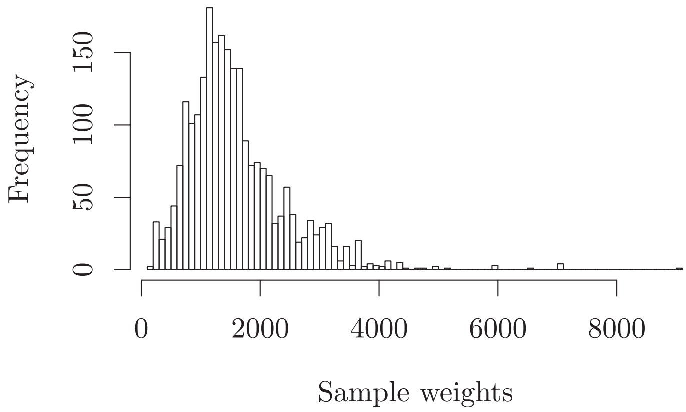

Figure 2: Histogram of final sample weights, Source: HFCS 2010, own illustration

A second important methodological aspect regarding the handling of the data is the use of multiple imputations to tackle the issue of item non-response. According to the guidelines provided by Little and Rubin (2002), all observations of a predetermined set of variables for which no valid response was obtained were imputed during the preparation of the HFCS data (see Eurosystem Household Finance and Consumption Network, 2013a, 46ff). Thereby, it is secured that the the joint distribution between a pre-defined set of core variables is preserved without the need to remove observations with missing values. This set consists of 130 variables that cover the main components of household income, consumption and wealth. In order to account for the inherent uncertainty raised by this procedure, not only one value is chosen to replace the missing information, rather five values are provided based on different random draws from the joint distribution of the entirely observed data. This approach combines the advantage of providing a distribution of imputed values with the possibility to reflect the uncertainty of the imputation process. Therefore, all figures and calculations reported in this paper were derived with the use of complex survey weights, all five multiple imputations, and the application of Rubin's rule.

The focus of the survey clearly lies at the household level, the only exceptions to this are the demographic characteristics of household members including age, gender, education and marital status. Unfortunately, no sample weights were calculated or published at the individual level. In order to make qualified statements about the total population of persons living in Austrian households, I approximate these weights by the reported household weights. Based on the 5,014 observations at the individual level, this approach yields an aggregated total of 8,021,944 persons.

To interpret the following calculations about the development of future revenues of inheritance taxation, it is important to form some idea about the relationship between the amount of assets and the age structure of households. Since most households are composed of more than one person, there are different ways to map such a link. Fessler, Mooslechner, and Schürz (2012, 50f) report the average and the median of the assets according to the age of the reference person, i.e. the person with whom the interview was conducted from. Table 1 displays these values by the average age of the household [2] and leads to the same conclusions.

Table 1: Net Wealth by the Average Age of Household Members

	Households	Sum (bn.)	Average
0—10	3,335	0.02	5,083
10—20	155,609	21.77	139,915
20—30	708,127	145.33	205,231
30—40	647,759	217.88	336,354
40—50	521,689	159.37	305,488
50—60	578,601	195.98	338,705
60—70	596,673	151.17	253,356
70—80	393,502	84.93	215,838
80+	168,661	23.78	140,984

Source: HFCS 2010, own calculation

The highest average assets can be found in households where the average age is between 30 and 60 years. This group includes about half of all households. The net assets of younger households are significantly lower, primarily because they had little time to accumulate assets. Remarkably, the older households have lower asset holdings as well, which somewhat contradicts with the pattern Piketty and Saez (2013) described for the case of France. Based on historical series of French inheritance taxation, Piketty argues that μ, the ratio of average wealth at time of death to the average wealth of living individuals, has always been above unity except for a small period in the aftermath of World War II. Several explanations emerge, but based on the

[2] The group of households with an average age of ten years, consists of two observations. These are two single mothers (18 and 27 years old) living with young children (1, 1, 3 & 5 years old) in the same household.

available data I cannot discriminate between them. First, it could be that compared to France the behavior of Austrian households follows more closely the life-cycle theory of wealth put forward by Modigliani (1971). Or, it might be attributable to the long-term effects of World War II and thereby affected the employment histories of this generation. Finally, the older generation could simply already have transferred the ownership of their assets to their descendants and relatives. For the implementation of an inheritance taxation, this means that the tax revenues are very likely to increase significantly over the coming years, because both the number of asset transfers and their average value will increase steadily in this period.

