Inherit against Wealth Inequality?

An Analysis on the Consequences of Wealth Inequality and the Effect of a Universal Capital Endowment in the case of Austria.

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Abstract

Austria is characterized by a relatively high wealth inequality compared to other EU countries. This thesis analyzes the consequences of high wealth inequality on the proper functioning of democracies, economic freedom, and climate change and evaluates the potential effect of a Universal Capital Endowment (UCE) on wealth inequality in Austria. The empirical analysis utilizes data from the Household Finance and Consumption Survey, supplemented by simulated data for the wealthiest individuals based on a combined dataset from the HFCS and the Top-100 rich list by the Austrian magazine *trend*. The findings suggest that implementing a UCE could lower Austria's wealth inequality Gini coefficient by approximately 6%. This reduction is largely driven by a considerable increase in net wealth for households in the lower half of the wealth distribution, alongside a decrease for those in the highest percentiles. Overall the results indicate that a UCE is an adequate policy to reduce wealth inequality in Austria.

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1 Introduction

Research on wealth has increased rapidly over the last decade (Zucman, 2019), ranging from its distribution in the society to socioeconomic attributes of people along this distribution (Humer et al., 2015), but also on the effect of wealth on democracies and whether high wealth inequality is problematic for its proper functioning (Schürz, 2019).

Overall, for most of the twentieth-century wealth concentration saw a significant decline in Europe but started to increase again at the end of the century, with the very top of the wealth distribution experiencing the majority of the growth, while the wealth of other parts of the distribution increased only modestly or not at all over the recent past. This is especially true for the middle class, which wealth decreased over the last decade (Zucman, 2016)

Focussing on Austria, Fessler and Schürz (2018) show that the inequality of the wealth distribution as well as its stability can partly be explained by the functioning of the welfare state as a substitute for the private accumulation of wealth and by the large effect the reception of an inheritance brings regarding the positioning of an individual on the wealth distribution. However, as Fessler et al. (2019) show the majority of the population in Austria tends to inherit little or nothing, which adds to the concentration of the majority of wealth in the hands of a few at the top of the distribution.

Studies have shown that rising wealth inequality bears problems not only at the individual level but also at the community level, ranging from issues for democracies (Solt, 2008), to economic growth (Bagchi and Svejnar, 2015), economic freedom (Krieger and Meierrieks, 2016), carbon emissions (Green and Healy, 2022) and equality of opportunity (Alstott, 2007).

Despite the trend of increasing inequality, many countries have been reluctant to implement redistributive policies, with Austria serving as a notable example, as it lacks both a wealth tax and an inheritance tax (Holzknecht, 2021). For the case of democracies, the small number of redistributive policies is partly due to inhomogeneous preferences for redistribution within the society, with the middle

class playing the deciding role as Lierse et al. (2022) pointed out.

This paper takes stock of the impact of high wealth inequality on the proper functioning of democracies, climate change, in particular carbon emissions, and economic freedom. The topics were chosen because of their high importance in the current political debate in Austria. Moreover, the thesis aims to contribute to the existing stock of research by providing new insights into the revenue potential of a wealth tax in Austria and the effectiveness of a Universal Capital Endowment (UCE) in regard to reducing the concentration of wealth in Austria.

The idea of a UCE is far from new and has been proposed centuries ago, with Paine (1797) being one of the earliest and most prominent examples. More recent examples are Ackerman and Alstott (1999) and Planel (2018). This thesis will apply the version proposed by Bach (2021), who analyzed whether a UCE is an adequate policy to reduce wealth inequality in Germany.

In order to get an accurate presentation of the distribution of wealth in Austria survey data from the Household, Finance, and Consumption Survey is combined with data from the list of the Top-100 wealthiest individuals in Austria published annually by the magazine *trend*. The combination of survey data with national rich lists is a common method employed in recent wealth research for countries with no tax records on wealth and shall counteract the failure of survey data to cover the very top of wealth distributions (Vermeulen, 2018). However, including the wealthiest households in the analysis of wealth effects of policies is key to receiving reliable results of a UCE on wealth inequality in Austria.

This thesis relies mostly on the approach proposed by Disslbacher et al. (2023) who replaced the very top of the wealth distribution with a Pareto distribution, which is based on HFCS and rich list data. Their approach stands out by obtaining the primary parameters of the Pareto distribution through regression, rather than through visual assessment of data or arbitrary decision-making, which has been a common practice in past research (Vermeulen, 2018, Bach et al., 2019). Pareto distributions are a prominent choice for capturing the missing rich since they approximate the tail of income and wealth distributions relatively well (Davies and Shorrocks, 2000).

Similar to Bach (2021) the effect of a UCE on wealth inequality as well as the revenue potential of a wealth tax is obtained by simulation using four tax systems with a progressive marginal tax rate and different tax allowances. The resulting UCEs range from €39.914,74 to €23.985,29 and the Gini-coefficient of the wealth distribution in Austria is reduced by a minimum of 4,83% and a maximum of 7,33% depending on the tax scenario. Particularly at the bottom and the top of the distribution, the redistributive effect is strongest. Even though behavioral responses to the introduction of a wealth tax are not taken into account the obtained results promise that the introduction of a UCE bears the potential to reduce wealth inequality in Austria, especially at the edges of the distribution.

To my knowledge this analysis presents the first study that analyzed the effect of a UCE on wealth inequality for Austria. More research is needed particularly regarding the accurate estimation of wealth distribution in Austria but also on the inclusion of behavioral responses to the introduction of a UCE to get a better understanding on its effect.

The remainder of the thesis proceeds as follows: Section 2 discusses the consequences of excessive wealth inequality and introduces the idea of a UCE and Section 3 presents the data, section 4 the methodology, and section 5 the results. Section 6 concludes.

2 Inequality & Redistribution: Policies & Practices in Austria & the EU

Wealth tends to be highly concentrated at the top of the distribution in Europe. Regarding to this, Austria represents a country with an above-average wealth inequality compared to other European countries (Fessler et al., 2019, Shorrocks et al., 2021).

While this development is observable in most of the countries of the European Union, many countries have been reluctant to implement redistributive policies, with Austria serving as a notable example, as it lacks both a wealth tax and an

inheritance tax (Holzknecht, 2021). In part that lack of redistributive policies is due to inhomogeneous preferences for redistribution within the society. Lierse et al. (2022) show that next to the perceived position of an individual along the wealth distribution, expectations about future social mobility determine whether redistribution is preferred or not. While the diverging preferences of upper and lower wealth deciles balance each other out, the middle class appears to feel like they do not have much to gain or lose, according to Lierse et al. (2022). As a result, the salience of this group for redistribution is relatively low.

Further evidence suggests that misperceptions about the true level of inequality of a society (Kenworthy and McCall, 2008) or about the own position along the distribution of wealth or income (Bellani et al., 2021;Bublitz, 2022) also explain why preferences for redistribution have not risen significantly.

Apart from preferences for redistribution, other factors play a role in the decision of whether and how much wealth is taxed. For that reason consequences of high or excessive inequality are analyzed in the following subsection, to get a better understanding if taxes on wealth are beneficial and can be expected to have a positive impact on a society.

2.1 Consequences of high/excessive Inequality

There exists a vast amount of research on income-, and wealth inequality and its consequences on various dimensions, ranging from economic growth to questions regarding the reporting of media. This subsection will cover studies that investigated the consequences of excessive wealth inequality on democracies, economic freedom, and climate change. The analysis will be limited to those topics, partly because of the attention they receive in current political debates and partly because of their relevance to the social well-being of the people within a community and society as a whole.

Looking at the proper functioning of democracies in the light of high inequality is particularly interesting, due to the question of whether the basic principle of democracies, which is equal power for every citizen, is compatible with big actual differences in the amount of resources individuals possess. Referring to the argu-

ments made by Fessler and Schürz (2017) the question is whether status and power obtained through wealth can be utilized to influence political decision-making in one's favor and undermine the one-person-one-vote rule.

Evidence suggests that this is actually the case, and mainly realized through three channels: political engagement, trust, and the quality of institutions.

In general, political participation requires resources that can be allocated to aspects like political discussions, elections, or research. Since people at the bottom half of the wealth distribution have fewer resources at their disposal, this creates an imbalance in how much people can engage in political processes. Solt (2008) shows, that high inequality reduces political interest, the frequency of political discussions, and the participation in elections among all but the wealthiest people in a society. Moreover, Schäfer (2012) adds that the frequency of other forms of political participation than the most conventional ones, like elections, is positively correlated with income. This means that more affluent individuals participate more often in less conventional ways like signing a petition or working for a party, which enables them to actively shape the political discourse in their favor.

Both of those results demonstrate that high inequality creates a divergence in the degree of political engagement between affluent and less-affluent individuals. Wealthier households benefit from that divergence and may take advantage by influencing the political discourse in their favor.

Furthermore, inequality is positively correlated with less trust in democratic institutions (Schäfer, 2012). This seems plausible, considering that the additional political participation of wealthier individuals is likely to bias political decision-making in their favor. Following that argument, less affluent individuals, who do not have the resources to participate as actively in political processes may feel less supported and in turn, lose confidence in democratically elected administrations to represent them adequately.

Resources may also be used in an illegal way by bribing government officials. Jong-Sung and Khagram (2005) and Policardo and Carrera (2018) investigate the relationship between inequality and corruption and conclude that there is a slightly positive effect of inequality on corruption. The weakness of the correlation suggests

that the effect is most likely to be indirect and works through intermediate steps on corruption. Most convincingly the reaction stems from an income inequality that is sufficiently high to be perceived as unfair by the population triggering the already-mentioned loss of confidence in democratic institutions and government officials. This in turn leads to adverse effects on people's beliefs on corruption and the legitimacy of rules and law, which ultimately results in less opposition against and more tolerance of corruptive activities.

However, political power resulting from wealth, will not only be exerted on political institutions but economic institutions alike. As a consequence aspects like market regulation, property rights protection or general rule of law may get tilted in favor of the most affluent, which further cements their position at the top of the social hierarchy but may also have negative effects on the economy.

In fact, inequality reduces economic freedom, which is an umbrella term for various aspects of the economy, as Krieger and Meierrieks (2016) demonstrate. In particular, this includes the protection of property rights, the rule of law, regulation of international trade, and domestic business regulation. Components of economic freedom that are not affected by inequality are government size and sound money. While Krieger and Meierrieks (2016) looks at income inequality, Islam (2018) analyzes the same question using wealth inequality. The results are fairly similar, with the exception that an increase in wealth inequality also reduces access to sound money and government size, which may result from a cut in social services. Moreover, both studies reveal that the government type of a society has only a small influence on the result. This emphasizes that democracies seem to fail in counteracting developments of excessive inequality, that result in negative consequences for various aspects of economic freedom like protection of property rights. That inability may come from corrupted political institutions, as was mentioned earlier.

Consequently, it seems that excessive inequality bears adverse effects on economic freedom and depresses aspects that are crucial for a healthy and successful economy, like regulation of economic activities and access to sound money.

Lastly, there is a research field on inequality that is relatively young and has gained a lot of attention in the recent past due to its acute relevance. That field is

the impact of inequality on climate change, in particular on the amount of carbon emissions.

There is reasonable evidence that the effect of inequality on carbon emissions is positive and therefore fuels climate change. For example, income and wealth inequality have a positive and significant effect on carbon emissions from residential energy consumption (Adua, 2022). Taking into account that wealthier households tend to live in more energy-efficient houses and are able to afford more efficient household appliances, that result is highly informative in its magnitude and likely the cause of a substantial rebound effect. However, that relationship is not only observable in terms of energy consumption but can be found in all consumption sections. Knight et al. (2017) find a relatively stable positive effect of wealth inequality on carbon emissions. Thus, a one percent increase causes an increase in carbon emissions of 0,75 percent. However, that link is not one-dimensional but rather works through a number of relations that are closely entangled.

It has already been shown that excessive inequality potentially erodes the quality of economic-, and political institutions, which in turn are influenced by the interests of the most affluent. This holds true in the context of climate change, as Green and Healy (2022) show. The consequence is that capital interests prevail, which are often carbon-intensive industries and activities. Consequently, that power imbalance allows wealthy individuals to follow an unsustainable lifestyle and consume conspicuously as a declaration of status, which makes less affluent individuals strive for such a lifestyle as well.

