CENTER FOR
ECONOMIC
BEHAVIOR &
INEQUALITY

CEBI WORKING PAPER SERIES

Working Paper 21/22

INTERGENERATIONAL TRANSMISSION OF HOUSING WEALTH

N. Meltem Daysal

Michael F. Lovenheim

David Wasser

Eungik Lee

ISSN 2596-447X

CEBI
Department of Economics
University of Copenhagen
www.cebi.ku.dk

The Intergenerational Transmission of Housing Wealth[1]

N. Meltem Daysal
(University of Copenhagen; CEBI; IZA)

Michael F. Lovenheim
(Cornell University, NBER, and CESifo)

David Wasser
(Cornell University)

September 2022

Abstract

Rising wealth inequality has spurred an increased interest in understanding how and why wealth is correlated across generations. Prior research has found an intergenerational correlation between 0.2 and 0.4 and has emphasized the role of family characteristics in driving this correlation. We contribute to this literature by examining the intergenerational transmission of wealth *changes*, which allows us to isolate the causal effect of wealth shocks from pre-determined parental preferences and household characteristics. Using Danish Register Data, we examine the effect of home price changes that occur between ages 0-5, 6-11, and 12-17 on the value of the home children own at ages 29-33. For the youngest age group, we find that 12.7% of each Krone of home price change is transmitted to housing wealth in adulthood. The transmission rate for the 6-11 age group is higher, at 20.5%, and there is no transmission of home price changes that occur during the teenage years. Examining mechanisms, we find that home price increases in the first two age groups lead to modest increases in home ownership and educational attainment. There also is an increase in non-housing wealth, income, and partner wealth for the middle age group. Income and education can explain only 20-30% of the intergenerational transmission we document. We argue that our results largely reflect changes to parental/household behaviors and preferences that are passed down to children and cause them to accumulate more housing wealth in young adulthood.

JEL CODES: J62, R31, I20

KEYWORDS: Intergenerational wealth transmission, housing wealth

[1] We would like to thank Asger Lau Andersen, Simon Halphen Boserup, Sandy Black, Kerwin Charles and participants at the ASSA Annual Meetings and the journées Louis-André Gérard-Varet for helpful comments and suggestions.

1. Introduction

The persistent growth in wealth inequality in the prior four decades has led to a heightened interest in understanding how and why wealth is transmitted across generations. Prior research has shown in numerous settings that the wealth of children is positively correlated with the wealth of their parents. In a seminal study on this question, Charles and Hurst (2003) find an age-adjusted intergenerational wealth correlation of 0.37. There are several reasons why parent and child wealth could be positively correlated: direct transfers, more human capital investments, transmission of tolerance for and understanding of risk, correlated savings behavior, and transmission of the propensity to invest in specific assets.

A key distinction among these explanations is the extent to which they reflect pre-determined correlated characteristics of parents and children that drive wealth accumulation for both groups or rather whether they reflect the causal effect of parental wealth on adult child wealth. The policies one might employ to support wealth accumulation across generations differ substantially based on the relative importance of these underlying mechanisms. If wealth accumulation is determined by correlated preferences across generations that are not driven by wealth itself,[2] then policies focused on building wealth among parents may have little effect on wealth accumulation among children. Conversely, if wealth increases among parents when children are young *cause* more wealth accumulation among children when they are older, policies designed to help parents save and accumulate wealth when children are young could have large long-run impacts on children and on wealth inequality.

In this paper, we isolate the role of wealth changes during childhood on longer-run wealth accumulation of children who experience these changes. Our focus is on housing wealth, which has a number of attractive properties for this type of analysis. First, housing wealth is far more evenly distributed across the population than is other forms of non-retirement wealth (see Figure 4). For all but the wealthiest households, the main source of wealth is their home. Wealth from equities and business investments is typically isolated to a small set of very advantaged households. Second, there is plausibly exogenous variation in the value of housing wealth driven by housing market trends in different areas. Third, housing wealth is relatively liquid, with

[2] As discussed in Section 2, wealth changes can affect household preferences or behaviors, which then can be passed down to children as part of the intergenerational transmission mechanism. This is conceptually distinct from the intergenerational wealth correlation being driven by pre-determined correlated characteristics between parents and children that are unaffected by wealth changes per se.

households extracting between 20-25% of home equity increases to fund current expenditures (Mian and Sufi 2011; De Stefani and Hviid 2018). In the long run, parents can downsize once children leave the home, which increases the liquidity of housing assets. Fourth, recent decades have witnessed large increases in the volatility and liquidity of housing wealth. This underscores the independent interest in understanding the intergenerational implications of this variation.

We employ Danish Register Data to estimate the effect of housing price changes children experience at different ages on their future housing wealth as well as other intermediate outcomes. The data include unique identifiers and follow every person in Denmark over time. As a result, we can link parents to children and then follow the children as they age. The data additionally contain rich information about both the parents and children that allow us to control comprehensively for the characteristics of parents and the households in which children grew up and to examine directly some of the mechanisms through which home price changes in youth may alter longer-run wealth accumulation. Because of the timing of when home prices become available in the data, our analysis sample is comprised of the 1985-1989 birth cohorts, whom we observe up to ages 29-33. Despite the relatively young ages of the children, 51.2% own a home when we observe them as adults.

We focus on wealth variation occurring in three distinct time periods of childhood: 0-5, 6-11, and 12-17. Thus, not only are we able to show novel evidence on the intergenerational transmission of wealth changes, we also show how such transmission varies by the age of the child. This evidence is important for policymakers in targeting programs that can support asset accumulation among parents with different-aged children. Variation in transmission by child age also helps inform potential mechanisms. We first estimate the intergenerational correlation of housing wealth for the entire population by regressing children's home prices at ages 29-33 on average parental home prices in each of these age ranges. These correlations change with child age, from 0.138 at 0-5, 0.296 at 6-11, and 0.365 at 12-17. The magnitudes align with prior estimates of the intergenerational transmission of wealth (Charles and Hurst 2003; Boserup, Kopczuk, and Kreiner 2018; Black et al. 2019), the intergenerational transmission of equity market participation (Black et al. 2016), and the intergenerational transmission of debt default (Kreiner, Leth-Petersen, and Willerslev-Olsen 2020).

We next move beyond these raw correlations to estimate the effect of home price changes during childhood on wealth and other outcomes of adult children. We focus on children whose

parents own a single residential property at the time of the child's birth and use this childbirth home to assess the effect of home price changes. By fixing children into the first house in which we see them, we abstract from concerns about endogenous mobility across houses. Using this first house, we then examine how changes in home prices between the ages of 0-5, 6-11, and 12-17 affect later-life outcomes. Because homeowners (rather than mortgage lenders) obtain all the wealth from a home price increase, this method isolates the role of housing wealth changes per se rather than correlated characteristics of parents and children. These characteristics could be correlated with home price changes as well. We control richly for such selection by including birth cohort fixed effects, municipality fixed effects interacted with home price at birth, birth parity, gender, and parental background controls such as income, education, and marital status. We thus isolate variation in home prices that are orthogonal to baseline home price, municipality, and parental background.

Our results suggest that wealth changes during childhood are differentially passed on to children later in life based on the age at which the wealth change occurs. The largest effect is among the middle group (aged 6-11), where we find that 20.5% of each additional Krone of housing wealth is translated to housing wealth of children at ages 29-33. This estimate is statistically significant at the 1% level and is similar in magnitude to the intergenerational wealth correlation using the same sample and home price measure. The estimate declines to 12.7% for the youngest children aged 0-5, which is somewhat smaller than the raw correlation from the same sample. For the oldest group, aged 12-17, the estimate is -0.26 percent and is not statistically significantly different from zero at conventional levels. The raw correlation is much larger, implying that the intergenerational correlation of wealth among teenagers is driven by correlated parent-child characteristics rather than by the causal effect of wealth itself. Our results highlight the importance of parental wealth for families with young children.

After examining baseline effects, we then turn to understanding the mechanisms through which these results operate. We propose a simple theoretical framework that articulates the potential mechanisms through which wealth may be transmitted across generations. The model shows that the effects are driven by: 1) direct effects of wealth (i.e., transfers), 2) changes to labor market income (potentially driven by changes in educational attainment), 3) changes to non-housing wealth, and 4) changes to unobserved parental preferences and behavior that are passed on to children. Changes to non-housing wealth are themselves a reflection of parental

preferences and behaviors because they are not driven by direct transfers. We separate them from (4) because they are observed in our data, but they are conceptually part of the same transmission mechanism.

We examine these mechanisms directly to the extent allowed by the data. First, we show that the home price changes we use for identification are not transitory: each Krone of home price increase leads to between 1.3 (12-17) and 1.7 (0-5) Krone of higher home price when the child is 18. Second, we find that home price increases in youth have a small effect on the likelihood of owning a home at ages 29-33: for each 100,000 DKK increase in home prices, the likelihood of homeownership increases by 1.5 percentage points for 0-5 year olds and 1.2 percentage points among 6-11 year olds, with a small negative effect among teenagers.

Third, home price increases could lead to more educational attainment by relaxing credit constraints (Lovenheim 2011; Lovenheim and Reynolds 2013; Hotz et al. Forthcoming).[3] Such an effect also should lead to higher income, which would facilitate more savings through housing or other mechanisms. Our estimates point to statistically significant but small increases in educational attainment among the 0-5 and 6-11 age groups and modest increases in income for home price changes occurring during the 6-11 age range. Finally, we examine non-housing wealth accumulation of the children. There is a sizable effect of home price changes among 6-11 year olds on future non-housing wealth that is similarly-sized as the housing wealth transmission estimate. The estimate among 12-17 year olds is positive but small, while there is a sizable negative estimate for the 0-5 year old age group. Hence, for the youngest children, there is some evidence that home prices increases induce shifting between assets when older. We also find evidence that home price changes affect assortative matching: home price increases among 0-5 and 6-11 year olds leads them to select partners whose parents have higher housing wealth.

Taken together, these intermediate factors explain 87% of the transmission effect among 0-5 year olds and 58% among 6-11 year olds. Income and educational attainment explain less than a third of the transmission we document, however. We thus conclude from this evidence that the main mechanism through which housing wealth changes in childhood affect housing wealth in adulthood is through changes to parental savings preferences and behaviors that are

[3] These estimates are from the US setting, where college requires far more direct outlays among families than is the case in Denmark. Nonetheless, postsecondary attendance still includes substantial opportunity cost in terms of foregone earnings, which may make parental resources important for these investment decisions.

then passed down to children. Our finding that the transmission of wealth shocks disappears during the teenage years also is consistent with this mechanism, as younger children likely are more malleable with respect to parental preferences and behaviors than are teens.

