

# Do inheritances increase wealth inequality? Evidence from Dutch long-run survey data\*

MSc thesis Economic Policy

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## *Abstract*

This thesis examines the effect of inheritances on wealth inequality. The literature has failed to achieve consensus on the sign of the effect. Studies using descriptive statistical evidence argue for a positive effect, while most studies using econometric techniques find a negative effect. This conflict could be potentially due to the time frame used by most econometric studies. Most of these studies use a time span of at most 16 years, while descriptive statistical studies use data of at least two decades. This thesis uses long-run survey data of almost thirty years of the Dutch Central Bank Household Survey (DHS). This study hypothesises that in the short run wealth inequality decreases due to inheritances, but in the long run inheritances increase wealth inequality. To measure the effect in the short run, this study uses simple accounting identities based on Crawford and Hood (2016). To measure the long-run effect, it uses Maximum Likelihood estimation with logit models. The main finding of this study is that in the short run wealth inequality decreases, but that in the long run the effect on wealth inequality is ambiguous. The implication for economic policy is that taxation of inheritance of less wealthy individuals could increase wealth inequality, while taxation of wealthy inheritors could decrease wealth inequality.

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\* I thank Lucia Rosell for her excellent supervision. I also thank Kattia Moreno for her helpful comments. Also thank my fellow students, family and friends. Do-files are available upon request. My contact details are [haandetimo@gmail.com](mailto:haandetimo@gmail.com). The copyright of this thesis rests with the author. The author is responsible for its contents and opinions expressed in the thesis. U.S.E. is only responsible for the academic coaching and supervision and cannot be held liable for the content.

*'I am astonished that commentators old and new have not attributed to the laws of inheritance a greater influence on the progress of human affairs (...). [T]hey ought to take place at the head of every political institution since they have an unbelievable effect upon the social conditions of people' – Alexis de Tocqueville, Democracy in America (1835)*

## **1. Introduction**

In his book *Capital in the Twenty-First Century*, Thomas Piketty describes the lecture of the streetwise Vautrin to the young law student Rastignac in the 19<sup>th</sup> century novel *Père Goriot* of Honoré de Balzac. Vautrin tells in this lecture that marrying a rich woman with an inheritance is more profitable than studying and working to achieve social success in life. Piketty argues that modern high-income countries are returning to such a state, what he calls 'patrimonial capitalism': a capitalism in which what you inherit is more important than what you work for in determining outcomes in life (Piketty, 2014a). In his book *Capital*, Piketty calculates that the share of inheritance of total wealth was first reduced from the First World War to the 1980s, but since then it has been increasing again. At the same time, he shows, wealth inequality moved in the same direction: it first decreased from the 1920s to the 1980s, then increasing since the 1980s. To what extent are these related? According to Piketty, highly so.

However, economic theory is ambiguous. On the one hand, life cycle theorists argue in their canonical models that inherited wealth does not matter for the build-up of wealth over a life-time. Their models predict that people spend all their wealth at the end of their life (Ando and Modigliani, 1963). They, therefore, argue that inheritances do not lead to more wealth inequality. In contrast, dynastic theorists argue that inheritances do matter for the accumulation of wealth. Individuals, for example, want to give a 'warm glow' to their loved ones. In this case, inheritances do play a role in wealth inequality (Davies and Shorrocks, 2000).

Empirical evidence is equally divided into two spheres. On the one hand, most studies using descriptive statistical methods on macro-data argue that inheritances do increase wealth inequality (Piketty, 2011; Piketty, 2014a; Alvaredo et al., 2017; Atkinson, 2018). Yet, most studies using econometric methods on micro-data find an equalizing effect of inheritances on wealth inequality (Wolff, 2002; Wolff and Gittleman, 2014; Boserup et al., 2016; Elinder et al., 2018), although some econometric studies also find a disequalizing effect (Leitner, 2016; Nolan et al., 2021, Nekoei and Seim, 2021; Salas-Rojo and Rodriguez, 2022).

How can there be such a conflict between these two spheres of empirical studies? This could potentially be due to the short time frame used by most econometric studies. Most econometric studies use a time frame of three to four years (e.g., Wolff, 2002; Boserup et al.

2016) or at most 16 years (Wolff and Gittleman, 2014; Nekoei and Seim, 2021). Contrastingly, most studies using descriptive statistical methods use a time frame of at least two decades. This study tries to fill this gap by using long-run survey data over a period of almost thirty years for an econometric study.

Why would using more long-run data make a difference? This could potentially uncover long-run effects instead of short-run ones. This study hypothesises that in the short run inheritances reduce wealth inequality, but that in the long run it increases wealth inequality. The reason is that, in the short run, less wealthy inheritors receive relatively more inheritance than wealthy inheritors, reducing wealth inequality. In the long run, it is expected that less wealthy inheritors spend their inheritance, while wealthier households invest their inheritance to increase their wealth, increasing wealth inequality.

To test these hypotheses, this study uses Dutch household data gathered by the Dutch Central Bank Household Survey (DHS) from 1993 to 2021. In the Netherlands, academic discussion on the role of inheritance on wealth inequality has been relatively scarce. So far, only one study has been done on the effect of inheritances on wealth inequality (CPB, 2019). However, this study only surveys recent microdata from 2007 to 2015. Providing long-run econometric evidence on Dutch data therefore also fills a gap in this field.

To measure the effect of inheritances on wealth inequality, this study makes the distinction between the short run and long run effect. So far, only two studies have explicitly done this (Elinder et al., 2018; Nekoei and Seim, 2021). To measure the short run effect, this study uses the method of Crawford and Hood (2016), who compare wealth distributions with and without inheritances. To measure the long run effect, this study uses Maximum Likelihood (ML) estimation for logit models on the long-run data from 1993 to 2021. This method shows whether inheriting increases the probability of becoming part of a certain place in the wealth distribution, for example, the top 10%. This study thus estimates the effect of inheritances on wealth inequality using comparisons between wealth distributions and logit models on Dutch long-run DHS survey data.

Consequently, this study contributes to the scientific literature in three main ways. First, it uses long-run survey data of almost thirty years for econometric estimation. Most previous econometric studies have used a time frame of only a few years. Second, it extends the literature on the role of inheritance on wealth inequality in the Netherlands. Only one study has been done so far that uses short-run micro data (CPB, 2019). Third, it methodologically adds to the studies that make a difference between the short run and long run effect. Only two studies have done it so far, with conflicting results (Elinder et al., 2018; Nekoei and Seim, 2021).

The findings of this paper are threefold. First, it finds that inheritances decrease wealth inequality in the short run. Wealth distributions with inheritances are more equal than without. Second, it finds ambiguous evidence on whether wealth inequality increases due to inheritances in the long run. Logit models do not provide strong evidence that inheriting increases the probability of belonging to the top of the wealth distribution. Third, it finds evidence for the mechanism in the short run, but not for the mechanism in the long run. Less wealthy inheritors receive relatively more inheritance than wealthy inheritors, but there is no evidence that wealthier inheritors invest their inheritance which leads to more relative wealth compared to less wealthy inheritors.

This study partakes in a societal debate on how to deal with the rising wealth inequality observed in a wide range of countries in the world. Citizens worry about the negative effects of wealth inequality on social stability, equal chances and democratic institutions (Mounk, 2018). To reduce wealth inequality, economic policy could make the case for increasing the inheritance tax. Its effectiveness depends, however, on the magnitude of the effect of inheritances on wealth inequality. This is exactly what this study examines.

This study finds that the effect of taxing inheritances on wealth inequality depends on who is taxed. Taxing inheritance of less wealthy people could reduce the equalizing effect of inheritances in the short run, which would increase wealth inequality. If, however, richer inheritors are taxed, this will have a reducing effect on wealth inequality. Policymakers should therefore carefully consider whose inheritance to tax to reduce wealth inequality.

This thesis is structured as follows. Section two reviews the empirical literature. The third section discusses the data and methodology. The fourth section shows the results. Finally, the fifth section concludes.

## **2. Empirical literature review**

The empirical literature on the role of inheritance on wealth inequality can be divided into two spheres. One investigates the causal effect of inheritances on wealth inequality using econometric methods, while the other investigates the share of inheritance of total wealth using descriptive statistical methods. After discussing this, it discusses the literature on wealth inequality and inheritance in the Netherlands. It then identifies the gaps in the literature and develops the hypotheses.

## *2.1 Econometric studies*

First on the studies which use econometric approaches to measure the effect. Most of these studies find an equalizing effect of inheritances on wealth inequality. After a period in the 1970s and 1980s, in which the question was mostly attempted to be answered by theoretical modelling (e.g., Atkinson, 1970; Blinder, 1973; Davies, 1982), Wolff (2002) was one of the first to use econometric approaches to answer the question. Using data from the US Survey of Consumer Finances (SCF) from 1989 to 1999, he finds using a decomposition method, that wealth inequality decreased. Wolff re-examined his result in Wolff and Gittleman (2014), where he finds, using SCF data from 1989 to 2007, the same result using a similar decomposition method.

Other studies also find this. Klevmarken (2004) finds an equalizing effect after using a comparable decomposition method on Swedish household data from 1984 to 1998. Using English Longitudinal Study of Ageing (ELSA) data for the year 2012, Crawford and Hood (2016) find the same result. However, they find that after correcting for pension wealth, the equalizing effect disappears. The method that they use is an analysis of the wealth distributions with and without inheritance. Boserup et al. (2016) find using Difference-in-Differences (DID) that relative wealth inequality also decreases after bequest. They look at ten years of Danish administrative data. Elinder et al. (2018) also find a decrease of wealth inequality, using DID on Swedish population register data from 1999 to 2007, again, also for a shorter time period. Bönke et al. (2017) find, using the European Household Finance and Consumption Survey (HFSC), also an equalizing effect on cross-sectional data from 2010, using the same decomposition method as Wolff and Gittleman (2014). Karagianakki (2017) finds after Ordinary Least Squares (OLS) estimation on British household survey data from 1995 to 2005 that there was also an equalizing effect. Most recently, Wei and Yang (2022) find a decreasing effect on wealth inequality after employing empirical strategies of Wolff and Gittleman (2014) and Boserup et al. (2016) on Chinese data from 2011 to 2018. However, they use data that is based on recollection of the participants in a survey.

There have also been studies using econometric techniques that find a disequalizing effect. The most rigorous analysis has been given by Nekoei and Seim (2021). Based on DID on long-run data from 1999 to 2015 from Sweden, they find that wealth inequality increased in the long run. They use administrative micro-data from multiple sources. Salas-Rojo and Rodriguez (2022) find, based on a machine learning approach, that inheritances also lead to an increase in wealth inequality. Other studies using cross-sectional methods have also found this result. Leitner (2016) finds that wealth inequality increases, using HFCS data for the year 2010,

after applying Shapley value decomposition. Fessler and Schurz (2018) also find a disequalizing effect after using logit models on data from the HFCS for the year 2010. Palomino et al. (2021) find that it leads to more inequality, based on a model by Roemer and Trannoy (2016), for four OECD countries for the year 2016. Nolan et al. (2020; 2021) and Morelli et al. (2021) find, using multiple methods, such as the Roemer and Trannoy (2016) method and the decomposition method, that wealth inequality increases as a result of inheritances.

## *2.2 Descriptive studies*

The other part of the literature focuses on the share of inheritance of total wealth to measure the importance of inheritances for wealth accumulation. This field has a long history. As early as the end of the nineteenth century, economists have tried to measure the share of inheritance in France (Piketty, 2011). For this, they used the ‘estate multiplier method’. They often found very high shares of inheritance of total wealth (Piketty, 2011).