Additionally, people at the bottom of the income distribution desist from supporting policies that shall reduce carbon emissions significantly, since they fear being stripped of their work and livelihood or losing some of their already low purchasing power. As a final point, Green and Healy (2022) points at the trustlosing factor of socioeconomic inequalities, that limits the degree of sacrifices that people are willing to make in order to reduce carbon emissions and mitigate climate change.

In total, it has been shown that excessive inequality bears adverse effects on democracies, economic freedom, and carbon emissions. The common denominator between those three aspects is that a sufficient amount of wealth creates political

power. The consequence is that wealthy individuals influence the political discourse in their favor and make sure that their economic and social interests are served. While those political power imbalances create further social-, and economic inequality, they moreover potentially undermine the basic one-person-one-vote principle of democracies.

In the next subsection this thesis will analyze the status quo of redistribution in Europe with a particular focus on Austria.

2.2 Status Quo of Redistribution in Austria and the European Union

So far it was shown that there are downsides to excessive inequality within a society on various levels. As a consequence, governments adopted policies to limit the creation of excessive inequality and distribute resources more equally across the population.

Before investigating particular countries and policies it is necessary to get a better understanding of the concept of redistribution and some basic aspects of the distribution process. As Luebker (2015) points out there are three stages in the distribution process of income. The primary distribution of income refers to the allocation of resources among individuals which purely results out of market transactions, before any government interventions have been done. Consequently, the secondary distribution of income refers to the situation after the state interfered by levying taxes or granting benefits. The remaining amount after taxes have been deducted and net transfers have been added is called net income, over which individuals can fully dispose in their interests. Lastly, tertiary distribution refers to services or goods that are directly provided by the state to individuals. Examples are garbage disposal, streets, or land defense.

Similar to the term wealth defining redistribution comes with its difficulties. In general, it is often defined as *to alter the distribution of something* (Merriam-Webster, 2023), which is a rather vague definition, as Luebker (2015) rightfully points out. It follows that by default all government decisions have some distri-

butional effect in one way or another. For example, the decision to liberalize or regulate an economic sector creates winners and losers, and therefore intrinsically carries a distributional effect. However, more commonly what is meant when talking about redistribution, is the direct fiscal redistribution like taxes or transfers, which are particularly implemented to alter the distribution of resources in one way or the other. Henceforth, when discussing redistribution in this thesis, direct fiscal redistribution measures are what will be referred to.

In principle, redistribution works through the collection of taxes and the transfer of benefits. However, countries differ in the way their respective tax, and benefits systems are designed and consequently in how much is redistributed.

Inchauste and Karver (2018) provide an overall assessment of fiscal redistribution across countries of the European Union. They show that the tax and benefits systems of all EU countries are progressive and ultimately fulfill their goal of reducing income inequality. However, this does not hold for poverty reduction. That unexpected finding can be explained by the fact that in some countries the volume of social transfers that are given to households at the bottom of the income distribution is insufficient to cancel out the income-reducing effect of direct taxes. Examples are Hungary, Bulgaria, and Romania. Moreover, if regressive indirect taxes, like value-added-, or excise taxes, are considered, this holds for more countries. Regarding the benefits system, the authors criticize that the majority of government spending goes into non-means-tested benefits, although mean-tested benefits have proven to be significantly more progressive. It follows, that EU-countries' social benefits systems can be improved in terms of their inequality-reducing effect.

Although all EU member states manage to reduce income inequality, the difference in the specific design of nations' tax and benefits systems naturally implies that the resulting redistributive effect varies between countries. Avram et al. (2014) reveal Belgium, Hungary, Ireland, France, Germany, and the Czech Republic reduce their respective Gini-coefficient more than twice as much compared to Cyprus, Malta, Bulgaria, Latvia or Lithuania. [1] Among specific redistribution policies, di-

[1]Hungary represents an example of a tax and benefits system with a relatively high redistributive effect overall, but a relatively small one when considering the bottom part of the income distribution alone. This explains the on first sight implausible result of Inchauste and Karver

rect taxes and public pension contribute the most to the reduction of inequality, which is mostly due to their size and significant share of disposable income.

So far referenced studies in this subsection only investigated the redistributive effect of tax and benefit systems on the distribution of income. However, as mentioned in previous sections the distribution of wealth is in general less equal than the distribution of income, which highlights the necessity to include wealth in studies that analyze the efficiency of redistribution systems. If wealth is included, the overall redistributive effect of tax and benefits systems within the European Union are significantly lower, as Kuypers et al. (2021) demonstrate. Adding wealth to the stock of resources that individuals dispose of decreases the conventional effect of taxes and benefits that are based on income, due to its reduced relative size. The progressivity of specific instruments is also reduced as a result of the addition of wealth. Since personal income taxes and social benefits are generally based on income levels, the high concentration of wealth at the top of the distribution reduces its progressivity, although they remain the instruments with the highest redistributive effect, due to their size.

According to the evidence brought forward by Kuypers et al. (2021) excluding wealth from analyses concerning the efficiency of redistribution policies potentially results in misleading conclusions about their effect.

Since this thesis will analyze the implementation of a specific redistribution policy in Austria it is essential to understand the peculiarities of its tax system and its design. Therefore, in the second part of this subsection, the details of the Austrian system will be outlined and compared to other countries of the European Union.

Overall taxes can be distinguished by their base, which leaves three types of taxes: Taxes on income, capital, and expenditure. Moreover, while income-, and capital taxes represent direct taxes, for which the taxpayer is directly assessed, expenditure taxes naturally represent an indirect tax, for which a third party is assessed instead of the taxpayer itself. The most common examples for each type

(2018) and Avram et al. (2014) that the Hungarian system although having a relatively large redistributive effect does not reduce poverty overall.

of tax are the personal income tax (income tax), a wealth or inheritance tax (capital tax), and an excise or sales tax, more commonly known as value-added tax (expenditure tax) (Sandford, 2000).

In general, as indicated in previous paragraphs, the tax systems of EU-countries are progressive. However, while this holds true for the whole tax system it is not necessarily the case for individual taxes. One common example is the value-added-tax (VAT). As a consequence of the indirect nature of the taxation process, the individual taxpayer is not assessed, which implies that the tax burden can not be coupled to the individual taxpayer's economic position. Hence, indirect taxes are regressive.

Regarding to this, Anderwald (2022) states that there is an observable trend in many industrialized countries including Austria that the overall tax burden is increasingly shifted from direct income taxes towards indirect consumption taxes, and with that from progressive towards regressive taxation. Moreover, while labour income taxes in Austria are progressive at relatively high rates, that is not the case for income resulting from capital. Gains on capital assets are taxed at a special linear rate that is independent of income or wealth, which ultimately benefits capital income over labour income. One explanation for the development of decreasing taxation of capital is that the high mobility of capital makes it harder to assess in a highly globalized economy compared to labour income or consumption.

The consumption-oriented shift in the Austrian tax system reduces the accuracy of the system in terms of the ability-to-pay principle to which Austrian tax law is subject, as Anderwald (2022) further elaborates. Poor individuals are hit proportionally harder by indirect taxes like the VAT because they tend to spend all of their disposable income, while richer individuals are able to save a fraction of their income. Additionally, low-income individuals spend a higher fraction of their money on goods and services that are taxed indirectly vis-a-vis high-income individuals. Although special rates on particular goods and services have been implemented in numerous countries to improve the accuracy of the tax and soften the burden for individuals with few resources they still fall behind the equalizing effect of progressive taxes. Lastly, due to their limited resources low-income individuals

generally do not own capital assets, excluding them from potential tax benefits on capital income.

There is clear evidence that countries with a disproportional high tax burden on consumption and labour compared to capital are faced with rising inequality (Atkinson and Piketty, 2007).

By comparing tax rates in Austria to other European countries the high tax burden of labour income sticks out. The top personal income tax rate of 55% ranks third among European OECD countries only behind Denmark (55,9%) and France (55,4%).(Tax Foundation, 2024d) Corporate income and capital gains are taxed at a significantly lower flat rate, with the former being 23%. (Tax Foundation, 2024a)

Regarding consumption taxes the standard VAT rate in Austria is slightly below average among other EU member states with 20%. Hungary with 27% and Croatia, Denmark and Sweden with 25% represent the countries with the highest standard VAT-rate while Luxembourg can be found at the other end of the distribution with a tax rate of 17%. (Tax Foundation, 2024e)

When it comes to taxes on wealth there are only a few countries in Europe that levy a tax on overall net wealth namely Norway, Spain and Switzerland, with the Spanish design being the only one that is progressive. They differ further in terms of their tax allowances. Moreover, there are countries with a tax on selected assets instead on overall wealth. Examples are France which taxes real estate and Italy that taxes real estate as well as financial assets that are held abroad by Italian residents. (Tax Foundation, 2024f) In contrast to taxes on the stock of wealth, the majority of European countries collect some type of tax on the transfer of wealth also known as estate, inheritance and gifts tax. A common characteristic among the otherwise dissimilar tax designs of the respective countries is that most states do not collect taxes on transfers below a specific threshold. The highest rates of estate, inheritance and gift taxes can be found in Spain with 87,6% and Belgium with 80,0%. (Tax Foundation, 2024b) Up until 1993 Austria levied taxes on the stock and transfer of wealth as well but repealed a net wealth tax in 1993 and an inheritance tax in 2008 (Holzknecht, 2021). Currently Austria essentially collects no taxes on wealth apart from a tax on the acquisition of land property and the value

of land property, however which only make up a small share of total tax revenue.

Overall, Austria obtains most of its tax revenue from personal income taxes with 57,6% of which 22,6% are payroll tax revenues and 34,9% stem from social insurance levies. Consumption taxes make up 27,5% and with that more than a quarter of total tax revenues while corporate taxes contribute comparably little with 6,4%. Property taxes contributions are vanishingly low with 1,3% and result from the absence of taxes on the stock or transfer of wealth. (Tax Foundation, 2024c)

In total the tax burden in Austria is distributed rather unequally among the population with income-, and expenditure levies bringing in the majority of revenue. In contrast to that corporates are significantly lower taxed with a trend that promises the rate to decrease even further. Referring back to the three types of tax bases, one can see that while income and expenditure is taxed at a relatively high rate, wealth is nearly not taxed at all in Austria, which results in an unequal distribution of the tax burden among the population, which further amplifies already existing inequalities that have been mentioned earlier in this thesis.

In the next subsection a redistribution policy is introduced with the potential to at least partially correct those unequal tendencies in Austria.

2.3 Policy Details: Universal Capital Endowment

Before going into detail about the policy in question and after having laid out the status quo of redistribution in Austria compared to other European countries it makes sense to analyze the motives of redistribution of governments. Boadway and Keen (2000) highlight that next to social justice and greed, efficiency is one of the main motives for redistribution within a society. Regarding the aspect of efficiency, the welfare-enhancing effect arises amongst others from altruism, individuals being better off by assisting other people, and insurance. By stepping in and redistributing, for example over a life-cycle or between borrowers and lenders, problems like adverse selection or imperfect information are softened. The reduction in uncertainty and the reallocation of resources puts individuals in a position to make better decisions, which ultimately increases efficiency and enhances welfare.

Historically there have been various proposals for a UCE, however, which re-

ferred to different motives as to why the implementation is necessary and beneficial for society. The first one, dating back to 1797, was made by Thomas Paine (1797), who claimed that the improvements in welfare made at that time through technological progress were unfairly distributed. In specific, he criticized, that while technological progress enabled people to cultivate the land and reap the benefits, those benefits were withheld from the common public, by land property, although the earth on which the improvements were made has no owner and belongs to everybody. As a solution, he proposed the creation of a national fund that should pay every person at the age of twenty-one *fifteen Pounds Sterling* as compensation for the loss of this person's *natural inheritance*.

Ackerman and Alstott (1999) enhanced that proposal by further referring to equality of opportunity next to fairness and equality. They argued that the increasing inequality in resources not only affected the purchasing power of individuals but also limited the pool of options that especially young adults can choose from in the context of growing up. In specific their proposal of a UCE totaled at 80.000$, which would be paid for by an annual wealth tax of 2%. The full amount would be paid out after high school graduation if college-bound. Otherwise, to prevent inefficient and improper spending, the endowment shall be paid out over the course of three years, from twenty-one to twenty-four years of age, to allow the individual to get accustomed to the additional resources and may learn from failures that then would only result in the loss of a fraction of the total amount. Ultimately, the authors envision a more egalitarian society in which individuals get the means necessary for freedom of choice regarding employment-, educational-, or other livelihood decisions.