These results align with prior evidence of the importance of family characteristics in driving intergenerational wealth correlations, including correlated asset choices across generations (Chiteji and Stafford 1999; Charles and Hurst 2003; Black et al. 2016; Boserup, Kopczuk, and Kreiner 2018). While previous research has concluded that the intergenerational correlation of wealth largely reflects transmission of savings behaviors and preferences, it is unclear whether these behaviors and preferences are affected by wealth changes per se and then passed down to children or are simply correlated with wealth accumulation among both parents and children. Examining the transmission of wealth changes in childhood allows us to distinguish between these stories. From a policy perspective, our results thus suggest that policies to support wealth accumulation among parents when children are young will support wealth accumulation of their children when they are young adults.[4]

Our central contribution to the literature is to estimate how wealth *changes* experienced by children at different ages are transmitted to adult financial outcomes. A growing literature examines the intergenerational correlation of wealth. This body of work does not exploit plausibly exogenous wealth shocks, which we argue is an important advancement because it isolates the role of the wealth per se, separate from the role of pre-determined parent characteristics.[5] The focus on housing wealth also is important because housing wealth is much more evenly distributed across the population than is other forms of wealth. Our estimates thus are easier to generalize to the broader population.

Charles and Hurst (2003) are the first to estimate the intergenerational correlation of wealth. They use the Panel Study of Income Dynamics (PSID) in the US, which is a rich but small dataset that allows them to trace wealth across generations. They find an age-adjusted intergenerational correlation of 0.37. Boserup, Kopczuk, and Kreiner (2018) find an identical

[4] Parental housing wealth could mechanically increase children's wealth in the longer-run due to bequests. However, children tend to be rather old when their parents die, making the wealth less useful. Our approach examines the transmission of wealth shocks that operate through mechanisms other than direct bequests, which emphasizes the role of behavior rather than simply of direct wealth transfers.

[5] There is a small literature that examines intergenerational effects of wealth shocks driven by lottery winnings (Cesarini et al. 2016; Bulman et al. 2021). These papers focus on educational attainment and health outcomes of children and do not examine wealth transmission.

rank-rank correlation in Denmark, while Black et al. (2019) show similar correlations in Sweden. Charles and Hurst (2003) then "explain" the intergenerational wealth correlation using parent and child observables, highlighting the important role played by income, educational attainment, and the ownership of particular assets.

The results in Charles and Hurst (2003) suggest that one's family characteristics are important determinants of wealth transmission. This conclusion is reinforced by Black et al. (2016), Black et al. (2019), and Fagereng, Mogstad, and Rønning (2015). The first two studies examine adoptees in Sweden and the third study examines adoptees in South Korea. Studying adoptees allows researchers to separate the roles of nature versus nurture. All three studies show a much larger role for the adopted parents than the biological parents. Together, these studies show strong evidence that nurture is more powerful than nature (i.e., genetics) in driving wealth correlations across generations. However, none of these studies can isolate the role of wealth itself from the correlates of wealth. Put differently, do wealthier parents have wealthier children because the wealth allows them to help their children accumulate more assets, or is it because parents and children endogenously share attributes that lead to higher wealth accumulation? Only by examining the direct role of wealth changes can one disentangle these two mechanisms. We are the first to do so in this literature.

Two additional papers provide supporting evidence of the critical role of parents and the household for long-run wealth accumulation. Boserup, Kopczuk, and Kreiner (2018) show that children with higher wealth *in childhood* have higher wealth as adults. Wealth in childhood reflects early life transfers from parents, which affects only a small percentage of wealthy families. These transfers tend to be too small to independently drive later-life wealth accumulation, so they argue that the empirical relevance of this wealth is driven by intergenerational correlation of savings behavior. Kreiner, Leth-Petersen, and Willerslev-Olsen (2020) further demonstrate that parents who default on debt have children who are more likely to default. This is not driven by household finances but rather by inherited financial behavior.

Our conclusions align with those from these studies, but our approach differs substantially from theirs. Neither of these papers speaks to whether savings preferences or behavior of the parents can be affected by wealth changes nor whether any such changes are passed down to their children. In order to isolate the role of parental wealth from the role of factors that positively correlate with wealth, one needs to examine the causal effect of wealth

changes in youth. Our paper advances the literature by estimating the effect of wealth *changes* during childhood on later life outcomes that show not only how these shocks translate into housing wealth when the children are young adults but also the mechanisms underlying this transmission.

Finally, we contribute to the literature by showing novel evidence on how wealth changes at different ages affect longer-run outcomes. Prior research on wealth transmission has not examined whether transmission patterns vary by child age, largely because they have not used wealth variation from childhood. Carneiro et al. (forthcoming) examine the intergenerational transmission of income changes experienced at different childhood ages. Using administrative data from Norway, they show that conditional on permanent income, stable income during childhood is most strongly associated with positive long-run outcomes. However, conditional on permanent income and later childhood income, higher income early in the child's life is more productive. Our paper extends their work by focusing on the role of wealth at different ages. Wealth and income transmission mechanisms may be quite different, which is why there are separate bodies of work on intergenerational income and wealth elasticities. We also employ an identification strategy that exploits plausibly exogenous variation in parental resources, which is more challenging using income in their context. Our results differ in the age pattern of transmission, which highlights that age-specific resource changes affect future outcomes differently for income and wealth.

2. Illustrative Model

In this section, we present a simple theoretical model that articulates the different mechanisms through which wealth can be transmitted across generations. Let H^c be the housing wealth of the child at adulthood. Aligned with our empirical approach, we consider three child ages, a_1, a_2, and a_3. In our context, these refer to ages 0-5, 6-11, and 12-17, although it would be easy to extend the model to other ages or to consider more age ranges.

We model housing wealth of the child in adulthood (H^c) as a function of parental housing wealth at each age (H^{pa_1}, H^{pa_2}, H^{pa_3}), Income of the child in adulthood (I^c), other wealth in adulthood (OW^c), and a sequence of unobserved household/parental characteristics and preferences, X. These include factors like propensity to save, preferences over different asset classes, and risk tolerance. Without loss of generality, assume there are N such factors and they

are related to adult housing wealth through the function g: $g(X_1, X_2, \ldots, X_N)$. The function *f()* maps these factors into adult housing wealth:

$$\mathrm{H^c} = f(W^{pa_1}, W^{pa_2}, W^{pa_3}, I^c, OW^c, g(X_1^{a_1}, \ldots, X_N^{a_1}; X_1^{a_2}, \ldots, X_N^{a_2}; X_1^{a_3}, \ldots, X_N^{a_3})) \quad (1)$$

Changes in parental housing wealth at age a_s ($s \in \{1,2,3\}$) affects adult housing wealth of the children as follows:

$$\frac{\partial H^c}{\partial W^{pa_s}} = \frac{\partial f()}{\partial W^{pa_s}} + \frac{\partial f()}{\partial I^c}\frac{\partial I^c}{\partial W^{pa_s}} + \frac{\partial f()}{\partial OW^c}\frac{\partial OW^c}{\partial W^{pa_s}} + \frac{\partial f()}{\partial g()}\left(\sum_{j=1}^{N}\left(\frac{\partial g()}{\partial X_j^{a_s}}\frac{\partial X_j^{a_s}}{\partial W^{pa_s}}\right)\right) \quad (2)$$

Equation (2) shows the different pathways through which housing wealth changes can be transmitted across generations. The first piece is the direct effect: parents can provide transfers to their children to help, for example, with down payments. While there is evidence from Denmark that parents do not help their children with down payments (Kolodziejczyk and Leth-Petersen 2013), this still is a theoretically important component of the transmission mechanism.

The second part of equation (2) operates through changes to adult income of the child. Parents can use their housing wealth to make human capital investments in their children, which will lead to higher income. Higher parental wealth also provides some insurance against risk, which could support postsecondary investments.

The last two terms in equation (2) reflect the possibility that wealth changes could change parents' (and thus children's) preferences and household environment, including risk tolerance, preferred assets, and financial acumen. As discussed above, prior research has shown the importance of these factors. To the extent that they are influenced by wealth changes, and specifically by housing wealth changes, they can influence housing wealth accumulation of the next generation. Although separate in equation (2), OW^c is not conceptually distinct from $g(X)$. Direct transfers from parents to children aged 29-33 are small, and so accumulation of other wealth largely reflects the transmission of parental preferences and behaviors. We separate OW^c from the $g(X)$ function because we can directly observe other wealth in the data. The $g(X)$ function thus represents unobserved factors that come from parental preferences and behaviors.

In our empirical application below, we focus on estimating the total effect: $\frac{\partial H^c}{\partial W^{pa_s}}$. Using the information available in the Danish Register Data, we then provide evidence on how housing wealth changes at different ages affect the observed intermediate mechanisms highlighted in equation (2). We are unable to observe $\frac{\partial f()}{\partial W^{pa_s}}$ and $\frac{\partial f()}{\partial g()}\left(\sum_{j=1}^{N}\left(\frac{\partial g()}{\partial X_j^{a_s}}\frac{\partial X_j^{a_s}}{\partial W^{pa_s}}\right)\right)$. Kolodziejczyk and

Leth-Petersen (2013) show that the direct effect operating through parental transfers are unimportant for the housing market, however. We take this evidence as showing that $\frac{\partial f()}{\partial W^{pa_s}} = 0$. The remainder of the effect after we account for the observed mechanisms in equation (2) is from housing wealth induced changes to parental behaviors and preferences that are then passed down to their children.

3. Data

3.1. Sample and Variable Construction

We use register data from Denmark for the period 1985 to 2018. The data include individual-level records with unique personal identifiers, allowing us to follow the entire population over time and to link children to their parents.

To construct our analysis sample, we begin with the universe of 275,701 children born between 1985 and 1989 in Denmark. We focus on these birth cohorts because housing valuation data first becomes available in 1984, and after the 1989 birth cohort the children are too young to observe their adult outcomes with contemporaneous data. We make a number of restrictions to construct our analysis sample. First, we exclude children whose parents were renters at the time of the child's birth. Second, we only include children whose parents owned a single residential property.[6] Third, we exclude children with incomplete data on parental home price and missing parental control variables. Online Appendix Table A.1 shows the number of children excluded due to each of these conditions, while Online Appendix Table A.2 shows how our sample restrictions affect the number of houses. With these sample restrictions, our final analysis sample contains 128,382 children and 117,427 houses.

Our primary outcome variables consist of housing and non-housing wealth in early adulthood, obtained from the Income Statistics Register. These data are based on tax records collected by the Danish Tax Agency and provide information on asset holdings and liabilities of all individuals measured on the last day of the calendar year. Data on asset holdings include the cash value of real estate owned by the individual as well as the value of deposits, stocks, bonds,

[6] Children are included in the sample if the parents are renting the primary residence at the time of the child's birth but own a vacation home.

and deposited mortgages.[7] Data on liabilities include the aggregate value of mortgage credit debt, credit and debit card debt, student debt, debt to Hypotekbanken (a public institution), debt to financial corporations, debt to the Danish municipalities, and other debt (e.g. outstanding tax payments). We measure housing wealth using the average cash value of owned properties when the child is aged 29-33, which is the cash value of all real estate holdings weighted by the ownership share of each holding. For the sole owner of one home, this is just the value of the house in a given year. Note that this measure differs from the equity an individual has in their home. We focus on the cash value rather than on equity because the cash value reflects the long-run wealth associated with owning the property. We often refer to this cash value as "housing wealth" for simplicity below.

We use additional outcome variables to assess the mechanisms underlying the intergenerational transmission of housing wealth, including educational attainment, labor market earnings, and the total housing wealth of the household if the child is cohabiting or married when they are 29-33 years old.[8] We also study effects on non-housing wealth at ages 29-33, calculated as the difference between gross wealth (total assets) and housing wealth.