After the two world wars in the twentieth century, the discussion faded to the background. But at the same time that inheritances began to rise again in the 1980s according to Piketty (2011), a famous debate took place between Lawrence Kotlikoff and Franco Modigliani. Kotlikoff estimated that about 80% of total wealth was due to inheritance (Kotlikoff and Summers, 1981; Kotlikoff, 1988), while Modigliani estimated that about 20% was inherited (Modigliani, 1988). Strikingly, they both used the same data from the 1960s. The difference was thus due to the method used. In essence, Kotlikoff used a capitalisation method that takes into account the return on assets, while Modigliani did not. Consequently, their estimates yielded very different results (Alvaredo et al. 2017).

Since then, new estimates have been done. For example, Gale and Schorz (1994) find using more recent SCF data from 1983 to 1986 that inheritance and gifts account for a 50% share of total wealth accumulation. However, Hurd and Mundaca (1989) estimate, in the same vein as Modigliani, that inheritances account for 20% of total wealth, also using more recent SCF data. Davies and Shorrocks (2000), which has often been cited as giving an excellent overview of the debate, argue that most studies find the range to be close to 30 to 40% of total wealth.

Unsatisfied with the large conflicting results of the two methods, Piketty (2011) brought forward a new method to measure the share of inheritance. Using administrative data and accounting identities, he measures the long-run share of inheritance of national income over the last two centuries. He calculates that inheritances have been rising from 4% to 16% of national income from the 1980s to the 2010s. Piketty et al. (2014b) go further by proposing a model

with savers from labour and inheritors that bypasses the representative agent models used by Kotlikoff and Modigliani. The according method calculates the relative importance of saving and inheritance of total wealth. Exploiting microdata from Paris inheritance records from 1872 to 1927, they find that inheritances represent about 80% of total wealth in this period. Yet, since this method requires intensive microdata, this approach is not applicable everywhere. Alvaredo et al. (2017) propose a less data-intensive approach that still contrasts savers and inheritors to measure the relative importance of the two in total wealth. They find, for the period 1900 to 2010, that inheritances account for 40 to 50 percent of total wealth in France, depending on the return on assets assumed. They see an increasing trend since the 1980s.

This approach has been applied to other countries. Adermon et al. (2018) estimate for Sweden that the share of inheritance is between the range of 23% to 49%. Ohlsson et al. (2020) also estimate the inheritance share of wealth for Sweden and find a range of 40 to 50 percent over the twentieth century with also an increasing trend since the 1980s. Alvaredo et al. (2017) also make estimates for other countries. They find that for the United States it was before the 1980s lower than Continental Europe, but they took over in the 1980s. According to their findings, Germany and the UK have broadly the similar trend as France.

Other methods have been used also for other countries. Atkinson (2018) estimates, using the Piketty (2011) approach, that the share of inheritance increased from 5% to 10% for the UK from the 1980s until the 2010s. Acciari et al. (2021) apply the ‘mortality multiplier method’ for the years 1995 to 2016 on Italian administrative data. They also find an increase of inheritances since the 1980s. Feiveson and Sabelhaus (2018) use microdata from the SCF to measure the share of inheritance. Their findings correspond with the findings of Alvaredo et al. (2017).

Based on these trends and the increase of wealth inequality since the 1980s, these authors often argue that inheritances are a driver of wealth inequality. However, Wolff and Gittleman (2014) estimate, using SCF data, that the share of inheritance of total wealth did not increase since the 1980s. Also, Kaplan and Rauh (2013) argue that inheritances have reduced in importance for wealth accumulation, by using data on the Forbes 500 rich list. This conflict between these authors seems to stem from the use of survey data versus the use of more aggregated data from national statistics.

### *2.3 Wealth inequality and inheritance in the Netherlands*

Research on the relationship between wealth inequality and inheritance in the Netherlands is almost non-existent. There is, however, literature on wealth inequality in the Netherlands. Since the mid-nineteenth century, Dutch economists have tried to investigate the

extent of wealth inequality in the Netherlands (Pareau, 1864; Gleichman, 1879; Vissering, 1879, Stuart, 1888). This tradition continued until the Second World War (Bongur, 1923; Smeets, 1931; Wijk, 1939). However, between 1945 to the 1980s there was almost no research on the subject. This changed with the work of Nico Wilterdink (1984; 2015). He estimates based on national statistics that over the period 1894 to 1974, the top 5% first held 79% of all wealth, but by the end of this period it held 52%. Since then, more research has been published by Bos (1990) and Verstegen (1996), who also find a decreasing trend (see De Vicq et al., 2021 and the references therein).

The publication of Piketty's *Capital* has spurred new research in this field. Van Bavel (2014) finds in line with Piketty (2014) that wealth inequality has increased since the 1980s: in 2012, the top 10% held 61% of all wealth, while this was lower in the 1980s according to Wilterdink (1984). However, Camineda et al. (2014) argue that current wealth inequality is lower because they correct for pension wealth, which lowers the share of the top 10% to 50% of total wealth. In response, Van Bavel et al. (2017) look at wealth inequality from 1945 to 2015 using multiple sources such as the Dutch Central Bank household data (DHS), Netherlands Statistics (CBS) micro data and Quote 500 data. They find an increasing trend over time where the top 10% in 2013 holds 61% of all wealth. Salverda (2019) also finds an increasing trend, where, in 2014, the top 10% held 66% of all wealth, compared to 58% in 2006. Toussaint et al. (2020) argue that the share of wealth inequality is even higher if accounted for 'substantial shares' (wealth in family businesses). They find that the wealth owned by the top 1% increases with 7% on average if this is accounted for. Recently, De Vicq et al. (2021) provide new estimations on the degree of wealth inequality in the Netherlands from 1894 to 2019. They find that the wealth owned by the top 5% was about 75% in 1890, decreased to 30% in 1980, but since then increased to 55% in 2019. In comparison to other countries, they argue, the Netherlands has almost the same degree of wealth inequality as the US, France and the UK (De Vicq et al., 2021).

All this research, however, does not include studies on inheritance. Only a recent report by the CPB (2019) looks at the effects of inheritance on wealth inequality using econometric methods. The authors find, using a DID-technique similar to Boserup et al. (2016), that inheritances have a decreasing effect on wealth inequality. However, the authors only use short-run data from 2007 to 2015. De Beer et al. (2018) also write about inheritances and wealth inequality, but this book neither provides econometric evidence nor precise long-run descriptive statistical work.

## *2.4 Gaps in the literature*

It is fair to say that there is no consensus on whether inheritances increase wealth inequality. On the one hand, most studies using statistical descriptive methods on long-run aggregated data argue that increasing inheritance shares and rising wealth inequality are related. Yet, most studies using econometric methods on survey data find an equalizing effect of inheritances on wealth inequality.

This conflict between the descriptive studies and econometric studies is potentially due to the time frame used by the econometric studies. The econometric studies with the longest time frames are by Wolff and Gittleman (2014) and Nekoei and Seim (2021), who both use a time frame of 16 years. Other econometric studies apply shorter time frames around five to ten years (e.g., Wolf 2002; Boserup et al. 2016; Elinder et al., 2018). In contrast, studies using statistical descriptive evidence apply a time frame of at least two decades.

A gap in the literature is thus the lack of long-run survey data evidence. This study tries to fill this gap by using survey data of almost thirty years. This could give insight into the long-run trends, such as the investing decisions of wealthy inheritors and the ‘inheritance depletion’ of less wealthy inheritors (Nekoei and Seim, 2021). Using long-run survey data could therefore potentially resolve the conflict between long-run statistical evidence and short-run survey evidence.

Another gap in the literature is the lack of studies on the Dutch situation. So far, only one serious study has looked into the relation between inheritances and wealth inequality in the Netherlands (CPB, 2019), which uses short-run data. By using long-run survey data, this study adds to this field.

Finally, most studies do not make the difference between the short run and long run effect. Only two studies so far have done that. Elinder et al. (2018) make a difference between the two and find for both time frames a decreasing effect on wealth inequality. Yet, Nekoei and Seim (2021) find in the short run a decreasing effect but in the long run an increasing effect on wealth inequality. This study contributes to this field by giving new evidence on the short and long run effect.

## *2.5 Hypotheses*

Based on the previous literature, this study expects that in the short run inheritances reduce wealth inequality, but that in the long run it increases wealth inequality. Most econometric studies find that inheritances reduce wealth inequality in the short run (Wolff, 2002; Boserup et al. 2016; Elinder et al., 2018). Across different datasets and different methods,

this is a consistent finding. Also studies using more long-run data and different methods find in the short run a negative effect (Nekoei and Seim, 2021). A potential mechanism behind this effect is that wealthy households receive relatively less inheritance compared to less wealthy individuals (Wolff and Gittleman, 2014). Although wealthy households receive absolutely more inheritance than less wealthy inheritors, relatively, wealthy inheritors receive less. This has the effect of improving the relative position of less wealthy households in comparison to richer households, which reduces wealth inequality.

In the long run, this study expects that inheritances increase wealth inequality. This is based on the analysis of Nekoei and Seim (2021), who find an increasing effect in the long run using DID on long-run data of 16 years. Although a study using data of 15 years finds no increasing effect (Wolff and Gittleman, 2014), the Nekoei and Seim (2021) study seems more convincing since they use an empirical strategy that exploits the long-run nature of the dataset using DID, and they have access to highly detailed administrative data. An explanation behind this result is that less wealthy inheritors spend a large part of their inheritances, while wealthy inheritors invest their inheritance into assets with high returns which increases their wealth (Nekoei and Seim, 2021). As a result, the position in the wealth distribution of wealthy inheritors increases, while the position of less wealthy inheritors increases less fast, stagnates or decreases. This has the effect of increasing wealth inequality.

### **3. Data and methodology**

#### *3.1 Institutional setting*

Before going to the data and methodology, let's first discuss the institutional setting. The Netherlands for the first time levied taxes on inheritances in 1598 to pay for the Spanish war. In 1805, during the French reign, a general inheritance tax system was introduced. These laws were adjusted in 1859. These laws still form the basis for the current inheritance tax laws. In 1956, the laws were adjusted for mostly fiscal-technical reasons. The last reform of inheritance law was in 2010, which slightly reduced the tariffs (De Beer et al., 2018).

In the Netherlands, the receivers are taxed instead of the person who passed away. In the United Kingdom, for example, the person who passed away is taxed (an estate tax). Currently, partners are exempt from paying inheritance tax up to €643.194. After that, they pay 10 percent of taxes up to inheritances of €123.248, and 20 percent for the remaining amount. The children are exempt up to €20.371 (De Beer et al., 2018). After that the same tax structure as partners applies, thus 10 percent up to €123.248, and 20 percent for the remaining amount. People who receive inheritance other than partners or children are not exempted and pay

respectively 30 and 40 percent. In 2019, the mean of inherited wealth was €127.700 and the median was €27.200 (CBS, 2021a).

The Dutch government receives about 1% of its total tax revenues from inheritance tax, which is comparable to other European nations. Inheritance tax makes up about 0.2% of GDP. This share is also comparable to other European nations. In recent years, some countries have abolished the inheritance tax. For example, Sweden in 2005 and Norway in 2014 (Nolan et al., 2020). In the Netherlands this is not on the political agenda, but it has been called by its prime minister ‘the most unjust tax’ (De Beer et al., 2018). Recently, more political parties, as well as economists, have been arguing for a higher inheritance tax (Nolan et al., 2020).

### 3.2 Data description

This study uses the survey data of the Dutch Central Bank Household Survey (DHS) from 1993 to 2021. The original goal of this survey is to investigate economic and psychological determinants of the savings behaviour of households. Since 1993, it has collected the data of some two thousand households annually, which can be analysed on the individual level. These individuals are a representative sample of the Dutch population, a small high-income country. From 1993 to 2000 there was a specific focus on the top 10 percent, but this was discontinued due to lack of updating of this group since 1997. The whole dataset contains eight smaller data sets that encompasses information on general household characteristics, assets, income, liabilities, and aggregate income and wealth. The dataset ‘Health and Income’ provides information on inheritance and gifts. The DHS data is available after request. Due to changes from guilders to euros in 2002, the variables regarding money need to be corrected for.

