How Long do Wealth Shocks Persist? Less than three generations in England, 1700-2024

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What happens to random shocks to wealth? Do they endure and even magnify to current times, or do they completely dissipate within a few generations? How much of the modern wealth distribution is attributable to events before 1900? Family size among rich families for marriages before 1880 was close to a random variable. Marital fertility was not targeted by couples, but was the product of a biological lottery. Family size for richer families also strongly influenced wealth at death for children. This paper finds that such demography induced wealth shocks quickly dissipated. By three generations later they had no impact on the wealth of descendants. Since wealth itself persisted strongly across more than five generations this implies that, in the long run, wealth mainly derives from sources other than wealth inheritance itself. The link between nineteenth century wealth and modern wealth does not lie in wealth inheritance itself, but in the inheritance within families of behaviors and abilities associated with wealth accumulation.

Introduction

There has been considerable attention recently to the persistent effects of wealth disparities, or wealth transfers, in the nineteenth century in terms of current wealth and social status. Thus the compensation paid to British slave owners with the emancipation of slaves in the British Empire in 1834 has been argued to be still a foundation of the wealth of many richer Britons now, including David Cameron, the former Conservative Prime Minister, and Peter Bazalgette, former Arts Council Chair (Hall et al., 2014). Even cultural institutions, such as the Booker Prize for literature, are alleged to have been ultimately funded in part by 1834 slave compensation (Creamer, 2024). Many British country houses, museums, and charitable

institutions have also been associated with the taint of slave and Colonial wealth (Gilbert, 2022).

In the USA profound differences in Black and White wealth after the Civil War in 1865 have been argued to be the foundation of the large current White-Black wealth gaps. A recent paper notes that "The main reason for such a large and lasting gap is the enormous difference in initial wealth between Black and white Americans on the eve of the Civil War." (Derenoncourt et al., 2024, p. 695).[1]

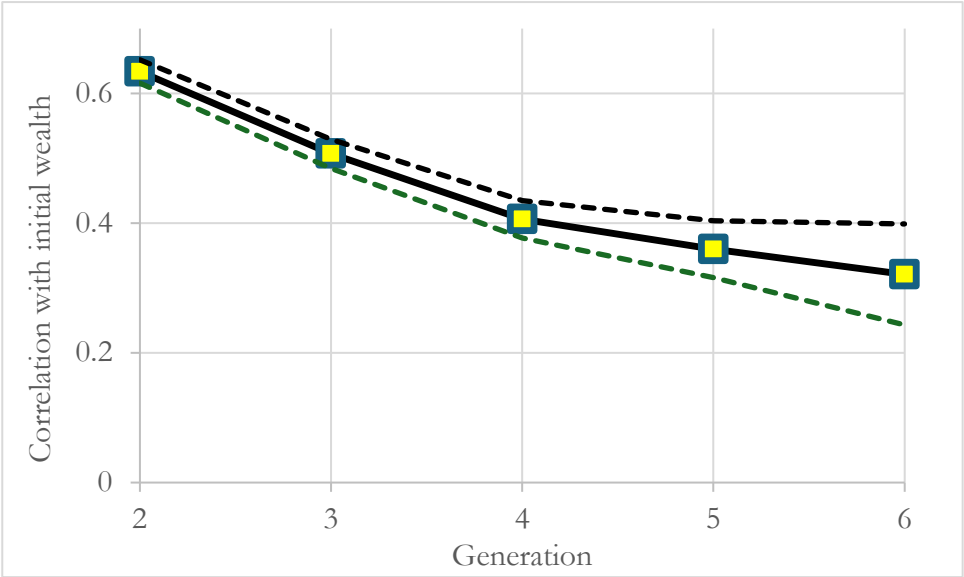
But this raises an interesting question. If we in 1834 were to give £100,000 to a randomly chosen British person, and then did an audit of their descendants, 190 years (6 generations) later, would we find them wealthier than the average person in 2024? Do shocks to wealth persist across generations? Or does unexpected, unearned wealth dissipate quickly, so that, for example, none of the Booker Prize money can be attributed to slavery, and none of David Cameron's or Peter Bazalgette's assets face that same taint?

If we look at the intergenerational persistence of wealth among men in England 1700-2024 then we do observe a strong persistence of wealth, even across six generations. Figure 1 shows the correlation of wealth at death for men across 2-6 generations, where the initial testator married before 1880, using the Families of England (FOE) database. The correlation in wealth across six generations is still 0.32, and even for a modest sample of 956 such cases, highly significant statistically.[2] In this case the average birth year of the first generation was for men born 1769, and for the sixth generation men born 1925. At the observed rate of decline, there will still be a correlation in wealth even after 12 generations.

[1] Note, however, that Bleakley and Ferrie, 2016, find that lottery allocations of land wealth in Georgia 1832 had no effect on levels of education of descendants fifty years later. But their measures concern human capital as opposed to physical capital.

[2] The standard error of the estimate is 0.040. Ln wealth is used since wealth is so skewed to make the wealth measure have a distribution closer to normal.

