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Dynastic Home Equity*

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Using a nationally-representative panel of consumer credit records for the US from 1999 to 2021, we document a positive correlation between child and parent homeownership. We propose a new causal mechanism behind this relationship: parents extract home equity to help finance their child's home purchase. To identify the mechanism, we use fixed effect, event study, local projection and matching methods. We find that children whose parents extract equity: (i) are 60-80% more likely to become homeowners; (ii) have lower leverage at origination; and (iii) buy higher-valued homes and at a younger age. The effects are stronger when housing affordability is worse and children's financial constraints are more likely to bind. Using a simple structural model, we find that in a counterfactual economy with no role for parental equity, intergenerational homeownership mobility increases.

Keywords: Home equity, intergenerational wealth, inequality, mortgages, housing, household finance
JEL Codes: D31, D64, E21, G5, G51

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1 Introduction

Wealth is highly correlated between parents and their children, but the relative importance of wealth itself versus other factors in explaining this intergenerational persistence is the subject of an active debate with far-reaching policy implications (Charles and Hurst (2003), De Nardi (2004), Black, Devereux, Lundborg and Majlesi (2015), Fagereng, Mogstad and Ronning (2021)). A home is the largest asset for typical middle-income households in developed countries, and a mortgage is their most significant financial contract (Campbell (2006)). Not surprisingly then, housing plays a prominent role in the current debate about inequality and housing affordability.[1]

This paper studies the intergenerational correlation in housing wealth and the role credit markets play in allowing households to transfer home equity between generations. Our main contribution is isolating a new channel for the persistence of homeownership across generations: parents who own a house extract equity from their house to help their children purchase a home. We label this channel "*dynastic home equity*" and quantify its importance using a nationally-representative panel of consumer credit records in the US from 1999 to 2021. We use these credit records data to construct a unique panel linking children and parents, which allows us to measure their homeownership status and equity extraction. Using several empirical strategies, we quantify the importance of the dynastic home equity channel in intergenerational persistence in homeownership.

We start the analysis by documenting an economically and statistically significant positive correlation in homeownership across generations. This correlation holds conditional on a rich set of borrower-level characteristics as well as business cycle and zip-code level economic conditions. We find that children with parents that are homeowners are about one percentage point (16%) more likely to be a homeowner by the age of 25 relative to similar children whose parents are not homeowners.

[1] See Piketty and Zucman (2014), Piketty, Yang and Zucman (2019), Kuhn, Schularick and Steins (2020), Chetty, Hendren and Katz (2016), Favilukis, Mabille and Van Nieuwerburgh (2019).

We isolate the role of parents' home equity extraction in the intergenerational correlation in homeownership from other factors that can potentially drive the correlation. We focus on the sample of children whose parents are homeowners and exploit variation in equity extraction by parents to measure the transfer of wealth to children through the housing market. In our data, about 11% of the transitions to new homeownership for a child are associated with parents extracting equity, suggesting a potential causal link between equity extraction and homeownership. To measure the effect of parental equity extraction on the probability of a child becoming a homeowner, we employ several empirical approaches — fixed effects, event study, local projection difference-in-difference and propensity-score matching.

First, controlling for the effects of birth cohort, zip code, age, and credit quality of parents and children, we find that children whose parents extract equity are about 0.6 percentage point more likely to become a homeowner than children whose homeowner parents do not extract equity. Given the average flow into ownership rate of about one percentage point, having a parent who extracts equity increases the probability a child becomes a homeowner by about 60%. We find an almost identical magnitude when we include children fixed effects and only exploit variation within a child over time based on parents equity extraction.

Second, we implement an event study approach. We estimate a model with leads and lags of parent's equity extraction and find that almost the entire increase in child homeownership occurs in the year when parents extract equity. The effects in the years before or after parental equity extraction are statistically insignificant and close to zero. This implies that the equity extraction event itself is allowing the transition in ownership status for the children.

Third, we estimate the effect of parents equity extraction on children homeownership using a local projection based difference-in-differences approach to account for the staggered nature of the treatment across children-parents pairs and the potentially heterogeneous effects (Dube, Girardi, Jorda and Taylor (2023)). We find that parental equity extraction is associated with a statistically significant and large increase in the likelihood of the child becoming a new homeowner. The point estimate indicate a 0.8 percentage point increase,

even larger than the magnitude from the event study. As a further check that our estimate is not caused by a spurious correlation, we conduct a placebo test and randomly match children to similar parents and re-estimate the effect of equity extraction. These estimates show that our treatment effect is well outside the bands of what we would expect due to random correlation.

Fourth, we use propensity score matching to construct a control group for children who are treated by parent equity extraction. This allows us to better account for potentially nonlinear relationships between control variables and the probability of becoming a homeowner. We estimate an average treatment effect on the treated (ATT) of about 0.6 percentage point, which is almost identical to the average treatment effect (ATE). Overall, all our different empirical approaches point to a similar economically and statistically significant impact of parent equity extraction on children new homeownership. As compared to children whose parents do not extract equity, children whose parents extract equity are about 60-80% more likely to become a homeowner immediately after the extraction event.[2]

We next explore how the dynastic home equity channel varies across parent and child characteristics. We find that dynastic home equity is more important when local housing affordability is worse, as well as when financial constraints are more likely to bind for children either due to macroeconomic reasons (like the financial crisis) or due to children being too young to have accumulated substantial assets for a downpayment. Turning to parents heterogeneity, we find that dynastic home equity is more important when parents have better access to credit (higher credit card limits and credit scores, and lower credit card utilization) and if they are relatively young. This could suggest that the parents did not have time to accumulate enough savings to help their children, and they tap into their home equity.

We then turn to the exploration of the mechanisms through which parents' equity extraction affect children homeownership. First, we look at children's leverage at origination. We

[2]Interestingly, our estimated effect are very similar to Berger, Turner and Zwick (2020), who study a $20 billion stimulus program to support the U.S. housing market. They find that the program increased the likelihood of being a first-time homeowner by over 50%, by relaxing down payment requirements and liquidity needs. Hence, the impact of parental equity in the US housing market can be compared to the one of a large stimulus program.

find that children whose parents extract equity have lower loan-to-value (LTV) at origination, consistent with parental equity relaxing leverage constraints for the children. Children whose parents extracted equity are about 4.4 percentage points (6%) less likely to have an LTV greater than 80%, above which borrowers are typically required to buy costly mortgage insurance. Second, we find that, conditional on buying, children whose parents extract equity buy a home at a younger age. Third, we find that, conditional on buying, children whose parent extract equity: (i) have a lower moving probability in the next three years, and (ii) buy higher value homes. Both results are consistent with parental assistance helping the child afford a better quality match in the housing market, thus saving on search and transaction costs. Overall, our results show that parental help not only increases the likelihood of children becoming new homeowners, but also lowers the cost of homeownership for children by decreasing leverage at origination, and potentially increasing the match quality for children in the housing market.

In the last part of the paper, we provide two complementary quantifications of the importance of dynastic home equity. First, we present back-of-the-envelope calculations of the effect of parental equity extraction on the black-white homeownership gap. A large literature has studied disparities in wealth across black and white households, their persistence over time, and their connection to persistent gap in homeownership (Charles and Hurst (2002), Derenoncourt, Kim, Kuhn and Schularick (2022)). We document that the racial housing gap is even larger when looking at young adults in both absolute and relative terms, suggesting that differential factors early in life matter significantly for access to homeownership. We calibrate transition probabilities from renting to owning for young adults, to match the white homeownership rate at age 35. We then compute the fraction of homeowners by age 35 as a function of these transition probabilities and (i) differences in homeownership rate of the parents; (ii) differences in equity extraction rates of the parents, all else equal.[3] We find

[3]We make two simplifying assumptions in our calculation: (i) all children at age 18 are renters and that once they become homeowners, they do not transition back to renting (i.e., homeownership is an absorbing state); and (ii) the probability of a renter child becoming a homeowner each year is a constant function of the parental homeownership status and equity extraction behavior.

that the dynastic home equity channel explains about 5% of the 29 percentage point racial homeownership gap in the data for young adults. Thus, our results show that the racial gap in homeownership can be partially explained by pre-existing differences in parental access to housing wealth.

Second, we develop a simple structural model of housing choice with heterogeneous entry costs depending on parental background. The structure of our model allows us to relate the relationships in the data to general equilibrium effects on prices and counterfactual homeownership rates. We estimate the model using our data and study homeownership of young adults in a counterfactual economy with equal opportunities (i.e., without parent equity extraction affecting children entry costs). We find that parents equity extraction accounts for about 15-17% of the overall effect of parent's homeownership on the child's likelihood of becoming a homeowner. In a counterfactual economy with no role for parental equity, intergenerational homeownership mobility increases. Because parents with significant levels of equity can no longer help their children, housing prices fall. Children of renters and low-equity families see the largest gains into homeownership, but overall aggregate home ownership remains almost unchanged.

Our results show that the dynastic home equity channel has important implications for policy discussions around inequality, by emphasizing the role played by housing wealth itself in facilitating wealth accumulation and perpetuating inequality. Furthermore, dynastic home equity is likely to become more important over time as housing affordability worsen and rising house prices leave parents much wealthier than their working-age children.

The rest of the paper is organized as follows. The remainder of the section discusses the relevant literature. Section 2 describes the data. Section 3 presents results on the relationship between parents' and children homeownership. Section 4 presents the main result on the effects of parents' equity extraction on child homeownership. Section 5 explores the mechanisms. Section 6 shows the implications of dynastic home equity for the racial housing gap, while Section 7 presents the model and counterfactual results. Section 8 concludes.

1.1 Related Literature

Our paper contributes to two main strands of the literature. First, our work speaks to the literature on the mechanisms behind intergenerational persistence of wealth (for a review, see Black and Devereux (2010)). There is a broad consensus that parent and child well-being and status are related, but an open debate on the different mechanisms behind this correlation. Several papers explore whether wealthy parents have wealthy children because parents invest in their children's education, thereby indirectly raising their children's income and wealth; or because parents give their children financial gifts, which raises children's wealth directly, or provide children with credit and insurance, which enables children to undertake potentially risky investments; or because parents pass on similar propensities to save or access to networks of income accumulation and employment (see Charles and Hurst (2003), Piketty (2011), Black et al. (2015), Adermon, Lindahl and Waldenström (2018), Bauluz and Meyer (2021), Hubmer, Krusell and Smith Jr (2021), Boar (2021), Fagereng et al. (2021), among others).

Within the literature on intergenerational persistence, several papers have focused on the housing market, given the importance of housing for wealth-building (Piketty and Zucman (2014), Sodini, Van Nieuwerburgh, Vestman and von Lilienfeld-Toal (2016), and Bernstein and Koudijs (2020)). Engelhardt and Mayer (1998) show that transfers to first-time home-buyers in the US lead to shorter time to save for down-payments, higher down-payments and more expensive houses. Charles and Hurst (2002) find a strong positive association between parental wealth (used as a proxy for available financial assistance) and homeownership in the US. Guiso and Jappelli (2002) show that bequests, gifts and other inter vivo transfers shorten the saving period before homeownership and increase the value of the house purchase in Italy. More recently, Blanden and Machin (2017) document a large persistence in homeownership rates in the UK; while Brandsaas (2021) estimates a rich life-cycle overlapping generations model with altruistic parents and children housing decision and finds that transfers account for 31% of the homeownership rate of young adults in the US.

Existing papers are mainly based on survey data (usually, the PSID for the US) and typically do not explicitly address the endogeneity of intergenerational transfers. A notable exception is Blickle and Brown (2019) who uses intra-family deaths as an instrument for the exogenous receipt of wealth transfers. While important, this approach rules out inter-vivos transfers, the objects of analysis in our paper. Englund, Jansson and Sinai (2014) use administrative data and show that in Sweden the intergenerational correlation in net worth is largely due to housing wealth, but conclude that the causality of the relationship requires further investigation. In contrast to these papers, we use rich administrative data in the US to examine parental equity extraction as a specific channel of the total (unobserved) inter-vivo intra-family potential transfer, and link it directly to child homeownership. The high frequency and large cross-section of our data allow us to implement tighter identification strategies and explore variation across children and parents characteristics.

The second strand of the literature that our paper contributes to analyzes mortgage and housing markets and focuses on borrowing constraints, equity extraction and housing affordability. Several papers study mortgage refinancing and equity extraction and document the important role of interest rate and house prices changes (Hurst and Stafford (2004), Bhutta and Keys (2016)). Since the 2008 financial crisis, several papers have studied the rise and fall in household leverage and its implications for house prices and homeownership (Mian and Sufi (2011), Acolin, Bricker, Calem and Wachter (2016), Fuster and Zafar (2016)). Mian and Sufi (2011) show how home equity-based borrowing contributed to the increase in household leverage from 2002 to 2006. Bhutta and Keys (2016) and Kumar (2018) show, using different identification strategies, that equity extraction is associated with higher default risk. Chen, Michaux and Roussanov (2020) find that extraction of home equity contains a strongly countercyclical component consistent with household demand for liquidity. Our work complements these studies on direct effects and cyclical implications of equity extraction by providing an inter-generational perspective.

In the last decade, the combination of stricter lending standards, stagnating income and increasing house prices have led to a large debate about the trade-offs between tighter credit

markets regulation and limited access to homeownership, especially for credit-constrained or lower-income households (DeFusco and Mondragon (2020), DeFusco, Johnson and Mondragon (2020) Mabille (2020), Benetton (2018)). A booming literature has explored, using both cross-country and administrative micro-level data, the heterogeneous effects of macroprudential policies, which have been adopted by more than 60 countries since 1990 (for a review, see Claessens (2015) and Alam, Alter, Eiseman, Gelos, Kang, Narita, Nier and Wang (2019)). Our results emphasize that focusing on the impact of leverage regulations at the individual and household level may give an incomplete picture of the effects of these interventions, particularly if the impact vary with the household family background and can have repercussions across generations.

2 Data

2.1 Construction of Intergenerational Records in the FRBNY Consumer Credit Panel/Equifax Data

The primary data for our analysis are from the New York Federal Reserve Bank Consumer Credit Panel/Equifax (CCP). The CCP is an individual-level panel dataset that contains detailed records of borrowing on a quarterly basis from the first quarter of 1999 to the fourth quarter of 2019, and on a monthly basis thereafter. The data we use cover the period from 1999 to October 2021. The core of the CCP is a five percent random sample of all U.S. consumers with a credit record. These individuals constitute the "primary sample". In addition, for each reporting period (quarterly prior to 2020, and monthly thereafter), the CCP has information about individuals who reside at the same address as individuals in the primary sample.[4] Using this information, we link individual records to a household and then use individuals' ages to identify children's and parents' records as we describe below. Despite the need to reconstruct family relationships, the advantage of the CCP relative to survey data is its large sample size and accurate measurement of credit outcomes.

[4]Lee and van der Klaauw (2010) provide an excellent description of the CCP data with additional details.

To construct the data records of children and parents, we combine individual records that correspond to the same mailing address into household records. The earliest age an individual is included in the CCP is typically 18. We refer to the individuals for whom we have records at age 18 as children. We refer to an individual who resides in a household with an 18-year-old child and is 36 years or older as a parent (18 years or older than the "child"). The adult might not be a genetic parent of the child.[5] To decrease the probability of capturing nontraditional living arrangements (for example, military bases), we restrict our analysis to the individuals who at the age of 18 live in households with at most 10 members. We further restrict the sample to children who at age 18 reside with at most two parents. The resulting dataset contains 1,083,176 records for individuals whom we define to be children. Having identified children and their parents from the household identifiers at the time when children are 18 years old, we follow the individual records over time even when children and their parents no longer reside in the same household. While our identification limits us to children that live with their parents at age 18, a high fraction of young adults do live with their parents at age 18.[6] Admittedly, our data do not contain information on individuals without any credit activity, which likely leads to under-representation of lower-income individuals.