The strength of the DHS is that it provides long-run data on inheritances and wealth, but there are also some weaknesses. First, the survey ‘undersamples’ the richest households. Comparable surveys, such as the Survey of Consumer and Finances (SCF), oversample the richest households in order to combat undersampling, because this is a well-recognized problem with survey data on wealth (Vermeulen, 2018). Consequently, the coefficients will probably underestimate the effect. Second, the DHS does not make a difference between inheritances and *inter vivo* gifts (gifts made during the life of a grantor). It, therefore, makes it hard to separate the effects from each other. To achieve a large sample size, this study assumes that *inter vivo* gifts and inheritances are the same. Another reason to assume that they are identical is that due to inheritance tax, people give gifts to their beneficiaries in order to avoid taxes. *Inter vivo* gifts could therefore be seen as part of inheritance (Elinder et al., 2018). This study will therefore use the inheritance and *inter vivo* gifts variable as a proxy for inheritance. It will

also refer to the variable as inheritance. Third, the sample size of inheritors is modest. On average, every year about eighty to hundred individuals inherit. This smaller sample size affects the ability to obtain statistically significant results.

Despite these caveats, the DHS survey is the only survey that provides information on wealth and inheritance for almost a thirty-year period. In addition, it is the only accessible dataset for the Netherlands for such a time frame. Therefore, the dataset is used to measure the effect and also to extend the field for the Netherlands.

Before going to the summary statistics, it is important to define wealth. In this study wealth is defined as ‘marketable wealth’: this refers to the sum of assets that are possible to sell in a relatively short time frame, minus the debts that are equally able to be paid off in a relatively short time frame (Wolff and Gittleman, 2014). For assets, this includes real estate, financial assets, bank deposits, cash at hand, and cash surrender value of life insurance. For debts, this includes mortgage loans, student loans, and consumer loans. This definition of wealth excludes pension wealth, human capital, and ‘social security wealth’ (wealth due to future social benefits). This standard of wealth is used by many studies, besides some small differences (e.g., Boserup et al. 2016; Elinder et al., 2018; Nekoei and Seim, 2021).

### *3.3 Summary statistics*

Table 1 shows the summary statistics for the years 1993 to 2021. It shows the summary statistics for the whole sample; for the group who inherited; and for the group who did not inherit. For the whole sample, it shows that over time the average sum of total wealth is €109.799, with a large standard error of €216.906. The group who did not inherit has a mean of €107.462, while the group inheriting has an average wealth of €168.298. The inheritance dummy indicates that about 4% of the observations received inheritance. The average inheritance or gift is on average €15.660 with a standard error of €41.300. These numbers are after tax reductions. The wealth rank variable shows that on average non-inheritors belong to the 50th percentile, while the inheritors belong to the 60th percentile.

Table 1: Summary statistics of 1993 to 2021. *Source:* DNB Household Survey

VARIABLES	(1) Whole sample observations	(2) Mean	(3) SD	(4) No inheritance observations	(5) Mean	(6) SD	(7) Inheritance observations	(8) Mean	(9) SD
Total wealth	68,807	109,799	216,664	65,808	107,462	214,484	2,870	168,298	257,941
Inheritance percentage	68,678	4%	2%						
Sum of inheritance or gift	2,823	15,660	41,300				2,823	15,660	41,300
Wealth rank	68,807	0.50	0.27	65,808	0.50	0.28	2,870	0.60	0.27
Age	68,799	49.66	16.37	65,806	49.75	16.48	2,870	47.76	13.52
Sex	68,800	0.542	0.498	65,807	0.541	0.498	2,870	0.572	0.495
Education	67,921	2.792	1.062	64,939	2.778	1.061	2,853	3.142	0.999
Position in the household	68,732	1.601	1.044	65,742	1.605	1.049	2,867	1.496	0.925
Occupation	68,666	4.286	3.482	65,678	4.319	3.483	2,865	3.480	3.374
Number of household members	64,212	2.593	1.308	61,419	2.589	1.307	2,666	2.670	1.358
Number of kids	68,797	0.793	1.122	65,798	0.790	1.120	2,870	0.870	1.167
Degree urbanisation	62,680	2.997	1.318	59,961	3.000	1.317	2,592	2.949	1.335
Region	62,680	3.064	1.439	59,961	3.066	1.440	2,592	3.032	1.401
Province	62,680	7.733	2.984	59,961	7.740	2.986	2,592	7.563	2.944
Owner of house	40,754	0.725	0.446	38,896	0.719	0.449	1,858	0.846	0.361
Partner	64,212	0.776	0.417	61,419	0.776	0.417	2,666	0.781	0.414
Type of living situation	64,212	2.285	0.863	61,419	2.283	0.863	2,666	2.308	0.856
Gross income	58,916	27,597	27,376	56,148	27,281	27,265	2,640	35,640	28,505
Net income	53,514	20,601	19,216	50,966	19,717	16,564	2,420	40,296	44,297

The two groups differ in their control variables. The average age for non-inheritors is 50 years, while the inheriting group age is on average 48 years. In the non-inheritors group, 54% are men, while the inheriting group has a share of 57% of men. Education is on average around 2.7 for the non-inheritors, which refers to high school education. Inheritors have on average a higher education level of 3.1, which refers to senior vocational training. There is also a difference in income. Inheritors have a gross income of €35.640, while non-inheritors have a mean of €27.281. For net income the difference is even larger: €40.296 for inheritors and €19.717 for non-inheritors. The means are approximately the same for the variables not mentioned here but that are shown in Table 1. The precise measurement of the variables is shown in the Appendix (Table 10).

Figure 1 displays the overall changing values over time of the sum of inheritance, gross income and total wealth. It shows that total wealth increased in this period from €50.000 to almost €200.000 in 29 years. It also shows that gross income increased from €24.000 to

€32.000. The average sum of inheritances changed considerably over the years. Overall, there seems to be an increasing trend: it started with €9.436 in 1993 and ended with €17.156 in 2021. But in some years the average is quite different from the previous years. This is especially the case for 2011 and 2014. If the sample would have been representative, the mean would have been more stable over time. However, as the bottom right corner of Figure 1 shows, if looked at a different scale, the mean of inheritance seems more stable.

Figure 1: Mean of gross income, inheritance sum, and total wealth over 1993 to 2021. *Source:*

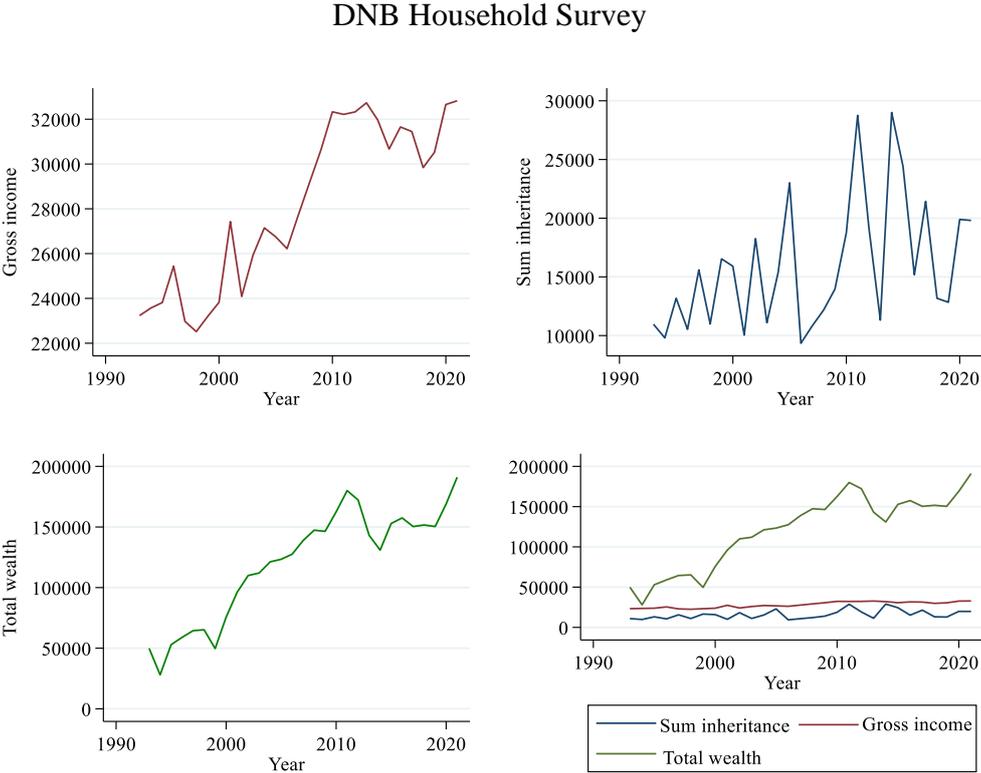
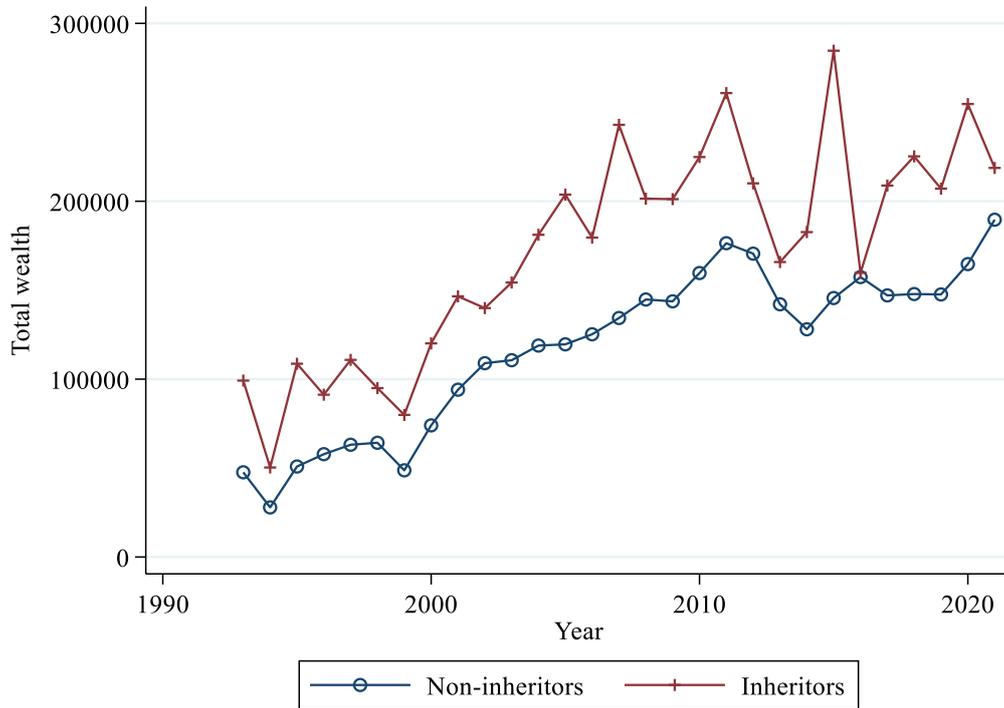


