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Parental Housing Wealth, Job Search, and Labor Market Outcomes

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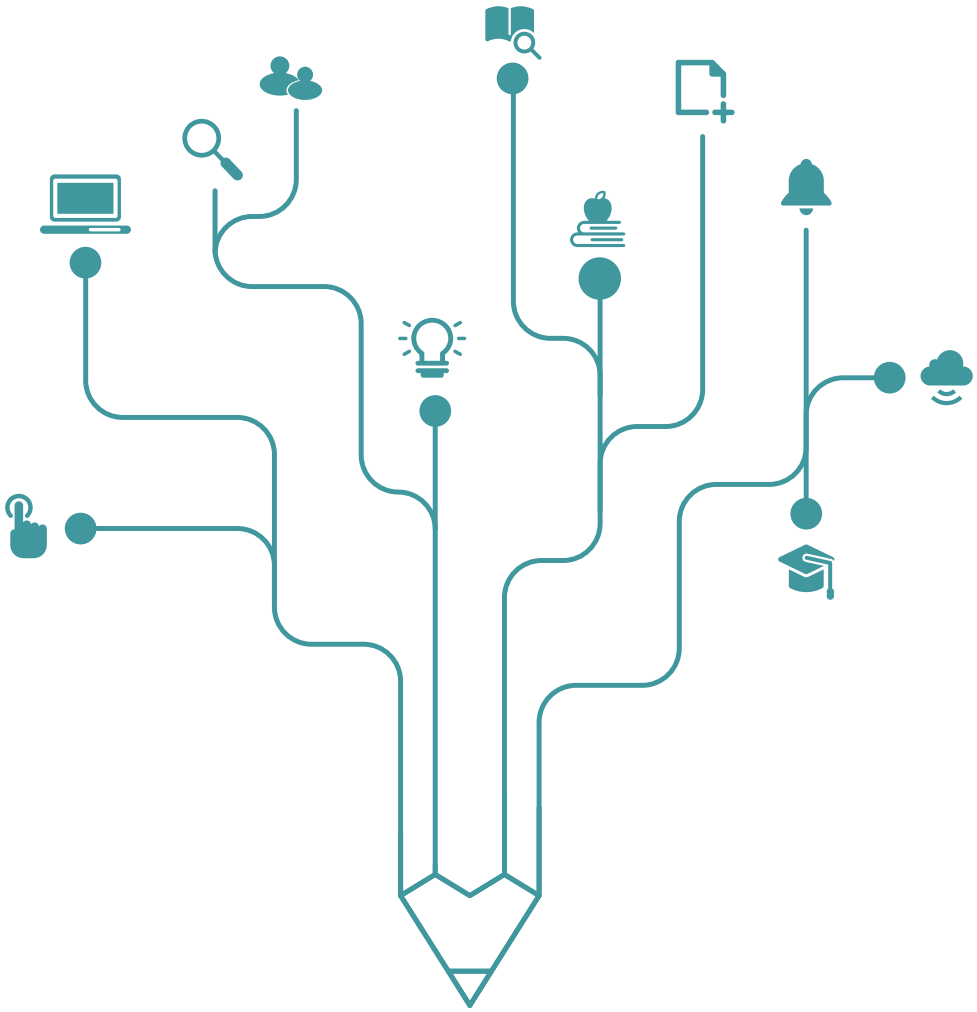

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Parental Housing Wealth, Job Search, and Labor Market Outcomes *

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Abstract

This paper examines the effects of parental housing wealth on job search behavior of their children. I exploit variation in parental housing wealth generated by short-run housing market fluctuations within municipalities over time and housing types. I document weak evidence that parental housing wealth delays the transition from college to work at both the extensive and intensive margins. The extensive margin is driven by post-graduate schooling among high-income children, whereas the intensive margin is driven by job-related exam preparations among low-income children. Parental housing wealth does not improve labor market outcomes.

JEL classification: J2, J64

Keywords: Parental housing wealth, school-to-work transitions, job search

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I Introduction

For young adults who make transitions from school to work, financial resources of parents can work as insurance against labor market risks (Fradkin et al., 2019). When students enter the labor market, they usually have limited resources to manage expenses that a job search incurs. Monetary support from parents can help first-time job seekers smooth consumption while searching for a job, allowing them to be more selective in accepting job offers. This selectivity can extend the job search duration (Danforth, 1979). On the other hand, a longer search has its own costs in terms of human capital depreciation, foregone on-the-job training, or a reduction in job availability. These factors render negative duration dependence, which means that the longer the search, the lower the probability of finding a job (for example, Kroft et al. (2013)). The adverse effects of long-term unemployment may prevent young job seekers from being overly selective.[1]

This paper explores whether parental housing wealth affects the job search behavior of college graduates and corresponding labor market outcomes. While economists pay enormous attention to the role of education as a vehicle for intergenerational mobility (see Lefgren et al. (2012); Hilger (2017); Richey and Rosburg (2017) for recent evidence), better education alone does not guarantee a quality job, which finally turns human capital into a paycheck. The role of parental wealth as a private safety net against labor market risks can be an important but rarely investigated channel of the intergenerational transmission of economic status. At the same time, studies have shown that early labor market experiences have a long-lasting impact on subsequent labor market outcomes (Burgess et al., 2003; Kondo, 2007; Oreopoulos et al., 2012; Altonji et al., 2016), and the negative impact is not easily mitigated by additional human capital accumulation in the following period (Mroz and Savage, 2006).

In the absence of a randomized experiment, it is challenging to identify the effects of parental wealth on the job search and labor market outcomes. Any correlation between parental wealth and unobserved factors such as abilities (Shea, 2000), time preferences (DellaVigna and Paserman, 2005), or qualities of informal networks (Ioannides and Loury, 2004; Bayer et al., 2008) gives rise to endogeneity. To address potential endogeneity, I exploit quasi-experimental variation in parental

[1] Nekoei and Weber (2017) argue that the effect of unemployment insurance on wages, not on duration, depends on the relative importance between the selectivity effect and the duration dependence effect.

housing wealth generated by short-run housing market fluctuations within municipalities over time and housing types. This approach follows Lovenheim (2011) and Lovenheim and Reynolds (2013), except that I use variation in the house price per square meter only, similar to Hurst and Lusardi (2004). In other words, I do not exploit variation in the house size across households because the size itself might be correlated with factors mentioned above.[2] Given the idiosyncratic nature of the housing market, the variation that I exploit is arguably less prone to the aforementioned sources of bias, especially conditional on an extensive set of individual and parental characteristics as well as municipality fixed effects.

While I provide suggestive evidence that variation in the short-run house prices is less likely to be correlated with unobserved individual or parental characteristics, local housing market conditions may directly influence job search behavior by changing their labor market prospects. For example, Charles et al. (2018) show that the housing boom in the United States discourages young individuals from going to college by raising their opportunity costs. To alleviate this concern, I control for three economic indicators at the province level: the youth unemployment rate, the number of employees per establishment, and the gross regional domestic product (GRDP) per capita. Additionally, I conduct a placebo test for each outcome of interest using a subsample of individuals whose parents were renters. Because college graduates in this group are not expected to benefit from windfall gains in parental housing wealth, finding a similar effect among homeowners and renters would cast doubt on my findings. In general, the data do not indicate that my findings are driven by local economic shocks.

