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David Sturrock
Peter Levell

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How do house prices affect social mobility

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David Sturrock† Peter Levell ‡

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Abstract

We study the impact of the UK house price boom on the intergenerational persistence of homeownership, housing wealth, location and earnings. Using price variation driven by geographic differences in the elasticity of housing supply, we find that increases in local house prices have a negative effect on homeownership and increase the intergenerational persistence of housing wealth. We show that by age 28 to 37 around 15% of parental gross housing wealth differences are passed through to children's gross housing wealth. This is not explained by parental housing wealth gains increasing childrens' likelihood of becoming homeowners, but is largely explained by the children of wealthier parents being more likely to move to and own a home in London. Moving to this high house price and high earning part of the country comes alongside an effect of parental housing wealth on occupation choice and a positive effect of parental housing wealth on the likelihood of being a top earner for men. Increased parental housing wealth causes larger wealth transfers to adult children. We interpret these findings with a model in which wealthier parents help their children overcome liquidity constraints to move to high house price parts of the country. Counterfactual simulations show that the UK house price boom doubled the intergenerational persistence of housing wealth and caused living in London to become more concentrated among the children of the wealthy.

Keywords: homeownership; social mobility; house prices; intergenerational persistence

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†University College London (email: david.sturrock.17@ucl.ac.uk).

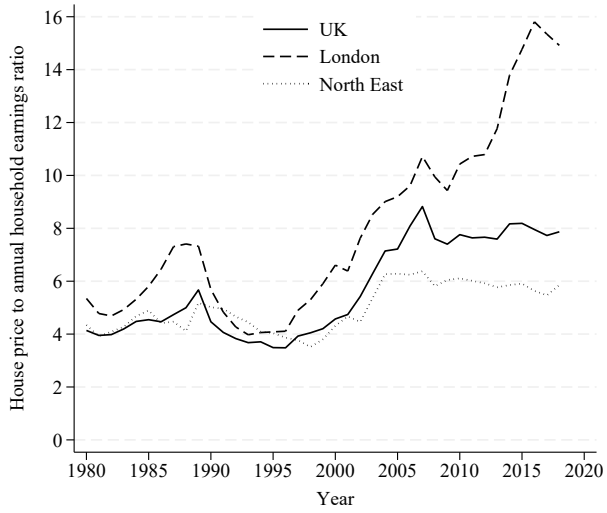
‡Institute for Fiscal Studies (email: peter_l@ifs.org.uk).

1 Introduction

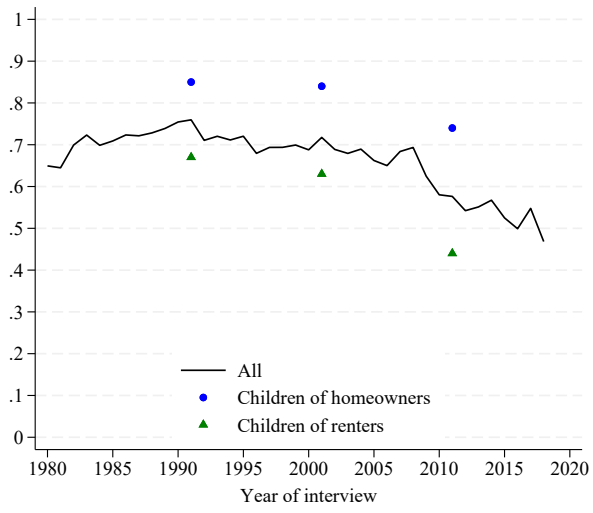
How do house prices affect intergenerational mobility? The half-century from the mid-1970s onwards saw a decline in real interest rates and dramatic rise in asset-price-to-income ratios across advanced economies (Piketty and Zucman, 2014; Miles and Monro, 2021). Substantial increases in house prices, particularly in high-productivity urban areas, have been an important part of this trend. Simultaneously, geographic mobility and intergenerational income and wealth mobility have declined.[1] These trends are particularly stark in the UK: House prices doubled as compared to earnings between the early-1990s to the 2010s, with much faster growth in London, and its surrounding areas, than in lower-productivity areas like the North East of England (Figure 1 (a)). At the same time, the homeownership rate for those aged 30 to 36 fell from 70% to around 55%, and the intergenerational persistence of homeownership increased (Figure 1 (b)).

Figure 1: Trends in house prices and homeownership inequality by parental background

(a) House price to earnings ratio



(b) Homeownership rate for 30-36-year-olds



Source: Average earnings by region are taken from the Family Expenditure Survey and its successors (1980-2002), the British Household Panel Survey 2002-2008 and UK Household Longitudinal Study, 2009-2018. Average ownership rates by children of homeowners and renters are from Bell et al. (2023), who use the ONS Longitudinal Study. Note: Panel (a) shows the mean region house price from the Nationwide index divided by mean household earnings in that region.

We hypothesise that housing costs are a growing barrier to young people accessing high-productivity labour markets and that an individual's housing, location and career choices are increasingly determined by the amount of financial support they receive from family. Despite the potential implications for intergenerational and geographic mobility, the efficient allocation of skills, and national productivity, this hypothesis has not been assessed.

[1] For evidence from the USA see Chetty et al. (2017) and Molloy et al. (2011). For the UK see van der Erve et al. (2024) and Champion and Gordon (2021).

This paper quantifies the effects of house prices and parental housing wealth on young adults' housing, location and career choices, proposes a theoretical framework for understanding the relationships between house prices and geographic and intergenerational mobility, and conducts counterfactual simulations demonstrating the implications of the UK house price boom for intergenerational mobility.

To estimate the effect of house prices on intergenerational mobility, we combine linked UK census data spanning five decades with the universe of housing transactions, and new estimates of local housing supply elasticities. House prices may affect young adults both directly—through the prices they face as buyers—and indirectly—through parental housing wealth. We exploit geographic differences in exposure to the price boom to quantify effects of both channels on homeownership, housing wealth, location, occupation, and earnings.

Identification is challenging because local house prices are driven in part by factors that can affect our outcomes of interest, like local labour market conditions. We address this in two key ways. First, we use data on multiple generations of young people, covering pre-boom and post-boom periods, allowing us to include local-area fixed effects and exploit changes in prices over time. Second, we instrument local house prices with interactions of housing supply elasticities and year indicators. Our estimated housing supply elasticities are functions of local area characteristics measured before the house price boom (such as topographical features and availability of land for development). These shape the responsiveness of local house building – and therefore local house prices – to national level shifts in housing demand but are plausibly uncorrelated with unobserved shocks to our outcomes.

To distinguish parental housing wealth effects from area-level shocks correlated with house price increases, we note that children of renters are exposed to the latter but not the former. We exploit this by instrumenting for parental housing wealth with the interaction of homeownership status (when children are young), local supply elasticity and year indicators, while also controlling for rich parental and child characteristics.

We find that while the direct effect of higher house prices is to reduce the probability that a young person owns their own home, the indirect effect via higher levels of parental housing wealth causes young people to buy houses in more expensive locations and pursue higher-earning careers, rather than affecting whether they own a home or not. Those aged 28 to 37 who face house prices £100,000 higher in their local area are 12 percentage points less likely to own their home but we can rule out a substantive effect of parental housing wealth on whether a young person owns their home. Having parents who have £100,000 more gross housing wealth causes a child to attain around £15,000 more in gross housing wealth at age 28 to 37. Parental housing wealth increases the probability of being a top earner, in the case of men, and of not being in work (primarily driven by women). Location

choice is a key channel behind these effects: those with wealthier parents are more likely to move to London and the South-East of England, a high-earning and high house price part of the country, and to buy a house and enter certain high-earning occupations there. These results are consistent with parental gifts to adult children helping them to overcome liquidity constraints to purchase homes in expensive areas, thereby accessing higher earning careers. We corroborate this interpretation using survey data on gifts, showing that higher levels of housing wealth causes parents to make higher value gifts to their children.

To interpret these results, we develop an overlapping generations model of housing and location choices in which parents transfer wealth to their children in the form of inter-vivos gifts and bequests. Young people are constrained in their ability to borrow on financial markets, meaning they face a trade-off between higher current consumption and making a downpayment on a house in a more expensive, higher productivity location. Parents can ease this trade-off by making inter-vivos gifts, establishing a link between parental wealth and the location choice and lifetime income of their children. A decline in interest rates leads to an increase in steady-state house prices, particularly in higher productivity areas, with an ambiguous effect on intergenerational mobility. The more that parents pass on wealth gains as inter-vivos gifts, the more that their children's location choices and lifetime income are positively related to their parents' wealth rather than the child's skills. This leads to reduced mobility, misallocation of skills and reduced output. However, if parents pass on wealth gains as bequests, their children's incentives to move to higher productivity locations are reduced and the relationship between parental wealth and children's earnings is weakened. Our empirical evidence demonstrates that the former effect dominates on average.

Using our estimated reduced-form model, we simulate counterfactuals in which house prices do not increase in real terms over time. Relative to this counterfactual, the house price boom doubled the rank-rank measure of the intergenerational persistence of housing wealth and increased the rank-rank relationship between parents' housing wealth and their children's earnings by 9%. The effect on earnings persistence is more muted because we find two offsetting effects on earnings: parental housing wealth increases the probability of being not in work but also increases the probability of being a top earner. Finally, we show that the house price boom made living in London much more concentrated among the children of the wealthy.

Our findings contribute to the literature which seeks to understand the determinants of social mobility. Since Becker and Tomes (1986), this literature has focused primarily on the formation of inequalities in human capital and their role in driving the intergenerational persistence in earnings. A smaller number of studies have provided evidence on the drivers of the intergenerational persistence of wealth (Fagereng et al. (2022); Black et al. (2020); Boserup

et al. (2017)) and the role of wealth transfers in shaping intergenerational persistence (Abbott et al. (2019); Adermon et al. (2018)). This paper brings empirical evidence of, and a theoretical framework to understand, a new channel linking the housing wealth of parents to the wealth, location and career choices of their children. Importantly, we show how the strength of this channel is shaped by the conditions in the housing market.

Understanding the role of housing in the context of intergenerational mobility is important for several reasons. In the USA and UK, rank-rank measures of intergenerational persistence of wealth are high internationally and higher than for earnings, even before the arrival of bequests (Charles and Hurst (2003); Levell and Sturrock (2023)). This suggests that there are channels that drive persistence in wealth beyond the persistence in earnings (van der Erve et al. (2024)). In the UK, the intergenerational persistence of homeownership has increased over recent generations (Blanden et al. (2023)), meaning these channels may be of growing importance. Recent studies have shown that intergenerational mobility varies substantially across space (Bell et al. (2023); Chetty et al. (2014)) and that childhood neighbourhoods affect upwards mobility (Chetty and Hendren (2018a); Chetty and Hendren (2018b)). Understanding how house prices shape location choices for those young people who move, and wealth accumulation for those who do not, is likely to be important to our understanding of the determinants and evolution over time of social mobility. While Getz Wold et al. (2023) examines the role of housing in intergenerational persistence, they do not consider the role of location and career choices as we do.

A small number of papers have shown a causal link between family housing wealth and child outcomes such as education and fertility (Lovenheim (2011); Lovenheim and Reynolds (2013); (Lovenheim and Mumford (2013); Daysal et al. (2021)). Most pertinent for this paper are studies showing the effect of parental housing wealth on child housing wealth. Benetton et al. (2022) show that parents extract equity from their homes which they use to help children finance home purchase. Daysal et al. (2023) shows that around 25% of parental housing gains are transmitted to wealth gains of children and argues that this is driven by parental wealth affecting the home environment and consequently saving behaviour in adulthood. Our contribution is first to show that parental housing wealth affects location and career choices. We then go beyond the study of intergenerational effects to show, empirically and theoretically, how these effects contribute to levels of intergenerational persistence in equilibrium. In doing this we bring together the literature studying the relationship between parental wealth transfers and house purchase (Boileau and Sturrock (2023b); Eylands Brandsaas (2021); Kolodziejczyk and Leth-Petersen (2013)) with the social mobility literature.

We contribute also to the macroeconomic literature studying the relationships between interest rates, asset prices and inequality. Mian et al. (2021) show how rising earnings in-

equality depressed real interest rates while Fagereng et al. (2025) shows that recent asset prices increases have redistributed from the young to the old. One contribution is to show how the young will also be exposed to asset price changes via their parents exposure. Secondly, our theoretical framework shows a new and important effect of interest rates on geographic and intergenerational mobility, and overall productivity. In this way, we also link to the literature studying the implications of restrictive housing supply for the distribution of skills and national productivity (Hsieh and Moretti (2019); Diamond and Gaubert (2022)).

This paper proceeds as follows. In section 2 we set out a set of key facts motivating our hypothesis and that we seek to explain. Sections 3, 4 and 5 set out the data, methodology and results from our empirical analysis. Section 6 presents a theoretical model of the role of house prices in intergenerational mobility which can rationalise these findings. Section 7 conducts some counterfactual simulations using our reduced form estimates. Section 8 concludes.

2 Key motivating facts

Intergenerational mobility: The UK has levels of income and wealth mobility that are low by international standards (van der Erve et al. (2024)). The rank-rank measure of wealth persistence is 0.38, similar to estimates for the USA and higher than in many European countries (Levell and Sturrock (2023); Figure 2 (a)). Significantly for this study, intergenerational wealth persistence is only partially explained by inequalities in prior education and labour income. After partialling out differences in education and earnings, the rank-rank coefficient falls to around 0.2 (Levell and Sturrock (2023)). This leaves a significant role for differences in wealth transfers, saving, and portfolio allocations to drive intergenerational wealth persistence. Intergenerational mobility has been declining in the UK over the past half-century. Income mobility fell between the generations born in the late 1950s and the 1970s (Dearden et al. (1997); van der Erve et al. (2024)). There are indications that wealth mobility is declining too: Blanden et al. (2023) show that the intergenerational persistence of homeownership increased between generations born in the 1950s and the 1980s. While the majority of the decline in income mobility across generations has been attributed to increased education inequalities (Dearden et al. (1997)), the drivers of the level and change in intergenerational wealth mobility in the UK have received less attention.

Geographic mobility in early-adulthood is substantial with around 40% of college graduates and 20% of non-graduates living in a different labour market at age 30 to age 16 (Britton et al., 2021). Moves are associated with significant earnings gains. Men with a college degree who move earn on average 10% more than those who do not move, controlling for

background characteristics and for college attended and subject studied. For women, the difference is 4% (Britton et al., 2021). London is an important destination with 25% of college graduates moving there. Movers to London drive the earnings 'premia' estimated by Britton et al. (2021). Moving to London leads to higher earnings *progression*. Xu (2025) estimates that the initial earnings increase caused by moving to London from a low-paying area to be 15%, rising to over 50% 8 years later.

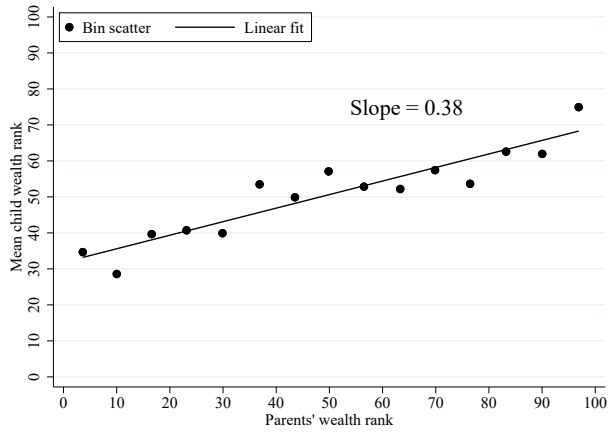
Intergenerational wealth transfers and home purchase: In the UK as in many advanced economies, wealth transfers between households are dominated by parent-to-child transfers. van der Erve et al. (2024) show that these typically arrive either as parental gifts received by adult children in their late-20s and early-30s, or as bequests received around retirement age. The annual flow of bequests is around five times the size of the annual flow of gifts (Boileau and Sturrock, 2025). Receiving a transfer is strongly related to first home purchase: half of the value of gifts received is reported as used for home purchase and around half of those who buy a house in their 20s report financial support from family to do so (Boileau and Sturrock, 2023a). Gifts received in early-adulthood are also associated with moving between regions and entering self-employment, but are less strongly associated with 'adverse' events (Figure 2 (b)). Parental support for home purchase looks to have become more important over time. Cribb and Simpson (2018) estimated that the proportion of young people who would need to save more than six months worth of their income to fund a 10% downpayment on a median-priced local property rose from around one-third in the mid-1990s to around three-quarters in the late-2010s.[2]

In summary, the prior literature has established that the UK has high intergenerational wealth persistence that cannot be explained by education and earnings, high returns to earnings from accessing labour markets with high house prices, and that parental transfers are an increasingly important means by which children can meet deposit requirements on first home purchases.

