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A tale of three distributions: inheritances, wealth and lifetime income*

Rowena Crawford and Andrew Hood[†]

Abstract

This paper investigates the impact of inheritances and gifts received on the distribution of wealth among older households in England, and the implications for inequality in lifetime incomes. Whereas previous work has looked only at marketable wealth, we consider broader measures including public and private pensions. We find that once pension wealth is included, inheritances and gifts no longer have an equalising impact on the distribution of wealth. Without pension wealth, including transfers takes the wealth share of the top 10% from 40% to 38%; with pension wealth, the impact is near zero. This has important implications for the impact of inheritances and gifts on the distribution of lifetime incomes. Exploiting a link with administrative data on lifetime earnings, we show that savings rates are significantly increasing in lifetime incomes when pension wealth is excluded, but less so when it is included. Our results thus indicate that the impact of intergenerational transfers on the distribution of lifetime incomes among these individuals is likely to be negligible or inequality-increasing, rather than inequality-reducing.

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1. Introduction

Intergenerational transfers are an increasingly important issue in both economics and public policy. Interest arises for three main reasons. First, to fully understand the impact of public policies, one needs to take into account the potential intergenerational incidence of those policies. For example, policies pertaining to pensions, social care, housing, or higher education funding can all have consequences on cohorts other than those directly affected by the policy, through their impact on individuals' ability or desire to leave an inheritance or make an *inter vivos* transfer. Second, intergenerational transfers are an important factor in explaining economic behaviour. Labour supply, consumption and savings decisions are likely to be partly determined by the desire to leave a bequest, and the (expected) receipt of an inheritance. Third, the relative importance of inheritances and other intergenerational transfers in determining the lifetime economic resources of individuals is widely thought to be increasing over time, which has led to concerns about widening intra-generational inequality and an adverse impact on intergenerational mobility.

This paper provides new evidence on a key aspect of the third issue – the impact of intergenerational transfers on the distributions of wealth and lifetime incomes. We document patterns in the inheritances and other wealth transfers received by older individuals in England over the course of their lives, and show the impact of these transfers on the distribution of wealth including public and private pensions (abstracting from the potential endogeneity of labour supply and savings decisions). We find that, once pension wealth is included, intergenerational transfers have little impact on wealth inequality. In the final part of the paper, we build on this finding to provide evidence of the impact of inheritances on inequality in lifetime incomes. Whatever the measure used, wealth is more unequally distributed than lifetime income, although this is less true when pension wealth is included. This implies that inheritances are more likely to have increased lifetime income inequality among these individuals than to have reduced it.

This paper builds on a substantial literature exploring the role of intergenerational transfers in determining the distribution of wealth. One of the earliest strands of the literature that considers this

question attempted to estimate the aggregate importance of inherited wealth relative to lifecycle saving. An excellent summary of this literature and the issues involved in calculating the relative contribution of inherited wealth (and of a resulting disagreement between Kotlikoff and Summers (1981, 1988) and Modigliani (1988)) is provided in Davies and Shorrocks (2000).

More recently, the increased availability of individual and household level datasets containing information on inheritances and other wealth transfers received has led to a number of contributions that investigate the effect of transfers on the distribution of wealth. Wolff (2002) and Wolff and Gittleman (2013) used data from the Survey of Consumer Finances to document patterns of inheritance receipt, and found that in the US inheritances and other wealth transfers are equalising with respect to the distribution of current wealth. They illustrate that this finding is robust to a number of alternative assumptions about crowd out and capitalisation rates used when estimating the contribution of inheritances, including some scenarios where these parameters depend on the level of wealth. Klevmarken (2004) used data from the Swedish Household Panel Survey and also found an equalising effect of inheritances and gifts on the distribution of current net wealth. For the UK the most comprehensive analyses of patterns of inheritance are those of Karagiannaki (2011a, 2011b, 2011c), summarised in Karagiannaki and Hills (2013). These authors also find that inheritances and gifts have not increased the inequality of current wealth, but this finding is based on the flow of transfers observed over a particular 9 year period (1996-2004, using data from the British Household Panel Survey), and so we may be concerned that this data do not provide a representative picture of the relationship between wealth transfers and non-transfer wealth for any particular cohort.

In contrast, our data source (the English Longitudinal Study of Ageing) contains information on the lifetime receipt of inheritances and gifts of older individuals (who are unlikely to expect any further transfers). We use these data to provide new evidence on the distribution of inheritances and gifts in England, and the characteristics of those who receive them. We find that those with higher levels of education and higher levels of household income are both more likely to receive an inheritance, and on average receive a larger inheritance. We also find evidence of concentration of inheritances and gifts within the same households. Among those in couples who had received an

inheritance, 53% had a partner who had also received an inheritance, compared to just 18% among those who had not themselves received an inheritance.

The second contribution of the paper is to illustrate the importance of the definition of wealth used when assessing the contribution of intergenerational transfers to wealth inequality. A common feature of all previous papers on the subject is that they focus on the distribution of current ‘marketable’ wealth, with non-fungible assets such as physical wealth and future public and private pension rights typically excluded. In line with this literature we find that, on this definition, inheritances and gifts reduce wealth inequality. This is because while inheritances are smaller in absolute terms for those lower down the wealth distribution, they are more important relative to other wealth holdings, and hence reduce inequality on a relative measure. However, we go beyond the existing literature in incorporating public and private pensions into a broader measure of wealth. Including pension wealth significantly reduces inequality in the distribution of wealth excluding transfers, as pensions (and public pensions in particular) account for a larger share of wealth towards the bottom of the distribution. This has the effect of shrinking (or even eliminating) the inequality-reducing impact of transfers found in the previous literature, as this result was driven by the very large *proportional* increase in wealth at the bottom of the distribution when transfers are included.

The final contribution of the paper is to provide evidence of the impact of intergenerational transfers on the distribution of lifetime incomes among these individuals. In order to do this, we build on the growing literature looking at whether households with higher lifetime incomes save a larger proportion of their income (Alan, Atalay and Crossley (2014), Bozio et al (2013), Dynan, Skinner and Zeldes (2004), Venti and Wise (1998, 1999, 2000)).

For the UK, Bozio et al (2013) use a link between survey data on wealth holdings and administrative data on lifetime earnings histories to show that there is a positive relationship between wealth accumulation as a proportion of lifetime earnings and levels of lifetime earnings. We exploit the same data linkage as Bozio et al to investigate the relationship between the different measures of wealth described above and lifetime incomes. We find that the positive relationship between

marketable wealth and lifetime incomes is strengthened when private pension wealth is added, but weakened when both public and private pension wealth are included. Hence the impact of inheritances and gifts on the distribution of total wealth provides a better guide to their impact on the distribution of lifetime income. We argue that it is this impact, rather than the effect on the distribution of marketable wealth, that is of most economic and policy interest.

The rest of the paper proceeds as follows. Section 2 describes our data and approach in more detail. In section 3 we briefly document the pattern of inheritances and gifts received over the lifetime by older individuals in England, before presenting our estimates of the impact of wealth transfers on the distribution of our various measures of wealth in Section 4. Section 5 provides evidence of the relationship between these different measures of wealth and lifetime incomes, and discusses the implications for the effect of inheritances and gifts on the distribution of lifetime incomes. Section 6 concludes.

2. Data and methodology

The English Longitudinal Study of Ageing

This paper makes use of the English Longitudinal Study of Ageing (ELSA) – a biennial panel survey of the private household population of England aged 50 and over. ELSA is similar to ageing studies in other countries, including the Health and Retirement Study (HRS) in the US, and the Survey of Health, Ageing and Retirement in Europe (SHARE) in 20 European countries. It collects detailed information on household demographics, labour market circumstances, health and, most importantly for our purposes, income and the level and composition of wealth holdings. Furthermore, in 2012/13 the ELSA survey included questions about inheritances and gifts that respondents had received over their lifetimes.