I estimate the effects of parental housing wealth on the decision of whether to search for a job (i.e., extensive margin) and how long to search (i.e., intensive margin) separately. Using Korean survey data on college outcomes combined with administrative data on assessed housing values, I find that a 10 percent increase in parental housing wealth reduces the probability of ever having searched for a job by about 5.3-5.6 percentage points. Given this evidence, I explore the potential mechanisms underlying the extensive margin response. In particular, I examine whether the wealth gains of parents lower young adults' probability of ever having searched for a job through

[2]Similarly, Li et al. (2020) point out that nonrandom selection of house size would be an important source of biases.

either higher reservation wages or increased post-graduate schooling. The results suggest that both channels cannot explain the reduction in job search experience.

Next, I explore how parental wealth affects the intensive margin of job search. I find that the job search duration of college graduates increases by about one month for a 10 percent increase in parental housing wealth, although this intensive margin response is not precisely estimated. The estimated effect is somewhat larger for low-income graduates, consistent with the prediction of job search models, which suggest that an increase in wealth extends the duration of search by relaxing credit constraints. However, heterogeneity in the intensive margin of job search across income groups is less clear than in the case of extensive margin. Further analysis shows that preparation for job-related exams, including civil service exams, is a channel through which parental housing wealth extends the time to first employment among low-income graduates.

Lastly, I investigate whether parental housing wealth influences their children's labor market outcomes. Parental housing wealth does not appear to help college graduates find a better job, as measured in various ways. In fact, a 10 percent increase in parental housing wealth reduces the hourly wage at the first job by 7 percent. For low-income graduates, the estimated elasticity is approximately -1.25. This substantial reduction in the first-job wage among low-income individuals along with their propensity to prepare for job-related exams may suggest their selection into public-interest jobs. Although parental housing wealth seems to increase the probability of working in the public sector among low-income graduates, the effect is not precisely estimated.

Studying the case of South Korea has several benefits. First, the GOMS provides a relatively large sample size and contains detailed information on education, school-to-work transitions, and early career development of college graduates. The GOMS also collects data on the self-reported reservation wages and job-finding routes, which are rarely available from other data sources. Second, the role of family support is likely to be stronger in South Korea where about 69 percent of 25-34 years-olds have completed tertiary education according to the Organisation for Economic Co-operation and Development (OECD, 2017). Third, due to the high college enrollment rate, the youth labor market in South Korea is quite tight and quality jobs are difficult to find. As higher education becomes increasingly common in many countries, this study will shed light on the job search behavior of college graduates in a competitive labor market the role of parental wealth as informal insurance.

This paper contributes to two strands of literature. The first strand of literature examines the role of parents' financial resources in determining children's outcomes. Researchers mostly focus on the intergenerational wealth (or income) effect on human capital accumulation. Lovenheim (2011) finds that increased parental housing wealth raises college enrollment, while Shea (2000) and Hilger (2016) show that parental job losses have a small negative impact on schooling of their children. Similarly, Carneiro and Heckman (2002) find that parental income plays a limited role in explaining college enrollment once the authors account for unobserved abilities of children. Studies also find that shocks in family resources affect children's earnings (Oreopoulos et al., 2008) and college choices (Lovenheim and Reynolds, 2013).

The paper shares similarities with Fradkin et al. (2019), who also examine the role of family insurance for first-time job seekers in Belgium. While their study focuses on the labor supply of young adults, I study both the intensive and extensive margins of job search. Moreover, I employ a different identification strategy with different data in a different context. Lastly, the rich information in the GOMS data allows me to explore potential mechanisms through which parental wealth influences job search of young adults.

This study is also related to another strand of literature that explores the effects of unemployment insurance (UI) on job search. There exists ample evidence that extended UI benefits prolong job search duration (Meyer, 1990; Card et al., 2007; Chetty, 2008; Landais, 2015). Interestingly, researchers have not found evidence that extending UI benefits improves employment outcomes until recently (Card et al., 2007; Lalive, 2008; van Ours and Vodopivec, 2008; Johnston and Mas, 2018). However, a couple of recent studies find that the UI benefit extensions affect reemployment wages negatively (Schmieder et al., 2016) or positively (Nekoei and Weber, 2017). I document new evidence of the effects of insurance on labor market outcomes.

This paper is not without limitations. First, although the GOMS collects data on certain characteristics of a residential home of parents, it does not collect data on housing wealth. To address this limitation, I estimate parental housing wealth based on household characteristics, house characteristics, and residential locations of households.[3] Results from the reduced-form estimation, which do not rely on the imputation, are qualitatively similar to those from the instrumental

[3]The use of an estimated variable to overcome the missing data problem is not uncommon in the intergenerational mobility literature (Björklund and Jäntti, 1997; Aaronson and Mazumder, 2008; Collins and Wanamaker, 2022).

variable approach. Second, I focus on a selected subsample of young adults, specifically those who were living with their parents three to four years after college graduation. However, these individuals may represent the population of policy interest if they moved back to their parents' home after failing to find a job (Kaplan, 2012). I also show that individuals in my estimation sample are similar to those in the full sample in terms of observed characteristics.

The paper proceeds as follows. Section II provides background information regarding the youth labor market in South Korea in 2000s. Section III describes data sources, housing wealth imputation process, duration calculations, and sample selection criteria. Section IV proposes an empirical strategy. Section V explores the effect of parental wealth on the extensive and intensive margins of job search and their potential channels. Section VI examines the role of parental housing wealth in determining labor market outcomes. Section VII concludes.

II Labor market and housing market in South Korea in 2000s

II.A Youth labor market

South Korea is famous for its education fever (Park, 2013). In 2008, the share of 25-34 year-old with tertiary education in Korea marked 57.84, which was the highest among OECD countries.[4] Since then, Korea has consolidated its position as the most educated country in the world. Despite the rapid growth in the supply of highly educated labor force, the economy could not create a sufficient number of jobs accordingly. The excess supply has increased the unemployment rate of college graduates by 1.6 percentage point in 2000s.

Due to fierce competition for jobs, a college degree alone is not enough to send a strong signal about one's ability to the market. To improve the chance of finding a decent job, it is common for young individuals to spend months after graduation to acquire qualifications, licenses, or certificates recommended or required by potential employers. A non-trivial share of the population commits themselves solely to job preparation without "actively" looking for a job. Because these individuals are not considered as labor force, the unemployment rate understates the true extent of joblessness.

I can think of four choices available to individuals upon graduation. First, the majority of college graduates want to work, and therefore enter the labor market and look for a job. Second,

