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Report: Generation, Inheritance, and Wealth

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OSLO METROPOLITAN UNIVERSITY
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Forord

Dette notatet beskriver funnene fra en litteraturgjennomgang om sammenhengen mellom generasjoner, arv og formue. Både norsk og internasjonal litteratur er gjennomgått. Litteraturgjennomgangen inkluderer også en diskusjon av de empiriske utfordringene denne typen forskning er forbundet med. Avslutningsvis peker notatet på mulige empiriske spørsmål for fremtidig forskning.

Notatet er ført i pennen av Maja Weemes Grøtting. I tillegg til undertegnede, er tidligere versjoner av notatet kommentert av Britt Slagsvold, Viggo Nordvik og Lars Gulbrandsen. De takkes for gode innspill.

Oslo, november 2019
Hans Christian Sandlie

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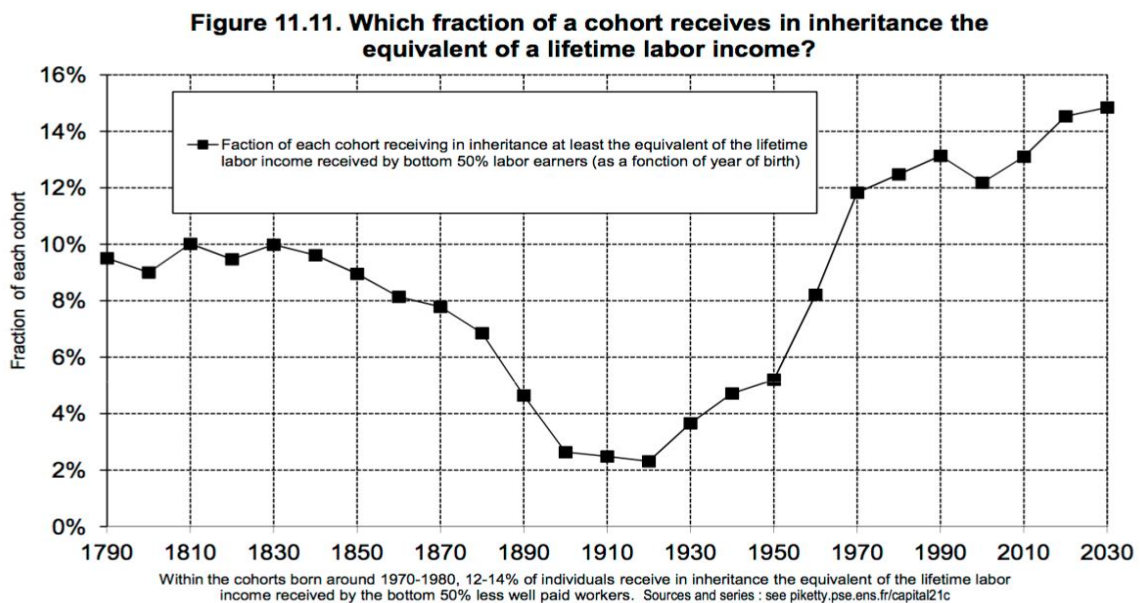
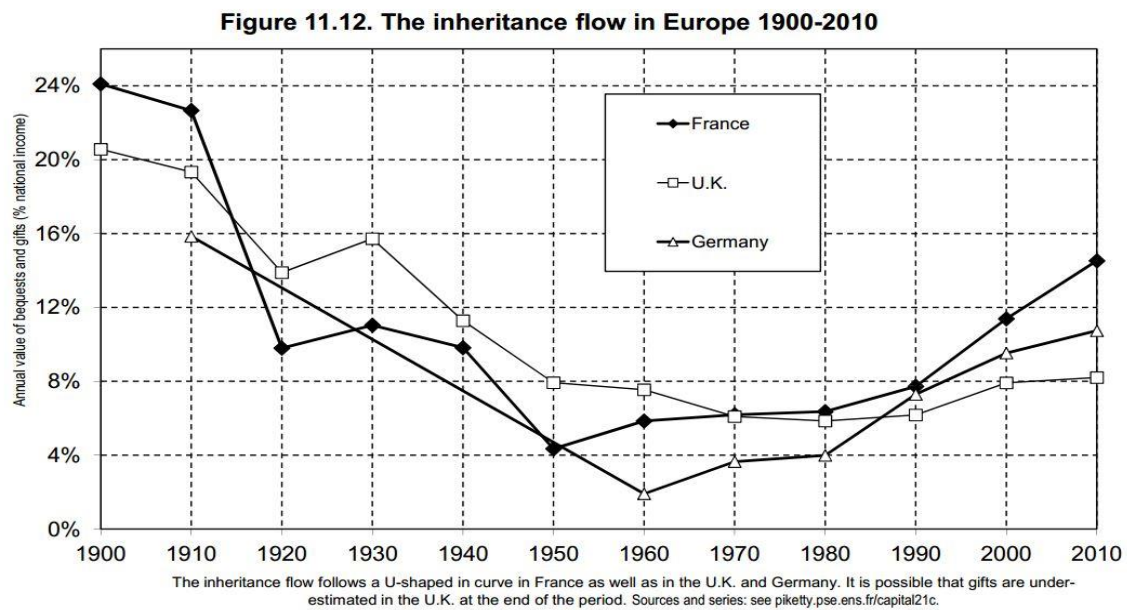
Abstract

This report concerns the relationship between generation, inheritance, and wealth. The report starts with a detailed literature review of the empirical findings of the relationship between generation, inheritance, and wealth. The literature review is followed by a discussion of empirical challenges within this field of research, before limitations in the literature and some potentially interesting empirical questions or directions for future research are discussed. The report ends with a brief conclusion.

1 Background

After decades of decreasing or relatively low levels of wealth inequality throughout the western world, wealth inequality is now on the rise (Øverbye, 1988; Piketty, 2014; Atkinson, 2018). With increasing personal wealth, the amount and importance of inheritances have also increased (Piketty, 2014; Atkinson, 2018).

Figure 1: The Importance of Inheritance



Note: The graphs are from Piketty (2014). Numbers in fig 11.11 from France.