Since the probability of dying is very low up to the age of approximately 60 years in Austria, a person who is assigned with a statistical death at the age of 35 years by chance, would represent too many individuals in the population. Consequently, the projected number of deaths of people under 60 years would be considerably too high. To counteract this problem, each observation (both households and individuals) in the data set was replicated ten times and the sample weights were divided by ten. Through this step no new information is added, but I allow for a finer breakdown of the population during the simulations.

In addition, the simulation of deaths requires information about the survival and mortality rates for different parts of the population. These mortality rates are usually derived from mortality tables. It is known that mortality rates vary significantly with the age of a person. Further differences in the mortality rates can be identified if the cohort is stratified by gender and educational level. On average, higher education is accompanied by more favorable economic conditions and a greater sensitivity for a healthy lifestyle. Such behavior may manifest in more healthy food intake or regular health checks and seems to be reflected in a shifted increase of mortality rates with age. In order to get a reliable picture about the dynamics of wealth transmissions over the timespan from 2010 to 2060 I have to take into account another important component, i.e. that of demographic change. Medical and technical progress in developed societies leads to rising life expectancies over the next decades, a pattern that should be reflected by my calculations. For this reason, I employ projections of age-, gender- and education-specific mortality rates for the next 50 years, which were compiled by IIASA (2012). For the reader's convenience, the structure of such data is depicted in table 4 in the appendix.

3 Projection of Inheritance Flows

Based on the enlarged HFCS dataset and the projection of mortality rates, the projection of future deaths and associated wealth transmissions is executed according to the following algorithm:

1. Compute the statistical age of persons by adding the difference between the year of the simulation and the base year (2010).
2. Select a subgroup of persons with the same gender, age and educational level.
3. Calculate the expected number of the deaths in this subgroup by multiplying the number of persons (sum of weights) with the projected mortality rate for this specific group.
4. Choose an individual randomly from the subgroup of observations.
5. If the sample weight of the person is less than the expected number of deaths, assign the year of simulation as their year of death.

6. If the person's weight is greater than the expected number of deaths, assign the year of simulation as their year of death with a probability that is proportional to the difference between the sample weight and the expected number of deaths.

7. If two consecutive runs do not result in the assignment of a virtual death, jump to step 2 and select a different group of people with matching sex, age and educational level.

8. Repeat steps 2–7 until all subsets of the population have been processed.

9. Repeat steps 1–8 until all years of the projection frame were processed.

Steps 5 & 6 in this algorithm are modeled like a *Metropolis–Decision*, proposed by Hastings (1970), where w_i is the sampling weight of the randomly selected individual i, and $E(D_{a,g,e})$ stands for the expected number of deaths within each gender (g) and education–specific (e) subgroup of the age cohort a.

$$P = min\left(1, \frac{E(D_{a,g,e})}{w_i}\right) \tag{1}$$

This ensures that the allocated number of deaths corresponds on average to the expected number of deaths in every subgroup of the cohort and is not structurally biased up- or downwards.