For the part of our analysis that exploits leverage constraints, we rely on the Equifax Credit Risks Insight Servicing McDash and Black Knight McDash Data. These data match consumers in the CCP data to mortgage servicing data that allow us to measure an individual's loan-to-value (LTV) ratio at both the loan's origination and contemporaneously as long as the loan is reported in the servicing data. While this match reduces the size of our sample, it allows us to construct an accurate measure of the leverage constraint faced by a borrower in the mortgage market. We construct the contemporaneous LTV using county-level house price indexes from Corelogic and the borrower's reported loan balance.

[5]Ghent and Kudlyak (2016), Dettling and Hsu (2018) use the household dimension of the CCP data to study debt and parental co-residence among young adults.

[6]In 2015, a third of young people, or 24 million of those aged 18 to 34, lived under their parents' roof. (See: https://www.census.gov/library/stories/2017/08/young-adults.html). In 2020, more than half (58%) of adults ages 18 to 24 lived in their parental home. (See: https://www.census.gov/newsroom/press-releases/2020/estimates-families-living-arrangements.html).

We also use county-level unemployment rates, employment growth, and wage growth from the Bureau of Labor Statistics. We measure house prices with the Corelogic house price index at the zip-code level.

2.2 Definition of Variables

We classify an individual (parent or child) as a homeowner in the data if one of the following is true: the number, payment amount, total balance or high credit of mortgages, home equity installment or home equity revolving loans is greater than 0 and takes a non-missing value. If an individual owns the house without a mortgage and does not have an equity line of credit, our analysis will erroneously classify such individuals as non-homeowners.[7]

We identify equity extractions as instances when a borrower's outstanding mortgage debt increases by more than 5 percent over a one-year period, with a minimum increase of $1,000, as in Bhutta and Keys (2016). Additionally, we group the parents within a household into a single parental entity, aggregating variables if appropriate. If two parents no longer live in the same location, we assign the parental location between the two at random.

Finally, we construct an annual panel of CCP variables by using data for households from the last month of each year. So, any debt balances, for example, are the debt at the end of the reported year. The resulting dataset is an annual panel where the basic unit of observation is a child and all of the child's credit bureau information is tracked along with the relevant variables from the identified parents. Thus, we can observe if parents extract equity and at the same time their child's transitions into homeownership.

When we match these data to the loan servicing data, we collect loan variables from the earliest reported month in that calendar year, typically January. We take this approach because we want to minimize the likelihood that we have debt variables from the CCP but loan observables are missing because a matched loan was paid off earlier in the year but the new loan was not matched.

[7]The ACS reports that about 63% of homeowners currently have a mortgage, but this does not include the fraction of homeowners who ever had a mortgage, both of which will be captured in our measure.

2.3 Sample Description

Table 1 presents summary statistics for our CCP sample. Panel A shows the summary statistics at the children level. First, only five percent of children are homeowners by the age of 25. The rate of homeownership rises rapidly, with about 16 percent of children having a mortgage by the age of 30. Overall, the children in our sample have an annual probability of becoming a homeowner of about one percentage point. The average child in our sample is 22 years old and has a credit score of 660. Conditional on buying, the average value of a new home is about $270,000 and the LTV at origination is about 86%.

Table 1: Summary Statistics

	Mean	SD	p10	p50	p90
Panel A: Child level					
Homeowner by 25	0.05	0.22	0.00	0.00	0.00
Homeowner by 27	0.09	0.29	0.00	0.00	0.00
Homeowner by 30	0.16	0.37	0.00	0.00	1.00
New Homeowner	0.01	0.11	0.00	0.00	0.00
Age	22.16	4.21	18.00	21.00	28.00
Credit score	659.29	82.67	542.00	671.00	754.00
New home value	270385	284203	105995	214996	475155
LTV at origination	86.27	16.48	69.57	90.23	98.19
Panel B: Parent level					
Homeowner	0.76	0.43	0.00	1.00	1.00
Age	51.93	6.38	43.00	52.00	61.00
Credit score	707.92	105.21	553.00	736.00	821.00
lagged LTV	58.35	31.67	21.43	57.15	93.08
lagged LTV (2 period MA)	59.38	31.10	22.87	58.09	93.87
Equity extraction	0.08	0.27	0.00	0.00	0.00
Extraction amount	5269	41152	0.00	0.00	0.00
Extraction amount (> 0)	72984	136079	7197	32056	176244

Note: Summary statistics for the main variables from the main sample used in the analysis constructed from the FRBNY Consumer Credit Panel/Equifax data as described in the text. Credit score is the Equifax credit score. Extraction amount is the total of parents' individual amounts of equity extracted, and extraction amount (alternate construction) is the total household extraction amount, where extraction is identified by the change in parents' aggregate mortgage balance.

Panel B of Table 1 shows the summary statistics at the parent level. The average homeownership rate at the parent level is about 65%, which is in line with aggregate statistics for the US population (See also Figure A1 in the Appendix). The average parent in our sample is 52 years old and has a credit score of 708. Conditional on owning a house, the average outstanding LTV is about 60%. About 8 percent of identified parents report extracting equity in an average year, comparable to estimates from Bhutta and Keys (2016) despite our longer window. Conditional on extracting, the average amount extracted is about $74,000, while the median amount is about $33,000.

3 Intergenerational Homeownership

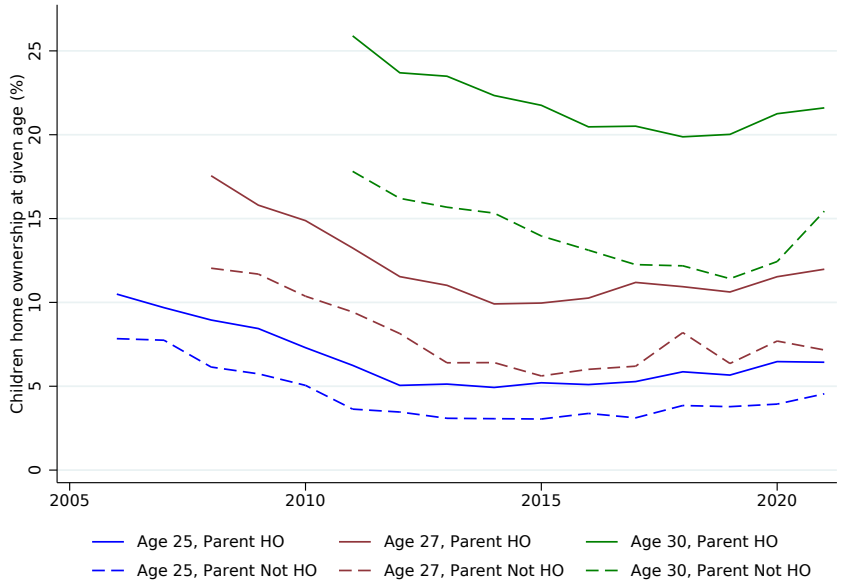
We document a positive link between parental and children homeownership. We begin by examining correlations between homeownership rates of children and the homeownership status of their parents. Figure 1 shows the fraction of children that are homeowners at ages 25, 27, and 30 as a function of the homeownership status of the parents over 2006-2021.[8] The solid lines show the homeownership rate of children whose parents are homeowners, and the dashed lines show the homeownership rate of children whose parents are not homeowners.

Three patterns emerge. First, homeownership increases with the child's age monotonically. Second, homeownership rates among young adults have been falling since the housing boom in the early 2000s. In 2006, the average homeownership rate of children at age 25 was about 8-9%, but by 2013 it had fallen to below 5%. This large decline is consistent with the aggregate patterns for young homeowners more broadly.[9] Third, Figure 1 shows that children of parents who are homeowners are more likely to be homeowners across all age groups and across all years, consistent with existing evidence on intergenerational wealth for the US (Lee, Myers, Painter, Thunell and Zissimopoulos (2020)) and other countries (Guiso and Jappelli (2002), Englund et al. (2014)).

[8] Figure A2 shows fraction of children that are become new homeowner at ages 25, 27, and 30 as a function of the homeownership status of the parents over 2006-2021.

[9] Figure A1 in the Appendix shows home ownership rate for individuals below 35 years old has declined over time in the Census data.

Figure 1: Parent Homeownership Status and Children's Homeownership



Note: The figure shows the fraction of children that are homeowners as a function of the homeownership status of their parents. The solid lines show the average homeownership rate of children whose parents are homeowners. The dash lines show the average homeownership rate of children whose parents are not homeowners. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

There are several factors that can explain the correlation in homeownership across generations, including location, education, or wealth transfers. In the next section, we examine the link between parental and children homeownership controlling for a broad set of potential factors to demonstrate the robustness of this relationship.

We estimate two linear probability models of the relationship between child and parent homeownership using individual-level data. First, we estimate the relationship between children being homeowners at a given age and their parents' homeownership status. This model is directly comparable to our descriptive evidence in Figure 1. Second, we estimate a model of the effect of parental homeownership on the probability that children transition into homeownership in a given year conditional on not being a homeowner before. The first model studies the stock of children's homeownership in a given year while the second model studies

the flow into new homeownership. The stock model allows us to quantify the cumulative effect of parental homeownership on child homeowernship, while the flow perspective will allow us to exploit the timing of transitions into homeownership and help us identify the effects of equity extraction on those transitions, which we explore in Section 4.

3.1 Stock Measures of Children's Homeownership

We begin by studying the relationship between children being homeowners at a given age and their parents homeownership status. Specifically, we estimate the relationship between parental homeownership status and the probability that children are homeowners at a certain age a, using the following linear probability regression:

$$HO_{ialt}^{Child} = \alpha HO_{ialt}^{Parent} + \theta X_{ialt} + \gamma_{lat} + \epsilon_{ialt}, \tag{1}$$

where HO_{ialt}^{Child} is the indicator equal to one if child i of age a living in location l at time t is a homeowner; HO_{ialt}^{Parent} is the indicator equal to one if any of the parents of individual i own a house in period t; X_{ialt} is the vector of children and parental controls; γ_{lat} captures child's location, age and time fixed effects. Our main coefficient of interest is α, which captures the correlation between parents' homeownership and child homeownership. We estimate equation (1) separately for different children's age, pooling across multiple years.

Panel A of Table 2 presents the results for age $a = 25$.[10] In column (1) we show the estimate of the model without any controls. We find a positive and significant relationship between parent and child homeownership. Children whose parents are homeowners have a 1.8 percentage points higher probability of being homeowners than children whose parents are not homeowners. Given the average homeownership rate of about 6% at age 25, the estimate implies that having a homeowner parent is associated with a 30% higher probability of being a homeowner at age 25.

In the remaining columns of Table 2, we control for a variety of factors that can affect

[10] In the Appendix, Table A1, we replicate the analysis at ages 27 and 30.

Table 2: Intergenerational Homeownership

	(1)	(2)	(3)	(4)	(5)
Panel A: "Stock" model	Dep Var: Child is home owner by age 25				
Parent homeowner	1.834***	1.473***	1.185***	1.037***	0.954***
	(0.163)	(0.225)	(0.158)	(0.119)	(0.157)
Controls (parent age, parent and child credit)	No	Yes	Yes	Yes	Yes
Year f.e.	No	Yes	Yes	Yes	Yes
State f.e.	No	No	Yes	No	No
Zipcode f.e.	No	No	No	Yes	No
Group f.e.	No	No	No	No	Yes
Mean Y	6.02	6.02	6.02	6.02	6.02
Observations	505508	505508	505508	505508	505508
Adjusted R^2	0.00	0.02	0.03	0.04	0.06
Panel B: "Flow" model	Dep Var: Child becomes home owner at age 25				
Parent homeowner	0.675***	0.329***	0.260***	0.193***	0.157**
	(0.075)	(0.075)	(0.059)	(0.061)	(0.078)
Controls (parent age, parent and child credit)	No	Yes	Yes	Yes	Yes
Year f.e.	No	Yes	Yes	Yes	Yes
State f.e.	No	No	Yes	No	No
Zipcode f.e.	No	No	No	Yes	No
Group f.e.	No	No	No	No	Yes
Mean Y	2.12	2.12	2.12	2.12	2.12
Observations	430076	430076	430076	430076	430076
Adjusted R^2	0.00	0.01	0.01	0.02	0.03

Note: The table reports the estimates of equations (1) and (2). In Panel A the dependent variable is the dummy equal to one hundred if the individual is a homeowner at age 25 and zero otherwise. In Panel B the dependent variable is the dummy equal to one hundred if the individual becomes an homeowner at age 25 and zero otherwise. Parent homeowner is the dummy equal to one if the parents of the individual are homeowners. Controls are parents age and age squared, and deciles of credit score for both children and parents. Group f.e. are interacted fixed effects for year and zip code. Standard errors are clustered at the state level. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

homeownership. In column (2) we add year fixed effects and controls for deciles of children and parent credit scores, which proxy for access to credit. In columns (3) and (4) we add fixed effects for the children's location (state fixed effects in column (3) and zip code fixed effects in column (4)). Previous studies have documented significant variation across US states and zip codes in house prices and affordability, which are key determinants of homeownership (Quigley and Raphael (2004), Saiz (2010)). In column (5) of Table 2 we add interacted fixed effects for year and zip code. Children of the same age in the same year living in the same zip code whose parents are homeowners are approximately one percentage point more likely to be a homeowner than children whose parents are not homeowners. Given the average homeownership rate of about 6% at age 25, the estimate implies that having a homeowner parent is associated with 16% higher probability of being a homeowner.[11]

3.2 Flow into First-Time Homeownership

Next, we study the relationship between children becoming first-time homeowners at an age a and their parents' homeownership status. We estimate the following specification:

$$NewHO_{ialt}^{Child} = \alpha HO_{ialt}^{Parent} + \theta X_{ialt} + \gamma_{lat} + \epsilon_{ialt}, \tag{2}$$

where $NewHO_{ialt}^{Child}$ is the indicator equal to one if individual i living in location l becomes homeowner for the first time in period t at age a, and all other variables are as in equation (1). Our main coefficient of interest is α which captures the correlation between parents' homeownership status and a child's inflow into homeownership.

Panel B of Table 2 shows the results of estimating model (2) for individuals becoming first-time homeowners at age 25. In column (1) we show the unconditional estimates. Children whose parents are homeowners have a 0.6 percentage point higher probability of becoming a homeowner than children whose parents are not homeowners. Given the flow rate into

[11] Our estimates are in line with the findings of Englund et al. (2014) for Swedish households. Controlling for a rich set of parental and children characteristics, they find that children of homeowning parents are about 10 percentage points more likely to own their own house, which corresponds to a 20% increase relative to an average homeownership rate of 50% in their sample.

ownership is 2.1%, having a homeowner parent increases the likelihood a child transitions into homeownership by about 30%. The relationship declines somewhat as we control for other characteristics and location fixed effects in the additional columns. As in Panel A of Table 2, column (5) shows the estimate from the most restrictive specification with interacted fixed effects for year and zip code. Within this more homogeneous group, we find that children whose parents are homeowners have a 0.16 percentage point higher probability of becoming a homeowner than children whose parents are not homeowners, or an 8% increase relative to the average flow into ownership. Together, these results show there is a robust correlation in homeownership rates across time, even when conditioning on a broad set of controls.