Our main independent variables capture the change in parental housing wealth at different developmental stages of the child: ages 0-5, 6-11, 12-17. We focus on these ages because they reflect pre-schooling years, middle childhood years, and later childhood teenage years, respectively. Currently, there is little evidence on how the timing of wealth in childhood affects later life outcomes. Examining transmission by child age of the wealth shock provides new information about whether and when family wealth shocks affect the long-run outcomes of children.

In order to alleviate concerns related to endogenous mobility and home purchases, we calculate parental housing price changes based on the house the parents own at the time of the birth of the child, regardless of whether they subsequently move.[9] This essentially is a simulated

[7] The data do not include information on pension wealth. Self-reported information on car values, boat values, caravan values, premium bonds, cash deposits, and stocks are available until 1996 when taxpayers had to declare these as a requirement of the Danish wealth tax. Such items are not included in the calculations after the abolishment of the wealth tax in 1996. Similarly, values of cooperative dwellings are not included in the post-1996 period. The cash value of houses is assessed by the Danish Tax Authority using public valuations. If an individual co-owns a property, the cash value only reflects their share. For more details, see Leth-Petersen (2010) and Boserup *et al*. (2016).

[8] Educational attainment comes from the *Education Register*, which contains the highest level of completed schooling from administrative school records.

[9] Daysal et al. (2021) also employ this strategy to examine the effect of housing wealth changes on births and early life health outcomes in Denmark.

instrument that shows the housing wealth changes of a household if they did not move from the house in which their first child was born. Parental home prices come from the Income Register as described above. In order to reduce the influence of outliers, we winsorize home value changes at 1st and 99th percentiles of the distribution of changes within each age bin.

Using data from the formerly described registers as well as the Population Register, we include a rich set of child and parent characteristics as control variables. The Population Register provides a snapshot of demographics on all Danish residents as of January 1st of each year, allowing us to control for birth cohort fixed effects, municipality fixed effects, and birth parity fixed effects. We also control for parental education at the time of the birth of the child, mother's and father's labor income in the year preceding the child's birth, martial status at the child's birth, and the gender of the child.

3.2. Descriptive Statistics

Table 1 presents descriptive statistics of the variables used in our analysis samples. Columns (1)-(3) show means and standard deviations (in parentheses) for our age 0-5, 6-11, and 12-17 year old samples, respectively. We show parental and child variables, where the child variables are measured in adulthood at ages 29-33. Because we have a balanced panel, child outcomes when they are adults do not vary across columns.

On average, parents in our sample have some college attainment and have relatively high incomes that grow as children age. This is expected as the sample is positively selected in terms of socioeconomic status because of the requirement that parents are homeowners at child birth. Average parental income in the year preceding child birth is 318,160 DKK, which is approximately $47,088.[10] By age 12, average parental income rises to 585,740 DKK, or $86,690. Parental housing wealth also grows over time, from 586,470 DKK ($86,798) at childbirth to 900,590 DKK ($133,287) at age 12.

Table 1 additionally shows child outcomes in adulthood. We often refer to these as "child outcomes," but they always refer to outcomes when the children are 29-33. Despite the relatively young ages of the adult children, 51.24% own a home. They have relatively high personal income levels as well as high levels of educational attainment. The homes they own also are quite high in value, and the value of their homes is over four times larger than their non-housing

[10] We use the purchasing price parity exchange rate of 0.148 in 2018. These exchange rates can be found at: https://data.oecd.org/conversion/purchasing-power-parities-ppp.htm#indicator-chart.

wealth levels. That the adult children of relatively advantaged parents have high incomes and wealth levels is unsurprising. The question on which we focus in this analysis is the extent to which parental wealth, and in particular parental housing wealth, drives these outcomes.

The main source of variation we use in our empirical analysis is the change in home prices over different periods of time. Figure 1 shows the distribution of real average home values from 1983 through 2006, which covers the childhood time period of our analysis sample, for both the full population as well as the properties included in our sample. Aggregate home prices are flat through the mid-1990s, and then they rise considerably during the period of the housing boom. While the housing boom provides extensive variation, note that this period comes after any of our birth cohorts are under the age of 6. Hence, the early childhood estimates are identified prior to the housing boom. This is a period of stable home prices in the aggregate, however there is much variation across geographic areas in the home price changes during this period.

Figure 2 presents the distribution of home prices of the parents (in 100,000 DKK units) by age of the child.[11] Aligned with Table 1 and Figure 1, the aggregate distribution of home prices varies little between ages 0-5 and ages 6-11 in our sample. Home prices rise substantially when the children are teenagers, which likely reflects interaction between the timing of the housing boom and the ages of the children in our sample. Despite this relative stability at younger ages, Figure 2 shows that there is a wide distribution of home prices in each child age range.

Our analysis focuses on the role of housing wealth for two reasons. The first is that the period we study includes historically large volatility in home prices, combined with an increased liquidity of this wealth (Mian and Sufi 2011; De Stefani and Hviid 2018). This provides a large amount of variation off of which to identify the intergenerational transmission of wealth changes. Figure 3 shows the distribution of parental home price changes during each child age period. Table 1 also presents means and standard deviations of this variable. Between birth and age 5, parents on average experienced small but negative home price growth. The small mean masks considerable cross-sectional variation in the home price changes parents experience, however. For the two older age groups, home prices universally rise, and the distribution of changes shifts

[11] Figures 2 and 3 show parent home price variation using simulated home values based on the home the family owned when the child was born.

markedly to the right. Between ages 6-11, parental home valuations increase by $38,190 on average, while they increase by $51,227 on average between ages 12 and 17. These large average increases are driven in part by the housing boom shown in Figure 1. Figure 3 demonstrates that the wealth changes we examine in this analysis are large and that there is an extensive amount of cross-sectional variation in exposure to home price changes at each age group.

The second reason to focus on housing wealth is that it is the largest single component of household wealth and is much more evenly distributed across the population than is non-housing wealth. Figure 4 shows average housing and non-housing wealth across the income distribution. Panel A shows data from the full population, while Panel B focuses on parents in our analysis sample. In both panels, we see that housing wealth is larger than non-housing wealth at each income level. As well, low- and middle-income households have nontrivial amounts of housing wealth but have no other source of wealth. That is, for all but the wealthiest households, housing is the only source of wealth. Examining housing wealth specifically allows us to focus on a source of wealth that is more ubiquitous in the population. Estimates of intergenerational wealth transmission using other sources of wealth likely are weighted much more heavily towards very advantaged households.

Finally, Figure 5 presents the distribution of home prices among adult children at ages 29-33. Examining the distribution unconditional on owning a home (Panel A) and conditional on owning a home (Panel B) shows a wide distribution of home prices (and thus potential housing wealth) of the children. The remainder of this paper examines the extent which the home price variation children experience in their youth drives the adult home price distribution in Figure 5.

4. Empirical Approach

The goal of our empirical models is to identify the effect of home price changes in each child age range on future outcomes. To do so, we estimate models of the following form that relate home price changes experienced by homeowner families to outcomes of their children at ages 29-33:

$$Y_{ipmc} = \beta_0 + \beta_1 \Delta HP_{ipm}^{0-5} + \beta_2 \Delta HP_{ipm}^{6-11} + \beta_3 \Delta HP_{ipm}^{12-17} + \gamma \boldsymbol{X}_p + \delta_c + \psi_m * HP_{ipm}^{0} \quad (3)$$
$$+\theta Parity_i + \epsilon_{ipmc} ,$$

where Y_{ipmc} is the adult outcome for child i, with parents p, in municipality m, and birth cohort c.

The variables of interest are ΔHP_{ipm}^{0-5}, ΔHP_{ipm}^{6-11}, and ΔHP_{ipm}^{12-17}, which are the changes in home prices of the home owned by parents at child birth. The main coefficients on which we focus are $\beta_1 - \beta_3$. Our model includes a rich set of parental controls ($\boldsymbol{X}_p$), including mother's and father's educational attainment at child birth and labor income in the year preceding child birth. The full list of parental controls is shown in Table 1.[12] We also include birth cohort fixed effects (δ_c),[13] birth parity fixed effects (θ), and municipality fixed effects interacted with home price at birth ($\psi_m * HP_{ipm}^0$). The municipality fixed effects are important for our model because they account for systematic differences across households based on where they live that could be correlated with home prices they and their children face. Home price changes also are likely to be mechanically correlated with home price levels, and so we control directly for home price at birth. We interact initial home price with municipality to allow for the fact that the distribution of home prices differs across areas. Finally, ϵ_{ipmc} is an error term, and we cluster standard errors at the municipality level throughout the analysis.

The identification assumption we invoke is that, conditional on the observables, changes in home prices are uncorrelated with potential wealth outcomes of children. Put differently, we assume that the relationship between changes in home prices during youth and the value of the home in adulthood is driven by the home price changes rather than by any correlation between home price changes and household unobservables that also affect wealth. This identification strategy has been used extensively to study outcomes such as education (Lovenheim 2011; Lovenheim and Reynolds 2013; Hotz et al. forthcoming), fertility (Lovenheim and Mumford 2013; Dettling and Kearney 2014; Daysal et al. 2021), adult health (Fichera and Gathergood 2016), retirement behavior (Zhao and Burge 2017), and consumer debt (Brown, Stein and Zafar 2015). We are the first to use this approach to study wealth transmission across generations.

In order to provide some evidence on the validity of the identification assumptions, we use the analysis sample and predict adult outcomes of the children using all parental observables measured at birth of the child in **X**. We then estimate versions of equation (3) excluding these controls but including all of the fixed effects and home price at child birth. This is a summary measure of selection that shows how much residual selection there is conditional on the fixed

[12] Table 1 shows descriptive statistics for parents at the birth of a child. In some specifications of equation (3), we also control for parent observables at ages 6 and 12 of the child.
[13] Because we measure outcomes at specific ages, birth cohort fixed effects act as year fixed effects as well.

effects and baseline home price. The results of this exercise are shown in Table 2. Column (1) presents our main estimates that include parental income in the prediction model and control for housing wealth at birth. There is a moderate amount of selection, with estimates that range from 0.053 (6-11) to 0.006 (12-17). While statistically significant at the 1% level, these estimates are substantially smaller than the main treatment effects that we present below. Interestingly, these correlations are only minimally affected by controlling for home price at birth, as shown in Column (2). These results provide suggestive evidence that those who experience higher housing price growth have slightly higher predicted housing wealth based on parental observables. Of course, we control for these parental observables, so this selection is not problematic in and of itself. It does raise concerns about selection on unobservables for which we cannot control, however.

Online Appendix Table A.3 shows estimates for each of the observables separately. Each outcome is correlated with home price growth, but the estimates tend to be small outside of mother's and father's income. We thus re-estimate the models show in Table 2, excluding parental income from the prediction and instead using them as controls. These results are shown in columns (3) and (4). The estimates are smaller, ranging from 0.027 (6-11) to 0.007 (12-17). While the estimates remain statistically significant, they are quite modest and suggest that after we control for all of the observables there is little scope for residual selection. Indeed, if you subtract the estimates in column (3) of Table 2 from our results below, our results and conclusions do not change. This is an extreme lower bound that is based on the assumption that selection on residual unobservables is just as strong as selection on the extensive observables we include in the model (Oster 2019).