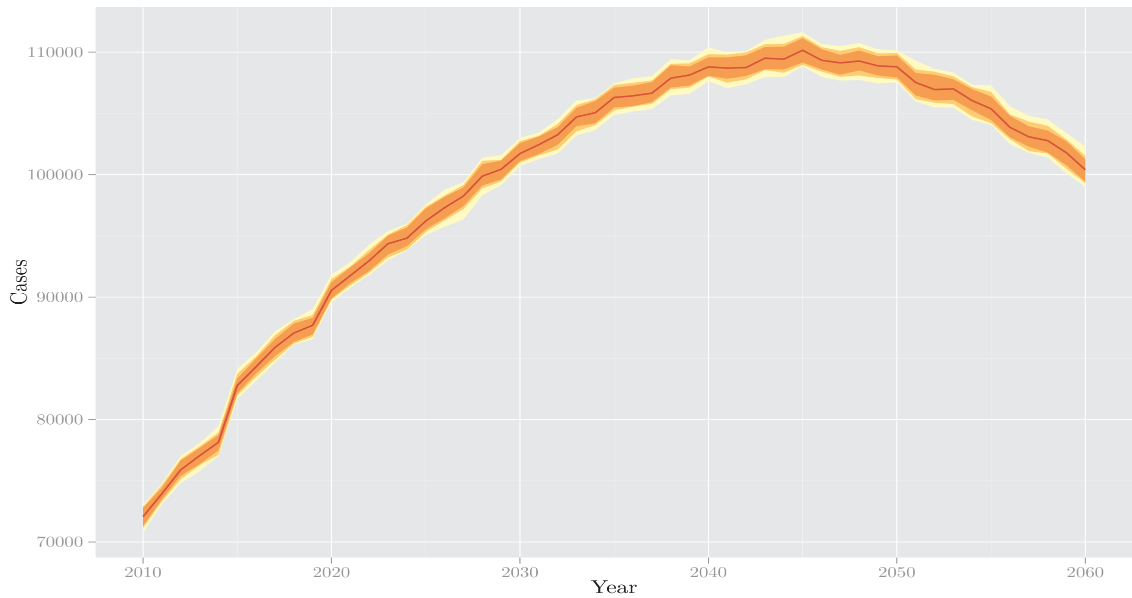

Figure 3: Projection of Deaths
Median: red, Confidence bands: 90% (dark orange), 95% (orange), 99% (yellow).
Source: HFCS 2010, own illustration

As noted in section 2, no assignment of the assets at the individual level is possible on the basis of HFCS. Consequently, it is necessary to think about how to transfer deaths at the individual level into successions at the household level.

A succession is defined for this application as follows:

- The household dissolves, i.e. all household members die. The succession is counted in the year in which the algorithm assigns the statistical death to the last living household member. This group covers all single households and multi-person households with comparatively small age differentials. They account for approximately 50% to 65% of total simulated successions.

- Additionally, a substantial proportion of households consists of more than one generation. In the vast majority of cases these are adults who live with their dependent children, but also the presence of a third generation (i.e. grandparents) as well as adult children or other relatives is not negligible. For this group of households, no direct identification of succession emerges. Unfortunately, it is even impossible to derive the complete network of all bivariate relationships between household members, since the HFCS data only comprise the relationship of household members to the respondent of the questionnaire. Consequently, I have to rely on an ad hoc routine. More concretely, household members are divided into generations through the following definition: a generation is composed of a group of people whose age difference amounts to less than 18 years.[3] Based on this definition of generations, successions are counted at the time when all, or the last member of a generation suffers a statistical death.

Again, this approach obviously carries some chanciness with it. For instance, a household of two adults with an age difference of 25 years is very likely to be a parent living together with his or her child. At the same time we can not rule out a priori that they are a couple living in a partnership. Though, in the first case it is likely that the transfer of assets would be captured correctly, this can be questioned in the second case. However, this does not result in a structural distortion of the amount of capital transfers and thus the flows of inheritance tax, but only in temporal variations.

