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Parental housing wealth and children's marriage prospects in China—evidence from CHARLS

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Abstract

We estimate the association between parental housing wealth and children's marriage prospects in China by drawing data from the China Health and Retirement Longitudinal Survey (CHARLS). We focus on children aged 16–35 who were unmarried in 2011 and track their marriage outcomes in 2015. Our results show that parental housing wealth acts as a signal for males in the Chinese marriage market, which is characterized by a strongly unbalanced sex ratio. Males are more likely to get married if their parents own high-value houses, especially among rural households. The relationship is not significant for females.

Keywords Housing wealth · Marriage · Children · CHARLS

JEL classification E21 · J12 · J13

1 Introduction

For centuries, marriage has been a fundamental institution among Chinese households. However, in recent years individual marriage behavior has been changing dramatically, and marriage rates have been decreasing (Wrenn et al., 2019). Specifically, some young males might never get married due to the high pressure in the marriage market. The pressure partly comes from the unbalanced sex ratios in China (males largely outnumber females), which is affected by the one-child policy and a

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traditional preference for sons.[1,2] As a result, many males have difficulty in finding a female partner and getting married (Li and Wu, 2017), while females have opportunities to marry males with a better background and wealth holdings. In this context, males and their parents are motivated to accumulate more wealth to enhance males' probabilities of getting married (Wei and Zhang, 2011).

In this paper, we investigate the association between parental housing wealth and young males' transitions into marriage in China. We focus on housing wealth for three reasons. First, housing wealth is the largest form of household wealth in China (Li and Wu, 2017; Xie and Jin, 2015). For example, Xie and Jin (2015) find that housing wealth accounts for more than 70% of household wealth. Second, affected by their traditional culture, Chinese households prefer housing asset holdings and regard it as a necessity for marriage (Wrenn et al., 2019). Third, as housing wealth is more visible than other types of wealth, such as stock and savings, we would expect housing wealth to be a better signal of household wealth in the marriage market than other forms of wealth.

Different from previous studies that emphasize individual wealth, we focus on parental wealth as parents play a non-trivial role in their children's marriage decisions in China. First, it is difficult for young individuals to purchase houses at marriageable age due to their insufficient wealth holdings and the high housing prices in many cities (Wrenn et al., 2019). Second, according to the traditional Chinese social norms, households pursue the accumulation of housing equity, especially when they have unmarried sons, as they view housing as a status good (Wei et al., 2017). This implies that in China, while young individuals have low homeownership rates, parents have very high homeownership rates.[3] Moreover, parental housing wealth is important for the newlyweds because they are very likely to coreside with the groom's parents. Our analytic sample, constructed based on data from the China Health and Retirement Longitudinal Survey, shows that more than 47% of newlyweds coreside with the groom's parents after marriage in 2015. Therefore, a better parental house can also directly affect the wellbeing of newlyweds. Finally, in the Chinese context, it is a common practice for sons to obtain the parental house as a bequest. A better parental house means a more generous bequest for males, implying that parental housing wealth also affects the future wealth of the newlyweds. Noted that parental housing wealth acts as an important signal of current and future wellbeing, this study focuses on parental housing wealth.

To empirically investigate the role of parental housing wealth on young males' transitions into marriage, we use the 2011, 2013, and 2015 waves of the China Health and Retirement Longitudinal Survey (CHARLS hereinafter). CHARLS is a nationally representative data set, and it has a unique advantage for this research. That is, it focuses on individuals aged 45 and above, which means that their children are very likely to be at marriage ages. Moreover, the CHARLS data provides detailed

[1] The skewed sex ratio affects society in many aspects, such as the crime rate (Edlund et al., 2013), labor force participation (Angrist, 2002), entrepreneurship behaviors (Chang and Zhang, 2015), and consumption behavior (Grier et al., 2016).

[2] In China, the sex ratio of the population aged 0–19 is 114.84 males to 100 females, according to 2010 Population Census Data of the People's Republic of China.

[3] In our data, only 11.62% of unmarried children in 2015 own a house.

information on respondents' housing and non-housing wealth and their children's demographic information.

The results show that parental housing wealth plays a crucial role in young males' transitions into marriage. First, we find that parental housing value is positively and significantly related to men's marriage transitions. A better house enhances men's attractiveness in the marriage market and increases their chances of getting married. Second, the results suggest that the role of parental housing wealth varies with children's *hukou* status. We find that the role of parental housing wealth is only significant for males with rural *hukou*. In other words, parental housing wealth is more likely to be a signal in rural areas than in urban areas.

Our study contributes to the existing literature mainly in two ways. First, different from other studies that only have information on homeownership (Hu and Wang, 2020) or the size of the house (Fang and Tian, 2018), the detailed wealth information provided by CHARLS allows us to use a measure of the financial value of the parental house. Second, the structure of our data set allows us to rule out potential reverse causality issues. For example, the coresidence between the newlyweds and their parents after getting married may lead to a need for larger or better parental houses. In that sense, marriage would affect parental housing wealth positively. To address this concern, we restrict our sample to unmarried children aged 16 to 35 in the 2011 survey and observe their marriage transitions in 2015. Our strategy is different from the existing studies in China, in which individuals are observed in only one wave and cannot be tracked over time (Fang and Tian, 2018; Wei and Zhang, 2011). Of course, there may still be unobserved factors (such as family preferences) that may drive the positive associations between parental housing wealth and marriage outcomes and, therefore, we refrain from the use of causal language in the paper.

In the remainder of the paper, we review the relevant literature in Section 2. Section 3 discusses the data and empirical strategy. Section 4 shows the main results, and Section 5 concludes.

2 Relevant literature

The existing literature shows that individuals' marital status is often associated with housing wealth in both developed countries and developing countries. However, the underlying mechanisms in developed countries and developing countries are different. In developed countries such as the United States, the most prominent explanation is that if marriage serves as a contract for couples to invest in their children in the long run, then homeownership before marriage can act as collateral (Lafortune and Low 2017a). As a consequence, homeowners in the United States are found more willing to get married than renters (Lafortune and Low 2017b). In developing countries such as China and India, the increased sex ratio imbalance makes it difficult for single males to find a female partner and get married. To enhance males' relative attractiveness in the marriage market, unmarried males and their families have strong incentives to compete with other males in wealth accumulation. In other words, the competitive motive is one of the mechanisms through which wealth affects marriage. In countries with unbalanced sex ratios, parents with

unmarried sons prefer to accumulate saving rates (Wei and Zhang 2011), construct a toilet (Stopnitzky 2017), and hold more risky assets (Li et al., 2022) to enhance their sons' chances in the marriage market.

For China, Wrenn et al. (2019) reveal that the rise in housing prices discourages young individuals from entering into marriages. An increase in housing prices leads to a significant decline in the rate of young people's first-time marriage entry. Using Taiwan registration data, Chu et al. (2020) find that owning higher values of housing enhances young men's chances of entering their first marriage in any particular year. They also show a positive association between parental wealth and young men's marriage prospects. This paper considers only the male sample without a discussion of the effect of wealth on females' marriage. Moreover, they concentrate on individual housing wealth. Similarly, Hu and Wang (2020) explore the relationship between individual homeownership and marital status. By using the China Family Panel Studies (CFPS) data, they show that homeowners are more likely to be married than renters. They also find that the impact of homeownership is more prominent for females. They argue that female homeowners are less concerned about their potential partners' housing wealth, which gives them more choice in the marriage market and thus a higher probability of getting married. However, the authors select a broad sample that includes respondents aged 22 to 60 years old, but it might be hard for young unmarried individuals to purchase their own houses and be homeowners. As a result, instead of individual housing wealth, parental housing wealth could be more crucial in explaining the marriage transitions of young individuals.

Similar to our work, a strand of literature studies the role of parental housing wealth on young people's marriage success. Wei et al. (2017) argue that housing is a status good in China, and it is an essential sorting trait for young individuals in the marriage market. They show descriptive evidence that, in regions where males outnumber females, housing prices are higher. Using two different cross-sectional data sets, Wei and Zhang (2011) explore the association between parental housing wealth and the marriage probability of young individuals. Drawing from the 2002 wave of the Chinese Household Income Project (CHIP) data, they find that owning a better house made of concrete, bricks, or stones decreases their likelihood of having an unmarried son for rural households. For urban households, homeowners are less likely to have an unmarried son at home than renters. Additionally, they employ household census for rural households in Guizhou Province (a province of China located in the southwestern part) in 2007 and report that adult males with a high parental housing value (an estimate of the housing value owned by the family) are more likely to be married.