5. Results

5.1. Intergenerational Wealth Correlations

Prior to showing the results from the estimation of equation (3), we show the raw correlations between home price(s) of the home(s) owned by adult children at ages 29-33 and the home price of the parents when the children are born, age 6, age 12, and ages 29-33. In these correlations, renters are included with a home price of zero. Hence, these results include both the extensive and intensive margin. Table 3 shows these correlations in two panels. Panel A includes the full population and the actual home prices parents live in at the time from the income

register. In Panel B, we use our analysis sample and the simulated home value of the house the family owned when the child was born.

The correlations in Panel A are 0.14 (ages 0-5), 0.30 (ages 6-11), and 0.37 (ages 12-17). These correlations are strong, suggesting that the value of homes owned by adult children are meaningfully related to the price of the home their parents own in childhood. The correlation between the adult child's home value and the parents' home value when the child is an adult is much smaller, at 0.039. This indicates that adult child housing wealth is much more closely tied to their parents housing wealth when they are young than when they are adults, which is consistent with a causal role of parental wealth in generating wealth outcomes of their children.

In Panel B, we show the correlations using our simulated home prices that fix households to the house in which each child was born. The pattern shows a decreasing correlation as children age: the correlation is 0.207 at ages 0-5, 0.182 at age 5-11, and 0.099 at ages 12-17. The correlation when the children are adults is 0.042, which again suggests a more important role of parental wealth when children are young.

These estimates are similar to if somewhat smaller than the rank-rank wealth correlations in Boserup, Kopczuk, and Kreiner (2018) and Black et al. (2019) that are between 0.2 and 0.4. Their samples and approaches are most similar to those shown in Panel A of Table 3, and thus the correlations we show align with the magnitudes from prior literature. Our analysis sample and home price measure leads to smaller, but still sizable, correlations. We highlight that we are measuring home price correlations rather than aggregate wealth correlations, and so it is not surprising that the estimates are somewhat different when we use our preferred measure and sample. That the correlations in Table 3 are similar to the wealth correlations shown in prior work indicates that the estimates from equation (3) reflect differences in the parameters being estimated rather than differences in the setting. We compare our estimates of $\beta_1 - \beta_3$ below to the correlations in Panel B of Table 3 in order to determine how much of these correlations reflect the impact of plausibly exogenous *changes* to wealth during childhood.

5.2. Baseline Results

Table 4 presents our baseline estimates of equation (3). Panel A shows reduced-form estimates, and in Panel B we show estimates that instrument actual home price changes at each age with simulated home price changes. Each column in each panel comes from one regression,

where we add controls sequentially across columns in order to assess their importance for the results. Column (1) presents raw correlations between parental home price changes and the value of the adult children's home. We next add municipality and birth cohort fixed effects as well as home value at birth. This is our most basic model, as the design of our empirical approach requires these controls at a minimum. Focusing first on Panel A, the estimates for the first two age groups in column (2) are positive and statistically significant at the 1% level, while there is little transmission for home price changes occurring between 12 and 17 years old. In column (3), we add birth parity fixed effects as well as parental controls at birth, age 6, and age 12. The estimates for the two youngest ages become smaller, consistent with the selection results shown in Table 2. However, in column (4) we exclude parental controls at ages 6 and 12, and the estimates become slightly larger. This is reassuring, because it suggests that conditional on parental controls at birth, controlling for later parental outcomes (including income) has little impact on the estimates. The pattern of these results indicates that there is little residual selection after including our large set of controls.

Our preferred estimates are shown in column (5), which adds municipality fixed effects interacted with housing wealth at birth. These results show a modest amount of transmission of housing price shocks that occur between ages 0-5. The estimate is 0.067, which means that 6.7% of each Krone increase in housing wealth is transmitted to children in the form of higher home prices when they are adults. This is a rather modest effect in absolute terms, however it is statistically significantly different from zero at the 5% level.

The estimate of the effect of home price changes at ages 6-11 is larger, at 0.1511, and it is significant at the 1% level. Among 12-17 year olds, the point estimate in Table 4 is small in magnitude and is not significant at even the 10% level. The upper bound of the 95% confidence interval is 0.030, which indicates that we can rule out anything other than a small amount of transmission of housing wealth changes during the teenage years. This null effect is particularly interesting because this age group is the one that experiences the large home price increases from the housing boom. The resulting housing wealth increases are not passed on to children in terms of their later-life outcomes.

Panel B presents results from IV models. First stage estimates are presented in Appendix Table A.4. The instruments are strong for each age group, with the strongest correlation between simulated and actual home price changes occurring on the diagonals of the table with matching

age groups. There is little evidence that increases during one age range lead to large reductions at future ages, suggesting that the wealth variation off of which our models are identified are persistent. The pattern of results in Panel B of Table 4 match the reduced form estimates in Panel A closely. Our preferred estimates in column (5) show transmission rates of 12.7% among 0-5 year olds, 20.5% among 6-11 year olds, and null effects among 12-17 year olds. Estimates for the younger two age groups are statistically significantly different from zero at the 5% and 1% levels, respectively.

Comparisons of these results with the raw correlations in Panel B of Table 3 provides insight into how much of the raw correlations are driven by the causal effect of wealth. The transmission estimate for 0-5 year olds is smaller than the raw correlation, but the raw correlation is within the 95% confidence interval of the causal estimate. For 6-11 year olds, the causal estimate and the raw correlation are closely aligned in magnitude. Hence, for younger children, most of the intergenerational correlation reflects a causal effect of parental wealth on child wealth. The null effect among teenagers, however, is much smaller than the raw correlation of 0.099 in Panel B of Table 3. The intergenerational correlation in the teenage years is driven by factors other than the direct impact of wealth itself.

Taken together, the results in Table 4 suggest that housing wealth increases at early ages are transmitted to children, with larger effects among those in the middle childhood age ranges. The effects disappear as children enter their teenage years. Put differently, the intergenerational wealth correlations shown in Table 3 represent a mix between the causal effect of wealth and other factors, and this mix varies with the age of the child. As well, while the housing boom of the late 1990s-mid 2000s incorporated an historic increase in the value and liquidity of housing, the boom had little measurable impact on the wealth of the teenagers in our sample who were exposed to these changes.

Thus far, we have examined the transmission of parental housing wealth changes to the child's own home price in adulthood. This ignores the role of the partner, which could be important if home price changes affect whether, when, or with whom one partners. In Table 5, we use partner data from the tax records to estimate IV models of how own parents' home price changes in youth affect total (own + partner) housing wealth in adulthood.[14] To understand the

[14] We focus on IV models for the remainder of the paper for ease of exposition and interpretation. Reduced form models are similar and are available from the authors upon request.

difference with the results in Table 4, consider an individual who buys a house with a partner and they each own 50%. The outcome in Table 4 is half of the total home price, while in Table 5 it is the full price. Adding in partner valuations has little effect on the magnitude or pattern of results. Our main results and conclusions are not driven by the use of individual versus partner home price valuations.

5.3. Mechanisms

What mechanisms can explain our overall findings as well as the pattern of age differences we document? Table 6 presents several results that can shed light on the role of the different mechanisms shown in equation (2). One potential mechanism is that home price changes are differentially transitory at different ages. Column (1) of Table 6 shows the relationship between home price changes in each age range and the simulated value of the home when the child is 18. The estimates all are above one and are statistically significant at the 1% level, indicating that home price changes are persistent. This finding also is consistent with the first-stage estimates shown in Table A.4. In column (2), we show similarly-persistent effects for observed housing wealth rather than simulated housing wealth, with a smaller estimate for 12-17 year olds. These estimates underscore that we are not identified off of transitory shocks. That the estimates are very similar across age groups indicates that persistence of the shock cannot explain the age pattern of results we document.

Going back to the theoretical model, equation (2) shows that we could obtain different effects for different ages because the effects on mechanisms may vary by age. For example, a housing wealth increase over the early childhood years could lead to more early life investments that have been shown to be highly productive (e.g., Heckman 2006; Cunha et al. 2006). Children also may become less influenced by their parents as they age, which would reduce the effect operating through the Xs. We now examine some of the different components of the overall transmission effect highlighted by equation (2) in order to better understand these mechanisms and how they vary across age groups.

In column (1) of Table 7, we show estimates of equation (3) where the dependent variable is the likelihood of owning a home. The estimates indicate a modest effect on home ownership: a 100,000 DKK increase in parental home value increases the likelihood that 0-5 year olds are homeowners when they are 29-33 by 1.5 percentage points, and the effect is 1.2

percentage points for 6-11 year olds. The effect is negative and close to zero among the teenage sample. The estimates are statistically significantly different from zero at the 1 percent level, but they are not large in magnitude.

Next, we examine the effects on years of educational attainment in column (2). As with the results in column (1), the estimates for the younger two groups are positive and statistically significant. Each 100,000 DKK of housing wealth leads to 0.05-0.07 more years of educational attainment, which is between 2.1 and 3.1 percent of a standard deviation (see Table 1). In column (3), we show results using adult labor market income as the dependent variable. The estimates in the first two age groups are positive and for the oldest group it is negative, but only the 6-11 estimate is statistically significant at conventional levels. Each 100,000 DKK of housing wealth leads to 5,470 higher annual income among 6-11 year olds, which is 1.6% of the mean. This translates into $810 per year. Taken together, these results show that that home price changes between ages 0-5 and 6-11 have positive but modest effects on a range of later life outcomes.

Column (4) of Table 6 shows estimates of how housing wealth shocks in youth affect non-housing wealth of adult children. Among 6-11 year olds, there is a positive effect of home price increases on non-housing wealth that is of almost the same magnitude as the housing wealth transmission effect. There is a similarly-sized but negative effect among 0-5 year olds, with an estimate for 12-17 year olds that is positive but small in magnitude. These estimates provide evidence that home price increases lead to shifting across assets for the youngest children, while they induce more overall wealth accumulation among older children. The underlying reason for these differences is outside of the scope of this paper. One possible explanation is that the resulting shift in parental behaviors and preferences from a home price increase affect children differently according to their age. The youngest children are induced to invest more in housing at the expense of other assets, while older children are induced to invest more in housing and non-housing assets.

Non-housing wealth also can be affected through partner selection. Columns (5) and (6) examine the importance of one's partner in explaining our results. In column (5), there is little evidence that home price changes in youth are related to whether one has a partner. In column (6), we show that home price increases between 0-5 and 6-11 lead children to match with partners whose parents own more expensive homes. While neither estimate is significant at even the 10% level, the point estimates in both age groups suggest that home price increases when

young generate more assortative matching on housing wealth of the parents. As shown in Table 5, this increase in assortative matching has little overall effect on the transmission of housing wealth to the household, however.

Combining the evidence from Tables 4 and 5 with the evidence in Table 6 shows that housing wealth changes that occur while children are young positively influence their future housing wealth as well as their income, educational attainment, other wealth accumulation, and partner selection. In the terminology of equation (2), $\frac{\partial I^c}{\partial W^{pa_s}}$ and $\frac{\partial OW^c}{\partial W^{pa_s}}$ are positive for housing wealth changes at ages 0-5 and 6-11. Furthermore, Kolodziejczyk and Leth-Petersen (2013) show that $\frac{\partial f()}{\partial W^{pa_s}} = 0$ in Denmark.