There are a number of advantages of the ELSA data for the analysis in this paper. First, since the data are recall questions on the history of receipt of inheritances and gifts, we do not need to be concerned with how the timing of receipt might coincide with the timing of the survey period (unlike,

for example, Hills and Karagiannaki (2013) whose analysis is based on flows of inheritances received over a particular 9 year period). Second, ELSA consists of a relatively large sample of the older population of England. These individuals are likely to have already received any inheritance that they might expect to receive (only 5% of our sample have living parents), and so we do not need to be concerned with future probability of receipt. Being a large sample we are able to restrict our analysis to a relatively narrow age range. This provides reassurance that our results are not being driven by cohort differences in wealth or receipt of transfers, or by lifecycle effects (such as the decumulation of wealth in retirement).¹

We focus on individuals aged between 65 and 79 (inclusive) when they are interviewed in 2012/13. These individuals are likely to have already received any inheritance that they will get during their lifetime, but are less likely than older individuals to suffer from recall problems when reporting their lifetime receipt of inheritances and gifts. There are 4,170 individuals in the desired age range who respond to ELSA. We impose three further restrictions: we exclude individuals with a partner aged below the state pension age (the age at which individuals are eligible to claim a public pension – 65 for men, and 62 for women), those who have chosen to defer claiming their public pension (or whose partner has chosen to defer), and those who have a private pension that they have not yet begun claiming (or who have a partner in this position). These restrictions exclude 241, 70 and 185 individuals respectively, and are imposed to simplify the methods required to estimate pension wealth (discussed below). We also exclude a small number of individuals with missing data. The final sample size is 3,611, which amounts to 87% of the original ELSA sample.²

¹ One disadvantage of ELSA relative to dedicated wealth surveys is that there is no oversampling of the top of the wealth distribution, and so the very richest households are likely to be under-represented in our sample. Our results describe the distributions of inheritances and wealth across the vast majority of the population, but will not provide an accurate guide for the top 1% of wealth holders. For further discussion of this issue, see Vermeulen (2014).

² Our sample restrictions are more likely to exclude younger households; our final sample comprises 97% of the ELSA sample aged 75–79, 90% of those 70–74, and 73% of those aged 65–69. It is not clear that the sample restrictions imposed would bias our results in a particular direction. However, to check this is the case we test the sensitivity of our main results to focusing only on those aged 70–79, which yields similar results.

Measures of wealth

As mentioned above, ELSA contains detailed information on income, its different sources, and the level and composition of wealth holdings. This allows us to construct three different measures of the wealth held by households:

1. ‘Non-pension wealth’: defined as the sum of net financial wealth (interest-bearing accounts at banks and building societies, stocks and shares, government, cooperate and local authority bonds, investment trusts and unit trusts, less outstanding loans and non-mortgage debts), net property wealth (the value of the principle residence and any other housing, less mortgage debts), and physical wealth (other property and land, antiques and collectables, covenants and trusts, net business wealth). This is closest to the definition of ‘marketable wealth’ used in much of the previous literature.
2. ‘Total private wealth’: defined as the sum of non-pension wealth and the estimated value of future private pension income.
3. ‘Total wealth’: defined as the sum of total private wealth and the estimated value of future public pension income.

We estimate the value of future pension income using individuals’ reported income from public and private pensions. For private pensions, we assume that they are indexed in line with inflation, and that all private pensions offer survivor benefits of half value to surviving partners from the death of the recipient until the death of the partner. Based on these assumptions we can estimate the individuals’ total private pension income in future years, and can calculate the value of private pension income as the discounted sum of that stream of income from the point the individual is observed until their life expectancy.³ For public pensions we also calculate the value as the discounted sum of the stream of income from the point of observation until the life expectancy of the individual,

³ We do not allow these life expectancies to depend on wealth, and so to the extent that individuals with higher non-pension wealth also have higher life expectancies, we will slightly understate inequality in total private and total wealth.

where annual income is estimated based on reported public pension income in 2012/13 and the current indexation rules for the UK public pension system.⁴

Table 1 describes the average level and distribution of our three measures of wealth. Median non-pension wealth among our sample is £141,160 per person, but this wealth is shared very unequally. The Gini coefficient is 0.52, with 37.6% held by the wealthiest 10%. Private wealth (i.e. also including private pensions) is 37% greater at the median (32% at the mean), and slightly more equally distributed, with a Gini coefficient of 0.49. Median total wealth (i.e. also including public pensions) is nearly twice as high as non-pension wealth, and much more equally distributed. The Gini coefficient for total wealth is 0.38, and the least wealthy 25% of individuals hold 8.3% of total wealth, compared to just 2.5% of non-pension wealth.

Inheritances and substantial gifts

The 2012/13 ELSA survey asked respondents how many inheritances and large gifts (defined as gifts worth £1000 or more in 2012 prices) they had received over their lifetime.⁵ For up to three inheritances and three gifts respondents were asked follow-up questions about who the transfer was from, when it was received, and what the value was at the time.

Recall questions of this type, especially when asked of older individuals, might be suspected of having under-reporting problems.⁶ This might be particularly problematic in the case of gifts, which might not be associated with as memorable an event as the death of a relative or friend, or might not be interpreted as a 'gift' at all if it were provided in-kind rather than in a monetary form.

⁴ This calculation is somewhat complicated by the fact that different components of the UK public pension system are indexed in different ways. In particular, income from the 'basic state pension' (BSP) is indexed in line with (at least) earnings, while income from the 'additional pension' is indexed in line with prices. ELSA only collects data on total public pension income, and not the amount of income from each component. We assume that only individuals who report public pension income in excess of the maximum BSP amount are entitled to any additional pension, and those individuals are entitled to the full BSP and an amount of additional pension equal to the difference between that and their reported income.

⁵ To help individuals answer this question, they are told what £1000 in 2012 prices would have been roughly equivalent to in nominal terms in each decade.

⁶ For those who do not recall when the inheritance or gift was received, or what its value was, we impute these using a 'conditional hot-deck' procedure. This involves choosing a random inheritance/gift from all those with matching characteristics in a number of dimensions (the conditioning variables), and replacing the missing timing/value with the timing/value of that inheritance/gift. For the timing of inheritances/gifts the conditioning variables are the sex and age band of the recipient and the relationship of the donor. For the value of inheritances/gifts the conditioning variables are the age band of the recipient, the relationship of the donor, and the range in which the value was reported to be.

There is debate about how the contribution of transfers to current wealth should be calculated (see Davies and Shorrocks (2000)). The main divergence of opinion is over whether transfers crowd out private saving (and therefore whether the return on transfers (dividends, interest and capital gains received) should be counted as part of the contribution of transfers, and whether transfers affect the return on private saving (and therefore whether that impact of that different return should also be attributed as a contribution of the transfer).⁷ In this paper we calculate the contribution of transfers to lifetime resources by capitalising them at a real rate of 3% since the time of receipt. The simplest way to interpret this assumption is that we assume there is no crowd out of private saving, no impact on the return to private saving, and that the real return on inherited wealth is 3%. However, this assumption could also represent a compromise between assuming that transfers crowd out some private saving, and assuming that transfers increase the rate of return enjoyed on private saving.

Lifetime income and the ELSA-administrative data linkage

In section V of the paper we explore the relationship between measures of wealth and lifetime incomes. We define *net lifetime income* as the sum of three components: i) the discounted present value of earnings net of taxes, ii) the discounted present value of lifetime net public pension income, iii) the discounted present value of lifetime net private pension income that has not been accumulated through contributions made out of net earnings (for example, through employer contributions). A lack of data inhibits the inclusion of the discounted present value of unearned income or state benefits.