Figure 1 presents two graphs from Piketty's infamous book «Capital in the Twenty-first Century» (2014). The graphs show that inheritance is becoming increasingly important, both when measured as a fraction of the national income, and as the fraction of a cohort receiving inheritance at least the equivalent of the labor income received by the bottom 50 percent labor earners. Increasing importance of inheritance has been documented in France, Britain, and Germany, and the u-shaped pattern of the importance of inheritance in Britain is also confirmed by Atkinson (2018). As housing prices continue to increase relative to real wages and economic growth declines (or remains low) inheritance is assumed to grow more important for individual wealth.

2 Literature Review

This Section presents empirical findings from the literature on gender, inheritance, and wealth. The results reported here are mainly from the economics literature. Studies of inheritance and wealth generally falls into three broad categories:

- The importance of inheritance for personal wealth.
- The importance of inheritance for wealth inequalities.
- The importance of inheritance for intergenerational mobility in wealth.

These categories are not mutually exclusive and several studies assess two or more of the categories. For expositional ease, the categories are presented separately in this review. As housing capital constitute the majority of private individual wealth, the importance of housing in relation to inheritance and wealth will be discussed in a separate section. In addition, there is a strand of literature on how bequests or inheritances are determined, including the relationship and provision of informal care between family members. This will be presented as a separate topic.

2.1 The Importance of Inheritance for Personal Wealth

The first section in the literature review presents empirical assessments of the importance of inheritance for personal wealth. In general, the findings in this literature are that inheritances account for between 25 and 50 percent of personal wealth, yet the results are sensitive to how personal wealth is measured. Table 1 summarizes the findings. The rest of this section consist of a more thorough description of the empirical analyses and findings reported in the table.

Davies and Shorrocks (2000) review the literature on the importance of inheritance for personal wealth from the last century. Despite substantial variation in the findings across studies, they conclude that the most reasonable estimate of the importance of inheritances for individuals' aggregate wealth is in the range 35–45 percent.

Boserup et al. (2016) estimate the impact of bequests on wealth levels using Danish administrative data from 2002 to 2013. They compare the distributions of wealth over time of those whose parent died to those whose parent did not die, and find that bequests account for 26 percent of the average post-bequest wealth 1–3 years after parental death.

Table 1: The Importance of Inheritance for Personal Wealth

Author	Country	Year	Study Period	Effect of Inheritance
<i>Individual level:</i>				
Davies and Shorrocks		2000	Review	35–45% of aggregate wealth
Boserup et al.	DK	2016	2003–2013	26% of wealth 1–3 years after for 45–50 year olds
Karagiannaki	UK	2017	1995–2005	30% increase in wealth
Adermon et al.	SWE	2018	1991	40–50% of wealth at mid-life
Wiborg and Hansen	NO	2018	2005–2012	Wealth incr. from 50th to 60th percentile for people in their 30s
<i>Aggregate level:</i>				
Picketty	FR	2014	2010	25% of aggregate (personal) wealth

Note: This table summarizes the findings from selected literature on the importance of inheritance for personal wealth.

Using data from the British Household Panel Survey (BHPS), Karagiannaki (2017) assess the role of bequests for household wealth. Inheritances are based on self-reported records of having received any inheritance during the last twelve months and the value of any reported inheritance. In particular, they assess the period 1995 to 2005, which was characterized by a substantial increase in wealth in Britain. During this period, 27 percent of households aged 25 and older in the BHPS received an inheritance.

They find that bequests received during this period accounted for 30 percent of the increase in the wealth of inheritors, when the behavior of the inheritors is disregarded. In addition, they show that households consume 30 percent of their inheritances on average, but that there is substantial heterogeneity in household responses. Among the households that saved a larger share of their inheritances were the households that accumulated more wealth, middle aged households, and households with lower initial wealth.

Adermon et al. (2018) use register data from the county Malmø in Sweden, containing information on up to four generations. Inheritances are measured as the value of bequests from parents at death to their children based on the registers. They apply several approaches to compute the share of inheritance in total wealth. Following Modigliani (1988) which disregards the return to capital (accounting only for inflation) they find a share of 46 percent. Adding capital return to the model, following Kotlikoff and Summers (1981), they show that the share range from almost 90 percent to 27 percent, depending on the rate of return (3,-3). Finally, they apply the approach by Piketty et al. (2014) which assumes that some individuals also consume parts of the inheritance, while also accounting for

the rate of return. Using this approach, the shares range from 49 to 23 percent assuming a rate of return of 3 and -3 respectively. Based on the analysis, they argue that inheritance accounted for a substantial fraction of personal wealth, with the most likely share being between 40–50 percent.¹

Using data from «Skatt- og gaverregisteret» and «Formueregister fra skatte-taten» for the period 2005–2012 Wiborg and Hansen (2018) assess wealth transfers across generations by different social classes and its consequences for the accumulation of personal wealth among young adults (aged 24–31). They find vast class differences in wealth transfers. Wealth transfers are more common and the transfers are larger among the higher social classes. Young adults who receive transfers accumulate more wealth than those who do not receive inter-vivos gifts and inheritances, and this difference is especially large within the higher social classes. They conclude that wealth transfers play a vital role for personal wealth, especially among the higher economic classes.

Moving from the micro to the macro accounts, Piketty (2014) estimates that in 2010 inheritances will constitute about 25 percent of total accumulated wealth (income from labor and inheritance) for the cohorts born after 1969. In case economics growth turns out to be lower than assumed in the main scenario (1.2 percent), the fraction will be even larger amounting to about one third. Moreover, he argues that inheritances will become increasingly more important, as the society has not turned more meritocratic. The share of the national income going to labor has not increased, neither has the access to opportunities.

Further, Piketty (2014) argues that the importance of inter-vivos transfers or gifts, as a fraction of total inheritances, has increased dramatically during the last 40 years, from about 20–30 percent during the 1970, to 40 percent in the 1980s, and 60 percent in the 1990, and finally amounting to more than 80 percent in the first decade of the twenty-first century. Today, transmission of capital through gifts is almost as important as transmission of capital through inheritance.² Moreover, he argues that what increased the magnitudes of gifts provided was an increase in the awareness of the importance of providing for one's children while the parent was still alive due to increased longevity.³ Finally, Piketty (2014) argues that the increase in inter-vivos transfers has contributed to an increased importance of inherited wealth.