How do these effects on intermediate mechanisms impact the overall wealth transmissions estimates? We follow Charles and Hurst (2003) and control for the intermediate factors shown in Table 7. This effectively nets out these intermediate factors from the overall transmission effect. The results from this exercise are shown in column (7) of Table 7. When we control for these factors, we obtain estimates for home prices changes from 0-5 that are 87% smaller and estimates for the 6-11 range that are 58% smaller. The 0-5 estimate no longer is statistically different from zero at even the 10% level. The observed intermediate mechanisms reduce both the 0-5 and 6-11 estimates by 0.11, suggesting that they have the same effect on both age groups. For the 12-17 results, controlling for these intermediate outcomes leads to a small but positive transmission effect, suggesting that these mechanisms reduce the transmission of housing wealth. In each age group, the remainder of the transmission of housing wealth across generations comes through altering parental behaviors and preferences that are then passed on to their children.

How important are the different types of mechanisms shown in Table 7? If we exclude partner wealth as controls, the transmission estimates are almost identical to those in column (7). Hence, partner wealth does little to explain the transmission patterns we document. When we control only for income and educational attainment, the 0-5 estimates are reduced by 30% and the 6-11 estimates decline by 21% relative to the baseline results in Table 4. The estimate for 12-17 year olds is close to zero, suggesting little role for these intermediate mechanisms. Income and education thus explain less than a third of the overall transmission rates we document for the younger age groups.

The results in Table 7 highlight that all of the mechanisms shown in equation (2), other than the direct transfer of wealth, help drive the intergenerational transmission of housing wealth changes. The relevance of these mechanisms varies by child age, however, which underscores the importance of examining wealth shocks that occur at different stages of child development. Among these mechanisms, we find a particularly strong role for other wealth as well as unobserved parent behaviors and preferences. As discussed in Section 2, effects on other forms of wealth accumulation may themselves be a reflection of changing parental savings behaviors and preferences, because they are occurring through a process of altering later life wealth accumulation decisions rather than through direct transfers. We separate out other wealth from parental Xs in equation (2) because we can measure the former, however conceptually they are part of the same mechanism.

Our finding that changing parent preferences and behaviors are main determinants of the intergenerational transmission of wealth aligns with the prior research showing the importance of the home environment on later life outcomes. Charles and Hurst (2003) present evidence that child and parent observables explain much of the intergenerational wealth correlation they find. Furthermore, Boserup, Kopczuk, and Kreiner (2018) show that those with higher childhood wealth have higher adult wealth, which they argue is driven by the intergenerational transmission of savings behavior. Kreiner, Leth-Petersen, and Willerslev-Olsen (2020) further demonstrate the intergenerational transmission of adverse credit outcomes, which is driven by correlated behaviors between parents and children in how they interact with debt.

These papers highlight the role of parental transmission of savings behavior and preferences to children as a core factor in driving the intergenerational transmission of wealth. Our results complement these results strongly, with the main contribution that we demonstrate how wealth *changes* in childhood affect the development and transmission of these factors. Our results are consistent with wealth increases in childhood changing parents' preferences for saving and savings behavior, which then gets passed down to their children and leads to higher housing wealth in early adulthood. This story also is consistent with the age pattern of results we find. Younger children are both more mutable in terms of the development of their preferences but also are exposed to the wealth treatment for longer. These factors will naturally make wealth increases early in life more impactful, which is what we find.

Outside of other wealth accumulation, we are unable to directly observe parental preferences and behaviors and how they are passed on to their children. However, as shown in equation (2), this is the only plausible mechanism that can explain the overall pattern of our results. The fact that these factors can shift when parents experience housing wealth changes and that these changes in preferences can be passed onto their children is a novel and important finding in this literature that advances our understanding of how and why wealth is correlated across generations.

5.4. Heterogeneity and Robustness Checks

Table 8 presents estimates separately by gender as well as a robustness check that assesses the importance of outliers. We argue that the main mechanism underlying the transmission of wealth is the transmission of parental savings preferences and behaviors. Such transmission may differ by child gender, which we examine directly in columns (1) and (2) of Table 8. The estimates are very similar for men and women, with women exhibiting more transmission for shocks that occur during the youngest childhood ages.

From the results in Table 7, we argue that a central housing wealth transmission mechanism is through changing household preferences and behaviors. These changes are akin to within-household public goods, since they are non-rival and non-excludable. An implication of this claim is that the effects should not diminish with the number of children. In contrast, if housing wealth transmission operates through direct expenditures, effects should differ with the number of children over whom the wealth is split. Column (3) of Table 8 presents reduced form estimates that include interactions between home price changes and the number of children ever born to the focal mother. Aligned with our hypothesis, the housing wealth effect does not vary systematically with the number of children: the interaction estimates are close to zero and only one is significant at even the 10% level (6-11). The estimate for 6-11 year olds is significant at the 10% level, but it is not economically large, especially because most households have 1-2 children. As well, the estimates among 0-5 year olds is positive. These results show no evidence that the transmission effects vary with the number of children. This is consistent with the results from Table 7 and strongly support our argument that the main transmission mechanism comes from a within-household public good in the form of changing parental preferences and behaviors that are passed down to all children in the household.

Columns (4)-(6) present a series of robustness checks of our main findings. The housing price variation we use represent long differences over specified childhood ages, and we have shown that these changes are persistent (Table 6). A potential alternative interpretation is that households differ systematically in terms of their exposure to housing market volatility. If such volatility has independent effects on later life outcomes, we would be falsely attributing the effects we find to real wealth increases. In column (4) of Table 8, we examine this alternative hypothesis by separately controlling for the coefficient of variation in annual home price changes during each childhood age range. These reduced form estimates are similar to those shown in Panel A of Table 4, and the coefficient of variation estimates themselves are negligibly sized.[15] Hence, it is the persistent change in wealth experienced over each age range rather than the effect of price volatility itself that is transmitted to children.

Column (5) shows IV estimates where we drop observations in which one of the observations for each age group are in the top quartile of the distribution of home price changes. This exercise allows us to assess the role of outliers in driving our results. The estimates for ages 6-11 and 12-17 are similar to baseline. The age 0-5 estimate is larger, at 0.17, suggesting that the baseline estimate is a lower bound for this age group.

`Finally, in column (6) we perform a falsification test using the sample of those who were renters at the time of their first child's birth. If the main mechanism underlying our findings are from real wealth changes, then renters should be unaffected. Alternatively, if our results reflect unobserved trends or shocks at the local municipality level, outcomes for the children of renters should be affected. We use changes in municipality-average home prices during each child age range as the treatment variable in column (6). The point estimates are universally negative and are not statistically significant at even the 10% level. Only the children of homeowners are affected by home price changes, which is consistent with our preferred interpretation of the data.

6. Conclusion

This paper extends the growing literature on the intergenerational transmission of wealth by examining how housing wealth changes experienced during childhood translate to housing wealth in adulthood as well as the mechanisms that underlie this transmission. We focus on

[15] We also have examined whether there are different effects of short-run positive vs. negative volatility, and we continue to find null effects of both. These results are available from the authors upon request.

housing wealth because it is the single most important component of wealth for most households and is more evenly distributed across the population than are others forms of wealth. As well, the past several decades have experienced historic volatility in the housing market, which underscores the importance of understanding the effect of this volatility on subsequent generations.

We use Danish Register Data from the 1985-1989 birth cohorts that contain rich information on parents, the houses they own, and linkages to child outcomes when they are 29-33. We focus on home price changes experienced by the household during 3 distinct periods of childhood: ages 0-5, 6-11, and 12-17. To abstract from mobility issues, we fix each child in the home in which they were born and then calculate the change in the value of this house over these three different child age ranges. Our empirical approach links the changes in home prices in each period to the average price of the home the children own when they are between the ages of 29 and 33. We control extensively for selection through the inclusion of home price at birth, parent education and income, birth parity, birth cohort, and municipality-by-year fixed effects.

Our main results indicate that home price changes experienced during youth are passed through to children differentially based on their age when the price change occurred. Among 0-5 year olds, 12.7% of each Krone of home price change is passed through to housing wealth at ages 29-33. The transmission effect among 6-11 year olds is 20.5%. For both of these groups the causal estimates are similarly-sized with respect to the raw correlations, suggesting that much of the intergenerational wealth correlations reflect causal effects of wealth. Among teenagers, there is no effect of home price change on future wealth outcomes. The larger raw correlation hence reflects correlated pre-determined characteristics.

We present a simple model that articulates the potential mechanisms through which wealth shocks are transmitted across generations. Our model highlights the following factors: 1) the direct effect of the wealth shock, 2) an effect operating through higher income of the child (which also could be reflected in higher educational attainment), 3) changes to other wealth, and 4) changes to unobserved parent preferences and behaviors related to savings that are passed down to their children. Changes to other wealth likely are a reflection of parental preferences and behaviors as well, since our sample of 29-33 year olds receive few direct transfers from their parents. We additionally consider the roles of selection into home ownership and the persistence of the housing wealth changes we use for identification. Our results from examining these factors

indicate some role for the second mechanism and a larger role for mechanisms (3) and (4). Taking the evidence together, we argue that housing wealth changes during childhood alter parental preferences and behaviors, which are then passed down to children and affect their housing wealth accumulation as adults. This interpretation of the evidence is supported by the larger transmission among children prior to their teenage years, as younger children are likely to be more influenced by their parents than are teens.

Our results have a number of important implications. First, from a policy perspective, they suggest that policies that support wealth accumulation of parents, especially among parents of young children, will foster higher wealth accumulation among children as they age. Second, our preferred interpretation of the results highlights the role of parental savings preference and behaviors in driving the intergenerational transmission of wealth. These preferences and behaviors could be independently targeted by policy interventions, for example by helping develop financial literacy. Third, our estimates add to the evidence on the long-run impact of housing market volatility. In particular, the large fluctuations in home prices during the housing boom and bust are likely to meaningfully impact wealth accumulation among the next generation who were young children during this period. Subsequent work directly examining these cohorts and understanding how parental preference and behaviors are shaped by wealth fluctuations would be of high value.