Fang and Tian (2018) study the impact of household housing wealth on individuals' marriage outcomes in rural areas. Using data from a field survey that was conducted in 54 rural villages in 2011, they find that house size can explain the probability of males' marriage. In contrast, there is no impact on females' marriage. However, they only use a small sample of households that are from rural areas and in three provinces. Besides, similar to Wei and Zhang (2011), they only employ cross-sectional data. The results are thus very likely to be threatened by the reverse causality of marital status on parental housing wealth.

In summary, the existing literature suggests that housing wealth plays a vital role in individuals' marriage outcomes, especially in China. Wei and Zhang (2011) and

Fang and Tian (2018) provide evidence that parental housing wealth is important for sons' marriage outcomes in China. However, a common limitation is that they rely on cross-sectional data that do not track individuals over time. Besides, they lack information on the detailed housing value and only use indicators such as home-ownership rate and the size of the house.

3 Data and model

3.1 Data source

In this paper, we employ data from CHARLS, which is a nationally representative household survey administered by the National School of Development at Peking University. CHARLS aims to collect household-level and individual-level information of people aged 45 and above. CHARLS conducted the national-level baseline survey in 2011 and two follow-up surveys in 2013 and 2015. The sample covers respondents from 450 communities or villages in 28 provinces (including autonomous regions and municipalities). It contains rich information on health status and function, health care and insurance, work, income, and consumption of respondents. Besides, CHARLS also includes detailed information on family background, household members' demographics, and household wealth. To track children's marriage transitions across the three waves, we draw data from the 2011, 2013, and 2015 waves of the CHARLS and construct a child-level data set.

3.2 Sample selection

We restrict the analysis to children who were 16–35 years old and unmarried in the 2011 survey. We hypothesize that parental housing wealth might act as a signal for unmarried young individuals and enhance their relative attractiveness in the marriage market, while parental housing wealth should be less important for married individuals. By focusing on unmarried individuals at baseline, we attempt to mitigate the potential effect of marital status on parental housing wealth holdings. We choose 16 as the youngest age because individuals prefer to marry earlier in China, affected by the mindset of "early marriage". According to the 2010 Population Census Data of the People's Republic of China, the average age at first marriage is 23.64 years old,[4] and around 58.73% of individuals enter their first marriage between the age of 20 and 24. A non-trivial proportion of individuals gets married even before the age of 20. The age screening rule reduces our sample size to 3740 children and 9913 observations in total.

We also drop children who fail to appear in all three waves and restrict the sample size to 3386 children and 9559 child-year observations in total. Additionally, the family structure may influence children's outcomes. For example, Ginther and Pollak

[4] For males, the average first marriage age is 24.55 years old, and the average age is 22.76 years old for females. People in rural areas marry earlier than urban residents. On average, rural individuals enter the first marriage at the age of 22.99. Rural males become married when they are 23.92 years old, and rural females are married when they are 22.09 years old.

(2004) find that the children who have grown up in blended families, i.e., families in which one of the parents is not the children's biological parent, tend to have lower educational attainment. For this reason, we exclude children who grew up in blended families. This leaves us with a sample of 3220 children.

We exclude some children from our sample because they have substantial missing values in important variables. We drop 153 observations that lack children's marital status, 500 observations with missing values for parental homeownership, and 806 observations with missing values for parental housing value. We further drop 28 observations that fail to report children's education levels, 459 that lack information on children's ethnicity, and 468 that lack information on children's income level. Besides, we excluded 83 observations since we cannot identify their parents in the household. Finally, we delete 48 observations due to the inconsistency in marriage information between waves. Overall, the final child-level data set includes 2249 children, and it contains information on children's gender, *hukou* status, education levels, age, ethnicity, siblings, income level, birth order, parental wealth, and parental education levels.

3.3 Variable construction

The outcome variable of interest is the transition into marriage dummy, which measures children's marital status in the 2015 survey. If children are married in 2015, the transition into marriage dummy would equal one. Our key explanatory variables measure two types of household wealth. The first type is parental housing wealth, which measures the housing wealth owned by parents in the 2011 wave. We use three variables to measure parental housing wealth. The first measure is a home-ownership dummy, indicating whether parents own their primary house in 2011. The second measure is housing value, which is defined as the total gross value of the primary house and other houses in 2011. Housing value is defined as the total gross value of the primary house and other houses in 2011, and it is equal to zero if the parents do not own any real estate. In the analysis, we employ the inverse hyperbolic sine form of housing wealth to retain zero-valued observations. The third measure is an indicator of high-value houses, which is a dummy that takes the value of one if the parental house value is equal to or higher than the median value of all homeowners from the same city and with the same type of residence (rural or urban). In particular, as we consider the median housing value among all the homeowners, the high-value houses dummy is equal to zero if the respondents are not homeowners. To compare the association of parental housing wealth and other forms of wealth with children's marriage outcomes, we use non-housing wealth as our second key explanatory variable. We calculate it by adding up all non-housing wealth, including cash and deposits, stocks and mutual funds, government bonds, other financial assets, public housing funds, *jizikuan*,[5] consumer durable assets, fixed capital assets, irrigable land, agricultural asset, and unreceived cash lending, and subtracting all loans including credit card debts and outstanding borrowing. Similar to parental housing wealth, we employ the inverse hyperbolic sine form of non-housing wealth in the analysis.

[5] *Jizikuan* is the funds that individual provides to their work unit. The purpose is to invest, build staff apartments, etc.

We control for other child-level and household-level variables that may affect children's marriage prospects. At the child level, we introduce children's demographic information, including gender, *hukou* status, age, and ethnicity. As the previous literature shows that individual homeownership is associated with their marriage outcomes (Hu and Wang, 2020), one might argue that individual housing wealth is more important for marriage prospects than parental housing wealth. To mitigate the concern, we also add several other child-level characteristics, including education level and income level. We do not observe the housing wealth of unmarried children in the CHARLS data, but we believe that income level and education level are important indicators of individual wealth.

Moreover, having siblings plays a role in children's outcomes (Lei et al., 2017), which might also affect children's marriage prospects. We thus introduce dummies for having a brother who is alive and having a sister who is alive. There is also evidence showing that birth order affects children's outcomes (Chu et al., 2020; Price, 2008). For example, Ho (2019) argues that parental investment in children may be heterogeneous by children's birth order. If this is true, we would expect birth order to play a role in children's marriage prospects. Therefore, we also add a set of birth order dummies. For example, if a child is a first-born child among all the children that are still alive within a household, the *first child* dummy equals one, and the *second child* dummy equals zero. Family background characteristics include the education level of both the father and the mother.

3.4 Summary statistics

Table 1 provides the summary statistics of male and female children in the 2011 survey. The sample consists of 2249 children, including 1404 males and 845 females. Due to our sample selection strategy, all the children in our sample are never married in 2011. The children are 22.95 years old on average. The average age of males is 23.41 years old, which is higher than females' average age. Approximately 24.3% of single men are aged 25 and above, whereas only 15.4% of single women are aged 25 and above. This reflects the fact that women are more likely to marry earlier than men in China (Wrenn et al., 2019). More than half of the children have at least middle-level educational attainment. Consistent with the existing evidence (Yu and Xie, 2015), we find that young female children tend to have higher education levels than male children. In our sample, around 48.1% of young individuals have at least one brother alive, and 46.6% have at least one sister who is alive. In particular, male children account for 62.4% of the whole sample, which shows a strong sex ratio imbalance in our sample.[6] Moreover, the average income level of children for the past year is more than 2000 yuan (approximately 284.14 US dollars and 256.59 euros), and men seem to earn more than women. As for parental characteristics, parents' education levels are quite low, and most parents only obtain an education level that is less than lower secondary school.

[6] Males account for 55.4% of all the children aged 16–35 in the 2011 survey. For the children who were married in 2011, males account for about 51.4%. However, the sex ratio is much more imbalanced for the unmarried sample, as at marriageable ages males are less likely to get married than females.