[4]source: https://data.oecd.org/eduatt/population-with-tertiary-education.htm

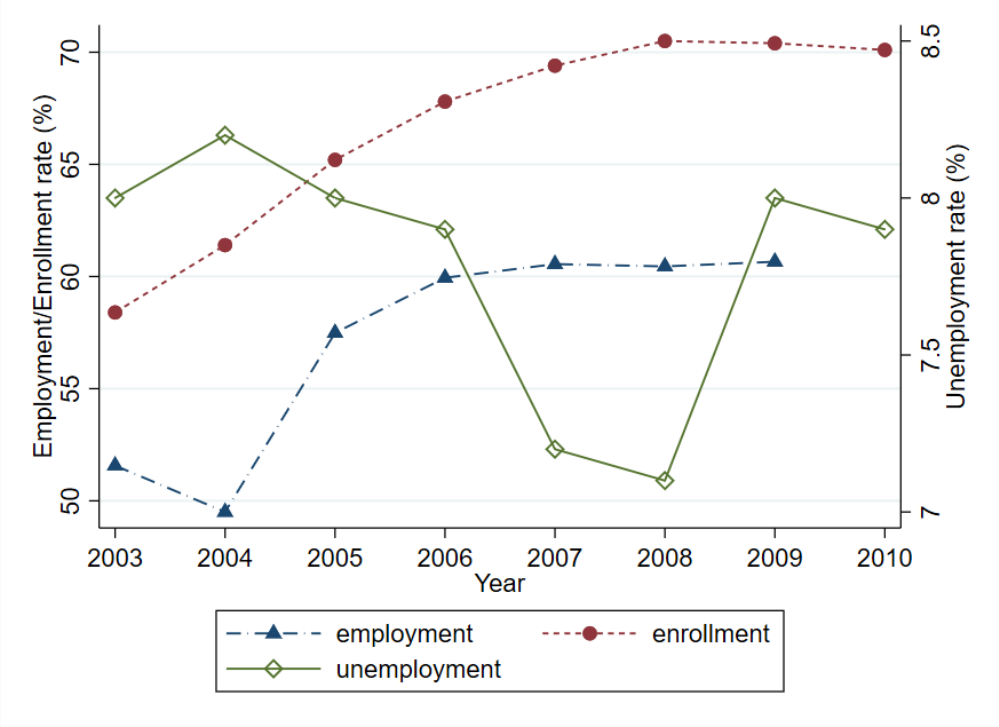


Figure 1: Korean labor market for college graduates

Note: The figure describes trends in the college enrollment rate among individuals aged between 15 to 29 and unemployment/employment rates of college graduates. The employment rate is calculated by dividing the number of employed graduates by the total number of graduates. Korean Health Insurance Database is used to calculate the total number of employed graduates from 2010. Therefore, the employment rate for 2010 is omittied due to incompatibility. *Source*: Korean Statistical Information Service and Higher Education Institution Graduates Employment Statistics

some students may continue their study. The third group of graduates engages in job-related exam preparation, which are unique to some Asian countries such as South Korea, China, Japan, to name a few.[5] Individuals preparing for exams are usually considered out of labor force. However, given that passing the exam is at least a partial requirement for certain types of jobs, I view the exam preparation as a non-traditional way of job search and categorize them as labor force throughout the paper. Lastly, some graduates will remain out of labor force.[6]

Figure 1 shows that while the employment rate for college graduates has increased over time, four out of ten graduates did not work in the late 2000s. Among individuals who were not employed, a quarter of them attended school, and the majority prepared for job-related exams such as civil

[5]Statistics Korea defines six categories of job-related exams: exams for enterprises, media and public enterprises, teachers, general public officials, high-ranking public officials and professional jobs, and technicians and others.

[6]These four choices are not mutually exclusive. For example, people can search for a job while attending graduate school and vice versa.

service exams (Jung, 2017). However, only a fairly small number of individuals can pass the exams. For example, the pass rate of civil service exams for general public official positions was 1.35 percent in 2011 (Ministry of Personnel Management, 2011). Despite the low chance of success, many South Korean youth prefer to work in the public sector due to high job security and other benefits it provides (Lee, 2013). Anecdotal evidence suggests that it is common for exam takers to prepare for an exam more than a year (Kim and You, 2017). Because both post-graduate education and job-related exam preparation are quite costly that young individuals cannot afford by themselves, parental support can be crucial in determining the time to a first job and labor market outcomes.

II.B Housing market

Like many other countries, housing is the most important asset for Korean households. Own housing accounts for 42.4% of total household assets, followed by savings (15.0%) and land (13.7%) in 2010. 57.7% of households are homeowners and the share increases to 65.8% (77.1%) for households whose head aged between 40-49 (50-59).[7]

With a deregulation of the housing finance market in late 1990s and the recovery from the Asian Crisis in 1997, Korean housing market expanded dramatically (Glindro et al., 2008). Figure 2 shows the trend in real housing price index (HPI) in South Korea during 2000s. In general, there exists an upward trend in the HPI. A drop in HPI started from the first quarter of 2004 was a result of the government policy to curb the soaring housing price during the Roh administration. Housing price declined once again at the time of Great Recession, but the dip was not as dramatic as the collapse of the U.S. housing market. The rise and fall of the Korean housing market during 2000s provides a natural experiment to test the effect of housing wealth on outcomes of interest.

There are a couple of mechanisms through which housing wealth effects manifest. One channel is the pure wealth effect (Cooper, 2013), suggesting that increased household wealth would lead to greater spending, regardless of whether the housing wealth is liquidated. Another channel is home equity extraction (Mishkin, 2007; Lovenheim, 2011). Households can borrow at a lower interest rate using their home as a collateral when the house price rises. The Bank of Korea (2014) documents

[7]Source: `http://kostat.go.kr/portal/korea/kor_nw/1/4/4/index.board?bmode=read&aSeq=244662&pageNo=2&rowNum=10&amSeq=&sTarget=&sTxt=`

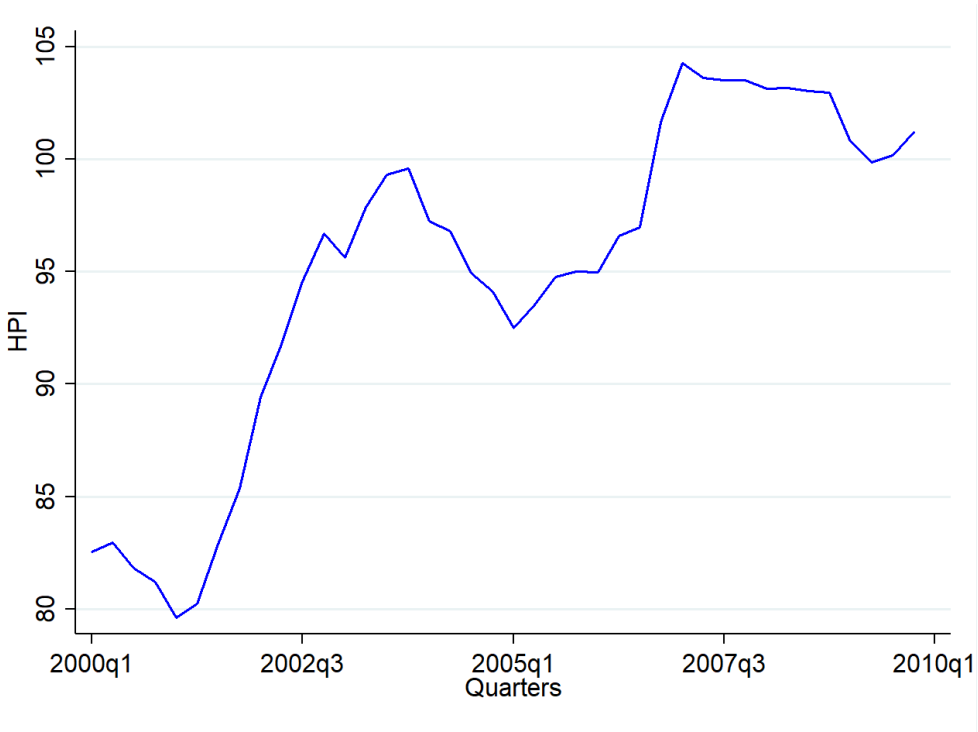


Figure 2: The trend in quarterly real housing price index in South Korea

Source: Bank for International Settlements, Real Residential Property Prices for Republic of Korea, retrieved from FRED, Federal Reserve Bank of St. Louis.

that Korean households use about 8.23 percent of mortgage lending for living expenses from 2007 to 2010.