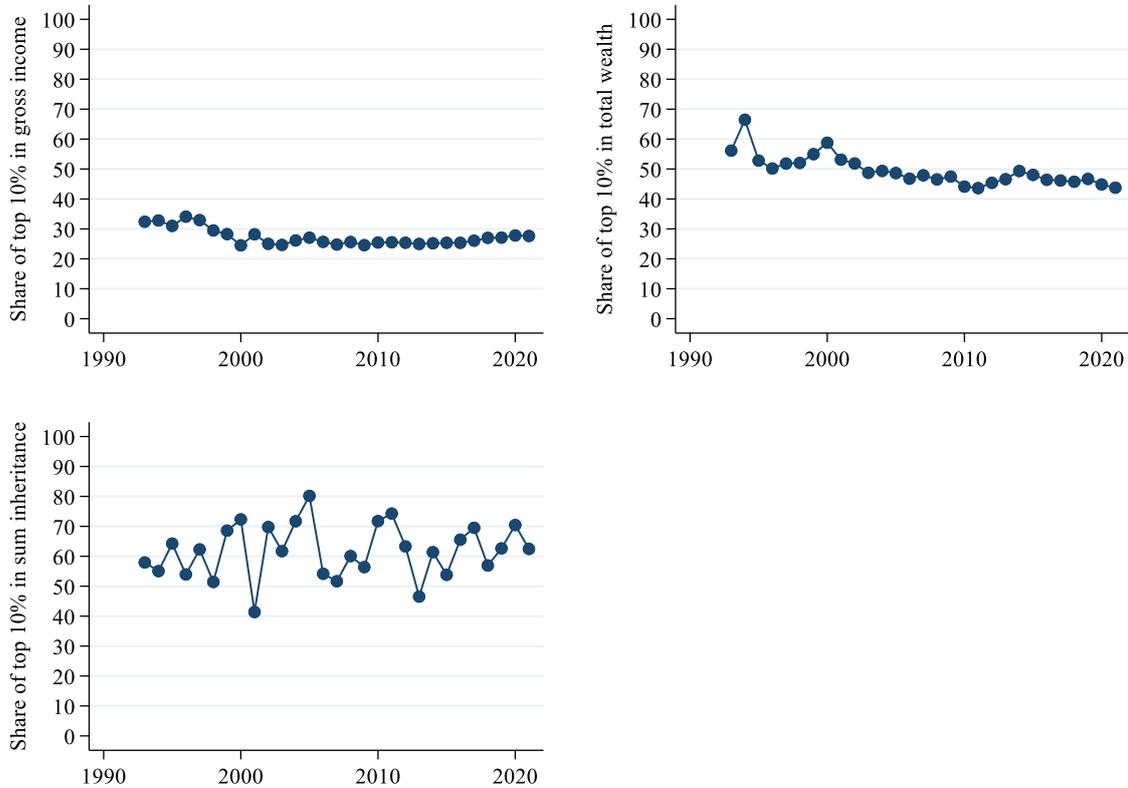
Figure 2 shows the difference in wealth between people who inherit and who do not inherit over the years. It shows that people who inherit have on average more wealth than people who do not inherit, as was also shown in the summary statistics. The figure shows that this trend is stable over time. It also shows that both groups move in basically the same trend. There is however a large spike in 2015. This spike seems not due to a macroeconomic event, but seems to be a particularity of the dataset. In the long run, inheritors seem thus to have on average more wealth. The question is whether this increases wealth inequality.

Figure 2: Mean of total wealth for inheritors and non-inheritors over 1993 to 2021. *Source:*  
DNB Household Survey



To what extent is there inequality in this sample? Figure 3 shows the distribution of gross income, total wealth and the sum of inheritance. For income inequality, it shows that the top 10 percent held 30 percent of income in 1993, then decreased slightly around the 2000s, but since the 2010s it is back to around 30%. It shows that wealth inequality decreased over this period: the top ten percent held 58% in 1993 while it held 43% in 2021. Wealth inequality is thus more unequally divided than gross income. What is even more unequally distributed is the sum of inheritance. Figure 3 shows that the top ten percent held approximately 60% of total sum of inheritance. Thus in order, inheritance inequality is more unequally distributed than wealth inequality, and wealth inequality is more unequally distributed than income. This is in line with national statistics (CBS, 2021b). What however is not in line with national statistics is the decreasing trend in wealth inequality. The trend should have been increasing, not decreasing (CBS, 2021b). This reflects the undersampling of the richest households in this sample.

Figure 3: Share of the top 10% in gross income, total wealth and inheritance sum. *Source:*  
DNB Household Survey



The summary statistics thus show that inheritances are unequally divided and that inheritors have on average more wealth than non-inheritors. The analysis on the short run and long run will show whether this decreases or increases wealth inequality.

### 3.4 Method

To measure the short run effect, this study uses the method of Crawford and Hood (2016). This method compares the distribution of wealth without inheritance and with inheritance. It looks whether adding inheritances increases wealth inequality in the sample. This exploits the simple accounting identity:

$$W = T + WX \quad (1)$$

where  $W$  is observed wealth,  $T$  is inherited wealth and  $WX$  is wealth excluding inheritances. If  $W$  and  $T$  are calculated from the data, then  $WX$  is determined by simply taking  $T$  of  $W$ . To compare wealth distributions, this study uses the Gini-coefficient and the Palma index (the

top 10 percent divided by the bottom 40 percent). This method, however, assumes that in one year there are no behavioural responses. Ideally, one would like to compare the wealth distributions right after inheritances are received. This data is unfortunately not available. It, therefore, assumes that in the first year inheritors save all the money they receive from inheritance. From this, it follows that the short run is defined as one year. Additionally, it should be noted that this method assumes the wealth distribution without inheritances as counterfactual. Assuming the counterfactual, for example, as the equal distribution of inheritances would give different results (Palomino et al., 2021).

Measuring the long-run effect is achieved by using probabilistic estimation. Specifically, it uses Maximum Likelihood (ML) estimation for logit models. The outcome variable will be a binary variable indicating whether an individual belongs to a certain place in the wealth distribution, for example, the top 10 percent. The main explanatory variable will be whether an individual receives inheritance or not. Formally, the model is:

$$\text{logity}_{it} = \beta_0_{it} + \beta_1 * INHER_{it} + \beta_2 * X_{it} + \varepsilon_{it} \quad (2)$$

where  $y$  indicates the dummy variable for a certain place in the wealth distribution,  $INHER$  refers to whether an individual received inheritance,  $X$  refers to a vector of control variables such as age, education and income, and  $\varepsilon_{it}$  is the error term.

The interpretation of the coefficient will be whether receiving inheritance increases or decreases the probability of belonging to a certain place in the wealth distribution. If it increases, this could be a sign that wealth inequality increases, because it shows that the relative position of inheritors rises compared to non-inheritors. The logit models will be estimated using Fixed Effect (FE) estimation. This has the benefit of accounting for time-invariant individual characteristics, such as ability or motivation. This addresses omitted variable bias. Also, to specifically look at the long run effect of inheritances on wealth inequality, it includes lags up to four years to see whether receiving inheritance has a positive effect on the place of an individual in the wealth distribution.

This study acknowledges that this is not the most robust way to measure the causal effect. Due to practical reasons, a randomized control trial is not possible, but also quasi-experimental methods, such as Differences-in-Differences (DID), are not possible since the data does not allow for that. Studies using DID have the advantage of knowing precisely whether the individual received inheritance (Nekoei and Seim, 2021) or when the parents of an individual died (Elinder et al., 2018). The DNB data does not have such information. In

addition, in order to replicate, for example, the method used by Nekoei and Seim (2021), the sample of this study would also have been too small. This method requires comparisons between individuals from the same birth cohort and the same education level over the years. The DNB data would only allow very small samples in this case. It is therefore opted to use probabilistic estimation using logit models. To compare the results, pooled OLS and Fixed Effects estimations will also be provided.

## 4. Results

### 4.1 Short run effect

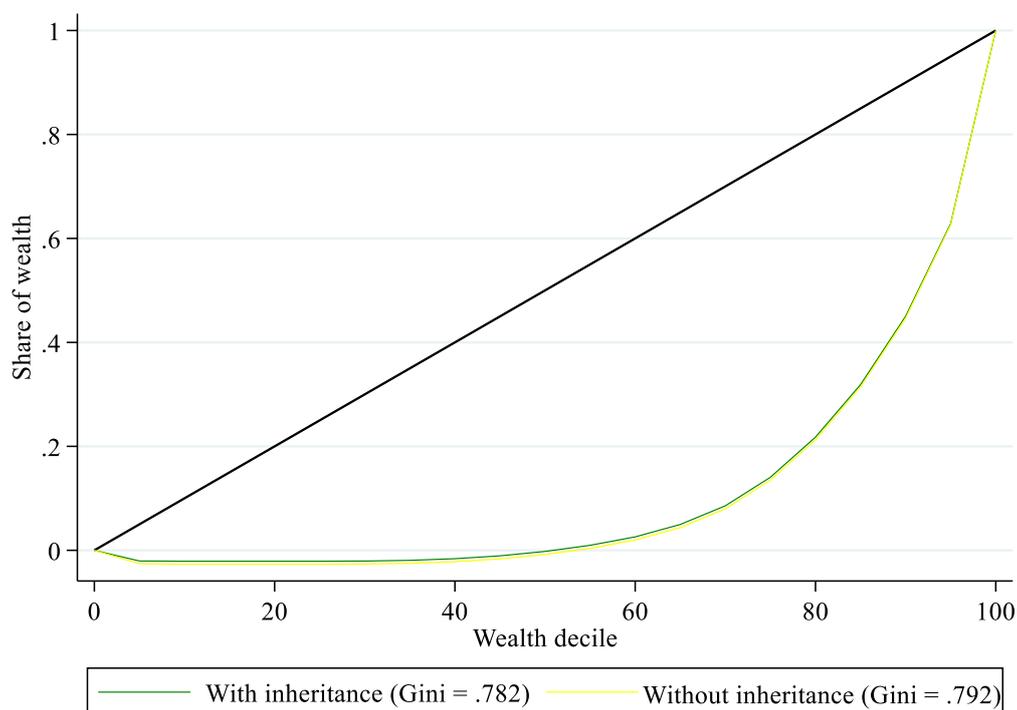
Table 2 shows the analysis based on the Crawford and Hood (2016) method, which compares wealth distributions with and without inheritance. Columns 1 to 3 show that the Gini-coefficient of wealth without inheritance is larger than the Gini-coefficient with inheritance for all individual years. Thus, for every year wealth inequality decreases when inheritances are added. The effect is, however, quite small, as the column 3 indicates. The reason could be that inheritors make up on average only five percent of the sample, although other studies also find a small effect (Wei and Yang, 2022). The largest differences are in the years 1994 and 1999, respectively 0.0116 and 0.0106 points. For all the other years the differences are smaller than 0.010 points. Yet, it is a consistent pattern that wealth distributions with inheritances are more equal than without. Also, for all the years combined there is a decreasing effect, as the ‘Overall’ row shows.

Table 2: The change of wealth inequality due to inheritance.