Table 1 Descriptive statistics at the first-wave, by gender

Variable	Full sample, $N = 2249$[i]					Male, $N = 1404$					Female, $N = 845$					p value[j]
	Mean	SD	Min	Max	Median	Mean	SD	Min	Max	Median	Mean	SD	Min	Max	Median	
Child information																
Age group																
16–20	0.244	0.430	0	1	0	0.202	0.402	0	1	0	0.314	0.464	0	1	0	0.000
21–25	0.546	0.498	0	1	1	0.554	0.497	0	1	1	0.533	0.499	0	1	1	0.320
26–30	0.162	0.369	0	1	0	0.182	0.386	0	1	0	0.129	0.335	0	1	0	0.001
30	0.048	0.213	0	1	0	0.061	0.240	0	1	0	0.025	0.156	0	1	0	0.000
Education level[a]																
Low[b]	0.425	0.494	0	1	0	0.492	0.500	0	1	0	0.314	0.464	0	1	0	0.000
Middle	0.246	0.431	0	1	0	0.226	0.418	0	1	0	0.279	0.449	0	1	0	0.004
High	0.329	0.470	0	1	0	0.282	0.450	0	1	0	0.407	0.492	0	1	0	0.000
Married	0[c]	0	0	0	0	0	0	0	0	0	0	0	0	0	0	–
Male	0.624	0.484	0	1	1	1	0	1	1	1	0	0	0	0	0	–
Rural	0.752	0.432	0	1	1	0.778	0.416	0	1	1	0.709	0.455	0	1	1	0.000
Age	22.95	3.775	16	35	23	23.41	3.846	16	35	23	22.18	3.527	16	34	22	0.000
Has brother(s)	0.481	0.500	0	1	0	0.437	0.496	0	1	0	0.553	0.498	0	1	1	0.000
Has sister(s)	0.466	0.499	0	1	0	0.498	0.500	0	1	0	0.414	0.493	0	1	0	0.000
Ethnic minority	0.098	0.298	0	1	0	0.090	0.286	0	1	0	0.112	0.316	0	1	0	0.080
Income[d]	3.338	2.018	0	11	4	3.507	1.990	0	8	4	3.057	2.034	0	11	3	0.000
Occupation[e]	5.535	1.874	1	7	7	5.427	1.858	1	7	6	5.670	1.888	1	7	7	0.047
Parental assets[f,g]																
Net non-housing value	1.393	15.52	−119.6	414.0	0.652	1.672	17.63	−119.6	414.0	0.621	0.930	11.14	−114.3	81.85	0.740	0.273
Gross housing value	17.67	114.1	0	4074	7	17.23	118.6	0	4074	6	18.40	106.3	0	3000	8	0.814
Homeownership[h]	0.896	0.306	0	1	1	0.901	0.299	0	1	1	0.886	0.318	0	1	1	0.273
High housing value	0.534	0.499	0	1	1	0.536	0.499	0	1	1	0.529	0.499	0	1	1	0.736
Ln(housing value)	10.62	3.817	0	18.22	11.85	10.63	3.720	0	18.22	11.70	10.60	3.973	0	17.91	11.98	0.835
Father education																
Low education	0.771	0.420	0	1	1	0.784	0.412	0	1	1	0.750	0.433	0	1	1	0.073
Middle education	0.195	0.397	0	1	0	0.186	0.389	0	1	0	0.211	0.408	0	1	0	0.172

Table 1 continued

Variable	Full sample, $N = 2249$[i]					Male, $N = 1404$					Female, $N = 845$					p value[i]
	Mean	SD	Min	Max	Median	Mean	SD	Min	Max	Median	Mean	SD	Min	Max	Median	
High education	0.033	0.180	0	1	0	0.030	0.170	0	1	0	0.039	0.195	0	1	0	0.237
Mother education																
Low education	0.887	0.317	0	1	1	0.890	0.313	0	1	1	0.880	0.325	0	1	1	0.447
Middle education	0.098	0.297	0	1	0	0.097	0.296	0	1	0	0.099	0.299	0	1	0	0.878
High education	0.016	0.125	0	1	0	0.013	0.112	0	1	0	0.021	0.144	0	1	0	0.139

[a]For children who have finished their education, we choose their highest educational attainment as their education level; for those who are still at school, we choose their future educational attainment as their education level

[b]Low education equals one if they report their education levels are less than lower secondary; Middle education equals one if they finish high school or vocational school; High education equals one if they have above two/three-year college education

[c]Married equals zero because we restrict our sample to the unmarried children in the 2011 wave

[d]Income refers to the category of children's income one year before the interview. There are 11 categories: 1) None, 2) under 2000, 3) 2000–5000 yuan, 4) 5000–10,000 yuan, 5) 10,000–20,000 yuan, 6)20,000–50,000 yuan, 7) 50,000–100,000 yuan, 8) 100,000–150,000 yuan, 9) 150,000–200,000 yuan, 10) 200,000–300,000 yuan, and 11)Above 300,000 yuan

[e]Occupation includes 1) Managers, 2) Professionals and technicians, 3) Clerk, 4) Commercial and service workers, 5) Agricultural, forestry, husbandry and fishery producers, 6) Production and transportation workers, and 7) Still at school

[f]All the household wealth is in ten thousand China yuan, which is approximately 1258 euros

[g]We calculate net household wealth by adding up all wealth such as the value of cash and deposits, stocks and mutual funds, government bonds, other financial assets, public housing funds, *jizikuan*, primary and other houses, consumer durable assets, fixed capital assets, irrigable land, agricultural asset, and unreceived cash lending, and subtracting all the loans such as loans for primary and other houses, other loans, credit card debts, and outstanding borrowing

[h]Homeownership is a dummy variable indicating whether parents own their primary house. If the parents own the primary house in wave 1 it equals one, and it equals zero if they do not own their primary house

[i]In our sample, we also include those children with information on a single parent. This leads to some missing values on parents' information. In wave 1, we have 2098 observations for father's education and 2141 observations for mother's education, and 946 for children's occupation. For the male sample, we have 1310 observations for father's education, 1332 observations for their mother's education, and 525 for children's occupation. For the female sample, we have 788 observations for father's education, 809 observations for mother's education, and 421 for children's occupation

[j]p-value tests the equality of the means between the male sample and the female sample

Our sample is reasonably consistent with the 2010 Population Census Data of the People's Republic of China in several ways. For example, the Census data shows that the proportion of the rural population is 70.86%. In our sample, the proportion of rural children is approximately 75%. Besides, according to the Census data, the fraction of ethnic minorities among the whole population is about 8%. The proportion of the ethnic minorities in our sample is around 9.8%.

In terms of wealth, the average net non-housing value held by the households is 13,930 yuan (approximately 1950 US dollars or 1753 euros) in 2011. Households with unmarried male children own more non-housing wealth than households with unmarried female children. Housing equity is the main part of the household's portfolio, as around 90% of parents own their primary house, and housing value is the major component of household total wealth. The average parental housing value is 176,700 yuan in 2011. Yet, it seems that the average housing value owned by parents of sons is less than that of parents of daughters.

Table 2 presents the marriage transitions of males and females between 2011 and 2015. It shows that the average marriage rates of female children are higher than male children. To further investigate the differences in marriage transitions between males and females, we report their marriage transitions by parental housing wealth and *hukou* status.

Table 2 suggests that the higher the parents' housing wealth, the better their sons' marriage prospects will be. This result indicates that parental housing wealth might serve as a signal in the marriage market: a better parental house enhances the relative attractiveness in the marriage market and leads to a higher probability of getting married. Interestingly, the same is not true for daughters. This may be due to the fact that males face a fiercer competitive marriage market due to the skewed sex ratios in the marriage market, parental housing wealth is more important for males than females in the marriage market. Besides, affected by the social norm in China, the grooms' family is expected to provide a house for the marriage (Li and Wu, 2019).

Overall, the differences in Table 2 suggest a positive association between parental housing wealth and males' transitions into marriage, yet we need a formal analysis to investigate the association between parental housing wealth and young males' chances of transitions into marriage. As for the differences between rural and urban individuals, the overall marriage transitions from 2011 to 2015 seem to be similar for young individuals with rural and urban *hukou*.