III Data

III.A The Graduates Occupational Mobility Survey (GOMS)

The Graduates Occupational Mobility Survey (GOMS) was first implemented in 2006. The survey is designed to alleviate mismatch between labor supply and demand and to help students make major choices by providing up-to-date information on Korean labor markets. The GOMS samples about 18,000 college graduates each year, which cover approximately 3-4 percent of the population of interest. Individuals are interviewed either 18 months or 24 months after their graduation, depending on whether they graduate in August or in February. By the time of the survey, most graduates have completed transitions from school to work.[8] For the second to fourth

[8]For example, 83.2 percent of the GOMS participants between the survey year 2009 to 2011 were either employed (74.6 percent) or enrolled in schools (8.6 percent) when they were interviewed.

waves of the GOMS, there was a follow-up survey implemented two years after the initial survey, but the GOMS has become a cross-sectional survey since 2011. This study uses the panel waves surveyed from 2009 to 2011, which cover individuals who graduated from college between August 2007 to February 2010.

The survey collects data on school experience, job preparation, and early employment history of recent college graduates. In particular, the GOMS asks survey participants about their reservation wages and how they obtained the jobs. The richness of information allows me to explore mechanisms through which parental housing wealth affect job search and labor market outcomes of college graduates. The GOMS also contains detailed information on parental characteristics, including their combined income levels, educational attainments, and occupations.[9]

Although the GOMS is well-suited for the purposes of my research in many dimensions, there are limitations of using the data as well. First, the GOMS does not have information on parental housing wealth, which is the variable of interest. To overcome this limitation, I estimate the housing wealth using data on household characteristics, housing characteristics, and residential locations of households. Section III.B discusses the estimation procedure in detail. Moreover, I can observe home ownership status of parents and their housing types only for young adults who lived with their parents three and a half years (or four years for those graduated in August) after graduation.[10] This raises a concern regarding sample selection bias. I discuss issues related to sample selection in Section III.D.

III.B Parental housing wealth estimation

I use data from the Korea Housing Survey (KHS) to estimate parental housing wealth. Starting from 2006, the KHS interviews approximately 30,000 households every two years and asks questions regarding characteristics of past/current residential homes, moving history, and housing preferences. The survey also collects household characteristics including information on various types of household assets. To make this sample comparable to the analytic sample, I restrict the

[9]The survey asks combined income levels of parents at two different points in time: (i) when their children entered college and (ii) when they were interviewed. In the analysis, I only use the former information to avoid potential endogeneity.

[10]Data on home ownership status and housing types are only available in the follow-up surveys of earlier waves of the GOMS. If a young adult lived with his parents, I assume that he provided housing charactersitcis of the parents unless he was a head of the household. I consider three housing types: house, apartment, and multi-family residential housing.

sample to homeowner households whose head aged from 30 to 65 with at least one child of age between 12 and 30.[11]

To approximate parental housing wealth, I estimate a linear regression using the KHS data where the dependent variable is the log of housing wealth. Housing wealth is the total housing assets of a household net of total debts.[12] Covariates include the number of household members and dummies for the municipalities of residence, house type, household income, head's education, and importantly, the municipality-level house price per unit (m^2). Data on the per-unit home price are not publicly available at the municipality level. In order to construct the local-level house price per squared meter, I use administrative data on assessed housing values provided by the Korea National Spatial Data Infrastructure Portal. The data cover the universe of housing units in South Korea and contain information on housing values assessed for tax purposes as well as house size and location. I use data collected in 2016, which contain the relevant information for about 3.8 million single houses and 12 million apartments/multiple-family houses in South Korea.

After obtaining the coefficient estimates for all predictors, I plug the GOMS data into the estimated equation to predict parental housing wealth. One way to test the performance of the estimation is to plot the correlation between the original housing wealth and the estimated housing wealth in the KHS data. Figure 3 shows that the two values are highly correlated.[13] The raw correlation between the true and the estimated housing wealth is 0.738 in the full sample and 0.734 after removing observations from the bottom and top 1 percent of the housing wealth distribution.[14]

III.C Duration calculation

To calculate job search duration of young adults, I need to identify the time of the job market entry and first employment. I assume that an individual enters the market a year before graduation

[11] To minimize the influence of extreme values in predicting housing wealth, I remove 194 observations in the bottom and top 1 percent of the housing wealth distribution. I also remove 8 observations with a municipality cell size less than 10. However, I confirm that these restrictions have little impact on the estimation results in terms of R-squared and the first-stage F-statistics.

[12] The KHS does not provide household debt specifically related to housing.

[13] For a representation purpose, I exclude the bottom and the top 1 percent observations in Figure 3. The correlation plot using the full sample is available upon request.

[14] The estimated housing wealth tends to be higher at the bottom of the housing wealth distribution, while it tends to be lower at the top of the distribution. This is not surprising given that the wealth of households at the tails of the distribution are likely to be determined by unobserved characteristics such as abilities or preferences, which impose concerns to identifying the effects of parental housing wealth.

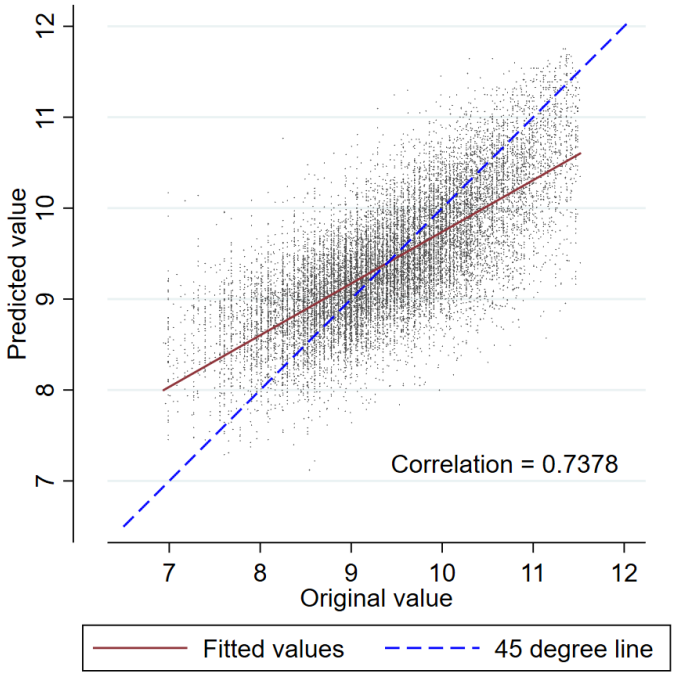


Figure 3: Correlation between original housing wealth and estimated housing wealth

Note: The x-axis represents household housing wealth (in log) from the KHS data. The y-axis represents the housing wealth (in log) estimated from the regression using the number of household members, dummies for the municipalities of residence, house type, household income, head's education, and the municipality-level house price per square meter as predictors. All values are adjusted for inflation using the first quarter of 2009 as a base.

and exits when the first employment begins.[15] A job is defined as the first job if a respondent recognizes it as the first employment or it is the earliest job in one's employment history.

Figure 4 shows the distribution of the search duration, which is the months from the time of job market entry to the first job. Two features are noticeable. First, there exists a spike in the number of individuals who found a job upon graduation, which is not surprising. Second, the distribution has a very long right tail. The majority of graduates made the transition from school to work within three months of graduation and about three quarters of graduates found a job within a year. But the transition took more than two years after graduation for about ten percent of the graduates at the right tail.

[15] A nontrivial share of college students in South Korea begins to search for a job several months before graduation. Here I set the time of entry to a year before graduation, but the results are qualitatively similar to different choices of the entry time. The GOMS also provides self-reported data on when respondents begin to search. However, the decision of when to search is purely subjective and can be influenced by parental wealth.