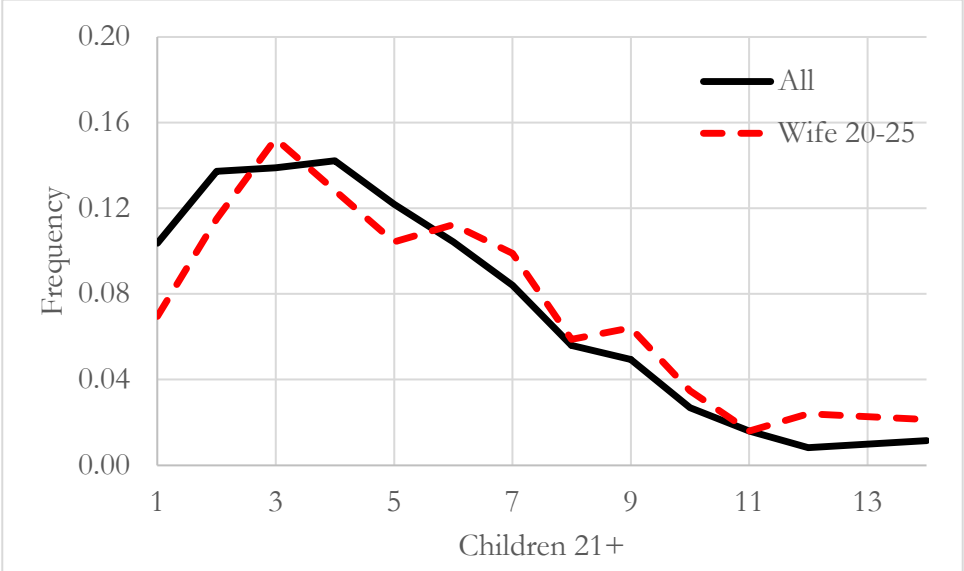
Figure 1: Wealth Correlations across 2-6 generations, men



Note: The dotted lines show the 95% confidence interval. Standard errors clustered by initial testator.

Source: Families of England database.

Figure 2: Net Family Sizes among Testators, England marriages pre-1880



Source: Families of England database.

We can observe what are largely random wealth shocks in England in the years before 1880, and measure their effects on future generations, again using the Families of England (FOE) database. These wealth shocks, in families where there are significant bequests to children, come from largely random shocks in the numbers of children whom family wealth is split among. Figure 2 shows for 1,822 marriages before 1880, where the father left an estate at death of above average value, the distribution of family sizes, measured as the number of children who attained at least age 21.[3] The enormous range in family sizes meant that the amount of bequest received from a father of given wealth also varied enormously.

Family size was largely determined by factors outside individual control. Prior to 1880 there is no evidence of any attempt at birth control within marriage.[4] The primary variable that affected family size, which was under control, was wife age at marriage. But controlling for wife age, husband age, and husband social status explains only 7% of the variance in family size. 93% was random variation. To illustrate this note that the while the overall variance in family size was 7.95, the variance in size for men marrying women aged 23 in their first marriage was still 8.07.

Figure 2 also shows the distribution of family sizes for men whose first wife was 20-25 at marriage, where the husband was 22-28. As can be seen the range in family size even for this restricted set of marriages in terms of spousal age was nearly as great as the overall range in sizes. Shocks to child wealth for families with wealth were largely random.

When there were multiple heirs, birth order had only modest effects on the amount bequeathed to each child. The oldest son was typically about 10% wealthier at death than his younger brothers. Sons, however, seem to have been bequeathed more than daughters. Thus family size, as well as the gender composition of siblings, was an important determinant of wealth inheritance for all children. The huge variation in family size implies that for equally wealthy fathers, their children would inherit very different amounts.

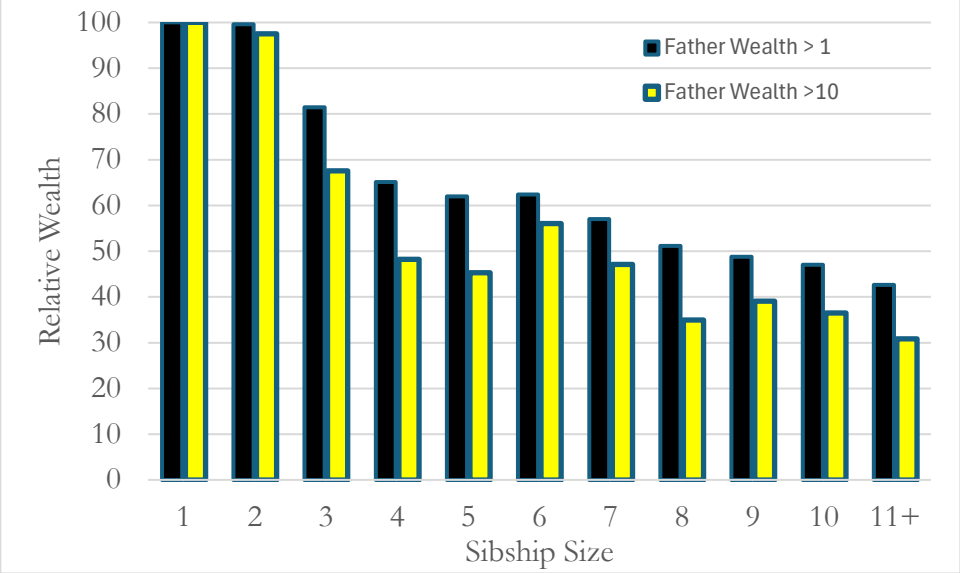
[3] Families without any adult children were not included.
[4] See Clark and Cummins, 2019, and Clark, Cummins and Curtis, 2020.