3.5 Empirical strategy

The objective of this paper is to estimate the association between parental housing wealth and individuals' transitions into marriage. Therefore, we focus on the transitions into marriage of unmarried individuals in 2011 and estimate the following linear probability model:

$$y_{ijpt} = \beta_0 + \beta_1 Housing\ wealth_{jpt-1} + \beta_2 NonHousing\ wealth_{jpt-1} + X'_{ijpt-1}\gamma + \lambda_{\mathrm{p}} + \varepsilon_{\mathrm{ijpt}} \quad (1)$$

where y_{ijpt} is the marriage outcome for child i in household j and province p at time t. In our analysis, $t-1$ refers to the year 2011, and t is the year 2015. y_{ijpt} is a dummy

Table 2 Marriage rate, by housing wealth and *hukou* status

Marriage rate		2011–2013 (wave 1–wave 2)					2011–2015 (wave 1–wave 3)				
		Male		Female		*p*-value	Male		Female		*p* value[d]
		Percentage	*N*	Percentage	*N*		Percentage	*N*	Percentage	*N*	
By parental housing value[c]	Low housing wealth	21.04%[a]	109[b]	32.49%	103	0.000	38.70%	221	56.20%	195	0.000
	High housing wealth	26.05%	199	31.28%	142	0049	46.70%	389	49.20%	245	0.378
By *hukou* status	Urban *hukou*	21.69%	64	27.54%	65	0.119	46.45%	157	52.59%	142	0.123
	Rural *hukou*	24.72%	244	33.64%	180	0.002	42.50%	453	51.83%	298	0.000

[a]The percentage is the number of married males with low parental housing value in wave 2 divided by the total number of males with low parental housing value in wave 2

[b]*N* is the number of married males with low parental housing wealth in wave 2

[c]If the parental housing value is above the median value among all the homeowners from the same city and with the same residence location (rural areas or urban areas) in the 2011 wave, it belongs to the high housing wealth category. If parental housing value is below the median value, it belongs to the low housing value category

[d]*p*-value tests the equality of the means between the male sample and the female sample

variable that is equal to one if the child *i* is married in 2015, and it is zero if the child is still single in 2015. We make use of the panel structure of our data and estimate the association between parental housing wealth in 2011 and children's marriage transitions four years later in a cross-sectional regression. This strategy is similar to Lafortune and Low (2017b), who study the association between individual homeownership and marriage in the United States.

Housing wealth$_{jpt-1}$ is the housing wealth owned by parent *j* in province *p* in the 2011 survey. We use three measures: a dummy for *Homeowner*$_{jpt-1}$, a measure of *Housing value*$_{jpt-1}$, and a dummy for *High value houses*$_{jpt-1}$. β_1 is our key parameter. We expect β_1 to be positive and significant, especially for men. This would mean that parental housing wealth is a signal for males in the marriage market: better parental housing can enhance males' chances in the marriage market. On the contrary, females face a less competitive marriage market, and it is also not common that females' families provide a house for marriage. Therefore, parental housing wealth plays a less important role in females' marriage.

NonHousing wealth$_{jpt-1}$ refers to the household non-housing wealth in the 2011 survey. We expect β_2 to be of a smaller magnitude or to be insignificant, because non-housing wealth accounts for a smaller fraction of parental wealth than housing wealth. Additionally, non-housing wealth is typically less visible and more difficult to verify than housing wealth.[7] Consequently, non-housing wealth would be a less important signal for children in the marriage market.

The vector X_{ijpt-1} contains a rich set of background characteristics including children's gender, age, education levels, *hukou* status, whether having siblings who are alive, ethnicity, and their parents' educational attainment in the 2011 survey. Besides, we introduce a province fixed effect λ_p in our analysis. The main advantage of introducing province fixed effects is that it can control for the problem of confounding regional factors on people's marriage outcomes. For example, individual marriage probabilities are sensitive to local sex ratios (Wrenn et al., 2019), and men from regions with more excess men than women may find it more difficult to get married than men from regions with less skewed sex ratios imbalance. Of course, there could still be other unobservables, such as family preferences for marriage, that affect both the accumulation of housing wealth and the probability of getting married. For this reason, we refrain from using causal language when interpreting our results. The error term, ε_{ijpt}, captures the remaining unobservable heterogeneity. We estimate our regression model by OLS. We cluster the standard errors at the household level to capture the within household correlation.

4 Results

In this section, we estimate the association between parental housing wealth and children's marriage prospects.

[7] Compared to housing wealth, it is easier to borrow non-housing wealth such as a car and a piece of jewelry from others to enhance own attractiveness in the marriage market (Wei et al., 2017).

4.1 Housing value and children's marriage

Table 3 shows the results when we consider the relationship between parental housing value in 2011 and children's transitions into marriage in 2015. In the first three columns, we regress individuals' transition into marriage in 2015 on baseline parental housing value and homeownership. As wealth background may be more important for men than women in the marriage market (Li et al., 2022), we also investigate the association between parental housing wealth and children's marriage outcomes for men and women, respectively. The results can be found in columns 2 and 3 of Table 3. In columns 4–6, we add covariates measuring children's characteristics, including age groups, birth orders, income level, and dummies for males, for a high education level, for rural *hukou*, for having a sister and a brother who is alive, and for the ethnic minority.

Columns 2 and 3 show that the association between parental housing value in 2011 and children's marriage transitions in 2015 is different for males and females: it is positive and statistically significant for males, while negative but insignificant for females.

The results are similar after adding all control variables and province fixed effects, as shown in columns 4–6. The estimates suggest that parental housing value is strongly and positively associated with males' transitions into marriage, while the relationship is negative but statistically insignificant for females. In particular, column 5 shows that, for men whose parents are homeowners in the 2011 survey, a ten percent increase in parental housing wealth leads to a 0.14 percentage points increase in their sons' probability of getting married in 2015. Given that the mean probability of marriage for men in 2015 is 43.45%, the probability of marriage increases by 0.32%. The magnitude of this effect is roughly comparable to the one obtained by Chu et al. (2020), who report that a 10% increase in individual housing wealth results in a 0.0392 percentage points increase in the probability of marriage for men in the next year as our observation period is on average four years. Moreover, men whose parents own a house worth 200,000 yuan in 2011 are 6.46 percentage points more likely to be married in 2015 than men whose parents rent a house in 2011.

A formal test confirms that the gender differences that we find in our results are significant. This is in line with our expectation that parental housing wealth is more likely to be a signal for males and improve their chances of getting married than for females. Contrary to housing wealth, we find no significant association of non-housing value with the marriage transitions for both men and women. This finding is supported by Chu et al. (2020), who show a positive effect of individual housing wealth on males' chances of getting married, but no significant relationship between individual financial wealth and marriage. One potential reason is that financial wealth is not a good signal in the marriage market because it accounts for a small fraction of total household wealth and it is less visible than housing wealth.

In terms of the control variables, several control variables are shown to affect children's transitions into marriage significantly. For example, on average, males are less likely to marry than females (see column 4), as they face a more competitive marriage market. Moreover, being highly educated decreases young individuals' chances of getting married since young individuals might delay marriage to pursue higher education. In our results, *hukou* status, having sisters or brothers who are

Table 3 Parental housing value and children's marriage success (OLS)