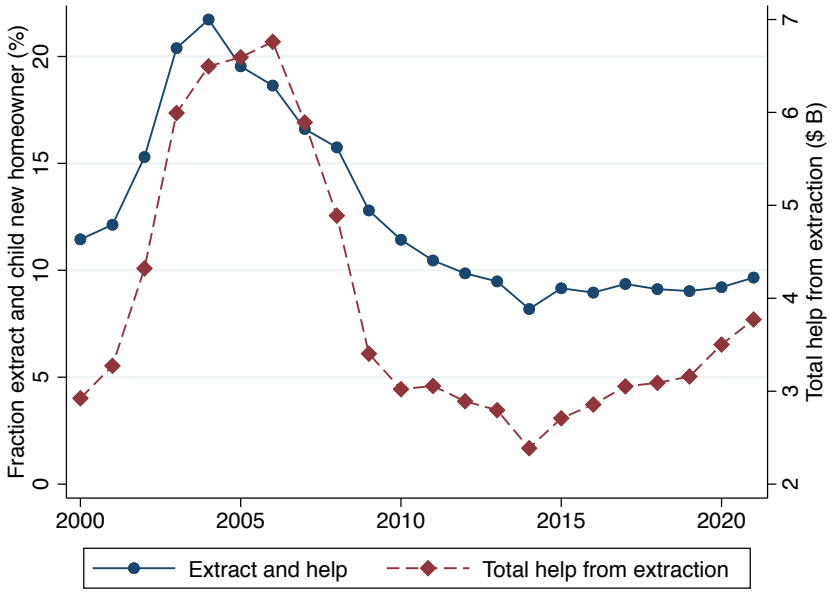
4 Dynastic Home Equity: Main Result

In this section, we study the effect of parent equity extraction on child homeownership. We begin by presenting our main results from a linear probability model where we relate the probability of a child becoming a new homeowner to the timing of parental equity extraction. We then test the robustness of our results using: (i) an event study of parental equity extraction and transitions to homeownership; (ii) a local projection based difference-in-differences approach; and (iii) a propensity score matching approach. We report the latter in Online Appendix B.

Before presenting the regression results, we compute two summary measures to gauge the importance of parents' equity extraction for children flow into homeownership. First, we examine the total number of periods in which children become new homeowner and parents extract equity relative to all periods in which children become new homeowner. Across our sample about 11% of the transitions to new homeownership for a child are associated with parents extracting equity. The solid line in Figure 2 shows this ratio over time. The time series pattern resembles that of aggregate parent equity extraction documented in previous work (Bhutta and Keys (2016)).[12]

[12] Figure A3 in the Appendix shows parents equity extraction over time.

Figure 2: Parent Equity Extraction and Children Transition to Homeownership



Note: The solid lines show the ratio of the total number of periods in which children become new homeowner and parents extract equity relative to all periods in which children become new homeowner. The dash lines show ratio of new homeownership that is associated with parents extracting equity (the solid line in the figure), multiplied by the annual frequency of new homeownership and the median amount extracted, and scaled up by the number of adults between 35 and 64 years old. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

Second, we compute an upper bound on the amount transferred from parents to children via equity extraction each year. We take the ratio of new homeownership that is associated with parents extracting equity (the solid line in Figure 2) and multiply it by the annual frequency of new homeownership and the median amount extracted. We then scale up the number by the number of adults between 35 and 64 years old. We estimate that parents pass on through equity extraction up to $4 billion a year to their children for home purchases.[13]

[13] A 2016 survey estimated individuals *total* borrowing from from family and friends for downpayment on a home at almost $70 billion (See https://www.finder.com/americans-borrow-friends-and-family-household-debt).

4.1 Parental Equity Extraction and Child Homeownership

In this section, we focus on the sample of children whose parents are homeowners and exploit variation in parental equity extraction to study the causal effect of parental homeownership on children's homeownership. We estimate the following linear probability model of the children's inflow into homeownership as a function of parental equity extraction:

$$NewHO_{ialt}^{Child} = \alpha Extract_{ialt}^{Parent} + \theta X_{ialt} + \gamma_{lat} + \epsilon_{ialt}, \tag{3}$$

where $NewHO_{ialt}^{Child}$ is the indicator of whether individual i living in location l becomes a homeowner for the first time in period t at age a; $Extract_{ialt}^{Parent}$ is the indicator equal to one if any of the parents of individual i extract equity from the house in year t;[14] and all other variables are as in equation (1). We also estimate a version of (3) with children fixed effects, to capture all unobservable time-invariant children-level characteristics. Our main coefficient of interest is α, which captures the correlation between recent parental equity extraction and children transitioning into homeownership in year t.

Table 3 presents the results. In column (1), we show the unconditional correlation between parental equity extraction and the child's transition rate into homeownership. Children whose parents extract equity are about 0.46 percentage point more likely to become a homeowner in the subsequent period than children whose parents are homeowners that do not extract equity. Given the average flow into ownership rate of about 1 percentage point, having a parent who extracts equity increases the probability for the children to become homeowner by about 46%. The effect is robust as we add controls for child's and parents' characteristics and granular fixed effects for locations in the additional columns. In column (6), we estimate equation (3) with interacted fixed effects for year, age and zip code. Within these more homogeneous groups, we find that children whose parents extract equity are 0.60 percentage point more likely to become a homeowner than children whose homeowner parents do not extract equity, slightly larger than the unconditional estimate in column (1).

[14] Specifically, we check if the parent extracted equity in the period between between $t-1$ and t.

Table 3: Parental Equity Extraction and Children's Probability of Becoming a Homeowner

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Parent Equity Extraction	0.457***	0.597***	0.613***	0.617***	0.626***	0.600***	0.606***
	(0.059)	(0.064)	(0.063)	(0.028)	(0.018)	(0.073)	(0.080)
Year F.E.	No	Yes	Yes	Yes	Yes	No	No
Child State F.E.	No	No	Yes	No	No	No	No
Child County F.E.	No	No	No	Yes	Yes	No	No
Child Zipcode F.E.	No	No	No	No	No	No	No
Group F.E.	No	No	No	No	No	Yes	No
Child F.E.	No	No	No	No	No	No	Yes
Age F.E.	No	Yes	Yes	Yes	Yes	No	Yes
Controls	No	Yes	Yes	Yes	Yes	Yes	Yes
Mean Y	1.01	1.01	1.01	1.01	1.01	1.01	1.01
Observations	3978941	3978941	3978941	3978941	3978941	3978941	3969759
Adjusted R^2	0.00	0.01	0.01	0.02	0.02	0.10	-0.02

Note: The table shows the estimates of equation (3) in the sample of children whose parents are homeowners. The dependent variable is the dummy equal to one hundred if the individual becomes a homeowner and zero otherwise. Parent equity extraction is the dummy equal to one if the parents extract equity in the current year. Controls are parents age and age squared, lagged deciles of credit score for both children and parents, and 3-year parent-county home price growth. Group f.e. are interacted fixed effects for year, children age, and zip code. Standard errors are clustered at the state of the parents level. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

Finally, in column (7) of Table 3 we show the results of a specification with children fixed effects. This way we control for all observable and unobservable characteristics at the child level and only exploit the variation jointly across children and over time in parent equity extraction and transition into homeownership. We find that children whose parents extract equity are 0.60 percentage point (or 60% relative to average flow into homeownership) more likely to become a homeowner than children whose homeowner parents do not extract equity, almost identical to the estimates in column (6).[15]

[15]The magnitudes of our estimates are larger than the ones from previous work that studies intergenerational transfers. For example, Lee et al. (2020), using US survey data, find that young adults between 25 and 44 year old who receive a transfer of over $5000 from their parents are about 15% more likely to buy a home. Our larger effect may be due to our focus on younger adults - 18 to 30, for whom parental help may be even more important. Guiso and Jappelli (2002) study Italian households and find that the average

Our analysis has shown a statistically significant and economically large effect of parental equity extraction on the probability that their children become homeowners at the time when parents extract equity. While equity extraction is a decision by the parents, it may still be correlated with unobservable variables that also affect children's homeownership decision. Suppose, for example, that parents with higher saving propensities (and unobservable total wealth) are more likely to extract equity and they are also more likely to invest in children education. Both of these channels would affect the child's future income and propensity to buy a house. In this case our OLS estimates will be biased upward. On the other hand, the direction of causation between saving propensity and equity extraction is not obvious. Parents with higher saving propensity might be less likely to extract equity and in this case our OLS estimates will be biased downward. For these reasons, we now present several approaches to test the robustness of our estimates and argue that we can recover a causal effect of parent equity extraction on the child's homeownership probability.

4.2 Event Study

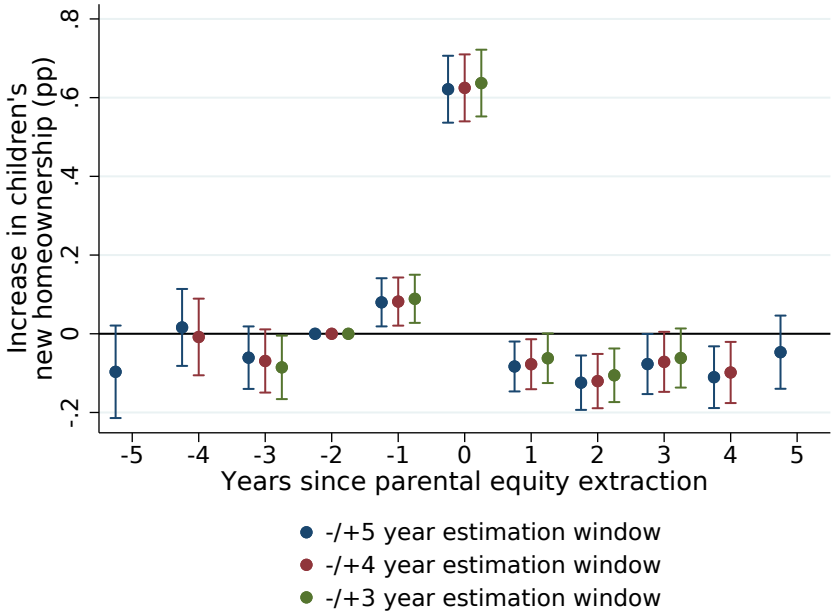
We next estimate a version of equation (3) with leads and lags for parent's equity extraction focusing only on the sample of parents who extracted equity during our sample period. This allows us to test more directly if the timing of parental equity extraction coincides with the timing of children becoming homeowners or if children whose parents extract equity tend to exhibit higher homeownership rates in general. We estimate the following model:

$$NewHO_{ialt}^{Child} = \sum_{k=-K}^{K} \alpha_k Extract_{ialt+k}^{Parent} + \theta X_{ialt} + \gamma_{lat} + \epsilon_{ialt}, \tag{4}$$

where $Extract_{ialt\pm k}^{Parent}$ is the indicator equal to one if any of the parents of individual i extract equity from the house in year $t+k$; and all other variables are as in equation (3). We set the period two-years prior to equity extraction as the omitted category, so all estimates can

transfer to recipients increases the hazard rate of becoming a homeowner by about 20% relative to the mean. Blickle and Brown (2019) study Swiss households and find that receipt of a wealth transfer increases the propensity of consumers to transition from renters to homeowners by about 35% relative to the mean.

Figure 3: Dynastic Home Equity - Event Study



Note: The figure shows the coefficients α_k^{lag} and α_k^{lead} estimated from equation (4) for $K = 3, 4, 5$. Controls are 3-year child zip code home price growth, 3-year child county and parent county wage growth 3-year child county and parent county employment growth, child county and parent county unemployment, child age fixed effects, and interacted child zip code and parent zip code fixed effects. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

be interpreted as relative to the two years before we measure the extraction event.

We plot the coefficients α_k in Figure 3, for $K = 3, 4, 5$. We find that the child's transition to homeownership is only positively and statistically significantly associated with parental equity extraction in the same or preceding year. The slight increase in the year prior to equity extraction may just reflect that noise in estimating mortgage payoffs and equity extraction relative to new mortgages. We only record a cash out refinance once the credit bureau mortgage balances have been updated, which can often be several months after the extraction event took place. The coefficients on the equity extraction in previous and subsequent years do not exhibit any pre-trend. The effects on homeownership in the year when parents extract equity are comparable to those from our specification above, with equity extraction

associated with a 0.6 percentage point increase in the likelihood of the child becoming a new homeowner. The sharp timing of these effects is strong evidence in favor of parental equity extraction having a causal effect on the transition into homeownership for their children.[16]

4.3 Local Projection

We next follow recent developments in the difference-in-differences literature and estimate the effect of parents equity extraction on children homeownership using a local projection based difference-in-differences approach (LP-DiD in Dube et al. (2023)). In our setting the timing of the treatment (parent equity extraction) is staggered and the treatment effect can differ across groups of parent-children pairs, which might expose our estimates to the negative weight bias discussed in the literature.[17]

We estimate the effect of parent extraction using the following LP-DiD specification:

$$NewHO^{Child}_{ialt+h} - NewHO^{Child}_{ialt-1} = \alpha_h^{LP-DiD} Extract^{Parent}_{ialt} + \theta X_{ialt} + \gamma_{lat} + \epsilon_{ialt}, \tag{5}$$

restricting the sample to observations that are either treated in the current period or not treated as of the current period:

$$\begin{cases} \text{treatment} \quad Extract^{Parent}_{ialt} = 1 \\ \text{control} \quad Extract^{Parent}_{ialt+h} = 0. \end{cases} \tag{6}$$

This is called a "clean control" condition and uses only untreated children as controls.

[16]For example, a correlation between parents' propensity to extract equity and children propensity to save and buy a house can explain the average relation between parent extraction and children new homeownership, but not the correlation in the timing between the two events. We provide further evidence supporting our mechanism based on inter-vivo transfers in Section 5 by looking at leverage at origination. Table A2 in the Appendix shows the difference for each year after the parent equity extraction between the predicted children homeownership and the counterfactual in the absence of parent equity extraction. We find that half of the effect of parent equity extraction on the likelihood of being a new homeowner is still present three years after the extraction, and about a third of the effect persist five year after the event. In general, reverse causality is not a problem in our setting. Children deciding to buy a house and then using parent financing is in line with our mechanism.

[17]For a discussion of the literature on difference-in-differences approaches see Goodman-Bacon (2021) and De Chaisemartin and dÄôHaultfoeuille (2020), among others.

While it is feasible to incorporate repeated treatments in this framework, we would need to specify the dynamic horizon of the treatment effect. Since the sample of children only treated once (or never) is very large, we do not lose much by dropping the repeated treatment sample. Also, we consider children homeownership to be an absorbing state, so the effects of repeated treatments are likely to take place on the intensive margin, not observed by us.

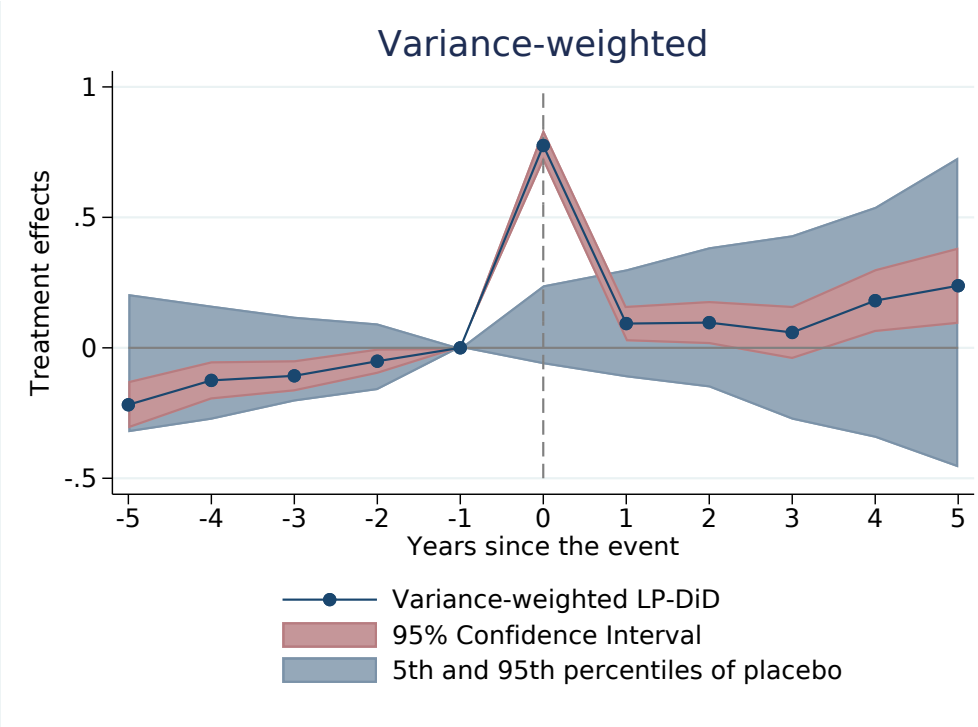
Figure 4 reports the results by plotting an the variance-weighted average treatment effect (ATT), which correspond to the α_h^{LP-DiD} from (5). The estimates show a positive and large effect of parents' equity extraction on the probability of child transition into homeownership. The estimated effect of parent equity extraction are very precise and the magnitude is even larger than the ones in Table 3 and Figure 3 with parental equity extraction associated with a 0.8 percentage point increase in the likelihood of the child becoming a new homeowner. This suggests there was some scope for bias in the OLS weighting of the event study estimates.