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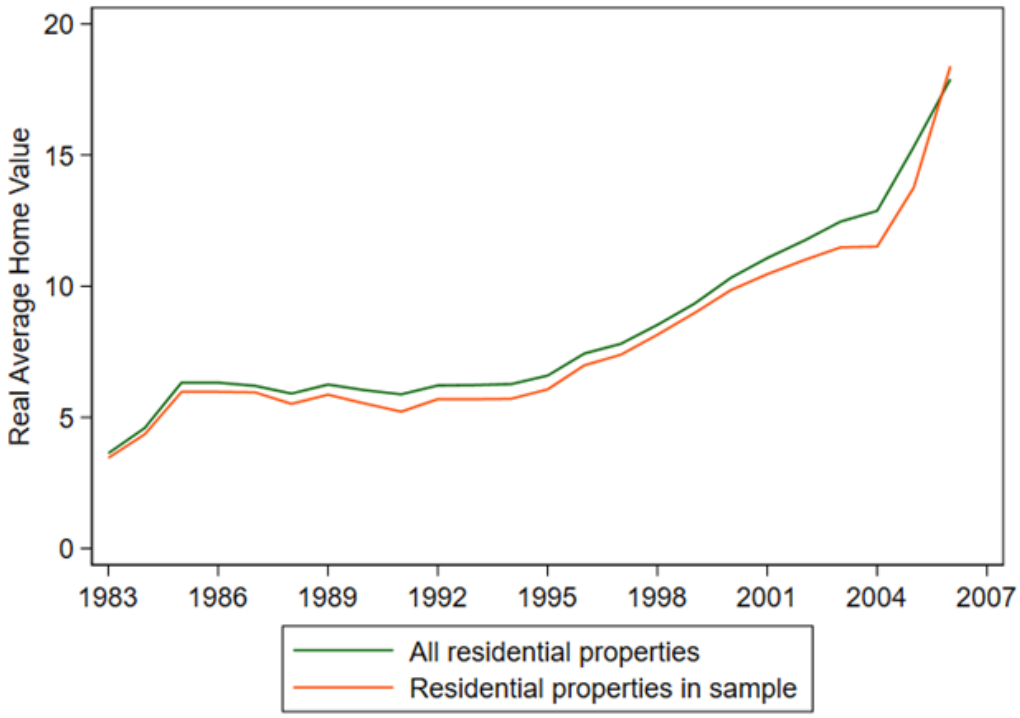
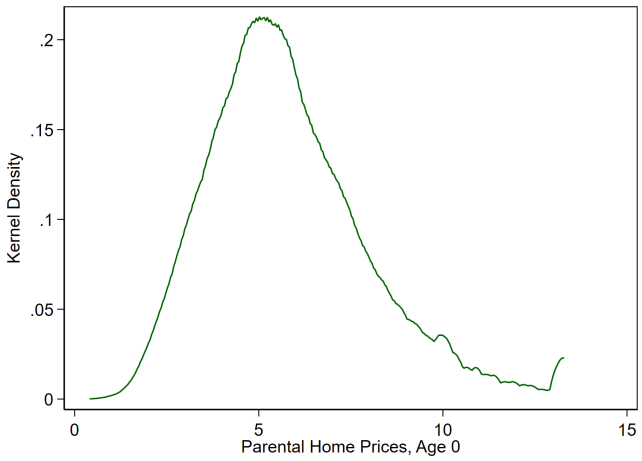
Figure 1: Real Average Home Price, 1983-2006

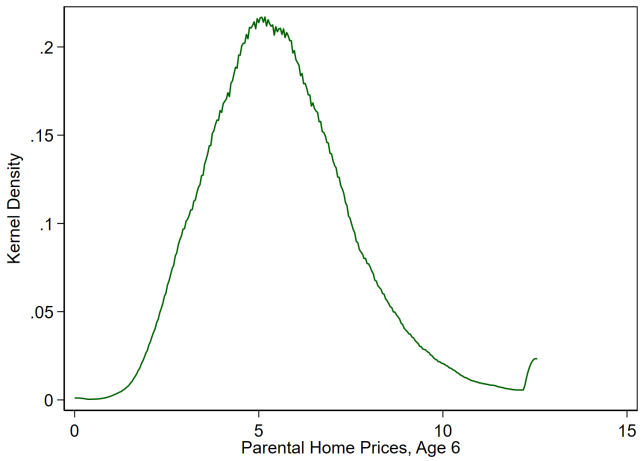


Average value of primary and holiday residences in the full population as well as only the houses included in our sample. Prices are in 100,000 DKK2018.

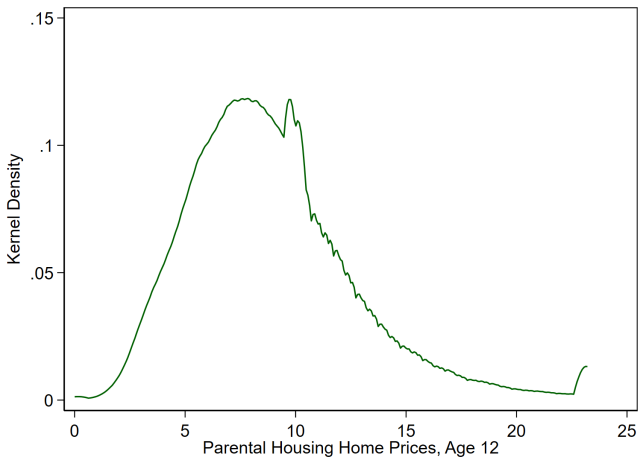
Figure 2: Distribution of Parental Home Prices



(a) At Birth



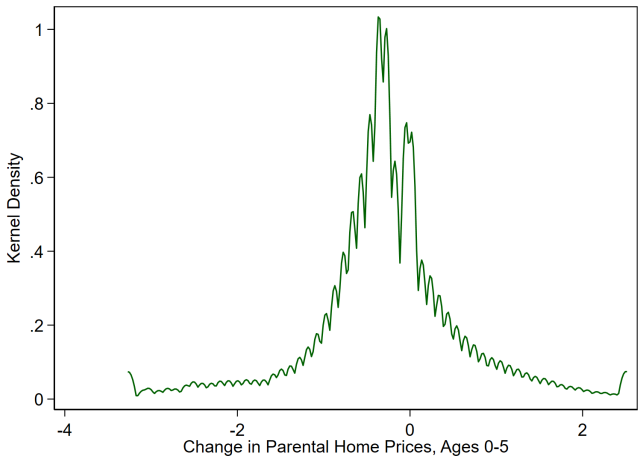
(b) Age 6



(c) Age 12

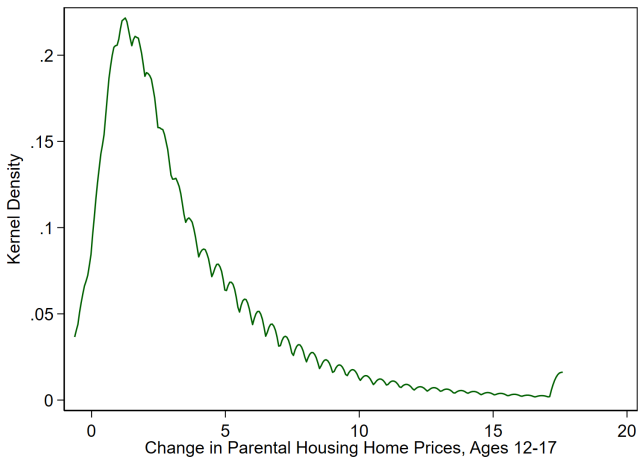
Kernel densities estimated using Epanechnikov kernel with optimal bandwidth. Housing wealth levels winsorized at the 99th percentile within each age group.

Figure 3: Distribution of Parental Home Price Changes



(a) Ages 0-5

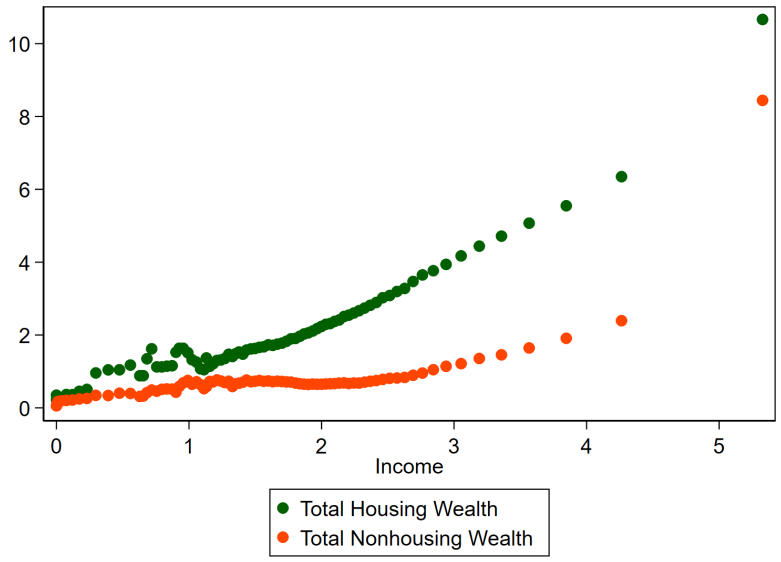
(b) Ages 6-11



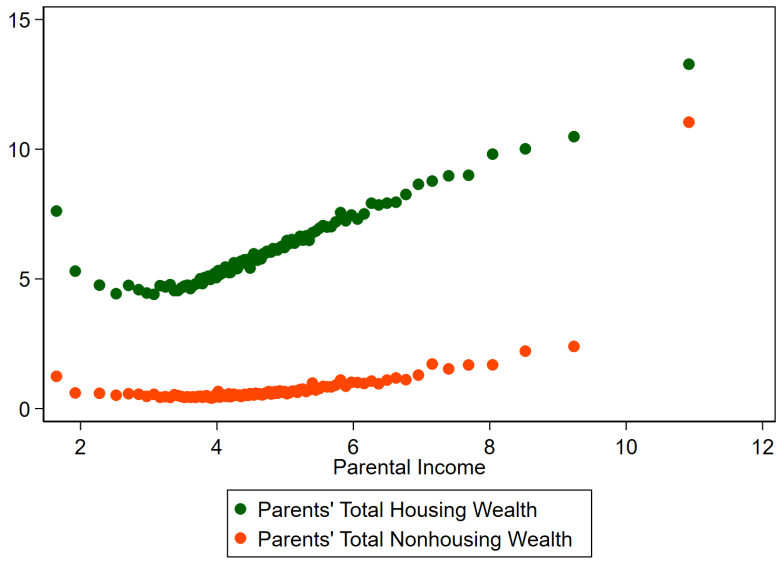
(c) Ages 12-17

Kernel densities estimated using Epanechnikov kernel with optimal bandwidth.