¹ This estimate is within the range assumed to be most reasonable in the literature review by Davies and Shorrocks (2000).

² These numbers are from France, but similar trends of increased inter-vivos transfers has been detected in other European countries as well.

³ Financial incentives for providing gifts (primarily to children) were put in place during 1990–2000 in France.

2.2 The Importance of Inheritances for Wealth Inequalities

In a handbook chapter on the distribution of wealth, Davies and Shorrocks (2000) provide a thorough summary of relevant theories and empirical evidence of personal wealth distributions from several countries. The evidence in general points to a long-term downward trend in wealth inequality during most of the 20th century, before increasing inequality since the 80s.⁴ Their point of departure is that wealth accumulation and wealth differences arise (primarily) due to two mechanisms: life-cycle savings and inheritance.

In Norway, wealth inequalities have increased during the last 20 years (Aaberge and Stubhaug, 2018). The increase in wealth inequalities is primarily caused by a stronger concentration of financial assets among the richest. Wealth inequality is substantially larger than income inequality (Aaberge and Stubhaug, 2018),⁵ and although housing wealth is more equally distributed than other forms of wealth (commercial real estate and financial assets), there is an increasing tendency toward those having large housing wealth being the same people as those with large wealth from other sources. In addition, the Gini coefficient is larger among the younger than the older cohorts (ranging from 0.83 for the 25–35 year old to 0.62 for the oldest age group, 75+).

In the book *Capital in the Twenty-First Century* (2014), Piketty projects that inheritances as a fraction of national income will increase in the following decades. He shows that the amount of inheritance as a fraction of national income has regained the level of the early nineteenth century, cf. Figure 1 left graph. However, instead of a few very rich inheritors being able to live entirely on rents from the inheritance, we will now have a situation with many inheritors inheriting smaller but still substantial amounts of capital. Specifically, the fraction of a cohort that receive an inheritance that is equal to or larger than the life time earnings for the bottom 50 percent earners has dramatically increased since the war, cf. Figure 1 right graph. This number was about 13 percent in 2010 and is projected to be about 15 percent in 2030. Piketty argues that instead of a small elite of inheritors causing increased inequality, there will now be a substantial amount of inheritors in the population who is endowed with substantial inheritances, also causing increased inequalities.

A priori, it is not given in what direction inheritance will affect wealth inequality. Inheritance can reduce wealth inequalities by several mechanisms:

⁴ In addition to providing an overview of the theory and empirical evidence on the distribution of wealth, they discuss important determinants of the wealth distribution. This can be useful to have as a background in any analysis of wealth inequality.

⁵ SSB has also shown that the **income** inequality has fallen in Norway during the first half of the 20th century, before starting to increase during the 1980s. This increase is primarily caused by an inflow of poor immigrants and that the wealthiest has become relatively wealthier (Aaberge et al., 2017).

- Inheritances often imply a transfer from older, wealthier generations to younger, less wealthy generations.
- The correlation of spousal backgrounds is imperfect (Stiglitz, 1969).
- Parents have been shown to have a preference for equal provision of inheritance, or even leave more to children who are worse off compared to their siblings (Becker and Tomes, 1979; Tomes, 1981; Halvorsen and Thoresen, 2010).
- Several authors find that although inheritances are larger in absolute value for those with higher wealth, inheritance is relatively more important to people who are less wealthy (Klevmarken, 2004; Wolff and Gittleman, 2014; Elinder et al., 2018).
- In several countries, debt cannot be inherited, causing inheritances to be more evenly distributed than wealth.

On the other hand, intergenerational persistence in wealth has been documented in several studies. This is the topic of the next section and these studies will be covered there.

There exists only a few studies that assess the importance of inheritance for wealth inequalities. In general, these studies show that inheritance increases the variance of wealth, but reduces measures of relative wealth inequalities.

In a study using data from the BHPS, Karagiannaki (2017) argue that bequests amounts only to a small fraction of over-all wealth inequality. Although inheritances are highly unequal, they had a small impact on overall wealth inequality, which the authors argue can be due to the small impact of inheritance on wealth relative to other sources of wealth.

Boserup et al. (2016) use Danish administrative data to compare the differences in the distribution of wealth across 2003 to 2013, between a group whose parent died and a group whose parent did not die. They find that inheritances (bequests) significantly affected wealth throughout the wealth distribution. In addition, inheritance increased absolute wealth inequality, as the variance of the wealth distribution (censored at the top/bottom 1 percent) increased by 33 percent. However, relative inequality, measured as the top 1 percent share, declined by 6 percentage points from a base of 31 percent.

Elinder et al. (2018) assess the effect of inheritance on wealth inequality by using individual level register data on the estate value and bequests of all Swedes who passed away from 2002 to 2004. These data are combined with several years of register data on the net wealth of their heirs, from before to after receiving the inheritance. Two approaches are used. In the first, they compare wealth inequality at the end of the year preceding the inheritance year, with a measure of post-inheritance wealth inequality, where post inheritance wealth is defined as

the sum of the inheritance and the wealth in the year preceding the inheritance year for each heir. In the second, they rely on a difference-in-difference approach to identify the behavioral response to inheritance and how this affects wealth inequalities. Here, heirs who inherit one or two years later serve as the control group for those who inherit in a given year.

They find that inheritance reduces the Gini coefficient by about 7 percent.⁶ This is mainly because the wealth share of the top 10 decile is substantially reduced while the wealth share of the bottom half is increased. As in Boserup et al. (2016), Elinder et al. (2018) find that inheritance reduces relative inequality, it increases the absolute dispersion of wealth. Although wealthier heirs inherit larger amounts, less wealthy heirs receive much larger inheritances relative to their pre-inheritance wealth. In addition, they find that the reduction in the Gini becomes smaller when adjusting for behavior (a decline of 4 percent instead of 7 percent). This is because the less wealthy is found to spend more of their inheritance on consumption. Finally, they show that inheritance leads to increased overall wealth mobility, which is the topic of the next section.