To check if the correlation we find is driven by a spurious correlation between the kinds of parents who extract equity and children who just happen to transition into homeownership, we perform a simple placebo robustness exercise. When a child is 18 we randomly match them with a new parent living in the same state and with a credit score in the same quintile in that same year. We do this for all of the children we can match and then re-estimate our specification 500 times. For every horizon we then plot the 5th and 95th percentiles of the estimated coefficients from these 500 samples in the shaded red region in Figure 4. These placebo estimates show that our estimated effect at time zero are far beyond what would be expected from random correlation between the children and high-credit score parents. The coefficients for periods other than the impact time are well-within the range one would expect from completely spurious variation. Together, these results suggest the large estimate of equity extraction on new homeownership at the time of impact is likely causal.

4.4 Heterogeneity Analysis

We re-estimate our baseline regressions (equation (3)) within each of several splits of the full sample based on children's, parents' and joint characteristics. We discuss briefly the

Figure 4: Dynastic Home Equity - Local Projection



Note: The figure shows the coefficients α_h^{LP-DiD} from (5). Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

results here and report the details in Appendix C.

4.4.1 Children-Related Characteristics

First, we explore if the importance of equity extraction varies with the number of siblings in the family. Intuitively, if there are multiple children present in the family, then the same amount of home equity will be less useful for helping transition into homeownership. To explore this dimension, we classify children as an only child, with one sibling, and with more than one sibling.[18] We find that only-child and children with one sibling have similar estimates of the effects of equity extraction on new homeownership. However, cases which

[18]Importantly, these definitions are subject to the limitations of our algorithmic identification of siblings in the credit bureau data, which is likely to have measurement error.

we identify as more than one sibling in the household show a much smaller relationship between equity extraction and child homeownership, despite the fact that transitions to home ownership occur at about the same rate for all groups.

Second, we study how the role of parental equity extraction changes with the age of the child by splitting the sample into three groups: when children are younger than 26, between 26 and 30, and older than 30. Scaling the point estimates by the mean transitions into homeownership, we see that parent equity extraction is relatively more important when children are younger. Hence, the ability to access financing via parent equity extraction is relatively more important for younger children who are likely to have less savings available for a downpayment.

Third, we split counties into quartiles based on the median house price for children's location. Estimated effects are large and positive across all of the subsamples, but appear to increase monotonically with the price of housing. This shows that access to parental home equity may becomes important as housing becomes more expensive and children become constrained by downpayment requirements.

Finally, we look at different measures of children's access to and usage of credit. We find that parent equity extraction is relatively more important for children with higher credit card limit and relatively lower credit card utilization. These result suggest that parents' help through equity extraction plays a bigger role for children who are less likely to be more broadly financially constrained. We do not find large heterogeneity across children credit score.

4.4.2 Parents-Related Characteristics

First, we find that for parents with one or two children the effect of equity extraction on the probability to become homeowner is similar. However, for parents with more than two children the effect drops from about 60% of the average flow to about 40%, echoing the results for children with many siblings.

Second, scaling the point estimates by the mean transitions into homeownership, we see

that the effect of parent equity extraction is stronger when parents are younger. Hence, while parent of different ages are likely to help their children buying a home, the source of parents help varies across the life cycle. Younger parents are more likely to extract equity from their home to help their children, while older parents may rely on additional savings or other form of non-housing wealth.

Third, we split counties into quartiles based on the median house price for parents' location. Estimated effects are large and positive across all of the subsamples, but appear to increase monotonically with the price of housing. This result resembles the same split based on children location, suggesting that common location choices of parents and children could play a role.

Finally, we look at different measures of parents access to and usage of credit. We estimate a large effect of parental equity extraction for children transition to homeownership for parents with higher credit limit, lower credit usage, and higher credit score. All the results point to an important role of access to credit for parents – in terms of higher limit, lower utilization and higher credit score – to be able to help their children. The difference in the heterogeneity between children and parents on the credit score is informative. While all children benefit similarly from parental help irrespective of their credit score, parents with low credit scores have a more limited ability to help than parents with high credit scores.

4.4.3 Heterogeneity Across Locations and Over Time

We also study the impact of dynastic home equity: (i) across parents and children location; and (ii) over time during the boom, bust and rebound period of the 2008 housing crisis. We find that the effect of dynastic home equity is weaker for children living in different counties (states) from their parents.[19] Children moving to different counties (or states) could be more economically successful and financially independent, thus distance reduces the demand for parents' help. Similarly, parents might be more willing to extract equity from their own

[19]The results from the sample of different states are noisier as the number of observations in this subset is considerably lower. As a result, we cannot reject the null hypothesis of no effect of parents equity extraction of children flow into homeownership in this subsample.

home to help children buy only if their children decide to live close to them. Distance then reduces the supply of parent' help.

Finally, we split our sample into three periods based on the recent housing cycle: boom (pre-2007), bust (2007-2012), and recovery (post-2012), following Chodorow-Reich, Guren and McQuade (2021).[20] We find that dynastic home equity matters relatively less in the pre-2007 boom period, when credit was abundant and low-downpayment mortgages widely available (Mian and Sufi (2011)). The scaled effects show that parent equity extraction became more important for children homeownership after the housing bust, perhaps as a result of the tightening in credit standards following the crisis. Dynastic home equity has continued to play an important role in recent years, as increases in house prices (relative to income) have reduced housing affordability for young adults and credit standards have remained high.

Overall, our heterogeneity analysis suggests that dynamic home equity is particularly important when: (i) affordability is worse because of high house values; (ii) financial constraints are more likely to be binding for the children whether for macroeconomic reasons (like the financial crisis) or because children are too young to have accumulated substantial assets for down payment; and (iii) parents have access to credit (higher credit card limits and credit scores, and lower credit card utilization) but they are too young to have other means to help children, and therefore they tap into their home equity.

5 Exploring Dynastic Home Equity Channels

5.1 Parental Equity Extraction and Children's Leverage

We do not observe the actual transfer of money from the parents to the children in our data, but one potential implication of our proposed channel is that children receiving help from their parents are likely to be less leveraged than children not receiving help, conditional

[20] We re-estimate our baseline regressions (equation (3)) within each of these period and also fixing the age of the children, to separate the effect of time-series variation from child's cohort effect, due to the construction of our merged children-parent dataset.

on actually purchasing a home. This contrasts with some other potential explanations of the relationship between children's homeownership and parental equity extraction. For example, if both parents and children experience a booming housing market, it may induce them to leverage housing wealth through equity extraction and new homeownership. This could lead to the behavior we discuss in Section 4, even absent an inter-vivo transfer of money from the parents to their children. However, under these kinds of alternative stories, we would *not* expect the equity extraction of parents to be associated with less leverage by the children becoming new homeowners.

Figure 5 shows the distribution of the child LTVs at origination, dividing the sample into children whose parents extract equity and children whose parents do not extract equity. We show the full sample (left panel) and when children are 25 years old (right panel). The distribution for both children whose parents extract and those who do not display spikes at LTVs equal to 80%, 90%, 95%, and 98%, consistent with these being important underwriting thresholds in the mortgage market.[21] From a visual inspection, children whose parents extract in the year before they become new homeowners tend to have a higher mass at relatively lower LTVs (for example, 80%) than children whose parents do not extract.

We explore this relationship more formally using the following specification:

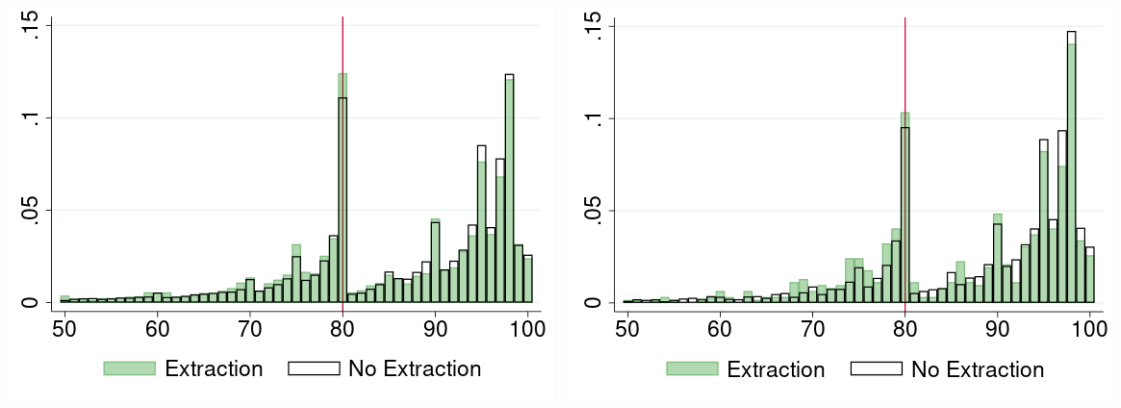
$$LTV_{ialt}^{Child} = \alpha Extract_{ialt}^{Parent} + \theta X_{ialt} + \gamma_l + \gamma_a + \gamma_t + \epsilon_{ialt}, \tag{7}$$

where LTV_{ialt}^{Child} is: (i) the child's LTV at origination; (ii) the indicator equal to one if the child has an LTV>80%; and (iii) the indicator equal to one if the child has an LTV>70%; γ_l, γ_a γ_t are county, age and year fixed effects and all other variables are as in equation (3). We estimate models (7) on the sample of children who become homeowners and whose parents are homeowners.

Table 4 shows the results. Columns (1) and (2) report the results with the child's LTV as dependent variable. Parents equity extraction is associated with a 1.7 percentage-point

[21] This sample is substantially smaller than our other samples as it relies on: (i) the child becoming homeowner; and (ii) the child's mortgage being present in the mortgage servicing data that we use.

Figure 5: Children's Loan-to-Value at Origination and Their Parents Home Equity Extraction



(a) Child LTV at origination

(b) Child LTV at origination at age 25

Note: The figure shows the distribution of children's LTV at origination by whether their parents extract equity or not, 2006-2021. The plot on the left is the distribution over all ages and the plot on the right is the distribution for only 25 year-old children. The green area is the distribution for children whose parents extract equity, and the black-outlined area is the distribution for children whose parents do not extract equity. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data and the Equifax Credit Risks Insight Servicing McDash and Black Knight McDash Data.

lower LTV, controlling for year, age, and county fixed effects. After adding our rich set of additional time-varying controls, parents equity extraction is associated with a 1.5 percentage-point lower LTV, essentially identical to the previous estimate. The effects are statistically significant and correspond to a little more than a 1% reduction in the average child's LTV.

Columns (3) to (6) of Table 4 show the results when using as dependent variable the indicator of children with an LTV>80% and LTV>70%. In our most restrictive specification, we find that parents equity extraction is associated with a 4 percentage point lower probability that the child's LTV is greater than 80%. The effect is statistically significant and, relative to the mean, represents about 6% decrease in the probability of having leverage greater than 80%.

Interestingly, when we repeat the same analysis using the the indicator for the child's LTV being greater than 70% as the dependent variable, we find smaller effects. Parent

Table 4: Parental Equity Extraction and Children's Leverage

	Continuous LTV		LTV> 80		LTV> 70	
	(1)	(2)	(3)	(4)	(5)	(6)
Parent Equity Extraction	-1.712***	-1.522***	-0.051***	-0.044***	-0.025***	-0.023***
	(0.325)	(0.311)	(0.009)	(0.008)	(0.006)	(0.006)
Year F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Age F.E.	Yes	Yes	Yes	Yes	Yes	Yes
County F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	No	Yes
Mean Y	86.00	86.00	0.65	0.65	0.90	0.90
Observations	26948	26948	26948	26948	26948	26948
Adjusted R^2	0.11	0.14	0.12	0.16	0.05	0.05

Note: The table shows the estimates of equation (7) for children who becomes homeowners. Parent equity extraction is the dummy equal to one if a parent extracts equity in the current year. Controls parents age and age squared, deciles of lagged credit score for both children and parents, unemployment rate for both children and parents, 3yr zip code home price growth for both children and parents, 3yr wage growth for both children and parents, 3yr employment growth for both children and parents. Standard errors are clustered at the parent county level. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data and Equifax Credit Risks Insight Servicing McDash and Black Knight McDash Data.

extraction is associated with about a 2 percentage point (or about 3% relative to the mean) lower probability that the child's LTV is greater than 70%. This suggests that parental help allows children to increase their down payment to the "standard" LTV of 80%, above which borrowers are required to buy costly mortgage insurance. For this reason popular financial advise websites encourage borrowers to use a 20% down payment.[22] This would be consistent with the idea that dynastic home equity is more important for child borrowers that are on the margin of new homeownership, so that the additional equity is needed to qualify for a mortgage with significantly lower payments.

[22]For example Nerdwallet suggests: "Try to clear at least the 80% LTV hurdle. Mortgage insurance premiums usually kick in if your LTV is above 80%. If you're close, try to make up the difference so that you clear the 80% mark. You'll save a good deal of money in the long run." (https://www.nerdwallet.com/article/mortgages/loan-to-value-calculator).

5.2 Parental Equity Extraction and Children's Housing "Quality"

We have shown so far that parental equity extraction: (i) increases the likelihood that children become homeowners; and (ii) decreases the leverage at origination, conditional on buying a house with a mortgage. We now explore if parental equity extraction allows children to buy different houses, conditional on buying.

We explore this relationship with a specification like the one we used for children leverage in Section 5.1, as follows:

$$Housing\ Quality_{ialt}^{Child} = \alpha Extract_{ialt}^{Parent} + \theta X_{ialt} + \gamma_l + \gamma_a + \gamma_t + \epsilon_{ialt}, \tag{8}$$

where $Housing\ Quality_{ialt}^{Child}$ is: (i) the likelihood that the children move within three years; and (ii) the (log) initial home value; and all other variables are as in equation (7). We estimate models (8) on the sample of children who become homeowners and whose parents are homeowners.

Table 5 shows the results. Columns (1) and (2) report the results using the likelihood that children move within three years as a proxy for housing quality. We find a significant negative effect of parent equity extraction on the probability that the child moves in the next three years, after becoming a new homeowner. The point estimates are large in magnitude. Parents equity extraction is associated with a 7.5 percentage-point lower probability to move, which corresponds to about a 20% decline in the average moving probability within three years. While we cannot isolate the exact mechanism with our data, this result is consistent with parents helping children finding a more stable match in the housing market. For example, children may buy a home with an extra bedroom, rather than a smaller starter home and then having to move up the property ladder a few years later. Thus, parent equity extraction allows children to save on search and upsizing costs.