Table 1: The Determinants of Child Wealth at Death

Variable	Father Wealth ≥ 1	Father Wealth ≥ 1	Father Wealth ≥ 10	Father Wealth ≥ 10
Ln(wealth father)	0.646**	0.654**	0.618**	0.619**
	(0.021)	(0.021)	(0.038)	(0.038)
Ln(adult sib size)	-0.405**	-0.387**	-0.502**	-0.458**
	(0.067)	(0.068)	(0.087)	(0.086)
Female	-	-0.477**	-	-0.785**
		(0.066)		(0.081)
Observations	7,614	7,614	4,903	4,903
R^2	0.170	0.178	0.082	0.101

Notes: Standard errors clustered by father. ** = significant at 1% level. Wealth measured relative to average wealth at death for that decade.

Figure 3: Relative Child Wealth at Death as a Function of Family Size, marriages before 1880



Notes: The horizontal axis shows the number of adult children for each father. The vertical axis shows average child wealth by sibship sized, controlling for father wealth. It is normalized to 100 for families of size 1.

To illustrate this, consider Edward Cazalet (1827-1883), who married Elizabeth Marshall (1837-1888) in 1860, when Elizabeth was 23. Despite her youth, the marriage produced just one child, a son. Cazalet died with wealth £0.346 m, and that one son with wealth £0.652 m. In contrast Richard Thomas Pulteney (1811-1874) married Emma Dalison (1826-1884) in 1845, and fathered 14 children, 12 of whom outlived him. His wealth at death was £0.500 million. Those twelve children left an average of only £0.027 m each, £0.323 m. in total. For families with wealth, size mattered for wealth per child.

Table 1 shows the effects of family size on child wealth, controlling for father wealth. It reports for the same men portrayed in figure 2, a regression of the logarithm of wealth at death of their children. Wealth is reported as wealth relative to average wealth for testators dying in the same decade. The logarithm of wealth was used as the wealth measure because wealth at death is highly positively skewed, so that with wealth reported in levels a few highest wealth individuals would have disproportionate influence on the outcome.

As table 1 shows there was a strong relationship between father and child wealth at death. But controlling for father wealth, child wealth also strongly depended on the size of their sibship. This is true where we consider all men with wealth at death above average, or a more restrictive sample of men with wealth at death at least 10 times the average. Figure 3 shows the adult sibship size versus relative wealth of children, estimated as just average wealth per child by sibship size.

Table 1 also shows that daughters systematically showed around 40% less wealth than sons. In looking at the long run effects of these demography driven wealth shocks we will be following the patriline in families, where the FOE database records complete fertility. So we need to also check that the same effects as in table 1 appear if we concentrate just on the patriline.

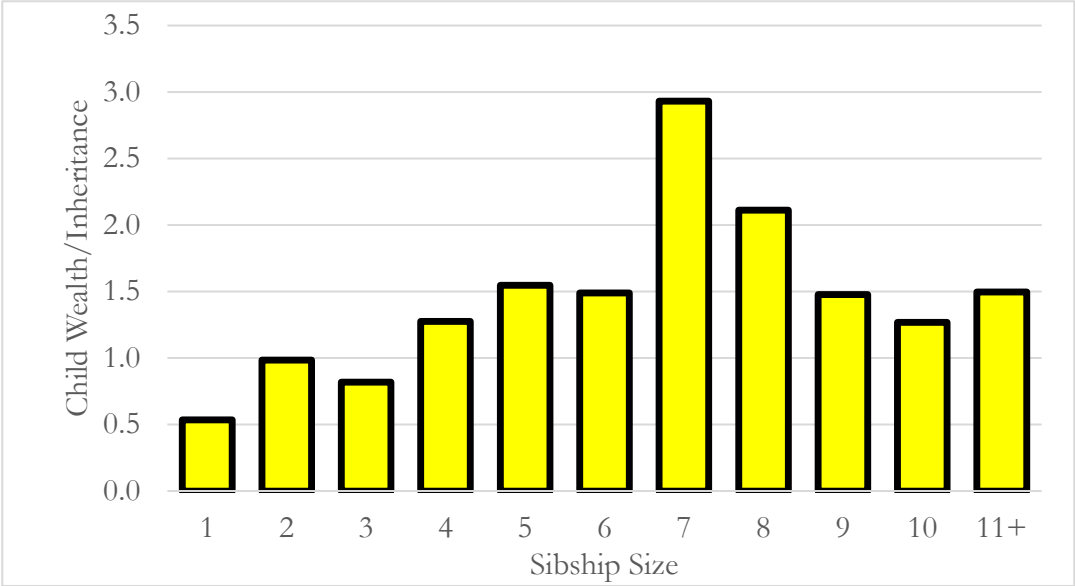
Table 2 estimates the determinants of son wealth for sons born to fathers first married before 1880. Two things stand out compared to table 1 showing all children. First the connection between father wealth and son wealth is stronger than the connection for daughters. Wealth is very strongly inherited among sons. Second the negative sibship size is also substantial for sons, as it was for children overall, but the relationship is a somewhat weaker than that for children as a whole.