2.3 The Importance of Inheritances for Intergenerational Mobility in Wealth

In a much cited chapter in the Handbook of Labor Economics, Black et al. (2011) provide an overview of the literature on intergenerational mobility. This includes an overview of estimates of intergenerational elasticities⁷ and correlations, primarily of income, across countries and across various methods for estimating the relationship between parental and child outcomes.

Intergenerational mobility is found to vary across countries, with a general tendency of stronger correlation between parent and child incomes in the US and UK compared to in the Nordic countries. This difference is hypothesized to be stemming from more egalitarian opportunities for education in the Nordic countries compared to in the Anglo-Saxon countries. In addition, the correlations are found to differ along the earnings distribution, with stronger correlations at the top income percentiles compared to the lower percentiles. It has also been shown that dividing into smaller percentiles, compared to quintiles or quartiles matters for the results. This is because moving from one quartile implies a far greater wealth increase than moving from one percentile to the next.

While there is a vast amount of literature documenting the intergenerational correlations of income (Black et al., 2011; Chetty et al., 2014), less is known about

⁶ This reduction is equated to the reduction in the Gini following the dot.com crash.

⁷ The intergenerational elasticity is usually estimated as: $\ln(y_{child}) = \alpha + \beta \ln(y_{parent}) + e$, where y is wealth. The coefficient of interest is β which is interpreted as the fraction of wealth that is on average transmitted across generations. For instance, $\beta=0.4$ indicates that 40 percent of the parental wealth position is transmitted to the next generation.

the intergenerational mobility of wealth (Black et al., 2011; Adermon et al., 2018). Due to the limited evidence available on intergenerational mobility of wealth, only one study assessing wealth is mentioned in the survey by Black et al. (2011). This is a study by Charles and Hurst (2003). They use data on wealth from the Panel Study of Income Dynamics (PSID) to estimate intergenerational wealth elasticities. They find that the elasticity of child wealth with respect to parental wealth is 0.37, before the transfer of bequests.⁸

Another study using the PSID is by Pfeffer and Killewald (2017).⁹ They estimate two- and three-generational associations in family wealth and find considerable intergenerational wealth transmissions across both two and three generations, with a particularly high rigidity at the top of the wealth distribution. They show that the main transmission of wealth occurs early in life through the provision of educational advantage, rather than by bequests and inter-vivos transfers.

Using data from 2002 in France Arrondel (2009) find an intergenerational elasticity of wealth of around 0.22., corrected for age and only concerning co-existing generations, i.e. before bequests. Moreover, he shows that 40 percent of the association can be explained by permanent income, whereas education and preferences account for 20 percent, and inter vivos transfers account for 13 percent.

Clark and Cummins (2014) use a panel of people from England and Wales observed at death between 1858–2012 to measure the intergenerational elasticity of wealth across five generations. Families are tracked by using rare surnames. They find that there is still a persistent correlation in wealth within families across five generations. The overall intergenerational mobility in wealth was found to be about 0.7–0.75 across the period 1858–2012.

Adermon et al. (2018) estimates intergenerational wealth correlations using Swedish data on wealth and bequests that include up to four generations. They find parent-child rank correlations of 0.3–0.4 and grandparent-grandchild rank correlations of 0.1–0.2. Moreover, they find that bequests and gifts appear to be central in this process, accounting for at least half of the parent-child wealth correlation while earnings and education can account for only a quarter, thus contrasting the findings in Pfeffer and Killewald (2017).

Despite significant intergenerational persistence in wealth, the importance of inheritances in this process is largely unresolved. Education is seen as particularly important for wealth accumulation and those with parents of higher wealth invest more heavily in the human capital of their children (Black et al., 2011; Pfeffer and Killewald, 2017). Adermon et al. (2018) find that inheritances are of significant importance, whilst Pfeffer and Killewald (2017); Arrondel (2009) find that inheritances are of smaller importance. Boserup et al. (2018) find that wealth

⁸ Due to data limitations they cannot estimate the effects of bequests.

⁹ There was a lifting of the data limitations compared to the time of the Charles and Hurst (2003) study.

at age 18 is a significant predictor of adult wealth, and argues that this can be caused by two mechanisms: inter vivos transfers at young ages foreshadow additional transfers later in life, and that children may inherit saving/investment propensities from their parents. The mechanisms behind why wealthy parents have wealthy children is poorly understood. The next section presents a few studies assessing these mechanisms.

2.4 Mechanisms

There exists a small literature aiming to uncover some of the mechanisms behind why wealthy parents have wealthy children using quasi-experimental designs. A review of these studies is included in here because the question of why wealthy parents have wealthy kids is strongly related to inheritance and because this literature includes some relevant designs that can be useful for studies of inheritance, wealth, and generation.

Fagereng et al. (2018) assess whether family background matters for the accumulation of wealth and for investor behavior in adulthood. They exploit a known and effectively random allocation of Korean-born children who were adopted at infancy by Norwegian parents. Information about the adoptees is linked to population panel data with detailed information on disaggregated wealth portfolios and socioeconomic characteristics. The quasi-random assignment then allows estimation of the causal effects of an adoptee being raised in one type of family versus another, thus finding the non-biological component in wealth accumulation. They find that family background matters significantly for the accumulation of wealth and investor behavior in adulthood. Adoptees raised by wealthy parents are more likely to be well off themselves and adoptees' stock market participation and portfolio risk are increasing in the financial risk taking of their adoptive parents. When assessing mediators of this relation they find that being assigned to a family with USD 10,000 of additional wealth is associated with an extra USD 1,480 of wealth transfer.¹⁰

The results from Fagereng et al. (2018) are supported by Arrondel (2009) who show that parents' and children's risk and discounting preferences are significantly positively correlated across generations, yet the correlation is only 0.22.