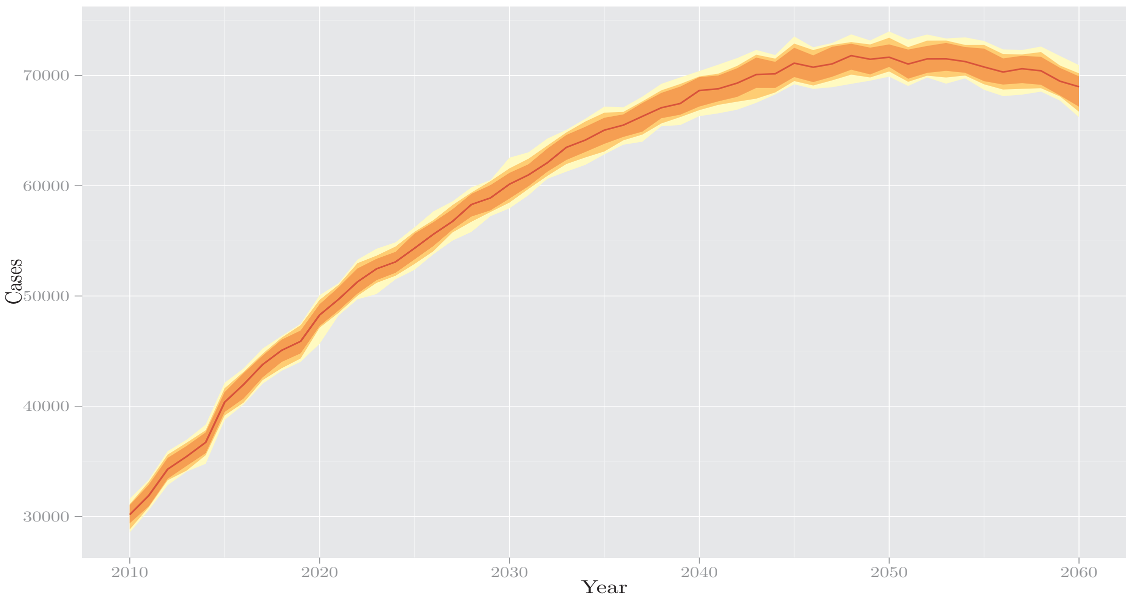

Figure 4: Projection of Successions
Median: red, Confidence bands: 90% (dark orange), 95% (orange), 99% (yellow).
Source: HFCS 2010, own illustration

[3] A similar definition was used during the preparation of the first register–based Census in Austria

To recapitulate, the simulation of revenues of the different variants of a tax on capital transfers over the coming decades requires a careful combination of the available information and is simultaneously impacted upon several layers of uncertainty. Obviously, the evolution of inheritance flows depends on many economic, demographic and political factors, and history teaches us that these are subject to large and highly unpredictable changes. Nevertheless, I do not want to stop myself from forming expectations about the future on the basis of available information. However at the same time, I will be as transparent a possible in laying down the assumptions that are necessary for the calculation. These points and the limitations of the interpretation of my results are addressed explicitly in the following lines.

Number of Deaths It is assumed that the projections provided by IIASA on the evolution of mortality rates reflect the demographic change and the socio-demographic differences in the age, gender and education specific probabilities to die (IIASA, 2012).

Number of Deaths vs. Successions On the one hand, the data on asset holdings are available only at the aggregated household level. Deaths, however are simulated on the basis of specific individual characteristics. Therefore, it is necessary to transform statistical deaths into successions. In this work, I count the transfer of assets at the time when the last person of a generation dies in a household.

Inheritance vs. Donations The timing of forced transfers of assets following the death of a person can, at least on a societal level, be projected with a relatively high accuracy (see Figure 3 and 4). This follows directly from the fact that there is comparatively little uncertainty around the average life expectancy of a cohort after controlling for their unchanging socio–demographic characteristics such as the year of birth, gender and completed level of education. For donations and gifts this is not applicable in a similar manner. A person's decision to transfer part of his/her assets to someone else during his/her lifetime depends on many factors. These include social customs, the relationship and needs of relatives and close friends, fiscal incentives and many others. At least to my knowledge, the required information to build reasonable assumptions about these factors do not exist. Therefore, I refrain from modeling donations and gifts separately and consider the transfer of assets at the time of death, the latest moment possible. With respect to the estimation of inheritance flows, this means that asset transfers and thus tax revenues are expected to occur earlier in reality than modeled in this paper. However, this should not affect the expected average revenue from an inheritance taxation, but result only in a temporal shift thereof. Compared to the graphics presented in section 4, donations would therefore increase both the number of tax incidents and revenues at the beginning, but their evolvement through the next few decades could be less steep. The total number of successions and total tax revenues over the period is still unbiased.

Development of Asset Values The future revenues from wealth taxation depend to a very large extent on the development of the assets themselves. In this work, the attempt is made to achieve a picture of the volume progression over the next 50 years. The last few years have shown that over time asset development can be volatile. For example, since the dawn of the global economic crisis values of real estate have increased rapidly, especially in urban parts of Austria. Obviously, assumptions about growth rates for the various asset classes over such a long period of time are connected to a substantial degree of uncertainty. In addition, the necessary information are either not recorded, or in case of the location of the property not included in the HFCS due to privacy concerns. Hence, for the calculations I use the market value of assets as it was reported in 2010.

Inflation It may be that to a certain extent, assumptions about the evolution of inflation are easier to make than about the development of the assets themselves. For example, these assumptions could be anchored at the ECB's target value of long–term inflation of just below 2% per annum. However, I refrain from adopting this approach. This has the advantage that in the context of the assumptions about the growth of assets a real interest rate of zero is assumed. All values presented in section 4 can thus be interpreted as present values. As real interest rates of assets in all likelihood will be positive in reality, my estimations tend do be biased downwards.