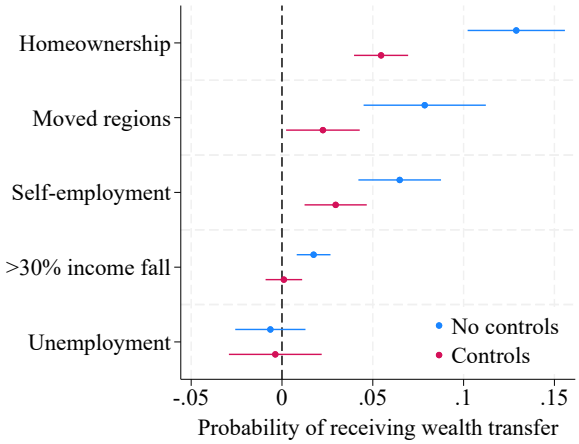
[2]It is uncommon to purchase a home with a downpayment of less than 10% of the purchase price. Bank of England data show that around 14% of mortgages in 2006 to 2007 were issued with a deposit of less than 10%, and fewer in the decade after.

Figure 2: Association between parents' and children's wealth and between life events and receipt of wealth transfers

(a) Rank-rank relationship for wealth



(b) Wealth transfers and life events



Notes: Panel (a) shows a bin-scatter and linear fit for the relationship between parents' wealth rank and that of their child. For methodological details see Levell and Sturrock (2023). Panel (b) estimated marginal effects with 95% confidence intervals from a probit regression of receiving a wealth transfer over a 2-year period and experiencing certain life events in the same period. For methodological details see Boileau and Sturrock (2023b). Source (a) UK Household Longitudinal Study (b) Wealth and Assets Survey.

3 Data

We draw on several administrative and survey datasets covering intergenerational links and combine these with survey data on earnings, administrative data on housing market transactions, and newly-estimated local elasticities of housing supply. We briefly describe each dataset in turn.

The Office for National Statistics Longitudinal Study (LS): The LS (Office for National Statistics, 2019a) is the central dataset used in our study. It contains decennial census and life events data for a 1% sample of the population of England and Wales. The LS links all census records from the 1971, 1981, 1991, 2001 and 2011 censuses for people born on one of four selected dates in each calendar year. Linkage across census waves takes place using National Health Service records on name, date of birth and address. New LS members enter the study through birth and immigration if they are born on one of the four selected birth dates. The LS data contains the census records of the LS members and the contemporaneous records of residents of the LS member's household. Consequently, we obtain linked census records of the parents of the LS members from the census waves in which LS member is living with their parents. The LS consequently gives us high-quality intergenerationally-linked administrative data on a wide range of individual outcomes including location, housing,

education and occupation. Crucially, the census is mandatory and linkage rates are high.[3]

Our sample combines two 'cohorts' of individuals from the LS: those born in 1954 to 1963, and those born in 1974 to 1983, in England. These cohorts represent those individuals aged between 8 and 17 in the 1971 and 1991 census waves, respectively.[4] At these ages, almost all individuals reside with their parents. We include in our sample those who are observed living with their parents in these census waves and who are also observed in the census wave 20 years later, when they are aged 28 to 37. This means that the earlier-born cohort is observed in adulthood in 1991, before the large increase in house prices while the later-born cohort is observed in 2011, after the house price boom. We also show a set of results where we include the cohort born in between, in the years 1964 to 1973. This is a largely representative sample of those individuals from these birth cohorts who resided in England and Wales in these periods. We note that our study therefore does not include those who emigrated to or from England between their childhood and early-adulthood ages.

We obtain information about the parents of our LS sample members from the census wave in which the sample member is aged between 8 and 17. Our main outcome variables are drawn from the LS member's census record 20 years later. Each wave of LS data contains the following variables at the individual level: age, sex, employment status (including whether an employee, self-employed, or self-employed with employees), most recent occupation (2-digit Standard Occupational Classification codes) and education level. At the household level we use the following variables: housing tenure (owner-occupied, private renter, social renter), house type (detached, semi-detached, terraced or flat) and location of residence. For location of residence there are two key units of geography used in our study. The first is the Local Authority District (1991 boundaries) of which there are over 300 in England. The second is based on the Nomenclature of Territorial Units for Statistics ('NUTS') geography. We use the NUTS1 classification but subdivide some of these regions into their into smaller regions, based on the NUTS2 and NUTS3 classifications. This classification separates out main urban centres from their surrounding NUTS1 areas, giving 15 regions. The LS data contains information on the relationships between all members of a household. We use this information to link individuals to their parents. We create an individual-level variable for homeownership as follows. In the waves of data in which the LS member is aged between 8 and 17, the parents are deemed to be homeowners if the household owns

[3]The 2011 census had an estimated population coverage rate of 94%. Of the census records selected to be in the LS, 99% were able to be linked to an NHS record. Of those included in the 2001 LS sample and not reported as dead or emigrated by 2011, 88% were linked to their 2011 census record. Equivalent rates were similar or higher in earlier census waves.

[4]17 was chosen as the maximum age as this is the last age when children are typically still living with their parents (among those aged 18 and older, those still living with their parents are a more selected group, as some will have left home for university or work). 8 was chosen as the minimum age so that the cohort spanned 10 years.

their home. In the wave 20-years later, the 'child' is a homeowner if they are living in a homeowning household and they are not living with a parent.

The LS does not contain direct measurement of house value or earnings. We impute values for these into the LS using the Land Registry and Labour Force Survey, as described below. The LS also does not contain information on debt (including mortgage debt), or other forms of financial wealth. In line with Daysal et al. (2023), we therefore focus on both children's and parents' *gross* housing wealth in what follows.

The Wealth and Assets Survey (WAS): The WAS (Office for National Statistics, 2019b) is a household panel survey dataset which interviews households every 2 years and elicits detailed information about wealth and wealth transfers. It is the basis for the UK's National Statistics on household wealth. WAS is a representative dataset but over-samples households from high-income postcodes in order to increase the coverage of high-wealth households. WAS has been running since 2006. We use the module of questions on gifts given and received by sample members. Individuals are asked to report all gifts of £500 or more (including both financial gifts and gifts in kind) received over the previous two years. In the seventh wave of the survey, all individuals are asked about the purpose and use of the gifts received and the relationship to the giver of the gift. In the seventh wave, there are equivalent questions about the number, value and purpose of gifts given.

The UK Household Longitudinal Study (UKHLS): Also known as Understanding Society, this is an annual representative household panel dataset (University of Essex, Institute for Social and Economic Research, 2024). Combined with its predecessor The British Household Panel Study (BHPS) this dataset has been running since 1991. The survey asks a wide range of questions across a broad range of topics including housing, wealth, and labour market outcomes, and is equivalent to the US Panel Study of Income Dynamics. All individuals resident in a household at the time it enters the survey, and all children of these original sample members, remain members of the survey in subsequent waves. The UKHLS therefore also provides an household panel dataset in which the children of sample members continue to be interviewed when they leave the parental home, allowing us to link parents and children. However it has significantly smaller sample sizes than the LS and significantly greater attrition (leaving only a few hundred matched parent child pairs). We use the UKHLS to measure the relationship between parental housing wealth gains and outcomes not directly observable in the LS (including net housing wealth and earnings).

Elasticities of local housing supply: We use the newly-created estimates of the local elas-

ticity of housing supply over the period 1996 to 2021 from Drayton et al. (2025). These are estimated using local labour market shocks to instrument for house prices in a regression of the local dwelling stock on local house price growth. We use the estimates at Local Authority District (LAD) level. We merge these elasticities to the observations in the LS, WAS and UKHLS using Local Authority district of residence. In the case of the LS, we make use of the elasticity for the LAD of residence during childhood i.e. the relating to the parents' home.

Labour Force Survey: The LFS (Office for National Statistics, 2024) is the largest source of representative data on earnings for the UK. We use this to impute earnings into the LS. We impute earnings as the predicted values from a regression of annual earnings on (a) the interaction of single year and age and level of education (college or no college education) and (b) the interaction of 2-digit Standard Occupational Classification code, gender, full-time versus part-time work and region of residence. Estimation is conducted separately using data from three time periods: 1993 to 1996, 1998 to 2000 and 2011 to 2013. The R-squared values for the three regressions are 0.61, 0.59 and 0.54, respectively. We use these three regressions to impute earnings of parents and children observed in the 1991, 2001 and 2011 census waves, respectively.

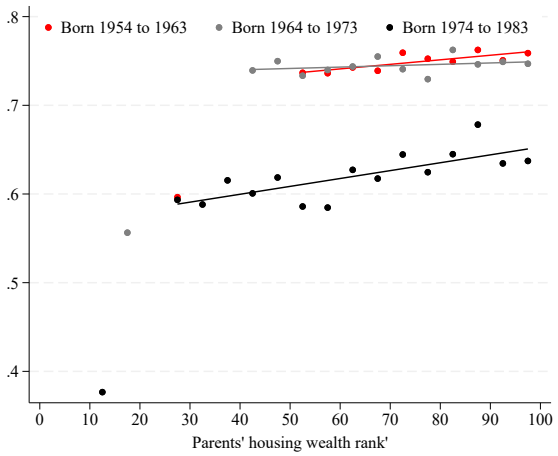
Land registry: This is the universe of housing transactions in the UK since 1995. The data contains transaction date, price, location (allowing us to determine LAD) and property type. We use this to impute property value into the LS using cell means by property type, year and and LAD, yielding our measures of gross housing wealth. For the 1991 observations of the LS, we impute property value as the 1995 imputed value deflated in line with regional level price growth estimates for the period 1991 to 1995 from Nationwide Bank. We also merge in average property prices by LAD and year to WAS.

3.1 Intergenerational mobility and geograhpic mobilty by parental background in the LS sample

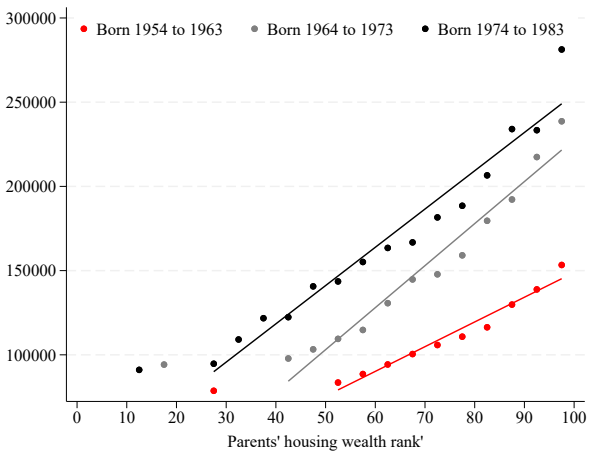
Figure 3 is a 'bin-scatter' chart of the homeownership rate and average level of housing wealth at age 28 to 37, for our three LS cohorts, according to their parents' gross housing wealth rank (imputed from the Land Registry). Housing wealth ranks of parents are defined in the period in which the child is resident with their parents. The leftmost point for each generation is the average outcome for the children of renters. Renting parents are given the mean rank of all those with zero housing wealth. Fitted lines are shown for the children of homeowners. Panel (a) shows that the sharp increase in the relationship between parental housing wealth and homeowership is driven primarily by the more rapid fall in homeown-

Figure 3: Intergenerational persistence of homeownership and housing wealth by generation

(a) Homeowership rate, age 28-37



(b) Mean gross house value, age 28-37



Source: ONS Longitudinal Study. Note: Renting parents given mean rank of renting parents. Lines fitted within children of homeowners.

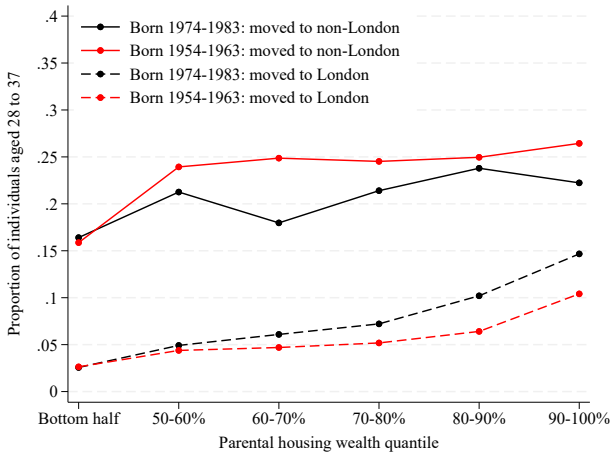
ership among the children of renters than the children of homeowners. Among those whose parents own their own home, there is no obvious increase in the gradient of homeownership by parental wealth. Turning to panel (b) we see that between the 1954 to 1963 cohort and the 1964 to 1973 cohort, there is a steepening of the gradient of child housing wealth in parental housing wealth rank. Figure 14 shows the equivalent 'bin-scatter' where the outcome is annual earnings of the adult children. We see a gradual steepening of the gradient across generations.

Figure 4 shows changes in patterns of geographic mobility between the 1954 to 1963 cohort and the 1974 to 1983 cohort. We look at the percentage who are resident London when observed at age 28 to 37 years later and the percentage who had moved to a region other than London. We split the sample into those growing up outside London and inside London and, within each group, put parents into quantiles of housing wealth. We see that (a) a smaller proportion of those in the later-born cohort moved to regions outside of London, (b) moving to London (and staying in London) increased across cohorts and (c) the increase in movement to London was strongly concentrated among those with wealthier parents. Panel (a) shows that the rate of movement to London did not increase across generations for those with parents in the least wealthy 50%. For those with parents in the wealthiest 10%, it increased from 10% to 15%. Among those who grew up in London, there is an increase in the proportion staying in the capital, concentrated among those from the wealthiest 30% of parental backgrounds.

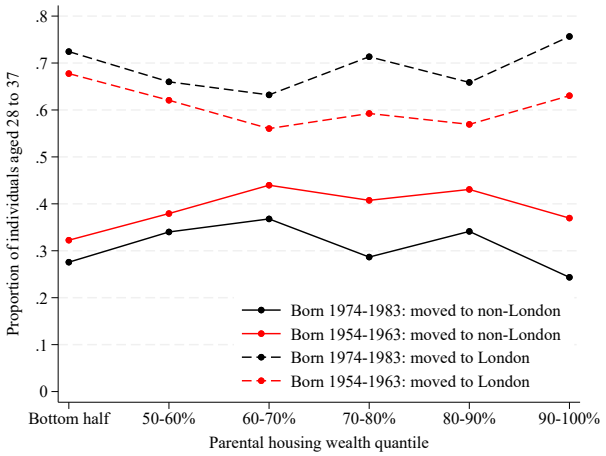
Using the UKHLS, we examine a further set of descriptive relationships between parents' house price gains over the period since 1995 and a range of child outcomes at age 28.

Figure 4: 20-year geographic mobility rates to London and non-London regions

(a) Children growing up outside London



(b) Children growing up in London



Source: ONS Longitudinal Study. Note: Renting parents given mean rank of renting parents. Lines fitted within children of homeowners. Quantiles defined within parents not resident in London (panel (a)) and resident in London (panel (b)).

Appendix Table 10 shows estimates estimates from a series of OLS regressions of child outcomes on parents housing wealth gains. These show a modest relationship between parental wealth and homeownership, with £100,000 of additional parental wealth associated with a 2ppts higher homeownership rate. We see that such a gain in parental wealth is associated with around £21,000 additional housing wealth on the part of the child and, importantly for our study, this is driven by differences in gross house value rather than mortgage debt. Those whose parents saw a larger gain were more likely to live in London and the South East of England and to hold a university degree and were higher up in the earnings distribution and saved at a higher rate.

While these descriptive figures are suggestive of a significant and growing importance of parental wealth for location, housing and career choices, a wide range of factors have changed across cohorts and could drive these patters. We therefore turn to a research design aiming to isolate causal effects.

4 Empirical Method

Suppose an outcome y for child i, in time t, who lives area $j(it)$ is determined as follows:

$$y_{it}^{c} = f(\underbrace{X_{i,t}^{c}}_{\substack{\text{child's} \\ \text{characteristics}}} , \underbrace{X_{i,t-s}^{p}}_{\substack{\text{parents'} \\ \text{characteristics}}} , \underbrace{W_{i,t}^{p}}_{\substack{\text{parents'} \\ \text{housing wealth}}} , \underbrace{p_{j(i,t),t}}_{\substack{\text{local house} \\ \text{prices}}} , \underbrace{j(i,t-s)}_{\text{childhood location}} , \underbrace{t}_{\text{year}} , \underbrace{\epsilon_{it}}_{\text{taste/ability}}). \quad (1)$$

This says that the outcome depends on the child's characteristics, the child's parents' characteristics, their parents' wealth, house prices in the area the child lives, the area that the child grew up in, and unobserved components like the child's preferences and abilities.

There are several challenges to isolating the effects of house prices and parental housing wealth on children's outcomes. First, individuals may sort into higher or lower house price areas based on unobserved determinants of demand for housing such as preferences. Second, unobserved idiosyncratic factors, such as tastes for housing, could be correlated across generations and drive correlations in the levels of housing wealth of both parents and their children. All of these considerations would drive correlation between the unobserved component, ϵ_{it}, and our explanatory variables of interest, $W^p_{i,t}$ and $p_{j(i,t),t}$ meaning that observed relationships between y_{it} and both $W^p_{i,t}$ and $p_{j(i,t),t}$ do not capture causal effects.