Wealth and lifetime incomes are calculated at the household level, and are then divided equally in the case of couples. To calculate the lifetime value of public and private pensions, we add past pension income to the future streams described earlier in this section on the additional assumption that all pensions have been in receipt since the state pension age. We do not know the proportion of private pension wealth that has arisen from contributions made by employers, and so we consider three scenarios: where 0%, 50% and 100% of private pension wealth is assumed to have been

⁷ For example, particularly in the UK context, one might argue that the receipt of an inheritance enabled a household to purchase a property, and that they then enjoyed a much greater rate of return on their other wealth that they invested in that property than they would have received had they held that wealth in alternative forms.

accumulated from employer contributions rather than those made out of net earnings.⁸ To estimate lifetime net earnings we exploit a link between ELSA data and administrative data from National Insurance (Social Security) records.

The National Insurance (NI) data is the administrative record of individuals' NI contributions, and is the dataset that is used by the government to establish individuals' rights to claim contributory benefits such as public pensions. For each year since 1975 the NI data records the level of earnings of employed individuals (though for the period before 1997 the data is subject to some topcoding). For the period between 1948 and 1975 the NI data record the number of weeks that an individual earned above a particular (low) level of earnings (known as the lower earnings limit (LEL)). Therefore, while the NI data provide extremely detailed and accurate information on earnings histories, there is still some estimation that needs to be done to construct full histories. The methodology used follows Bozio et al (2013) and Crawford and O'Dea (2014), and is described briefly in Appendix A.

To date it is only respondents to the first wave of ELSA in 2002/03 for whom linked NI records are available. The sample used in the part V of the paper is therefore different to that previously described, but defined in an analogous way where possible (i.e. we focus on individuals aged between 65 and 79 (inclusive) when interviewed in 2002/03, and the sample restrictions described above applied). However, there are a number of further sample restrictions we must apply. In particular, we exclude individuals who are separated, divorced or widowed when observed in 2002/03, since we do not observe the earnings history of the former or late spouse, and current wealth may have a misleading relationship with the lifetime earnings of the individual observed. This restriction excludes around 32% of the sample. Furthermore, not all individuals in ELSA gave permission to access their NI records, and so we must exclude from the sample individuals who were not linked to the NI data or whose partner was not linked to the NI data. We also exclude those who are not observed with positive earnings in the NI data, or who have more than 5 years of self-employment, since the NI data

⁸ In all three scenarios we assume a uniform rate of employer contributions across the population. To the extent that those with higher lifetime incomes have a higher rate of employer contributions, we will slightly understate inequality in lifetime incomes.

give a less good indication of the lifetime earnings of these individuals. Together these exclusions reduce the *linked* ELSA-NI sample size to 59% of the unlinked sample, and the resulting sample size is 1,567 individuals. Consistent with the findings of Bozio et al (2010) and Crawford and O’Dea (2014), however, this linked sample of couples and always-single individuals is broadly representative on observables. Furthermore a comparison of Table 2 with Table 1 shows that the distributions of our measures of wealth are similar for this sample as for the sample used for the analysis in Sections 3 and 4 of the paper.

3. Receipt of gifts and inheritances

In this section we briefly describe some of the main features of inheritance and gift receipt in England. Nearly one third of individuals aged 65–79 have received an inheritance in the past, and 6% have received a large gift. Table 3 illustrates that for the most part these inheritances and gifts were received from parents, though a reasonable proportion of individuals reported having received an inheritance from an uncle or aunt (6%) or a sibling (2%). Younger individuals are both slightly more likely to have received an inheritance and slightly more likely to have received a gift (despite having had less time during which to receive a transfer). This is indicative of an increasing trend across cohorts. Comparing the prevalence of receipt by age 60, 23.3% those aged 65–69 in 2012/13 had received an inheritance by age 60, compared to 19.4% of those aged 70–74 and 18.3% of those aged 75–79. Similarly, 4.5% of those aged 65–69 had received a gift by age 60, compared to 2.7% of those aged 70–74 and 3.3% of those aged 75–79.

Figure 2 describes the age at which individuals reported receiving an inheritance or gift. 11% of men and 14% of women reported receiving an inheritance in their 50s, compared to 5% and 7% (respectively) in their 40s, and smaller proportions at younger ages. Given that the majority of inheritances are received from parents, it is not surprising that inheritances tend to be received when the recipient is of older ages. What is more surprising is that large gifts are also more likely to be received at older ages: 2% of men and women received a gift in their 50s, compared to less than 1% in their 20s. This may be the result of greater difficulty recalling gifts received longer ago, or may

perhaps suggest that gift-giving to these cohorts was as much motivated by a desire to transfer resources before death as it was to provide resources in response to 'need' earlier in working life.

Among those who had received an inheritance or a gift, the sizes of the transfer(s) received differ considerably. Figure 3 describes the distribution of the total size of inheritance(s) received and the distribution of the total size of gift(s) received. Both distributions are very unequal. 15% of individuals who had received an inheritance received less than £5,000 in total, while 11% of individuals received more than £200,000. The median amount received was £35,733 and the mean £84,960. Similarly, one third of individuals who had received a gift worth over £1,000 received less than £2,000, while 16% received more than £50,000. The median large gift received was £9,029 while the mean was £66,420.

Given that not all individuals receive wealth transfers, and that the size of any transfer differs substantially among those that do, the characteristics of those who receive transfers, and of those who receive larger transfers, are clearly of interest. Table 4 presents the results of regression analysis that explores this question. We find that those with higher levels of education and higher levels of household income are both more likely to receive an inheritance, and on average receive a larger inheritance. Women and those of white ethnicity are also more likely to have received an inheritance, although conditional on having received an inheritance do not tend to receive a larger inheritance. The picture for gifts on the other hand is less clear cut. Women are still found to be more likely to have received a gift, but there is little evidence that those with higher levels of education or higher levels of income are much more likely to receive a gift, or to receive a gift of larger value.

There is also evidence of concentration of inheritances and gifts within the same households. Among those in couples who had received an inheritance, 53% had a partner who had also received an inheritance, compared to just 18% among those who had not themselves received an inheritance. Similarly among individuals in couples who had received a large gift, 17% had a partner who had also received a large gift, compared to 3% among those who had not themselves received a large gift. Taking inheritances and gifts together, the correlation between the total value of transfers received by

an individual and the total value of transfers received by their partner (where those who had not received a transfer are counted as having a total value of zero) is 0.14.

This analysis suggests that those who receive wealth transfers (particularly inheritances) in England are more likely to be those with other indicators of social advantage. It has been observations of this type in the past that have led to the assumption that wealth transfers increase inequality. However, the present discussion has focused on how the absolute value of transfers varies across households. For measures of wealth inequality, what matters is the value of these transfers *relative* to the existing wealth holdings of different households. As the next section shows, this distinction is crucial.

4. Transfers and the distribution of wealth

We turn now to explicitly considering the impact of inheritances and gifts on the distribution of different measures of wealth. It is not possible to truly simulate the impact of intergenerational transfers on the wealth distribution without a full multigenerational behavioural model of household saving and labour supply. However, under the assumption that transfers do not crowd out private saving or affect the return on that saving (or have an impact on labour supply), it is possible to express observed wealth (W) as the sum of wealth excluding transfers (WX) and transfers (T): $W = WX + T$.⁹ We can then compare the distributions of WX and W for each of our definitions of wealth. Our unit of analysis is still individuals, but since private wealth is often held at the household level (and for many asset types, the ELSA survey collects data on wealth at the household level), we pool wealth transfers within couples and investigate the impact of transfers received by the household on household wealth per person.

Our main results are set out in Figure 3. Starting with non-pension wealth, we find that transfers have an equalising impact on the distribution of wealth. In other words, if we excluded the estimated contribution of transfers from wealth, the Lorenz curve would lie slightly to the right of the Lorenz

⁹ As discussed, our figure for transfers includes interest that has accrued since the time of the transfer.

curve for observed wealth. The Gini coefficient for non-pension wealth excluding transfers is 0.57, compared to 0.52 for observed non-pension wealth. We find corresponding results for the impact of transfers on wealth shares, as laid out in Table 5. The share of non-pension wealth held by the top 10% falls from 39.6% to 37.6% when transfers are included. In contrast the share of non-pension wealth held by the bottom 25% rises from 0.3% to 2.5% when transfers are included.