Columns (3) and (4) of Table 5 show the estimates of equation (8) using the log of initial home value. The results without individual controls are imprecise. After adding our rich set of additional time-varying controls and controlling for year, age, and county fixed effects,

Table 5: Parental Equity Extraction and Children's Housing "Quality"

	Moves within 3 years		Log initial home value	
	(1)	(2)	(3)	(4)
Parent Equity Extraction	-7.897***	-7.508***	0.001	0.044***
	(1.030)	(1.053)	(0.011)	(0.010)
Controls	No	Yes	No	Yes
County f.e.	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes	Yes
Mean Y	35.72	35.72	12.28	12.28
Observations	18756	18756	18756	18756
Adjusted R^2	0.02	0.03	0.34	0.47

Note: The table shows the estimates of equation (8) for children who becomes homeowners. Parent equity extraction is the dummy equal to one if a parent extracts equity in the current year. Controls parents age and age squared, deciles of lagged credit score for both children and parents, unemployment rate for both children and parents, 3yr zip code home price growth for both children and parents, 3yr wage growth for both children and parents, 3yr employment growth for both children and parents. Standard errors are clustered at the parent county level. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data and Equifax Credit Risks Insight Servicing McDash and Black Knight McDash Data.

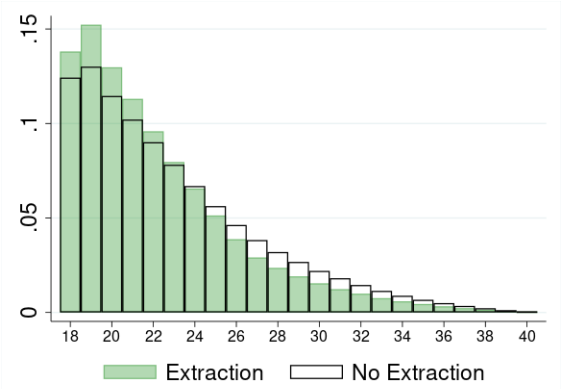
parents equity extraction is associated with a 4.4% increase in home value. This result is also consistent with parents helping children buying a larger and more expensive home.

5.3 Parental Equity Extraction and Children's Age

Our estimates in Section 4 show that parents equity extraction allows children to become homeowner and this effects persist over time. In other words, the effect of parents equity extraction does not reverse immediately, as children whose parents extract equity remain more likely to have a higher flow into homeownership than children of parents who do not extract several years into the future. We now explore a related dimension. Conditional on actually purchasing a home as young adult, what is the age of homebuyers whose parents extract relative to the age of other homebuyers?

Figure 6 shows the distribution of the child age at origination, dividing the sample into

Figure 6: Parental Equity Extraction and Children's Age



	Child Age	
	(1)	(2)
Parent Equity Extraction	-1.473***	-0.633***
	(0.045)	(0.032)
Controls	No	Yes
County f.e.	Yes	Yes
Year f.e.	Yes	Yes
Mean Y	26.60	26.60
Observations	65845	65845
Adjusted R^2	0.05	0.46

Note: The figure shows the distribution of children's age at origination by whether their parents extract equity or not, 2006-2021. The green area is the distribution for children whose parents extract equity, and the black-outlined area is the distribution for children whose parents do not extract equity. The table shows the . Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data and the Equifax Credit Risks Insight Servicing McDash and Black Knight McDash Data.

children whose parents extract equity and children whose parents do not extract equity. Children whose parents extract in the year before they become new homeowners tend to be relatively younger than children whose parents do not extract. We explore this relationship more formally using the following specification:

$$Age_{ialt}^{Child} = \alpha Extract_{ialt}^{Parent} + \theta X_{ialt} + \gamma_l + \gamma_a + \gamma_t + \epsilon_{ialt}, \tag{9}$$

where Age_{ialt}^{Child} is the child's age at origination; and all other variables are as in equation (7). We estimate models (9) on the sample of children who become homeowners and whose parents are homeowners.

Figure 6 shows the results. Within the sample of children becoming homeowner, parents equity extraction is associated with children buying a house 1.5 years sooner. After adding our rich set of controls, the effect declines to 0.6, but remains statistically significant. Given an average age of young homebuyers of 26, parents extraction lower the average age of young homebuyers by about 2.5%. Combining these estimates with the ones from Table 3, we find that parents equity extraction: (i) increases the children transition to homeownership

relative to all children of parents who do not extract; and (ii) shifts this transition earlier in time relative to children who end up buying as young adults.

6 Implications for the Racial Housing Gap

We use our estimates to provide back-of-the-envelope calculations of the effect of the dynastic home equity channel on the black-white homeownership gap. A large literature studies the black-white wealth gap in the US and its persistent over centuries (Derenoncourt et al. (2022)). Given the strong historical association between home ownership and wealth, it is likely that the racial wealth gap is linked to differences in housing wealth (Charles and Hurst (2002)). Recent studies have explored possible mechanisms for the existence of a gap in housing wealth and proposed policies in the housing market to address it (Gupta, Hansman and Mabille (2021); Kermani and Wong (2021)). In addition to its possible contribution to the wealth gap, the black-white homeownership gap is of independent interest, given the importance of homeownership in the US for access to credit and placed-based amenities, such as schools and jobs (Goodman and Mayer (2018)).[23]

We exploit our estimates of the dynastic home equity channel to study its contribution to the racial homeownership gap. Table 6 reports the results from the calculations. Panel A shows variable at the parents level. The average homeownership for white adults (defined as older than 35 years) is about 78%, while the average homeownership for black adults is approximately 53%. The average frequency of equity extraction is 9% for white adults, while only about half for black adults. A lower extraction of black adults is in line with the results by Conklin, Gerardi and Lambie-Hanson (2022), who document a large black-white denial rate gap for mortgage equity withdrawal products, concluding that minority homeowners do not have the same ability as white homeowners to access their accumulated housing wealth.

Turning to children's outcomes, Panel B of Table 6 shows an average homeownership for

[23]The benefit of homeownership have been studied beyond the US context. For example Sodini et al. (2016) show that in Sweden homeownership causes wealth building via house price appreciation, increases consumption and improves consumption smoothing through a collateral effect.

Table 6: Parental Equity Extraction and Black-White Homeownership Gap

	White	Black			
		≠ Extraction ≠ Homeownership		= Extraction ≠ Homeownership	
	level	level	Δ	level	Δ
	(1)	(2)	(3)	(4)	(5)
Panel A: Parents					
Homeownership (%)	78.5	53.5	25.0	53.5	25.0
Equity extraction (%)	9.0	4.5	4.5	9.0	0.0
Panel B: Children					
Homeownership at 35 - data (%)	46.0	17.0	29.0	17.0	29.0
Homeownership at 35 - model (%)	45.5	44.1	1.4	44.4	1.1
Percentage of gap explained (%)			4.7		3.8

Note: Panel A shows the homeownership rate and fraction extracting equity for black and white adults, define as older than 35 years. Panel B shows the homeownership rate in the data and predicted by our calculations for black and white young adults at age 35.

white young adults (defined as up to age 35) of about 46%, while for black young adults it is only 17%. The racial housing gap is even larger when looking at young adults in both absolute and even more in relative terms, suggesting that differential factors between black and white children early in life matter significantly for access to homeownership.

To isolate the effect of dynastic home equity on the racial housing gap of young adults we proceed as follows. First, we assume all children at age 18 are renters and that once they become homeowners, they do not transition back to renting (i.e., homeownership is an absorbing state). The latter assumption allows us focusing on the transition from renting to owning as a function of parental homeownership status and equity extraction behavior.[24]

Second, we compute the probability of a renter child becoming a homeowner each year

[24]Kermani and Wong (2021) find that distressed home sales (i.e. foreclosures and short sales) have an important effect on the racial gap in realized housing returns. Racial differences in income stability and liquid wealth explain a large share of the differences in distress. Understanding the role of parents over the course of the housing (and mortgage) tenure is an interesting avenue for future research.

as a function of the parental homeownership and equity extraction status, as follows:

$$\begin{aligned} p_{i,renter\to owner} \quad = \quad & \pi^{\text{parent owner \& extract}} \times p^{\text{parent owner \& extract}}_{i,renter\to owner} + \\ & \pi^{\text{parent owner no extract}} \times p^{\text{parent owner no extract}}_{i,renter\to owner} + \\ & \pi^{\text{parent renter}} \times p^{\text{parent renter}}_{i,renter\to owner}. \end{aligned} \tag{10}$$

We compute the probability of parents ownership status and extraction behavior directly from the data. We then calibrate the transition from renting to owning when parents are renters $p^{\text{parent renter}}_{i,renter\to owner}$ to match the white homeownership rate at age 35. We set $p^{\text{parent owner no extract}}_{i,renter\to owner} = p^{\text{parent renter}}_{i,renter\to owner} \times (1+15\%)$, where 15% is the higher transition to homeownership in the data for children of parents who are owners but do not extract relative to children of renters. Finally, $p^{\text{parent owner \& extract}}_{i,renter\to owner} = p^{\text{parent owner no extract}}_{i,renter\to owner} + \alpha$, where $\alpha = 0.6$ is our estimated coefficient on parent equity extraction.

While parsimonious, this calculation allows us to isolate the effect of dynastic home equity on the black white ownership gap. By construction, the transition probabilities are identical between black and white young adults. Hence, the difference in homeownership rate by race for young adults is coming from two channels: (i) differences in homeownership rate of the parents and (ii) differences in equity extraction rates of the parents.

Columns (2) and (3) of Table 6 show the total effect from both channels. When black parents have a lower homeownership rate than white parents (53.5% versus 78.5%) and extract at a lower rate (4.5% versus 9%) the predicted homeownership for young black adults will be 44.1% relative to an homeownership rate for young white adults of 45.5%. Hence, our channel is able to explain 1.5 percentage points, or almost 5% of the 29 percentage point racial homeownership gap observed in the data for young adults.

We also show in columns (4) and (5) of Table 6 the counterfactual case in which black and white parents extract equity at the same rate, but continue to have different baseline homeownership rates. In this case the explained gap shrinks to about 1 percentage point, or about 3.8% of the 29 percentage point gap observed in the data for young adults.

Comparing the joint effect of equity extraction and homeownership in column (3) to the effect of homeownership only in column (5), we find that differences in parent equity extraction accounts for about 20% of the effect of parents in explaining the housing gap between black and white young adults.[25] Hence, our results show that the aforementioned racial gap in applications can be partially explained by pre-existing differences in parental *access* to housing wealth, which can then be handed down from one generation to another.

7 A Simple Model of Dynastic Home Equity

We develop a simple equilibrium model of housing choice with heterogeneous entry costs depending on parental background. We then estimate the model using our administrative data and study homeownership of young adults in a counterfactual economy with equal opportunities (i.e., without parent equity extraction affecting children entry costs).

7.1 Model

In the model there are two statuses j - homeownership and renting - that an individual from family i and generation g can choose between. Individuals live for two periods. In the first period, individuals from generation g are born from parents of generation $g-1$ and choose to own or rent based on preferences and costs to maximize their utility. In the second period, individuals from generation g are parents and their status is fixed until they die.

We posit an indirect utility that is a function of three factors. First, the benefits of homeownership or renting h_j. For example, homeownership can facilitate wealth accumulation via house price appreciation, improves consumption smoothing and family stability, and give access to job opportunities (Goodman and Mayer (2018), Sodini et al. (2016)). Second, entry costs m_j which can include search costs, access to leverage, and providing a minimum

[25] Previous studies on the racial homeownership gap in the US consider the effect of overall parental wealth on children mortgage access and homeownership, without investigating the sources of parents wealth. For example, Charles and Hurst (2002) find that parental wealth contributes to about 25% of the racial gap in applications, and Brandsaas (2021) finds that parental transfers account for 30% of the black white homeownership gap.

down payment. Third, an entry-cost discount d_j, which can capture several forces, such as parents providing better information about the housing buying process or direct transfer of money to help with meeting the listing price or the minimum down payment requirement. The formulation of the discount in the model is very general. In the empirical application we will focus on discount due to parent homeownership status and following parent equity extraction, following the identifying variation in our data.

Hence, indirect utility is given by $u_{ij} = h_j - m_j + d_j \mathbb{I}_{i,g-1=j}$, where $\mathbb{I}_{i,g-1=j}$ is an indicator for having a parent in status j (and potentially extracting home equity if j = homeownership). If the discount is large more children of homeowners that extract will end up being homeowners themselves.

Housing tenure choice in this simple model is directly influenced by parents' housing tenure and extraction choices. Thus the model allow us to study how parental influence can affect intergenerational home ownership. What the model does *not* allow us to study is if parental influence lead to misallocation and inefficiency. The model can in principle address this question, by allowing the benefits to be heterogeneous across families ($h_{ij} \neq h_{i'j}$ if $i \neq i'$). In this case there could be instances in which children of renters have a higher benefits from homeownership but are misallocated to renting, as children of owners with relatively lower benefits select into housing and crowd out available homes. When moving to the estimation we discuss why separately identifying differential benefits from heterogeneous fixed costs is problematic with the available data.

To take the model to the data and perform an equilibrium counterfactual we add two ingredients. First, we assume utility is affected by idiosyncratic preferences over housing tenure. We follow the discrete choice literature and model these preferences as unobservable shocks ϵ_{ij} which are i.i.d. across individuals and tenure status. These shocks allow the econometric model to be able to explain why two individuals with with the same parent status and equity extraction behavior choose different housing tenure.

Second, we assume a fixed supply of housing available to buy (rent) for generation g given by $\bar{H}_j$. Parents from generation $g-1$ keep their homes or keep renting, so they do

not crowd out or create additional supply. Given fixed supply, prices p_j adjust to clear the housing and rental market in equilibrium.

Hence an equilibrium in this economy is a set of prices $\{p_j\}_{j=1}^2$, entry cost $\{m_j\}_{j=1}^2$ and discounts $\{d_j\}_{j=1}^2$, such that:

- Individuals optimally choose to rent or buy to maximize their utility $u_{ij} = h_j - m_j + d_j \mathbb{I}_{i,g-1=j} - \alpha p_j + \epsilon_{ij}$.
- (Fixed) supply equal demand in all markets j: $\bar{H}_j = D_j = \int_{i \in I} (u_{ij} > u_{ij'} \quad \forall j') \, di \quad \forall j$

7.2 Estimation

When estimating the model we make two parametric assumptions. First, we assume that the unobservable shocks ϵ_{ij} are distributed according to a standard logistic distribution and normalize the utility from renting to zero. The interpretation of utility, costs and prices for owning are therefore relative to the option of renting. Hence the mass of individuals who choose to buy is given by $s_{ij=own} = \frac{exp^{u_{ij=own}}}{1+exp^{(u_{ij=own})}}$

Second, we make a parametric assumption on the parental discount on entry cost. In the empirical analysis we document: (i) a strong correlation in homeownership between parents and children; (ii) an effect of parent equity extraction on children flow into homeownership. To account for this in the model, we allow parent tenure status and equity extraction behavior to affect entry costs. All individuals who want to become homeowners need to pay a common entry cost $m_{j=buy}$. The utility of homeownership net of common entry cost is then given by: $h_{j=own} - m_{j=own}$. Depending on parents' tenure and available equity, children enjoy reductions in entry costs which we parameterize as follows:

$$\overbrace{d_1 \mathbb{I}_{i,g-1=own}}^{\text{parent own}} + \overbrace{d_2 \mathbb{I}_{i,g-1=own\&extract}}^{\text{parent own \& extract}} \tag{11}$$

where d_1 is the discount for individuals choosing to own as their parents and d_2 is the discount for individuals choosing to own as their parents when their parent also extract home equity.

We jointly estimate the utility of homeownership net of common entry cost ($h_{j=own} - m_{j=own}$), discounts (d_1 and d_1), and price responsiveness α with maximum likelihood. We estimate the model using the flow into homeownership to be consistent with the empirical analyses of section 4.[26] We have a number of sources of identification. First, the share of young adults that become new homeowner relative to the total number of young adults that could become new homeowner pins down the utility of homeownership net of common entry cost ($h_{j=own} - m_{j=own}$). A high overall flow into homeownership could be the result of high benefits or low entry costs, all else equal.[27] Second, the share of young adults that become new homeowners and have parents that are homeowners identifies the discount d_1. Third, the share of young adults that become new homeowners and have parents that are homeowners and extract identifies the discount d_2.