Our approach to these challenges is to use variation in price growth across areas to identify the effect of local house prices and to use the combination of parents' homeownership status at the start of the house price boom period and house price growth in their initial area of residence to identify the effect of parental wealth. Specifically, to address the endogeneity of child's later-life location, we instrument for current local prices using current house prices in the area the child grew up in. We instrument for parental housing wealth with the interaction of local house prices and whether the parents were homeowners when the child was young. We control for time and fixed effects for the location of parents/original location of children. so that all the variation in prices we exploit is due to variation in house price *growth* across areas. As we have data on multiple cohorts, we can include controls for the interaction of local area and parental homeownership, to account for any time-invariant differences between the children of renters and homeowners across areas. This approach identifies the effects of local house prices based on variation across areas in house price growth and identifies the effects of parental wealth based on the variation in gap in parental wealth between the children of homeowners and the children of renters across high and low house price growth areas.

Specifically, assuming a linear form for $f(\cdot)$, we estimate

$$y^c_{i,t} = \beta_1 X^c_{i,t} + \beta_2 X^p_{i,t-s} + \beta_3 \widetilde{W^p_{i,t}} + \beta_4 \widetilde{p_{j(i,t),t}} + \lambda_{j(i,t-s),h^p_t} + \epsilon_{i,t}, \tag{2}$$

where $X^c_{i,t}$ are predetermined child characteristics (age, gender, ethnicity - all interacted with region of upbringing), $X^p_{i,t-s}$ are parent characteristics when the child is residing with their parents (occupation, social class, employment status, housing tenure interacted with cohort, education and single parent indicator - all interacted with region), h^p_t is parents' homeownership status at time t. $\lambda_{j(i,t-s),h^p_{t-s}}$ are fixed effects for children's origin LAs, interacted with parents' ownership status.

$\widetilde{W^p_{i,t}}$ and $\widetilde{p_{j(i,t),t}}$ are fitted values from the following first stage equations

$$W^p_{i,t} = \alpha_1 X^c_{i,t} + \alpha_2 X^p_{i,t-s} + \alpha_3 h^p_{t-s} \cdot p_{j(i,t-s),t} + \alpha_4 p_{j(i,t-s),t} + \lambda^p_{j(i,t-s),h^p_t} + \omega_{i,t} \quad (3)$$

$$p_{j(i,t),t} = \delta_1 X^c_{i,t} + \delta_2 X^p_{i,t-s} + \delta_3 h^p_{t-s} \cdot p_{j(i,t-s),t} + \delta_4 p_{j(i,t-s),t} + \lambda^W_{j(i,t-s),h^p_{t-s}} + \eta_{i,t} \quad (4)$$

Identification of β_3 and β_4 requires that unobserved drivers of our outcomes (like preferences) are not correlated with the interaction of parental housing wealth and local house price growth conditional on our child and parent controls.

A threat to identification in this model is that the growth in house prices over time (and thus parents' wealth) in an area are potentially correlated with *changes* in local conditions that affect our outcomes of interest, like an improvement in school quality (recall that non-time varying differences in the attributes of different areas are already accounted for by the fixed effects $\lambda_{j(i,t-s),h^p_{t-s}}$).

We address this concern in several ways. Firstly, we show results from an additional specification, where we allow local authority fixed effects for childhood locations to vary by time as well as by parents' home-ownership status (but not their interaction). This accounts for time-varying factors at the local authority level, but assumes that the effects of location are common to the children of renters and homeowners. This addition makes it impossible to identify the effects of local prices on child outcomes, previously identified using differences across cohorts, but still allows us to identify the effects of parents' wealth.

Secondly, we can use variation in local prices driven by variation in the local elasticity of housing supply. This isolates changes in house prices that are driven by factors like local topography and planning restrictions which are more plausibly exogenous with respect to the outcomes of the children growing up in that area. Specifically, we instrument for prices with the elasticity of housing supply in the local authority in which the child grew up, as estimated by Drayton et al. (2025). Crucially, variation in these estimated supply elasticities comes from variation in local area characteristics before the house price boom period. We can also instrument for parental housing wealth with the interaction of parental homeownership in the earlier period interacted with the local housing supply elasticity and an indicator for being in the later cohort. Effectively, we exploit variation in the change of the within-area wealth gap between renting and homeowning parents across areas with higher and lower elasticities of housing supply.

Table 1: First-stage estimates

	Par wealth	Prices	Par wealth	Par wealth	Prices	Par wealth
Parents owners × prices	1.508*** [25.610]	-0.034* [-1.740]	1.583*** [26.080]			
Prices in parents LA	0.039*** [3.630]	0.632*** [22.340]				
Elasticity × 2011				2.573*** [3.400]	-3.156*** [-3.410]	
Parents owners × elasticity × 2011				-7.673*** [-6.290]	2.049** [2.760]	-8.608*** [-5.720]
Kleibergen-Paap	330.72	330.72	680.25	6.53	6.53	32.75
Observations	93,062	93,061	93,061	93,062	93,062	93,061

Source: ONS Longitudinal Study. t-statistics in brackets. Statistical significance at the 10%, 5%, and 1% levels denoted by *, **, and ***, respectively.

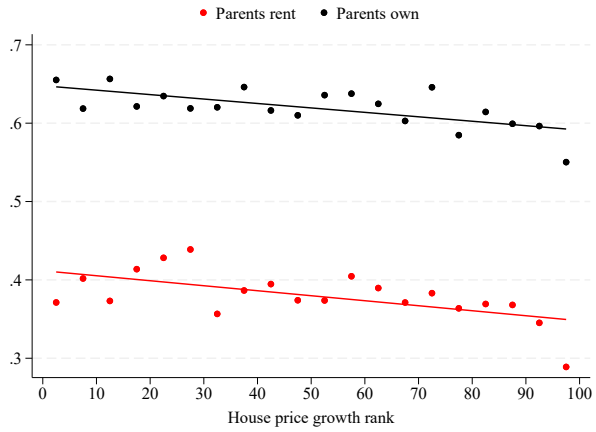
5 Results

5.1 First stage estimates

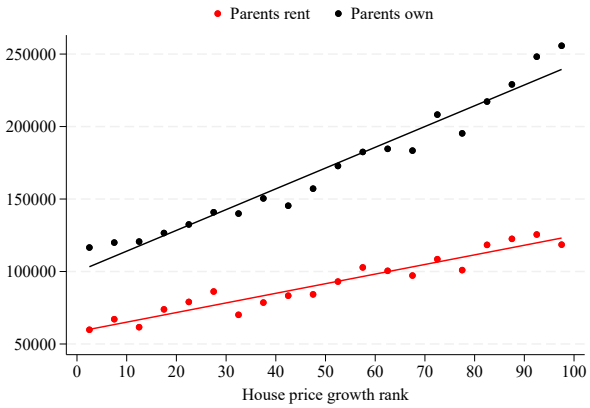
Table 1 reports the coefficients on our excluded instruments from the 6 first stage regressions for four IV specifications. The endogenous variables, indicated in the column headings, are the level of parents' wealth and the average level of house prices in the area the child lives in adulthood. The first two sets of estimates are from the first stage equations presented above. The third column is a specification in which we additionally include local-authority-by-year fixed effects and therefore do not identify the effect of local prices (so there is one first stage equation). Columns (4) to (6) give the estimates from an equivalent set of first stage equations where, in place of current prices in the area the child grew up ($p_{j(t-s),t}$) we have the elasticity of housing supply in the area the child grew up, interacted with an indicator for being observed in 2011. Higher house prices (and lower supply elasticities) in the area that the child grew up predict higher house prices in their current area of residence. Having a parent who, 20 years ago, owned a home in what is *now* a high price area (or low elasticity area) predicts higher levels of parental wealth. The Kleibergen-Paap Wald tests show that these first stage regressions are very strong, other than when identifying both the price and parental wealth effect and using the elasticity-based instruments. We should therefore be cautious when interpreting the results from the fifth column in the main results tables.

Figure 5: Relationship between parent's local house price growth and children's outcomes

(a) Homeowner



(b) Gross housing wealth



Source: Authors' calculations using the ONS Longitudinal Study Note: Both panels shows mean outcomes for the children of renters and the children of homeowners aged between 28 and 37 in 2011, by ventile of the distribution of local house price growth over the period 1991 to 2011 for parents' region of residence in 1991. Panel (a) shows the homeownership rate and panel (b) shows the mean level of gross housing wealth.

5.2 Effects on homeownership and housing wealth

Figure 5 illustrates our identification and headline results with regards to homeownership and housing wealth. We show average outcomes for the children in the 1974 to 1983 cohort across the distribution of local house price growth in their parents' initial area of residence. We split by whether the child has renting or homeowning parents. Our identification of the effect of prices exploits the slope of outcomes in local house price growth. Our identification of the effect of parental wealth exploits the differential in this slope between the children of owners and renters.[5]

Homeownership rates are lower for those who grew up in areas that saw faster house price growth over the boom period, implying that higher house prices reduce homeownership. However, the *difference* between the children of owners and renters does not substantively change with price growth, implying that parental housing wealth does not affect homeownership. For housing wealth, the gap between the children of owners and renters increases in the rate of house price growth in the area the child grew up. This implies that parental wealth causes higher levels of child housing wealth.

The two-stage-least squares estimates are given in Tables 2 and 3. Relative to the Figures, these estimates control for a fine set of parental characteristics and also include data from

[5]By pooling data across the 1971 and 1991 cohorts and including local authority by parental homeownership status fixed effects, we partial out any variation in outcomes across local authorities and parental homeownership groups that predates the boom period. Appendix Figure 15 shows that the patterns seen in Figure 5 did not exist before the boom period. Appendix Figure 16

the pre-boom cohort, allowing the inclusion of local area fixed effects. We also show results when instrumenting using the elasticity of housing supply. The conclusions drawn from the Figures are robust to these additions.

Table 2 shows the results of our estimation where the outcome is whether the child is a homeowner when observed between age 28 and 37. We express the effects of parents' housing wealth and local house prices in hundreds of thousands of pounds. Specification (1) shows the OLS relationship of homeownership with parents' wealth and local house prices, controlling only for the year of observation. Specification (2) adds controls for child and parent characteristics, $X^{c}_{i,t-20}$ and $X^{p}_{i,t-20}$, attenuating the effects. The inclusion of LA-by-parental ownership status fixed effects in specification (3) attenuates the effects further. Once we adopt the more robust LA-by-year fixed effects in specification (4), we no longer detect substantive effects of parental wealth on homeownership. Specifications (5) and (6) are the equivalent of specifications (3) and (4) but using the local housing supply elasticity rather than local prices as the basis of instrumentation. The results are less precisely estimated. However, they suggest that there is a stronger negative effect on homeownership of high local prices where this is driven by low elasticity of housing supply than the growth in local prices overall.[6] Appendix Table 11 shows that half of the reduction in homeownership is accounted for by an increase in living with parents with the remaining half accounted for by a rise in renting.

Table 3 shows an equivalent set of results where the outcome is the child's gross housing wealth. The OLS relationship shows that a child's gross housing wealth is positively related to local house prices and their parents' housing wealth. The addition of controls for individual characteristics and local authority-by-parental homeownership status fixed effects attenuates this such that we find that around 10% to 15% of the housing wealth gains of parents are passed through to their children. When using the local housing supply elasticity as instrument, we find slightly larger estimated effect of parental housing wealth, but broadly similar magnitudes across the two instruments. In Appendix A.1 we show results when also including a cohort born between 1964 and 1973 (the 'mid-boom' cohort). We find very similar results.

The effect of parental wealth on the intensive margin of children's housing wealth could be explained either by parental housing wealth causing children to buy larger houses or to buy houses in more expensive locations. The house type recorded in the census has four categories. Table 4 shows that there is no evidence of parental housing wealth causing children

[6]This is consistent with some of price growth being driven by demand-side changes such as a growth in local incomes, which, in the absence of any effects on the population or any non-homotheticity of housing demand, would be expected to be capitalised into house prices but not change the allocation of housing. Conversely, variation in local price growth driven by variation in the responsiveness of local supply to common demand shifts would be expected to have a negative effect on homeownership.

Table 2: Effects on whether child is a homeowner

	Child is a homeowner					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	0.048***	0.014***	-0.003	0.002	-0.015	0.018
	(0.004)	(0.003)	(0.004)	(0.004)	(0.017)	(0.017)
Local house prices (£00k)	-0.047***	-0.034***	-0.011		-0.122**	
	(0.002)	(0.002)	(0.008)		(0.059)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	93,636	93,062	93,062	93,061	93,062	93,061

Source: ONS Longitudinal Study. Note: Statistical significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively. Standard errors are clustered at the level of the local authority and shown in parentheses.

Table 3: Effects on child's gross housing wealth

	Child gross housing wealth (£)					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	16,606***	8,554***	9,659***	10,518***	13,240***	14,617***
	(1,130)	(1,668)	(2,562)	(2,887)	(5,037)	(5,402)
Local house prices (£00k)	30,859***	32,497***	2,204		106	
	(2,318)	(2,680)	(5,761)		(14,069)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	93,636	93,076	93,076	93,075	93,076	93,075

Source: ONS Longitudinal Study. Note: Statistical significance at the 10%, 5%, 1% levels are denoted by *, ** and ***, respectively. Standard errors are clustered at the level of the local authority and shown in parentheses.

Table 4: Effects of parental housing wealth on owning houses of particular type and location

	Detached house	Semi-detached	Terraced house	Flat	Owns in London
Local p as instrument	-0.000	0.005	-0.009**	0.006**	0.007***
	(0.002)	(0.003)	(0.004)	(0.003)	(0.003)
Elasticity as instrument	-0.020*	-0.033**	0.051***	0.019**	0.022***
	(0.012)	(0.015)	(0.017)	(0.008)	(0.009)
Observations	93,075	93,075	93,075	93,075	93,075

Source: ONS Longituinal Study. Note: Statistical significance at the 10%, 5%, 1% levels are denoted by *, ** and ***, respectively. Standard errors are clustered at the level of the local authority and shown in parentheses.

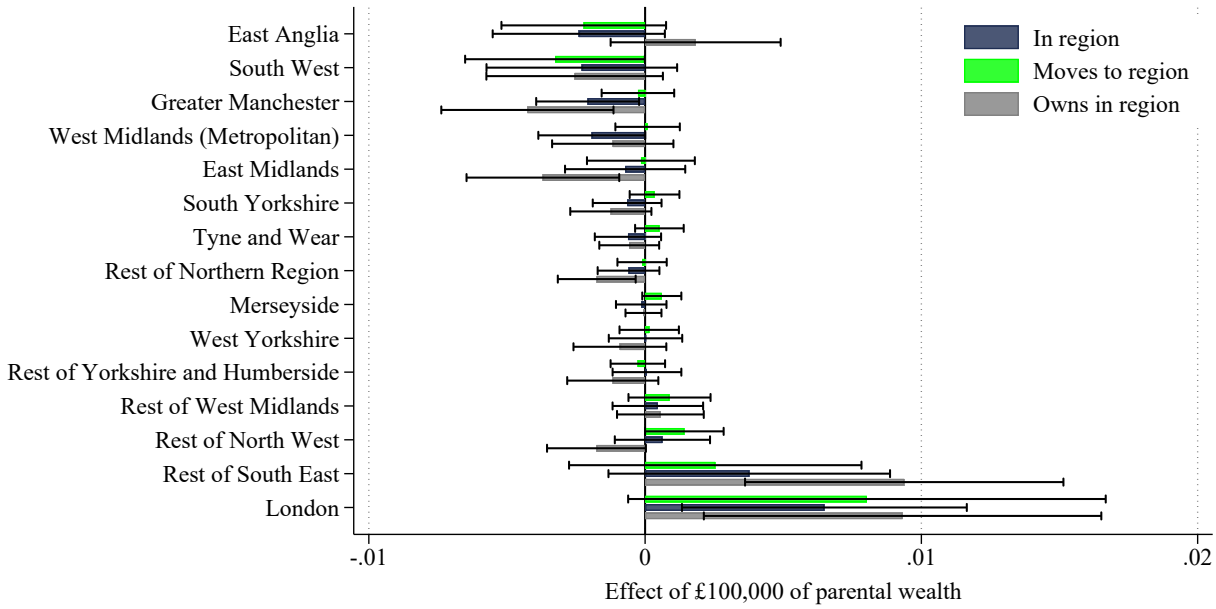
to be more likely buy houses that are detached or semi-detached (typically larger homes). If anything, there is evidence of a shift towards being more likely to buy flats. What instead stands out is that parental housing wealth causes children to be more likely to own a home in London, the most expensive housing market in the country.