Underestimation of the Top Tail Eckerstorfer et al. (2013) and Vermeulen (2014) argue that the HFCS as well as sample surveys in general, underestimate the top tail of the wealth distribution. A comparison of the greatest assets in the record (17–22 million € taking into account the uncertainty associated with the imputation procedure) with the list of wealthiest households in Austria compiled by the magazine *Trend* (41 billions €[4]) underlines this point. Eckerstorfer et al. (2013) and Vermeulen (2014) present a method that allows correction for this under-reporting under certain assumptions about the functional profile of the distribution function. However, in the context of the projections done in this paper their methodology is not applicable, since not only the amount of assets would have to be imputed, but also the socio–demographic characteristics of the members of missing households. Therefore, I would argue that in all likelihood the projection of inheritance flows are significantly biased downwards and should be regarded as a lower bound.

Succession vs. Successor In the present calculations we simulate asset transfers. More specifically, it is attempted to estimate the time at which certain assets are transferred to third parties. Nevertheless, in general an inherited fortune flows to several heirs. This is important because inheritance taxation in the European countries is linked mostly to the beneficiary and not the testator (*inheritance vs. estate tax*). If certain assets are transferred to several people, all heirs can make the appropriate deductions on the value of the accrued assets. In the HFCS data, family relationships are recorded only very rudimentary and even that applies only for people living in the same household. For this reason, it is assumed that each estate will flow to two people on average. This is based on the long–term average of the Austrian fertility rate, which indicates how many babies are born to a woman over her lifetime. In the 1960s fertility rate lay at about three, fell below two in the 1970s and has remained at 1.4 children per woman since. The tax revenue of such a scheme is significantly less than if the tax would be deducted directly at the decedent from the entire estate. Such a system is used, for example, in the United States.

4 Inheritance Flows and Tax Revenues

The combination of mirco data, which contains information both on the assets and liabilities of households and the individual sociodemographic characteristics, with projections on the development of age, gender and education specific mortality rates empowers us to form expectations

[4]Trend: The wealthiest Austrians

about the future involvement of aggregated wealth transfers. Applying the methodology described in the previous section to these data leads to the following results.

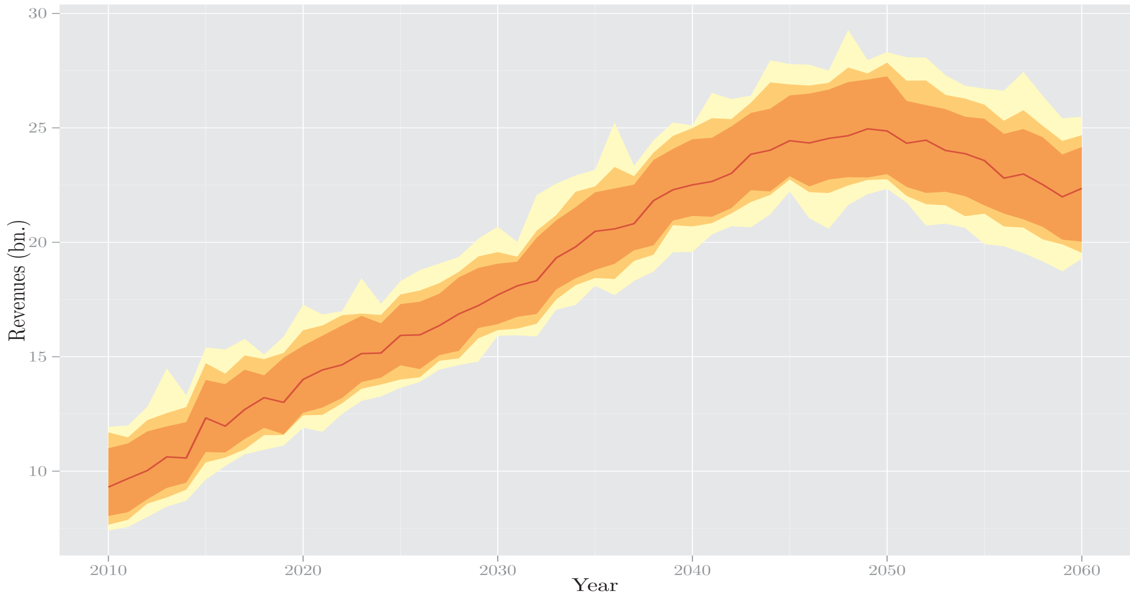

Figure 5: Projection of Wealth Transfers
Median: red, Confidence bands: 90% (dark orange), 95% (orange), 99% (yellow).
Source: HFCS 2010, own illustration