Table 2: Determinants of Child Wealth at Death, Sons only

Variable	Father Wealth ≥ 1	Father Wealth ≥ 1	Father Wealth ≥ 10	Father Wealth ≥ 10
Ln(wealth father)	0.780**	0.776**	0.764**	0.767**
	(0.027)	(0.027)	(0.038)	(0.050)
Ln(adult sib size)	-0.361**	-	-0.417**	-
	(0.084)		(0.108)	
Ln(male sib size)	-	-0.432**	-	-0.559**
		(0.083)		(0.107)
Observations	4,324	4,324	2,655	2,655
R^2	0.227	0.230	0.118	0.123

Notes: Standard errors clustered by father. ** = significant at 1% level.

Figure 4: Child Wealth versus Expected Inheritance, by Sibship Size



Tables 1 and 2 already suggest that wealth is not purely derived from inheritance. For the average amount of wealth inherited per child will be $\frac{father\ wealth}{adult\ sibship\ size}$. Thus the coefficient on ln(adult sibship size) should be the same as on ln(father wealth), if all that predicted child wealth at death was how much they inherited. But we see the effect of the sibship size is much less than that of the wealth of the father. Figure 4 illustrates why sibship size has less effect than expected on wealth. The figure shows the ratio of wealth at death of children to their expected inheritance, given their father's wealth and the sibship size. If this ratio is less than 1 then the child dies with less wealth than their expected inheritance. If the ratio is more than 1 the child dies with more than their expected inheritance. For adult sibship sizes of 1-3, children die with less wealth than their expected inheritance from their father. But for sibships of 4 or more children die with more wealth than inherited from their father. They accumulate wealth as well as inheriting it.

Inheritance of family size

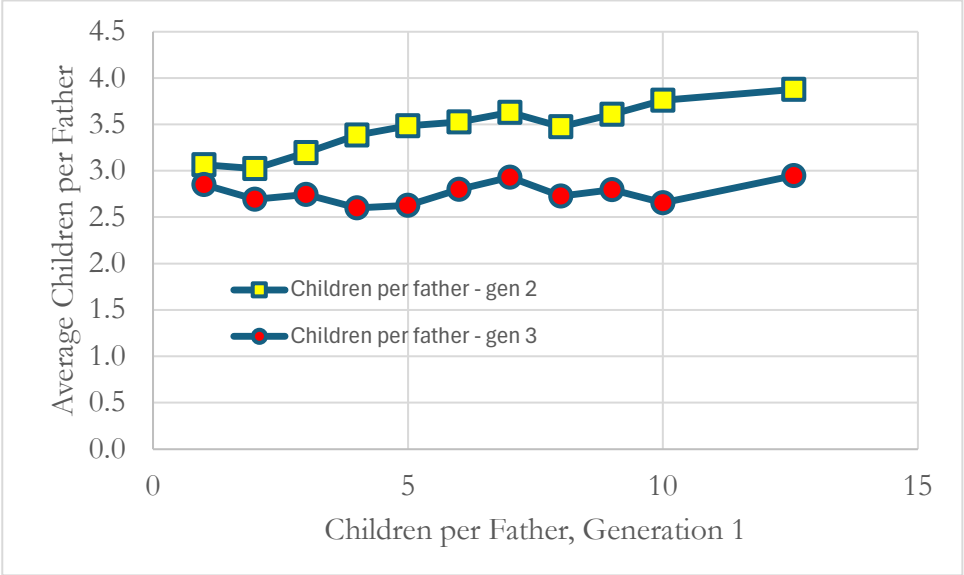
Did fathers with large families produce sons who also had large families so that the effects of family size on wealth in the initial generation were further magnified in later generations?

The correlation between family sizes of fathers and of sons was actually very low, illustrating the largely random sources of family size. Thus in the sample of fathers marrying first before 1880, and with wealth at death above average, the correlation between their family size and that of their sons was only 0.032.[5] However, all the fathers in the first generation have at least one adult child, while those in the second can have 0 adult children. The correlation between fathers and sons in numbers of adult children, where only sons with one or more children are included, rises to 0.093, still very low.[6]

By the third generation, the correlation between grandfathers and their grandsons in numbers of adult children becomes insignificantly different from 0, even only including grandsons with at least one adult child. There is a slight echo in the second generation of large or small family size, but no echo by the third generation. Thus family size really is a transient influence on wealth.