Variables	Full sample (1)	Male (2)	Female (3)	Full sample (4)	Male (5)	Female (6)
ln(housing value) $_{t=1}$	0.0047 (0.0042)	0.0115** (0.0051)	−0.0089 (0.0072)	0.0063 (0.0043)	0.0140** (0.0055)	−0.0089 (0.0063)
Homeowner $_{t=1}$	−0.0012 (0.0511)	−0.0575 (0.0624)	0.1336 (0.0883)	−0.0560 (0.0534)	−0.1160* (0.0677)	0.0743 (0.0758)
ln(non-housing value) $_{t=1}$				−0.0020 (0.0020)	−0.0015 (0.0026)	−0.0021 (0.0031)
Age group: Child aged under 20 (reference)						
Child aged 21–25 $_{t=1}$				0.2788*** (0.0254)	0.2723*** (0.0322)	0.2920*** (0.0407)
Child aged 26–30 $_{t=1}$				0.3176*** (0.0373)	0.3028*** (0.0471)	0.3799*** (0.0629)
Child aged above 30 $_{t=1}$				0.1361** (0.0630)	0.1717** (0.0713)	0.0891 (0.1378)
Child male				−0.1502*** (0.0225)		
Child high education $_{t=1}$				−0.0520** (0.0244)	0.0016 (0.0311)	−0.1610*** (0.0392)
Child rural *hukou* $_{t=1}$				−0.0056 (0.0298)	−0.0332 (0.0385)	0.0135 (0.0482)
Child has brother $_{t=1}$				−0.0390 (0.0245)	−0.0421 (0.0316)	−0.0403 (0.0398)
Child has sister $_{t=1}$				−0.0105 (0.0243)	−0.0030 (0.0325)	−0.0075 (0.0361)
Child Ethnic Minority				−0.0644 (0.0446)	−0.0635 (0.0615)	−0.0767 (0.0742)
Child income level $_{t=1}$				0.0487*** (0.0060)	0.0453*** (0.0077)	0.0528*** (0.0100)
Birth order: Fifth child or beyond (reference)						
First child				0.1213 (0.0763)	0.1240 (0.0992)	0.1082 (0.1522)
Second child				0.1162 (0.0742)	0.1376 (0.0963)	0.0703 (0.1506)
Third child				0.1330* (0.0750)	0.1102 (0.0971)	0.1710 (0.1528)
Fourth child				0.1757** (0.0831)	0.1952* (0.1111)	0.1665 (0.1610)
Father high education $_{t=1}$				−0.0548** (0.0272)	−0.0695* (0.0359)	−0.0548 (0.0420)
Mother high education $_{t=1}$				−0.0238 (0.0384)	−0.0537 (0.0502)	0.0075 (0.0604)
Constant	0.4185*** (0.0341)	0.3641*** (0.0434)	0.4967*** (0.0552)	−0.2599 (0.1785)	−0.2083 (0.1283)	−0.3507 (0.2319)

Table 3 continued

Variables	Full sample (1)	Male (2)	Female (3)	Full sample (4)	Male (5)	Female (6)
Observations	2249	1404	845	1990	1238	752
Number of households	1752	1241	758	1537	1096	671
R-squared	0.0012	0.0044	0.0029	0.1669	0.1498	0.2513
Regional fixed effect				Yes	Yes	Yes
Test for the difference in the coefficients on parental housing wealth between males and females						
		F(2,1751) = 2.77 Prob > F = 0.0631			F(2,1536) = 3.92 Prob > F = 0.0200	

Standard errors, clustered at the household level, are shown in parentheses

In the regressions, we restrict our sample to unmarried children in the 2011 wave and track their marriage transitions. Finally, we obtain 2249 children of 1752 households in our sample

The main explanatory variable in the regressions is parental housing value. We employ the inverse hyperbolic sine form of housing wealth and non-housing wealth

In columns 2-3 and columns 5-6, we estimate the association between parental housing value in 2011 and males' and females' marital status

If the children or their parents are with middle or high education levels, the high education dummy equals one, otherwise, it equals zero

First child is a dummy variable, and it equals one if the child is the first-born child among all the children who are still alive within the households, zero otherwise

In the last row, we test whether the coefficients estimated over different groups are equal to each other

*$p < 0.1$, ** $p < 0.05$, ***$p < 0.01$

alive, ethnicity, and parental education are less important for young individuals' marriage transitions. Children's income level, which is an indicator of children's wealth, plays a role in their marriage outcomes; a higher income level in 2011 increases individuals' chances of getting married in 2015. More importantly, adding child income in columns 4–6 does not influence the relationship between parental housing value and children's transition into marriage. This suggests that parental housing value indeed is positively associated with males' marriage probabilities, even after we control for individual wealth. Besides, we also find that birth order affects men's marriage probability, while no evidence shows that birth order affects women's marriage possibilities.

The association between parental housing wealth and children's marriage prospects might be different between children with rural *hukou* and children with urban *hukou*. In Table 4, we estimate the association of housing value with marriage transitions for children with urban *hukou* (columns 1 and 2) and rural *hukou* (columns 3 and 4) separately. Column 1 of Table 4 suggests that for rural males whose parents are homeowners in the 2011 survey, a ten percent increase in parental housing value leads to a 0.18 percentage points increase in their chances of marriage in 2015, corresponding to 0.42% relative to the mean probability of marriage for rural males in 2015.

The main finding is that parental housing wealth is positively associated only with rural males' transitions into marriage. For males with urban *hukou*, however, the correlation is positive but insignificant. Consistent with the results in Table 3, we find no significant relationship between parental housing value and females' marriage prospects.

The differences between males with rural and urban *hukou* can be explained in several ways. First, housing wealth is the largest household wealth component in rural areas (Gan et al., 2016), while in urban areas, the fraction of housing wealth among total household wealth is lower. Therefore, housing value could be more critical for rural *hukou* children than for those with urban *hukou*.

Second, rural households have a stronger preference for conspicuous spending than urban households (Brown et al., 2011). As an essential form of conspicuous expenditure in rural areas, the expenditure on marriage, especially on housing wealth, plays a more important role in the status competition. Therefore, housing wealth is more important for rural households than for urban households.

Third, coresidence can also be a potential explanation. In rural areas, a popular social norm is that the bride lives together with the groom's parents after getting married (Lei et al., 2015). In that sense, the bride would benefit from better parental housing. Thus, higher parental housing wealth improves rural men's relative attractiveness to the partner and affects their marriage prospects positively. On the contrary, a more widespread practice in urban areas is that parents help their children purchase a house before the children get married (Sun and Zhang, 2020). In that case, individual housing wealth might be a more important signal than parental housing wealth for men with urban *hukou*. In Table 5, we show different coresidence patterns after children get married using the analytic sample. Panel B reports coresidence rates of 51.58% and 33.83% for married men in the rural sample and urban sample, respectively. The higher rates in the rural sample can support the coresidence mechanism. Furthermore, Table 6 reports the homeownership rates for

Table 4 Parental housing value and children's marriage success, by *hukou* status (OLS)

Variables	Rural sample		Urban sample	
	Rural male	Rural female	Urban male	Urban female
	(1)	(2)	(3)	(4)
ln(housing value) $_{t=1}$	0.0183*** (0.0067)	−0.0065 (0.0078)	0.0018 (0.0116)	−0.0217 (0.0141)
Homeowner $_{t=1}$	−0.1688** (0.0845)	0.0454 (0.0975)	−0.0057 (0.1346)	0.2299 (0.1570)
ln(non-housing value) $_{t=1}$	0.0000 (0.0031)	0.0017 (0.0036)	−0.0051 (0.0057)	−0.0085 (0.0069)
Age group: Child aged under 20 (reference)				
Child aged 21–25 $_{t=1}$	0.2728*** (0.0373)	0.2852*** (0.0476)	0.3346*** (0.0763)	0.3392*** (0.1000)
Child aged 26–30 $_{t=1}$	0.2753*** (0.0550)	0.3590*** (0.0742)	0.3902*** (0.1021)	0.4112*** (0.1435)
Child aged above 30 $_{t=1}$	0.1276 (0.0789)	0.1076 (0.1713)	0.3972** (0.1811)	0.0429(0.2199)
Child high education $_{t=1}$	−0.0070 (0.0341)	−0.1700*** (0.0411)	0.0419 (0.0994)	−0.0769 (0.1747)
Child has brother $_{t=1}$	−0.0287 (0.0349)	−0.0612 (0.0468)	−0.1015 (0.0827)	0.1025 (0.0891)
Child has sister $_{t=1}$	0.0090 (0.0365)	−0.0204 (0.0418)	−0.0153 (0.0833)	0.0410 (0.0798)
Childe ethnic minority	−0.0476 (0.0696)	−0.0794 (0.0865)	−0.0934 (0.1622)	0.0143 (0.1481)
Child income level $_{t=1}$	0.0403*** (0.0090)	0.0602*** (0.0123)	0.0568*** (0.0170)	0.0326* (0.0188)
Birth order: Fifth child or beyond (reference)				
First child	0.1488 (0.1082)	−0.0267 (0.1655)	0.0901 (0.2329)	0.7464*** (0.2274)
Second child	0.1455 (0.1052)	−0.0219 (0.1644)	0.1549 (0.2219)	0.5440** (0.2188)
Third child	0.1172 (0.1060)	0.1179 (0.1657)	0.1357 (0.2273)	0.3632 (0.2733)
Fourth child	0.2168* (0.1215)	0.0678 (0.1702)	0.1317 (0.2593)	0.4802 (0.3304)
Father high education $_{t=1}$	−0.0750* (0.0427)	−0.0434 (0.0519)	−0.0322 (0.0728)	−0.0557 (0.0768)
Mother high education $_{t=1}$	−0.0067 (0.0800)	0.1275 (0.0916)	−0.1001 (0.0739)	−0.1134 (0.0912)
Constant	−0.1674 (0.2525)	0.6708*** (0.2001)	−0.0490 (0.2721)	−0.8461** (0.3722)
Observations	968	550	270	202

Table 4 continued

Variables	Rural sample		Urban sample	
	Rural male	Rural female	Urban male	Urban female
	(1)	(2)	(3)	(4)
R-squared	0.1448	0.2886	0.2679	0.3500
Regional fixed effect	Yes	Yes	Yes	Yes
Test for the difference in the coefficients on parental housing wealth between males and females				
	F(2,1168) = 3.05 Prob > F = 0.0477		F(2,416) = 0.91 Prob > F = 0.4019	

Standard errors, clustered at the household level, are shown in parentheses.