While it matches the existing literature (Hills and Karagiannaki (2013), Klevmarken (2004), Wolff and Gittleman (2013)), this finding is counterintuitive given the descriptives on inheritances and gifts presented in Section III. There we showed that wealth transfers were more likely to be received by (and on average larger for) those with higher levels of education and higher income. It is therefore worth setting out in more detail why this result comes about.¹⁰

Table 6 shows that individuals in higher deciles of the non-pension wealth distribution are indeed more likely to be in households that have received a transfer, and on average to have enjoyed a greater cash contribution to their wealth as a result. However, when we compare the average transfer received to average wealth holdings, we find that transfers are *relatively* more important for those with lower levels of wealth. For example, across all individuals in the top decile of non-pension wealth, the average transfer was £93,054, 12.0% of average non-pension wealth. Across individuals in the 2nd decile of non-pension wealth, the average transfer was only £8,603, but because these individuals have lower wealth, this is 17.7% of average non-pension wealth. In other words, while inheritances are smaller in absolute terms for those lower down the wealth distribution, they are more important relative to other wealth holdings. Excluding inheritances from wealth therefore essentially ‘takes away’ a greater proportion of wealth from lower wealth individuals, and so makes the distribution of wealth more unequal.

Importantly, the equalising effect of inheritances and gifts on the distribution of wealth does not hold for broader measures of wealth. The second and third panels of Figure 3 illustrate that the results

¹⁰ A source decomposition of wealth inequality provides a more formal framework within which to examine the impact of intergenerational transfers on the wealth distribution. This is provided in Appendix B.

obtained are sensitive to whether public and private pensions are included in the wealth of households. When we examine the impact of transfers on the distribution of total private wealth we find a smaller effect of transfers; the Lorenz curve is barely moved and the Gini coefficient increases by only 0.02 (from 0.49 to 0.51). When we consider the impact on total wealth we find virtually no effect – the Gini for observed total wealth is 0.38, compared to 0.39 for total wealth excluding transfers. Table 5 shows a corresponding picture for the impact of transfers on the wealth shares of these broader measures of wealth. Including transfers has little impact on the proportion of total wealth held by the top 25% or the top 10%.

The reason for this difference can be understood with reference to Figure 4. Private pension wealth and, to a much greater extent, public pension wealth are more important relative to non-pension wealth for those lower down the wealth distribution. Among those in the 9th decile of non-pension wealth, mean total private wealth is around one third larger than mean non-pension wealth and mean total wealth is 56% larger. In contrast among those in the 2nd decile, mean total private wealth is over 75% larger the mean level of non-pension wealth, and mean total wealth is over three times the mean level of non-pension wealth. Because the share of wealth held by those towards the bottom of the wealth distribution is much larger on our broader measure, wealth transfers no longer have a disproportionate impact on the wealth holdings of those individuals, and so do not reduce wealth inequality.

5. Implications for the impact of inheritances on the distribution of lifetime incomes

The previous section illustrated that the impact of inheritances and gifts on the distribution of wealth depended on the measure of wealth used. In this section we relate these different measures of wealth to lifetime income, and draw out the implications for the impact of inheritances on inequality in lifetime incomes.

Why might the (inequality-reducing) impact of wealth transfers on the distribution of marketable wealth *not* provide a good guide to their impact on the distribution of lifetime incomes? The concern is that non-pension wealth represents a greater proportion of lifetime incomes for richer households,

as a result of higher savings rates and/or better rates of return (i.e. the lifetime rich save more). If this is the case, the distribution of non-pension wealth may be significantly more unequal than the distribution of lifetime incomes. It does not follow from the fact that wealth transfers act to equalise this highly unequal distribution that they also act to equalise the distribution of lifetime income.

One might have the opposite concern about our measure of total wealth, which includes public pensions. The rules of the UK public pension system (which comprises a large flat rate component and a relatively small earnings related component) give rise to public pension wealth that is generally smaller relative to lifetime earnings for higher earning individuals than it is for lower earning individuals. If this leads to our measure of total wealth being *more* equally distributed than lifetime incomes, the fact that wealth transfers do not equalise the distribution of total wealth does not imply that they do not equalise the distribution of lifetime income.

Fortunately, we can provide empirical evidence on the relationship between lifetime income and our different measures of wealth, albeit for a slightly older cohort, using the link with lifetime earnings histories of these cohorts discussed in Section 2. In Table 7 we present the results of median regressions of the ratio of wealth to net lifetime income on net lifetime income, while in Table 8 we present the results of median regressions of the ratio of wealth to net lifetime incomes on quintiles of the net lifetime income distribution. In each case, we present results for the three different measures of net lifetime income outlined in Section 2 (including 0%, 50% and 100% of private pension wealth).

We find that, irrespective of how much private pension wealth is included in lifetime income, non-pension wealth as a share of lifetime income is increasing in lifetime income. In other words, on this narrow definition of wealth the lifetime rich do save more. Under the assumption that half of private pension wealth is accrued from contributions made out of net earnings, we find that a £100,000 increase in lifetime income is associated with an increase in the ratio of non-pension wealth to lifetime income of 1.3 percentage points. Allowing for a non-linear relationship, we find that the ratio of non-pension wealth to lifetime income varies monotonically from 0.16 for the poorest quintile to 0.27 for the richest quintile. The first concern mentioned is therefore justified – the distribution of

non-pension wealth is indeed more unequal than the distribution of lifetime incomes, and so the equalising effect of wealth transfers on non-pension wealth does not imply a similar effect on the distribution of lifetime income.

On the other hand, the concern that total wealth (including public and private pensions) is more equal than lifetime income proves to be unwarranted. Again assuming half of private pension is accrued from contributions made out of net earnings, the ratio of total wealth to lifetime income is virtually unchanged between the poorest quintile (0.39) and the third quintile (0.40). The ratio then rises to 0.44 for the fourth quintile of lifetime income, and 0.50 for the top income quintile. In other words, when public and private pensions are included, the distribution of wealth becomes slightly more similar to that of lifetime income, but remains more unequal rather than less.

The implications of this are twofold. First, as long as the correlation between wealth transfers and non-transfer wealth is close to that between wealth transfers and lifetime incomes, then the effect of transfers on total wealth inequality is a better guide to their effect on lifetime income inequality than their effect on inequality in non-pension wealth.¹¹ Second, the intergenerational transfers received by this cohort are more likely to have increased inequality in lifetime incomes than reduced it. Given that lifetime incomes are more equally distributed than total wealth, the negligible impact of inheritances on inequality in total wealth can be considered something of a “lower bound” on their impact on inequality in lifetime incomes, under the same assumption as above.

6. Conclusion

Recent years have seen a growing concern around the role of intergenerational wealth transfers in widening inequalities, and potentially reducing intergenerational mobility. Looking at older households in England, we investigate those concerns by examining the impact of inheritances and

¹¹ The assumption that the correlation between wealth transfers and non-transfer wealth is close to that between transfers and lifetime income accords with the assumption we make when calculating the contribution of transfers to current wealth, namely that transfers do not crowd out private saving, nor do they increase the returns to that saving. If wealth transfers crowd out private saving, one would expect the correlation between transfers and lifetime income to be stronger than that between transfers and non-transfer wealth. If they increase the return to private saving, one would expect the correlation between transfers and non-transfer wealth to be stronger than that between transfers and lifetime income.

gifts on the distribution of wealth, and draw out the implications for the impact of these transfers on the distribution of lifetime income.