5.3 Effects on location choices

We investigate the effect of parental housing wealth on location choices. Figure 6 shows the results of three sets of IV regressions. We use the equivalent of specification (4) in Tables 2 and 3. In the appendix Figure 17 we show estimates using the elasticity instrument. The effects are larger but less precisely estimated. We examine effects on a series of binary indicators for living in each of 15 English regions.[7] We also show an equivalent set of estimates where the outcome is a binary indicator for living and owning a home in a region. The third set of estimates takes the outcome of moving to a region, estimated on the sample of people who grew up outside the region examined. Having higher levels of parental housing wealth makes individuals more likely to live in London and buy a home there. There is also a positive effect on owning in the rest of the South East of England, outside London. We verify that these effects on living in London are driven both by a positive estimated effect of moving to London for those growing up in another region and a decrease in likelihood of leaving region for those growing up in London, although the latter effect is very imprecisely estimated and not shown. The estimates are consistent with the decision of whether to live and own a home in London being a key margin along which parental housing wealth has its impact.

[7]These are the 'government office' regions that form the NUTS1 geography, with some regions separated into their urban and non-urban areas.

Figure 6: Effect of parental housing wealth on living in, moving to, leaving and owning a home in London



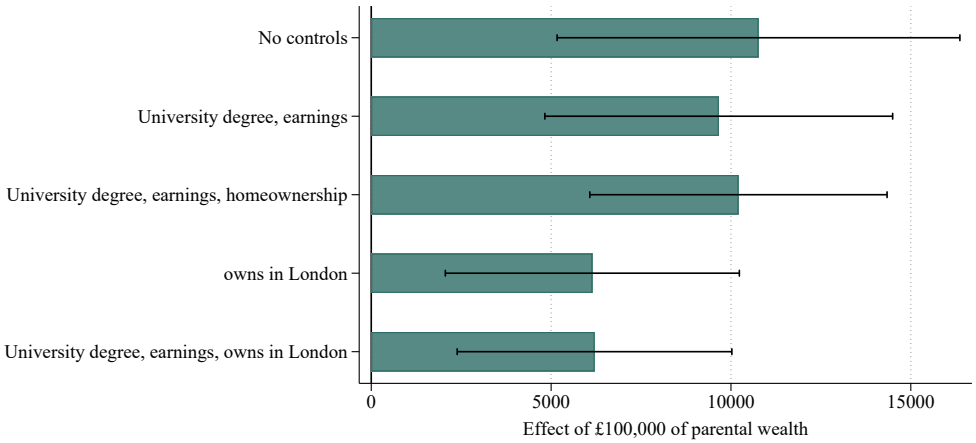
Source: ONS Longitudinal Study. Each bar shows the estimated coefficient on parental wealth from an IV regression analogous to specification (4) in main results tables.

5.4 Understanding the effect of parental wealth on housing wealth

We estimate the effect of parental wealth on a range of other child outcomes that could drive wealth accumulation: whether the individual holds a University degree, whether they live with their parents, whether they have children and their number of children, whether they live with a partner and whether their partner holds a University degree. The results are shown in Appendix Table 17. We find that there is some evidence of a small positive effect of parental wealth on university attendance and living with parents. We do not find effects on whether the individual has a partner. When using the elasticity instrument we find positive effects on the probability of having children and on the number of children, though the latter effect is small and marginally significant.

Figure 7 performs an analysis to assess the mechanisms through which the parental wealth effect may play out. We add sets of potentially mediating variables to our IV specifications. If adding a set of variables reduces the estimated coefficient on parental housing wealth then these variables are taken as mediating channels of the effect of parental housing wealth on child housing wealth. The figure shows that 'human capital' channels (university degree level education and earnings) explain only a small part of the effect. Homeownership itself does not explain the effect, either, in line with the fact that there is not a large effect of parental housing wealth on the extensive margin of homeownership shown above. This implies that parental housing wealth causes young people to buy more expensive houses. We

Figure 7: Mediation of effects on housing wealth



Source: Authors' calculations using the ONS Longitudinal Study. Baseline estimates are from column (4) of Table 3.

have seen that young people are caused to buy houses in London, the highest house price city in the UK. Figure 7 shows that this explains around half the effect of parental housing wealth. Appendix Figure 18 shows the equivalent results for the specification in which the local elasticity is used as the instrument. In this case, owning a home in London can explain almost all of the estimated effect.

5.5 Effects on earnings

The fact that parental housing wealth drives moves to London, a high earning part of the country, raises the possibility that parental wealth affects career choices and therefore earnings. Table 14 shows that we find no evidence for substantial effect on earnings on average. The upper end of the 95% confidence interval in the specification (6) is £1200, equivalent to around 6% of mean annual earnings. However, Table 6 shows that parental housing wealth has a negative effect on employment, while Table 14 shows some evidence of positive effects on earnings for those in work. When looking at log earnings, parental housing wealth is found to increase earnings by 1.3% in specification (4). To investigate these varied effects further, we estimate the effect of parental housing wealth on earning in certain quantiles of the earnings distribution. These quantiles are defined within each cohort. We then examine effects separately for men and women. Figure 8 shows that for men, parental wealth causes a movement away from earning in the middle of the earnings distribution. There is a 1.5ppts increased probability of earning above a level that defines the top 20% of earnings. This increased probability of earning at the top is almost entirely accounted for by an increase in

Table 5: Effects on child's gross annual earnings (£)

	Child gross annual earnings (£)					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	1,323*** (100)	308*** (76)	267** (102)	188* (115)	-14 (418)	339 (430)
Local house prices (£00k)	1,608*** (143)	1,595*** (154)	-17 (200)		-2,126 (1,412)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	93,636	93,076	93,076	93,075	93,076	93,075

Source: ONS Longitudinal Study using earnings imputed from the Labour Force Survey. Note: Statistical significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively. Standard errors are clustered at the level of the local authority.

the probability of earning at a level that puts the individual in the top 5%. For women, there is a marginally significant shift away from being an earner in the second lowest earnings quantile and the second highest earnings quantile, towards being in the bottom 20% i.e. not being in paid work. These results are consistent with two types of effect: a standard income effect of parental wealth that causes some women to reduce the amount they work, and an effect of access to liquidity that affects location and career choices (which we consider further in the next section).

We show direct evidence of effects of parental wealth on occupation choice in Figure 9. This shows the estimated effect of parental wealth on working in certain occupations (these are the 2-digit groups of the Standard Occupational Classification 2010). We examine a set of binary outcomes for working in each occupation, both in London and outside of London. As occupation codes recorded in the census have changed over time we estimate a specification including only the 1974 to 1983 cohort and relying on cross-sectional variation in house prices and outcomes. We use the equivalent of specification (4) in Tables 2 and 3. We plot the estimated effects against the average earnings for a full-time male worker aged 25-to-34 in that occupation, with the marker size proportional to employment in that occupation.

We see that there is a general shift away from middle-paying occupations outside London and towards relatively more highly-paid occupations in London. There is evidence of a shift within occupation towards London-based rather than non-London based employment, with an associated increase in earnings. For example, parental wealth causes an increase in employment in 'Business, Media and Public Service Professionals' in London, and away from the same occupation outside of London, with this occupation attracting 30% higher

Table 6: Effects on whether child in employment

	Child employed					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	0.024***	0.003**	-0.006*	-0.006*	-0.038**	-0.032**
	(0.002)	(0.002)	(0.003)	(0.003)	(0.015)	(0.016)
Local house prices (£00k)	0.001	0.009***	-0.001		-0.007	
	(0.002)	(0.002)	(0.008)		(0.047)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	93,636	93,076	93,076	93,075	93,076	93,075

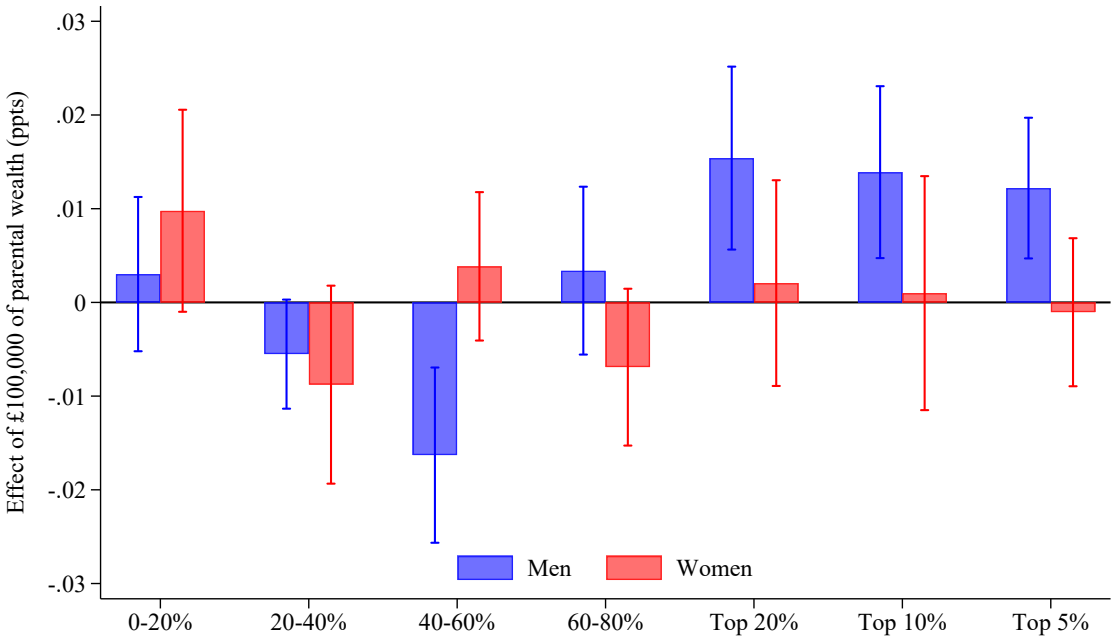
Source: ONS Longitudinal Study. Note: Statistical significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively. Standard errors are clustered at the level of the local authority.

Table 7: Estimated effect on child log annual earnings

	Child log earnings					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	0.047***	0.003*	0.012**	0.013**	0.016	0.036*
	(0.004)	(0.002)	(0.005)	(0.005)	(0.023)	(0.022)
Local house prices (£00k)	0.078***	0.070***	-0.032**		-0.154*	
	(0.005)	(0.005)	(0.012)		(0.087)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	73,544	72,890	72,890	72,888	72,890	72,888

Source: ONS Longitudinal Study using earnings imputed from the Labour Force Survey. Note: Statistical significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively. Standard errors are clustered at the level of the local authority.

Figure 8: Effect of parental wealth on probability of having earnings in selected quantiles

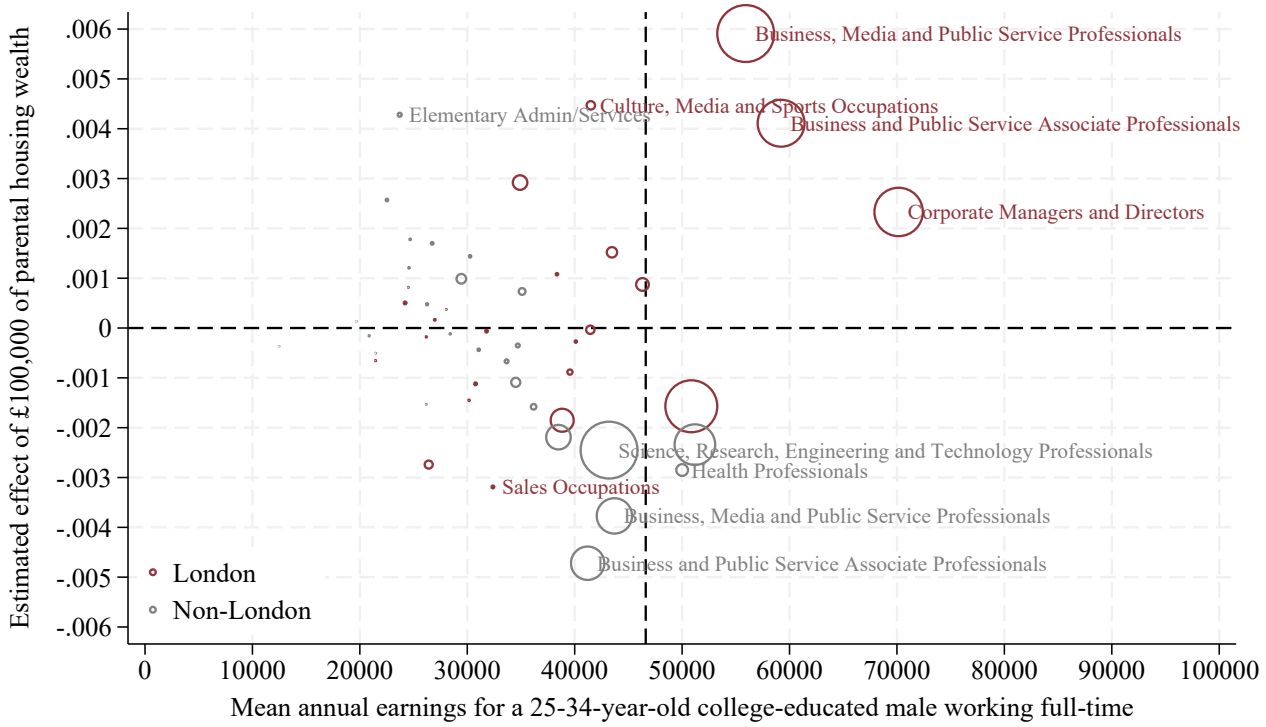


Source: Authors' calculations using the ONS Longitudinal Study with earnings imputed from the Labour Force Survey. Note: estimates are from a set of linear IV regressions equivalent to specification 4 in Table 3.

earnings on average in London. There is also a shift between occupations. We see that parental wealth makes an individual less likely to work in 'Science, Research, Engineering and Technology Professionals' and 'Health professionals' outside of London with no corresponding increase in London. We also see an increase in 'Culture, Media and Sports Occupations' in London, a category that includes artistic, literary and media occupations as well as design and fashion. Notably, this group is below average earning. In the Appendix we present the full set of effects on each occupation group for both local prices and elasticity instruments.

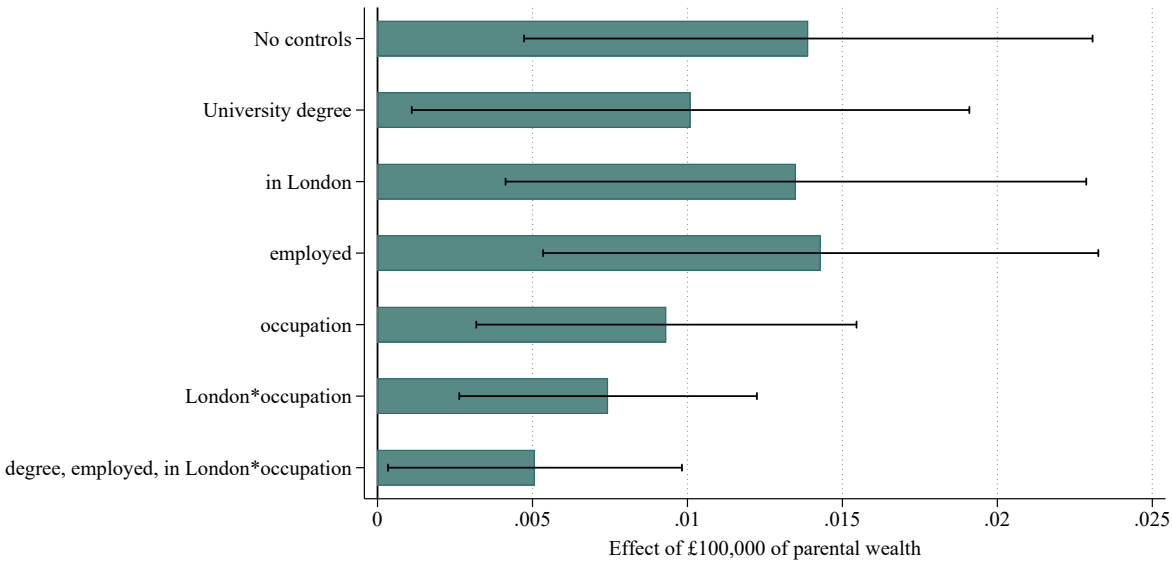
Figure 10 performs a mediation exercise for the effect of parental housing wealth on earnings, equivalent to that carried out for housing wealth. Controls for having university level education and living in London only explain a small minority part of the parental wealth effect. Occupation can by itself explain 33% of the effect. The interaction of being in London and occupation explains 46% of the effect and conditional on this, education and employment have only a modest further explanatory role. This tells us that the joint decision of location and occupation is the main channel whereby parental wealth affects the probability of men being top earners.

Figure 9: Comparison of effect of parental wealth and mean annual earnings of occupations in London and non-London regions



Source: ONS Longitudinal Study with earnings imputed from the Labour Force Survey. Note: Marker size is proportional to share of 25-34-year-old male employment in that occupation group. Dashed black line indicates mean earnings overall. Labeled groups have an effect size that is significant at the 5% level, with the exception of Corporate Managers and Directors.