Kvaerner et al. (2016) use Norwegian register data on individual cancer diagnoses merged with income, wealth and family linkages to assess the importance of inheritance (bequest) motives for saving and consumption choices when life expectancy is suddenly reduced. Identification comes from comparing the wealth trajectories of individuals who are diagnosed with cancer today to the wealth trajectories of individuals who are diagnosed with cancer three years from now. The findings are that family structure matters for consumption and saving

¹⁰ In addition, they find that the effect of being allocated to a family of USD 10,000 of additional wealth, leads to the adoptees accruing an additional 0.01 years of schooling.

choices. While for couples, a sudden change in life expectancy makes no difference on these outcomes, widowed individuals respond by reducing their wealth by 30 to 50 percent. A large fraction of this reduction in wealth is observed as increased wealth for their offspring.

2.5 What is the Case for Housing?

Rising house prices is found to be an important driver behind the sharp increase in household wealth during the last 50 years (Karagiannaki, 2017). In Norway, housing wealth constitutes about 71 percent of gross wealth (Aaberge and Stubhaug, 2018). Despite housing wealth being more equally distributed than other sources of wealth, there is an increased tendency for those with higher housing wealth to also have higher wealth in other assets.

Family housing wealth and resources are found to be important for owning, as well as size and value of, own property. This is supported using data from US (Luea, 2008), France (Spilerman and Wolff, 2012), Australia (Barrett et al., 2015), and Norway Galster and Wessel (2019). For instance, Spilerman and Wolff (2012) study several outcomes of parental resources; home-ownership, home value, the down-payment proportion, and non-housing consumption. They find that parental wealth has strong effects on the ownership rate and home value of their offspring and conclude that this is mainly achieved by direct financial transfers rather than by indirect transfers of social and human capital.

Using register data on three generations of families linked from the 1960s to 2015, Galster and Wessel (2019) show that the housing resources of grandparents are important for the value of and the likelihood of owning a house for the grandchildren. Especially, they compare outcomes for observably comparable grandchildren of those who owned a large house in Oslo to those who rented a house outside the urban sphere. In addition, they exploit the deregulation of house prices in Oslo as a natural experiment, and show that it is in fact the financial transfers, more than the passing on of housing-related norms, that cause this intergenerational persistence in housing.

Halvorsen and Lindquist (2017) show that the relationship between family and own housing resources is quite nuanced. While parents' resources have a positive effect on the likelihood of purchasing a first house, it is not important compared to the child's own economic situation. Receiving an inter vivos transfer substantially increase the likelihood of purchasing a house. However, some of the direct transfers are taken out as a lower loan-to-value and higher housing prices. In addition, they find that as the housing prices increase more rapidly than income, parental resources are becoming increasingly more important. Thus leading to a gap in house ownership rates between those with and those without helping or wealthy parents. Finally, Halvorsen and Lindquist (2017) assess whether the recent prudent mortgage-lending practices introduced in Norway have reduced the likelihood of entering the housing market, but they find no effects, not even for those who receive no financial help from parents.

In a paper related to the discourse on housing wealth inequalities, Stubhaug (2017) show that after applying the market value of housing wealth instead of the tax assessment value when calculating individual wealth, the Gini index was slightly reduced. He applies data from 1995 to 2015, where he applies the hedonic method for calculating the market values of people's housing assets.¹¹ Over all he shows that housing wealth inequality has been fairly stable during from 1995 to 2015, with a slight downward trend. Moreover, the inequality in *net* wealth was stable until 2005, before increasing slightly.

2.6 Bequests and Family Relations

A different, but still related, branch of literature assesses the importance of family relations for bequest and other forms of inheritance. These studies are related to the study by Kvaerner et al. (2016), which showed that couples and widowed individuals respond differently in terms of inheritances upon a shock to life expectancy. In addition, this literature is related to the discussion on how inheritance affects wealth inequalities in Section 2.2.

2.6.1 Parents' Inheritance Motives

Using data from the Health and Retirement Study (HRS), Groneck (2017) show that caring for a parent has a significant positive impact on the incidence and amount of bequests received. In addition, increasing the amount of care relative to one's siblings significantly increases the proportion of bequest within a family. The HRS contains exit interviews where a close relative or friend of the recently deceased is asked about the division of bequests and the intensity of help with (I)ADLs. This include information on the hours of help with (I)ADL from each child, as well as the actual inheritance given to each child.

2.6.2 Parents' Inheritance Preferences

A study using data from Europe (SHARE¹²) show that parents in Europe are more altruistic than in the US when it comes to how they divide inter vivos transfers between their children (Olivera, 2017). There are large inter-country differences

¹¹ «The hedonic method is a regression technique used to estimate the prices of qualities or models that are not available on the market in particular periods, but whose prices in those periods are needed in order to be able to construct price relatives. It is based on the hypothesis that the prices of different models on sale on the market at the same time are functions of certain measurable characteristics such as size, weight, power, speed, etc and so regression methods can be used to estimate by how much the price varies in relation to each of the price varies in relation to each of the characteristics.» (<https://stats.oecd.org/glossary/detail.asp?ID=1225>). The hedonic method applied by Stubhaug (2017) is similar to the approach taken by Statistics Norway (SSB) since 2010, but unlike what is done in SSB, he includes the housing value of holiday homes to get an even more accurate representation of household wealth.

¹² The Survey of Health, Ageing and Retirement in Europe.

in the division of inter vivos transfers, also within Europe, ranging from 49 percent of parents dividing equally in the Scandinavian countries to about 16 percent in Greece and only between 6 and 9 percent in the US (McGarry, 1999; Hochguertel and Ohlsson, 2009; Olivera, 2017). Bequests, on the other hand, are more equally distributed both across children and across countries. Estimates range from 76 to 98 percent in Europe and from 83 to 95 percent in the US (McGarry, 1999; Norton and Van Houtven, 2006; Olivera, 2017).

Halvorsen and Thoresen (2010) argue that parents are torn between altruism and the desire to support children who are less well off. Using Norwegian survey data and fixed effects models, they show that parents give more gifts, below the taxable level, to children who are worse off than their siblings or who are single, provided their siblings are married, all else equal. However, they also find that in the case of one-child families (i.e. parents who are not concerned about equal divisions), the recipient income derivative is significantly higher than in multiple child families. This supports the assumption that parents also have a preference for equal division of gifts among children. On the other hand, they show that the derivative in multiple child families is non-linear, with a larger degree of parental compensation among children whose income is lower than mean or median income, thus supporting the hypothesis that parents have a preference for equal divisions among children.