To do so, we pull together two distinct strands of microeconomic research – the impact of transfers on the wealth distribution, and the pattern of wealth accumulation across the distribution of lifetime incomes. We build on the first strand by showing that the inequality-reducing impact of inheritances and gifts shrinks (or even disappears) when public and private pensions are included in the measure of household wealth. We then draw on the second strand to show that the distribution of this broader measure of wealth is more similar to that of lifetime income. This implies that our results provide a better guide to the effect on intergenerational transfers on inequality in lifetime incomes for these individuals than analyses based on narrower definitions of wealth.

Future research is still required. First, once suitable data is available, it would be informative to look directly at the relationship between the distributions of intergenerational transfers and lifetime incomes for the same individuals. Second, future research should address the important question of how this picture may be changing for younger cohorts in light of the increasing prevalence of inheritances. Third, a full multigenerational behavioural model of household saving and labour supply could allow one to understand the mechanisms underlying the empirical results we have described. Until then, the evidence presented here suggests that the impact of intergenerational transfers on the distribution of lifetime incomes is likely to be negligible or inequality-increasing, rather than the inequality-reducing effect that might have been supposed based on the existing economics literature to date.

Appendix A: Estimating earnings histories using the National Insurance data

The two limitations of the National Insurance data that need to be overcome when estimating full lifetime earnings histories are the top-coding of earnings at the upper earnings limit (UEL) – a parameter in the UK national insurance system, between 1975 and 1997, and the lack of data on the level of earnings prior to 1975.

To predict censored earnings in the years 1975 to 1996, we estimate the coefficients of a fixed effect Tobit on earnings from 1975 to 2003, with the censoring point in each year up to 1996 equal to the UEL. We use these coefficients to predict earnings for those who are affected by the top-coding of earnings. Crawford and O’Dea (2014) illustrate that quantiles of earnings constructed using this method show only a very small discontinuity in 1997.

To simulate earnings before 1975 we use broadly the methodology of Bozio et al (2013): we calculate mean earnings for each individual over the years 1975 to 2004 in which they were observed working, and then estimate potential previous years’ earnings by adjusting for average economy-wide earnings growth and individual-level earnings growth given their age, sex and education level. The NI data record how many weeks the individual made NI contributions between 1948 and 1975. For men, we assume they worked those weeks immediately prior to 1975 (therefore any periods of not working were at the start of working life). For women, we assume that they worked those weeks from the point of leaving full-time education (therefore any periods not working were immediately prior to 1975). The combination of the estimates of potential earnings in a particular year for each individual and the years in which they were working yields our earnings estimates for the years prior to 1975.

Appendix B: A source decomposition of wealth inequality

A source decomposition of wealth inequality provides a more formal framework within which to examine the impact of intergenerational transfers on the wealth distribution. Following Wolff (2002) and Gittleman and Wolff (2013) we use a source decomposition of the squared coefficient of

variation.¹² In doing, we uncover an interesting difference between how transfer and non-transfer wealth are related in England and the United States.

First it should be noted that comparisons between the squared coefficient of variation (the ratio of the variance to the square of the mean) for wealth and wealth excluding transfers yields similar results to the preceding analysis using Lorenz curves and the Gini coefficient. This is illustrated in Table 9. When wealth is defined as non-pension wealth, excluding transfers results in a 23% increase in inequality as measured by the squared coefficient of variation. When wealth is defined as total wealth, excluding transfers has much less impact on inequality, although on this measure inequality does still increase (by 9%).

The decomposition works as follows. Given that $W = WX + T$, it can be shown that:

$$CV^2(W) = \left(\frac{E(WX)}{E(W)}\right)^2 CV^2(WX) + \left(\frac{E(T)}{E(W)}\right)^2 CV^2(T) + 2\frac{Cov(WX, T)}{E(W)^2}$$

In words, the squared coefficient of variation of overall wealth is the weighted sum of the squared coefficients of variation of transfer and non-transfer wealth, plus a function of the covariance between those two components. For inheritances to be inequality-reducing, we require that:

$$CV^2(WX) > \left(\frac{E(WX)}{E(W)}\right)^2 CV^2(WX) + \left(\frac{E(T)}{E(W)}\right)^2 CV^2(T) + 2\frac{Cov(WX, T)}{E(W)^2}$$

Wolff (2002) showed the fact this inequality holds for the US can be explained by the third term in the decomposition being negative, that is transfer and non-transfer wealth are negatively correlated. This is the point at which the US data confounds expectations – it is surprising that those with higher observed non-transfer wealth have received less in transfers on average.¹³ This counterintuitive relationship between transfer wealth and non-transfer wealth does not hold for England. We find

¹² The reasons for using this measure of inequality when conducting a source decomposition are given in Shorrocks (1982). In short, the contribution of a given factor to inequality as measured by the squared coefficient of variation is the average of the inequality that would be observed if that factor were the only source of inequality, and the amount that inequality would fall if that factor were distributed equally. This is not true of inequality measures in general.

¹³ One potential explanation for this pattern is the endogeneity of savings behaviour to (expected) inheritances. If those who (expect to) inherited reduce their savings in response, we might expect to observe a negative correlation between transfers and non-transfer wealth.

instead that, as one might expect, transfer and non-transfer wealth are positively correlated. The fact that inheritances are still inequality-reducing among our population is explained by the fact that the above inequality can still hold even when all terms on the right hand side are positive, as long as the second and third terms are sufficiently small (since the squared coefficient of variation in non-transfer wealth is multiplied on the right hand side by a factor less than one). Intuitively, inheritances reduce wealth inequality in England because they increase the dispersion in wealth by less than they increase average wealth. This is in apparent contrast to the US, where inheritances reduce wealth inequality in part because they are negatively correlated with non-transfer wealth.

More concisely, the condition for inheritances to be inequality-reducing can be rewritten as:

$$\left(\frac{\tau}{1+\tau}\right)^2 (CV^2(WX) - CV^2(T)) + \frac{2\tau}{(1+\tau)^2} CV(WX)(CV(WX) - \rho_{WX,T}CV(T)) > 0$$

where τ is the average rate of inheritances $E(T)/E(WX)$, and $\rho_{WX,T}$ is the correlation coefficient between WX and T . Hence whether inheritances are inequality-reducing is a function only of $CV(WX)$, $CV(T)$, τ and $\rho_{WX,T}$.

Tables and figures

Table 1: Average levels and the distribution of alternative wealth measures

<i>Household wealth per person, 2012–13</i>	Non-pension wealth	Private wealth	Total wealth
Mean	£212,028	£278,943	£356,227
Median	£141,160	£193,596	£269,748
Gini coefficient	0.524	0.489	0.382
<i>Proportion of wealth held by:</i>			
Top 25%			
<i>of which:</i>			
<i>Top 10%</i>	61.1%	58.4%	51.0%
Next 25%	37.6%	34.2%	28.7%
Next 25%	23.2%	24.2%	24.5%
Next 25%	13.2%	13.8%	16.1%
Bottom 25%	2.5%	3.6%	8.3%

Note: Sample size 3,611. Figures are in nominal terms.

Table 2: Average levels and the distribution of alternative wealth measures – sample of couples in the linked ELSA-NI data

<i>Household wealth per person, 2002–03</i>	Non-pension wealth	Private wealth	Total wealth
Mean	£95,703	£129,086	£181,260
Median	£66,850	£94,693	£146,612
Gini coefficient	0.513	0.479	0.349
<i>Proportion of wealth held by:</i>			
Top 25%			
<i>of which:</i>			
<i>Top 10%</i>	60.2%	57.6%	48.7%
Next 25%	34.8%	32.4%	26.2%
Next 25%	24.4%	25.1%	25.2%
Next 25%	12.7%	13.5%	16.6%
Bottom 25%	2.6%	3.9%	9.6%

Note: Sample size 1,567. Figures are in nominal terms.