Year	(1) Gini without inheritances	(2) Gini with inheritances	(3) Differences	(4) Palma index without inheritances	(5) With inheritance	(6) Differences
1993	0.7868	0.7819	0.0049	-37.085723	-44.0639	6.978158
1994	0.8574	0.8458	0.0116	-21.654552	-26.3186	4.664069
1995	0.7575	0.7547	0.0028	-55.481976	-66.8913	11.40931
1996	0.7402	0.7375	0.0027	-60.938862	-73.4959	12.55703
1997	0.7547	0.7518	0.0029	-41.635246	-47.5234	5.888196
1998	0.7621	0.7592	0.0029	-30.580362	-32.3842	1.80386
1999	0.7921	0.7815	0.0106	-25.215671	-34.1714	8.955715
2000	0.8118	0.8108	0.001	-31.925933	-33.2561	1.330181
2001	0.7549	0.7528	0.0021	-55.907389	-61.4597	5.552319
2002	0.7476	0.7447	0.0029	-53.814071	-60.906	7.091967
2003	0.7224	0.7214	0.001	-124.15649	-135.269	11.11241
2004	0.7202	0.7193	0.0009	-526.27178	-874.43	348.1579

2005	0.7272	0.722	0.0052	-68.797052	-110.072	41.27474
2006	0.7063	0.7049	0.0014	273.89795	196.5315	77.36647
2007	0.7162	0.7153	0.0009	-149.17077	-178.059	28.88796
2008	0.7065	0.7041	0.0024	-294.43196	-1176.78	882.3441
2009	0.7183	0.7157	0.0026	-155.10591	-283.771	128.6651
2010	0.6813	0.6791	0.0022	241.44345	145.8079	95.63557
2011	0.6712	0.6689	0.0023	138.27102	92.95697	45.31405
2012	0.6843	0.6812	0.0031	154.24409	113.4423	40.80179
2013	0.7111	0.7093	0.0018	-63.793846	-72.6757	8.881858
2014	0.7419	0.734	0.0079	-32.21649	-45.2225	13.00599
2015	0.7131	0.7088	0.0043	-79.717831	-127.417	47.69952
2016	0.7021	0.6999	0.0022	-91.873782	-125.727	33.85353
2017	0.7033	0.7009	0.0024	-105.13072	-152.392	47.26124
2018	0.7048	0.7035	0.0013	-65.013378	-69.4255	4.412104
2019	0.7069	0.7056	0.0013	-182.98989	-229.235	46.2453
2020	0.6869	0.684	0.0029	122.01858	89.65578	32.3628
2021	0.6727	0.669	0.0037	53.395633	43.59918	9.796457
Overall	0.7541	0.7512	0.0029	-59.451366	-70.8857	11.43433

Figure 4: Lorenz curve of the wealth distributions for the year 1999



The Palma index, shown in columns 4 to 6, shows larger differences but the same result as the Gini-coefficient. This inequality measurement also shows consistently that wealth distributions without inheritances are more unequal than wealth distributions with inheritance.

The index numbers are, however, to some extent confusing due to the high index numbers and negative signs. This is because of the often negative wealth share of the bottom 10 percent, which means that they have more debts than assets. The remaining bottom 20 to 40 percent often do not have a large enough wealth share to add up to a positive number. The interpretation is thus for negative numbers that if the wealth distribution is smaller, i.e. is more negative, inequality has decreased. For some years, the differences are larger than for other years. This is also related to the negative wealth share of the bottom 10 percent, because a small negative number between 0 and 1 can lead to high Palma indexes. Overall, the indexes do show a decreasing effect on wealth inequality.

Figure 4 shows the same result but graphically for the Gini-coefficient. It uses the year 1999 because in this year one of the largest differences took place, which makes it clearly noticeable in the graph. The line with inheritances is more close to the 45 degree line than the line without inheritances. This means that the wealth distribution with inheritance is more equally distributed than without. If looked closely at the graph, it shows that the bottom 50% increases in their wealth share if inheritances are added. It should be noted, however, that for other years the results are hardly noticeable in a graph. The effect is thus quite small. Overall, there seems to be a decreasing effect on wealth inequality due to inheritances in the short run.

#### *4.2 Long run effect*

Table 3 shows the results of logit models to estimate the long run effect. This table notes the sign of the coefficient. Columns 1 and 2 show that inheritances do not have a statistically significant positive effect on the probability of becoming part of the top 10 percent. Columns 3 and 4 show that inheriting does increase the probability of belonging to the top 20%, also if controls are included. This suggests that inheritances increase wealth inequality in the long run, because the relative position of inheritors compared to non-inheritors is likely to increase. Also, without controls, inheriting increases the probability of belonging to the top 30%. However, if controls are added the effect is no longer statistically significant. For the top 40%, inheriting also does not increase the probability of belonging to this group. There thus seems to be only a positive effect of inheriting on the probability of belonging to the top 20%. For the other wealth brackets this is not the case. There is thus mixed evidence for an increasing effect in the long run.

Table 3: Logit models. Coefficients note the sign of the effect.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Top 10%	Top 10%	Top 20%	Top 20%	Top 30%	Top 30%	Top 40%	Top 40%
Inheritance dummy	0.178 (0.116)	0.197 (0.129)	0.277*** (0.0979)	0.320*** (0.110)	0.143* (0.0858)	0.142 (0.0960)	0.129 (0.0859)	0.0574 (0.0979)
Education		-0.195 (0.134)		-0.0729 (0.108)		-0.126 (0.101)		-0.0590 (0.110)
Age		0.0141 (0.0121)		0.0144 (0.00949)		0.00926 (0.00800)		0.00766 (0.00785)
Gross income		1.12e-05*** (2.13e-06)		5.75e-06 (6.43e-06)		1.44e-05*** (1.96e-06)		1.24e-05*** (2.09e-06)
Number of children		-0.303 (0.213)		-0.136 (0.172)		-0.0649 (0.160)		0.0262 (0.153)
Number of households		0.0985 (0.213)		0.0689 (0.177)		0.0964 (0.164)		0.0505 (0.151)
Type of living situation		0.0780 (0.143)		0.0606 (0.1000)		0.0640 (0.0957)		0.0160 (0.0844)
Region		-0.576*** (0.203)		-0.0581 (0.183)		0.0447 (0.134)		0.122 (0.123)
Province		0.0422 (0.177)		0.0377 (0.102)		0.00398 (0.0759)		0.0237 (0.0620)
Urbanisation		-0.184 (0.139)		-0.0980 (0.102)		-0.0606 (0.0902)		-0.0641 (0.0928)
Occupation		0.00922 (0.0221)		0.0202 (0.0188)		0.00381 (0.0174)		0.00826 (0.0178)
Observations	12,511	9,425	19,915	14,993	24,060	17,964	25,965	19,277

Robust standard errors in parentheses

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

Table 4: Logit models. Coefficients note the size of the effect

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VARIABLES	Top 10%	Top 10%	Top 20%	Top 20%	Top 30%	Top 30%	Top 40%	Top 40%
Inheritance dummy	0.0445 (0.0289)	0.0361 (0.0278)	0.0692*** (0.0244)	0.0623* (0.0352)	0.0357* (0.0214)	0.0106 (0.00796)	0.0322 (0.0215)	0.0118 (0.0208)
Education		-0.0357		-0.0142		-0.00936		-0.0121

	(0.0277)	(0.0234)	(0.00880)	(0.0242)
Age	0.00258	0.00281	0.000690	0.00157
	(0.00295)	(0.00178)	(0.000533)	(0.00151)
Gross income	2.05e-06*	1.12e-06	1.08e-06***	2.55e-06**
	(1.06e-06)	(1.28e-06)	(3.97e-07)	(1.14e-06)
Number of children	-0.0555	-0.0266	-0.00484	0.00537
	(0.0508)	(0.0335)	(0.0118)	(0.0317)
Number of households	0.0180	0.0134	0.00719	0.0103
	(0.0418)	(0.0337)	(0.0120)	(0.0306)
Type of living situation	0.0143	0.0118	0.00477	0.00327
	(0.0274)	(0.0200)	(0.00725)	(0.0173)
Region	-0.106**	-0.0113	0.00333	0.0251
	(0.0514)	(0.0368)	(0.00971)	(0.0249)
Province	0.00773	0.00736	0.000297	0.00486
	(0.0353)	(0.0182)	(0.00561)	(0.0121)
Urbanisation	-0.0337	-0.0191	-0.00452	-0.0131
	(0.0305)	(0.0243)	(0.00738)	(0.0211)
Occupation	0.00169	0.00393	0.000284	0.00169
	(0.00403)	(0.00415)	(0.00130)	(0.00374)
Observations	12,511	9,425	19,915	14,993
	24,060	17,964	25,965	19,277

Robust standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Table 4 notes the size of the effect. Again, for the top 10% there are no positive statistically significant effects. For the top 20% there are positive statistically significant effects. Including controls, inheriting increases the probability of belonging to the top 20% with 6.23 percentage points. For the top 30%, the effect is 3.57 percentage points at the 10% significance level, but after including controls reduces there is no statistically significant effect anymore. For the top 40% there are no positive statistically significant effects. This shows that inheriting has a positive influence on belonging to the top 20%. For the other places in the wealth distribution, however, it does not increase the probability of belonging to a high place in the wealth distribution. Table 4 shows that if there is a statistically significant effect, the effect is quite small. The small sample size of inheritors could be one of the reasons of the failure to obtain statistically significant results.

Does including lags support the hypothesis for the long run? Table 5 shows the results after including lags. It provides the size of the effect of whether receiving inheritance in past years influences the probability of belonging to a certain place in the wealth distribution. Column 2 shows that inheriting two years ago does not have a statistically significant influence

on the probability of belonging to the top 10%. Column 3, however, shows that inheriting three years ago has a statistically significant positive effect of 7.68 percentage points. Yet, if a fourth lag is included, the statistically significant effect disappears. Inheriting in the past, therefore, does not seem to influence the current probability of belonging to the top 10%. Columns 6 and 7 show that the effect of inheriting two years ago has a positive influence on belonging to the top 20%. However, if a fourth lag is included, again, the statistically significant effect disappears. Past values of inheritance, therefore, do not seem to influence the probability of belonging to a certain place in the wealth distribution. Also if lags are included for more years, no statistically significant effects are obtained (see Appendix Table 14). These results do not provide strong evidence for an increasing effect in wealth inequality in the long run.

Table 5: Lagged logit model. Coefficients note the size of the effect

VARIABLES	(1) Top 10%	(2) Top 10%	(3) Top 10%	(4) Top 10%	(5) Top 20%	(6) Top 20%	(7) Top 20%	(8) Top 20%
Lag top 10%	0.168*** (0.0497)	0.187** (0.0825)	0.200*** (0.0343)	0.135 (0.153)				
Lag top 20%					0.116 (0.0732)	0.225*** (0.0760)	0.246*** (0.0822)	0.179 (0.185)
Inheritance dummy	0.0383 (0.0311)	0.0630 (0.0429)	0.0515 (0.0319)	0.0317 (0.0387)	0.0512 (0.0368)	0.105** (0.0478)	0.105** (0.0506)	0.0672 (0.0757)
Lag 1 inheritance dummy	0.0264 (0.0271)	-0.00601 (0.0284)	0.0135 (0.0319)	0.0205 (0.0315)	0.0409 (0.0301)	0.0388 (0.0327)	0.0240 (0.0337)	0.0125 (0.0308)
Lag 2 inheritance dummy		0.0294 (0.0319)	0.0323 (0.0338)	0.0177 (0.0302)		0.102** (0.0467)	0.111** (0.0497)	0.0602 (0.0679)
Lag 3 inheritance dummy			0.0768** (0.0328)	0.0560 (0.0651)			0.0197 (0.0316)	0.0264 (0.0392)
Lag 4 inheritance dummy				-0.00745 (0.0290)				0.0402 (0.0496)
Observations	7,321	5,323	4,099	3,198	11,414	8,141	6,149	4,757

Robust standard errors in parentheses. Control variables included.