[5] Though with a standard error of 0.012, this is statistically significant at the 1% level
[6] With a standard error of 0.015 this is again highly statistically significant.

Figure 5: Adult Children per Father, by Generation



Notes: The figure shows he number of adult children per father in the patriline in the second and third generations as a function of family size (adult children) in the first generation, counting only fathers with at least one child.

Figure 5 shows this effect graphically. The horizontal axis shows the number of adult children from each father in the first generation. The first line shows the number of adult children on average from each of their sons who had adult children. This line has a positive slope of 0.073. If the grandfather went from 1 adult child to 11, their sons would be expected to have 0.73 additional adult children. So there is some echo of previous generation fertility in the first generation. But by the third generation net fertility is the same across all men, independent of what their grandfather's fertility was.

Figure 5 implies that the negative shock to wealth created by large family size in the initial generation will be perpetuated across subsequent generations largely unchanged. This means that if inheritance is the main source of wealth, the grandchildren and even great grandchildren of a wealthy man with a small number of adult children in a marriage before 1880 will have greater wealth, all other things being equal, than the grandchildren or great-grandchildren of a man with a large number of children.

Wealth Shocks Across Multiple Generations

To measure the multi-generational effects of wealth shocks I estimate the parameters in the expression

$$\ln (Wealth)_{ijk} = a + b_0 \ln (Wealth)_{j0} + b_1 \ln (N21)_{j0} + e_{ijk}$$

for k = 2, 3, 4, 5 where j indexes fathers and i indexes each child. This expression thus measures the effects of initial family wealth, and family size in the first generation, on wealth at death in the third and fourth generations.

Table 3 shows these estimates for the second to fifth generations, where the initial father wealth was at least average. There is still a strong correlation between grandfather and grandchild wealth across generations 2-5. But the estimated size of the effect of larger family size falls significantly in the third generation, the grandchildren. In the fourth and fifth generations this coefficient is no longer significantly different from 0.

Table 3: Wealth at Death, 2nd to 5th generations (wealth ≥ 1)

Variable	Child Wealth 2nd gen	Child Wealth 3rd gen	Child Wealth 4th gen	Child Wealth 5th gen
Ln(initial wealth)	0.657**	0.492**	0.365**	0.239**
	(0.021)	(0.027)	(0.031)	(0.040)
Ln(initial sibship)	-0.352**	-0.150	0.022	0.226
	(0.068)	(0.084)	(0.109)	(0.129)
Female	-0.501**	-0.341**	-0.107	-0.166
	(0.065)	(0.066)	(0.081)	(0.133)
Observations	7,900	7,245	4,444	1,969
R^2	0.177	0.125	0.083	0.049
Average birth year child	1849	1871	1888	1903

Notes: Standard errors clustered by father. ** = significant at 1% level. * = at 5% level.

Table 4: Wealth at Death, 2nd to 5th generations, sons (wealth ≥ 1)

Variable	Son Wealth 2nd gen	Son Wealth 3rd gen	Son Wealth 4th gen	Son Wealth 5th gen
Ln(initial wealth)	0.781**	0.541**	0.400**	0.234**
	(0.027)	(0.031)	(0.032)	(0.048)
Ln(initial sibship)	-0.330**	-0.075	0.127	0.124
	(0.084)	(0.098)	(0.117)	(0.160)
Observations	4,497	4,254	2,721	1,243
R^2	0.227	0.144	0.097	0.042
Average birth year sons	1848	1873	1890	1905

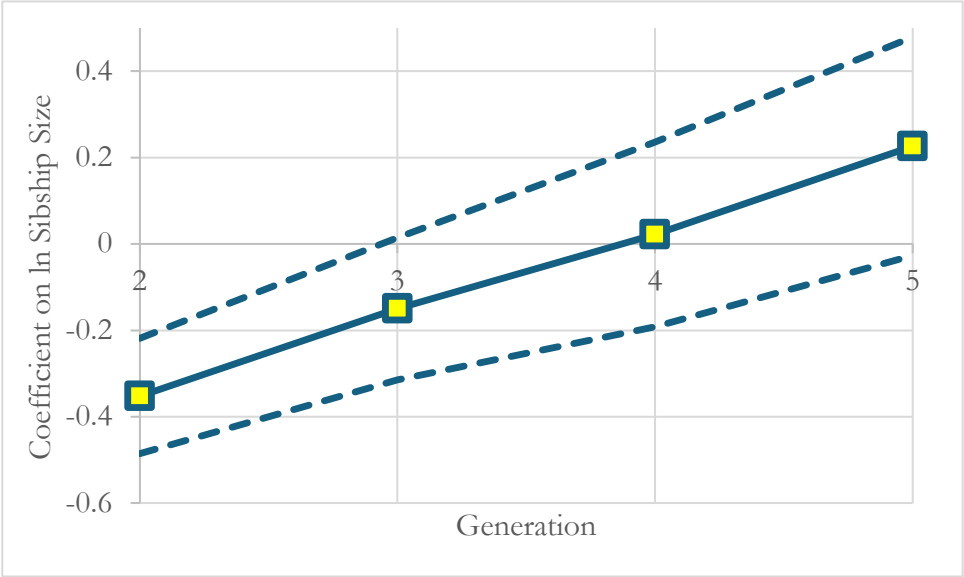
Notes: Standard errors clustered by father. ** = significant at 1% level.