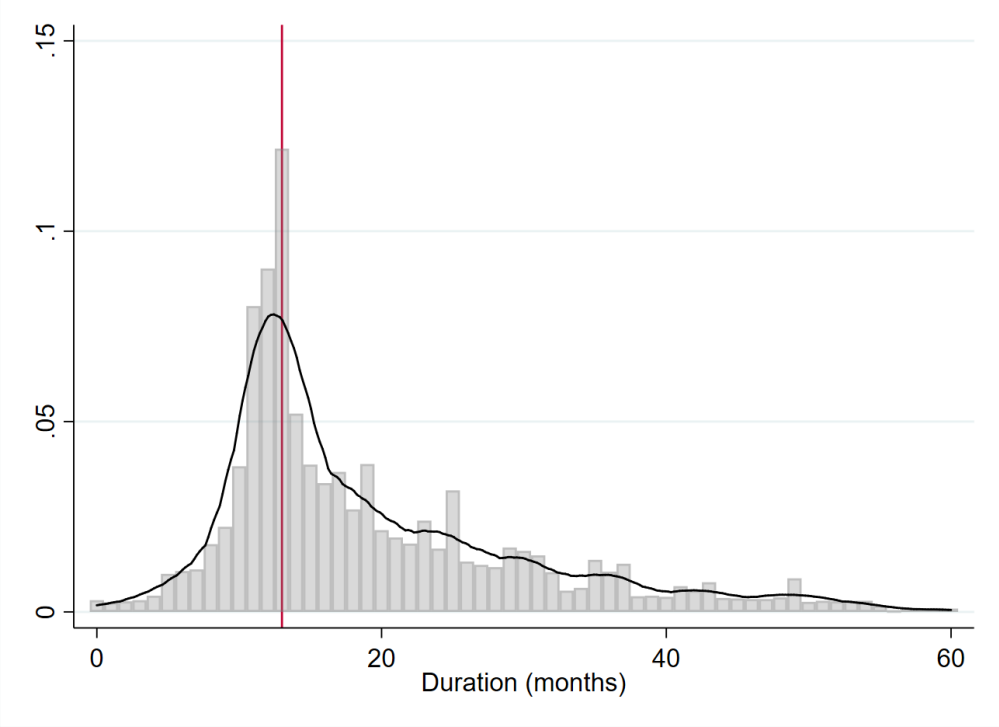


Figure 4: The distribution of search duration

Note: The search duration is the months from the time of job market entry to first employment. The time of job market entry is set to a year before graduation. I drop observations with negative duration.

III.D Sample selection

My estimation sample consists of 4-year college graduates (1) who attended high school in municipalities with school equalization policy and (2) were living with their homeowner parents at the time of the follow-up survey. The first restriction is necessary to approximate the residential location of parents when their child was in high school. The location of high school that one attended is a good proxy for the residential location because the school equalization policy in South Korea forces students to attend schools within a certain distance of their residence.[16]

[16]In general, students who plan to attend general education high schools first apply for schools within their *Hakgun*, which consists of multiple municipalities. Schools admit students based on their preferences to some extent and then remaining slots are randomly assigned based on the proximity to schools from students' residence. The school equalization policy applies to both public and private general education high schools, but the policy does not apply to vocational and specialized high schools. For individuals who graduated from schools to which the equalization policy did not apply, high school location is a poor proxy for their residence. Moreover, if students were able to sort into high-quality schools and home prices of municipalities in which good schools were located grew faster, it would render a spurious correlation between school quality and search duration.

The second restriction is required because I can infer the home ownership status and house type of parents only for coresiding young graduates.[17] Rosenzweig and Wolpin (1993) and Kaplan (2012) show that parental assistance in the form of shared residence helps young individuals insure themselves from labor market risks. The evidence suggests that job search duration might be endogenous to the living arrangements of young individuals. In other words, individuals who face a higher risk of being unemployed may sort into coresidence. If young adults with poor labor market prospects tend to live with parents, selection into coresidence would overestimate the effect of parental housing wealth on search duration. On the other hand, the selection can also result in underestimation of the wealth effect if coresidence and monetary support are substitutes as Rosenzweig and Wolpin (1993) assume.

In addition to these restrictions, I exclude individuals who had worked full-time before the labor market entry since they are different than their counterpart in several aspects.[18] Furthermore, their work experience might facilitate job search either through more information, a broader network, and/or accumulated wealth. Lastly, I drop individuals with missing covariates.

Table 1 shows descriptive statistics for each stage of sample selection. Column 1 shows the characteristics of the full sample of 4-year college graduates. Column 2 restricts the sample to those who attended high schools subject to the school equalization policy, and column 3 further restricts the sample to those who live with their homeowner parents at the time of the follow-up survey. The resulting estimation sample consists of 6,225 college graduates, covering about one-fifth of the full sample. On average, individuals in the estimation sample remained unemployed longer, and had richer, and better-educated parents. The sample also contains more female individuals. Note that the difference in characteristics mainly comes from the first sample restriction. This is not surprising because municipalities with the school equalization policy are mostly located in urban areas. In contrast, the average characteristics given in column 2 and column 3 are quite similar, at least in terms of observables. The average 3-year home price difference per square meter is 0.32 MKRW in the final sample.

[17] To be precise, GOMS lacks data on homeowners. However, it is very rare for a young individual to become a homeowner in three years after graduating from college and live with his parents. Thus, I simply assume that parents are homeowners when they coreside with their children.

[18] For example, the average graduate who had a full-time job before the job market entry is about 9 years older and less likely to live with their parents than their counterpart.

Table 1: Descriptive statistics

	(1) Sample 1		(2) Sample 2		(3) Estimation sample	
Ever having searched for a job	0.91	(0.29)	0.90	(0.30)	0.91	(0.29)
Duration (month)	14.91	(23.69)	18.24	(10.31)	19.30	(10.89)
Parental housing wealth (10MKRW)	23.25	(21.69)	27.30	(23.91)	28.28	(24.35)
3-year changes in per-unit home price (MKRW)	0.23	(0.57)	0.27	(0.63)	0.32	(0.68)
Share of students	0.17	(0.38)	0.18	(0.38)	0.17	(0.38)
Ever preparing for job-related exams	0.22	(0.42)	0.23	(0.42)	0.25	(0.43)
Hourly reservation wage (10,000KRW)	1.37	(0.86)	1.37	(0.86)	1.30	(0.64)
Parents' monthly income, 0-1MKRW	0.05	(0.23)	0.04	(0.19)	0.03	(0.17)
Parents' monthly income, 1-2MKRW	0.11	(0.31)	0.09	(0.29)	0.08	(0.28)
Parents' monthly income, 2-3MKRW	0.24	(0.43)	0.23	(0.42)	0.24	(0.42)
Parents' monthly income, 3-4MKRW	0.24	(0.43)	0.26	(0.44)	0.26	(0.44)
Parents' monthly income, 4-5MKRW	0.16	(0.36)	0.17	(0.38)	0.17	(0.38)
Parents' monthly income, 5-7MKRW	0.11	(0.31)	0.12	(0.33)	0.13	(0.33)
Parents' monthly income, over 7MKRW	0.08	(0.28)	0.09	(0.29)	0.09	(0.29)
Share of male	0.58	(0.49)	0.57	(0.49)	0.50	(0.50)
Age	26.92	(3.49)	26.39	(1.82)	26.09	(1.80)
Number of household members	2.98	(1.39)	3.09	(1.36)	3.64	(1.05)
Share of fathers received higher education	0.38	(0.49)	0.43	(0.50)	0.44	(0.50)
Share of mothers received higher education	0.20	(0.40)	0.24	(0.43)	0.24	(0.43)
GPA	79.80	(16.01)	81.43	(8.51)	81.49	(8.47)
Share of loan takers	0.10	(0.31)	0.10	(0.30)	0.09	(0.29)
Share of dual degree holders	0.22	(0.41)	0.23	(0.42)	0.25	(0.43)
English test (TOEIC) score (takers only)	757.97	(139.58)	765.52	(134.66)	752.39	(142.04)
Work experience	0.70	(0.46)	0.73	(0.44)	0.75	(0.43)
Study abroad	0.22	(0.42)	0.26	(0.44)	0.24	(0.43)
Having qualification(s)	0.50	(0.50)	0.50	(0.50)	0.52	(0.50)
Standard college graduates		✓		✓		✓
School equalization policy				✓		✓
Living with homeowner parents						✓
Observations	35373		18843		6225	

Note: All figures are given in Korean Won and adjusted for inflation using the first quarter of 2009 as a base. See Table B.1 in Appendix for definitions of variables.