Finally, Arrondel and Grange (2014) argue that those who are interested in intergenerational transfers should pay more attention to the possibility of family tradition in bequest behavior, because family tradition could help explain some anomalies in transfer behavior.

3 Empirical Considerations

The literature review above documented the empirical findings from different branches of the literature on, generation, inheritance, and wealth. In this literature, there are several empirical challenges. This section discusses these challenges.

3.1 Types of Data

A common approach in this literature is to use survey data. In survey data, inheritance is typically identified by asking the respondent whether he or she received any inheritance during the last year or the last x years, and what the amount of the inheritance was. Another option is administrative records or register data. These are typically estate duties, capital transfer taxes, or inheritance taxes reported to the tax authorities. A third approach has been to track rear family surnames and old estate records to connect multiple generations within the same family. Each of these types of data have some limitations to be aware of.

Self-reported data on inheritance can lead reporting or recollection bias. This sort of errors are likely to bias results towards zero (measurement error). In addition, non-response in survey data on wealth has been shown to be positively correlated with wealth, i.e. the wealthiest have lower response rates (Davies and Shorrocks, 2000). It is not immediately clear how this would bias results as studies have shown that inheritances, although larger in absolute terms, are less important for the personal wealth of the most wealthy (Klevmarken, 2004; Wolff and Gittleman, 2014; Elinder et al., 2018).

Register data are typically not biased from recollection errors. However, register data can provide a very incomplete picture of the actual transfers between generations. First, transfers and bequests are not necessarily recorded or they are insufficiently recorded. In Norway, for instance, only inheritances or gifts above a minimum taxable level were recorded, and after the abolishment of inheritance tax, inheritances are not recorded at all. Second, particularly wealthy families might be better at finding channels of transfers between generations that are tax exempt, and thus inheritance can be severely underreported for this group.

Studies using rear family surnames allow assessing wealth associations across multiple generations. This approach have been criticized because rear surnames was more common among the higher classes. This can bias the estimates as the intergenerational persistence in wealth has been found to be particularly strong for the wealthy (Güell et al., 2018).

3.2 Cross Sectional Data and Low T

In survey data, inheritance is typically identified by asking the respondent whether he or she received any inheritance during the last year, or during the last x years, and what the amount of the inheritance was. This provides a snap shot of the distribution of inheritances in the targeted population at the time of the survey. Longitudinal surveys, can provide insights into how important inheritance reported in former waves are for wealth in subsequent waves. Albeit conveying insights about the short term importance of inheritance for wealth, it provides a very incomplete picture of the importance of wealth and of the transfers of wealth from one generation to the next. The same holds for shorter panels of register or administrative data. In order to estimate the importance of inheritance for wealth or wealth inequalities, data covering all transfers between two generations are needed. This implies a panel covering the full life-course of at least one generation or retrospective data of tremendous quality. Figure 2 shows the age distribution of gifts or inheritances in Norway in 2012. Inheritance or gifts are distributed across the life-course, with a peak for inheritances for people in their late 50s.

3.3 Age Matters – a Lot

Figure 2 brings us to a related problem in this literature. The age at which wealth is measured, for both the providing and receiving group matters a great deal for the results obtained. As shown in Figure 2, most people inherit when they are in their 50s and 60s, whereas gifts are more evenly distributed across age. Due to data limitations, several studies can only assess wealth and inheritance at age-intervals where the majority of the inheritance has not yet been transferred. On the other hand, inheritance can be more important for younger age groups, as they have not yet had time to accumulate savings based on earnings. In addition, the transfer structures might differ substantially between different income and wealth groups, which can lead to biased estimates.

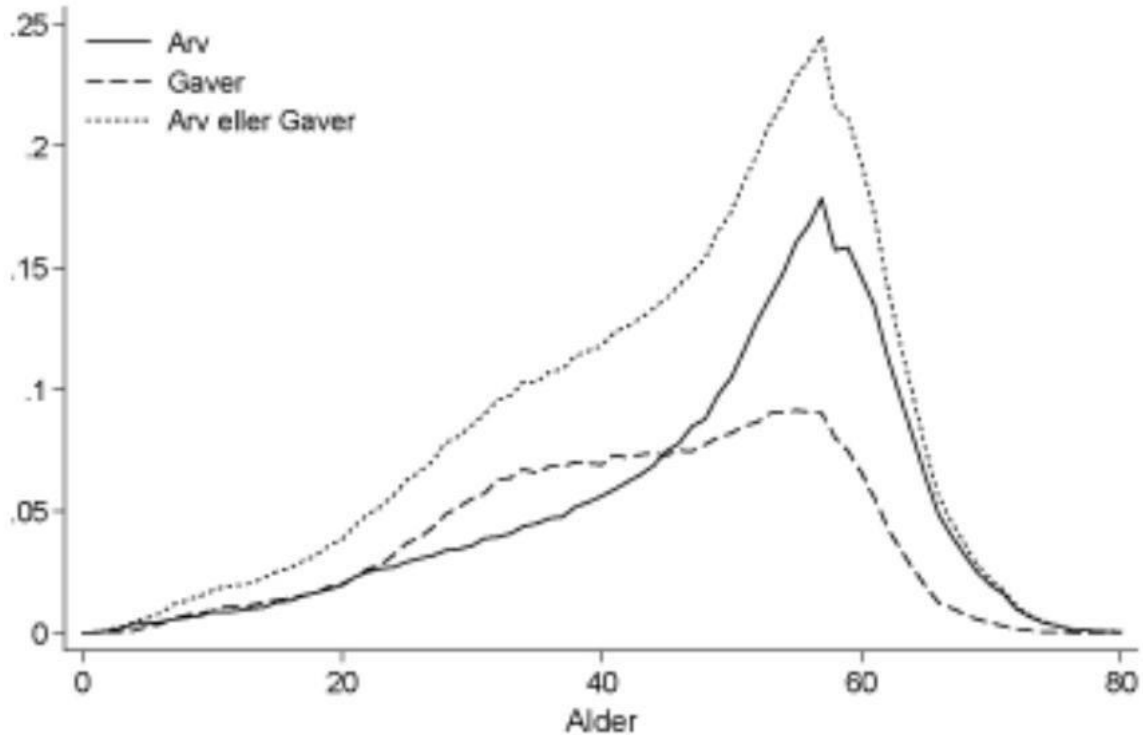


Figure 2: The Age Distribution of Inheritance

Note: Fraction of individuals aged 0–80 years who have received either a gift or inheritance during the period 2005–2012 in Norway. The graph was originally published in Wiborg and Hansen (2018).