Planel (2018) followed a similar argument however putting more emphasis on the aspect of fairness and basing his analysis on the theories of justice brought forward by Rawls (2004). According to the author, every french citizen shall receive 50.000€ over a five-year period starting the day they turn eighteen. The specific payout design shall guarantee access to college education and cover the majority of costs involved.

The most recent policy proposal was made by Bach (2021). He proposed the payment of 20.000€ to every resident that turned eighteen, which would require

an annual budget of 15 billion €. As a financing source, the author suggests either a higher inheritance tax up to 30% that would be levied every thirty years, or a marginal increase in the wealth tax, which is collected annually. Depending on the specific design of the tax scheme the UCE would decrease the Gini-coefficient of wealth inequality in Germany from five to seven percent.

A common characteristic of those proposals is the goal to achieve equality of opportunity. Alstott (2007) points out that receiving an inheritance constitutes an unjustified head start for the receptor compared to other individuals. Hence, to achieve equality of opportunity, a fraction of those wealth transfers need to be redistributed from the initial receptor to individuals who otherwise would not receive an inheritance. Ultimately the system that is required to realize equality of opportunity is very similar to the mentioned policy proposals in this subsection, based on two cornerstones: wealth taxation and a UCE.

Since the argument that inheritances represent a head start for the receptor is one of the main arguments for an inheritance-, or overall wealth tax, it promises insightful to analyze whether there is evidence that this is actually the case.

In the literature, the common method to analyze whether inequality results from inequalities in opportunity is to decompose the total measure of inequality into two parts. One that can be explained by an individual's motivation and performance called *effort* and one that comes from other aspects such as characteristics or origin called *circumstance*. The idea behind that decomposition is to differentiate between the fraction of inequality that is due to differences in aspects that are outside the control of individuals, *effort*, and the fraction of total inequality that can be attributed to differences that are without the individuals control, hence, *circumstances*. The larger the share of total inequality that can be explained by *circumstances* the higher the inequality of opportunity.

Regarding income inequality evidence suggests that the share of inequality of opportunity of total inequality is rather small for Nordic-, or continental European countries, but significantly larger for Mediterranean and Atlantic European countries, according to Marrero and Rodríguez (2012). Their results range from 22,22% (Portugal), 15,02% (Ireland) to 5,08% (Austria) and 2,07% (Germany) in terms of

the share of inequality of opportunity to total income inequality.

However, it was shown that redistribution policies are predominantly based on income and expenditures, while wealth is taxed at a lesser rate or in some cases not at all. Moreover, the distribution of income is significantly less stable than the distribution of wealth, which is partly due to the problems arising when transferring income to the next generation compared to wealth. Both of those factors suggest that inequality of opportunity in wealth may be higher than inequality of opportunity in income, which would indicate that there is limited influence of individuals in terms of their control over their position within the wealth distribution.

Palomino et al. (2017) analyzed that research question for Spain. Their results show that inequality of opportunity in wealth is indeed higher than inequality of opportunity in income, also in terms relative to their respective total inequality. In specific, the former makes up 48,97% and with that nearly half of the total wealth inequality, while the latter represents 33,46% of total income inequality. Furthermore, that difference in percentage is completely equalized once inheritances are excluded from the analysis. It follows that inheritances play an essential role in the inequality of opportunity measure which corresponds to the argument made in the previous paragraph.

A similar pattern is observable when Germany is considered. The inequality of opportunity measure is higher for wealth than for income, in absolute and relative terms according to Graeber et al. (2022). In addition to that it was shown that the aspects that influence inequality of opportunity in wealth differ from those that are relevant for inequality of opportunity in income. While gender and personal education represent the most important aspects for income, inheritances, or gifts, parental education and the region of birth predominantly affect inequality of opportunity in wealth. In specific, inheritances explain up to 20% of the wealth IO measure.

The study for Germany is particularly interesting for the purpose of this thesis, since, as Fessler et al. (2019), Fessler et al. (2023) and Baresel et al. (2021) demonstrate, Germany and Austria are both characterized by a somehow similar level of wealth concentration and a similar concentration of inheritance net value

along the wealth distribution, with the top of the distribution receiving a relatively large share of the total net value of inheritance of the respective country. Therefore, it seems likely that the results of Graeber et al. (2022) are comparable to the situation in Austria, especially regarding the importance of an inheritance reception in the context of wealth distribution and inequality of opportunity. Furthermore, evidence provided by Leitner (2016) supports that assumption as well, indicating that about 40% of wealth inequality in Austria can be explained by the inequality concerning the question of whether, and how much an individual inherits. Hence, redistribution policies that aim at balancing out inequality in inheritances appear promising in their effectiveness of redistribution, especially in the case of Austria.

As a last point, it is necessary to address the potential economic effects that come with the implementation or increase of a wealth tax, since the predominant source of funding for the mentioned proposals comes from taxes on wealth. There exist a multitude of behavioral responses ranging from under-reporting and offshore evasion to migration of the taxed individual to minimize its respective tax burden (Advani and Tarrant, 2021). In particular, two of the main arguments against a wealth tax are its consequences for the savings behavior as well as the labor supply, since those aspects are relevant for the majority of property-owning individuals, while the first three responses may only present a practical option for the richest among them. The argument goes that wealth taxes distort the incentive to save and encourage individuals to spend more, which results in financial issues over the life cycle and a saving deficit in retirement. Moreover, the distortion of the incentive to save may go hand in hand with a reduction in the labor supply which affects the productivity of the economy and reduces the financial resources of the individual.

While there is overall little empirical evidence for those effects (Advani and Tarrant, 2021) Adam and Miller (2021) points out that very affluent individuals are less likely to change their labor supply or saving behavior as a response to an increase in wealth taxation. Because of that aspects like tax allowances shall guarantee that the tax burden is mostly carried by high-wealth individuals, which is included in the proposal by Bach (2021).

In contrast to that, Guvenen et al. (2023) highlight that there are also positive

effects of wealth taxation. Their main argument is that the reduction of the incentive to save brought forward by the tax leads to efficiency gains since holding assets gets less attractive. It follows that individuals are encouraged to use their assets in a productive way to reduce their tax burden and increase their return on those assets. Consequently, the authors suggest reducing the tax rate on capital income, which punishes individuals who are more productive and receive a higher income and shifts the tax burden towards the stock of wealth.

In total, behavioral responses have to be considered when implementing a wealth tax. However, if aware the tax can be designed in a way to minimize the negative economic effects of the tax, for example, tax allowances, and maximize the positive aspects such as productivity increase, diversification of tax revenue sources, and of course fairness. Furthermore, although the universal provision of capital already incorporates an equalizing effect due to the fact that the majority of the Austrian population does not receive an inheritance, combining it with a wealth tax alters the equalizing effect significantly. By that, wealth inequality as well as inequality of opportunity will be reduced substantially.

Before addressing the empirical analysis of this thesis it is necessary to elaborate on the specific design of the UCE studied here. As already mentioned the proposal of Bach (2021) will function as a blueprint for this study due to the relatively good comparability of the German and the Austrian status quo in terms of wealth inequality. In essence, the Capital Endowment will be paid out to every Austrian citizen who turns 18 regardless of their level of assets or income. That aspect will counteract the inequality-enhancing effect of an inheritance reception, which is highly unequally distributed at the moment among the Austrian population. The usage of the Endowment however will be tied to specific options, such as the financing of education, the purchase of a home, or for self-employment purposes. Moreover, it can be used as a financial puffer in case of unforeseeable events such as illness or unemployment, or it may cover expenses in the context of care responsibilities of family members. As a puffer, it will also earn interest over time and serve as a pension provision. Regulating the purpose of the Endowment shall prevent intended, or unintended misuse and make sure that the capital is used in a

way that benefits not only the individual but also the society.

So far the evidence included in this thesis paints a rather clear picture of the effectiveness of a UCE as an instrument to reduce wealth inequality. However, to make sure that those conclusions hold in reality it is vital to complement the extensive literature research so far with an empirical analysis that is based on available data on wealth in Austria, which will be done in the following section.

3 Data

For the following analysis, the Household Finance and Consumption Survey (HFCS) of the European Union will be utilized, which includes ex-ante harmonized data on wealth in Austria as well as other EU member states. However, since studies have shown that surveys fail to represent the top tail of wealth distribution effectively (Waltl and Chakraborty, 2022; Vermeulen, 2018; Kapeller et al., 2021) a rich list from the European Rich List Database (ERLDB), containing the Top 100 wealthiest individuals in Austria is used as an estimate of the top tail of the wealth distribution and combined with the HFCS data.

Lustig et al. (2020) highlights three main reasons for the "missing rich" in household surveys: non-, or insufficient coverage of items, non-response and under-reporting. Coverage errors occur when specific sub-groups of the target population are deliberately left out, or not reachable or identifiable by the researcher, like homeless people for instance. Moreover, since high-wealth individuals typically make up a very small fraction of the total population the probability of being interviewed is comparably small for this sub-group (sparseness), which leads to coverage errors at the top. Secondly, unit non-response, as well as item non-response play a critical role as well. By that individuals with a positive ex-ante probability of being selected into the sample fail to respond completely (unit non-response) or do not respond to a specific question (item non-response), which leads to a biased and non-representative sample of the population. Moreover, as Kennickell (2019) shows non-response is non-random and correlated with socioeconomic characteristics and wealth in particular, ultimately culminating in a systematically biased sample of

the population that fails to cover the top tail of the wealth distribution accurately. Ultimately, rich individuals tend to underreport their true level of wealth, either because some of their possessions are difficult to value, they lose track of capital flows between highly diversified portfolios, or they misreport their level of wealth on purpose.

To counteract those named inefficiencies data from the HFCS and rich list data from the ERLDB are combined and used for the empirical analysis. In the following subsection, the two data sources are further introduced.

3.1 Household Finance and Consumption Survey HFCS

The HFCS provides household-level data on various aspects of socio-demographic and financial factors, like consumption, income, and wealth. While the survey is conducted by the different national central banks or statistical institutes, the process is supervised by the European Central Bank (ECB), which makes sure that a common methodology is used, or pools the different datasets together. Over time an increasing number of countries enrolled in the program. While the first wave of the HFCS, in 2010, was conducted in merely 15 countries that number increased to 22 in the third wave. For the analysis of this thesis, the third wave of the HFCS will be utilized, which was conducted from 2016 until 2017 for the case of Austria (Finance and Network, 2020).

Overall the HFCS employs various strategies to increase the representation of the data for the target population, although the applied methods vary significantly between countries depending on the external data available. Regarding the sampling design the HFCS utilizes probability sampling in which every citizen of a country has a positive probability of being selected into the sample. In addition, most countries stratify the target population before sampling.

As already shown, the issue of representation is especially important for wealth surveys, due to coverage errors, non-response and underreporting. Therefore there are multiple strategies employed in the HFCS to counteract that inefficiency.

First, because of the before-mentioned issues, Kennickell (2008) proclaims that it is vital to have a high share of wealthy households in the sample. The higher

share of wealthy households increases the probability to sample those households even though they are harder to reach by the researcher, because of prolonged absences from their main residence or a higher concern for privacy for instance. In the third wave of the HFCS, although Austria is not one of them, 17 out of 22 countries implemented some type of oversampling in their survey. The oversampling methods utilized were based on different criteria, dependent on available data, and therefore vary considerably between countries. For example, Germany used regional indicators (wealthy street sections), France personal wealth data, Portugal dwelling size and Cyprus electricity consumption for their oversampling strategy.

In essence, increasing the relative share of wealth households in the sample population shall counteract coverage errors (sparseness) and non-response. However, since methods of oversampling differ between countries it is interesting to compare the success of the respective methods, for which effective oversampling rates are used as an indicator. They illustrate the difference between the share of wealthy households in the sample compared to the population. In the case of the top 5%, the effective oversampling rate ranges from 287% in France, which uses personal wealth data to -15% in Austria, where no oversampling is done.

Moreover, data points are weighted to further minimize the effect of coverage errors or non-response. The weighting procedure is nearly identical in all participating countries and accounts for selection probability, unit non-response, coverage errors, and adjustments to external data. By that weights, being the inverse of the probability of being selected into the sample run through three stages. First weights are adjusted for non-eligible units and multiple selection probabilities. After that response probabilities by characteristics are estimated and used to adjust for non-response. And finally, auxiliary data is consulted to adjust weights in line with population totals or other variables like age, or gender. The total sample weights are provided such that they add up to the total number of households in the population.