Table 4 shows these same estimates, but where we restrict the child generation to be males only. This produces a stronger correlation between initial generation wealth and wealth in subsequent sons. The effects of initial family size we see again are strongly negative in the 2nd generation. The estimated effect of family size is still negative in the 3rd generation, but insignificantly different from 0. The point estimate of the effect of family size by the 4th and 5th generations is actually positive, but again insignificantly different from 0.

Figure 6 shows the point estimates of the effects of family size on wealth across generations 2 to 5 from table 3, and the associated 95% confidence intervals, for all children in that generation. Figure 6 suggests that the effects of a wealth shock from family size dissipate completely within 3 generations. Figure 7, for sons only, shows the point estimates of the effects of family size on wealth across generations 2 to 5 from table 4, and the associated 95% confidence intervals. Figure 7 suggests that the effects of a wealth shock from family size similarly dissipate completely within 3 generations among sons.

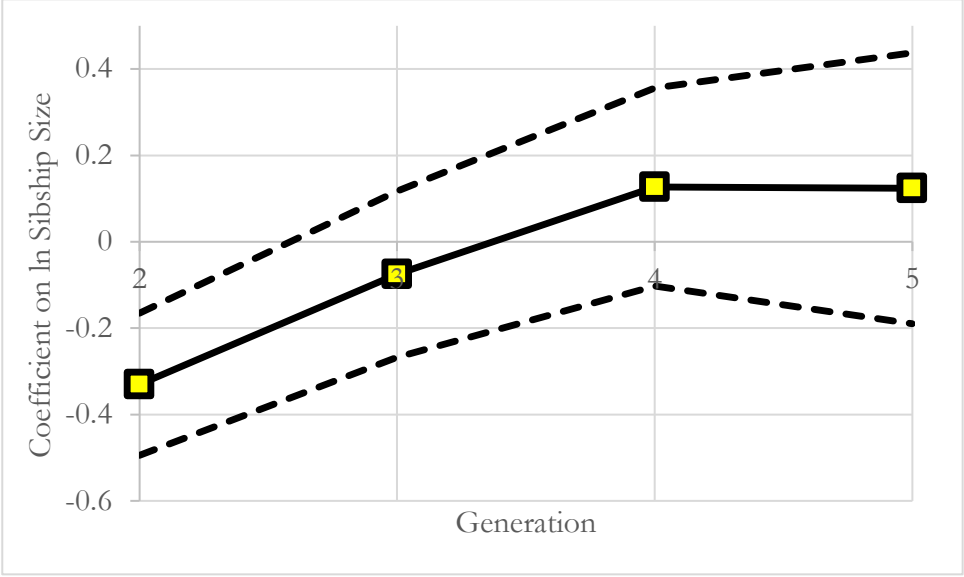
Table 5 shows for the fourth generation the effects of the sibship size in the second generation on wealth for richer grandfathers, those with wealth at least 10 times greater than average. The results here are very similar for the sample where grandfather wealth was just above average, rather than at least 10 times greater than average. So even in the very rich there is indication that wealth shocks from sibship size dissipate within three generations.

Figure 6: Effects of Initial Sibship Size on Wealth Across 2-5 Generations (wealth ≥ 1), all children



Notes: The dotted lines show the 95% confidence intervals.

Figure 7: Effects of Initial Sibship Size on Wealth Across 2-5 Generations (wealth ≥ 1), sons only



Notes: The dotted lines show the 95% confidence intervals.

Table 5: Wealth at Death, 2nd to 5th generations (wealth ≥ 10)

Variable	Child Wealth 2nd gen	Child Wealth 3rd gen	Child Wealth 4th gen	Child Wealth 5th gen
Ln(initial wealth)	0.615**	0.473**	0.363**	0.257**
	(0.038)	(0.046)	(0.047)	(0.063)
Ln(initial sibship)	-0.435**	-0.129	0.018	0.219
	(0.087)	(0.101)	(0.135)	(0.145)
Female	-0.801**	-0.411**	-0.192*	-0.142
	(0.080)	(0.078)	(0.094)	(0.160)
Observations	5,095	5,008	3,119	1,318
R^2	0.100	0.061	0.038	0.028
Average birth year child	1844	1866	1885	1903

Notes: Standard errors clustered by father. ** = significant at 1% level. * = at 5% level.