The explanatory variable in the regressions is parental housing value. We employ the inverse hyperbolic sine form of wealth

We estimate the association between parental housing value in 2011 and marriage transitions for rural males and rural females in columns 1 and 2, and for urban males and urban females in columns 3 and 4

*$p < 0.1$, **$p < 0.05$, ***$p < 0.01$

Table 5 Coresidence rates of children and their parents

	Male		Female		*p* value
	Percentage (%)[a]	N[b]	Percentage (%)	N	
Panel A: Coresidence rates of 2011 sample ($N = 2231$[c])					
Full sample	78.18	1089	77.21	647	
A. Rural sample	78.26	846	77.53	459	0.723
B. Urban sample	77.88	243	76.42	188	0.083
p value	0.887		0.727		
Panel B: Coresidence rates in 2015 of the children who get married ($N = 1002$)					
Full sample	47.49	274	12.24	52	
A. Rural sample	51.58	229	12.62	39	0.000
B. Urban sample	33.83	45	11.21	13	0.000
p value[d]	0.000		0.693		

[a]The percentage is the number of males coreside with parents by the number of males

[b]N is the number of males coreside with parents

[c]We observe the coresidence information for 2231 children in the 2011 sample

[d]p value tests the equality of the means between the male sample and the female sample

Table 6 Children's homeownership in the 2015 survey

	Male		Female	
	Percentage (%)	N	Percentage (%)	N
Full sample	25.89	363	25.21	211
A. Rural sample	23.49	256	24.66	146
B. Urban sample	34.29	107	26.53	65

Homeownership rates are calculated based on the question CB071_W3 in the 2015 CHARLS survey: Does [child's name] own a house? However, this question was not asked in the 2011 survey

rural and urban children in 2015 (this question was not asked in 2011), indicating that rural males have lower homeownership rates than urban males. Therefore, parental housing wealth is likely to be more important for rural males than for urban males.

4.2 Owning high-value houses and children's marriage

In Table 7, we show the results of a similar analysis with another measure of housing wealth. High-value houses is a dummy that equals one if parents own high-

value houses in 2011. In columns 1–3, we regress children's transitions into marriage in 2015 on high-value houses and their parents' homeownership in 2011. We then regress the marriage transitions of children in 2015 on high-value houses and homeownership of their parents, and a full set of controls in columns 4–6. Column 2 shows that owning high-value parental houses plays a role in young males' marriage success. The results are consistent after we add controls, as shown in columns 4–6. Column 5 indicates that for males, owning high-value parental houses increases their probability of getting married by 9.14 percentage points. However, for females, the coefficient of high-value parental houses is insignificant and negative. Additionally, in Table 7, we observe no significant effect of parental homeownership on children's transitions into marriage. The most likely cause is that the vast majority (around 90%) of parents in our sample own their primary house in 2011. Therefore, the parental homeownership indicator is not a signal in the marriage market.

Similar to Table 4, we estimate the association between high-value parental houses and children's marriage success by children's *hukou* status. The results are reported in Table 8. In columns 1 and 2, we regress the marriage transitions of rural males and rural females on the high-value houses owned by their parents and other control variables. Columns 3 and 4 show the estimates of high-value parental houses and other control variables on urban males' and females' marriage transitions, respectively. In line with our findings in Table 4, we find that parental high-value houses are only crucial for rural males: the marriage prospects of rural males are 10.77 percentage points higher if their parents own high-value houses. Similar to the earlier results, we find no significant effect for urban males. In addition, the test statistics imply that there is no significant difference between urban males and females.

In summary, we find that parental housing wealth is an important determinant of children's transitions into marriage. More importantly, the role of parental housing wealth is more prominent for males, while it is statistically insignificant for females. The differences can be confirmed by investigating the heterogeneous effects of parental housing wealth using interaction terms (see Tables A1-A3). This supports the view that in China, parental wealth serves as a signal of young males' marriage prospects. The signal is more crucial for males, due to the increased pressure in the marriage market caused by unbalanced sex ratios and the social norm that males are expected to provide a house for the marriage. Moreover, the parental housing wealth plays a different role for individuals with different *hukou* types. Rural males' marriage transitions are more likely to be affected by their parental housing wealth. Nevertheless, no evidence shows that parental housing wealth affects the marriage prospects of children with urban *hukou*.

The results are broadly consistent, regardless of whether we use housing value or high-value houses to measure parental housing wealth. However, if we use homeownership to measure parental housing wealth (see Tables 9, 10), we find no significant relationship. We think that this result is because homeownership rates are very high (around 90%), and therefore owning a home does not act as a signal. In contrast to parental housing wealth, we find no effect of non-housing wealth on children's transitions into marriage.

Table 7 Parental high-value houses and children's marriage success (OLS)

Variables	Full sample (1)	Male (2)	Female (3)	Full sample (4)	Male (5)	Female (6)
High-value houses $_{t=1}$	0.0321 (0.0230)	0.0841*** (0.0287)	−0.0562 (0.0372)	0.0436* (0.0229)	0.0914*** (0.0295)	−0.0434 (0.0363)
Homeowner $_{t=1}$	0.0223 (0.0371)	−0.0070 (0.0465)	0.0804 (0.0603)	−0.0269 (0.0387)	−0.0552 (0.0524)	0.0160 (0.0558)
ln(non-housing value) $_{t=1}$				−0.0021 (0.0020)	−0.0018 (0.0026)	−0.0021 (0.0031)
Age group: Child aged under 20 (reference)						
Child aged 21–25 $_{t=1}$				0.2782*** (0.0254)	0.2692*** (0.0318)	0.2912*** (0.0408)
Child aged 26–30 $_{t=1}$				0.3176*** (0.0373)	0.3005*** (0.0469)	0.3799*** (0.0628)
Child aged above 30 $_{t=1}$				0.1343** (0.0633)	0.1665** (0.0719)	0.0913 (0.1373)
Child male				−0.1509*** (0.0225)		
Child high education $_{t=1}$				−0.0514** (0.0244)	0.0016 (0.0311)	−0.1636*** (0.0393)
Child rural *hukou* $_{t=1}$				−0.0081 (0.0298)	−0.0392 (0.0386)	0.0181 (0.0476)
Child has brother $_{t=1}$				−0.0415* (0.0245)	−0.0459 (0.0317)	−0.0357 (0.0397)
Child has sister $_{t=1}$				−0.0121 (0.0243)	−0.0079 (0.0323)	−0.0069 (0.0362)
Child Ethnic Minority				−0.0657 (0.0446)	−0.0727 (0.0609)	−0.0799 (0.0734)
Child income level $_{t=1}$				0.0489*** (0.0060)	0.0454*** (0.0077)	0.0520*** (0.0100)
Birth order: Fifth child or beyond (reference)						
First child				0.1185 (0.0778)	0.1226 (0.1011)	0.1130 (0.1496)
Second child				0.1125 (0.0758)	0.1331 (0.0983)	0.0745 (0.1482)
Third child				0.1314* (0.0764)	0.1136 (0.0990)	0.1770 (0.1502)
Fourth child				0.1722** (0.0842)	0.1901* (0.1129)	0.1691 (0.1583)
Father high education $_{t=1}$				−0.0561** (0.0272)	−0.0693* (0.0358)	−0.0519 (0.0421)
Mother high education $_{t=1}$				−0.0249 (0.0382)	−0.0533 (0.0490)	0.0122 (0.0600)
Constant	0.4298*** (0.0324)	0.3957*** (0.0410)	0.4792*** (0.0530)	−0.2463 (0.1852)	−0.1300 (0.1258)	−0.3521 (0.2281)