Figure 4: Distribution of Gross Housing and Nonhousing Wealth (1995)



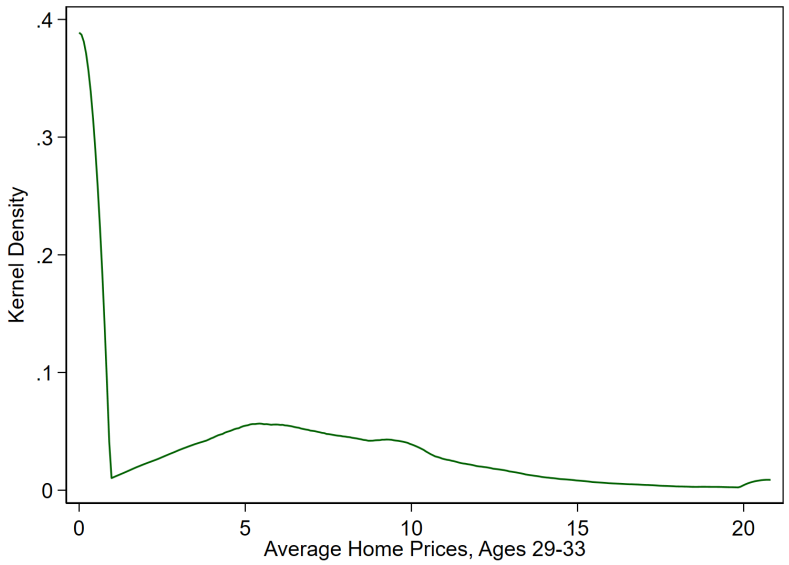
(a) Full Population



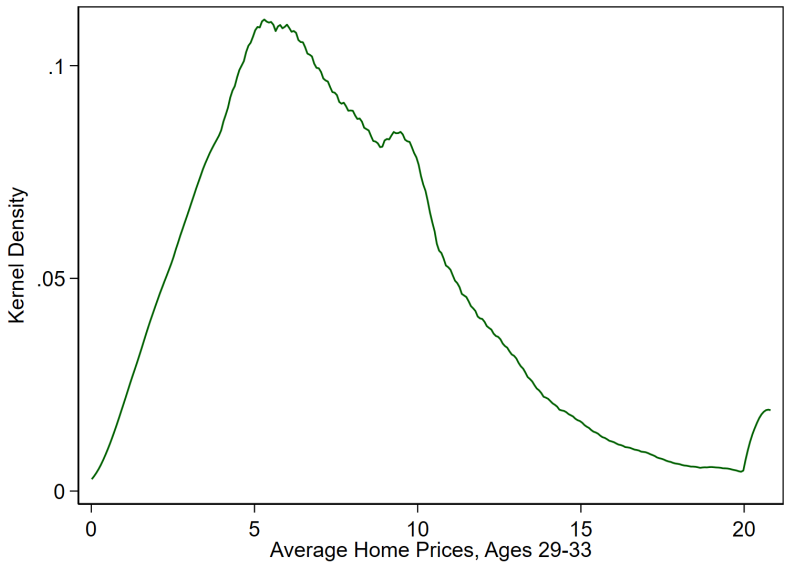
(b) Sample

Binned scatter plots of gross housing and nonhousing wealth in 1995. Panel A includes data from the full population. Panel B includes data from the parents included in our sample of the 1985-1989 birth cohorts.

Figure 5: Distribution of Child Home Prices in Adulthood



(a) Unconditional



(b) Conditional

Kernel densities estimated using Epanechnikov kernel with optimal bandwidth. Housing wealth levels winsorized at the 99th percentile within each age group.

Table 1: Summary Statistics

	(1) Ages 0-5	(2) Ages 6-11	(3) Ages 12-17	(4) Ages 29-33
Women	0.4862	0.4862	0.4862	
	(0.4998)	(0.4998)	(0.4998)	
Mother's Education (years)[a]	13.1892	13.2929	13.4625	
	(2.4602)	(2.4759)	(2.4794)	
Father's Education (years)[a]	13.8133	13.8788	13.9184	
	(2.6602)	(2.6740)	(2.6789)	
Mother's Income[a,b]	1.2420	1.8763	2.4206	
	(0.4410)	(0.7765)	(1.0635)	
Father's Income[a,b]	1.9396	2.6766	3.4368	
	(0.8797)	(1.7239)	(3.6265)	
Mother's Age[a]	28.3570	34.3570	40.3570	
	(4.3937)	(4.3937)	(4.3937)	
Father's Age[a]	31.1295	37.1295	43.1295	
	(5.1447)	(5.1447)	(5.1447)	
Birth parity	1.7508	1.7508	1.7508	
	(0.7983)	(0.7983)	(0.7983)	
Parents are married/co-habitating[a]	0.9861	0.8537	0.7706	
	(0.1169)	(0.3534)	(0.4204)	
Simulated Parental Housing Wealth[a,b]	5.8647	5.7044	9.0059	
	(2.5265)	(2.6215)	(4.5056)	
Change in Simulated Parental Housing Wealth[b]	-0.2753	2.5804	3.4613	
	(0.9073)	(1.8389)	(3.3692)	
Parental Housing Wealth[a,b]	5.1959	5.4348	9.6622	
	(2.5782)	(3.0305)	(7.1632)	
Change in Parental Housing Wealth[b]	0.1552	3.5241	5.5649	
	(2.7716)	(4.5896)	(8.7988)	
Average Housing Wealth[b]				4.1180
				(6.0979)
Average Nonhousing Wealth[b]				0.9907
				(5.8261)
Pr(Homeowner)				0.5124
				(0.4998)
Education (Max Years)				15.0570
				(2.4093)
Average Personal Income[b]				3.4411
				(2.4975)
Pr(Partner)				0.7851
				(0.4108)
Partner's Parental Housing Wealth, Age 18[b]				14.8388
				(28.6570)

Number of observations = 128,382. Standard deviations in parentheses. (a) Measured in the base year for each age group. (b) 100,000 DKK2018 $\approx$ \$14,800.

Table 2: Selection: Predicted Average Housing Wealth, Ages 29-33

	(1)	(2)	(3)	(4)
Change in simulated housing wealth, ages 0-5	0.0477***	0.0527***	0.0265***	0.0248***
	(0.0067)	(0.0033)	(0.0037)	(0.0025)
Change in simulated housing wealth, ages 6-11	0.0529***	0.0417***	0.0319***	0.0265***
	(0.0045)	(0.0017)	(0.0024)	(0.0014)
Change in simulated housing wealth, ages 12-17	0.0063***	0.0079***	0.0051***	0.0071***
	(0.0012)	(0.0011)	(0.0010)	(0.0010)
Parental housing wealth at birth	X		X	
Parental income at birth	X	X		
Observations	128,382	128,382	128,382	128,382
R^2	0.1584	0.1717	0.0681	0.0788
Dep. Var. Mean	4.1180	4.1180	4.1180	4.1180

In each column, the dependent variable is predicted average housing wealth when the child is 29-33 years old, obtained from a regression of adult housing wealth on each parent's real income at birth, age (fixed effects) at birth, education (fixed effects for years) at birth, an indicator for the parents being married and/or cohabiting at birth, and the gender of the child. Columns (3) and (4) exclude parental income from the prediction model. Columns (1) and (3) control for parental housing wealth at birth. Changes in housing wealth are in 100,000 DKK2018. Standard errors clustered at the municipality level in parentheses: significant at *10%, **5%, and ***1%.

Table 3: Age-adjusted Intergenerational Correlation of Housing Wealth

Panel A: Full Population and Income Register Data				
	(1)	(2)	(3)	(4)
Parental housing wealth, age 0	0.1380***			
	(0.0093)			
Parental housing wealth, age 6		0.2960***		
		(0.0094)		
Parental housing wealth, age 12			0.3652***	
			(0.0020)	
Parental housing wealth, age 29-33				0.0390***
				(0.0007)
Observations	251,870	250,577	249,842	251,873
R^2	0.0027	0.0058	0.1210	0.0154

Panel B: Sample and Value of House Owned at Birth				
	(1)	(2)	(3)	(4)
Simulated Parental housing wealth, age 0	0.2073***			
	(0.0070)			
Simulated Parental housing wealth, age 6		0.1823***		
		(0.0066)		
Simulated Parental housing wealth, age 12			0.0989***	
			(0.0039)	
Parental housing wealth, age 29-33				0.0423***
				(0.0018)
Observations	128,382	128,382	128,382	128,240
R^2	0.0093	0.0083	0.0075	0.0069

Each column of each panel is a separate regression that includes fixed effects for each parent's age in the first year of each age group. Housing wealth is measured in 100,000 DKK2018. Standard errors clustered at the municipality level in parentheses: significant at *10%, **5%, and ***1%.

Table 4: Baseline Results – Child's Housing Wealth in Adulthood

Panel A: Reduced Form Estimates					
	(1)	(2)	(3)	(4)	(5)
Change in simulated housing wealth, ages 0-5	-0.0567*	0.1061***	0.0574**	0.0669**	0.0671**
	(0.0303)	(0.0267)	(0.0267)	(0.0266)	(0.0270)
Change in simulated housing wealth, ages 6-11	0.1312***	0.2031***	0.1140***	0.1492***	0.1511***
	(0.0183)	(0.0179)	(0.0201)	(0.0179)	(0.0175)
Change in simulated housing wealth, ages 12-17	0.0111	0.0124	0.0005	0.0035	0.0059
	(0.0173)	(0.0126)	(0.0111)	(0.0124)	(0.0122)
Observations	128,382	128,382	125,204	128,382	128,382
R^2	0.0020	0.0140	0.0360	0.0245	0.0280
Dep. Var. Mean	4.1180	4.1180	4.1400	4.1180	4.1180

Panel B: Instrumental Variables Estimates					
	(1)	(2)	(3)	(4)	(5)
Change in housing wealth, ages 0-5	-0.1241***	0.2163***	0.1299**	0.1254**	0.1272**
	(0.0315)	(0.0576)	(0.0566)	(0.0558)	(0.0568)
Change in housing wealth, ages 6-11	0.1269***	0.2226***	0.2115***	0.2038***	0.2048***
	(0.0148)	(0.0324)	(0.0298)	(0.0301)	(0.0305)
Change in housing wealth, ages 12-17	0.0188**	-0.0136	0.0060	-0.0065	-0.0026
	(0.0079)	(0.0163)	(0.0177)	(0.0171)	(0.0176)
Observations	128,382	128,382	128,382	128,382	128,382
Dep. Var. Mean	4.1180	4.1180	4.1180	4.1180	4.1180
Municipality FE		X	X	X	
Birth Cohort FE		X	X	X	X
Housing Wealth at Birth		X	X	X	
Municipality FE x Housing Wealth at Birth					X
Birth Parity FE			X	X	X
Parental Controls at Birth			X	X	X
Parental Controls at Ages 6 and 12			X		

Panel (A) presents reduced form results from estimation of equation (3), and Panel (B) presents IV estimates from estimation of equations (4)-(5). First stage estimates are shown in Online Appendix Table A.4. In both panels, Columns (3)-(5) include controls for each parent's real income at birth, age (fixed effects) at birth, education (fixed effects for years) at birth, an indicator for the parents being married and/or cohabiting at birth, and the gender of the child. Column (3) includes controls for each parent's real income, age (fixed effects), education (fixed effects for years), and marital/cohabiting status at ages 6 and 12. Changes in housing wealth and real income are in 100,000 DKK2018. Standard errors clustered at the municipality level in parentheses: significant at *10%, **5%, and ***1%.

Table 5: Instrumental Variables Estimates – Child and Partner's Housing Wealth in Adulthood

	(1)	(2)	(3)	(4)	(5)
Change in housing wealth, ages 0-5	-0.0961**	0.1951***	0.1129***	0.1284***	0.1284***
	(0.0443)	(0.0454)	(0.0428)	(0.0432)	(0.0424)
Change in housing wealth, ages 6-11	0.1454***	0.2884***	0.1731***	0.2196***	0.2214***
	(0.0259)	(0.0258)	(0.0286)	(0.0259)	(0.0254)
Change in housing wealth, ages 12-17	-0.0033	-0.0043	-0.0104	-0.0070	-0.0007
	(0.0247)	(0.0212)	(0.0198)	(0.0206)	(0.0207)
Municipality FE		X	X	X	
Birth Cohort FE		X	X	X	X
Housing Wealth at Birth		X	X	X	
Municipality FE x Housing Wealth at Birth					X
Birth Parity FE			X	X	X
Parental Controls at Birth			X	X	X
Parental Controls at Ages 6 and 12			X		
Observations	128,382	128,382	125,204	128,382	128,382
Dep. Var. Mean	6.3128	6.3128	6.3457	6.3128	6.3128

The table presents IV estimates of equation (4), where the outcome variable is the value of the homes owned by the focal child and their partner in adulthood. Columns (3)-(5) include controls for each parent's real income at birth, age (fixed effects) at birth, education (fixed effects for years) at birth, an indicator for the parents being married and/or cohabiting at birth, and the gender of the child. Column (3) includes controls for each parent's real income, age (fixed effects), education (fixed effects for years), and marital/cohabiting status at ages 6 and 12. Changes in housing wealth and real income are in 100,000 DKK2018. Standard errors clustered at the municipality level in parentheses: significant at *10%, **5%, and ***1%.