7.3 Results and Counterfactual

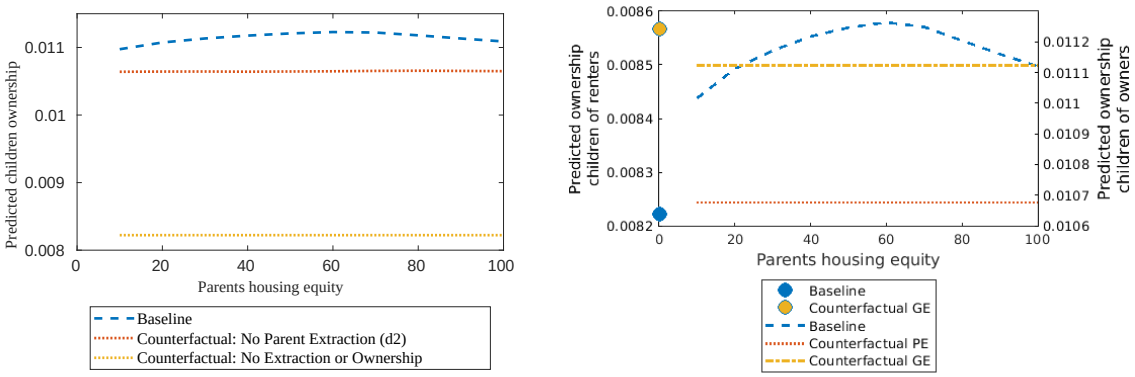
Figure 7 and Table 7 show the results in the baseline and three counterfactuals. First, the blue line in both panel (a) and (b) of Figure 7 shows the predicted flow into homeownership for children of parents who are homeowners, as a function of the parent housing equity. In the baseline model we find a slightly inverted u-shape pattern relative to parent equity. Parents with very low equity cannot extract and help their children. Parents with very high level of housing equity might not need to extract to help their children, and rely instead on different - and perhaps less costly - sources of help (e.g., additional savings).

The first row of Table 7 report the annual probability of becoming a homeowner for children of renters and of homeowners by tercile of parents' equity. Children of renters have the lowest probability to become homeowners at about 0.8%, consistent with our facts from Section 3. Children of homeowners in the lowest tercile of the equity distribution have a probability to become homeowners of 1.10%, while children whose parents are in the middle and top tercile of the equity distribution have a probability to become homeowners of 1.12%.

[26] To measure house prices we take mean state-level house prices from the FHFA for 2010 and then use the Case-Shiller indexes to construct levels for all additional years.

[27] We do not have additional variation in the data to separate utility from common entry cost.

Figure 7: Dynastic Home Equity in Baseline and Counterfactuals



(a) Parent Discount Channels

(b) Partial VS General Equilibrium

Note: Panel (a) shows the probability to become homeowners for children of homeowners by their level of housing equity in the baseline and two counterfactuals. In the first counterfactual – No parent extraction (PE) – we compute probability to become homeowners after removing the discount from parent equity extraction (d_2 in Equation 11). In the second counterfactual – No parent help – we compute the probability to become a homeowner after removing the discount from parent equity extraction as well as the discount from parent ownership (d_1 in Equation 11). Panel (b) shows the probability to become a homeowner for children of renters as well as homeowners by their level of housing equity in the baseline and two counterfactuals. In the first counterfactual – No parent extraction (PE) – we compute the probability to become a homeowner after removing the discount from parent equity extraction. In the second counterfactual – No parent extraction (GE) – we compute the probability to become a homeowner after removing the discount from parent equity extraction as allowing prices to adjust to clear the market.

In our first counterfactual we remove the help coming from parent equity extraction (d_2 in Equation 11). The average flow into homeownership for children of homeowners decreases and becomes independent from parents' level housing equity. Children of homeowners in the middle tercile of the equity distribution experience the largest decline by about 5%, since their entry cost into homeownership have now increased the most. Children of homeowners in the highest tercile of parents equity experience a similar decline, while the probability to become homeowner for children of homeowners in the lowest tercile decrease by about 3.7%.

In our second counterfactual we also remove the discount on fixed costs from having parents being homeowners (d_1 in Equation 11). In this counterfactual, children of home-

Table 7: Dynastic Home Equity in Baseline and Counterfactuals

Parent status:	Renters	Homeowners		
Home-Equity level:		Low	Medium	High
	(1)	(2)	(3)	(4)
Baseline	0.82	1.10	1.12	1.12
Counterfactuals:				
No parent extraction (PE)	0.0%	-3.7%	-5.0%	-4.9%
No parent help	0.0%	-24.9%	-27.5%	-28.9%
No parent extraction (GE)	+4.2%	0.3%	-1.0%	-0.9%

Note: The table shows the baseline probability to become homeowners for children of renters and for children of homeowners based by tercile of housing equity. The table also shows the percentage change relative to the baseline for three counterfactuals. In the first counterfactual – No parent extraction (PE) – we compute the probability to become a homeowner after removing the discount from parent equity extraction (d_2 in Equation 11). In the second counterfactual – No parent help – we remove the discount from parent equity extraction as well as the discount from parent ownership (d_1 in Equation 11). In the third counterfactual – No parent extraction (GE) – we compute the probability to become a homeowner after removing the discount from parent equity extraction and allowing prices to adjust to clear the market.

owners experience a large decline in the probability to become homeowners, which is in the order of 25-29% relative to the baseline. Combining these magnitudes with the ones in the first counterfactual – that only remove the discount from parent equity extraction – we can estimate the importance of parents equity extraction for children homeownership relative to the overall importance of parents homeownership. We find that parents equity extraction account for about 15-17% of the overall effect.

In our final counterfactual we focus again only on the effect of removing parents help via equity extraction (the key channel of our paper), but we allow prices to adjust to clear the market. Through this equilibrium effect, children of renters are also affected and experience the largest gain in homeownership. As shows in panel (b) of Figure 7 as well as in the last row of Table 7 their probability to become homeowners increases by more than 4%, as the now relatively lower prices of homeownership make it more affordable. Interestingly,

children of parents in the lowest tercile of housing equity also experience a small increase in the probability to become homeowners. Despite the lower prices, children whose parents are homeowners with high equity experience a decrease in homeownership by about 1%. The lower equilibrium prices are not enough to compensate for the lost parental discount.

Overall, we find that in a counterfactual economy with no role for parental equity, intergenerational homeownership mobility increases. Children from zero and low-equity families see the largest gains. Aggregate home ownership, however, is almost unchanged due to a negative general-equilibrium effect on house prices.

8 Conclusions

We provide novel evidence that homeownership across generations is strongly positively correlated within a household. We then show that the positive relationship between parental homeownership and their children homeownership can partly be explained by the role of housing wealth itself. Households with access to liquid housing wealth in the form of equity extraction can use their wealth to help their children enter into the housing market.

Our results have implications for the persistence of housing wealth and inequality across generations. To the extent that access to housing wealth is distributed unequally across socioeconomic groups, housing wealth helps perpetuate the unequal distribution of wealth by enabling earlier access to housing markets for the children of parents with housing wealth. Further work is needed to quantify the relative importance of all the factors behind the unequal distribution of housing wealth in the population. The fact that many households hold most of their wealth in housing suggests that this is an important channel for the perpetuation of wealth inequality.

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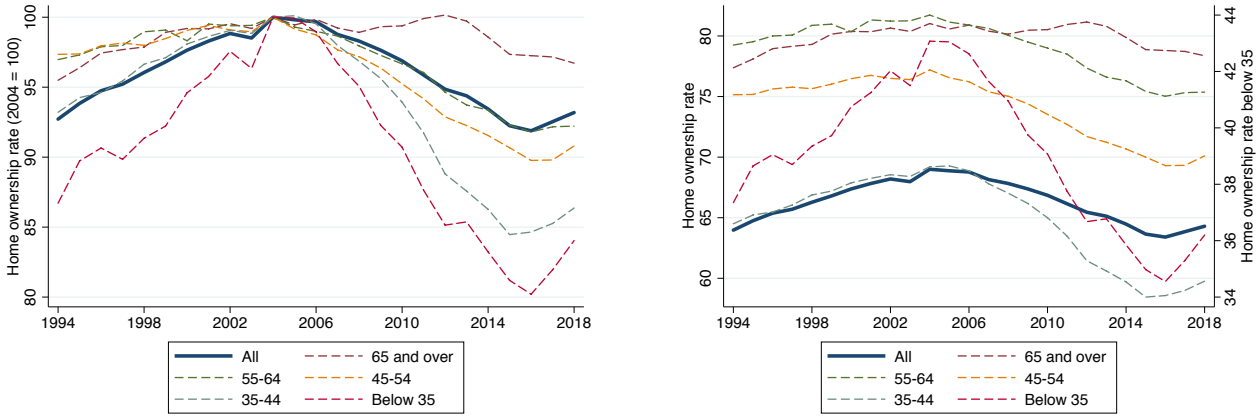
Online Appendix

Appendix A shows additional results for the main analysis. Appendix B shows the results from a matching approach. Appendix C shows additional results for the heterogeneity analysis. Appendix 5.3 shows the results on the effects of parents equity extraction on children age at homeonwership.

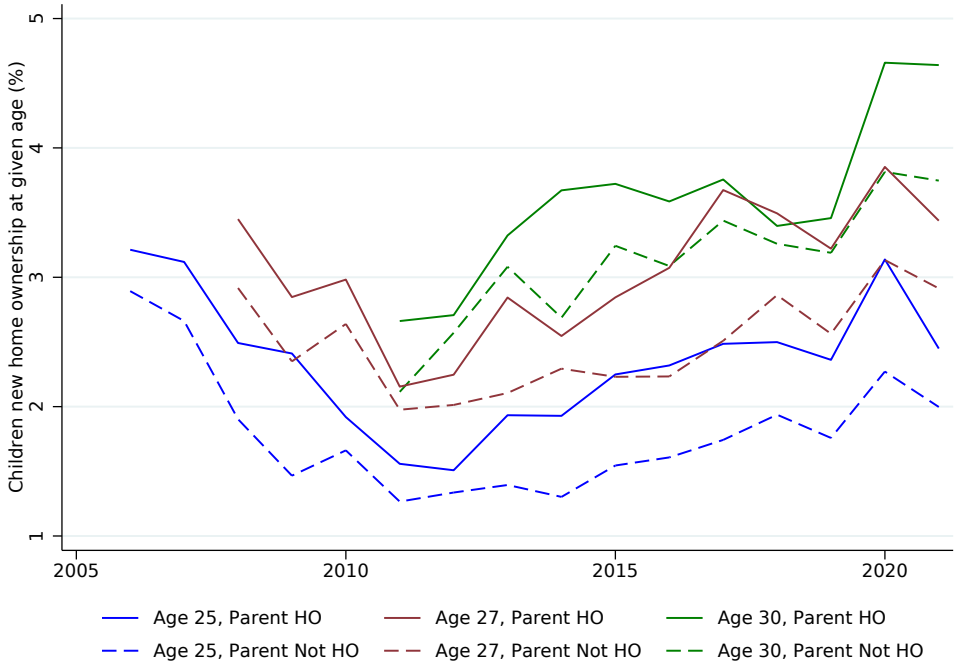
A Additional Results and Robustness

Figure A1: Home Ownership across Ages and Over Time



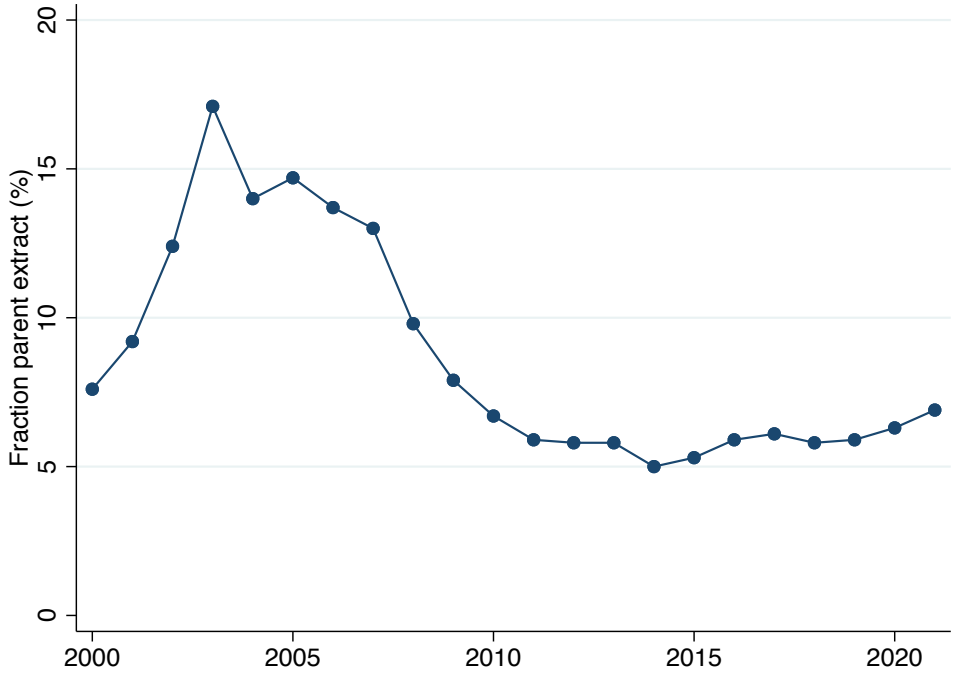
Note: The left panel shows the normalized home ownership rate for different age group. The right panel shows the home ownership rate for different age group. Authors' calculations using data from the U.S. Census Bureau, Current Population Survey/Housing Vacancy Survey.

Figure A2: Relationship between Children's Flow into Homeownership and Their Parents Homeownership Status



Note: The figure shows the fraction of children that become homeowners as a function of the homeownership status of their parents. The solid lines show the average share of children who become new homeowners and whose parents are homeowners. The dash lines show the average share of children who become new homeowners and whose parents are not homeowners. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

Figure A3: Parent Equity Extraction



Note: The figure shows the fraction of parents extracting equity. uthors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

Table A1: Intergenerational Home Ownership, "Stock" Model, Ages 27 and 30

	(1)	(2)	(3)	(4)	(5)
Panel A: Homeowner by 27	Dep Var: Child is home owner at age 27				
Parent homeowner	3.253***	2.263***	1.940***	1.556***	1.519***
	(0.254)	(0.289)	(0.191)	(0.156)	(0.216)
Controls (parent age, parent and child credit)	No	Yes	Yes	Yes	Yes
Year f.e.	No	Yes	Yes	Yes	Yes
State f.e.	No	No	Yes	No	No
Zipcode f.e.	No	No	No	Yes	No
Group f.e.	No	No	No	No	Yes
Mean Y	11.26	11.26	11.26	11.26	11.26
Observations	325298	325298	325298	325298	325298
Adjusted R^2	0.00	0.04	0.05	0.07	0.08
Panel B: Homeowner by 30	Dep Var: Child is home owner at age 30				
Parent homeowner	6.064***	3.318***	2.727***	1.921***	1.664***
	(0.310)	(0.456)	(0.228)	(0.188)	(0.286)
Controls (parent age, parent and child credit)	No	Yes	Yes	Yes	Yes
Year f.e.	No	Yes	Yes	Yes	Yes
State f.e.	No	No	Yes	No	No
Zipcode f.e.	No	No	No	Yes	No
Group f.e.	No	No	No	No	Yes
Mean Y	21.07	21.07	21.07	21.07	21.07
Observations	175740	175740	175740	175740	175740
Adjusted R^2	0.00	0.08	0.10	0.11	0.12

Note: The table reports the estimates of equations (1). In Panel A the dependent variable is the dummy equal to one hundred if the individual is an homeowner at age 27 and zero otherwise. In Panel B the dependent variable is the dummy equal to one hundred if the individual is an homeowner at age 30 and zero otherwise. Controls are parents age and age squared, and deciles of credit score for both children and parents. Group f.e. are interacted fixed effects for year and zip code. Standard errors are clustered at the state level. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

Table A2: Dynastic Home Equity - Event Study

Time	$\hat{\alpha}$				Children homeownership		
	Estimate	Std.	Lower bound	Upper bound	Predicted	Counterfactual	Cumulative
-5	-0.094	0.059	-0.209	0.022	1.720	1.813	.
-4	0.002	0.049	-0.094	0.098	1.461	1.459	.
-3	-0.063	0.041	-0.143	0.017	1.090	1.153	.
-2	0.000	0.000	0.000	0.000	0.911	0.911	.
-1	0.076	0.031	0.015	0.137	0.790	0.714	.
0	0.612	0.043	0.527	0.696	1.164	0.553	0.612
1	-0.072	0.032	-0.135	-0.010	0.426	0.499	0.539
2	-0.125	0.035	-0.194	-0.056	0.355	0.480	0.414
3	-0.087	0.038	-0.160	-0.013	0.368	0.455	0.328
4	-0.112	0.040	-0.190	-0.033	0.323	0.434	0.216
5	-0.037	0.048	-0.130	0.057	0.379	0.416	0.179

Note: The table reports the estimates from equation (4) for the parameter α and different leads and lags. We report point estimate, standard errors, lower and upper bounds. The table also reports predicted children homeonwership using the estimated coefficients from equation (4), countefactual children homeonwership setting α to zero, and the cumulative effect of parent equity extraction. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data Equifax Credit Risks Insight Servicing McDash and Black Knight McDash Data.