IV Research design

IV.A Empirical strategy

The primary goal of this paper is to estimate the effect of parental housing wealth on the job search behavior of their children and associated labor market outcomes. Individuals first decide whether to search for a job (extensive margin) and how much effort to put into the search (intensive margin). While modeling the extensive margin is relatively straightforward, there are several ways to model the intensive margin of job search. One popular approach is to estimate a survival model. The survival analysis framework is suited when the outcome variable of interest is time to an event, and the variable is right-censored for some individuals. However, I prefer to estimate a linear model for two reasons. First, only 4.3 percent of the observations in the estimation sample are censored because the GOMS allows me to trace college graduates up to four years after graduation. Moreover, interpreting estimates from a linear model is more intuitive than estimates from a hazard model. To make sure that results are robust to different specifications, I also present estimates from the Cox proportional hazard model.

The baseline specification has the following form:

$$outcome_i = \beta_0 + \beta_1 ln(\widehat{hwealth}_i) + \Gamma X_i + \Phi \Omega_{k,t} + \theta_c + \theta_j + \theta_t + \varepsilon_i \tag{1}$$

where $outcome_i$ is an outcome of interest of individual i and $\widehat{hwealth}_{i,t}$ is the estimated parental housing wealth of individual i at the time of graduation. X_i includes individual i's own age, sex, college major, and the number of household members. X_i also includes combined income, educational attainments, residential location, and house type of i's parents. $\Omega_{k,t}$ is a vector of provicial-level macroeconomic factors, including the youth unemployment rate, the number of employees per establishment, and the GRDP per capita measured at time t.[19] θ_c, θ_j, θ_t are fixed effects for institution, municipalities, and graduation time. ε_i is the error term.[20] I cluster the standard errors at the municipality level to allow for any within-municipality correlations and heteroskedasticity.

[19] The data on the GRDP per capita and the number of employees per establishment are available every year and the data on the youth unemployment rate is available every quarter.

[20] See Table B.1 in Appendix for definitions of variables.

The coefficient of interest is β_1. To obtain an unbiased estimate for β_1, parental housing wealth should not be correlated with the error term ε_i. However, endogeneity can arise for several reasons. The classical source is the unobserved ability transmitted from parents to their offspring (Shea, 2000; Carneiro and Heckman, 2002). For example, β_1 would underestimate the wealth effect if graduates from wealthier families tend to have greater abilities, and thus finding a job quicker. Similarly, a greater level of housing wealth may be correlated with time preference of individuals (DellaVigna and Paserman, 2005), or parents who live in a rich neighborhood may have a better informal network that facilitates the job search of their children (Bayer et al., 2008).

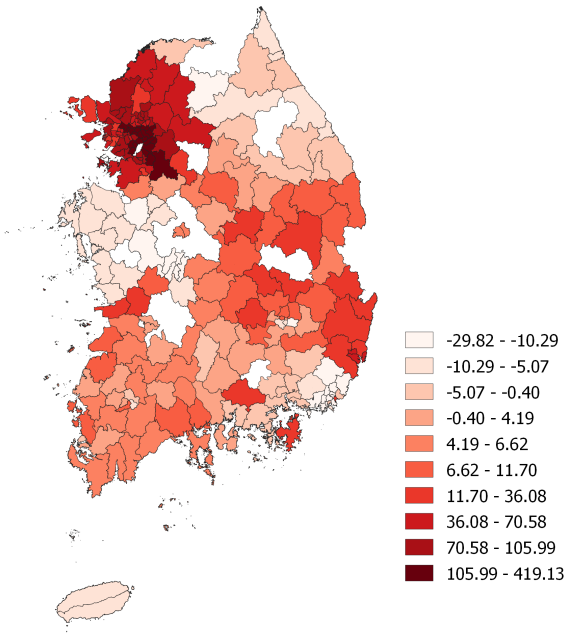
I address potential endogeneity using the 3-year difference in the local home price as an instrument for parental housing wealth. Formally, I estimate the following first-stage equation:

$$ln(\widehat{hwealth}_i) = \alpha_0 + \alpha_1 \Delta hprice_{h,j,t} + \Lambda X_i + \Psi \Omega_{k,t} + \eta_c + \eta_j + \eta_t + \mu_i \tag{2}$$

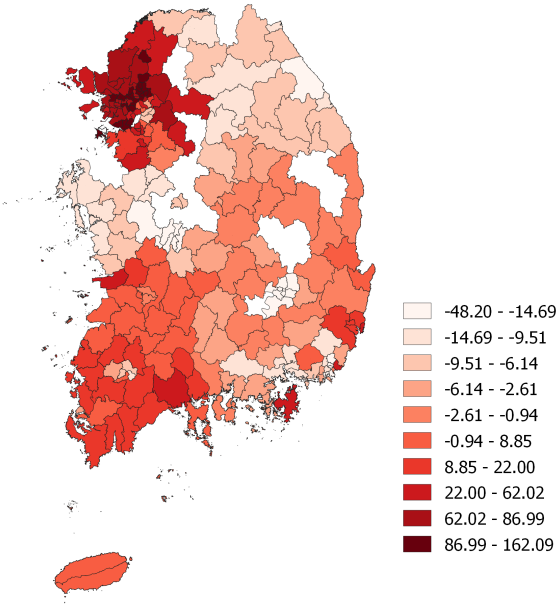
where $\Delta hprice_{h,j,t} \equiv hprice_{h,j,t} - hprice_{h,j,t-36}$ and $hprice_{h,j,t}$ is a home price per square meter for house type h in municipality j in a given year-month t. Because I only observe the house price per unit in 2016, I obtain $hprice_{h,j,t}$ and $hprice_{h,j,t-36}$ by deflating the 2016 per-unit house price using the HPI specific to house types following (Lovenheim, 2011; Lovenheim and Reynolds, 2013). Lovenheim (2011) exploits variation in the short-run gains in housing wealth to identify parental wealth effect on college enrollment. Although this strategy can mitigate biases to some extent, the wealth difference is a function of the level of individual wealth. Li et al. (2020) point out that household selection into a neighborhood and house size can be a source of bias when estimating the effects of housing wealth on labor supply. Because my identification strategy mainly relies on idiosyncratic housing market shocks within the same municipalities, it reduces potential concerns raised by Li et al. (2020).[21]

Note that the instrument also varies across house types. The majority of parents own an apartment, which is the most popular house type in South Korea. Other parents own either a single-family house (21.2 percent) or a multi-family house (14.0 percent). Figure 5 shows both cross-sectional and time variation in the apartment price per square meter in South Korea. Although

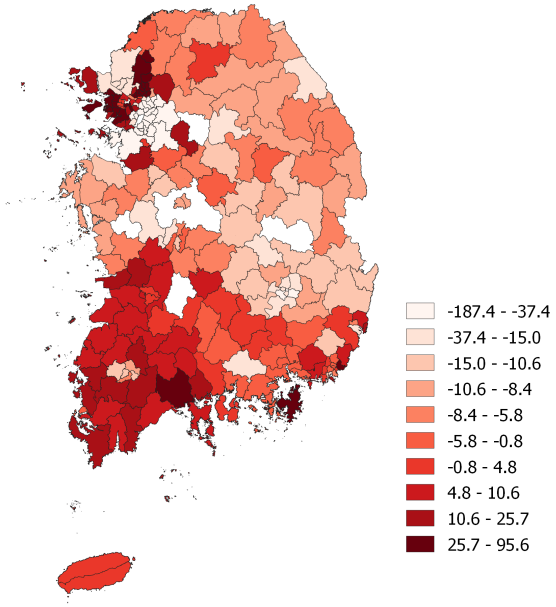
[21] I note that Hurst and Lusardi (2004) also employ a similar identification strategy.