Still, unit-, and item-non-response, and underreporting remain issues since it is not mandatory to report on single questions or at all for selected households. As a consequence, this thesis will use a national rich list as a complementary data

source. Researchers complemented wealth data from the HFCS with data from national rich lists, to get a better estimate of the very top of the wealth distribution (Waltl and Chakraborty, 2022, Kapeller et al., 2021, Vermeulen, 2018, Disslbacher et al., 2023). Since that approach is used in this thesis as well, the next subsection will provide some details on those aforementioned rich lists.

For the analysis conducted in this thesis, the following variables of the HFCS are used:

DN3001 - net wealth: Total household assets excluding public and occupational pension wealth minus total outstanding households liabilities. [2]

HW0010 - household weight

RA0300 - age: Age of the person at the time of the interview.

SA0010 - household identification number

3.2 European Rich List Database

Concerning the limitations of survey data regarding the coverage of the very top of the wealth distribution, researchers started using rich lists put together by media companies as a complementary to survey data. Recent examples are Baselgia and Martinez (2024) who study wealth inequality in Switzerland, Luo and Chen (2021) take a look at China's wealth inequality, and Cantarella et al. (2023) focus on Finland, Germany, France, and Italy. The specific rich list used in this thesis is put together by the Austrian magazine *trend* and accessed through the publicly available European Rich List Database (ERLDB, http://erldb.ineq.at/). The database consists of rich list data from 23 countries with around 13.000 observations and is put together by Disslbacher et al. (2023) to facilitate data access for researchers.

It has to be noted that data from national rich lists comes with several quality limitations. Disslbacher et al. (2023) point out that journalistic magazines are primarily interested in maximizing sales rather than providing correct data, which potentially leads to incomplete, or inaccurate lists. Moreover, values from rich lists stem from publicly available information, which may result in assets abroad, or not disclosed possessions being left out. Finally, wealth levels from rich lists are not

[2]Descriptions of the variables stem from Finance and Network (2021)

reported on a common unit but rather vary between individuals, households, or families.

Despite those limitations in terms of data quality, at the moment rich lists present the best available source for top wealth data.

4 Methodology

In the following section, the methodology used in this thesis is introduced starting with a general description of the Pareto distribution and its relevance for the top tail data of wealth distribution. Afterward, the process of the adjustment of the top tail of the wealth distribution is introduced followed by the method of analysis exploited to simulate the effect of a UCE on wealth distribution in Austria.

4.1 Pareto Distribution

In recent research, many economists have taken advantage of the discovery that the top of a wealth distribution approximately follows a Pareto distribution named after its discoverer Vilfredo Pareto. For example Ogwang (2011) uses it to estimate Pareto distributions for the 100 wealthiest Canadians for the years 1999-2008, Sinha (2006) for the 125 wealthiest Indians between 2002-2004 and Hegyi et al. (2007) compute power law's for the noble society in medieval Hungary.

This thesis will take a similar approach as Disslbacher et al. (2023) in the sense that the total wealth distribution of Austria is corrected by a simulated tail based on its Pareto distribution, of which the relevant parameters are obtained via a combined dataset of micro-data from the HFCS and the rich list of the Austrian magazine *trend*, as put forward by Vermeulen (2018).

The cumulative distribution function (CDF) of a pareto distribution

$$F(w_i|w_{min}, \alpha) = 1 - (\frac{x_{min}}{w_i})^{\alpha} \tag{1}$$

can easily be transformed into the complementary cumulative distribution function (CCDF)

$$1 - F(w_i|w_{min}, \alpha) = (\frac{w_{min}}{w_i})^{\alpha} \tag{2}$$

where w_{min} indicates the lower bound of the Pareto distribution, w_i is the wealth of observation i, and α, the shape parameter, denotes the "fatness" of the distribution. The smaller the value of α the steeper the distribution and the heavier the tail. In essence, the CCDF represents the probability of a household owning at least w_i.

Vermeulen (2018) illustrates the power-law in terms of a significantly large finite population of N households, where each household has wealth above the minimum threshold of the Pareto distribution w_{min}. Households are ranked in descending order, w_i denotes the wealth of household i and $N(w_i)$ the number of households with wealth at or above w_i. The wealth of this population approximately follows a power law if the CCDF of the population approximately follows the CCDF of a Pareto distribution.

$$\frac{N(w_i)}{N} \approx \frac{i}{N} \approx (\frac{w_{min}}{w_i})^{\alpha} \tag{3}$$

Taking logs on both sides leads to a downward-sloping function of the log of the rank of the observation to the log of wealth, the so-called "log-rank-log-size" relationship. Moreover, Gabaix and Ibragimov (2011) have shown that the regression is biased in finite samples, which is why, as proposed by the authors, 0.5 will be subtracted from the rank, the left side of the equation, leaving the following result.

$$ln(i - \frac{1}{2}) = C - \alpha ln(w_i) \tag{4}$$

where $C = ln(n) + \alpha ln(w_{min})$.

This thesis continues to follow Vermeulen (2018) in terms of the inclusion of sample weights, which has to be done in the context of complex survey samples. However, instead of using OLS as a regression method, this thesis uses a median quantile regression approach, similar to Disslbacher et al. (2023) to correct for outliers, as demonstrated by Waltl and Chakraborty (2022). Hence, the regression

equation is given by,

$$ln((i - \frac{1}{2})\frac{\bar{N_{fi}}}{\bar{N}}) = ln(\frac{N_i}{\bar{N}}) + \alpha ln(w_{min}) - \alpha ln(w_i) \tag{5}$$

where $\bar{N_{fi}}$ is the average weight of the first i observations, N_i is the sample weight of observation i and $\bar{N}$ is the average weight of all observations. As a next step, the parameters of interest w_{min} as well as α are estimated based on Equation 5.

4.2 Estimation of α and w_{min} and Simulation of the Tail

To estimate the parameters of interest this thesis follows the method put forward by Disslbacher et al. (2023) who tackle the issue of α depending on w_{min} in Equation 5 by taking advantage of its linear form. The idea is to select w_{min} as the threshold over which the "log-rank-log-size" relationship is most linear. As an indicator of linearity, the root mean squared error (RMSE) of the regression is used.

Thus Equation 5 is estimated multiple times using different values for w_{min} ranging from €0 to €3.000.000 and increasing each time by €50.000. Similar to Disslbacher et al. (2023) only HFCS data at or above w_{min} is used for the estimation to correct for the data gap between the observations of the HFCS and the rich list. Ultimately the w_{min} with the smallest RMSE is selected. The estimation procedure is illustrated in Figure 1

Having identified w_{min} Equation 5 is estimated again using both HFCS and rich list data to get the definitive estimate of α.

The identification method for the parameters w_{min} and α used in this thesis has advantages compared to methods used in other empirical research. For example, Bach et al. (2019) selects w_{min} based on the minimum of *Van der Wijk's Law*, which is a characteristic property of Pareto distributions. It states that the ratio of the average wealth above a specific threshold and the threshold itself is constant and determined by $\frac{\alpha}{1-\alpha}$, which is labeled as the inverted Pareto-Lorenz coefficient (Cowell, 2011). By comparing the value w_{min} as suggested by *Van der Wijk's Law* in Figure 2 to the value obtained through the identification method used in this

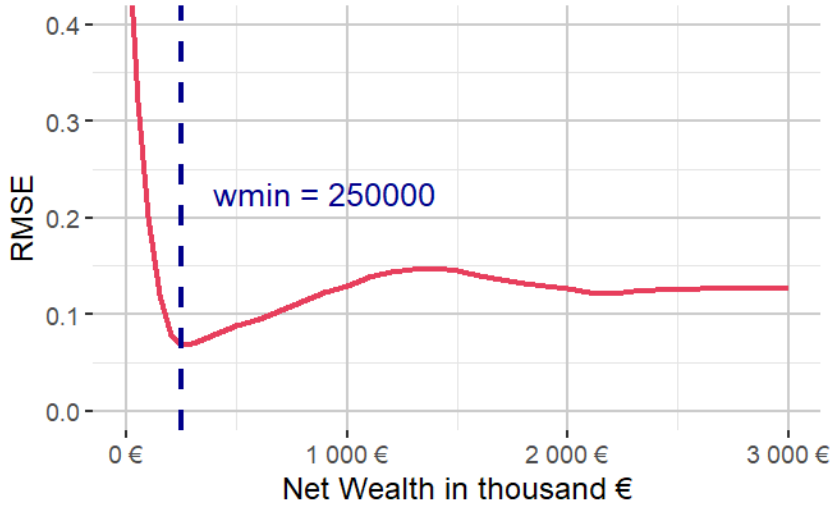

Figure 1: Estimation Procedure of w_{min}

The graph illustrates the estimation procedure used in this thesis to identify w_{min}. In steps of 50.000 increasing values from 0 to 3.000.000 are used for w_{min} to estimate equation 5 multiple times. The w_{min} is chosen that indicates the most linear relationship between the CCDF and the value (wealth), hence the smallest RMSE.

thesis reveals that the results are very similar.

Moreover, Krenek and Schratzenstaller (2017) use the Kolmogorov-Smirnov-criterion (KS), e.g. the maximum distance between an empirical and a fitted distribution, as an indicator for the goodness-of-fit of different Pareto distributions based on pre-defined combinations of w_{min} and α. However, Bach et al. (2019) criticizes that this method still very much depends on the empirical top tail distributions and therefore, because of the lack of data availability, may come up with biased results.

Ultimately, the identification method used in this thesis and proposed by Disslbacher et al. (2023) has advantages over both those methods, since it provides a unique combination of w_{min} and α and therefore, does not depend as much on pre-specified values or potentially inaccurate visual confirmation via plots.

Having identified w_{min} and α, the next step is to obtain data on the top tail of the wealth distribution through simulation. To get an accurate estimation of the top tail of the wealth distribution in Austria 200 simulations of Pareto distributions are performed using the estimated parameters w_{min} and α and using the sum of sample weights over the Pareto threshold as a proxy for the number of observations, e.g. the number of households over the threshold. The average of those simulations

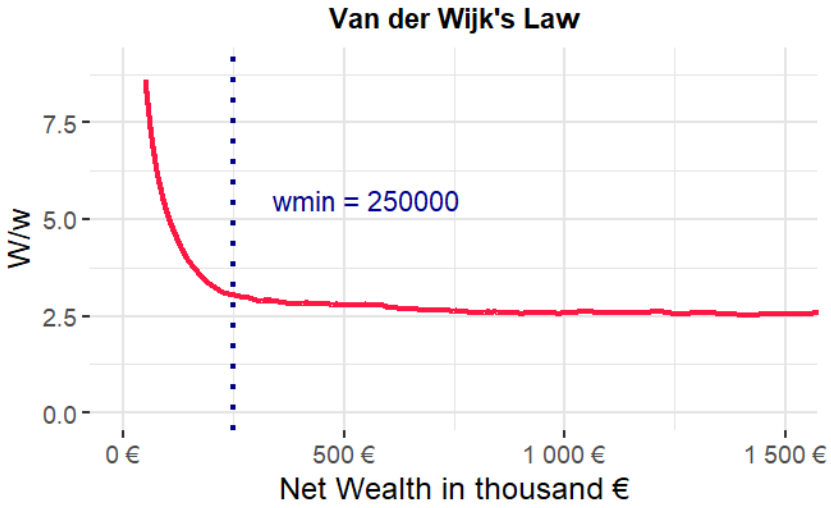

Figure 2: Estimation Procedure of w_{min} using *Van der Wijk's Law*

Van der Wijk's Law states that for data that is Pareto distributed the ratio above a particular threshold and the threshold itself is constant. Hence the minimum of those thresholds has often been used to identify w_{min}.

will function as the imputed tail of the wealth distribution, where each data point has a weight of 1. Finally, the combined tail of HFCS and rich list data over the threshold of €250.000 is replaced by the imputed tail of the wealth distribution.

Figure 3 illustrates the adjusted top tail of the wealth distribution via the characteristic linear pattern of the log-log-plot of the CCDF of the Pareto distribution against its value (net wealth).

To sum up, the method used in this thesis to adjust the top of the wealth distribution such that it depicts a more accurate representation of the wealthiest households in Austria consists of the following steps. First Equation 5 is estimated multiple times with different values for w_{min} and using HFCS data only to get the RMSE-minimizing value of w_{min} and with that the most linear log-rank-log-value relationship. After that Equation 5 is estimated again using HFCS and rich list data to get the final estimate of α. Finally, new observations are simulated by using the estimated parameters, where each data point is assigned a weight of 1.