Figure 10: Mediation of effects of parental housing wealth on male children earning in top 10%



Source: Authors' calculations using the ONS Longitudinal Study with earnings imputed from the Labour Force Survey. Specification equivalent to specification (4) in main results tables.

5.6 Effect on self-employment and business ownership

We show two final sets of results looking at the form of employment. Table 8 shows the parental wealth increases rates of self employment and Table 9 shows that this is explained by rates of self-employment where the individual has employees. This latter group is the nearest measure we have in our data to being a business owner-manager. This may be taken as tentative evidence that parental housing wealth also causes business ownership (this could be an effect on business start-up or an effect of becoming a business partner in a family business).

5.7 The role of wealth transfers

How is it that parental housing wealth affects child outcomes? There are several possibilities. First, parents may make direct transfers of wealth to their children in response to an increase in their housing wealth. This transfer may be a wealth or liquidity shock for the child (or both). Second, children may make different choices in the knowledge that their parents have greater amounts of wealth which may in future be used to insure them against negative shocks or be transferred to them in the form of inheritances. This may make children more willing to engage in high cost or risky activities.

Figure 11 provides evidence that housing wealth gains are in part passed on to children in the form of direct financial transfers. Using the Wealth and Assets Survey, we examine

Table 8: Effects on whether child is self-employed

	Child self-employed					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	0.008***	0.004***	0.005**	0.006**	0.015	0.021*
	(0.001)	(0.001)	(0.003)	(0.003)	(0.011)	(0.011)
Local house prices (£00k)	0.006***	0.005***	-0.003		-0.025	
	(0.001)	(0.001)	(0.005)		(0.035)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	93,636	93,076	93,076	93,075	93,076	93,075

Source: ONS Longitudinal Study. Note: Statistical significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively. Standard errors are clustered at the level of the local authority.

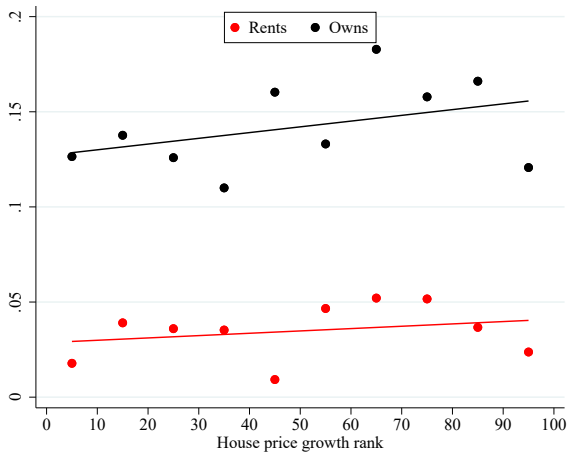
Table 9: Effects on whether child is self-employed with employees

	Child self-employed with employees					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	0.003***	0.001**	0.003**	0.004**	0.019**	0.016**
	(0.000)	(0.001)	(0.001)	(0.001)	(0.007)	(0.006)
Local house prices (£00k)	0.001**	0.002***	-0.007***		-0.005	
	(0.000)	(0.001)	(0.002)		(0.018)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	93,636	93,076	93,076	93,075	93,076	93,075

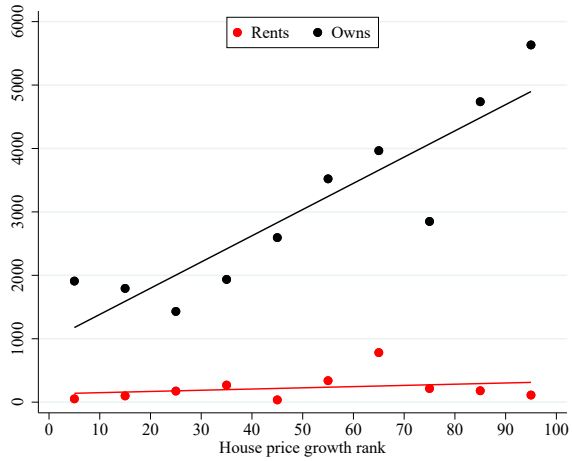
Source: ONS Longitudinal Study. Note: Statistical significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively. Standard errors are clustered at the level of the local authority.

Figure 11: Wealth transfers from parents to children

(a) Whether gives a gift to a child



(b) Value of gifts given over 2 years (£)



Source: Wealth and Assets Survey, round 8. Panel (a) shows the proportion of individuals giving one or more gifts of £500 or more to a child over the two year period up until the date of interview. Panel (b) shows the mean cumulative value of gifts given to children over the same two year period.

the effect of parental house price gains on wealth transfers to children. We use a method very similar to that employed with the LS. Our outcomes of interest are whether an individual gives a gift to their child and the value of gifts given to children, both over a 2-year period. Our explanatory variable of interest is house value. We instrument for house value with local house price growth in parents' current location over the prior 10-year period interacted with homeownership status. We control for individual age, income, education and marital status. While panel (a) shows that faster house price growth is not associated with a larger gap between homeowners and renters in the probability of giving a gift to children, it is associated with a larger gap in the *value* of gifts. Parents therefore respond to housing wealth gains by making higher value transfers to their children. Our IV estimates show that £100,000 of additional parental housing wealth causes an additional £1,644 of transfers over a 2-year period.

6 Model

We set out a theoretical framework to conceptualise the relationships between house prices and intergenerational mobility in equilibrium. We incorporate the idea of 'location as an asset' (Bilal and Rossi-Hansberg (2021)) whereby investing in a location by moving there, and paying housing costs, yields future labour market returns that depend on the location's productivity. In our framework there are overlapping generations of parents and children and parents can make gifts and bequests to their children. In the presence of constraints

on what can be borrowed on mortgage markets and financial markets, the level of financial assets made available at different points in the lifecycle through parental transfers becomes a determinant of location choices and therefore lifetime income.

6.1 Population structure

Time is discrete and with an infinite horizon. An individual in the economy lives for three periods of equal duration: 'young' life, 'working-life' and 'retirement'. Each individual is a member of a generation, defined as the collection of individuals who are young in a given period, t. There are therefore three generations alive in a given period. There is a unit mass of dynasties with each dynasty having one member of each generation. For individuals within a dynasty who are members of consecutive generations, the older individual is referred to as the 'parent' of the individual in the younger generation (who is referred to as their 'child').

6.2 Endowments

Individuals have an exogenous component of income in their young period, $y^y \in [\underline{y}^y, \bar{y}^y]$, in mid-life, $y^m \in [\underline{y}^m, \bar{y}^m]$, and in their retirement, $y^r \in [\underline{y}^r, \bar{y}^r]$. Each individual has a level of skill, $s \in [\underline{s}, \bar{s}]$ with $\underline{s} > 0$. An individual is characterised by a quadruplet, (y^y, y^m, y^r, s), and a dynasty is characterised by a sequence of quadruplets, $\{(y^y_t, y^m_{t+1}, y^r_{t+2}, s_{t+1})\}_{t=0}^{\infty}$. Assume a time-invariant first-order Markov transition function for the evolution of income and skills within a dynasty, which we denote $g(y^y_{t+1}, y^m_{t+2}, y^r_{t+3}, s_{t+2} | y^y_t, y^m_{t+1}, y^r_{t+2}, s_{t+1})$, and which is assumed to be weakly continuous in y^y, y^m, y^r and s (i.e. it is Feller continuous). This function determines the conditional distribution of income and skills of a child given those of their parent. We can think of this function as capturing the 'nature' and 'nurture' channels that generate the persistence of human capital across generations that exists by the time children leave the parental home and which is the focus of much of the literature on intergenerational mobility.

Given the compactness of the type space and Feller continuity of the Markov kernel, there exists a stationary distribution of outcomes $\pi(y^y_t, y^m_{t+1}, y^r_{t+3}, s_{t+1})$ and a corresponding stationary joint distribution of outcomes across two consecutive generations, denoted $f(y^y_t, y^m_{t+1}, y^r_{t+2}, s_{t+1}, y^y_{t+1}, y^m_{t+2}, y^r_{t+3}, s_{t+2})$, with corresponding cumulative distribution function F. We assume that F describes the distribution of incomes and skills for the living individuals in the economy at all times.

6.3 Locations and geographic mobility

There is a continuum of locations indexed $z \in [\underline{z}, \bar{z}]$ with $z \geq 0$. The density of cities with characteristic z is given by h with cumulative density H. The skill of an individual determines the financial benefits from locating in cities. We assume that the returns for an middle-aged individual of skill s to living in city z are given by zs.

When young, children are living with their parents i.e. $z_t^y = z_t^m$. They can then choose to move to a different location for mid-life, z_{t+1}^m. Individuals remain in the same location for their retirement: $z_{t+1}^m = z_{t+2}^r$. The density of dynasties living in location with productivity z is given by $L(z)$.

6.4 Housing

To live in a particular location for mid-life and retirement, individuals must purchase a house there. Houses must be purchased in advance, in the young period. House prices are given by a house price function $q(z)$. There is a housebuilding sector which buys and sells units of housing at a price that is given by a strictly increasing function of population density, Q, so that $q(z) = Q(L(z))$.

Mortgages are available to cover a fraction $1 - \xi$ of the purchase price. Individuals must therefore pay a downpayment of $\xi q(z)$ when they are young in order to live in location z for mid-life onwards. The mortgage must be repaid with interest at rate R in mid-life i.e. there is a payment of $R(1 - \xi)q(z)$. Individuals can borrow against the equity in their house during their retirement (a 'reverse mortgage') as described in more detail below.

6.5 Financial assets and wealth transfers

Individuals can save and borrow using a risk free bond with exogenous return $R > 1$. Before they have paid off their mortgage, the choice of level of the risk-free asset when young, a^y, and when in mid-life, a^m, are subject to a constraint $a^y, a^m > \underline{a}$.

Parents can make wealth transfers to their children in the form of gifts and bequests. Gifts, g^m are made during mid-life, taxed at a rate τ^g, and therefore received by the child when young (denoted $g_{t+1}^y = (1 - \tau^g) g_t^m$). Bequests, b, are made at the end of life, taxed at a rate τ^b and therefore received by the child as they enter retirement ($b_{t+1}^r = (1 - \tau^b) b_t$.

Bequests are the sum of financial assets and the individual's house i.e. $b = Ra^r + q(z^r)$. Bequests cannot be negative i.e. the individual can extract up to the entirety of their home equity through the reverse mortgage.

Government uses the revenues from gift and bequest taxation to fund lump-sum transfers to individuals when young, T^y.

6.6 Preferences and household problem

We assume that utility from consumption, gifts and bequests are given by concave functions, u, v and w, satisfying the inada conditions. The time discount factor is denoted β. Dynasties are not altruistic but have a 'warm glow' from gifts and bequests.[8] The household problem is to solve

$$
\begin{aligned}
V(y^y, y^m, y^r, s, g^y, b^m) &= \\
\max_{c^y, c^m, c^r, z^m, g^m, b} u(c^y) + \beta u(c^m) + \beta^2 u(c^r) &+ \beta v((1-\tau^g)g^m) + \beta^2 w((1-\tau^b)b) \\
\text{s.t. } c^y + a^y + \xi q(z^m) &= y^y + g^y + T^y, \\
c^m + g^m + a^m + R(1-\xi)q(z^m) &= y^m + z^m s + Ra^y + b^r, \\
c^r + a^r &= y^r + Ra^m, \\
b &= q(z^m) + Ra^r, \\
a^y, a^m &\geq \underline{a}, \\
b &\geq 0.
\end{aligned}
$$

6.7 Definition of equilibrium

To simplify notation we denote the vector of exogenous states (y^y, y^m, y^r, s) as $\mathbf{y}$ and the vector of endogenous states (z^m, g^y, b^m) as $\mathbf{x}$. Denote the household optimal decision functions that determine the next generation's endogenous states as $\mathbf{x}^*$. Given g, R, Q, H, a stationary equilibrium of this economy is

- a set of decision functions $c^{y*}, c^{m*}, c^{r*}, g^{m*}, z^{m*}, b^*$
- a house price function $q(z)$
- a joint distribution, G over $(z, g^y, b^m, y^y, y^m, y^r, s) \equiv (\mathbf{x}, \mathbf{y})$
- tax rates τ^g and τ^b and transfers T^y

such that

- the decision functions solve the household problem;
- house prices are such that $q(z) = Q(L(z))$;
- the government budget balances in each period

[8] By specifying a warm glow of utility from transfers made, our model does not generate the strategic interactions between parents and children that would arise under altruism. While not conclusive, there is a considerable amount of evidence refuting altruism in the context of wealth transfers and in favour of a 'warm glow' motive (cite Altonji, Sturrock, others.)

- L satisfies, for all $z \in [\underline{z}, \bar{z}]$,

$$\int_{\underline{z}}^{z} L(z) dH(z) = \int_x \int_y \mathbb{1}[z^{m*}(\mathbf{x}, \mathbf{y}) \leq z] dG(\mathbf{x}, \mathbf{y}).$$

- G satisfies for all $(\mathbf{x}, \mathbf{y})$,

$$dG(\mathbf{x}', \mathbf{y}') = \int_x \int_y \mathbb{1}\left[\mathbf{x}^*(\mathbf{x}, \mathbf{y}) = \mathbf{x}'\right] \cdot g(\mathbf{x}' \mid \mathbf{x})\, dG(\mathbf{x}, \mathbf{y}).$$

The final condition states that the distribution G in combination with the decision functions for the endogenous states, $\mathbf{x}^*$, and and law of motion for the exogenous states, g, reproduces itself. Under certain regularity conditions, an equilibrium of this economy exists. If Q is strictly convex then this equilibrium is unique. Appendix B discusses these points in detail.

6.8 Properties of equilibrium

We derive some significant properties of any equilibrium. We denote optimal choices with asterisks. We have a standard financial Euler equation for consumption between young and mid-life:

$$\frac{u'(c^{y*})}{\beta u'(c^{m*})} \geq R. \tag{5}$$

This holds with equality when $a^{y*} > \underline{a}$ i.e. the individual is 'unconstrained' in their choice of financial assets. We assume for simplicity of exposition in what follows that individuals are unconstrained in their choice of assets held from mid-life into retirement i.e. $a^{m*} > \underline{a}$, meaning it is always optimal to save for retirement. This can be expressed in terms of y^m be sufficiently large compared to y^r.

Due to free mobility, there is a 'mobility euler' equation that equates the marginal cost of moving to a more expensive area (the marginal reduction in consumption utility today due to spending more on the downpayment) with its marginal gain (the higher future consumption due to the higher earnings, net of mortgage repayments, and the higher resale value):

$$u'(c^{y*})\xi q'(z) = \beta u'(c^m)[s - R(1-\xi) + \frac{1}{R^2}] \tag{6}$$

Combining the financial euler equation and mobility euler equations gives us the following inequality:

$$\underbrace{q'(z^{m*})}_{\substack{\text{marginal} \\ \text{purchase cost}}} \leq \underbrace{\frac{s}{R}}_{\substack{\text{marginal} \\ \text{earnings gain}}} + \underbrace{\frac{q'(z^{m*})}{R^3}}_{\substack{\text{marginal} \\ \text{re-sale gain}}}. \tag{7}$$

This condition holds with equality for individuals who are unconstrained in their choice of financial assets and inequality for those who are constrained. Individuals who are unconstrained in their choice of financial assets equate the financial returns to investing in a better location with the returns available in financial markets. However, for those who are constrained, the marginal cost of moving to a more productive location is lower than the financial returns discounted at market interest rates because the costs must be paid at a time in life when they are credit constrained and the marginal utility of consumption is relatively high.

Taking Eq. (7) and assuming $q(\cdot)$ is strictly increasing and convex (as must happen in equilibrium on any segment on which unconstrained agents locate, as shown in Appendix B.1), we obtain a matching function $\mathbb{Z}^u(s)$ that maps each skill level to a unique location for unconstrained individuals and is strictly increasing in s. When an individual's choice of financial assets is unconstrained, they move to the area that maximises their lifetime income net of housing costs. The complementarity of the productivity of a location and skill level of an individual means that those with higher skills gain more from moving to more productive locations. Conditional on skill level and being unconstrained, there is a unique level of future location, independent of parental background and initial income. For constrained individuals, we obtain a matching function, $\mathbb{Z}^c(g^y, b^r, y^y, y^o, s)$. Unlike for unconstrained individuals, location choice depends on exogenous financial resources in young and mid-life.