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

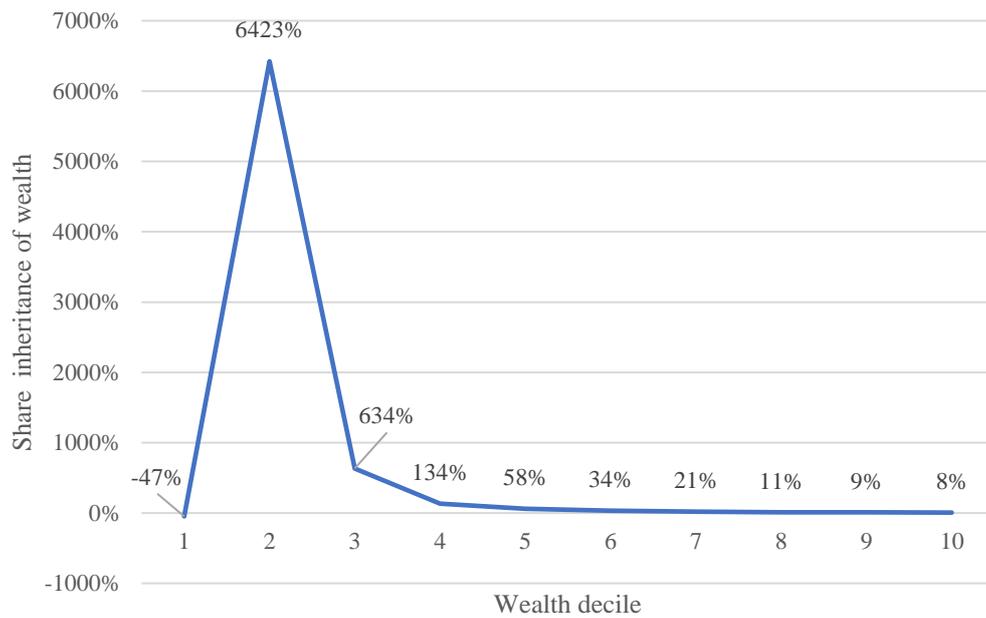
Overall, the logit models do not provide strong evidence that inheritances increase the probability of belonging to a high wealth bracket. This implies that evidence for an increasing effect on wealth inequality in the long run due to inheritances is weak.

### *5.3 Mechanisms*

The results give strong evidence about the short run effect, but provide no strong evidence for the long run effect. To what extent is there evidence for the mechanisms hypothesized? In the short run, it was expected that the less wealthy receive relatively more inheritance than the wealthy. In the long run, it was expected that the wealthy invest their inheritance, thereby increasing their wealth, while the less wealthy spend their inheritance, reducing their wealth.

First, the short run mechanism. Figure 5 shows the percentage share of inheritance as part of wealth per decile in the wealth distribution. This analysis shows that poorer households receive relatively more inheritance than wealthier households. For poor households, the percentage can be as high as 6000%. This is the case because the average wealth in the bottom 20 percent decile is €328, while the average sum of inheritance is €21.108. For the top 10 percent, the share of the inheritance of total wealth is only 8%. While the average inheritance sum of this decile, €40.166, is absolutely higher than the bottom 20 percent, €21.108, the wealth of this decile is on average €528.241, thereby lowering the share substantially. Thus, the richer individuals get, the lower the relative size of the inheritance becomes. This has the effect of increasing the relative position of the less wealthy compared to the wealthy, which in turn reduces wealth inequality. There is thus evidence that this mechanism is the driver behind the decreasing effect in the short run.

Figure 5: Inheritance as percentage of wealth per wealth decile



A caveat, however, is that this dataset has a high share of observations with negative wealth or zero wealth compared to the national statistics (CBS, 2020). This exaggerates the results for the lower deciles. Additionally, due to the undersampling of the wealthiest people, the average inheritance for the richest is substantially lower if compared to the national statistics (CBS, 2021a). It therefore also exaggerates this result. Despite this, the overall tendency would be the same with a higher quality dataset, but less extreme. The less wealthy inheritors would have a lower share of inheritance as part of their wealth, while the share for the wealthy inheritors would be larger. Still, the overall finding would be the same, that in the short run inheritances decrease wealth inequality, which is due to the higher relative share of inheritance of total wealth for less wealthy people.

Table 6 explores the long-run mechanism. The table shows the results of interaction terms between certain places in the wealth distribution with whether an individual inherits or not. This has the effect of estimating, for example, whether an inheritor of the top 10 percent sees a higher increase in his or her wealth compared to inheritors not belonging to the 10 percent. It uses a Fixed Effect model for this to account for time-invariant individual characteristics.

Strikingly, column 1 shows that inheritors belonging to the top 10% do not have higher wealth compared to non-inheritors in the same decile. This could be a sign that wealthy inheritors also spend their inheritance rather than invest to increase their wealth. For the top 20%, it also shows that inheritors do not have higher wealth than non-inheritors. Column 3

shows that people who belong to the top 30% and who inherit see an increase in their wealth, but this effect is statistically insignificant. There thus seems to be no strong evidence that wealthy inheritors see an increase in their wealth due to investing their inheritance.

Table 6: Fixed effect estimation of interaction terms

VARIABLES	(1) Wealth	(2) Wealth	(3) Wealth	(4) Wealth rank	(5) Wealth rank	(6) Wealth rank
Inheritance dummy x top 10%	-32,762* (18,214)			-1.305* (0.782)		
Inheritance dummy x top 20%		-2,847 (10,968)			-0.139 (0.672)	
Inheritance dummy x top 30%			6,510 (8,897)			0.194 (0.662)
Inheritance dummy	1,654 (2,803)	-5,331* (2,864)	-6,034** (3,048)	1.249** (0.488)	0.597 (0.508)	0.788 (0.521)
Top 10%	284,944*** (10,066)			22.48*** (0.564)		
Top 20%		207,449*** (5,856)			27.47*** (0.466)	
Top 30%			177,757*** (4,445)			30.70*** (0.421)
Constant	-189,321*** (33,637)	-171,581*** (38,994)	-220,587*** (43,612)	46.92*** (6.646)	46.37*** (6.342)	36.48*** (4.521)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	52,841	52,841	52,841	52,841	52,841	52,841
R-squared	0.225	0.197	0.183	0.103	0.242	0.371
Number of id	14,533	14,533	14,533	14,533	14,533	14,533

Robust standard errors in parentheses  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

For the wealth rank, which refers to the position in the wealth distribution, it also shows that inheriting and being part of the top 10% does not lead to a higher place in the wealth distribution. Column 5 also shows this result for the top 20%, but the effect is statistically insignificant. Column 6 shows that the top 30% who inherit see an increase in their wealth rank compared to non-inheritors in the same group, but the effect is statistically insignificant. There is thus no clear sign that wealthy inheritors see an increase in the wealth distribution.

These findings contradict the hypothesis that wealthy inheritors see an increase in their wealth due to investing their inheritance, while poorer inheritors see a decrease in their wealth because they spend their inheritance. The results do not show that the wealth of wealthy inheritors increases. However, this finding could be due to undersampling of the wealthy households, the small sample size, and the lack of difference between gifts and inheritance. For example, oversampling of the richest households would probably indicate that they invest their inheritance because it is highly unlikely that they will spend all their inheritance. The effect is thus probably underestimated.

#### *5.4 Robustness checks*

For the short run effect, the robustness of the results is already verified by using multiple inequality measurements, the Gini-coefficient and the Palma index. Combined, the two measurements clearly showed that inheritances reduce wealth inequality. The appendix provides further evidence by giving the wealth shares per decile after inclusion of inheritances and without. The results of Table 13 in the Appendix show that wealth inequality also reduces in this case, because the share of the top 10% decreases, while the share of the bottom 40% increases. The short run effect seems therefore stable.

Table 7 provides the robustness tests for the logit model that measures the long run effect. This table shows the size of the effect. The robustness tests are mainly done to check whether the logit models give the expected negative sign for the bottom deciles of the wealth distribution. This means that inheriting decreases the probability of belonging to the bottom deciles. Additionally, it checks whether a proxy for being wealthy has the same results as belonging to one of the top deciles as measured before. In line with the previous results, the effect should be ambiguous. The proxy used is a dummy variable whether someone owns a house or not.

Columns 1 and 2 show that inheriting has a negative influence on belonging to either the bottom 10% or the 20% decile. Column 3, however, shows that inheritance has a positive influence on belonging to the 30% decile, but the effect is statistically insignificant. Columns 4 and 5 show that inheriting has a negative effect on belonging to the top 40 and 50 percent, but the effect is not statistically significant. Strikingly, column 6 shows that inheritances have a positive effect on the probability of belonging to the 60% decile. The effect is 2.37 percent. Column 7 shows, in contrast, that inheriting has no statistically significant on belonging to the 70% decile. Oddly enough, column 8 indicates that inheriting has a negative influence on the probability of belonging to the 80% decile, which is significant at the 10% significance level.

Column 10 shows that inheriting does not lead to increasing the probability of owning a house. Here, owning a house is a proxy for wealth. In line with most of the other findings, there is no statistically significant effect. Despite some outliers, the overall effect is the same as for the logit model for the long-run analysis. Inheritance seems not to increase the probability of belonging to a certain place in the wealth distribution. Thus, the logit models do not provide evidence that inheritances increase wealth inequality in the long run.

Table 7: Logit model robustness tests. Coefficients note the size of the effect

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
VARIABLES	10% decile	20% decile	30% decile	40% decile	50% decile	60% decile	70% decile	80% decile	Owner house
Inheritance dummy	-0.00184 (0.00766)	-0.00315 (0.00350)	0.00506 (0.0179)	-0.0430 (0.0268)	- 0.000139 (0.0131)	0.0237** (0.0110)	-0.00715 (0.00849)	-0.0123* (0.00746)	1.72e-05 (4.29e-05)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8,495	10,313	15,152	15,126	16,323	17,181	16,457	16,043	3,533

Robust standard errors in parentheses

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

Finally, to compare the results of the logit models, Tables 8 and 9 show the results of pooled OLS estimation and Fixed-Effect estimation on total wealth and the wealth rank. For pooled OLS, column 1 of Table 8 shows that without controlling for other variables, inheriting increases wealth. Also after accounting for education, age, sex and income, the effect is statistically significant but the economic effect is smaller. After controlling for all variables, column 3 shows that inheriting is still significant for increasing wealth. Column 4 shows that inheriting increases the place of an individual in the wealth distribution. The outcome variable wealth rank refers to the place of an individual in the wealth distribution. After controlling for different variables, the effect is still statistically significant, but it has reduced to 8 percentage points. Overall, the pooled OLS estimations do seem to suggest that inheriting increases the wealth of individuals and the place in the wealth distribution, which provides evidence that in

the long run there is an increasing effect on wealth inequality. However, unobservable individual characteristics and other types of omitted variable bias could influence this result.

Table 9 shows the Fixed Effects (FE) results. FE-estimation shows that inheriting reduces wealth, but the effect is statistically insignificant. This is already the case if no controls are added. If controls are added, the negative effect becomes smaller. Yet, the effect on the place in the wealth distribution is still statistically significant and positive, although the effect has reduced compared to pooled OLS. Inheriting now increases the place in the wealth distribution with 1.5 percentage points, instead of 8, as with pooled OLS. FE estimation thus shows a negative effect on wealth, but a positive effect on the place in the wealth distribution. However, the positive effect is quite small.

Table 8: Pooled OLS results

VARIABLES	(1) Wealth	(2) Wealth	(3) Wealth	(4) Wealth rank	(5) Wealth rank	(6) Wealth rank
Inheritance dummy	60,836*** (4,886)	46,407*** (5,325)	48,930*** (5,557)	10.58*** (0.533)	8.471*** (0.584)	8.219*** (0.562)
Controls	No	Yes, individual	Yes, all	No	Yes, individual	Yes, all
Observations	68,678	58,567	53,326	68,678	58,567	53,326
R-squared	0.003	0.177	0.188	0.006	0.250	0.270

Robust standard errors in parentheses

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

Individual controls are age, sex, education and gross income

Table 9: Fixed Effect results

VARIABLES	(1) Wealth	(2) Wealth	(3) Wealth	(4) Wealth rank	(5) Wealth rank	(6) Wealth rank
Inheritance dummy	-4,075 (4,602)	-1,356 (4,481)	-1,531 (4,860)	1.337*** (0.410)	1.426*** (0.432)	1.331*** (0.457)
Controls	No	Yes, Individual	Yes, all	No	Yes, individual	Yes, all
Observations	68,678	58,567	53,326	68,678	58,567	53,326
R-squared	0.000	0.036	0.036	0.000	0.002	0.003
Number of id	17,311	15,629	14,611	17,311	15,629	14,611

Robust standard errors in parentheses

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

Individual controls are age, education and gross income

These estimations seem to suggest that inheriting increases your place in the wealth distribution. However, the effect is too small to move to another decile. This could be the reason why the logit models do not show statistically significant effects. The pooled OLS and Fixed Effect estimations do confirm the ambiguous effect of inheritances on inequality in the long-run, because of the diverging effects on wealth and wealth rank.