Table 3: Receipt of inheritances and gifts

<i>Proportion who have:</i>	All	Aged:		
		65–69	70–74	75–79
Received an inheritance	32.5	34.8	31.7	30.5
Received an inheritance from:				
Grandparent	0.4	0.3	0.6	0.4
Parent or parent-in-law	25.8	29.2	24.6	22.8
Uncle or aunt	5.7	5.6	6.4	4.9
Sibling or partner’s sibling	2.0	1.4	2.3	2.3
Child	0.1	0.1	0.3	0.1
Other	3.7	2.7	4.4	4.3
Received a large gift	5.6	6.2	4.9	5.5
Received a large gift from:				
Grandparent	0.1	0.1	0.2	0.2
Parent or parent-in-law	3.0	4.2	2.7	1.7
Uncle or aunt	1.1	0.9	1.2	1.1
Sibling or partner’s sibling	0.4	0.4	0.5	0.4
Child	0.1	0.1	0.1	0.1
Other	1.1	0.5	0.8	2.1
Living parent(s)	5.3	11.2	2.8	0.6

Figure 1: Timing of the receipt of inheritances and gifts

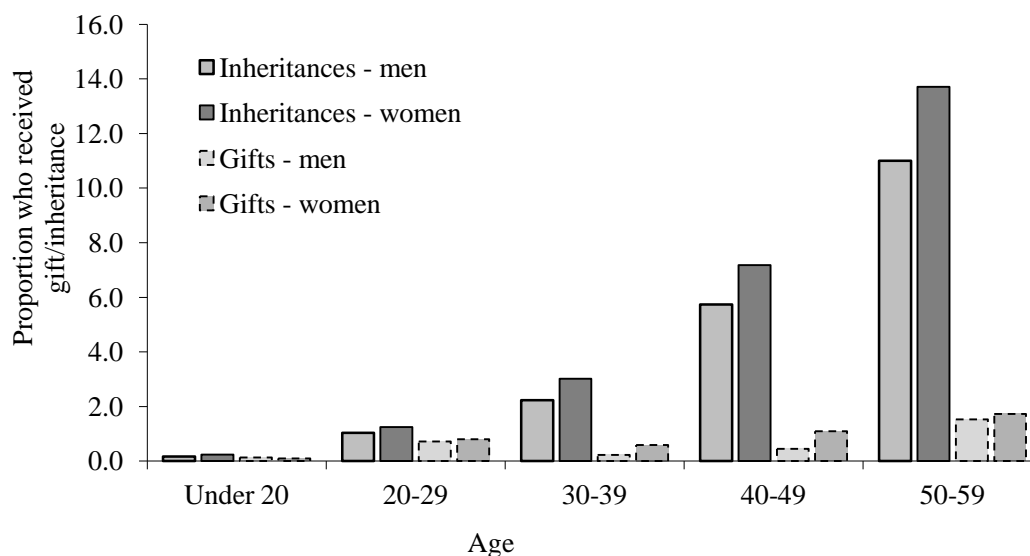
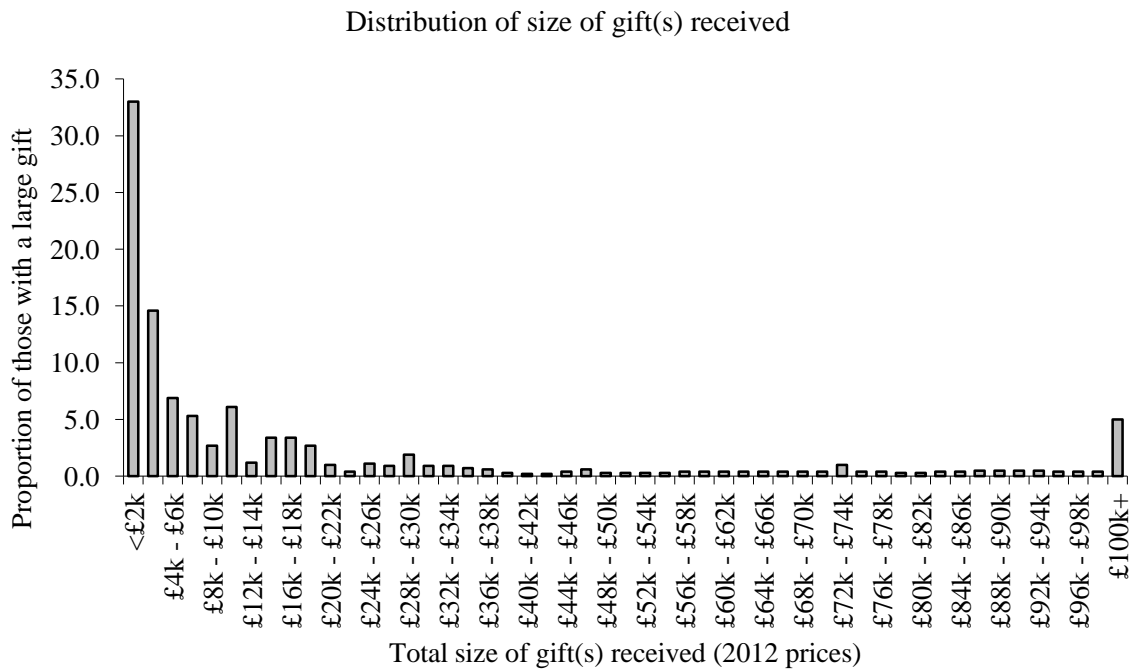
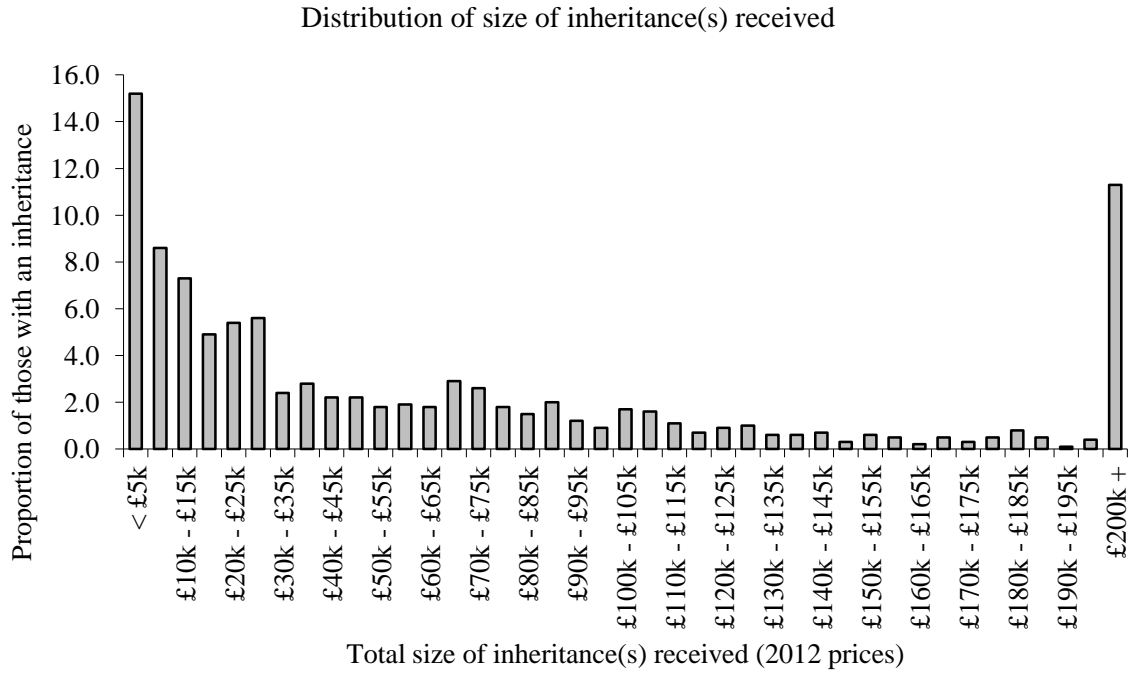


Figure 2: Distribution of size of transfer received



Note: Reported size of inheritances and gifts received are converted into 2012 prices using the Retail Prices Index.