The result is an adjusted wealth distribution for Austria in which the wealthiest individuals are accounted for and included, such that it represents a more accurate representation of the actual status quo. Table 1 provides an overview of all implicates in terms of their respective values of α and w_{min}, as well as the change

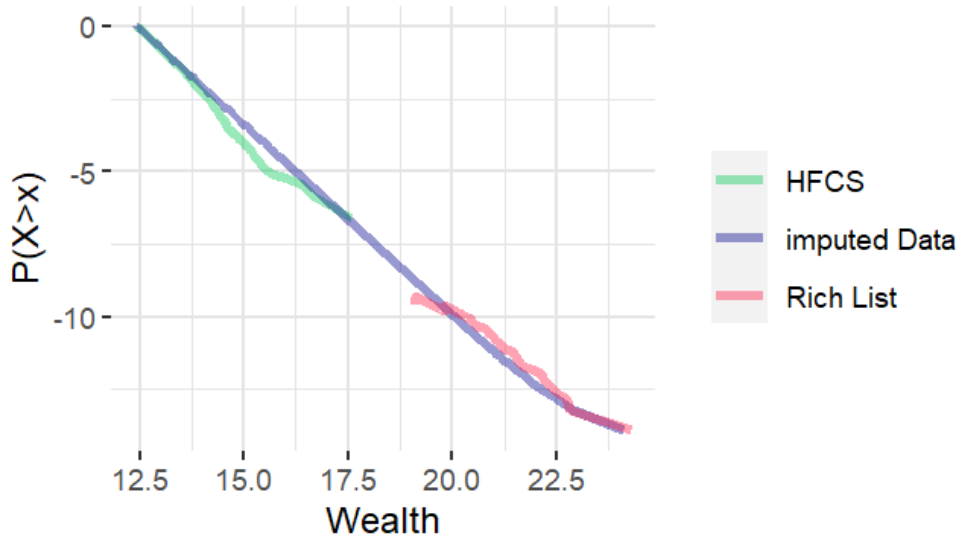

Figure 3: Complementary Cumulative Distribution Function of the HFCS; Rich List and the Imputed Tail.

Plotting the log-log relationship between the CCDF and net wealth reveals the characteristic linear pattern of the Pareto distribution for observations above w_{min}.

Data	α	w_{min}	**Tail Net Wealth**	**Adjusted Tail Net Wealth**
All Implicates	1.313	250.000	810 Billion	1,15 Trillion
Implicate 1	1.301	300.000	732 Billion	1,14 Trillion
Implicate 2	1.312	200.000	944 Billion	1,14 Trillion
Implicate 3	1.302	300.000	721 Billion	1,15 Trillion
Implicate 4	1.299	300.000	729 Billion	1,15 Trillion
Implicate 5	1.298	300.000	738 Billion	1,16 Trillion

Table 1: Descriptive Statistics

in total net wealth of the tail of the wealth distribution, once observations from the rich list are considered. The results clearly show that without adjusting for the wealthiest individuals total tail wealth is significantly underestimated, with the difference ranging from €421 Billion to €196 Billion.

In the following subsection, the newly obtained dataset will be used to assess the impact of a UCE on the distribution of wealth in Austria.

4.3 Policy Analysis Approach

This thesis will closely follow the method used by Bach (2021), in his analysis of the same policy idea for the case of Germany. As already touched the author proposes

to finance the policy in question by raising taxes on wealth, specifically the annually levied wealth tax in Germany, or the inheritance tax. Since Austria does not levy either one of those two types of taxes, this thesis will also provide some information on how much the introduction of an annual wealth tax, or an inheritance tax yields as tax revenue.

To get an estimate of the long-term effects on the respective types of taxes, Bach (2021) chooses to simulate a one-time capital levy of 30% that is paid out over a period of 30 years. In essence, it shall provide a similar result as an annual wealth tax of 1% levied over the same time span or an inheritance tax of 30% that is levied every 30 years. The time span of 30 years is chosen as an approximation for the gap between two generations.

Four different scenarios for the capital levy are simulated using different amounts of tax allowances, €500.000, €1.000.000, €2.000.000, and €5.000.000. Moreover, a progressive tax system is employed, in which wealth above the tax allowance up to €15.000.000 is taxed by 15%, assets between €15.000.000 and €30.000.000 by 22.5% and wealth that exceeds the €30.000.000-mark is taxed with 30%. The same tax rates can be used in the context of an inheritance tax that is levied every 30 years, while for an annual wealth tax, the equivalent result would be obtained by marginal tax rates of 0.5%, 0.75% and 1.0% for the corresponding tax brackets.

5 Results

The results can be seen in Table 2. Overall the capital levy would yield a maximum of around €137 billion and a minimum of roughly €82 billion, depending on the tax scenario. The equivalent annual revenue would range from €4,6 billion to €2,7 billion.

	Personal Allowance			
	€500.000	€1.000.000	€2.000.000	€5.000.000
Tax Revenue in billion Euros				
Total	136,96	116,21	99,50	82,30
Per Year	4,57	3,87	3,32	2,74
Capital Endowment per Person	€39.914,74	€33.865,83	€28.996,61	€23.985,29
	Percentage change in Net Wealth			
1st - 50th Percentile	144,6%	126,8%	111,7%	95,3%
50th - 90th Percentile	1,5%	1,0%	0,8%	0,5%
90th - 99th Percentile	-5,8%	-5,0%	-4,4%	-3,7%
Top 1 Percent	-6,7%	-5,8%	-5,0%	-4,2%
	Percentage change in Measures of Wealth Distribution			
Gini Coefficient	-7,33%	-6,86%	-5,65%	-4,83%
GE(2)	-13,27%	-11,48%	-10,01%	-8,45%
	Ratio of Average Wealth Top 1% to bottom 50%			
Reference: 726,6	-61,9%	-58,5%	-55,1%	-51,0%

Table 2: Results UCE
Results are based on all Implicates of HFCS 2017 data

The total tax revenue of each scenario is then distributed among the Austrian population between 18 and 47 years [3] to simulate the long-term effect of the UCE on the distribution of wealth, as if it would have been paid out for 30 years already. The respective capital endowments range from €39.914,74 in the scenario with the smallest tax allowance to €23.985,29 in the situation with maximum tax allowance analyzed in this thesis of €5 million. Interestingly, the resulting UCEs are nearly twice the sum obtained by Bach (2021). Further analysis is necessary in order to get an understanding of why the difference is that pronounced. A possible explanation may be the nonexistence of a wealth-, or an inheritance tax in Austria. For

[3]The total number of people between 18 and 47 years is obtained from the census of 2021 Austrian Bureau of Statistics STATISTICS AUSTRIA. According to the census, 3.431.438 people in Austria were between 18 and 47 years old in 2021.

households with net wealth below the Pareto threshold of €250.000, data on the age of individuals within a household is available and UCEs are paid out accordingly. However, since the upper tail of the wealth distribution is simulated there is no such data available for data points above €250.000. Therefore, data on the age of individuals is used from the HFCS to get an estimate on the share of individuals between 18 and 47 years with net wealth above the threshold, to which the UCE is then randomly assigned in the simulated tail.

As a result, the wealth tax in combination with the distribution of the UCE has a considerable effect on the distribution of wealth in Austria. As can be seen in Table 2, the total net wealth of the 1st-, to the 50th-percentile, e.g. the bottom half of the population, increases by 95,3% to 144,6%. Net wealth of the population between the 50th-, and the 90th-percentile increases as well, but by a considerably smaller magnitude. Between the 90th-, and the 99th-percentile net wealth decreases by 3,7% to 5,8% and net wealth of the top percent decreases by 4,2% to 6,7%. The numbers obtained in this analysis are roughly similar to the ones obtained by Bach (2021), with the exception that there seems to be a larger inequality-reducing effect at the top of the distribution in Austria. While total net wealth of the top 10% increases in Germany after the distribution of the UCE it decreases in Austria. Altogether the percentage changes in the respective percentile groups indicate that the distribution of a UCE, financed by wealth taxes has a significant positive effect on wealth inequality in Austria, by directly redistributing wealth from the top of the wealth distribution to lower parts, particularly to the bottom half.

The same conclusion can be drawn by looking at the effect of a UCE on indicators of inequality. One of the most commonly used indicators, the Gini-coefficient is reduced by a minimum of 4,83% in the situation with a tax allowance of €5.000.000. In the situation with a tax allowance of €500.000 that reduction increases to 7,33%. As was seen before, the inequality-reducing effect seems to be the strongest at the bottom and the top of the distribution. Therefore, another indicator is employed, which is more sensitive to changes at the upper part of a distribution. As can be seen in Table 2, the Generalized Entropy index with a weight parameter of 2, GE(2) indicates a roughly twice as strong reduction of wealth inequality compared

to the Gini-coefficient. For a tax allowance of €5.000.000 this means a reduction of 8,45%, while for a tax allowance of €500.000 the GE(2) is reduced by 13,27%. Although Bach (2021) finds similar numbers on the reduction of the Gini-coefficient for Germany, the reduction of the GE(2) indicator is far more pronounced compared to Austria. More research is needed to get a better understanding of why this is the case.

To provide a clearer picture of the UCE's purchasing power, some spending scenarios are outlined. For instance, the financial requirements to complete a master's degree at a university in Vienna can be approximated by adding the cost of living for the duration of the study to the expenses needed for study eligibility. A typical master's degree in Vienna spans 5 years (3 years for a bachelor's program and 2 years for a master's program), with living expenses for a single student estimated at approximately €1.200 per month (University of Vienna, 2024a). Adding the student fees for the respective semesters (University of Vienna, 2024b) leads to an amount of €72.247, or €75.880,6 for non-EU, non-EEA, and swiss students (due to additional tuition fees), which is around twice the sum of the UCE. As a result, the computed UCE in this thesis can only be considered as a complementary aid that helps to stem the significant financial requirements of a multi-year study.

Beyond education, the UCE can also be leveraged to start a business. In Austria, establishing a limited liability company (LLC) requires a minimum capital stock of €10.000 (Unternehmensserviceportal, 2024b), a sum that can be fully covered by any of the four UCEs estimated in this thesis. Additionally, nearly half of the €70.000 capital required to form a stock corporation in Austria can be financed through the UCE (Unternehmensserviceportal, 2024a).

Finally, investing the endowment in a mutual fund can generate returns and ensure future financial security. For example, if the capital is invested in the S&P 500 Index of the United States of America and the average return of 11,1% of the last 20 years is considered (Curvo, 2024a) the respective UCEs would double roughly every 6,5 years. Hence, the smallest estimated UCE of €23.985,29 would increase to €196.891,13 if invested for 20 years. Alternatively, if the average 6,9% return of the last twenty years of the STOXX Europe 600 Index is applied (Curvo,

2024b), the amount would double roughly every 10,5 years. Over twenty years this means an increase of the same UCE to €91.095,95.

Those examples demonstrate that a UCE primarily works as a springboard for recipients and ideally provides the required financial support for life choices that otherwise would not have been feasible. In particular, the first example shows that the UCE does not induce recipients to live free on state expenses for the time required to complete a study but rather assists in stemming the cost of living expenses that clearly exceed the amount provided by the UCE.

Moreover, it promises insightful to take a look at the consequences of a reduction in wealth inequality in the areas discussed in section 2, specifically on the proper functioning of a democracy and carbon emissions. Since it was shown that the distribution of a UCE benefits the bottom half of the wealth distribution the most, it can be argued that, along with the evidence provided by Solt (2008), these additional resources are at least partly used for political participation. As a consequence the inequality in the degree of political engagement between affluent and less-affluent individuals decreases and with that may force policy makers to implement further inequality-reducing measures. For instance, this could express itself in less influence of wealthy individuals on public opinion through the creation of additional media outlets or less dependency of existing ones on the money of a small number of rich individuals due to an increase in the spending of a larger number of people. Consequently, the reduction in wealth inequality may also rebuild or foster trust in democratic institutions, as argued by Schäfer (2012), which in turn also increases their resilience against corruption (Jong-Sung and Khagram, 2005, Policardo and Carrera, 2018). Additionally, Volacu (2023) states that high wealth inequality facilitates polarizing tendencies in societies, by making poor people more receptive to respective narratives because of their precarious economic situation. The provision of a UCE likely softens the burden of financial instability, which may makes less-affluent people less responsive to polarizing narratives.