Figure 4 indicates that the very pronounced wealth concentration at the top of the distribution together with the ongoing demographic change results in a strong increase of the aggregate amount of bequests over the coming decades. Both the number of wealth transfers and their average value will increase dynamically. Based on my projections the sum of annually transferred assets surges from 8 billion € in 2010 up to 20 billion € in 2035 and reach their maximum at 25 billion € in 2050. This raises the question about the fiscal and distributional consequences should the Austrian government decide to reintroduce a tax on such transfers. For illustrative purposes, two rather diametral tax schemes are considered more closely in the following part.

Linear Tax Scheme At first, I examine a simple linear scheme that consists of a marginal tax rate of 10% that applies to each positive wealth transfer. Revenue projections are depicted in table 2.

In the median scenario, such a proposal would lead to revenues amounting to 1 billion € at the beginning with a further doubling in 2035. If we look at the confidence bands based on one hundred separate runs, we see that 80% of the realizations lie in a margin of plus and minus 10%, the 90% confidence interval spans a region of plus and minus 20%. Concerning the actual tax burden, figure 6 provides further insights.

As total liabilities exceed assets for the bottom five percent of the wealth distribution, bequests of this subgroup are not taxed. Afterwards the average tax rate increases to 10% immediately since there is no tax exemption threshold. Maybe somehow surprising is that the shares of each percentile to overall tax revenues differ substantially. For example, the contribution of the top

Table 2: Tax revenue — Exemption threshold: 0 €, Marginal rate: 10%

	P01	P05	P10	P50	P90	P95	P99
2010	0.74	0.77	0.80	0.93	1.10	1.17	1.19
2015	0.87	0.92	0.95	1.06	1.22	1.28	1.33
2020	1.11	1.16	1.16	1.30	1.50	1.52	1.59
2025	1.33	1.38	1.41	1.52	1.65	1.68	1.73
2030	1.48	1.58	1.63	1.73	1.89	1.94	2.02
2035	1.73	1.82	1.85	1.98	2.16	2.23	2.30
2040	1.96	2.08	2.10	2.24	2.41	2.47	2.53
2045	2.13	2.22	2.23	2.41	2.59	2.71	2.80
2050	2.21	2.29	2.29	2.51	2.72	2.75	2.81
2055	2.07	2.12	2.22	2.40	2.57	2.64	2.69
2060	1.89	2.01	2.03	2.21	2.40	2.46	2.56

Source: HFCS 2010, own calculations

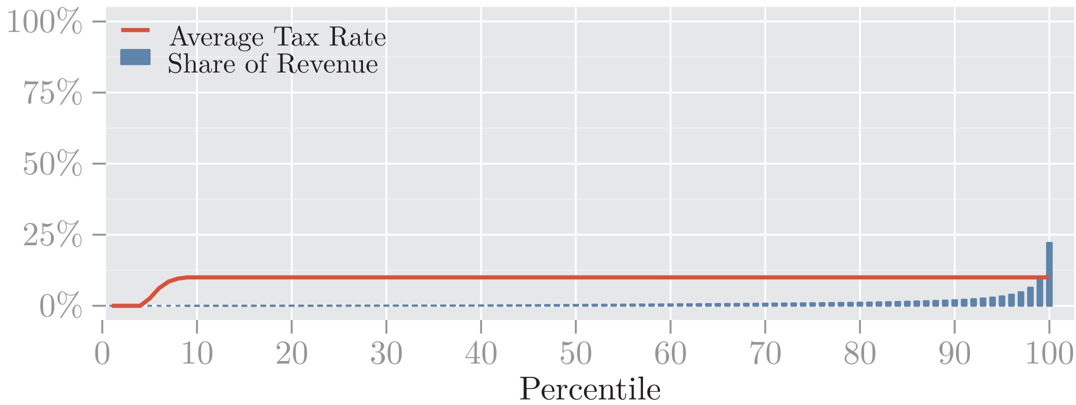

Figure 6: Actual Tax Burden — Exemption threshold: 0 €, Marginal rate: 10%

percentile would amount to 25%. This is a direct consequence of the unequal distribution of assets. Even if all households are taxed with the same marginal rate, the pronounced dispersion of wealth results in a similar large dispersion of tax contributions.