B Matching Approach

This Appendix section shows a complementary approach to construct a control group for children who are treated by parent equity extraction based on propensity score matching.

One concern with the approach given by (3) could be that children of homeowners parent who extract equity are different from those of homeowners parent who do not extract equity. In column (7) of Table 3 we addressed this issue with children fixed effects, thus controlling for all time-invariant unobservable differences across children and using only variation within child over time in parents extraction for identification.

A matching methodology provides two advantages in our setting. First, our treatment sample is restricted to children of parents who can extract equity. In our baseline analysis, parents with higher credit score or parents living in areas which experienced a higher appreciation in house prices may be compared to children with parents with low credit scores or low levels of equity. As a result, there may not be comparable children in the untreated group. Matching allows us to restrict comparisons to similar children. Second, a semiparametric matching procedure can better account for nonlinearities between control variables and the outcome, checking our dependence on the linearity assumption implied by the OLS specification (3).

Table A3 shows the characteristics that we used for matching. Most characteristics are comparable between the two groups after the matching. The magnitudes of any differences are small. For example, the average credit score for the parents of treated children is 734 and the equivalent score for the parents of control children is 736. Similarly, the average credit score of a treated child is 675 and the average credit score of a control child is 674.

Table A4 shows the results of the treatment effect of parents equity extraction on the flow of children into new homeownership using the matched sample of untreated children. In column (1) we show the the results based on the matched sample without any additional fixed effect. The average treatment effect on the treated (ATT) is about 0.44. Since the treated share is about 10%, we should be cautious of differing responses to parents extraction

Table A3: Dynastic Home Equity - Propensity Score Matching

	Mean		% Bias	t-test	
	Treated	Control		t	p-value
Parent age	52.451	51.798	11.5	35.76	0.000
Parent credit score	734.88	736.41	-1.7	-5.39	0.000
Children credit score	675.62	674.43	1.5	4.77	0.000
Parent HP growth 3yr	4.3425	5.7764	-20.7	-60.11	0.000
Child HP growth 3yr	4.337	5.7745	-20 .7	-60.26	0.000
Child county unemployment rate	5.7909	5.4956	12.0	38.68	0.000
Parent county unemployment rate	5.7919	5.4982	11.9	38.48	0.000
Child county 3yr wage growth	2.8814	3.0418	-8.8	-27.49	0.000
Parent county 3yr wage growth	2.8772	3.0378	-8.9	-27.60	0.000
Child county 3yr employment growth	.67611	.75336	-3.7	-11.35	0.000
Parent county 3yr employment growth	.67582	.75385	-3.7	-11.45	0.000

Note: The figure shows the balance tests for the matched sample using propensity scores. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

between treated and untreated children. These heterogeneous treatment effect can bias our estimate of the average treatment effect of the entire sample population of children. For this reasons we also report the average treatment effect on the untreated children (ATU). In our setting the ATU is about 0.46, which is very close to the ATT, suggesting that the heterogeneous treatment effect bias is small. As a result, the average treatment effect (ATE) is 0.46. Relative to an average flow into homeownership of about 1.27, parent equity extraction increase the flow into homeonwership by 35%.

In columns (2) to (4) of Table A4, we sequentially add stricter sets of fixed effect. In column (2) we add year and children age fixed effects; in column (3) we also include child state fixed effects; and in column (4) we also add child county fixed effects. The estimates are remarkably stable across columns. In column (4) we are comparing a child whose parent extract equity to another control child whose parent do not extract, in the same county in the same year at the same age and with minimal differences along other characteristics such as child and parent credit score. The ATT and the ATE are almost 0.6, which is almost identical to the results in Table 3 and Figure 3.

Table A4: Dynastic Home Equity - Propensity Score Matching

	(1)	(2)	(3)	(4)
Avg. Treatment on Treated	0.440***	0.571***	0.568***	0.565***
	(0.021)	(0.021)	(0.021)	(0.020)
Avg. Treatment on Untreated	0.462***	0.566***	0.572***	0.557***
	(0.021)	(0.020)	(0.019)	(0.021)
Treated Share (%)	10.27	10.27	10.27	10.27
Avg. Treatment Effect	0.46	0.57	0.57	0.56
Year Dmy.	No	Yes	Yes	Yes
Age Dmy.	No	Yes	Yes	Yes
Child State Dmy.	No	No	Yes	No
Child County Dmy.	No	No	No	Yes
Mean Y	1.27	1.22	1.22	1.23
Observations	1138373	1138371	1138376	1138377

Note: This table presents the estimated treatment effects from the propensity score matching. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data Equifax Credit Risks Insight Servicing McDash and Black Knight McDash Data.

Overall, all of our different empirical approaches point to an economically and statistically significant impact of parent equity extraction on child new homeownership. Most notably, children whose parents extract equity are about 60% more likely to become a homeowner immediately after parent equity extraction relative to similar children whose parents do no extract equity. In the next two sections we explore: (i) heterogeneity in the transmission of homeownership from parents to children via equity extraction; and (ii) different margins through which parents' equity extraction affects child homeownership.

C Additional Results on Heterogeneity

This Appendix section shows additional results on the heterogeneity analysis of the effect of parental equity extraction on the child home purchase.

C.1 Children Characteristics

First, we explore if the importance of equity extraction varies with the number of siblings in the family. Intuitively, if there are multiple children present in the family, then the same amount of home equity will be less useful for helping transition into homeownership. To explore this dimension, we classify children as an only child, with one sibling, and with more than one sibling.[28] The fist panel of Figure A4 reports the results. Only-child and children with one sibling have similar estimates of the effects of equity extraction on new homeownership. However, cases which we identify as more than one sibling in the household show a much smaller relationship between equity extraction and child homeownership, despite the fact that transitions to home ownership occur at about the same rate for all groups. This suggests that housing wealth is less helpful for financing homeownership for children if it is spread across larger numbers of children, consistent with our mechanism of equity extraction helping to finance homeownership.

Second, we study how the role of parental equity extraction changes with the age of the child by splitting the sample into three groups: when children are younger than 26, between 26 and 30, and older than 30. These results are reported in the second panel of Figure A4. Scaling the point estimates by the mean transitions into homeownership, we see that parent equity extraction is relatively more important when children are younger. Having a parent who extracts equity increases the probability that a child below 26 y.o. becomes a homeowner by about 90% of the mean, while the effect is about half as large for older children. Hence, the ability to access financing via parent equity extraction is relatively more important for

[28] Importantly, these definitions are subject to the limitations of our algorithmic identification of siblings in the credit bureau data, which is likely to have measurement error.

younger children who are likely to have less savings available for a downpayment.

Third, we look at different measures of children's access to and usage of credit. Panels three to five of Figure A4 report the result for credit card limit, credit card usage and Equifax credit score, respectively. We find that parent equity extraction is relatively more important for children with higher credit card limit and relatively lower credit card utilization. These result suggest that parents' help through equity extraction is more important for children less likely to be more broadly financially constrained. We note that correlation in access to and usage of credit between parent and children can explain these results and explore the same heterogeneity across parents in the next subsection. We do not find large heterogeneity across children credit score, suggesting that dynastic home equity matters for both high and low-credit quality children.

Finally, we split counties into quartiles based on the median house price for children's location. These results are reported in the last panel of Figure A4. Estimated effects are large and positive across all of the subsamples, but appear to increase monotonically with the price of housing. This shows that access to parental home equity may becomes important as housing becomes more expensive and children become constrained by downpayment requirements.

C.2 Parents Characteristics

We explore heterogeneity in the role of dynastic home equity across parental characteristics. The first panel of Figure A5 shows that for parents with one or two children the effect of equity extraction on the probability to become homeowner is similar. However, for parents with more than two children the effect drops from about 60% of the average flow to about 40%, echoing the results for children with many siblings.

Second, we study how the role of parental equity extraction changes with the age of the parents by splitting the sample into three groups: when parents are younger than 45, between 45 and 60, and older than 60. These results are reported in the second panel of Figure A5. Scaling the point estimates by the mean transitions into homeownership, we see

that the effect of parent equity extraction is stronger when parents are younger, increasing the probability that a child becomes a homeowner by more than 100% of the mean. The effect is about half as large for older parents. Hence, while parent of different ages are likely to help their children buying a home, the source of parents help varies across the life cycle. Younger parents are more likely to extract equity from their home to help their children, while older parents may rely more on additional savings or other form of non-housing wealth.

Third, we look at different measures of parents access to and usage of credit. Panels three to five of Figure A5 report the result for credit card limit, credit card usage and Equifax credit score, respectively. We estimate a large effect of parental equity extraction for children transition to homeownership for parents with higher credit limit, lower credit usage, and higher credit score. All the results point to an important role of access to credit for parents – in terms of higher limit, lower utilization and higher credit score – to be able to help their children.

The difference in the heterogeneity between children and parents on the credit score is informative. The dynastic home equity coefficient for parents in the bottom quartile of the credit score distribution correspond to about 40% of the average flow, while for parents in the top quartile of the credit score distribution it jumps to 80%. Note that this is despite the fact that equity extraction is fairly similar for parents in the bottom and top quartile of the credit score distribution. While all children benefit similarly from parental help irrespective of their credit score (panel five of Figure A4), parents with low credit scores have a more limited ability to help than parents with high credit scores (panel five of Figure A5).

Finally, we split counties into quartiles based on the median house price for parents' location. These results are reported in the last panel of Figure A5. Estimated effects are large and positive across all of the subsamples, but appear to increase monotonically with the price of housing. This result resembles the same split based on children location (last panel of Figure A4), suggesting that common location choices of parents and children could play a role. We explore this dimension further in the next subsection.

C.3 Heterogeneity Across Locations and Over Time

In this subsection on heterogeneous effects, we study the impact of dynastic home equity: (i) across parents and children location; and (ii) over time during the boom, bust and rebound period of the 2008 housing crisis.

The first panel of Figure A6 shows the normalized effect of dynastic home equity for children-parents pairs living in different states, in the same state, in different counties, and in the same county. First, notice that the results from the sample of different states are noisier as the number of observations in this subset is considerably lower. As a result, we cannot reject the null hypothesis of no effect of parents equity extraction of children flow into homeownership in this subsample. The split by counties leave us with enough power in both subsamples. We find that the effect of dynastic home equity is weaker for children living in different counties from their parents. For children living in different counties from their parents the effect of dynastic home equity drops from about 60% of the average flow to about 40%. Children moving to different counties (or states) could be more economically successful and financially independent, thus distance reduces the demand for parents' help. Similarly, parents might be more willing to extract equity from their own home to help children buy only if they decide to live close to them. Distance then reduces the supply of parent' help.

Finally, we split our sample into three periods based on the recent housing cycle: boom (pre-2007), bust (2007-2012), and recovery (post-2012), following Chodorow-Reich et al. (2021). We re-estimate our baseline regressions (equation (3)) within each of these period and also fixing the age of the children, to separate the effect of time-series variation from child's cohort effect, due to the construction of our merged children-parent dataset.

Figure A6 shows the result for children at age 22. We find that dynastic home equity matters relatively less in the pre-2007 boom period, when credit was abundant and low-downpayment mortgages widely available (Mian and Sufi (2011)). The scaled effects show that parent equity extraction became more important for children homeownership after the housing bust, perhaps as a result of the tightening in credit standards following the crisis.

Dynastic home equity has continued to play an important role in recent years, as increases in house prices (relative to income) have reduced housing affordability for young adults and credit standards have remained high.

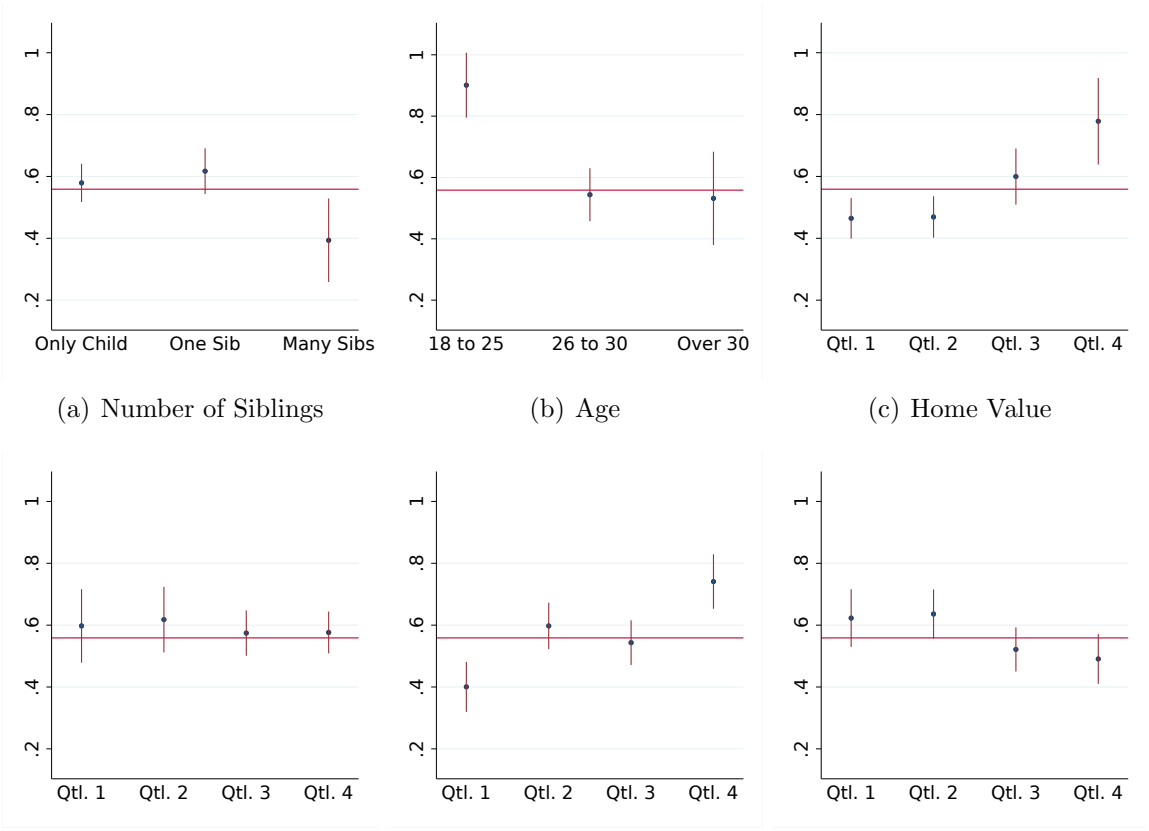
Overall, our heterogeneity analysis suggests that dynamic home equity is particularly important when: (i) affordability is worse because of high house values; (ii) financial constraints are more likely to be binding for the children whether for macroeconomic reasons (like the financial crisis) or because children are too young to have accumulated substantial assets for down payment; and (iii) parents have access to credit (higher credit card limits and credit scores, and lower credit card utilization) but they are too young to have other means to help children, and therefore they tap into their home equity.