Regarding carbon emissions, Green and Healy (2022) point out that less wealthy individuals tend to be more exposed to negative consequences of climate change and do not have the resources to sufficiently protect themselves, while wealthy people

have an interest in limiting mitigating policies of climate change due to capital interests and profit maximization. Moreover, less wealthy individuals are often hesitant to support climate change mitigating policies because of the fear that such policies potentially harm their employment status and put them into an even more precarious situation. As a consequence, it can be argued that the aforementioned decrease in the divergence in the degree of participation would lead to a higher number of environmental-friendly policies and therefore to a decrease in carbon emissions.

Additionally Qin et al. (2022) show that higher wealth inequality tends to go along with a higher level of conspicuous consumption, also known as the Veblen effect. Conspicuous consumption indicates that consumption not only grants individual utility and fulfills basic needs but also bears social value by granting individuals social status which is expressed by consumption choices. According to this reasoning greater wealth inequality necessarily means a greater difference in social status, which in turn leads to greater competition. That social competition is partly expressed by less affluent individuals trying to copy the consumption patterns of the richest individuals in the society, which typically are more carbon intensive and with that increase their carbon emissions. Moreover, the authors find evidence that higher competition between individuals of different socioeconomic status, which comes along with greater wealth inequality, favors short-term decision-making since there is a higher concern to lose the own socioeconomic position. As a result, long-term considerations, such as environmental consequences of consumption patterns are neglected and carbon emissions increased.

In total, there exists promising evidence that the reduction in wealth inequality as estimated in this thesis has positive effects on the proper functioning of the democracy in Austria, as well as on the reduction of total carbon emissions.

However, although the numbers paint a rather clear picture of the effectiveness of a policy such as the UCE, the result has to be treated cautiously. The methodology of this thesis presents a simplified analysis that does not include any changes in the behavior of individuals as a consequence of the introduction of wealth taxes, which may influence the resulting numbers significantly. For instance, as Bach (2021)

rightfully points out various measures of tax avoidance may very likely reduce the total revenue levied through a wealth tax. Moreover, very wealthy individuals may just meet tax requirements with returns on their assets or increase their savings rate, while individuals in the middle of the distribution may reduce their savings rate due to the additional capital coming from the UCE. Therefore, there is a high probability that the actual overall effect of a UCE on wealth inequality may be smaller.

6 Conclusion

This thesis provides information on the revenue potential of wealth taxes and the effectiveness of the introduction of a Universal Capital Endowment to reduce wealth inequality in Austria. As mentioned Austria presents a country with an above-average wealth inequality compared to other member states of the European Union. This can partly be explained by the lack of wealth taxes in the Austrian tax system. While most of the EU-member states levy taxes on the transfer of wealth Austria repealed its inheritance tax in 2008 and its tax on net wealth in 1993, which shows in the very small share of overall tax revenue in Austria coming from property-, or corporate taxes.

Moreover, consequences of high wealth inequality can be vital. There is evidence that excessive wealth inequality impedes the functioning of democracies through a lack of trust in democratic institutions, less participation, and corruption, and it limits economic freedom, especially along the lines of sound money access and regulation of economic activities. Additionally, high wealth inequality has a positive effect on carbon emissions and therefore fuels climate change.

The policy analyzed in this thesis is aimed at reducing wealth inequality via the distribution of capital among the population, which is obtained through a wealth tax. In addition, the capital endowment shall increase equality of opportunity and counteract the inequality-enhancing effect of inheritances, due to its unequal distribution in Austria. While the reception of the endowment is unconditional, meaning that everybody at the age of 18 shall receive it, the usage is limited to

specific purposes, such as education, home purchase, financing self-employment, or saving to provide in case of unemployment or sickness.

To determine the effectiveness of the UCE private net wealth data is used from the HFCS and the Top-100 rich list from the ERLDB. Since wealth survey data is unreliable especially at the top of the distribution, due to non-response and under-reporting, and fails to cover the very wealthiest households, the tail of the wealth distribution is simulated based on a Pareto distribution with a combination of survey and rich list data. The respective parameters of the Pareto distribution are estimated by exploiting the linearity of the logarithm of the rank-value relationship, which results from the complementary cumulative distribution function, via a median quantile regression. The determination of the location-, and shape parameter of the Pareto distribution via regression avoids the dependency on visual interpretations of distributions such as *Van der Wijk's Law*, as in Bach (2021) and therefore presents a more accurate method of estimation. The simulated tail is then put on top of the HFCS data above the Pareto threshold.

The combined dataset of the HFCS and simulated data is used to illustrate the effect of a UCE on the distribution of wealth in Austria. Four tax systems were employed with a similar progressive marginal tax rate but different amounts of tax allowances. Depending on the tax scenario, overall tax revenue goes from €82,30 Billion to €136,96 Billion and manages to finance UCEs ranging from €23.985,29 to €39.914,74. The results show a significant effect on the Gini coefficient of the wealth distribution in Austria, reducing it by a minimum of 4,83% and by a maximum of 7,33%. If the more tail-sensible indicator GE(2) is considered, the percentage reduction even increases and ranges from 8,45% to 13,27%. Those numbers indicate that the policy in question particularly affects the edges of the wealth distribution, which is observable via the percentage changes of total net wealth at the top and the bottom of the distribution as a consequence of the policy. Consequently, total net wealth increases of the bottom half of the distribution range from 95,3% to 144,6%, while total net wealth of the wealthiest percent are reduced by a minimum of 4,2% and a maximum of 6,7%.

The estimated reduction in wealth inequality promises to have positive effects

on Austrian democracy and may reduce total carbon emissions in Austria as well. First people at the bottom half of the wealth distribution often lack the resources to actively participate regularly in democratic processes. Thus the provision of a UCE remedies that issue and likely decreases the inequality in the degree of political engagement between affluent and less-affluent individuals. Second, the additional resources likely lead to more less-affluent people actively supporting climate mitigating policies, who otherwise would have been hesitant to do so because of fear that such policies potentially harm their livelihoods, since poor individuals tend to be more exposed to the negative consequences of climate change. Finally, there is evidence that smaller wealth inequality correlates with smaller carbon emissions from consumption, which is attributed to less conspicuous consumption and improved long-term decision-making. Both aspects are the result of less competition between individuals because of a smaller wealth inequality. On the one hand, this is expressed by less-affluent people not competing as much for social status, which is often done by copying the consumption patterns of wealthy individuals, on the other hand, people are less concerned about their socioeconomic status, which allows them to focus on long-term decisions, that tend to be less carbon emission intense. Overall, there exists convincing evidence that a reduction in wealth inequality has positive effects for the Austrian democracy as well as households carbon emissions.

In terms of usage, it was shown that the estimated UCEs in this thesis primarily work as an assistance to facilitate the financing of education or the creation of a business among others, or save and earn returns and interest over time. Additionally, the grant of a significant amount of money at a relatively young age forces the recipient to make long-term decisions and bears an educational purpose as well, as Ackerman and Alstott (1999) rightfully point out.

In total it can be concluded that the introduction of a Universal Capital Endowment, as illustrated in this thesis will most certainly reduce wealth inequality significantly especially at the bottom and the top of the distribution, which promises to have positive effects on Austrian democracy and total carbon emissions, although the actual effect is likely to be smaller due to behavioral changes as a response to the introduction of a wealth tax were not accounted for in this thesis.

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Appendix

Policy Results by Implicate

	Personal Allowance			
	€500.000	€1.000.000	€2.000.000	€5.000.000
Tax Revenue in billion Euros				
Total	147,17	125,61	108,12	89,96
Per Year	4,91	4,19	3,60	3,00
Capital Endowment per Person	€42.888,18	€36.605,40	€31.508,72	€26.215,90
	Percentage change in Net Wealth			
1st - 50th Percentile	153,3%	134,7%	118,4%	100,9%
50th - 90th Percentile	2,9%	2,3%	1,9%	1,5%
90th - 99th Percentile	-6,3%	-5,4%	-4,7%	-4,0%
Top 1 Percent	-7,2%	-6,2%	-5,4%	-4,5%
	Percentage change in Measures of Wealth Distribution			
Gini Coefficient	-7,37%	-6,64%	-5,68%	-4,84%
GE(2)	-13,99%	-12,13%	-10,58%	-8,92%
	Ratio of Average Wealth Top 1% to bottom 50%			
Reference: 801,1	-63,4%	-60,0%	-56,7%	-52,5%

Table 3: Results UCE
Results are based on 1st Implicate of HFCS 2017 data

	Personal Allowance			
	€500.000	€1.000.000	€2.000.000	€5.000.000
Tax Revenue in billion Euros				
Total	126,08	106,87	91,40	75,45
Per Year	4,20	3,56	3,05	2,52
Capital Endowment per Person	€36.743,25	€31.145,64	€26.635,11	€21.988,66
	Percentage change in Net Wealth			
1st - 50th Percentile	124,5%	107,9%	94,8%	79,8%
50th - 90th Percentile	0,9%	0,6%	0,4%	0,2%
90th - 99th Percentile	-5,3%	-4,6%	-3,9%	-3,3%
Top 1 Percent	-6,2%	-5,3%	-4,6%	-3,8%
	Percentage change in Measures of Wealth Distribution			
Gini Coefficient	-6,81%	-6,10%	-5,16%	-4,36%
GE(2)	-12,12%	-10,42%	-9,01%	-7,53%
	Ratio of Average Wealth Top 1% to bottom 50%			
Reference: 657,5	-58,2%	-54,4%	-51,0%	-46,5%

Table 4: Results UCE
Results are based on 2nd Implicate of HFCS 2017 data

	Personal Allowance			
	€500.000	€1.000.000	€2.000.000	€5.000.000
Tax Revenue in billion Euros				
Total	150,40	129,03	111,68	93,68
Per Year	5,01	4,30	3,72	3,12
Capital Endowment per Person	€43.831,29	€37.601,01	€32.547,16	€27.299,57
	Percentage change in Net Wealth			
1st - 50th Percentile	154,4%	136,3%	120,9%	103,4%
50th - 90th Percentile	3,1%	2,5%	2,1%	1,6%
90th - 99th Percentile	-6,3%	-5,5%	-4,8%	-4,1%
Top 1 Percent	-7,3%	-6,3%	-5,5%	-4,7%
	Percentage change in Measures of Wealth Distribution			
Gini Coefficient	-7,40%	-6,72%	-5,76%	-4,94%
GE(2)	-14,19%	-12,36%	-10,84%	-9,21%
	Ratio of Average Wealth Top 1% to bottom 50%			
Reference: 810,9	-63,6%	-60,4%	-57,2%	-53,1%

Table 5: Results UCE
Results are based on 3rd Implicate of HFCS 2017 data

	Personal Allowance			
	€500.000	€1.000.000	€2.000.000	€5.000.000
Tax Revenue in billion Euros				
Total	150,48	129,00	111,53	93,36
Per Year	5,02	4,30	3,72	3,11
Capital Endowment per Person	43.852.57	€37.590.90	€32.501,89	€27.205,87
	Percentage change in Net Wealth			
1st - 50th Percentile	151,2%	132,3%	117,5%	101,2%
50th - 90th Percentile	3,1%	2,5%	2,0%	1,5%
90th - 99th Percentile	-6,3%	-5,5%	-4,8%	-4,0%
Top 1 Percent	-7,3%	-6,3%	-5,5%	-4,6%
	Percentage change in Measures of Wealth Distribution			
Gini Coefficient	-7,41%	-6,71%	-5,76%	-4,93%
GE(2)	-14,15%	-12,32%	-10,79%	-9,15%
	Ratio of Average Wealth Top 1% to bottom 50%			
Reference: 793,5	-63,1%	-59,7%	-56,5%	-52,6%

Table 6: Results UCE
Results are based on 4th Implicate of HFCS 2017 data

	Personal Allowance			
	€500.000	€1.000.000	€2.000.000	€5.000.000
Tax Revenue in billion Euros				
Total	152,58	131,15	113,72	95,57
Per Year	5,09	4,37	3,79	3,19
Capital Endowment per Person	€44.464,23	€38.219,54	€33.140,75	€27.851,94
	Percentage change in Net Wealth			
1st - 50th Percentile	148,2%	130,8%	116,5%	100,2%
50th - 90th Percentile	3,2%	2,6%	2,2%	1,7%
90th - 99th Percentile	-6,3%	-5,5%	-4,8%	-4,1%
Top 1 Percent	-7,3%	-6,4%	-5,6%	-4,7%
	Percentage change in Measures of Wealth Distribution			
Gini Coefficient	-7,45%	-6,77%	-5,81%	-5,00%
GE(2)	-14,26%	-12,45%	-10,93%	-9,31%
	Ratio of Average Wealth Top 1% to bottom 50%			
Reference: 784,51	-62,7%	-59,5%	-56,4%	-52,4%