Implications

The estimates above suggest that pure wealth shocks – random wealth changes not associated with family characteristics – dissipate completely within 3 generations. Shocks to wealth at the level of the children of a testator are still observable in the grandchildren, though of much smaller size, but have disappeared by the time of the great-grandchildren. Since there is still a strong correlation of wealth between men and their great-grandchildren (figure 1), this implies that the main mechanism of wealth transmission across generations is not the actual physical transfer of wealth. If what mattered was just inheritance of wealth, then the demographically induced wealth shocks observed from marriages before 1880 would persist even beyond five generations.

This has two implications. First, for families with wealth now, even where we can trace that wealth back through inheritance to the nineteenth century, there is no causal connection between their nineteenth century inheritance and current wealth. The wealthy are typically distinguished from the rest of the population not just by the accidental creation or inheritance of money. In the famous, but fictive, exchange where F. Scott Fitzgerald notes "The rich are

different from you and me" and Ernest Hemingway responds "Yes, Scott, they have more money", Fitzgerald is the truth teller.[7]

The second implication is that wealth holdings of individuals stem largely from their social and economic abilities. It is this which links them strongly in figure 1 across six generations to the wealth of their great-great-great-grandfathers, not the actual wealth that they have inherited from those forbears.

[7] This exchange was mistakenly reported by the literary critic Lionel Trilling, in a review of a collection of Fitzgerald writings in 1945.

Appendix: Families of England Database

The database is a genealogy of a set of English families, 1600-2024, who carried one of 494 rarer surnames, where we track every holder of the surname, no matter what their location. This database has 432,143 individuals.

These surnames fall in two groups. The first is a set of 230 surnames, 59,269 people, which had significantly higher wealth than average in the mid nineteenth century that was used to measure the persistence of wealth in England 1858-2024. This set of surnames includes some well-known in English history including Courtauld, Pepys, Cornwallis, Lane-Fox, Sebag-Montefiore, de Havilland, Bazalgette, Champion de Crespigny, Rothschild, Baring, Pigou, and Rusbridger.

The second, larger, group is a set of 264 rarer surnames, 372,874 people, that had close to average social status. This group is representative of the general population of England.

Using census records 1841-1921, the population survey of 1939, marriage records 1837-2022, probate records 1796-2024, voting rolls 1999-2024, and other ancillary sources we can measure for many of these persons their educational attainment, their occupational status, their dwelling value, their wealth at death, their reproductive success, and their adult longevity.

In constructing the FOE database we directly compiled 424 of the 494 surname lineages (with 116,059 persons). The other 73 lineages (324,161 people) were obtained mainly from an appeal to members of the *Guild of One-Name Studies*, an organization devoted to tracing the history of particular rare surnames. These lineages incorporate everyone with a rare surname of interest, wherever they reside, as well as spelling variants of the surname. Thus the Mitchelmore lineage, for example, incorporates the surnames Michelmore, Mitchelmore, Mitchamore, Mitchmore, Mouchemore, Muchamore, and Muchmore.[20] Similary the Auty lineage encompasses Auty, Autey, Awty, Otty, and Ottey.[21] In cases where we only had access to published lineages, these did not typically contain details of any living holders of the surname. In these cases we added that information ourselves from public records of births, marriages and addresses. Lineages were chosen for inclusion based on their completeness, and either the public posting of the lineages, or their creators' willingness to share the data with us for inclusion in the study.

The decision to incorporate families with rarer surnames into the genealogy was in part adventitious. For an earlier study of social mobility using surnames to link generations we had assembled data on elite and underclass wealth in England by rare surname 1858-2012. But focusing on rare surname individuals allows a high degree of linkage across generations. In

the FOE database for 84% of individuals born with a rare surname and living to adulthood we can identify the father and mother. For those born 1800-1939 the percentage linked to their parents is even higher at 92%.

Figure A1 shows an illustrative fragment of the FOE database, showing linkages across 7 generations. Average completed family size in England in the nineteenth century was around 3 adult children, but this varied enormously across families, and the bulk of adults in each generation came from larger than average families, so that average sibship size then was 6. Table A1 shows the outline of the source of the data, and its distribution across time, and between general and elite lineages.