(a) From 2005 to 2008



(b) From 2006 to 2009



(c) From 2007 to 2010

Figure 5: 3-year changes in home prices per unit (m^2): Apartments

Note: I construct the maps by grouping municipalities into ten deciles in terms of three-year changes in the apartment price per square meter. Municipalities with darker colors experienced larger home price appreciation. Areas without color represent municipalities that are missing in the GOMS data for a given year. Each See Section III.B for home price construction details.

Table 2: The first-stage regression

	(1)	(2)	(3)	(4)
3-year changes in home price	0.0381***	0.0413***	0.0413***	0.0413***
	(0.0037)	(0.0045)	(0.0044)	(0.0044)
Municipality fixed effects	Yes	Yes	Yes	Yes
Graduation time fixed effects	Yes	Yes	Yes	Yes
College fixed effects	Yes	Yes	Yes	Yes
Regional time trends	No	Yes	Yes	Yes
Grade point average	No	No	Yes	Yes
Qualification controls	No	No	No	Yes
F-statistic	104.05	86.11	86.17	87.19
R^2	0.986	0.986	0.986	0.986
Observations	6225	6225	6225	6225

Note: All specifications control for individual characteristics, parental characteristics, and macroeconomic factors. Standard errors are clustered at the municipality level. * $p < 0.10$,** $p < 0.05$,*** $p < 0.01$.

the home price appreciation is usually higher in Seoul Metropolitan City and other cities around it, the figures clearly show that within-municipality variation is also substantial.

IV.B Instrument validity

The instrument, $\Delta hprice_{h,j,t}$, is valid when it is correlated with parental housing wealth, but not correlated with the error term of the structural equation 1. Also, the instrument should affect outcomes of interest only through parental housing wealth. I test the validity of the first assumption by regressing the estimated parental housing wealth on the 3-year difference in the home price. Table 2 presents the results. In all four specifications, the short-run change in the local house price is strongly correlated with parental housing wealth.[22]

The second assumption is the *exclusion restriction*, which implies that the short-run per-unit house price is uncorrelated with the error term in the structural equation 1, ε_i, and affects the outcomes of interest only through housing parental wealth, conditional on covariates. As Section IV describes, unobserved individual abilities are a classical source of endogeneity in the literature

[22]It is important to note that the F-statistic will overstate the first-stage relationship when I use the estimated housing wealth. It is because the housing wealth estimation procedure removes the portion of variation that is unexplained by the regressors. As a result, the variance of the first-stage error term μ_i in equation 2 will be smaller than the variance of the first-stage error term where the dependent variable is the true housing wealth. I confirm this using the KHS data. The first-stage F-statistic is 43.34 when the estimated housing wealth is used, and 22.73 when the true housing wealth is used.

(Shea, 2000; Carneiro and Heckman, 2002; Lovenheim, 2011). While all specifications include an extensive set of individual and parental characteristics, my instrument would not be valid if more capable parents tend to reside in a municipality experiencing faster home price growth over time. To address this concern, I control for college fixed effects in all specifications using college identifiers obtained from the Korea Employment Information Service.

Another threat to identification stems from the use of informal networks to obtain a job (Ioannides and Loury, 2004; Bayer et al., 2008). If the average quality of informal networks of residents evolves together with the house price, the exclusion restriction would be violated. The GOMS asks how individuals find their jobs. About 14.7 percent of individuals reported finding their job through a reference from family members, relatives, or acquaintances. In Table B.2, I examine whether the instrument is correlated with the probability of finding a job through the informal networks of family members, relatives, or acquaintances. I do not find evidence that my instrument is correlated with the use of informal networks.

The change in the local home price might also be correlated with individual time preferences. DellaVigna and Paserman (2005) argue that low-income individuals tend to underestimate the returns from future outcomes than high-income earners, and thus put less effort in searching for a job. So, a valid instrument should be orthogonal to individuals' level of patience. Unfortunately, I cannot test it because the GOMS does not contain any measure of patience. It is worth noting that the true wealth effect should be larger than my estimates if the change in the local house price is postiviely correlated with patience.

V The effect of parental wealth on job search

V.A Extensive margin

I begin by estimating the parental wealth effect on college graduates' probability of ever having searched for a job at the time of the survey. One can consider a decision whether to search as the extensive margin of the job search (Faberman et al., 2022). The outcome variable is a dummy that equals 1 if an individual has ever searched for a job, and 0 otherwise.[23]

[23]The GOMS directly asks survey participants whether she has ever looked for a job around the time of college graduation. In my estimation sample, 41.4 percent of graduates reported that they have never searched for a job. However, 57.9 percent of individuals without job search experience reported that they were working at the time of

Table 3 summarizes the estimation results. Column 1 presents the estimate from the specification given in equation 1. Column 2 shows the result from my preferred specification, which adds GPA to column 1. Column 3 further controls for an additional set of individual characteristics that might be endogenous to parental wealth, including dummy variables for dual degree holders, student loan take-up, work experience, study abroad experience, and a score for the test of English for International Communication (TOEIC).[24] The results are very similar across specifications, indicating that a 10 percent increase in parental housing wealth decreases their children's probability of having searched for a job by around 5.3-5.6 percentage points, or by 5.8 to 6.4 percent relative to the mean job search rate in my estimation sample.[25] The estimates are statistically significant at the 5 percent level and consistent with the previous studies documenting the negative effects of housing wealth on labor force participation (Fu et al., 2016; Zhao and Burge, 2017; Li et al., 2020). Given that Fu et al. (2016) estimate that female homeowners' labor market participation decreases by 1.37 percentage points when the value of their own housing increases by 100,000 yuan, the estimated impact is subtantial. The Kleibergen-Paap F-statistic is large enough to alleviate concerns about weak instruments.

Next, I split my estimation sample into two groups based on their household income at the time of college entry and explore whether the effect of parental housing wealth differs across the income groups. Column 4 and column 5 present estimates for low-income graduates and high-income graduates, respectively. Parental housing wealth negatively affects the probability of having job search experience for both groups of individuals, but the effect is larger and only marginally significant for high-income children. The results may reflect that low-income families cannot afford the luxury of letting their college-graduated kids to remain out of labor force. About 84.7 percent of graduates that have never looked for a job in the sample were either already enrolled in school or about to enroll in school. Additional investment in human capital can result in higher wage premium in the future, but it might be very costly for low-income households. The reminder

the survey, which does not make sense. This is because many activities aiming to obtain a job are not considered a job search in the GOMS. Those activities include job-related exam preparation such as civil service exams and a job search through informal networks. Inconsistent reporting behavior can be another reason. In the following analysis, I define individuals who were 1) working, 2) looking for a job, 3) waiting for an assignment, 4) attending institutions for job-preparation around the time of survey as having a job search experience.