3.4 Estimating Wealth Profiles

3.4.1 Housing

For wealth, the inclusion of housing wealth/assets can be important, as the majority of individual wealth is comprised of housing assets. For instance, Karagiannaki (2017) include self-assessed housing assets based on survey data in the net wealth concept. Housing value can be severely misreported as people have far from perfect information about the value of their house, and thus bias the estimates. In the Norwegian register wealth data (provided by SSB), the operationalization of wealth is difficult as the housing values recorded in the public wealth records were based on the tax assessment value until 2009. This value is substantially lower than the market value. A number of studies of dwellings sold on the free market, show that reported tax values on average constitute only 20 per cent of the market values. In addition, the studies show that expensive dwellings have lower relative assessed tax values than less expensive dwellings. This is generally the case for all types of housing throughout Norway (Epland and Kirkeberg, 2012). This was changed in 2010, after which individual

housing assets has been a calculation of marked value based on the selling prices of real estate and characteristics of the dwellings (the hedonic method).¹³

Stubhaug (2017), referred in more detail in Section 2.5 above, shows that after applying the market value of housing wealth using the hedonic method, instead of the tax assessment value, when calculating individual wealth, reduces the Gini index. The hedonic method applied by Stubhaug (2017) is similar to the approach that SSB have applied to assess the market value of housing wealth since 2010, but unlike the approach by SSB, he includes the housing value of holiday homes to get an even more accurate representation of household wealth.

3.4.2 *The Capital Return on Inheritance*

The assumption about how inheritance is spent by the receiver and about the return on capital have large implications for how important inheritance is for wealth. A classic example is the widely different results obtained by Kotlikoff (1988), Kotlikoff and Summers (1981), and Modigliani (1988) of the importance of inheritances for personal wealth for the US population. The approach by Modigliani (1988) entails calculating inherited wealth as the sum of past inheritances and controlling for inflation, which yielded a share of 20 percent of wealth. Adding the capital return on the inheritance in accordance with Kotlikoff and Summers (1981), increased inheritance's fraction of wealth to 80 percent. More recently, Piketty et al. (2014) argue that one must also take into account that inheritance can be both consumed and invested. Adermon et al. (2018) applies all three strategies, as well as different rates of return, to show how differing the results can be. His results are presented in Figure 3.

3.5 The Measure of Wealth Inequality

How wealth inequality is defined also matters for the conclusions reached. Boserup et al. (2016) and Elinder et al. (2018) show that inheritances (bequests) increase absolute wealth inequality defined as the variance of the distribution, whereas it reduces measures of relative wealth inequalities such as the Gini index and the wealth share owned by the top one percent wealthiest. See e.g. Boserup et al. (2016) for a more thorough discussion.

3.6 Group Effects

Güell et al. (2018) argue that group effects is an often overlooked but important aspect of estimates of intergenerational mobility. The reason is that different groups have different expected outcomes, e.g. more advantaged groups have a higher likelihood of being more well off compared to other groups or racial discrimination can provide a disadvantage for minorities even if their parents are equally well off. See Borjas (1992) for a more detailed econometric formulation

¹³ This method is presented in more detail in Epland and Kirkeberg (2012).

of this problem. Group differences provide an explanation for why studies differ substantially in their estimates of intergenerational mobility.

Table 2: The Inheritance Share of Total Wealth

	Modigliani	Kodikoff-Summers	PPVR
Capitalisation rate	(1)	(2)	(3)
3%	0.460	0.891	0.489
0%	0.460	0.460	0.334
-3%	0.460	0.270	0.225
<i>N</i>	386	386	386

Notes. Table shows estimates of the share of total wealth in 1991 that is from inheritances. Sample is restricted to individuals that have received bequests from both parents. Column (1) assumes that inheritances have grown only with the rate of inflation, as in Modigliani (1986, 1988). Column (2) capitalises inheritances by a yearly rate of return, as in Kodikoff and Summers (1981). Column (3) capitalises inheritances, adjusts for 'rentiers' consuming part of their inheritance (see text for details), and calculates inherited wealth as the sum of the wealth of rentier-heirs and the inherited wealth of savers, following Piketty *et al.* (2014).

Note: This table is from Adermon *et al.* (2018).

3.7 Technical Considerations when Estimating Intergenerational Mobility

- A simple, yet important issue is that measures of intergenerational elasticities or rank correlations in studies of intergenerational mobility are especially sensitive to how mobility is defined, e.g. choosing quantiles or percentiles. See Black *et al.* (2011) for a thorough discussion.
- The most common approach to estimating intergenerational mobility is by assuming an AR(1) process (first order auto-regression), which is a perfectly adequate way of obtaining a measure of intergenerational mobility between two generations. However, estimating the intergenerational mobility across several generations is more involved. Solon (2018) provides a detailed presentation.
- Finally, unlike income, which has been the most common outcome in studies of intergenerational mobility, wealth commonly takes the value zero. As elasticities are estimated in terms of logarithms ad hoc procedures must be applied.

4 Limitations in the Current Literature

In general, the evidence of intergenerational mobility of wealth is limited. The same holds for the literature on the importance of inheritance for personal wealth or wealth inequalities. Thus, more analyses on inheritance and wealth in general are needed. Güell et al. (2018) argues that «One of the greatest challenges in advancing the empirical literature [on mobility] is simply to assemble good data that span at least three generations.»