Table 7 continued

Variables	Full sample (1)	Male (2)	Female (3)	Full sample (4)	Male (5)	Female (6)
Observations	2249	1404	845	1990	1238	752
Number of households	1752	1241	758	1537	1096	671
R-squared	0.0015	0.0069	0.0036	0.1676	0.1521	0.2512
Regional fixed effect				Yes	Yes	Yes
Test for the difference in the coefficients on parental housing wealth between males and females						
		F(2,1751) = 4.52 Prob > F = 0.0110			F(2,1536) = 4.22 Prob > F = 0.0149	

Standard errors, clustered at the household level, are shown in parentheses

The explanatory variable in the regressions is a dummy variable (High-value houses), indicating whether the parental housing value is above the median value among all the homeowners within the same city and with the same location (rural areas or urban areas) in wave 1. It equals one if parental housing value in 2011 is equal to or above the median value and zero if it is below the median value

We employ the inverse hyperbolic sine form of non-housing wealth to solve the negative wealth problem

Homeowner is a dummy variable. It equals one if the parents own a primary home in 2011 and zero if not

*$p < 0.1$, ** $p < 0.05$, ***$p < 0.01$

Table 8 Parental high-value houses and children's marriage success, by *hukou* status (OLS)

Variables	Rural sample		Urban sample	
	Rural male	Rural female	Urban male	Urban female
	(1)	(2)	(3)	(4)
High-value houses $_{t=1}$	0.1077*** (0.0336)	−0.0643 (0.0409)	0.0345 (0.0670)	0.0097 (0.0787)
Homeowner $_{t=1}$	−0.0725 (0.0614)	0.0184 (0.0659)	−0.0142 (0.1035)	0.0248 (0.1094)
ln(non-housing value) $_{t=1}$	−0.0003 (0.0030)	0.0019 (0.0036)	−0.0053 (0.0057)	−0.0104 (0.0067)
Age group: Child aged under 20 (reference)				
Child aged 21–25 $_{t=1}$	0.2680*** (0.0367)	0.2842*** (0.0474)	0.3361*** (0.0763)	0.3422*** 4(0.1027)
Child aged 26–30 $_{t=1}$	0.2722*** (0.0546)	0.3548*** (0.0739)	0.3920*** (0.1022)	0.4262*** (0.1459)
Child aged above 30 $_{t=1}$	0.1216 (0.0798)	0.1142 (0.1689)	0.3978** (0.1795)	0.0497 (0.2246)
Child high education $_{t=1}$	−0.0060 (0.0339)	−0.1739*** (0.0411)	0.0412 (0.0992)	−0.0968 (0.1778)
Child has brother $_{t=1}$	−0.0327 (0.0349)	−0.0554 (0.0465)	−0.1033 (0.0831)	0.0986 (0.0911)
Child has sister $_{t=1}$	0.0052 (0.0361)	−0.0176 (0.0418)	−0.0183 (0.0840)	0.0427 (0.0802)
Childe ethnic minority	−0.0618 (0.0681)	−0.0891 (0.0858)	−0.0921 (0.1640)	0.0280 (0.1409)
Child income level $_{t=1}$	0.0412*** (0.0089)	0.0589*** (0.0124)	0.0563*** (0.0169)	0.0303 (0.0190)
Birth order: Fifth child or beyond (reference)				
First child	0.1467 (0.1092)	−0.0216 (0.1579)	0.0910 (0.2359)	0.7112*** (0.2231)
Second child	0.1399 (0.1063)	−0.0159 (0.1570)	0.1584 (0.2249)	0.5047** (0.2142)
Third child	0.1213 (0.1071)	0.1243 (0.1581)	0.1425 (0.2309)	0.3344 (0.2735)
Fourth child	0.2120* (0.1225)	0.0779 (0.1632)	0.1313 (0.2638)	0.4591 (0.3039)
Father high education $_{t=1}$	−0.0764* (0.0425)	−0.0401 (0.0521)	−0.0345 (0.0731)	−0.0535 (0.0757)
Mother high education $_{t=1}$	−0.0017 (0.0778)	0.1357 (0.0901)	−0.1010 (0.0743)	−0.1189 (0.0889)
Constant	0.2955 (0.2792)	0.6363*** (0.1954)	−0.0415 (0.2696)	−0.7618** (0.3743)
Observations	968	550	270	202

Table 8 continued

Variables	Rural sample		Urban sample	
	Rural male	Rural female	Urban male	Urban female
	(1)	(2)	(3)	(4)
R-squared	0.1479	0.2914	0.2686	0.3390
Regional fixed effect	Yes	Yes	Yes	Yes
Test for the difference in the coefficients on parental housing wealth between males and females				
	F(2,1168) = 5.36 Prob > F = 0.0048		F(2416) = 0.05 Prob > F = 0.9539	

Standard errors, clustered at the household level, are shown in parentheses

*$p < 0.1$, ** $p < 0.05$, ***$p < 0.01$

Table 9 Parental homeownership and children's marriage success (OLS)

Variables	Full sample (1)	Male (2)	Female (3)	Full sample (4)	Male (5)	Female (6)
Homeowner $_{t=1}$	0.0414 (0.0343)	0.0431 (0.0434)	0.0469 (0.0560)	−0.0003 (0.0359)	0.0004 (0.0495)	−0.0107 (0.0514)
ln(non-housing value) $_{t=1}$				−0.0019 (0.0020)	−0.0013 (0.0026)	−0.0022 (0.0031)
Age group: Child aged under 20 (reference)						
Child aged 21–25 $_{t=1}$				0.2782*** (0.0254)	0.2698*** (0.0321)	0.2915*** (0.0408)
Child aged 26–30 $_{t=1}$				0.3138*** (0.0372)	0.2912*** (0.0469)	0.3816*** (0.0629)
Child aged above 30 $_{t=1}$				0.1366** (0.0630)	0.1699** (0.0714)	0.0847 (0.1385)
Child male				−0.1507*** (0.0225)		
Child high education $_{t=1}$				−0.0521** (0.0244)	0.0015 (0.0312)	−0.1616*** (0.0393)
Child rural *hukou* $_{t=1}$				−0.0092 (0.0297)	−0.0376 (0.0385)	0.0215 (0.0476)
Child has brother $_{t=1}$				−0.0398 (0.0245)	−0.0420 (0.0318)	−0.0374 (0.0398)
Child has sister $_{t=1}$				−0.0111 (0.0243)	−0.0065 (0.0325)	−0.0087 (0.0361)
Child Ethnic Minority				−0.0674 (0.0446)	−0.0742 (0.0610)	−0.0745 (0.0734)
Child income level $_{t=1}$				0.0491*** (0.0060)	0.0463*** (0.0077)	0.0523*** (0.0100)
Birth order: Fifth child or beyond (reference)						
First child				0.1236 (0.0764)	0.1296 (0.0993)	0.1025 (0.1523)
Second child				0.1183 (0.0743)	0.1416 (0.0964)	0.0638 (0.1508)
Third child				0.1346* (0.0751)	0.1137 (0.0970)	0.1659 (0.1529)
Fourth child				0.1776** (0.0833)	0.1946* (0.1115)	0.1541 (0.1608)
Father high education $_{t=1}$				−0.0531* (0.0272)	−0.0644* (0.0359)	−0.0558 (0.0419)
Mother high education $_{t=1}$				−0.0227 (0.0383)	−0.0483 (0.0493)	0.0096 (0.0597)
Constant	0.4298*** (0.0324)	0.3957*** (0.0410)	0.4792*** (0.0530)	−0.2490 (0.1866)	−0.1130 (0.1243)	−0.3418 (0.2320)
Observations	2249	1404	845	1990	1238	752

Table 9 continued

Variables	Full sample (1)	Male (2)	Female (3)	Full sample (4)	Male (5)	Female (6)
R-squared	0.0006	0.0007	0.0009	0.1660	0.1450	0.2496
Regional fixed effect				Yes	Yes	Yes
Test for the difference in the coefficients on parental housing wealth between males and females						
		F(1,1751) = 0.00 Prob > F = 0.9750			F(1,1536) = 0.02 Prob > F = 0.8751	