Table 6: Instrumental Variables Estimates of the Permanence and Relevance of Housing Wealth Shocks

	(1) Simulated Parental Housing Wealth, Age 18	(2) Parental Housing Wealth, Age 18
Change in housing wealth, ages 0-5	1.9429***	1.7089***
	(0.2266)	(0.1400)
Change in housing wealth, ages 6-11	1.7386***	1.4747***
	(0.1216)	(0.0747)
Change in housing wealth, ages 12-17	2.3514***	1.3323***
	(0.0700)	(0.0437)
Birth Cohort FE	X	X
Municipality FE x Housing Wealth at Birth	X	X
Birth Parity FE	X	X
Parental Controls at Birth	X	X
Observations	128,382	128,074
Dep. Var. Mean	14.1865	15.6215

The table presents IV estimates of equation (4), where the outcome variables are the simulated value of the parents' home at age 18 of the child (column 1) and the observed value of the parents' home at age 18 of the child (column 2). All columns include controls for each parent's real income at birth, age (fixed effects) at birth, education (fixed effects for years) at birth, an indicator for the parents being married and/or cohabiting at birth, and the gender of the child. Changes in housing wealth and real income are in 100,000 DKK2018. Standard errors clustered at the municipality level in parentheses: significant at *10%, **5%, and ***1%.

Table 7: Instrumental Variables Estimates of Mechanisms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		Highest Education (Years),	Average Income	Average Nonhousing Wealth,		Partner's Parental Housing	Endogenous
	Pr(Homeowner)	Ages 29-33	Ages 29-33	Ages 29-33	Pr(Partner)	Wealth, Age 18	Mechanisms
Change in housing wealth, ages 0-5	0.0149***	0.0506**	0.0023	-0.1901***	0.0022	0.4646	0.0169
	(0.0046)	(0.0209)	(0.0233)	(0.0551)	(0.0038)	(0.3109)	(0.0433)
Change in housing wealth, ages 6-11	0.0117***	0.0745***	0.0547***	0.1524***	0.0048*	0.2593	0.0865***
	(0.0025)	(0.0112)	(0.0125)	(0.0295)	(0.0021)	(0.1723)	(0.0230)
Change in housing wealth, ages 12-17	-0.0042***	0.0050	-0.0098	0.0280*	-0.0028**	-0.0336	0.0288**
	(0.0014)	(0.0065)	(0.0072)	(0.0170)	(0.0012)	(0.1011)	(0.0135)
Birth Cohort FE	X	X	X	X	X	X	X
Municipality FE							
x Housing Wealth at Birth	X	X	X	X	X	X	X
Birth Parity FE	X	X	X	X	X	X	X
Parental Controls at Birth	X	X	X	X	X	X	X
Observations	128,382	123,906	128,382	128,382	128,382	93,429	123,906
Dep. Var. Mean	0.5124	15.0569	3.4411	0.9907	0.7851	14.8384	4.2452

The table presents IV estimates of equation (4), with each potential mechanism as the outcome variable in columns (1)-(6). Column (7) presents IV estimates of the transmission of housing wealth changes that control for average real income over ages 29-33 and fixed effects for highest level of education (years) over ages 29-33. All columns include controls for each parent's real income at birth, age (fixed effects) at birth, education (fixed effects for years) at birth, an indicator for the parents being married and/or cohabiting at birth, and the gender of the child. Changes in housing wealth, real income, nonhousing wealth, and partner's parental housing wealth are in 100,000 DKK2018. Standard errors clustered at the municipality level in parentheses: significant at *10%, **5%, and ***1%.

Table 8: Heterogeneous Effects and Robustness Checks

	(1)	(2)	(3)	(4)	(5)	(6)
			Reduced Form			
			Number of	Short Run	Drop 4th	
	Men	Women	Children	Variation	Quartile	Renters
Change in housing wealth, ages 0-5	0.0986	0.1731**	0.0397	0.0635**	0.1655***	-0.0757
	(0.0868)	(0.0710)	(0.0688)	(0.0272)	(0.0621)	(0.1192)
Change in housing wealth, ages 6-11	0.1964***	0.2080***	0.2133***	0.1532***	0.1999***	-0.1253
	(0.0467)	(0.0382)	(0.0427)	(0.0176)	(0.0321)	(0.0903)
Change in housing wealth, ages 12-17	0.0147	-0.0245	0.0140	0.0063	-0.0097	-0.0072
	(0.0275)	(0.0215)	(0.0212)	(0.0121)	(0.0186)	(0.0366)
Coefficient of variation, ages 0-5				0.0000		
				(0.0000)		
Coefficient of variation, ages 6-11				-0.0000		
				(0.0000)		
Coefficient of variation, ages 12-17				-0.0000		
				(0.0000)		
# children			-0.0821			
			(0.0504)			
Change in housing wealth, ages 0-5			0.0116			
x # children			(0.0235)			
Change in housing wealth, ages 6-11			-0.0241*			
x # children			(0.0140)			
Change in housing wealth, ages 12-17			-0.0031			
x # children			(0.0075)			
Municipality FE						X
Birth Cohort FE	X	X	X	X	X	X
Municipality FE						
x Housing Wealth at Birth	X	X	X	X	X	
Birth Parity FE	X	X	X	X	X	X
Parental Controls at Birth	X	X	X	X	X	X
Observations	65,969	62,413	128,382	128,197	124,591	58,224
R^2			0.0283	0.0280		0.0316
Dep. Var. Mean	4.2270	4.0029	4.1180	4.1181	4.1035	2.5405

The table presents IV estimates of equation (4) in columns (1), (2), (5), and (6). Columns (2) and (3) present reduced form estimates of equation (3). All columns include controls for each parent's real income at birth, age (fixed effects) at birth, education (fixed effects for years) at birth, an indicator for the parents being married and/or cohabiting at birth, and the gender of the child. Columns (3) and (4) are estimated using the reduced form of the instrument and so the treatment variables are changes in the simulated housing wealth for each age group. Column (3) interacts the number of children born to the focal child's mother with changes in housing wealth. Column (4) includes the coefficients of variation of deviations of actual home prices from the annualized long difference in housing wealth for each age group (estimates and standard errors are non-zero beyond four decimal places). Column (5) drops all observations where at least one of the changes in housing wealth for each age group is in the 4th quartile of the distribution of housing wealth changes for that age group. Column (6) uses changes in average municipality-level simulated housing wealth among the families in the sample. Changes in housing wealth and real income are in 100,000 DKK2018. Standard errors clustered at the municipality level in parentheses: significant at *10%, **5%, and ***1%.

A Online Appendix

Table A.1: Sample Creation

	(1)
Births (1985-1989)	275,701
At least one parent owns a single house	137,031
With data on parental education, income, and age at birth	128,382

Table A.2: Housing Sample Creation

	Number of Houses
Houses owned by parents of 1984 birth cohort	184,320
With a single address	183,926
With non-negative valuations	182,587
Limited to families that own 1 house	140,825
Limited to primary residences and summer houses	117,836
Limited to privately owned houses	117,831
With non-missing data when child is age 5	117,693
With non-missing data when child is age 6	117,654
With non-missing data when child is age 11	117,589
With non-missing data when child is age 12	117,561
With non-missing data when child is age 17	117,472
With non-missing data when child is age 18	117,427

Table A.3: Selection Effects – Contribution of Covariates

	(1) Mother's Income at Birth	(2) Father's Income at Birth	(3) Mother's Education at Birth	(4) Father's Education at Birth	(5) Mother's Age at Birth	(6) Father's Age at Birth	(7) Parity	(8) 𝟙(Woman)	(9) Parents' Marital Status at Birth
Change in sim. housing wealth, ages 0-5	0.0077***	0.070	-0.0099	-0.0212**	-0.3147***	-0.3930***	-0.0371***	-0.0011	-0.0005
	(0.0020)	(0.0057)	(0.0097)	(0.0104)	(0.0171)	(0.0204)	(0.0033)	(0.0020)	(0.0005)
Change in sim. housing wealth, ages 6-11	0.0230***	0.0771***	0.1516***	0.1669***	0.2117***	0.1756**	0.0153***	0.0008	0.0016***
	(0.0011)	(0.0026)	(0.0058)	(0.0062)	(0.0102)	(0.0124)	(0.0019)	(0.0012)	(0.0003)
Change in sim. housing wealth, ages 12-17	0.0065***	0.0257***	0.0720***	0.0735***	0.1068***	0.1173***	0.0003	0.0005	-0.0011***
	(0.0008)	(0.0019)	(0.0039)	(0.0042)	(0.0070)	(0.0084)	(0.0013)	(0.0008)	(0.0002)
Observations	128,382	128,382	128,382	128,382	128,382	128,382	128,382	128,382	128,382
R^2	0.1643	0.1726	0.0847	0.0783	0.0749	0.0508	0.0147	0.0021	0.0111
Dep. Var. Mean	1.2420	1.9396	13.1892	13.8133	28.3570	31.1295	1.7508	0.4862	0.9861

All columns include controls for each parent's real income at birth, age (fixed effects) at birth, education (fixed effects for years) at birth, an indicator for the parents being married and/or cohabiting at birth, and the gender of the child. Changes in housing wealth and real income are in 100,000 DKK2018. Standard errors clustered at the municipality level in parentheses: significant at *10%, **5%, and ***1%.

Table A.4: Instrumental Variables Estimates: First Stage

	(1) Change in Housing Wealth, Age 0-5	(2) Change in Housing Wealth, Ages 6-11	(3) Change in Housing Wealth, Ages 12-17
Change in simulated housing wealth, ages 0-5	0.4567***	0.0453**	0.1176***
	(0.0231)	(0.0175)	(0.0417)
Change in simulated housing wealth, ages 6-11	0.1799***	0.6280***	0.1556***
	(0.0093)	(0.0141)	(0.0211)
Change in simulated housing wealth, ages 12-17	0.0116*	0.0286***	0.5804***
	(0.0063)	(0.0090)	(0.0177)
Municipality FE			
Birth Cohort FE	X	X	X
Housing Wealth at Birth			
Municipality FE x Housing Wealth at Birth	X	X	X
Birth Parity FE	X	X	X
Parental Controls at Birth	X	X	X
Parental Controls at Ages 6 and 12			
Observations	128,382	128,382	128,382
R^2	0.3236	0.1554	0.1424
F-stat	1,619.55	429.79	497.50

All columns include controls for each parent's real income at birth, age (fixed effects) at birth, education (fixed effects for years) at birth, an indicator for the parents being married and/or cohabiting at birth, and the gender of the child. Changes in housing wealth and real income are in 100,000 DKK2018. Standard errors clustered at the municipality level in parentheses: significant at *10%, **5%, and ***1%.