Table 4: Receipt of inheritances and gifts

	Inheritances		Gifts	
	Probability of receipt	Mean log(value)	Probability of receipt	Mean log(value)
Aged 70–74	–0.031 (0.020)	0.083 (0.117)	–0.012 (0.009)	0.304 (0.265)
Aged 75–79	–0.033 (0.021)	–0.158 (0.121)	–0.002 (0.010)	0.132 (0.243)
Female	0.066*** (0.017)	0.125 (0.105)	0.032*** (0.007)	–0.197 (0.212)
1 or 2 children	0.040 (0.027)	–0.218 (0.161)	–0.005 (0.013)	–0.143 (0.313)
3 or more children	0.003 (0.028)	–0.313* (0.175)	–0.020 (0.013)	0.464 (0.331)
Mid education	0.077*** (0.021)	0.324** (0.127)	0.019** (0.010)	0.112 (0.252)
High education	0.120*** (0.022)	0.390*** (0.121)	0.019* (0.010)	0.103 (0.274)
Lowest income quintile				
Quintile 2	–0.003 (0.025)	–0.077 (0.182)	0.023** (0.011)	–0.047 (0.323)
Quintile 3	0.066** (0.026)	0.132 (0.173)	0.007 (0.010)	0.255 (0.347)
Quintile 4	0.086*** (0.028)	0.323* (0.173)	0.013 (0.011)	0.104 (0.371)
Highest income quintile	0.170*** (0.031)	0.855*** (0.178)	0.042*** (0.014)	0.423 (0.380)
Non-white ethnicity	–0.400*** (0.092)	0.155 (0.863)	–0.020 (0.029)	–1.013** (0.429)
Last parent died before age 60	0.146** (0.058)	0.415 (0.498)		
Last parent died at age 60–69	0.152*** (0.040)	0.133 (0.446)		
Last parent died at age 70–79	0.131*** (0.032)	0.226 (0.415)		
Last parent died at age 80–89	0.227*** (0.031)	0.433 (0.404)		
Last parent died at age 90+	0.288*** (0.034)	0.360 (0.411)		
N	3611	1244	3611	219

Notes: Figures are marginal effects from probit regressions (probability of receipt) and linear regressions (log(value)). Standard errors in parentheses. ***, **, * indicate statistical significance at the 1%, 5% and 10% level respectively.

Figure 3: Lorenz curves for wealth: observed and after deducting the contribution of transfers

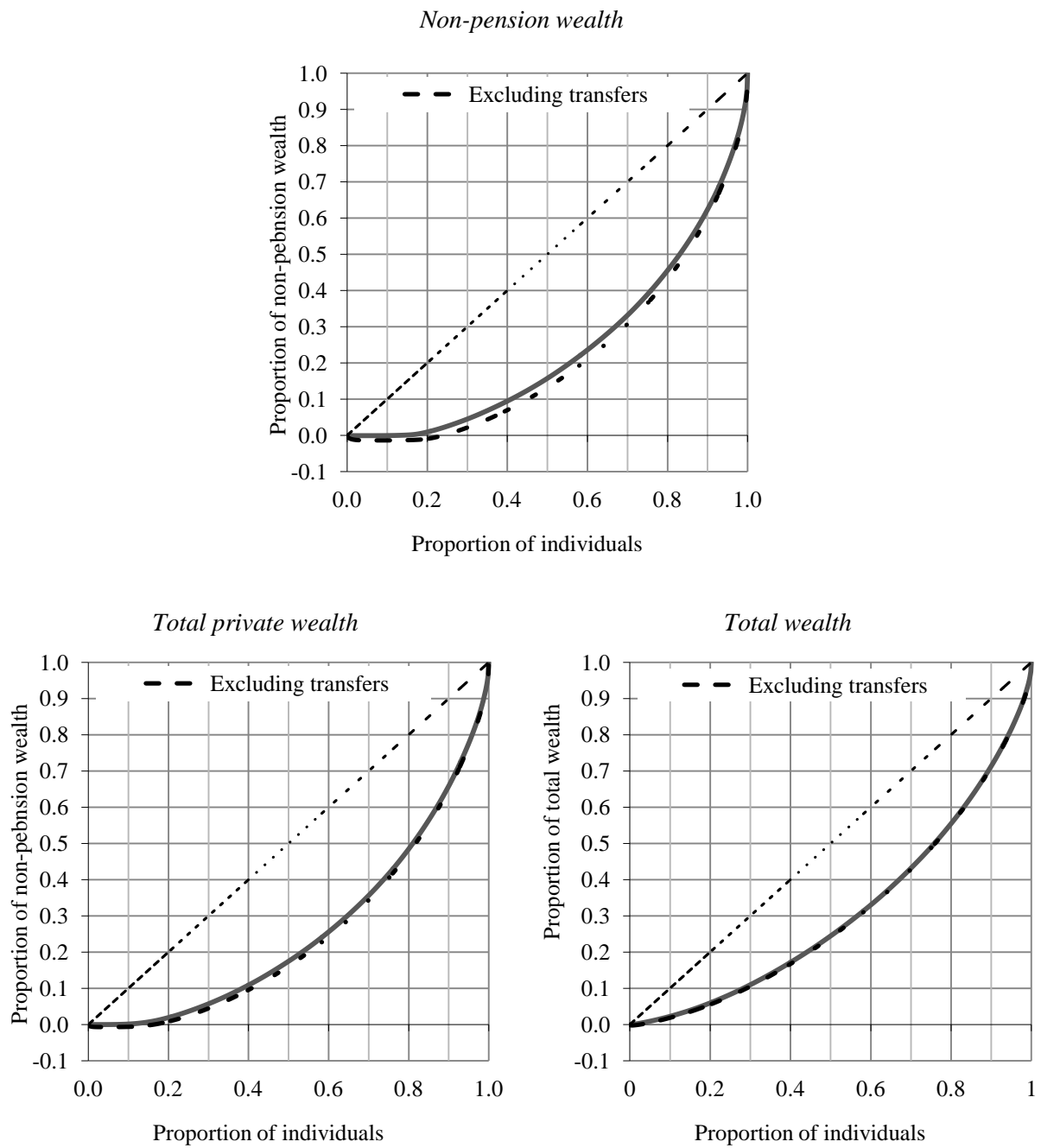


Table 5: Distribution of wealth: observed and after deducting the contribution of transfers

	Proportion of wealth held by:					
	Bottom 25%	Next 25%	Next 25%	Top 25%	Top 10%	Top 1%
Non-pension wealth						
Observed	2.5%	13.2%	23.2%	61.1%	37.6%	11.0%
Excluding transfers	0.3%	12.9%	23.3%	63.5%	39.6%	12.1%
<i>Difference</i>	-2.3%	-0.3%	-0.1%	-2.5%	-2.0%	-1.1%
Private wealth						
Observed	3.6%	13.8%	24.2%	58.4%	34.2%	8.8%
Excluding transfers	2.4%	13.7%	24.3%	59.6%	35.1%	9.3%
<i>Difference</i>	-1.2%	-0.1%	0.1%	1.2%	1.0%	0.5%
Total wealth						
Observed	8.3%	16.1%	24.5%	51.0%	28.7%	7.0%
Excluding transfers	7.9%	16.2%	24.6%	51.3%	28.9%	7.3%
<i>Difference</i>	-0.5%	0.1%	0.1%	0.3%	0.3%	0.3%