Table 7: Results UCE
Results are based on 5th Implicate of HFCS 2017 data

CCDF Tail Plots by Implicate

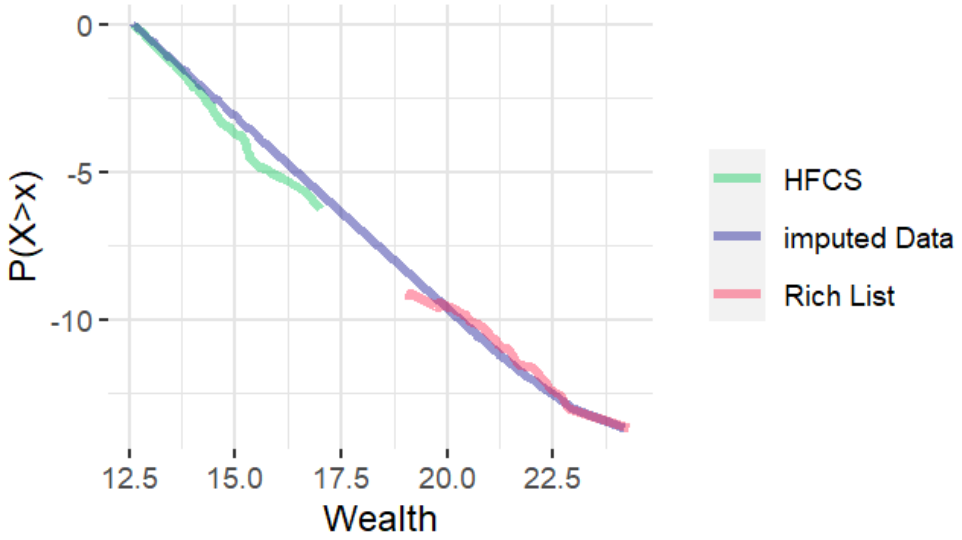

Figure 4: Complementary Cumulative Distribution Function of the HFCS; Rich List and the Imputed Tail.

Plot is based on Data from Implicate 1

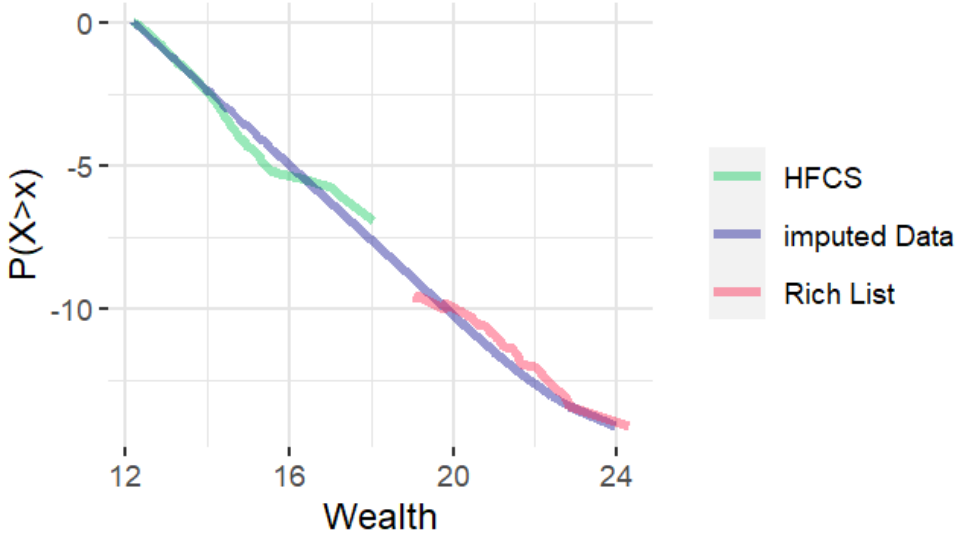

Figure 5: Complementary Cumulative Distribution Function of the HFCS; Rich List and the Imputed Tail.

Plot is based on Data from Implicate 2

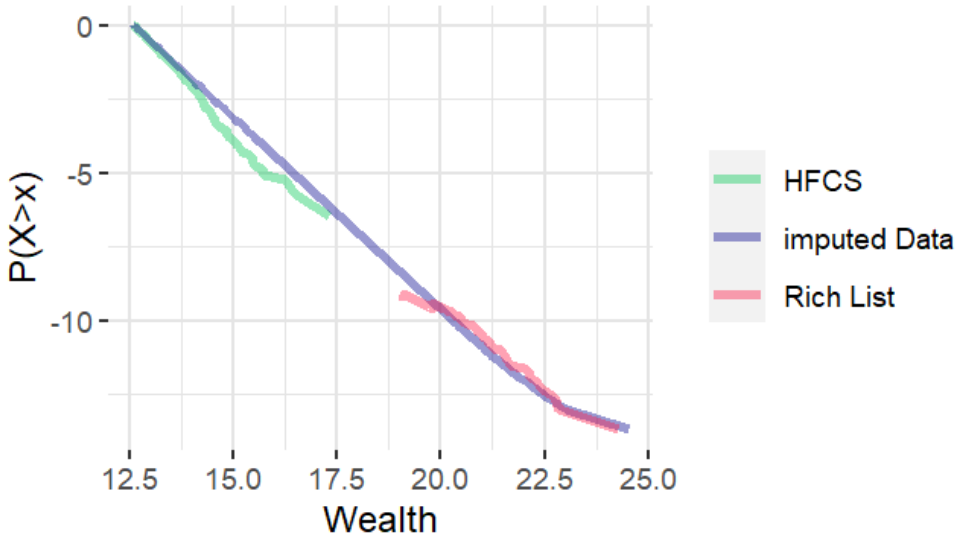

Figure 6: Complementary Cumulative Distribution Function of the HFCS; Rich List and the Imputed Tail.

Plot is based on Data from Implicate 3

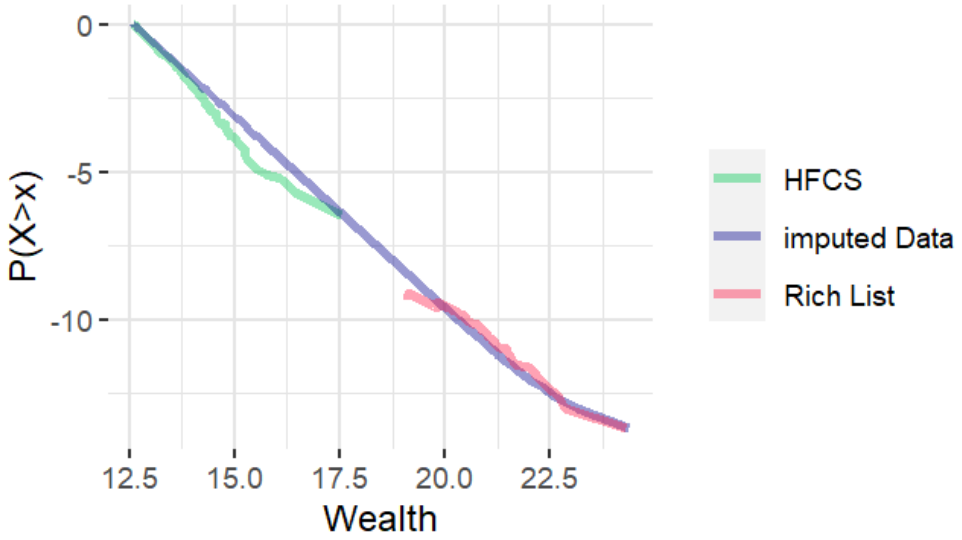

Figure 7: Complementary Cumulative Distribution Function of the HFCS; Rich List and the Imputed Tail.

Plot is based on Data from Implicate 4

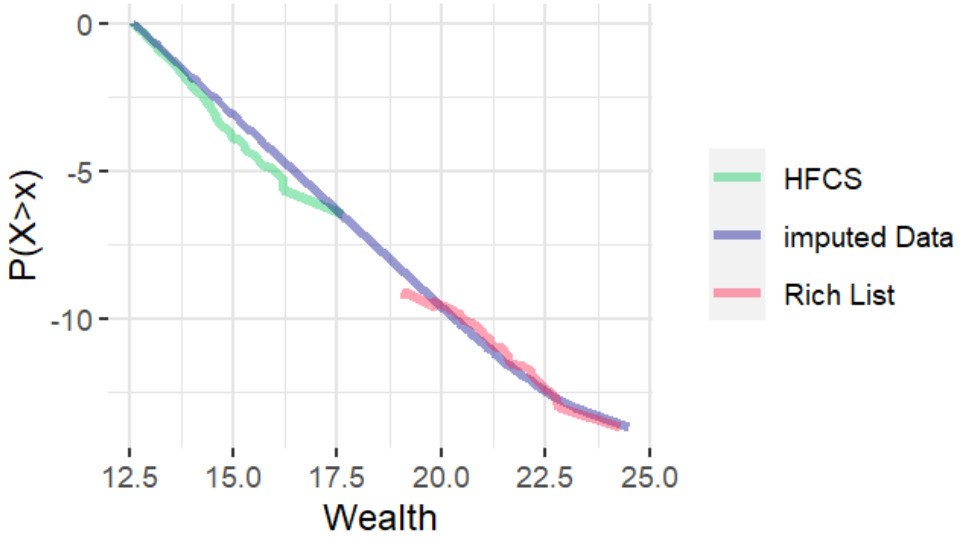

Figure 8: Complementary Cumulative Distribution Function of the HFCS; Rich List and the Imputed Tail.