## **5. Conclusion**

There is a conflict between the descriptive aggregate findings of Piketty and other authors and the micro findings of survey data on the effect of inheritance on wealth inequality. While the literature using descriptive statistical evidence argues that inheritances increase wealth inequality, most studies using econometric techniques on micro survey data find a decreasing effect on wealth inequality. A gap in the literature is that, so far, econometric studies have only used short-run survey data of at most sixteen years, despite descriptive statistical studies using data of at least two decades. This study fills this gap by using long-run survey data from the Dutch Central Bank Household Survey (DHS) of almost thirty years.

This study hypothesizes that in the short run wealth inequality decreases, because less wealthy inheritors receive relatively more inheritance than wealthy inheritors. In the long run, it hypothesizes that wealth inequality increases because it is expected that poorer individuals spend their inheritance, while wealthy inheritors invest their inheritance which increases their relative wealth. To measure the short run effect, this study compares wealth distributions with and without inheritances. To measure the long run effect, this study uses probabilistic estimation to see whether inheriting increases the chance of belonging to the top of the wealth distribution.

The findings of this thesis are threefold. First, inheritances decrease wealth inequality in the short run. The analysis of the wealth distributions shows that inequality of wealth is lower in wealth distributions with inheritances than wealth distributions without inheritances. Second, the effect of inheritances in the long run is ambiguous. There is some evidence that it increases the probability of belonging to a high place in the wealth distribution, but this is not a consistent finding. OLS and Fixed Effect estimations show that the increase in wealth is probably too small to move to another high place in the wealth distribution. Third, the mechanism of reducing wealth inequality in the short run is confirmed by the data analysis, while the mechanism of reducing wealth inequality in the long run is not clearly confirmed. Less wealthy inheritors receive relatively more inheritance than wealthy inheritors, but there is no strong evidence that less wealthy inheritors spend their inheritance while wealthy inheritors invest their inheritance.

The finding for the short run is in line with other studies that study the short run. Most studies find that in the short run inheritance reduces wealth inequality (Boserup et al. 2016; Wolff and Gittleman, 2014; Wei and Yang, 2022). This is in contrast to studies that find in the short run an increasing effect (Leitner, 2016; Nolan et al., 2021; Salas-Rojo and Rodriguez, 2022). It is hard to say why this is the case. These studies use very different methods, from computer simulations to analysis based on the equality of opportunity framework of Roemer (2016), which makes it hard to compare the results. Overall, it seems fair to say that the reducing effect on wealth inequality is a consistent finding. This study is in between studies that investigate the long run effect. On the one hand, Elinder et al. (2018) find that in the long run also wealth inequality decreases, while on the other hand Nekoei and Seim (2021) find an increasing effect. This study finds ambiguous results. It therefore fits into the literature that also does not find clear effects for the long run effect.

This also brings us to the limitations of this study. The ambiguous results for the long run are probably more due to the quality of the data rather than the unbiased effect size. Although the strength of the DNB data is that it provides information for almost thirty years, it undersamples the wealthiest; does not separate inheritances from gifts; and has a low sample size for inheritors. This has the effect that the results are less reliable than other datasets. A further limitation of the study is that it is not able to use quasi-experimental evidence. This limits the extent to which robust causal evidence can be obtained, which is reflected in the ambiguous long-run results. A final limitation is that it does not have data on inheritances before and after taxation. The effect measured could already account for the effect of inheritance taxation. Further studies should therefore use higher quality data that has information on a period of at least twenty-five years; oversamples the wealthy; identifies only inheritances; has a large sample size; is able to use quasi-experimental methods; and has information on inheritances with and without taxation.

Despite these limitations, this study contributes to the societal debate. It provides arguments for both supporters and opponents of inheritance tax. For opponents of inheritance taxation, it shows that inheritances in the short run do not increase wealth inequality, which weakens the argument for inheritance taxation. Supporters of inheritance taxation can argue that the effect in the long run is ambiguous, therefore inheritance taxation can remain or should be increased. Additionally, it gives further insight into the mechanics of wealth inequality and its drivers. Society can use this information to sophisticate the debate on wealth inequality.

It also contributes to economic policy. It shows that inheritance taxation could have mixed effects on wealth inequality. Taxing inheritance of less wealthy people reduces the

equalizing effect of inheritances in the short run. Thus, taxation of this group could lead to more wealth inequality. Taxing inheritance of wealthy people would decrease wealth inequality. Although the precise effects in the long run are unclear, redistributing wealth from the rich to the poor would have an equalizing effect. However, it should not be expected that the effects will be large, since the effect is ambiguous. To prevent the 'patrimonial capitalism' of Thomas Piketty and avoid new lectures by individuals such as Vautrin, policymakers should carefully consider whose inheritance to tax, but expect no large effects due to inheritance taxation alone.

## Appendix

Table 10: Overview of measurement of variables

VARIABLES	DESCRIPTION
Total wealth	Sum of assets minus debts. Includes insurance and housing wealth. See do-file for precise calculation.
Total wealth without housing wealth	Sum of assets minus debts excluding housing wealth. See do-file for precise calculation.
Inheritance dummy	Dummy indicating whether individual received inheritance or gift in a given year. 0 = received no inheritance or gift; 1 = received inheritance or gift.
Sum of inheritance or gifts	The sum of inheritance or gifts. Measured in euros
Age	The age of the individual. Measured in years
Sex	Indicates the sex of the individual. 0 = female; 1 = male.
Education	Highest level of education attained by individual. 1 = no education, special education, other sort education, kindergarten; 2 = pre-vocational (VMBO), pre-university; 3 = senior vocational (MBO); 4 = vocational (HBO), university. Edited variable of highest education attained.
Position in the household	The position in the household. 1 = head of the household; 2 = spouse; 3; permanent partner (not married); 4 = parent (in law); 5 = child living at home; 6 = house-mate; 7 = other.
Occupation	The occupation of the individual. 1 = contractual basis; 2 = own business; 3 = free profession; 4 = looking for work; 5 = first time looking for work; 6 = student; 7 = works in own household; 8 = retired; 9 = disabled; 10 = unpaid work; 11 = volunteer; 12 = other occupation; 13 = too young, no occupation yet; 14 = military service.
Number of household members	The number of household members.
Number of children	The number of children in a household.
Degree of urbanisation	The degree of urbanisation where an individual lives. 1 = very low degree of urbanization; 2 = low degree of urbanization; 3 = moderate degree of urbanization; 4 = high degree of urbanization; 5 = very high degree of urbanization.
Region	The location of where an individual lives. 1 = Three largest cities; 2 = Other cities in the west; 3 = North; 4 = East; 5 = South.

Province	The province where an individual lives. 1 = Groningen; 2 = Friesland; 3 = Drenthe; 4 = Overijssel; 5 = Flevoland; 6 = Gelderland; 7 = Utrecht; 8 = Noord-Holland; 9 = Zuid-Holland; 10 = Zeeland; 11 = Noord-Brabant; 12 = Limburg.
Accommodation	Type of accommodation living. 1 = owner; 2 = tenant; 3 = subtenant; 4 = free.
Owner	Owner of a house or not. 0 = not owner of a house; 1 = owner of a house.
Partner	Dummy indicating whether someone has a partner or not. 0 = no; 1 = yes.
Type of living situation	The type of how an individual lives. 1 = is living by him or herself; 2 = is living together with partner, no children living at home; 3 = is living together with partner, children living at home; 4 = is living without a partner, but with children; 5 = other.
Gross income	The gross income of an individual over a year. Taken from aggregated income data. See DNB (2021) for more information.
Net income	The net income of an individual over a year. Taken from aggregated income data. See DNB (2021) for more information.

Table 11: Overview of summary statistics per year

Year	(1) Total wealth	(2) Total wealth without housing	(3) Inheritance dummy	(4) Inheritance sum	(5) Age	(6) Sex	(7) Education	(8) Position in the Household
1993	50432.19	19865.52	0.05	9436.13	43.01	0.53	2.73	1.78
1994	28256.84	19734.07	0.05	8520.01	44.10	0.53	2.63	1.76
1995	53000.81	18399.87	0.04	11347.06	44.75	0.53	2.54	1.78
1996	59030.54	19410.98	0.04	9027.59	45.96	0.54	2.58	1.75
1997	64508.72	22051.62	0.04	12749.84	46.51	0.54	2.55	1.74
1998	65265.35	18991.73	0.04	9269.60	47.53	0.57	2.58	1.62
1999	49824.41	18552.97	0.03	14880.80	48.05	0.58	2.61	1.53
2000	75610.65	24671.23	0.04	15245.79	44.63	0.58	2.43	1.43
2001	96265.22	34802.01	0.04	9195.02	46.64	0.59	2.91	1.39
2002	109944.40	33145.98	0.03	16551.18	46.06	0.55	2.83	1.52
2003	112226.20	32189.00	0.04	9727.15	47.37	0.55	2.82	1.54
2004	121707.10	38623.92	0.04	13206.14	48.70	0.54	2.81	1.57
2005	124407.10	38015.63	0.05	20510.41	48.50	0.53	2.81	1.56
2006	127617.70	37683.93	0.05	8166.35	49.30	0.54	2.81	1.60
2007	138543.20	43663.24	0.05	9385.40	49.74	0.54	2.85	1.59
2008	147478.70	46387.78	0.05	11467.38	51.60	0.55	2.86	1.58
2009	147166.50	50149.57	0.05	12665.14	52.98	0.56	2.88	1.55
2010	162310.60	52046.00	0.05	16812.70	53.95	0.56	2.91	1.50
2011	179525.40	61387.98	0.05	25635.86	55.47	0.57	2.91	1.50

2012	172860.50	64692.19	0.05	15031.36	55.74	0.57	2.92	1.50
2013	143000.60	50908.15	0.05	9534.36	54.14	0.57	2.98	1.49
2014	131305.40	55249.51	0.06	26790.31	53.02	0.55	3.04	1.49
2015	153194.00	62974.95	0.06	20581.59	55.23	0.54	2.91	1.51
2016	157503.30	60683.86	0.05	15179.53	54.20	0.54	2.98	1.52
2017	150386.70	58416.19	0.05	21430.72	53.33	0.54	2.95	1.48
2018	151885.00	58097.57	0.06	11586.58	53.79	0.54	2.94	1.46
2019	150557.70	56935.45	0.05	11220.95	55.31	0.52	2.93	1.52
2020	168948.40	63644.58	0.06	17595.20	55.40	0.51	2.94	1.57
2021	191535.40	68634.20	0.06	17156.70	55.36	0.51	2.97	1.56
Mean	109977.80	39505.54	0.05	13802.30	49.64	0.54	2.79	1.60