Optimal Inheritance Taxation In a recently published paper, Piketty and Saez (2013) put forward a model of inheritance taxation in the context of the literature on optimal taxation. In such models tax parameters are chosen such that the overall societal utility is maximized. Concretely, they formulate their model to describe a trade-off between equity and efficiency and look how the optimal tax rate reacts if they vary other key inputs to the utility function. The authors conclude that optimal rates are positive and quantitatively large if the elasticity of the aggregated bequests to the tax rate is low. Bequests are quantitatively large and highly concentrated, and society cares mostly about those receiving little inheritance. On the other hand, if society cares predominantly about the marginal consumption of inheritors, optimal tax rates would be low or even negative (Piketty and Saez, 2013).

For the purpose of calibration, Piketty and Saez estimate their model with US and French micro data. From the perspective of the lower 70% of bequest receivers, they work out a optimal linear tax rate of 60% in the central scenario. Even if they increase the bequests to a tax rate elasticity of, as they argue, very improbable levels, the optimal rate still lies around 35%. Focusing only on the upper third of the bequest distribution, things look a little bit different. If the aim is to maximize the welfare of this subpopulation, tax rates would have to turn negative, i.e. bonuses from the public budget would increase their utility.

To illustrate the budgetary potential of such high tax rates, I adopt a marginal tax rate of 66% which was found to be optimal in the case of a non-linear tax scheme with flat rate above an exemption threshold of 500,000 €.

Table 3: Tax revenue — 2x Exemption threshold: 500,000 €, Marginal rate: 66%

	P01	P05	P10	P50	P90	P95	P99
2010	1.17	1.31	1.46	2.25	3.18	3.57	3.78
2015	1.37	1.56	1.66	2.34	3.10	3.40	3.72
2020	1.29	1.84	1.95	2.56	3.57	3.70	4.26
2025	2.04	2.26	2.42	2.87	3.71	3.83	4.20
2030	2.02	2.52	2.75	3.28	4.26	4.36	4.82
2035	2.56	2.85	3.00	3.74	4.78	4.98	5.53
2040	3.11	3.33	3.54	4.29	5.27	5.55	5.75
2045	3.31	3.45	3.83	4.60	5.82	6.14	6.70
2050	3.37	3.89	4.09	5.02	6.33	6.49	6.66
2055	3.21	3.46	3.94	4.94	5.80	6.38	6.92
2060	3.25	3.68	3.90	4.72	5.88	6.09	6.81

Source: HFCS 2010, own calculations

Results are depicted in table 3 and figure 7. The estimated tax revenue lies between 2.2 billion € in 2010 and 5 billion € in 2050. However, it should be noted that the uncertainty margins are comparatively wide. Due to the tax exemption threshold of 500,000 € and the modeling assumption that each bequest is divided between two heirs, only a minority of households would be taxed. As can be seen in figure 7 the bottom 95% of the distribution would not be taxed at all. Afterwards the average tax rate increases significantly. It reaches 25% in the 98% percentile and crosses 50% in the top percentile. All in all, such a scheme would have pronounced progressive effects. While a majority of the population does not suffer from the tax, total revenue estimates are substantial.