Albeit limited, the literature provides some evidence in the direction that inter vivos transfers or gifts received early in life are important for own wealth, and thus something that should not be left out of the equation. On the other hand, a central criticism of the literature is that the data applied typically assess transfers between generations before the oldest generation has passed away, thus not providing a correct picture of the importance of inheritances.

A related limitation is that much of the literature assess the intergenerational relationships of wealth before both parents are deceased, thereby not accounting for bequests as it is generally the widow(er) that inherits the deceased. Moreover, due to data limitations, few empirical studies have analyzed the link between bequests left and inheritances received. See a discussion of this in Arrondel and Grange (2014).

The assumptions about the return to inheritances received early are crucial for the later the wealth equation. Despite the multiple approaches that have been taken to assess this issue, see e.g. Adermon et al. (2018) or Section 3.4.2, there is still a scope for studies, especially studies assessing mechanisms, in this regard. What do people do when they inherit? For instance, Elinder et al. (2018) show that the Gini coefficient is reduced after controlling for behavior. Moreover, there can be heterogeneities that are important for behavioral responses. Karagiannaki (2017) shows that households with higher accumulated wealth, middle aged households, and households with lower initial wealth, save a larger share of their inheritances. Thus, besides the choice between consumption and saving, there are several options for investments. How are inheritances invested? What fraction of inheritances is directly related to investments in housing? These are all important for how inheritances received early in life affects later life wealth.

A final limitation in the literature is that it is quite common to use data with top coded (censored) wealth. This implies that wealth inequality generally is underestimated in these studies. In addition, several survey analyses rely on self-reported inheritance and wealth data. Applying register data without top coding would be a contribution in this regard.

5 Some Potential Directions for Future Research

In my opinion, two sub-topics of inheritance are interesting to pursue. The first relates to the effect of inheritance on wealth or the relationship between inheritance and wealth. Herein lies the intergenerational persistence in wealth and the importance of inheritance for personal wealth and wealth inequality. The second topic concerns the relationship between family members and how this matters for inter-vivo transfers and inheritances. This section discusses some possible research questions and potential designs.

5.1 Inheritance and Wealth

As noted in the previous section, there is a general paucity of analyses of inheritance and wealth. Particularly, efforts using high quality data would be valuable contributions. There is even a place for the most straight forward analyses due to the limited amount of literature on inheritance and wealth.

It would be particularly interesting to assess how important inheritance, hereunder gifts and inter-vivos transfers, are for housing choices. One approach can be to assess the impact of inheritance for the intergenerational persistence in wealth inequalities or for housing inequalities.

A more paramount question of generations and housing can be to assess how unequal access to housing shape inequalities along the following dimensions: within generations, across generations and across geographical locations? Exogenous variations in unequal access to housing, can be found by exploiting some of the following sources of variation in house prices and costs: reduced mortgage tax deductions in the 1992 tax reform (making owning a house more expensive), geographical differences in house price increases (during the last 30 years prices in Oslo grew 353 percent compared to 287 percent for Norway as a whole), the Oslo price de-regulation reforms in 1969 and 1982–86 (causing exogenous variation in house prices). The correct methods would be comparisons over time across different groups, such as differences-in-differences or synthetic control group theory.

An alternative approach can be to assess the effects of early life transfers on personal wealth and wealth inequalities in later life by differing between receiving «help» with entering the housing market *versus* receiving capital transfers of a more liquid nature (e.g. cash, bonds and stocks) *versus* receiving no help *versus* receiving transfers later in life. Education can also go into the equation, but this would require survey data with retrospective data on financial help and transfers.

Another question that can be worth pursuing is how the inheritance received is treated by the recipients. This is a question of the degree to which inheritance is consumed or saved (invested), see e.g. Piketty et al. (2014). Findings here, can also be related to the problem of how inheritances should be treated in the expression of wealth in later life, cf. Section 3.4.2 above.

An interesting question that has been poorly explored in the literature is the mechanisms behind why wealthy parents have wealthy children. Is the wealth transfer in itself, or the fact that your family has the ability accumulate wealth and thus teach these abilities on to later generations? See e.g. (Fagereng et al., 2018). Is it so that income transfers in early life, leads to higher wealth, or is it so that having parents with the ability to transfer wealth leads to higher wealth for the offspring in later life? The policy implications of these two will differ greatly. While the first implies that we can give people transfers to make them more well off in later life, the latter implies that we should teach people how to manage their wealth or there is little role for interventions (at this stage) because genes are vital for the accumulation of wealth.

A related question is whether the prospect of large bequests or merely having wealthy parents have effects along the same dimensions as actual inheritance. The outcome here would be economic behavior. A potential design can be to explore behavior in a group that have received a large bequest versus a group that will receive inheritance of a similar magnitude further down the road. A group with little or moderate prospects of inheritance can serve a benchmark. Important for this analysis, is Arrondel and Grange (2014) who find that there might be large differences in what the parent leaves behind and what the child inherits – which can also be interesting to study in its own.

5.2 Intra-Family Relations and Inheritance

The second strand of topics relates to how intra-family relationships and inheritances are related. Previous research has shown a link between informal caregiving and the size of bequests. This suggests a more formal role for caregiving and bequests. Prior research even show that written contracts are often involved in these transactions. Potential designs can exploit «Samhandlingsreformen». As this reform might have had implications for the prevalence of such arrangements, as those permitted to the nursing homes had poorer health after the reform, thus possibly implying increased caregiving responsibilities for close relatives. One contribution could be to assess whether the quality of the relationship determine who enters into these contracts or arrangements, and if the quality of the relationship matters for whether a child becomes a caregiver with or without payments. This would be a contribution to the literature on informal caregivers – which typically assess caregivers as informal workers who are not compensated.

6 Concluding Remarks

This report has documented empirical findings on the relationship between inheritance and wealth. Several studies highlight the limited empirical evidence on the intergenerational correlations of wealth, most notably (Black et al., 2011) and Güell et al. (2018). The same holds for the more specific relationship between inheritance and wealth. The most important reason for this lack of evidence stems from data limitations. Due to the limited literature, the potential for future research on these topics is large.

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