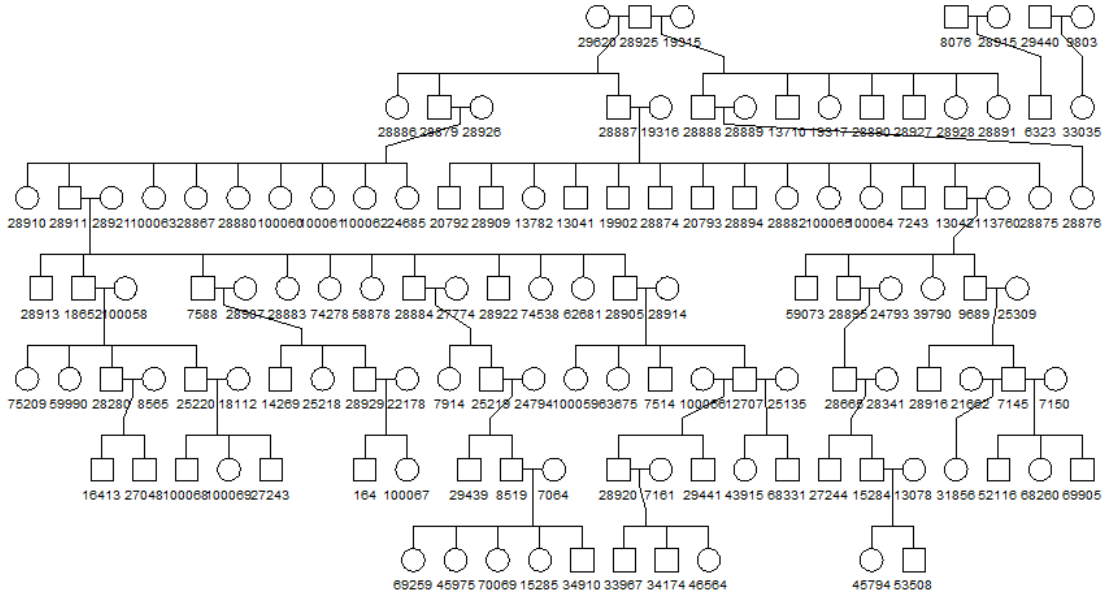
Since the focus of the genealogy is descent on the patriline, family size is measured as the numbers of births associated with each father, as well as the numbers of children attaining ages 14 and 21.

The Principal Probate Registry, 1858-2024, records for each testator the value of the estate. For those not probated, whose estate value fell below the value requiring probate, we attribute a value which is half the minimum value for probate. Thus for 1950 when the minimum value for probate was £500, we assume each person not probated had an estate of value £250. To allow for changing price levels and average wealth, we normalize each estate value by dividing by the average estate value in that decade. Thus the average normalized wealth at death should be around 1 in all periods.

In the years 1796-1858 a value was also attributed to each estate at probate. For wills proved in the highest probate courts, the Prerogative Court of Canterbury and the Prerogative Court of York, we get a record of the probate value also in these years. These wills were typically those of wealthier individuals.

For 80,713 individuals we have an estimate of wealth at death. 21,971 of these had wealth at death above average for their decade of death. In this study where we are seeking to measure the effects of wealth shocks we use individuals both from the general and the elite lineages.

Figure A1: Sample of the FOE database



Notes: A sample section of the FOE database, showing linkages across 7 generations. The squares denote men, the circles women.

Table A1: Families of England Data Outline

Birth Period	All	General Lineages	Elite Lineages
1600-99	5,858	5,546	312
1700-99	28,313	23,373	4,940
1800-49	64,718	54,503	10,215
1850-99	114,526	99,540	14,986
1900-49	78,161	69,314	8,847
1950-2024	47,470	41,371	6,099
All	432,143	372,874	59,268

Source: FOE database. Note that significant numbers of people have no date of birth observed.

Bibliography

Bleakley H, and J Ferrie. 2016. Shocking Behavior: Random Wealth in Antebellum Georgia and Human Capital Across Generations. *The Quarterly Journal of Economics*, 131(3):1455-1495. doi: 10.1093/qje/qjw014.

Clark, Gregory and Neil Cummins. 2019. "Randomness in the Bedroom: There is no Evidence for Fertility Control in Pre-Industrial England." *Demography, 56*(4): 1541–1555.

Clark, Gregory, Neil Cummins and Matthew Curtis. 2020. "Twins support the absence of parity-dependent fertility control in pretransition populations." *Demography, 57*(4): 1571-1595.

Creamer, Ella. 2024. "Booker prize urged to consider name change over slavery link" *The Guardian*, 25/4/2024.

Derenoncourt, Ellora, Chi Hyun Kim, Moritz Kuhn, Moritz Schularick, 2024. Wealth of Two Nations: The U.S. Racial Wealth Gap, 1860–2020, *The Quarterly Journal of Economics*, 139(2): 693–750, https://doi.org/10.1093/qje/qjad044

Draper, Nicholas. 2010. *The Price of Emancipation: Slave-Ownership, Compensation and British Society at the End of Slavery*. Cambridge: Cambridge University Press.

Gilbert, Isabel. 2022. "The Colonial Money Trail." History Workshop Digital Magazine. https://www.historyworkshop.org.uk/empire-decolonisation/the-colonial-money-trail/

Hall, Catherine, Nicholas Draper, Keith McClelland, Katie Donington, and Rachel Lang. 2014. *Legacies of British Slave-Ownership: Colonial Slavery and the Formation of Victorian Britain*. Cambridge: Cambridge University Press, 2014.

Mackillop, Andrew. 2021. *Human capital and empire: Scotland, Ireland, Wales and British imperialism in Asia, c.1690-c.1820*. Manchester: Manchester University Press.