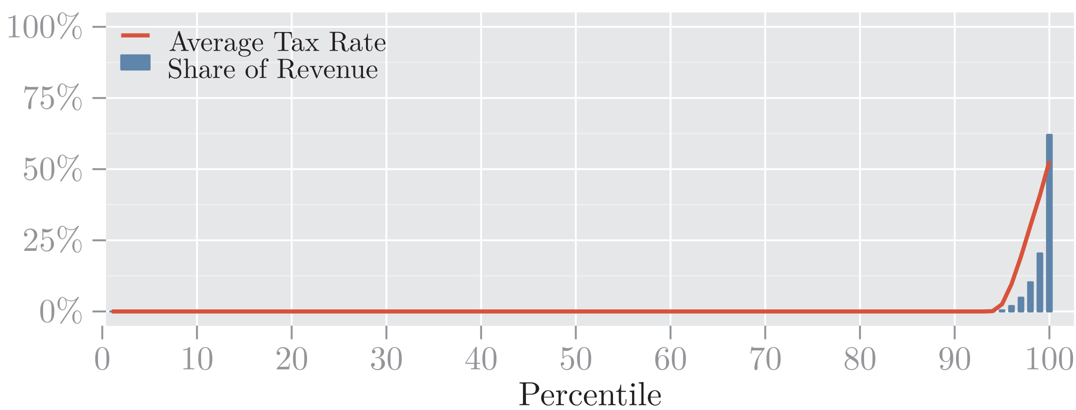

Figure 7: Actual Tax Burden — Exemption threshold: 2x 500.000 €, Marginal rate: 66%

5 Concluding Remarks

Academic research shows that while the distribution of income in Austria appears relatively egalitarian in an international comparison (Atkinson, 2008; OECD, 2008; Verwiebe et al., 2013), the distribution of wealth is highly skewed to the top (Eurosystem Household Finance and Consumption Network, 2013b). At the same time, wealth related taxes contribute only to a small extent to the government budget. In 2008, they made up 0.5% of gross domestic product (GDP), a value that was undercut only by three other states of the OECD.

The structure of the distribution of wealth among private households in Austria and demographic changes indicate a strong increase of aggregate capital transfers over the coming decades. Both the number of transfers and their average amount will increase substantially. On the basis of the performed projections, the sum of transferred assets surges from 8 billion € in 2010 up to 20 billion € in 2035. Against this background, the taxation of inheritances and gifts would not only support the principle of social justice and intergenerational mobility (see IMF, 2013, p.39), but also result in potentially attractive revenues. In the light of the difficult situation of fiscal budgets, this could provide the necessary flexibility to facilitate a shift in the tax burden from labor towards capital. According to (OECD, 2010) such a measure should result in positive growth effects since taxes on bequests and gifts have the lowest growth–inhibiting effects on labor supply decisions and human capital investments.

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Appendix

Table 4: Survival Rates — IIASA

2010	**Women**				**Men**			
	0	1	2	3	0	1	2	3
0-4	0.999	0.000	0.000	0.000	0.999	0.000	0.000	0.000
5-9	1.000	0.000	0.000	0.000	0.999	0.000	0.000	0.000
10-14	0.999	0.000	0.000	0.000	0.998	0.000	0.000	0.000
15-19	0.998	0.998	0.999	0.999	0.996	0.996	0.997	0.998
20-24	0.998	0.998	0.999	0.999	0.995	0.995	0.996	0.997
25-29	0.998	0.998	0.998	0.999	0.996	0.996	0.997	0.997
30-34	0.997	0.997	0.998	0.998	0.995	0.995	0.996	0.997
35-39	0.995	0.995	0.996	0.997	0.992	0.992	0.994	0.995
40-44	0.992	0.992	0.994	0.996	0.986	0.987	0.990	0.992
45-49	0.987	0.988	0.991	0.993	0.977	0.978	0.982	0.986
50-54	0.980	0.981	0.986	0.989	0.963	0.965	0.972	0.978
55-59	0.971	0.973	0.980	0.985	0.945	0.947	0.958	0.967
60-64	0.957	0.960	0.969	0.977	0.917	0.919	0.935	0.948
65-69	0.927	0.932	0.948	0.960	0.871	0.874	0.895	0.915
70-74	0.868	0.876	0.901	0.924	0.796	0.799	0.828	0.856
75-79	0.772	0.782	0.818	0.854	0.689	0.692	0.724	0.759
80-84	0.635	0.644	0.685	0.730	0.555	0.556	0.583	0.616
85-89	0.466	0.472	0.503	0.542	0.404	0.403	0.420	0.442
90-94	0.294	0.296	0.311	0.331	0.259	0.258	0.265	0.274
95-99	0.168	0.143	0.147	0.152	0.158	0.136	0.137	0.139

0: no formal education, 1: primary edu., 2: secondary edu., 3: tertiary edu.