Year	(9) Occupation	(10) Amount of household members	(11) Number of kids	(12) Degree urbanisation	(13) Region	(14) Province	(15) Owner	(16) Partner	(17) Type of living situation
1993	4.04	.	0.94	.	.	.	.	.	.
1994	4.07	2.85	0.96	2.96	2.99	7.81	.	0.85	2.43
1995	4.06	2.92	1.03	2.96	2.97	7.76	.	0.86	2.44
1996	4.19	2.96	1.06	2.93	2.98	7.78	.	0.86	2.47
1997	4.31	2.97	1.08	2.93	3.04	7.84	.	0.84	2.47
1998	4.45	2.78	0.96	2.98	3.07	7.85	.	0.78	2.36
1999	4.24	2.68	0.88	2.97	3.05	7.86	.	0.77	2.33
2000	4.16	2.51	0.77	3.08	3.05	7.78	.	0.77	2.01
2001	3.98	2.52	0.78	3.17	3.02	7.80	.	0.73	2.18
2002	4.12	2.62	0.82	3.07	3.00	7.78	0.68	0.78	2.28
2003	4.19	2.61	0.82	3.06	3.03	7.83	0.71	0.78	2.28
2004	4.07	2.61	0.81	3.05	3.06	7.80	0.72	0.78	2.27
2005	4.13	2.58	0.80	3.00	3.07	7.68	0.70	0.77	2.26
2006	4.23	2.61	0.81	2.99	3.08	7.76	0.72	0.77	2.29
2007	4.13	2.64	0.84	3.01	3.05	7.68	0.73	0.78	2.28
2008	4.32	2.59	0.78	3.04	3.05	7.77	0.74	0.79	2.26
2009	4.41	2.51	0.71	3.02	3.03	7.84	0.75	0.78	2.24
2010	4.38	2.50	0.69	2.99	3.09	7.71	0.77	0.78	2.25
2011	4.55	2.43	0.63	2.96	3.14	7.74	0.77	0.77	2.23
2012	4.60	2.46	0.65	2.95	3.16	7.63	0.76	0.78	2.23
2013	4.50	2.40	0.60	3.02	3.10	7.66	0.75	0.76	2.20
2014	4.21	2.51	0.70	3.01	3.13	7.66	0.75	0.76	2.27
2015	4.51	2.51	0.69	2.95	3.13	7.63	0.76	0.78	2.27
2016	4.50	2.45	0.66	2.99	3.11	7.64	0.74	0.76	2.24
2017	4.32	2.26	0.53	3.00	3.13	7.62	0.71	0.70	2.13
2018	4.45	2.17	0.46	3.04	3.13	7.54	0.69	0.67	2.08
2019	4.56	2.27	0.53	2.94	3.17	7.63	0.70	0.68	2.14

2020	4.55	2.30	0.55	3.02	3.15	7.64	0.71	0.69	2.17
2021	4.55	2.26	0.52	3.06	3.14	7.63	0.68	0.67	2.15
<b>Mean</b>	<b>4.28</b>	<b>2.59</b>	<b>0.79</b>	<b>3.00</b>	<b>3.06</b>	<b>7.73</b>	<b>0.73</b>	<b>0.78</b>	<b>2.29</b>

Year	(18) Gross income	(19) Net income	(20) Frequency observations
1993	23316.18	15740.45	4,627
1994	23624.96	15714.32	4,861
1995	23869.21	16216.91	4,623
1996	25456.15	17088.77	4,031
1997	22992.05	16068.56	3,256
1998	22475.28	16012.69	2,186
1999	23263.12	16903.36	2,046
2000	23823.49	17425.05	877
2001	27463.79	20082.18	1,666
2002	24108.06	20174.56	1,800
2003	25957.36	21133.92	2,004
2004	27158.62	22278.59	1,912
2005	26670.4	22413.2	2,007
2006	26214.59	21412.51	1,938
2007	27710.22	21121.07	1,901
2008	29212.47	22361.48	1,766
2009	30645.67	22786.29	1,698
2010	32329.72	24457.16	1,804
2011	32184.94	25103.69	1,737
2012	32364.22	24441.29	1,826
2013	32755.56	24103.52	1,786
2014	31992.28	26375.01	2,070
2015	30631.09	24342.81	2,276
2016	31653.73	25733.04	2,218
2017	31451.79	25257.85	2,313
2018	29835.44	24563.33	2,079
2019	30524.2	24506.4	2,700
2020	32562.11	26643.42	2,665
2021	32834.25	26614.76	2,519
<b>Total</b>	<b>27608.47</b>	<b>20601.47</b>	<b>69,192</b>

Figure 5: Percentage of people who inherited over 1993-2021

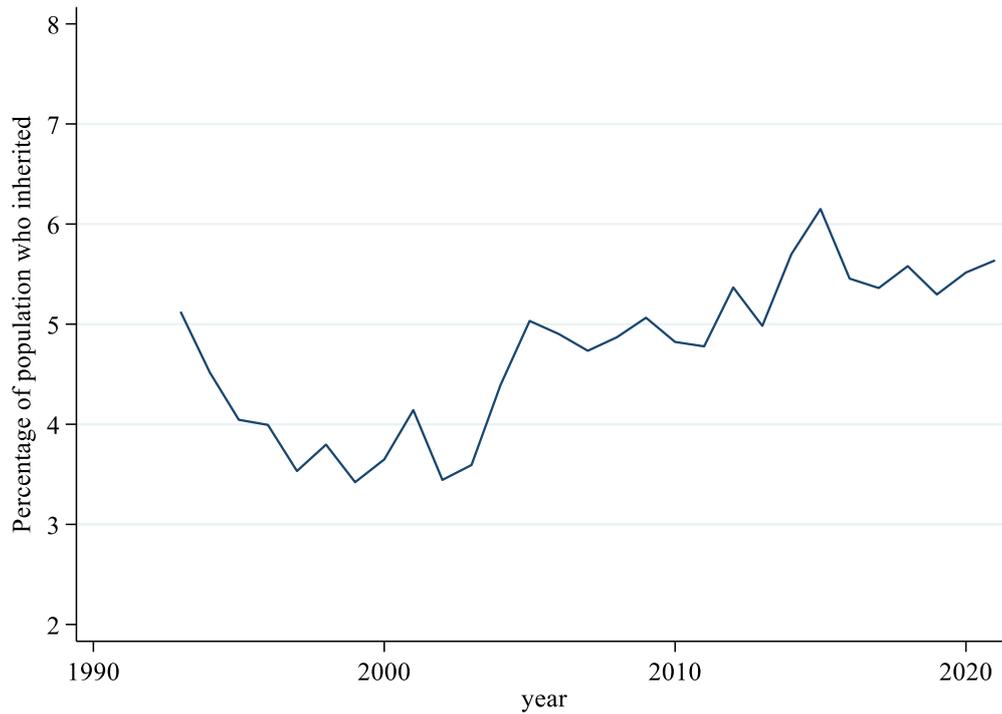


Table 12: Distribution of gross income, net income, total wealth and inheritance sum over 1993-2021

PERCENTAGE	(1) Gross income	(2) Net income	(3) Total wealth	(4) Inheritance sum
0-10	0	-0.0800021	-1.460745	0.248691
10-20	0.6253779	1.349576	0.0034315	0.812069
20-30	3.323691	4.155272	0.1389049	1.378732
30-40	5.791207	6.524817	0.5802449	1.946448
40-50	8.044356	8.448396	1.515294	2.492479
50-60	10.08458	10.15954	3.480824	3.107794
60-70	11.86855	11.88271	7.462531	3.597234
70-80	14.33548	13.90091	13.53414	7.127385
80-90	17.74324	16.74037	22.30424	14.76219
90-100	28.18351	26.91841	52.44113	64.52698
Observations	59,209	53,514	69,192	2,823

Table 13: Wealth distribution with and without inheritances

Wealth decile	(1) Without inheritance	(2) With inheritance	(3) Difference
0-40	-0.8852937	-0.7400516	0.1452421
40-90	48.25337	48.28098	0.02761
90-100	52.63192	52.45907	-0.17285
Observations	68,760	68,807	68,760

Table 14: Logit models with lags. Coefficients note the size of the effect

VARIABLES	(1) Top 10%	(2) Top 10%	(3) Top 20%	(4) Top 20%
Lag top 10%	0.205*** (0.0491)	0.0181 (0.0484)		
Lag top 20%			0.196 (0.236)	0.204*** (0.0545)
Inheritance dummy	0.0297 (0.0419)	0.00838 (0.0224)	0.0593 (0.0781)	0.0869 (0.0601)
Lag 1 inheritance dummy	0.0331 (0.0398)	0.0165 (0.0427)	0.00882 (0.0335)	-0.0185 (0.0529)
Lag 2 inheritance dummy	0.0315 (0.0420)	0.00809 (0.0210)	0.0662 (0.0840)	0.0905 (0.0628)
Lag 3 inheritance dummy	0.119** (0.0483)	0.0146 (0.0381)	0.0235 (0.0429)	0.112* (0.0591)
Lag 4 inheritance dummy	-0.00107 (0.0484)	-0.00157 (0.0100)	0.0303 (0.0490)	0.00751 (0.0514)
Lag 5 inheritance dummy	0.0733* (0.0407)	0.0100 (0.0262)	0.0709 (0.0885)	0.126** (0.0640)
Lag 6 inheritance dummy		0.0108 (0.0288)		0.0447 (0.0550)
Lag 7 inheritance dummy		0.00736 (0.0210)		0.0484 (0.0557)
Lag 8 inheritance dummy		0.0236 (0.0602)		0.0664 (0.0556)
Lag 9 inheritance dummy		0.00831 (0.0217)		0.0733 (0.0499)
Lag 10 inheritance dummy		0.0217 (0.0566)		0.0154 (0.0532)
Controls	Yes	Yes	Yes	Yes
Observations	2,511	796	3,765	1,301

Robust standard errors in parentheses

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

Table 15: Random Effects results

VARIABLES	(1) Wealth	(2) Wealth	(3) Wealth	(4) Percentile	(5) Percentile	(6) Percentile
Inheritance dummy	7,915* (4,138)	10,168*** (3,090)	10,866*** (3,321)	2.348*** (0.392)	2.729*** (0.360)	2.548*** (0.377)
Highest education attained		9,049*** (631.0)	10,523*** (675.1)		0.644*** (0.0810)	0.784*** (0.0848)
Age		3,657*** (70.97)	3,641*** (84.06)		0.351*** (0.00922)	0.399*** (0.0106)
Sex		47,900*** (2,654)	48,021*** (2,791)		12.66*** (0.360)	11.65*** (0.373)
Gross income		0.709*** (0.0299)	0.739*** (0.0319)		8.33e-05*** (3.52e-06)	7.72e-05*** (3.64e-06)
Number of children			-8,238*** (2,759)			-1.959*** (0.333)
Number of households			10,040*** (2,765)			2.695*** (0.335)
Type of living situation			-798.3			-0.759***
Region			(1,812) -65.45 (1,002)			(0.217) -0.154 (0.132)
Province			1,529*** (453.9)			0.463*** (0.0602)
Urbanisation			-7,949*** (1,051)			-1.741*** (0.135)
Occupation			1,187*** (316.9)			-0.377*** (0.0378)
Constant	83,502*** (1,398)	-164,725*** (4,730)	-181,628*** (9,113)	47.21*** (0.196)	20.44*** (0.611)	17.90*** (1.153)
Observations	68,678	58,567	53,326	68,678	58,567	53,326
Number of id	17,311	15,629	14,611	17,311	15,629	14,611

Robust standard errors in parentheses

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

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<sup>1</sup> This reference list misses references in the first paragraph of section 2.3 ‘Wealth inequality and inheritances in the Netherlands’. These studies are mentioned in De Vicq et al. (2021). Since their paper is a working paper, the references are not included in the paper. The author of this study refers the interested reader to later versions or the final version of De Vicq et al. (2021) paper to see the full references to these studies.

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