We emphasise some properties of these matching functions. First, the inequality in Eq. (7) implies that $\mathbb{Z}^c(g^y, b^r, y^y, y^o, s) < \mathbb{Z}^u(s)$ i.e. constrained individuals choose less productive locations than unconstrained individuals of the same skill level. This happens because those who are constrained are willing to trade-off somewhat lower lifetime income in exchange for reducing the size of the downpayment they must make when young. Second, for constrained individuals, the matching function is increasing in skill and current financial resources, and decreasing in future exogenous financial resources.[9] In particular, this means that the productivity of their future location and therefore their future income is increasing in gifts received but is decreasing in bequests received. That is,

$$\frac{\partial \mathbb{Z}^c(g^y, b^r, y^y, y^o, s)}{\partial g^y} > 0, \quad \frac{\partial \mathbb{Z}^c(g^y, b^r, y^y, y^o, s)}{\partial b^r} < 0. \tag{8}$$

This is because gifts help to ease liquidity constraints allowing the child to choose a location that makes the most of their skills without having to endure too low consumption when

[9] Increasing in current income and gifts is a straightforward consequence of the budget constraint and being constrained. If the matching function for constrained individuals were not increasing in skill then we would have a violation of the mobility Euler equation. Analogously for future income and bequests received.

young. However, future bequests reduce the marginal value of future income and therefore lead a child to prioritise current consumption rather than investing in a productive location. This mechanism whereby bequests received reduce lifetime earned income of the receiver is distinct from the standard 'Carnegie conjecture' channel whereby individuals choose to increase their leisure time in response to a positive wealth shock.

Gifts and bequests received from parents are both an increasing function of parents' net wealth, which we define as $w_t^p = q(z_{t-1}^m) + Ra_{t-1}^y$. As a consequence, the effect of an increase in a parent's wealth has an ambiguous effect on their child's lifetime income. The overall effect depends on the relative pass-through of parental wealth into gifts and bequests and the effect that any increases in gifts and bequests has on their child's location choice. Note that even in cases where an increase in parental wealth leads a child to move to a lower productivity location and therefore reduce their lifetime earned income, the lifetime utility of that child is increased by an increase in their parents' wealth.

6.9 Implications for intergenerational mobility

We define an individual's lifetime income as the discounted sum of all exogenous and endogenous income sources: $y^l = y^y + \frac{y^m}{R} + \frac{y^r}{R^2} + \frac{sz^m}{R}$. We have seen that for individuals who are not borrowing constrained, location choice depends only on skill level and not parental transfers received. This implies that if there were no limit on borrowing in financial markets, intergenerational persistence in location choice or the endogenous component of income would be driven only by the exogenous intergenerational persistence of skills. Consequently, the intergenerational persistence of lifetime income and the relationships between parental wealth and child location, lifetime income and wealth would be be a function solely of the evolution of exogenous components of income and of skills.

In an equilibrium without parental transfers, which could occur either under 100% gift and bequest taxation or if parents do not value transfers to children, location choices and therefore lifetime income would be a function of exogenous endowments (skills and exogenous parts of income). This would also mean that the intergenerational persistence of lifetime income and the relationships between parental wealth and child outcomes would be be a function solely of the evolution of exogenous components of income and of skills.

The combination of borrowing constraints and parental gifts and bequests generates a role for parental wealth to affect child outcomes via young people's location choices. Given that parental wealth has an ambiguous effect on child location choices and lifetime income, it is also theoretically ambiguous whether this mechanism will act to increase or decrease the intergenerational persistence of location, wealth and lifetime income.

6.10 The effect of interest rates on geographic and intergenerational mobility

How do house prices affect intergenerational persistence in our model? The distribution of house prices is an endogenous object so we consider comparative statics for parameters that would influence the steady-state distribution of house prices.

A decline in interest rates increases the present value of moving to a given location for an unconstrained individual and does so more for locations with higher productivity. Provided that there are some unconstrained individuals in each location and that heterogeneity in skills are not too great, this will result in house prices that are more strongly increasing in productivity. To see this, assume $\underline{s} = \overline{s} = s$ and differentiate Eq. (7) with respect to z to yield

$$\frac{dq^{'}(z)}{dR} = \frac{-s[1+\frac{2}{R^3}]}{[R-\frac{1}{R^2}]^2} < 0. \tag{9}$$

By continuity the house price schedule is also steeper for $\underline{s} - \overline{s}$ sufficiently small.

The change in the distribution of house prices has two effects: first, for given level of parental transfers, it will mean individuals who are (or become) borrowing constrained choose to move to a lower productivity location; second, it will expand the differences in parental wealth, and therefore wealth transfers received, between those with parents living in higher or lower productivity locations. The former point means that, holding skills constant, parental wealth transfers will have a greater influence on location choices. The latter point means that the differences in wealth transfers by parental background will increase. The net result is that the effect of parental background on location choices and income is increased. If the pass-through of parental wealth to gifts is sufficiently strong then we would expect a decline in geographic and intergenerational mobility as a fall in interest rates means that parental housing wealth becomes a stronger determinant of location choices and income. In principle, if there is a great enough pass-through into bequests instead, then a fall in interest rates could instead increase geographic and intergenerational mobility.

6.11 The role of the elasticity of housing supply

The elasticity of housing supply governs the how far a change in interest rates is reflected in changes in the distribution of house prices or changes in the quantity of housing in different locations. Considering again the case with no heterogeneity in skills, substituting $q^{'}(z) = Q^{'}(L(z))L^{'}(z)$ into Eq. (7) and totally differentiating with respect to R yields

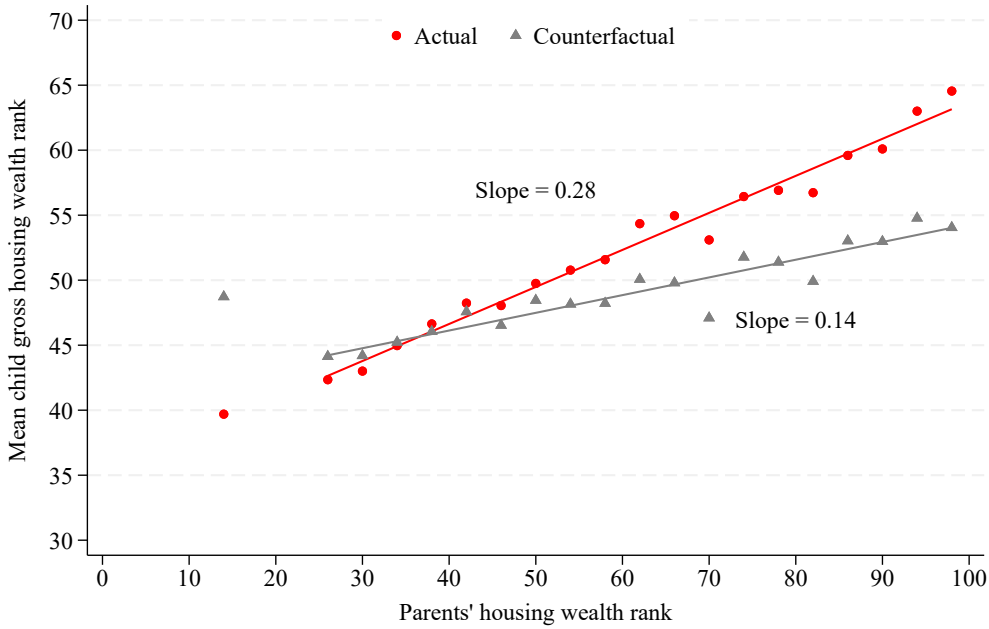
$$\frac{dL^{'}(z)}{dR}Q^{'}(L(z)) + L^{'}(z)Q^{''}(L(z))\frac{dL(z)}{dR} = \frac{-s[1+\frac{2}{R^3}]}{[R-\frac{1}{R^2}]^2}. \tag{10}$$

Assuming that the second-order term $Q^{''}(L(z))$ is small, and noting that the right-hand-side is a constant, we see that the effect of interest rates on the gradient of the population mass in productivity is smaller when $Q^{'}(L(z))$ is higher i.e. when housing supply is less price elastic. Intuitively, if more housing can be readily supplied at a given price, then an increase in the demand for housing in more productive areas that is driven by a fall in interest rates will be accommodated by more building.

7 Counterfactual simulations

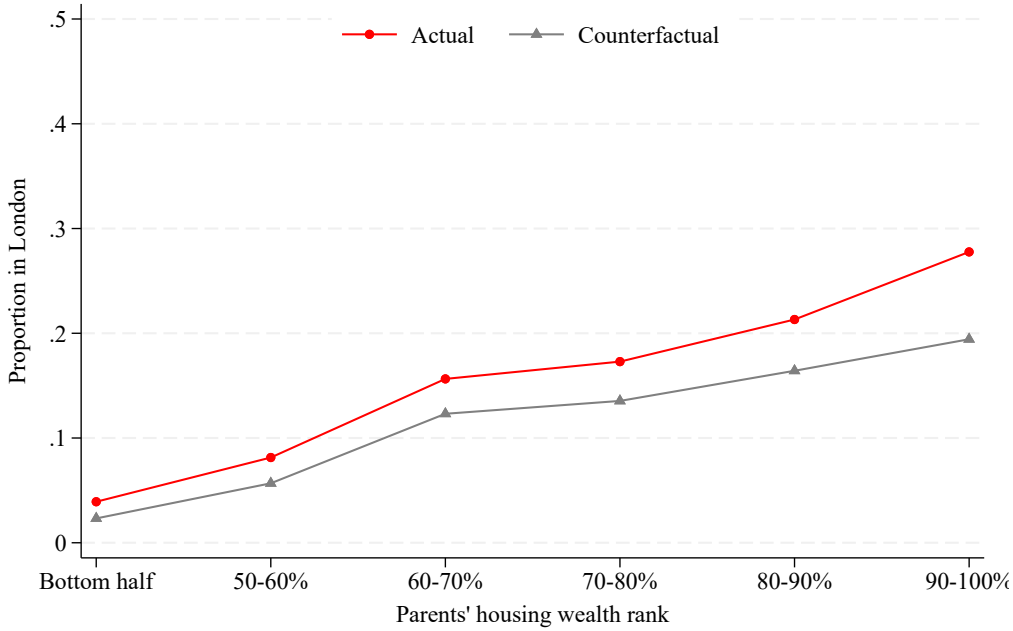
We use our estimates from specification (5) in Table 3 to produce a counterfactual for the rank-rank relationship between parents' and children's housing wealth in the 'post-boom' cohort in the case where there had been no housing boom. To do this, we subtract from each observation the estimated effect of the real-terms change in local house prices and appreciation in their parents' housing wealth since 1991 on their own housing wealth. We then re-rank parents and children given their counterfactual levels of housing wealth. As shown in Figure 12, the rank-rank slope is higher in the actual (0.28) than the counterfactual (0.14). We find that the house price boom doubled the rank-rank measure of intergenerational wealth persistence. We conduct further counteractual simulations where the outcomes are child earnings and whether the child lives in London. In the case of earnings, there is only a modest effect, reflecting the fact that parental wealth both increases the probability of not being in employment and increases the probability of being a top earner. The rank-rank relationship between parental wealth and child earnings is increased by 9% as a result of the house price boom (as shown in Appendix Figure 25). In the case of living in London, we find that the house price boom increased the probability that the child a parent in the wealthiest tenth lives in London from 20% to 28% (Figure 13). There is minimal change for those with less-wealthy parents, a substantial stregthening in the relationship between child location and parental background.

Figure 12: 'No boom' counterfactual simulation of average housing wealth rank by parental housing wealth rank



Source: Authors' calculations using the ONS Longitudinal Study. Counterfactuals are based on estimates are from column column 6 of Table 3.

Figure 13: 'No boom' counterfactual simulation of proportion living in London by parental housing wealth rank



Source: Authors' calculations using the ONS Longitudinal Study. Counterfactuals are based on estimates are from column column 6 of Table 3.

8 Conclusion

We have shown that the UK house price boom has increased the intergenerational persistence of wealth and location. While the effect on the intergenerational persistence of earnings is more muted, this reflects the fact that higher parental wealth increases the probability of being a top earner and of not being employed. Higher prices directly reduced the homeownership rate of young people. At the same time, increased levels of parental wealth had a positive effect on the wealth of the children of homeowners. As house price increases were unequal and higher for those with high initial levels of wealth, this increased inequalities between those with more wealthy and less wealthy parents. A large proportion of the effect on wealth and top earnings happens through effects on location and career decisions. Those with wealthier parents are more likely to move to London, a high earning and high house price part of the country, and to buy a house and enter certain higher-paying careers there.

Further work could proceed along three lines. First, there are several channels through which parental wealth could affect children's choices and further research could disentangle the roles of direct parental wealth transfers (which we show are important) and effects through two types of expected future wealth transfers: the provision of parental insurance of income and wealth shocks and increases in the expected value of inheritances received when parents pass away. Second, an estimated model of location, housing and career choices of the type set out in section 6 could be used to quantify the implications of the effects found here for inequality and social mobility over the lifecycle. Such an estimated model would allow us to study the impact of policies on the process investigated in this paper, including those policies aiming to alleviate liquidity constraints for home purchase, the taxation of wealth and wealth transfers, and policies that increase the supply elasticity of housing. The model set out in this paper can generate an effect of house prices on misallocation of skills across areas. Estimating complementarities between locations and skills and embedding these within an estimated version of the model set out in this paper would allow us to quantify the overall implications of high house prices for national productivity via this effect on the allocation of skills across places.

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A Supplementary results

Table 10: OLS estimates for association between parents housing wealth increase since 1995 and child's outcomes at age 28, controlling for parents' earnings rank andregion

	Homeowner	House wealth	Mortgage debt	Net house wealth
Δ parents' house wealth (£00k)	0.020*	21,252***	1,742	19,510***
	(0.008)	(4,720)	(1,323)	(5,248)
Observations	918	918	918	918

	London/SE	University	Earning rank	Saving rate	Partnered
Δ parents' house wealth (£00k)	0.016**	0.043***	0.012*	0.008*	-0.007
	(0.005)	(0.007)	(0.005)	(0.004)	(0.008)
Observations	918	918	918	918	918

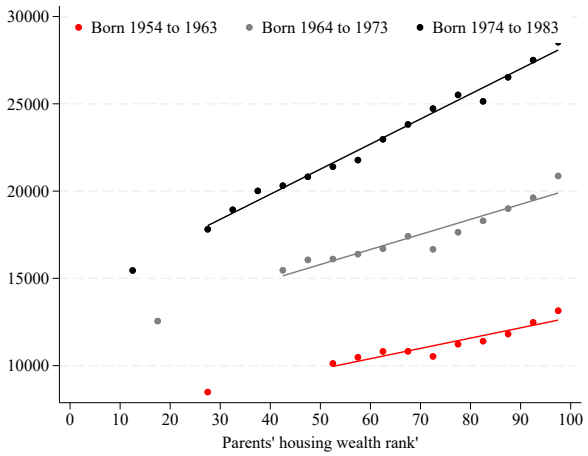
Source: UK Household Longitudinal Study. Standard errors in parentheses. Sample as defined in Levell and Sturrock (2023). All specifications control for parents' rank by mean earnings and year and commuting zone fixed effects. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: Estimated effect on child living with parents

	Child lives with parents					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	-0.000	0.004***	0.010***	0.008***	0.014	-0.002
	(0.001)	(0.001)	(0.003)	(0.003)	(0.012)	(0.011)
Local house prices (£00k)	0.003	-0.002	0.000		0.062*	
	(0.003)	(0.002)	(0.005)		(0.037)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	93,636	93,076	93,076	93,075	93,076	93,075

Source: ONS Longitudinal Study with earnings imputed using the Labour Force Survey. Note: Statistical significance at the 10%, 5% and 1% levels are denoted by *, ** and ***, respectively. Standard errors are clustered at the level of the local authority.

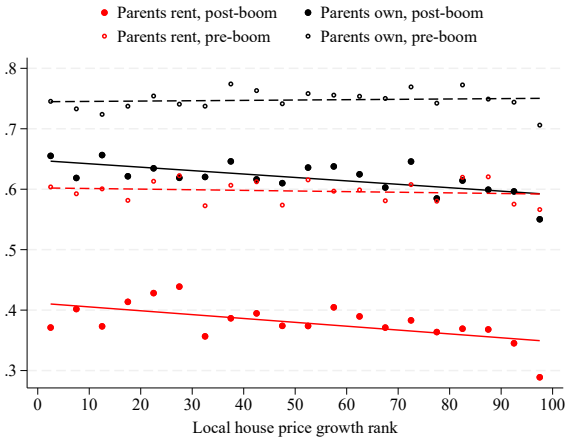
Figure 14: Mean annual earnings at age 28 to 27 by parental housing wealth rank and cohort



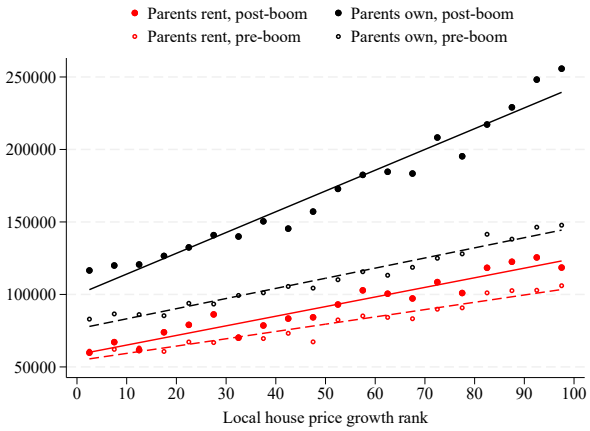
Source: ONS Longitudinal Study using earnings imputed from the Labour Force Survey. Note: Renting parents given mean rank of renting parents. Lines fitted within children of homeowners.