Table A5: Heterogeneity by Median County-Level Home Value Quartile

	Qtl. 1	Qtl. 2	Qtl. 3	Qtl. 4
Parent Equity Extraction	0.513***	0.523***	0.678***	0.741***
	(0.034)	(0.038)	(0.050)	(0.067)
Scaled effect	0.494	0.497	0.646	0.813
Mean cty. median home val.	155,752	230,983	316,731	579,105
Controls	Yes	Yes	Yes	Yes
County f.e.	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes	Yes
Mean Y	1.04	1.05	1.05	0.91
Observations	1004448	968054	983971	981397
Adjusted R^2	0.02	0.02	0.02	0.02

Note: The table shows the estimates of equation (3) on the sample of children whose parents are homeowners. The dependent variable is the dummy equal to one hundred if the individual becomes a homeowner and zero otherwise. Parent equity extraction is the dummy equal to one if the parents extract equity in the current year. Controls are parent's age and age squared, unemployment rate for both children and parents, 3yr zip code home price growth for both parents and children, 3yr wage growth for both children and parents, 3yr employment growth for both children and parents, and deciles of lagged child and parent credit scores. Standard errors are clustered at the parent-state level. Scaled effect is the parent equity extraction coefficient divided by the mean dependent variable in the regression sample. Authors' calculations using FRBNY Consumer Credit Panel/Equifax Data.

Figure A4: Children Heterogeneity

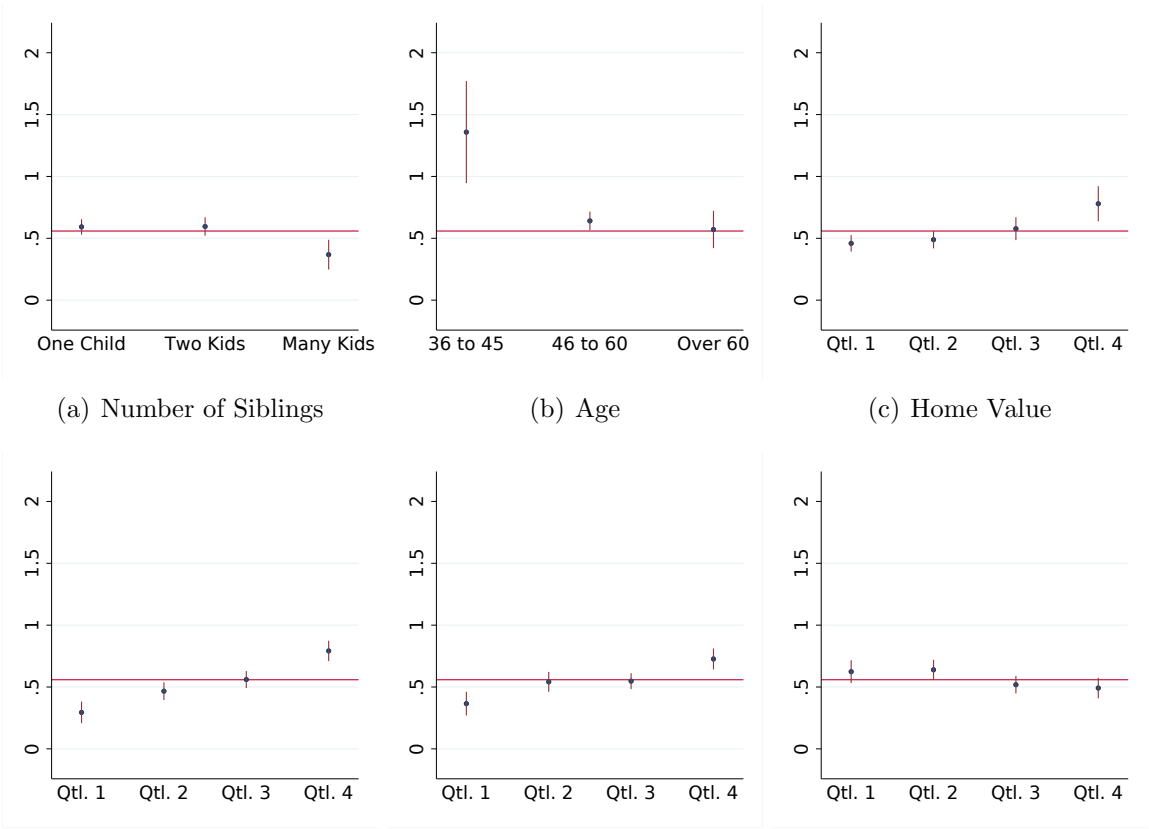


(a) Number of Siblings (b) Age (c) Home Value

(d) Equifax credit score (e) Credit limit (f) Credit usage

Note: The figure shows the estimates of equation (3) for different sample splits based on children characteristics. We report the point estimates and 95% confidence interval on the coefficient α that captures the effect of parent equity extraction divided by the average flow into homeownership in each subsample. The solid red line show the estimate of α in the full sample divided by the average flow into homeonwership in the full sample. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

Figure A5: Parents Heterogeneity

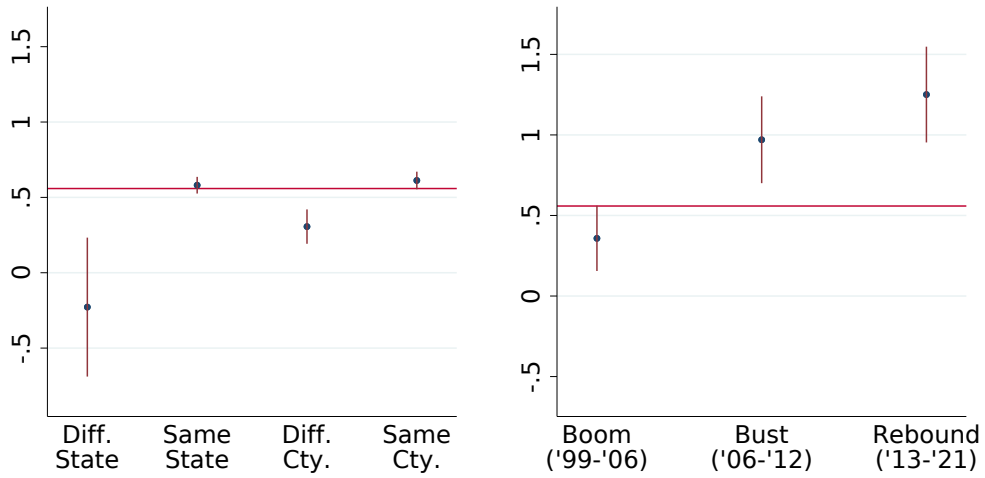


(a) Number of Siblings (b) Age (c) Home Value

(d) Equifax credit score (e) Credit limit (f) Credit usage

Note: The figure shows the estimates of equation (3) for different sample splits based on parents characteristics. We report the point estimates and 95% confidence interval on the coefficient α that captures the effect of parent equity extraction divided by the average flow into homeownership in each subsample. The solid red line show the estimate of α in the full sample divided by the average flow into homeonwership in the full sample. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

Figure A6: Heterogeneity Across Locations and Over Time



(a) Distance (b) Business Cycle

Note: The figure shows the estimates of equation (3) for different sample splits based on children and parents location and the time of mortgage extraction and flow into homeonwnership. We report the point estimates and 95% confidence interval on the coefficient α that captures the effect of parent equity extraction divided by the average flow into homeownership in each subsample. The solid red line show the estimate of α in the full sample divided by the average flow into homeownership in the full sample. Authors' calculations using data from the FRBNY Consumer Credit Panel/Equifax Data.

Table A6: Heterogeneity by Family Composition and Age

Panel A: Number of siblings	Only Child	1 Sibling	Many Siblings
Parent Equity Extraction	0.620***	0.670***	0.433***
	(0.032)	(0.040)	(0.071)
Scaled effect	0.61	0.66	0.42
Controls	Yes	Yes	Yes
County f.e.	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes
Mean Y	1.01	1.01	1.03
Observations	2702651	1031537	204314
Adjusted R^2	0.01	0.02	0.02

Panel B: Age group	Younger than 26	Between 26 and 30	Older than 30
Parent Equity Extraction	0.565***	1.651***	1.761***
	(0.034)	(0.126)	(0.229)
Scaled effect	0.91	0.56	0.50
Controls	Yes	Yes	Yes
County f.e.	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes
Mean Y	0.62	2.93	3.51
Observations	1617847	461329	120800
Adjusted R^2	0.01	0.01	0.01

Note: The table shows the estimates of equation (3) on the sample of children whose parents are homeowners. The dependent variable is the dummy equal to one hundred if the individual becomes a homeowner and zero otherwise. Parent equity extraction is the dummy equal to one if the parents extract equity in the current year. Controls are parent's age and age squared, unemployment rate for both children and parents, 3yr zip code home price growth for both parents and children, 3yr wage growth for both children and parents, 3yr employment growth for both children and parents, and deciles of lagged child and parent credit scores. Standard errors are clustered at the parent-state level. Scaled effect is the parent equity extraction coefficient divided by the mean dependent variable in the regression sample. Authors' calculations using FRBNY Consumer Credit Panel/Equifax Data.

Table A7: Heterogeneity Business-Cycle Heterogeneity

Panel A: Home Purchase at Age 22	Pre-2007	2007 - 2012	Post-2012
Parent Equity Extraction	0.407***	0.478***	0.607***
	(0.096)	(0.065)	(0.074)
Scaled effect	0.48	1.02	1.30
Controls	Yes	Yes	Yes
County f.e.	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes
Mean Y	0.85	0.47	0.47
Observations	77404	193639	212900
Adjusted R^2	0.01	0.01	0.01

Panel B: Home Purchase at Age 25	Pre-2007	2007 - 2012	Post-2012
Parent Equity Extraction	0.640	1.289***	1.182***
	(0.568)	(0.181)	(0.155)
Scaled effect	0.22	0.70	0.57
Controls	Yes	Yes	Yes
County f.e.	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes
Mean Y	2.91	1.85	2.08
Observations	5057	92120	141376
Adjusted R^2	0.01	0.01	0.01

Note: The table shows the estimates of equation (3) on the sample of children whose parents are homeowners. The dependent variable is the dummy equal to one hundred if the individual becomes a homeowner and zero otherwise. Parent equity extraction is the dummy equal to one if the parents extract equity in the current year. Controls are parent's age and age squared, unemployment rate for both children and parents, 3yr zip code home price growth for both parents and children, 3yr wage growth for both children and parents, 3yr employment growth for both children and parents, and deciles of lagged child and parent credit scores. Standard errors are clustered at the parent-state level. Scaled effect is the parent equity extraction coefficient divided by the mean dependent variable in the regression sample. Authors' calculations using FRBNY Consumer Credit Panel/Equifax Data.

Table A8: Heterogeneity by Median Parent County-Level Home Value Quartile

	Qtl. 1	Qtl. 2	Qtl. 3	Qtl. 4
Parent Equity Extraction	0.495***	0.510***	0.593***	0.716***
	(0.035)	(0.038)	(0.046)	(0.067)
Scaled effect	0.465	0.483	0.571	0.785
Mean cty. median home val.	155,430	229,625	314,559	577,983
Controls	Yes	Yes	Yes	Yes
County f.e.	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes	Yes
Mean Y	1.06	1.06	1.04	0.91
Observations	1209112	1116353	1172314	1149709
Adjusted R^2	0.01	0.01	0.01	0.01

Note: The table shows the estimates of equation (3) on the sample of children whose parents are homeowners. The dependent variable is the dummy equal to one hundred if the individual becomes a homeowner and zero otherwise. Parent equity extraction is the dummy equal to one if the parents extract equity in the current year. Controls are parent's age and age squared, unemployment rate for both children and parents, 3yr zip code home price growth for both parents and children, 3yr wage growth for both children and parents, 3yr employment growth for both children and parents, and deciles of lagged child and parent credit scores. Standard errors are clustered at the parent-state level. Scaled effect is the parent equity extraction coefficient divided by the mean dependent variable in the regression sample. Authors' calculations using FRBNY Consumer Credit Panel/Equifax Data.

Table A9: Heterogeneity by Family Composition and Age

Panel A: Number of Children	Only Child	1 Sibling	Many Siblings
Parent Equity Extraction	0.590***	0.632***	0.367***
	(0.033)	(0.038)	(0.061)
Scaled effect	0.59	0.61	0.35
Controls	Yes	Yes	Yes
County f.e.	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes
Mean Y	1.01	1.03	1.04
Observations	2980280	1367324	300677
Adjusted R^2	0.01	0.01	0.02

Panel B: Parent Age group	Younger than 46	Between 46 and 60	Older than 60
Parent Equity Extraction	0.655***	0.757***	1.139***
	(0.103)	(0.044)	(0.157)
Scaled effect	1.35	0.64	0.58
Controls	Yes	Yes	Yes
County f.e.	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes
Mean Y	0.49	1.18	1.95
Observations	178001	2130073	389598
Adjusted R^2	0.01	0.02	0.01

Note: The table shows the estimates of equation (3) on the sample of children whose parents are homeowners. The dependent variable is the dummy equal to one hundred if the individual becomes a homeowner and zero otherwise. Parent equity extraction is the dummy equal to one if the parents extract equity in the current year. Controls are parent's age and age squared, unemployment rate for both children and parents, 3yr zip code home price growth for both parents and children, 3yr wage growth for both children and parents, 3yr employment growth for both children and parents, and deciles of lagged child and parent credit scores. Standard errors are clustered at the parent-state level. Scaled effect is the parent equity extraction coefficient divided by the mean dependent variable in the regression sample. Authors' calculations using FRBNY Consumer Credit Panel/Equifax Data.

Table A10: Different Child and Parent Locations

	Same State	Different State	Same County	Different County
Parent Equity Extraction	0.595***	0.601***	0.589***	0.829***
	(0.028)	(0.177)	(0.027)	(0.134)
Scaled effect	0.53	0.16	0.58	0.20
Controls	Yes	Yes	Yes	Yes
County f.e.	Yes	Yes	Yes	Yes
Year f.e.	Yes	Yes	Yes	Yes
Mean Y	1.13	3.81	1.01	4.14
Observations	5346137	188587	5170214	364738
Adjusted R^2	0.01	0.01	0.01	0.01

Note: The table shows the estimates of equation (3) on the sample of children whose parents are homeowners. The dependent variable is the dummy equal to one hundred if the individual becomes a homeowner and zero otherwise. Parent equity extraction is the dummy equal to one if the parents extract equity in the current year. Controls are parent's age and age squared, unemployment rate for both children and parents, 3yr zip code home price growth for both parents and children, 3yr wage growth for both children and parents, 3yr employment growth for both children and parents, and deciles of lagged child and parent credit scores. Standard errors are clustered at the parent-state level. Scaled effect is the parent equity extraction coefficient divided by the mean dependent variable in the regression sample. Authors' calculations using FRBNY Consumer Credit Panel/Equifax Data.