Standard errors, clustered at the household level, are shown in parentheses

The explanatory variable in the regressions is a dummy variable (Homeowner), which indicates whether the parents own their primary house. If the parents own the primary house in wave 1 it is equal to one and zero if they do not own their primary house

*$p < 0.1$, ** $p < 0.05$, ***$p < 0.01$

Table 10 Parental homeownership and children's marriage success, by *hukou* status (OLS)

Variables	Rural sample		Urban sample	
	Rural male	Rural female	Urban male	Urban female
	(1)	(2)	(3)	(4)
Homeowner $_{t=1}$	−0.0073 (0.0581)	−0.0181 (0.0617)	0.0070 (0.0950)	0.0308 (0.0962)
ln(non-housing value) $_{t=1}$	0.0003 (0.0030)	0.0016 (0.0036)	−0.0051 (0.0056)	−0.0105 (0.0066)
Age group: Child aged under 20 (reference)				
Child aged 21–25 $_{t=1}$	0.2703*** (0.0371)	0.2833*** (0.0475)	0.3341*** (0.0763)	0.3414*** (0.1016)
Child aged 26–30 $_{t=1}$	0.2612*** (0.0545)	0.3579*** (0.0742)	0.3888*** (0.1019)	0.4257*** (0.1448)
Child aged above 30 $_{t=1}$	0.1291 (0.0789)	0.1057 (0.1716)	0.3951** (0.1809)	0.0509 (0.2240)
Child high education $_{t=1}$	−0.0059 (0.0342)	−0.1705*** (0.0411)	0.0423 (0.0988)	−0.0955 (0.1774)
Child has brother $_{t=1}$	−0.0279 (0.0352)	−0.0592 (0.0466)	−0.1014 (0.0826)	0.0990 (0.0908)
Child has sister $_{t=1}$	0.0060 (0.0366)	−0.0222 (0.0417)	−0.0160 (0.0838)	0.0428 (0.0800)
Child Ethnic Minority	−0.0633 (0.0688)	−0.0792 (0.0861)	−0.0944 (0.1614)	0.0265 (0.1398)
Child income level $_{t=1}$	0.0419*** (0.0090)	0.0599*** (0.0123)	0.0569*** (0.0169)	0.0304 (0.0189)
Birth order: Fifth child or beyond (reference)				
First child	0.1540 (0.1082)	−0.0314 (0.1653)	0.0913 (0.2337)	0.7177*** (0.2175)
Second child	0.1525 (0.1052)	−0.0267 (0.1643)	0.1548 (0.2227)	0.5107** (0.2070)
Third child	0.1232 (0.1059)	0.1138 (0.1656)	0.1354 (0.2277)	0.3405 (0.2627)
Fourth child	0.2159* (0.1218)	0.0582 (0.1699)	0.1326 (0.2604)	0.4580 (0.3031)
Father high education $_{t=1}$	−0.0734* (0.0426)	−0.0448 (0.0518)	−0.0310 (0.0725)	−0.0526 (0.0755)
Mother high education $_{t=1}$	0.0052 (0.0786)	0.1338 (0.0895)	−0.1007 (0.0743)	−0.1187 (0.0888)
Constant	0.2749 (0.2827)	0.6687*** (0.2002)	−0.0340 (0.2677)	−0.7697** (0.3693)
Observations	968	550	270	202
R-squared	0.1379	0.2879	0.2678	0.3390
Regional fixed effect	Yes	Yes	Yes	Yes
Test for the difference in the coefficients on parental housing wealth between males and females				
	F(1,1168) = 0.02 Prob > F = 0.8998		F(1,416) = 0.04 Prob > F = 0.8509	

Standard errors, clustered at the household level, are shown in parentheses

*$p < 0.1$, ** $p < 0.05$, ***$p < 0.01$

4.3 Sensitivity analysis

As a robustness check, we restrict our sample to the children who live with their parents in the 2015 wave. By applying the same analysis as aforementioned, we check the association between parental housing wealth and the marriage transitions of individuals who are living together with their parents. The results are shown in Tables A4 and A5 in the Appendix. As we expected, we find that parental housing value and high-value parental houses are still important for males' marriage transitions, and the effect is only significant for males with rural *hukou*. This reflects that the prevalent coresidence between sons and parents in rural areas after males get married may partly contribute to the difference we find for rural males and urban males. Moreover, parental homeownership is not essential for children's marriage outcomes.

To take into account the possibility that the number of siblings is associated with parental housing wealth and individual marriage outcomes, we further explore the effect of parental housing wealth by including the number of siblings in the analysis.

The results are presented in Table A6 in the Appendix. Table A6 shows that the number of siblings is negatively related to the probability of getting married. However, our results remain largely the same in terms of economic and statistical significance.

In Table A7 we check whether the results are robust to the inclusion of city characteristics. Ideally, we would like to include city fixed effects. However, this is not easy because there are very few observations for some cities in our sample. For example, there is one observation for Shanghai, Jiaxing, and Yancheng in the analysis sample, and only 2 or 3 for many others. Therefore, we include dummies for first-tier and second-tier cities to capture city characteristics. This is a common method of classifying cities in China (Fang et al., 2016) and is related to cities' economic and social development. The results align with our main findings, confirming that parental housing wealth is positively associated with males' marriage prospects.

In addition, we also examine the role of local sex ratios in the analysis. We calculate the city-level sex ratios (males/females) of children born in 1976–1995 using data from the 2005 China Population Census 1% Sampling Survey. We use the census data to calculate the sex ratio for individuals born between 1976–1995 and the sex ratio for unmarried individuals born between 1976–1995 separately. The results are reported in Table A8. Although we might expect housing wealth to be more important in regions with highly skewed sex ratios, there is no evidence that the effect of parental housing wealth depends on local sex ratios. The explanation for this result might be that in our data there is limited variability in sex ratios as they are all highly skewed.

Finally, in the main analysis, we consider the total value of the house that the parents fully or partially own, without adjusting for the share that they actually own. As a sensitivity analysis, we compute a new measure based on the share of housing value owned by parents. The results, which are reported in Tables A9, A10 in the Appendix, are qualitatively the same.

5 Conclusion

In this paper, we employ the China Health and Retirement Longitudinal Survey (CHARLS) to estimate the association between parental housing wealth and children's transitions into marriage. We focus on children who were unmarried in 2011 and track their marriage outcomes in 2015.

Our results indicate that parental housing wealth plays a crucial role in children's transitions into marriage. First, an increase in the parental house's value leads to a significant increase in males' probability of getting married. Second, the relationship varies with the gender and *hukou* status of the children. In particular, housing wealth is important only for males with rural *hukou*. The effect is sizeable as owning high-value houses increases rural men's probability to marry by 10.77 percentage points. This implies that parental housing wealth acts as a signal for rural males in the marriage market. Conditional on other characteristics, high-value houses enhance young males' attractiveness in the marriage market, thus leading to a higher

probability of getting married. Third, in contrast to housing wealth, no evidence shows that non-housing wealth affects young people's marriage transitions.

The finding has important policy implications. First, it is in line with the research showing that China's rising sex ratios and the twisted marriage market are likely to contribute to the competition in parental housing wealth, which further leads to an increase in housing prices. In fact, competing in housing wealth may impose financial constraints on young individuals and their parents and depress their consumption of other goods (Wrenn et al., 2019). At the same time, the aggregate number of males getting married is not affected by housing wealth. These effects combined imply that some of the increases in house costs resulting from the competition are socially inefficient (Wei et al., 2017). Second, in the long run, considering the assortative mating in the marriage market (Sun and Zhang, 2020), competing in owing high-value houses may also contribute to wealth inequality and the intergenerational transmission of this inequality. Therefore, for policymakers, when implementing housing market regulations, it is important to consider the marriage market. Although we focus on the context of China, this study could also shed light on other economies, especially other countries with unbalanced sex ratios (e.g., India and Singapore).

While our paper provides evidence that housing wealth is associated with individual marriage transitions, more research needs to be conducted in the future. For instance, the effect of housing wealth on the quality of marriage, instead of only marriage outcomes, is an interesting avenue for future research. To do so, one could investigate the impact of housing wealth on the partner's education level, the intra-household resource allocation, or the subjective well-being within the marriage.

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Compliance with ethical standards

Conflict of interest The authors declare no competing interests.

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