Figure 15: Relationship between parent's local house price growth and children's outcomes in pre- and post-boom generations

(a) Homeowner



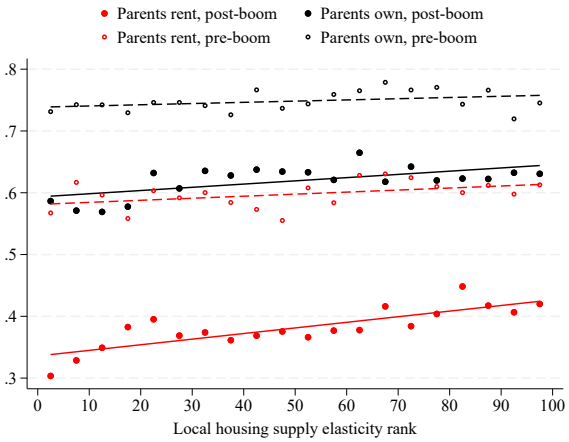
(b) Gross housing wealth



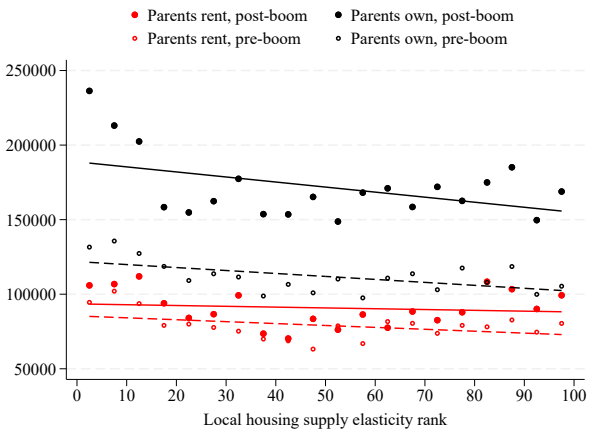
Source: Authors' calculations using the ONS Longitudinal Study

Figure 16: Relationship between parent's local housing supply elasticity and children's outcomes in pre- and post-boom generations

(a) Homeowner



(b) Gross housing wealth



Source: Authors' calculations using the ONS Longitudinal Study

A.1 Main results including an additional 'mid-boom' cohort, born 1964-1973

Table 12: Effects on whether child is a homeowner: inclusion of 'mid-boom' cohort

	Child is a homeowner					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	0.054***	0.014***	-0.006	-0.001	-0.018	0.014
	(0.004)	(0.002)	(0.004)	(0.005)	(0.018)	(0.018)
Local house prices (£00k)	-0.044***	-0.031***	-0.008		-0.122**	
	(0.002)	(0.002)	(0.008)		(0.061)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	149,083	148,501	148,500	148,499	148,500	148,499

Source: ONS Longituinal Study. Note: Statistical significance at the 10%, 5%, 1% levels are denoted by *, ** and ***, respectively. Standard errors are clustered at the level of the local authority and shown in parentheses.

Table 13: Effects on child's gross housing wealth: inclusion of 'mid-boom' cohort

	Child gross housing wealth (£)					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	17,459***	8,502***	8,177**	9,128**	10,259*	13,414**
	(1,019)	(1,584)	(3,019)	(3,545)	(5,734)	(6,198)
Local house prices (£00k)	37,842***	39,579***	3,526		-1,668	
	(1,955)	(2,213)	(5,830)		(15,505)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	149,083	148,501	148,500	148,499	148,500	148,499

Source: ONS Longituinal Study. Note: Statistical significance at the 10%, 5%, 1% levels are denoted by *, ** and ***, respectively. Standard errors are clustered at the level of the local authority and shown in parentheses.

Table 14: Effects on child's gross annual earnings (£): inclusion of 'mid-boom' cohort

	Child gross annual earnings (£)					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	1360*** (86)	229*** (69)	194** (94)	100 (111)	-218 (449)	259 (436)
Local house prices (£00k)	1718*** (106)	1831*** (117)	155 (210)		-2987* (1642)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	149,618	149,476	149,475	149,474	149,475	149,474

Source: ONS Longituinal Study with earnings imputed using the Labour Force Survey. Note: Statistical significance at the 10%, 5% level and 1% levels are denoted by *, ** and ***, respectively. Standard errors are clustered at the level of the local authority.

Table 15: Effects on whether child in employment: inclusion of 'mid-boom' cohort

	Child employed					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	0.026*** (0.002)	0.001 (0.001)	-0.006* (0.003)	-0.007** (0.003)	-0.041*** (0.016)	-0.030* (0.017)
Local house prices (£00k)	0.002 (0.002)	0.011*** (0.002)	0.003 (0.008)		-0.013 (0.050)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	149,083	148,501	148,500	148,499	148,500	148,499

Source: ONS Longituinal Study. Note: Statistical significance at the 10%, 5% and 1% levels are denoted by *, ** and ***, respectively. Standard errors are clustered at the level of the local authority.

Table 16: Estimated effect on child log annual earnings: inclusion of 'mid-boom' cohort

	Child log earnings					
	(1)	(2)	(3)	(4)	(5)	(6)
Parents house wealth (£00k)	0.051***	0.002	0.012**	0.014**	0.022	0.035
	(0.003)	(0.002)	(0.006)	(0.005)	(0.022)	(0.023)
Local house prices (£00k)	0.087***	0.081***	-0.032**		-0.111	
	(0.004)	(0.004)	(0.012)		(0.080)	
Controls	No	Yes	Yes	Yes	Yes	Yes
LA×owner FE	No	No	Yes	Yes	Yes	Yes
LA×cohort FE	No	No	No	Yes	No	Yes
Instrument	No	No	Local p	Local p	Elasticity	Elasticity
Observations	117,723	117,046	117,045	117,042	117,045	117,042

Source: ONS Longituinal Study with earnings imputed using the Labour Force Survey. Note: Statistical significance at the 10%, 5% and 1% levels are denoted by *, ** and ***, respectively. Standard errors are clustered at the level of the local authority.

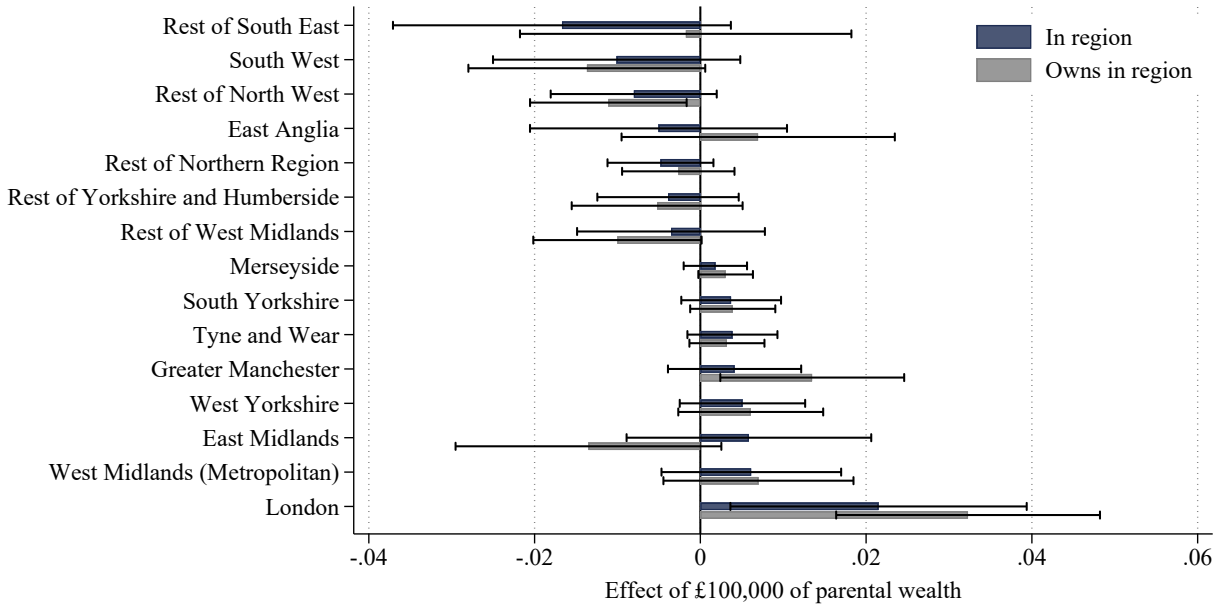
A.2 Further supplementary results

Table 17: Estimated effect of parental wealth on child outcomes

	University degree	Lives with parents	Has children	Number of children	Lives with partner	Partner has degree
Local p as instrument	0.009**	0.008***	0.005	0.012	-0.003	-0.002
	(0.004)	(0.003)	(0.004)	(0.010)	(0.004)	(0.003)
Elasticity as instrument	0.018	-0.002	0.041**	0.091*	0.010	0.026**
	(0.015)	(0.011)	(0.020)	(0.049)	(0.018)	(0.013)
Observations	93,050	93,075	93,075	93,076	93,075	93,069

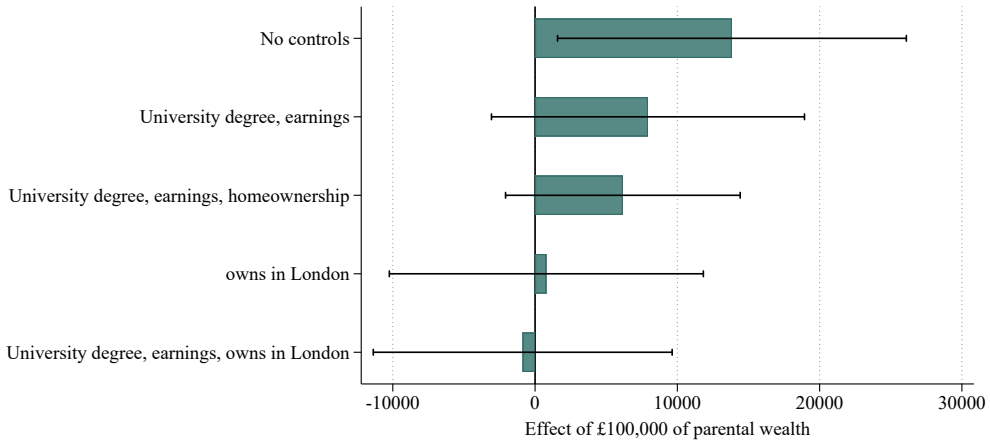
Source: ONS Longituinal Study. Statistical significance at the 10%, 5%, and 1% levels are denoted by *, **, and ***, respectively. Standard errors are clustered at the level of the local authority. Estimates are from the equivalents of specifications (4) and (6) from the main results tables.

Figure 17: Effect of parental wealth on living in and owning a home in London: elasticity instrument



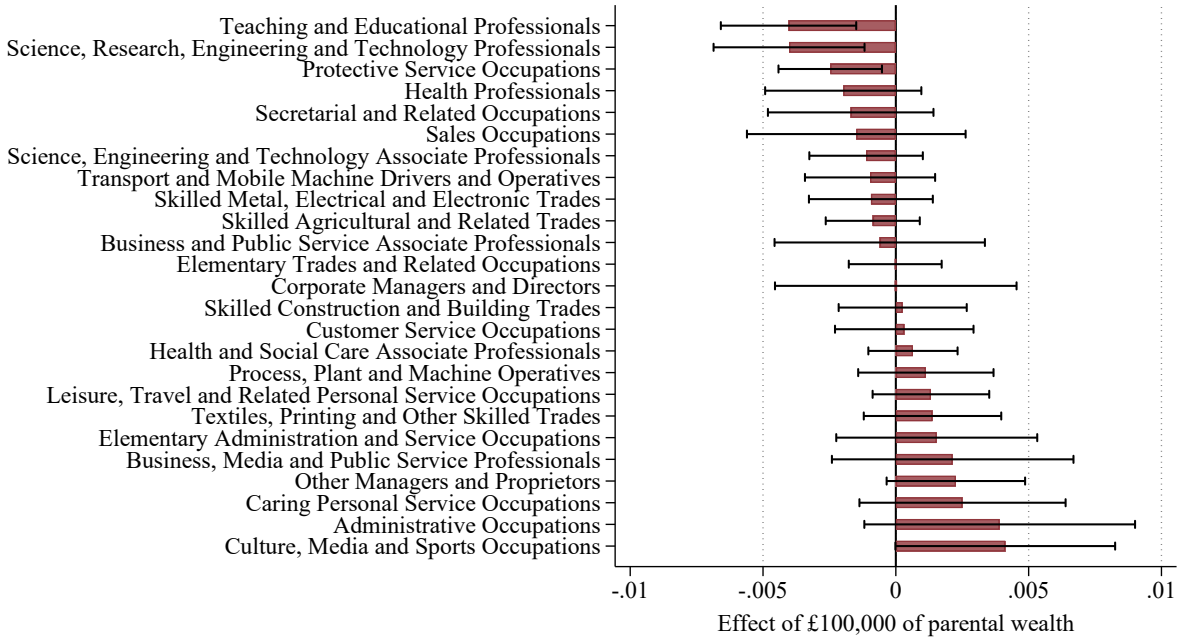
Source: ONS Longitudinal Study

Figure 18: Mediation of effects on housing wealth: local elasticity of housing supply as instrument



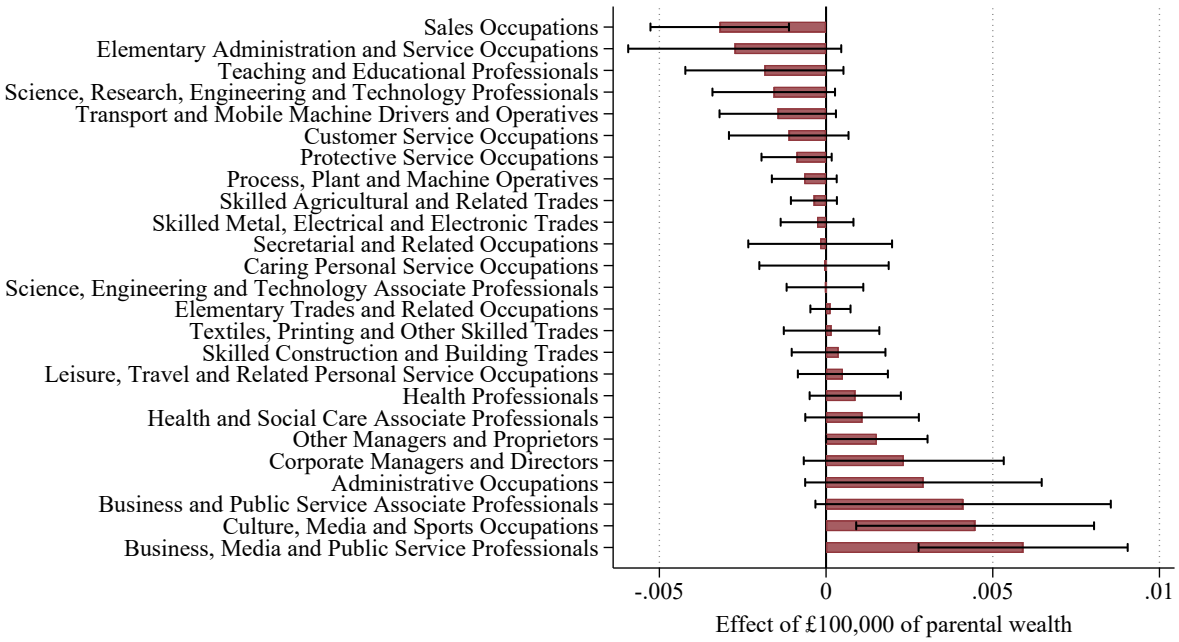
Source: Authors' calculations using the ONS Longitudinal Study. Baseline estimates are from column (6) of Table 3.