Table 6: The prevalence and contribution of transfers to wealth

	Proportion in households that received transfer	Mean contribution to household wealth per person		Mean wealth		
		(recipients)	(all)	Non-pension	Private	Total
All	44.5%	58,103	26,275	194,187	260,410	340,448
<i>Those with net non-pension wealth <=£0</i>						
All	15.1%	14,930	2,254	-3,311	13,345	97,667
<i>Those with positive net non-pension wealth:</i>						
Lowest wealth	22.9%	15,046	3,817	3,376	20,603	104,362
Decile 2	30.8%	27,951	8,603	48,726	85,177	161,601
Decile 3	41.7%	23,057	9,775	84,792	129,158	202,629
Decile 4	42.7%	31,513	13,451	108,759	161,092	233,390
Decile 5	48.4%	32,111	15,678	136,713	195,110	273,037
Decile 6	49.7%	53,726	26,746	166,104	231,923	313,581
Decile 7	52.3%	42,382	22,399	203,466	291,157	373,516
Decile 8	53.8%	70,931	38,534	258,820	355,782	439,299
Decile 9	58.4%	88,715	54,689	350,482	464,426	547,797
Highest wealth	64.7%	143,030	93,054	772,574	905,774	990,429

Figure 4: Composition of wealth, by decile of non-pension wealth

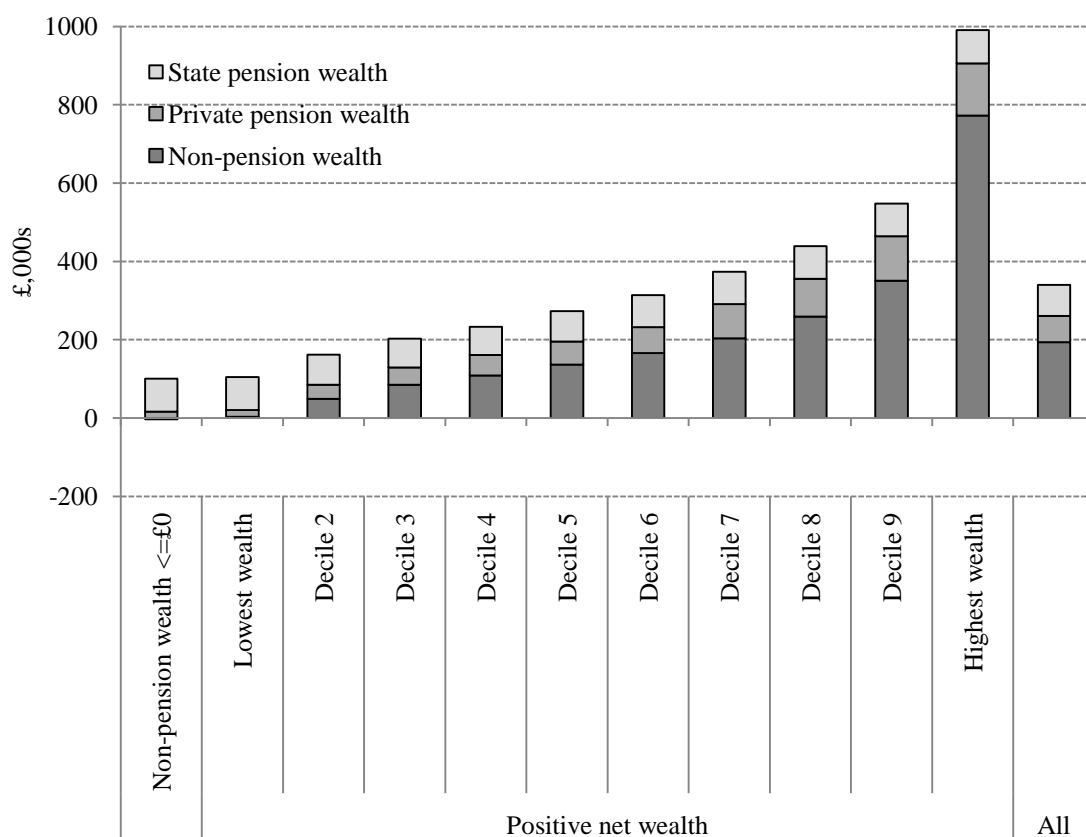


Table 7: Median regressions of the ratio of household wealth per person to lifetime net household income per person

	Non-pension wealth		Total private wealth		Total wealth	
<i>Net lifetime income (incl. no private pension income)</i>						
Constant	0.173***	(0.008)	0.199***	(0.010)	0.440***	(0.009)
Lifetime income (£00,000)	0.009***	(0.002)	0.026***	(0.002)	0.004**	(0.002)
<i>Net lifetime income (incl. 50% private pension income)</i>						
Constant	0.142***	(0.007)	0.148***	(0.008)	0.368***	(0.010)
Lifetime income (£00,000)	0.013***	(0.002)	0.033***	(0.002)	0.013***	(0.002)
<i>Net lifetime income (incl. 100% private pension income)</i>						
Constant	0.133***	(0.008)	0.110***	(0.008)	0.358***	(0.007)
Lifetime income (£00,000)	0.012***	(0.001)	0.036***	(0.002)	0.010***	(0.001)

Notes: Sample size is 1,567 individuals. *, **, *** indicates statistically different from zero at 10%, 5%, 1% confidence interval (respectively).

Table 8: Median regressions of the ratio of household wealth per person to lifetime net household income per person

	Non-pension wealth		Total private wealth		Total wealth	
<i>Net lifetime income (incl. no private pension income)</i>						
Constant	0.170***	(0.011)	0.226***	0.226***	0.414***	(0.014)
Qutintile 2 of net LI	-0.003	(0.015)	0.011	0.011	-0.018	(0.020)
Qutintile 3 of net LI	0.026	(0.015)	0.052**	0.052**	-0.016	(0.020)
Qutintile 4 of net LI	0.052***	(0.015)	0.089*	0.089*	-0.004	(0.020)
Qutintile 5 of net LI	0.110***	(0.015)	0.183***	0.183***	0.108***	(0.020)
<i>Net lifetime income (incl. 50% private pension income)</i>						
Constant	0.155***	(0.010)	0.183***	(0.012)	0.394***	(0.011)
Qutintile 2 of net LI	0.003	(0.014)	0.023	(0.017)	-0.024	(0.016)
Qutintile 3 of net LI	0.017	(0.014)	0.072***	(0.017)	0.009*	(0.016)
Qutintile 4 of net LI	0.062***	(0.014)	0.111**	(0.017)	0.044*	(0.016)
Qutintile 5 of net LI	0.111***	(0.014)	0.204***	(0.017)	0.108***	(0.016)
<i>Net lifetime income (incl. 100% private pension income)</i>						
Constant	0.138***	(0.010)	0.166***	(0.010)	0.367***	(0.010)
Qutintile 2 of net LI	0.011	(0.015)	0.028	(0.015)	-0.006	(0.015)
Qutintile 3 of net LI	0.040***	(0.015)	0.078***	(0.015)	0.021	(0.015)
Qutintile 4 of net LI	0.068***	(0.015)	0.122***	(0.015)	0.063***	(0.015)
Qutintile 5 of net LI	0.117***	(0.015)	0.198***	(0.015)	0.107***	(0.015)

Notes: Sample size is 1,567 individuals. *, **, *** on constant indicate statistically different from zero at 10%, 5%, 1% confidence interval (respectively). *, **, *** on quintile coefficients indicate coefficient is statistically different from the previous quintile at the 10%, 5%, 1% confidence interval (respectively).

Table 9: Wealth inequality as measured by the coefficient of variation and its decomposition

	<i>Wealth definition:</i>		
	Non-pension wealth	Private wealth	Total wealth
Squared coefficient of variation			
$CV^2(W)$	3.33	2.38	1.79
$CV^2(WX)$	4.11	2.77	2.01
$CV^2(T)$	9.58	9.58	9.58
Decomposition			
$CV^2(W)$	3.33	2.38	1.79
$[E(WX)/E(W)]^2 CV^2(WX)$	3.16	2.25	1.69
$[E(T)/E(W)]^2 CV^2(T)$	0.14	0.09	0.07
$2Cov(WX,T)/E(W)^2$	0.03	0.04	0.04
τ	0.14	0.11	0.09
$\rho_{WX,T}$	0.02	0.05	0.05

Note: W is observed wealth, WX is wealth excluding transfers and T is transfers (inheritances plus gifts). τ is equal to $E(T)/E(WX)$.

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