Plot is based on Data from Implicate 5

Determination of w_{min}

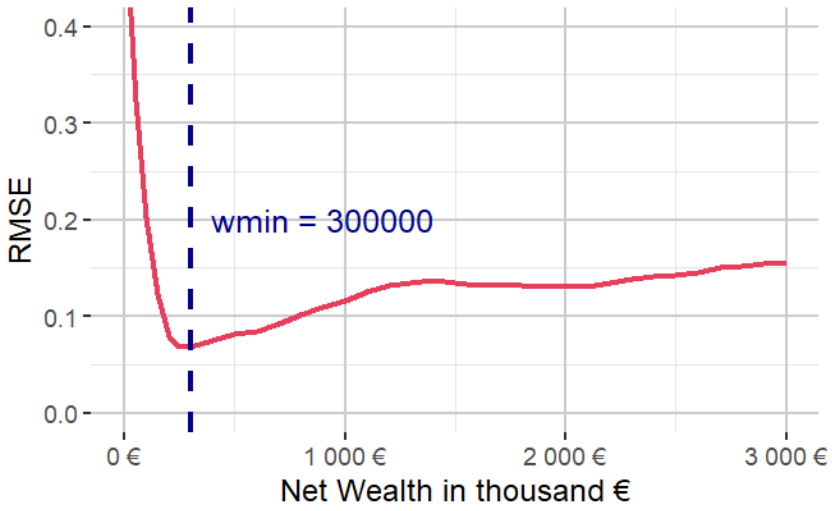

Figure 9: Estimation Procedure of w_{min}

Plot is based on Data from Implicate 1

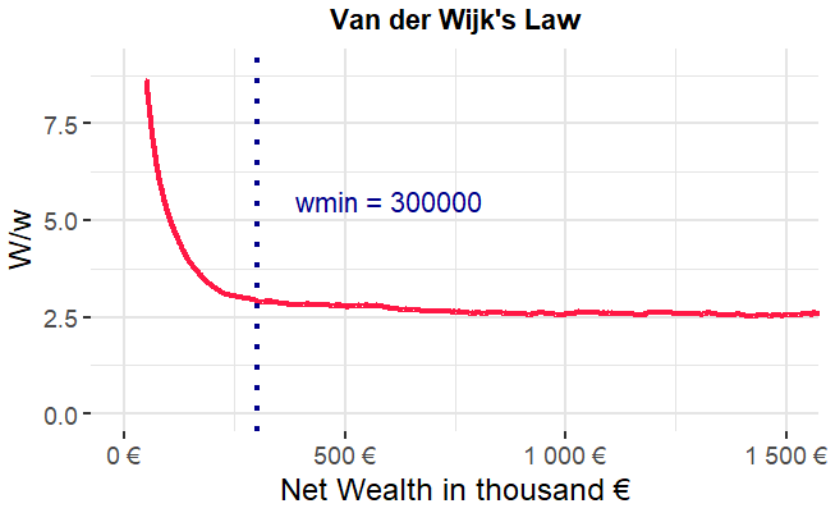

Figure 10: Estimation Procedure of w_{min} using *Van der Wijk's Law*

Plot is based on Data from Implicate 1

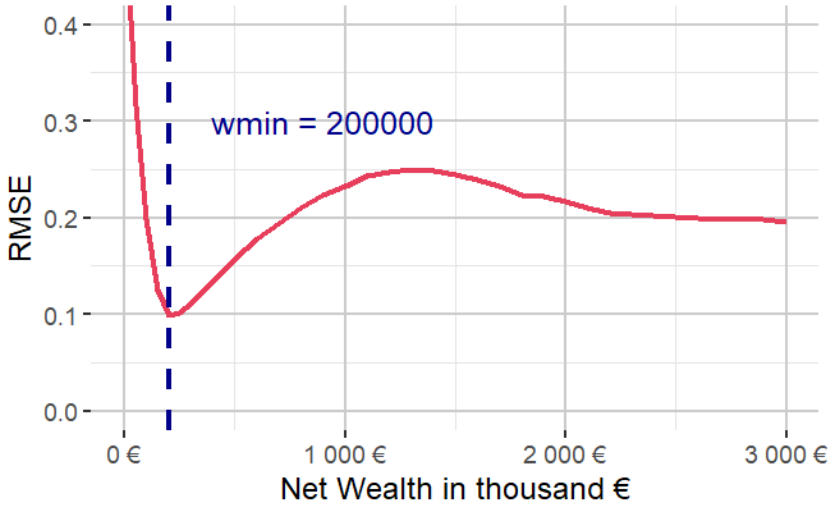

Figure 11: Estimation Procedure of w_{min}

Plot is based on Data from Implicate 2

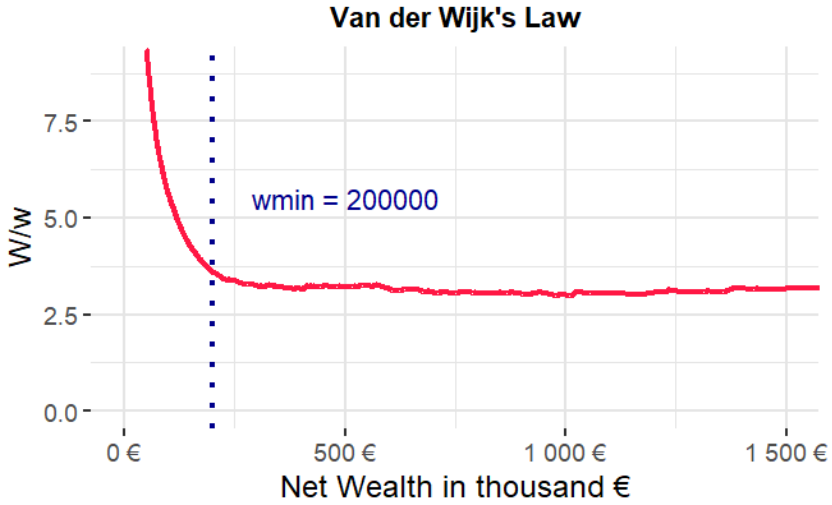

Figure 12: Estimation Procedure of w_{min} using *Van der Wijk's Law*

Plot is based on Data from Implicate 2

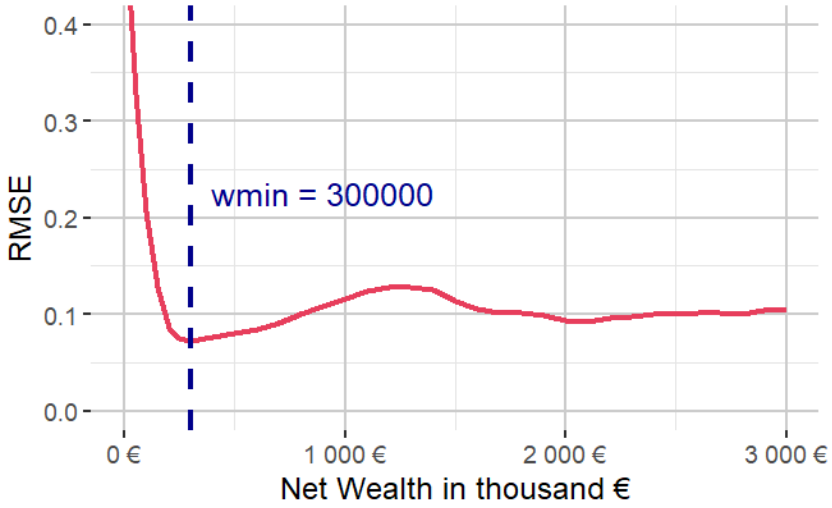

Figure 13: Estimation Procedure of w_{min}

Plot is based on Data from Implicate 3

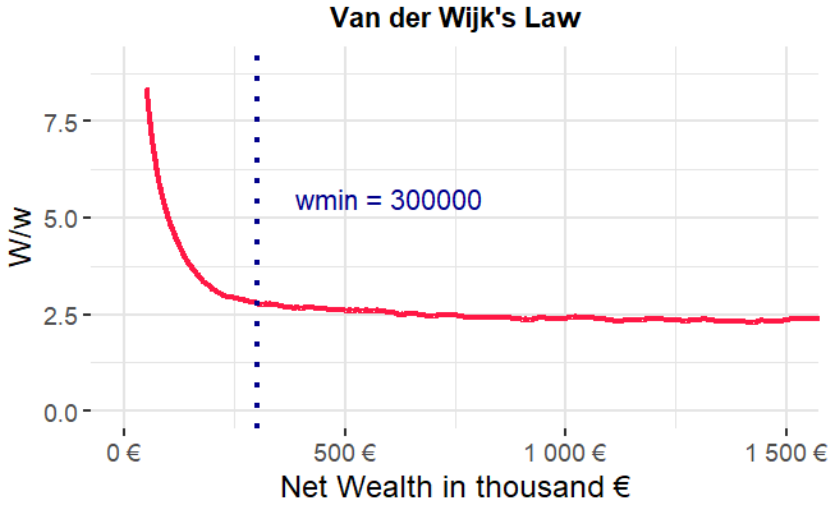

Figure 14: Estimation Procedure of w_{min} using *Van der Wijk's Law*

Plot is based on Data from Implicate 3

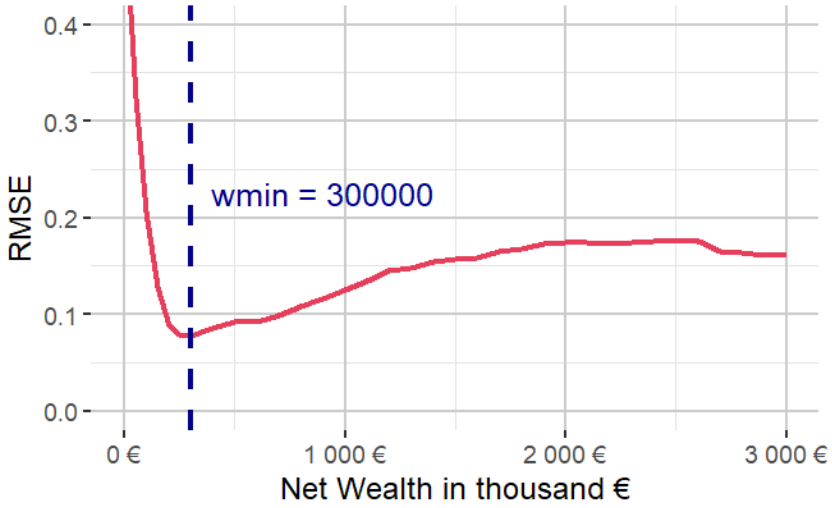

Figure 15: Estimation Procedure of w_{min}

Plot is based on Data from Implicate 4

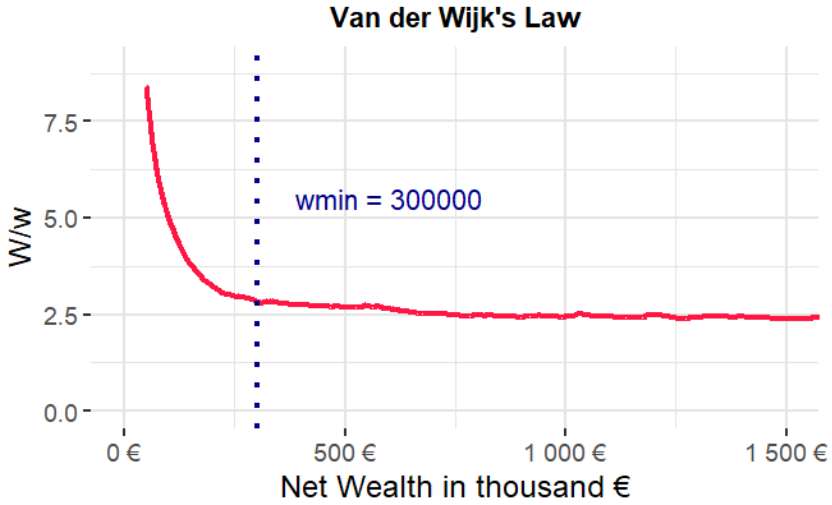

Figure 16: Estimation Procedure of w_{min} using *Van der Wijk's Law*

Plot is based on Data from Implicate 4

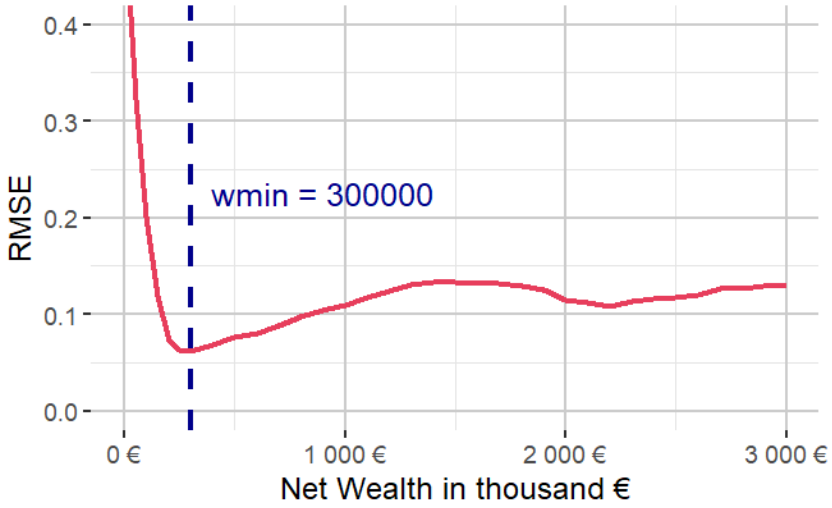

Figure 17: Estimation Procedure of w_{min}

Plot is based on Data from Implicate 5

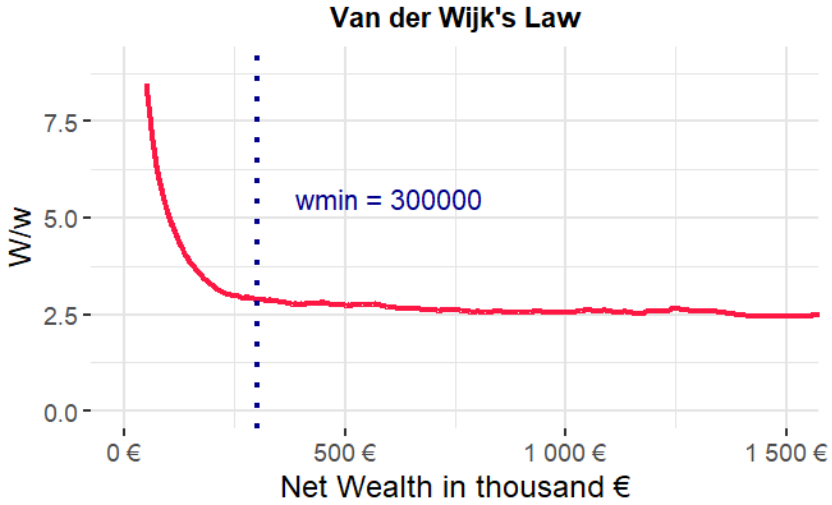

Figure 18: Estimation Procedure of w_{min} using *Van der Wijk's Law*

Plot is based on Data from Implicate 5