Figure 19: Effect of parental wealth on working in occupations



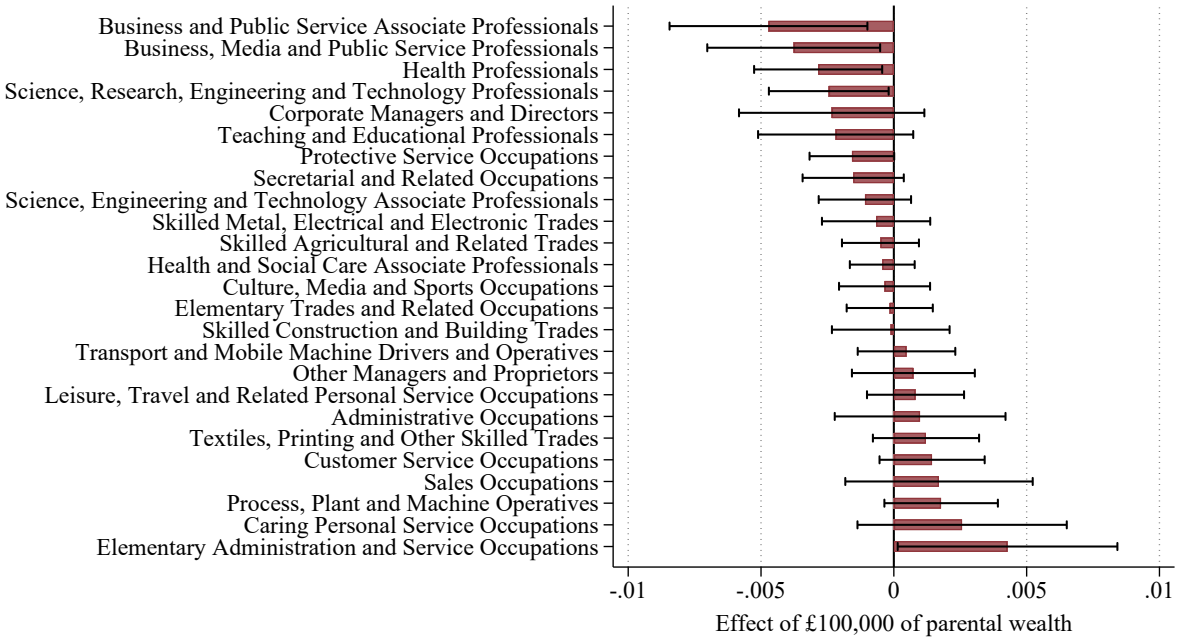
Source: ONS Longitudinal Study

Figure 20: Effect of parental wealth on working in occupations in London



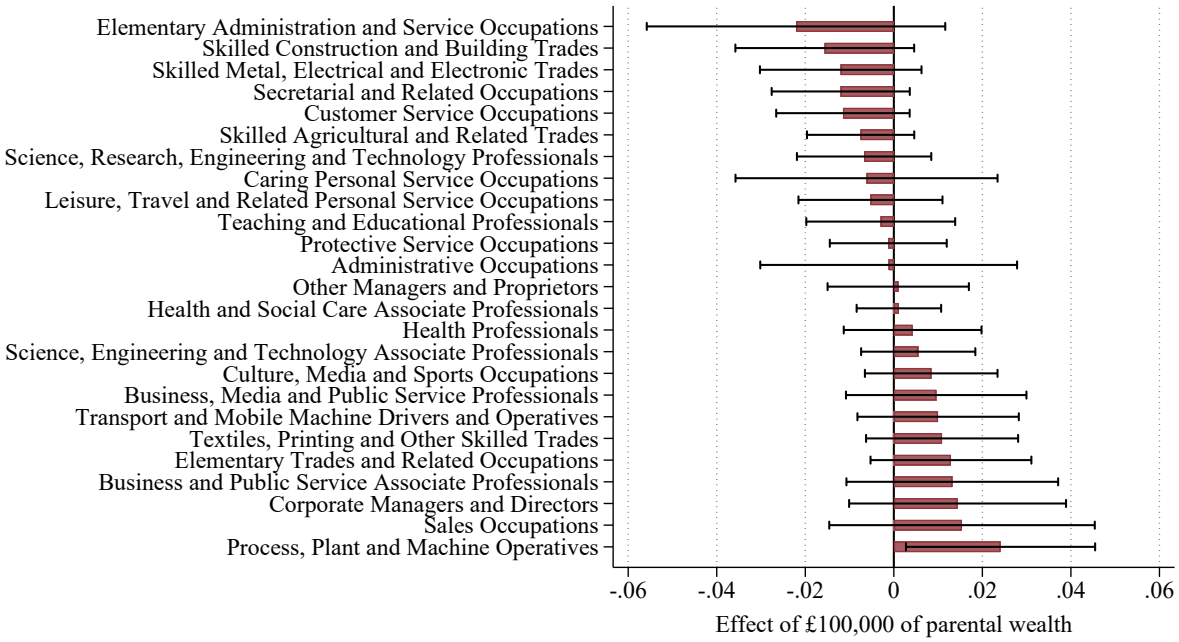
Source: ONS Longitudinal Study

Figure 21: Effect of parental wealth on working in occupations not in London



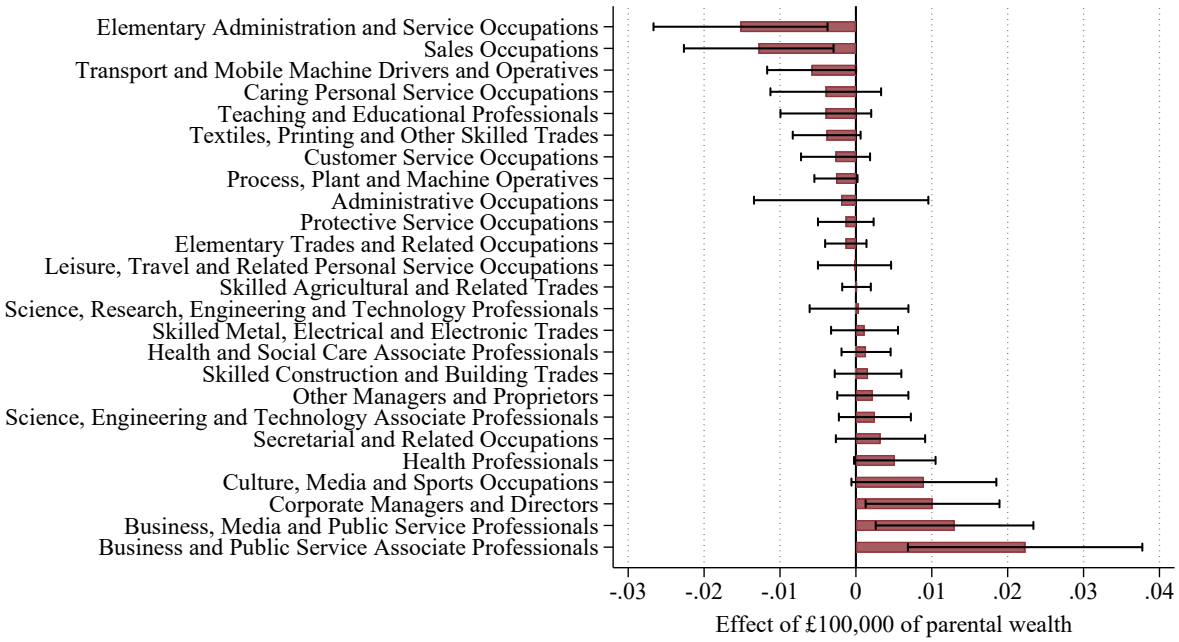
Source: ONS Longitudinal Study

Figure 22: Effect of parental wealth on working in occupations (elasticity instrument)



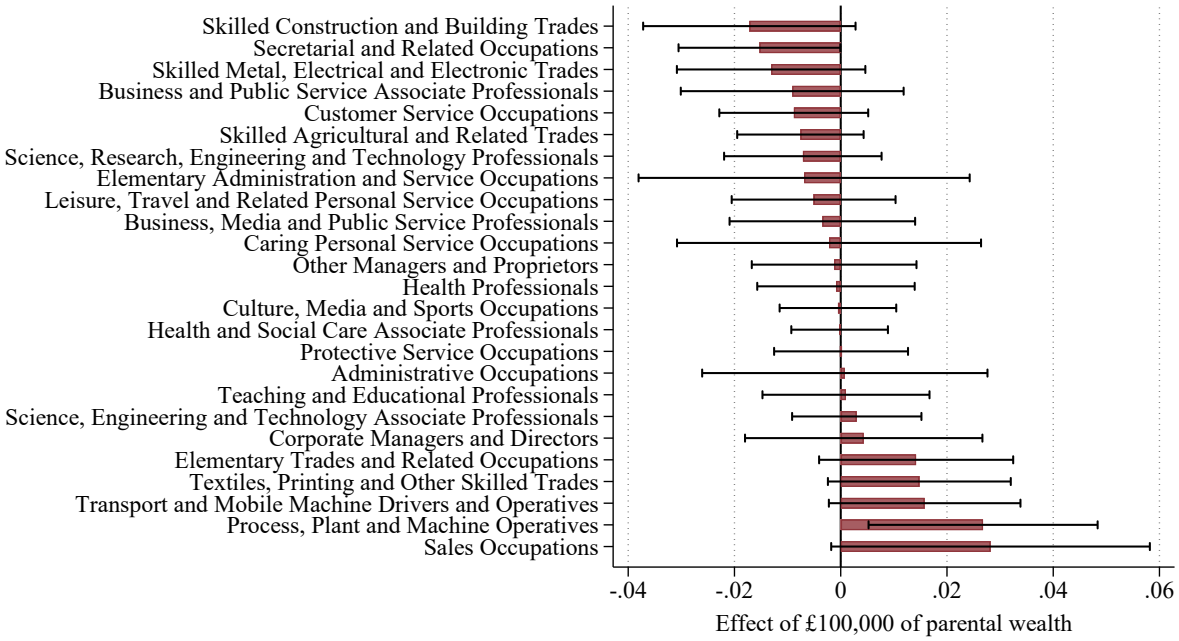
Source: ONS Longitudinal Study

Figure 23: Effect of parental wealth on working in occupations in London (elasticity instrument)



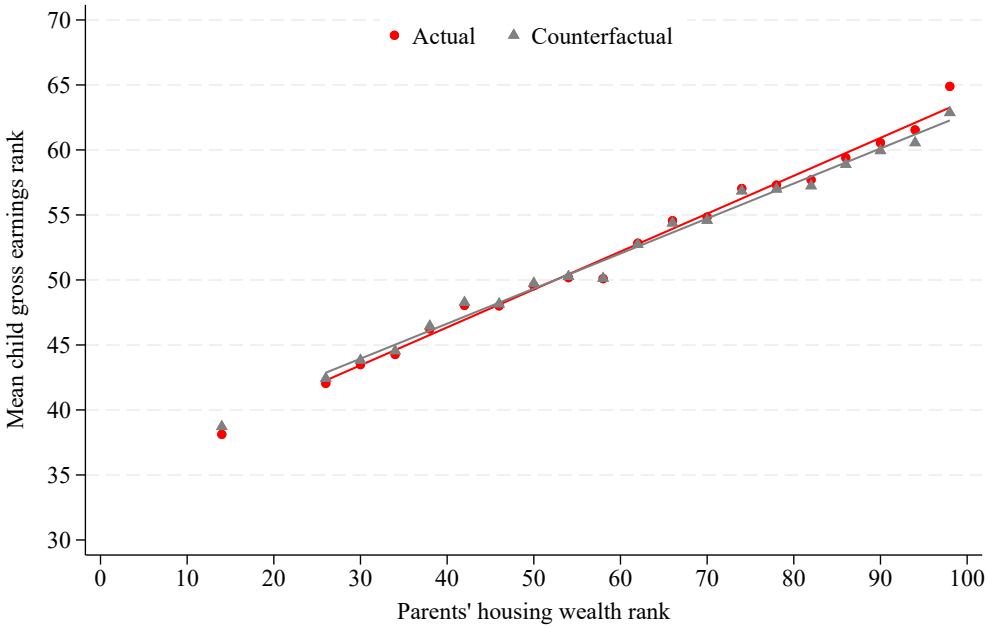
Source: ONS Longitudinal Study

Figure 24: Effect of parental wealth on working in occupations not in London (elasticity instrument)



Source: ONS Longitudinal Study

Figure 25: 'No boom' counterfactual simulation of average earnings rank by parental housing wealth rank



Source: Authors' calculations using the ONS Longitudinal Study. Counterfactuals are based on estimates are from column column 6 of Table 14.

B Equilibrium existence and uniqueness

B.1 Convexity of equilibrium house price schedule

Lemma 1. *In any equilibrium, for any $\tilde{z}$ such that $L(\tilde{z}) > 0$ and some agents are unconstrained for all $z \geq \tilde{z}$, $q(z)$ is strictly increasing and convex for $z \geq \tilde{z}$.*

Proof. Strictly increasing: Suppose there is some z for which $q^{'}(z) \leq 0$ and $L(z) > 0$. Then for any agent location at z, $dV/dz > 0$ and so $L(z) = 0$, a contradiction. *Convex:* Suppose there is some segment of cities $[z_1, z_2]$ over which q is increasing and concave. Suppose that this segment contains some unconstrained agents. The derivative of the objective function with respect to z^o is increasing in $s/R - q^{'}(z^o)$. Suppose that this expression is maximised for $\tilde{z} \in [z_1, z_2]$. Suppose that $s/R > q^{'}(\tilde{z})$, then $dV/dz > 0$ and this choice is not optimal. Suppose instead that $s/R < q^{'}(\tilde{z})$, then then $dV/dz < 0$ and this choice is not optimal. Suppose instead that $s/R = q^{'}(\tilde{z})$, then $dV/dz = 0$ and by concavity $d^2V/dz^2 = -q^{''}(\tilde{z}) > 0$ and the second order condition is violated this choice is not optimal. □

B.2 Existence of steady state competitive equilibrium

Theorem 1 (Existence and uniqueness of a stationary competitive equilibrium)**.** *Let $S = [\underline{z}, \bar{z}] \times [\underline{y^y}, \bar{y^y}] \times [\underline{y^o}, \bar{y^o}] \times [\underline{s}, \bar{s}]$ denote the state space for an individual and denote with $\mathcal{P}(S)$ the space of cumulative probability distributions over the state space. Assume*

1. *the Markov kernel $g(y^{y'}, y^{o'}, s' \mid y^y, y^o, s)$ is Feller–continuous;*
2. *$H(z) > 0$ is continuous on $[\underline{z}, \bar{z}]$;*
3. *$Q : [0,1] \to \mathbb{R}_+$ is continuous and strictly increasing, with $Q(0) = 0$;*

Denote the admissible house price function set as $\mathcal{Q} \in \{C([\underline{z}, \bar{z}])\}$. Then

1. ***Existence.*** *There exist policy functions (z^{o*}, a^*), a house price function $q^* \in \mathcal{Q}$ and distribution $G^* \in \mathcal{P}(S)$ such that the policy functions solve the household problem at prices q^*, $q^*(z) = L^*(Q(z))$ and L^* and G^* satisfy Eq. (6.7) and Eq. (**??**).*
2. ***Uniqueness.*** *If Q is* strictly convex*, the equilibrium is unique.*

Proof. For fixed $q \in \mathcal{Q}$ the household problem has a compact feasible set and continuous objective; the Maximum Theorem yields continuous policy functions (z^{o*}, a^*). Define $x = (z^y, y^y, y^o, s)$ as an individual's state and K_q as the transition function for the distribution of x induced by the combination of the Markov kernel g and the optimal policy z^{o*} when facing prices q. Continuity of policies and Feller continuity of g imply that K_q is Feller. Define

$T^{\text{dist}}(q, G) := GK_q$ as the mapping of the distribution of states from $\mathcal{P}(S)$ to $\mathcal{P}(S)$. This mapping is weakly continuous. Define $L_{q,G}(z)$ as the population density function induced by q and G as defined in Eq.(6.7). Define $T^{\text{price}}(q, G)(z) := Q\big(L_{q,\Gamma}(z)\big)$ as the mapping from the current state and price function to a new price function. $T^{\text{price}}(q, G)(z)$ is continuous from $\mathcal{Q} \times \mathcal{P}(S)$ to $\mathcal{Q}$. Note that $q(z)$ can never exceed $Q(1)$. The product $\mathcal{Q} \times \mathcal{P}(S)$ is therefore convex and compact. The map $T := (T^{\text{price}}, T^{\text{dist}})$ is continuous and self-maps this set; by Schauder's fixed-point theorem it has a fixed point, establishing existence. Strict convexity of Q makes T^{price} strictly monotone in q; T^{dist} is order-preserving. By Tarski's fixed-point theorem there can be only one fixed point if Q is strictly convex. □

B.3 Model extensions

Suppose that the individual chooses their number of working hours and that their hourly wage is given by sz. The endogenous part of their income in mid-life is $z^m sh$. The household problem is to solve

$$
\begin{aligned}
&V(y^y, y^m, y^r, s, g^y, b^m) = \\
&\max_{c^y, c^m, c^r, z^m, g^m, b} u(c^y) + \beta u(c^m) + \beta^2 u(c^r) - l(h) + \beta v((1-\tau^g)g^m) + \beta^2 w((1-\tau^b)b) \\
&\text{s.t. } c^y + a^y + \xi q(z^m) = y^y + g^y + T^y, \\
&c^m + g^m + a^m + R(1-\xi)q(z^m) = y^m + z^m sh + Ra^y + b^r, \\
&c^r + a^r = y^r + Ra^m, \\
&b = q(z^m) + Ra^r, \\
&a^y, a^m \geq \underline{a}, \\
&b \geq 0.
\end{aligned}
$$