[24] A dummy for TOEIC take-up is also included to account for missing data for individuals who have never taken the test.

[25] The average value of parental homes in the estimation sample is 283MKRW and this amounts to 246,000USD given the exchange rate of 1,150KRW.

Table 3: The effect of parental housing wealth on job search experience

	(1) Full sample	(2) Full sample	(3) Full sample	(4) Low income	(5) High income	(6) Renters
Housing wealth (in log)	-0.5309**	-0.5408**	-0.5594**	-0.3165	-0.8044*	
	(0.2685)	(0.2551)	(0.2688)	(0.2775)	(0.4471)	
3-year changes in home price						0.0043
						(0.0245)
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Graduation time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
College fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Grade point average	No	Yes	Yes	Yes	Yes	Yes
Qualification controls	No	No	Yes	No	No	No
Regional time trends	No	Yes	Yes	Yes	Yes	Yes
R^2	-0.0296	-0.0285	-0.0213	-0.00770	-0.0518	0.237
F-statistic	86.11	86.17	87.19	34.57	34.94	N/A
Observations	6225	6225	6225	3780	2445	1355

Note: All specifications control for individual characteristics, parental characteristics, and macroeconomic factors. Low-income (high-income) is defined as individuals whose parents make less than (greater than or equal to) 4MKRW monthly. Standard errors are clustered at the municipality level and obtained via 2,000 bootstrap replications. * $p < 0.10$,** $p < 0.05$.

of out-of-labor-force graduates mostly do nothing, which would be an option that is even more expensive.[26]

To control for local economic shocks that can affect housing markets and labor supply decisions of college graduates simultaneously, I include graduation time fixed effects, time-varying provincial-level macroeconomic conditions, and regional time trends in most specifications. To further check whether the results are driven by unobserved macroeconomic factors, I use the sample of college graduates whose parents are renters and estimate a reduced-form version of my preferred specification in column 6. Because renters do not benefit from changes in the house price, this exercise serves a placebo test.[27] The estimate presented in column 6 is positive and statistically insignificant, confirming that the results are not spurious.

Considering the evidence of the parental wealth effect on the job search experience of children, I explore potential channels through which parental wealth lowers the labor force participation in Table 4. First, I examine the parental wealth effect on the reservation wage. GOMS provides

[26]There were two individuals engaging in child care, two individuals being ready for the military service, one individual having a disability, and four uncategorized cases.

[27]Because renters have zero housing wealth, the first-stage relationship cannot be established.

Table 4: Potential mechanism: extensive margin

	(1) Full sample	(2) Full sample	(3) Low income	(4) High income	(5) Renters
Panel A: Reservation wage (in log)					
Housing wealth (in log)	-0.2047	-0.2078	-0.4033*	0.0449	
	(0.1905)	(0.1727)	(0.2100)	(0.3076)	
3-year changes in home price					0.0073
					(0.0193)
F-statistic	86.37	87.41	35.99	33.56	
R^2	0.0543	0.0743	0.0496	0.0535	0.360
Observations	6176	6176	3750	2426	1343
Panel B: Schooling					
Housing wealth (in log)	0.2522	0.2660	0.0294	0.5508	
	(0.3241)	(0.3214)	(0.3353)	(0.4742)	
3-year changes in home price					-0.0151
					(0.0166)
R^2	0.0200	0.0248	0.0247	0.0107	0.255
F-statistic	86.17	87.19	34.57	34.94	N/A
Observations	6225	6225	3780	2445	1355

Note: All specifications control for individual characteristics, parental characteristics, and macroeconomic factors. Low-income (high-income) is defined as individuals whose parents make less than (greater than or equal to) 4MKRW monthly. Standard errors are clustered at the municipality level and obtained via 2,000 bootstrap replications. * $p < 0.10$,** $p < 0.05$.

self-reported data on a minimum annual salary that one is willing to accept around the time of graduation. I convert the annual salary into an hourly wage using information on preferred working hours at the job.[28] The results show that parental housing wealth negatively affects the reservation wage of college graduates. Interestingly, the effect is mostly driven by responses among low-income graduates. For low-income children, a 10 percent increase in parental housing wealth lowers their hourly reservation wage by 4.5 percent.

The theory of labor supply suggests that an individual chooses to work only if the (expected) wage is greater than her reservation wage. If a greater level of parental wealth leads to a reduction in the reservation wage, young individuals should be more likely to participate in the labor market. However, it is worth noting that the GOMS does not ask about an occupation for which the

[28]GOMS asks survey participants "How many days do you prefer to work in a week on average?" and "How many hours do you prefer to work in a day on average?". I multiply the product of the two measures by 52, which is the number of weeks in a year, to compute the hourly reservation wage.

survey participant was looking.[29] Therefore, a lower reservation wage may reflect the difference in the types of job that people aim to find. Indeed, Rothstein and Rouse (2011) show that U.S. college graduates sort into lower-paying, but more rewarding jobs when their credit constraints are relaxed.[30] Moreover, while the reservation wage is measured at the time of graduation, one's job search experience is measured at the time of the survey. This time gap can be as large as two years. If a greater level of parental wealth allows young individuals search longer but adjust their reservation wage to a lesser extent over time, they may have a higher reservation wage at the time of the survey.

Another important factor that affects the extensive margin of job search is schooling. As I mentioned above, schooling is the most important activity for young individuals out of labor force. If a greater level of parental wealth allows their children to get more education, its negative impact on job search experience is not worrysome. Panel B presents evidence of the effect of parental housing wealth on post-graduate schooling. The dependent variable takes 1 if an individual was enrolled in school, and 0 otherwise. The results suggest that parental housing wealth seems to encourage post-graduate enrollment among young adults, and the effect is almost completely driven by high-income graduates. Although the estimate in column (4) is not statistically significant, it mirrors the negative effect of parental housing wealth on their children's job search experience.

The results do not necessarily contradict Lovenheim (2011), who finds that the effect of housing wealth on college enrollment mainly comes from low-income individuals in the United States. For parents, the decision of whether to invest in post-graduate education can be very different from the decision of college enrollment. In South Korea, many people take it for granted that one will go to college after graduating from high school. But the pursuit of advanced degrees is a choice for a group of people who can manage it academically and financially.[31] Unless the gains from their residence are very large, low-income parents may not consider to enroll their children in graduate school. Nevertheless, further investigation is needed to better understand the effects of family resources on post-graduate enrollment.

[29] For example, Krueger and Mueller (2016) use occupation-specific reservation wage to study how individuals adjust their reservation wage over the unemployment spell.

[30] I examine this question further in the next section.

[31] In my estimation sample, about 16 percent of individuals were attending graduate school.

Table 5: The effect of parental housing wealth on time to first job

	(1) Full sample	(2) Full sample	(3) Full sample	(4) Low income	(5) High income	(6) Renters
Housing wealth (in log)	10.4574	9.8882*	10.6843	16.6633	3.0532	
	(6.7810)	(6.0068)	(6.6280)	(12.1158)	(8.3299)	
3-year changes in home price						-0.2169
						(0.3221)
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
College fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Graduation time fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Grade point average	No	Yes	Yes	Yes	Yes	Yes
Qualification controls	No	No	Yes	No	No	No
Regional time trends	Yes	Yes	Yes	Yes	Yes	Yes
F-statistic	81.40	81.32	82.59	27.55	29.24	N/A
R^2	-0.00474	0.0000991	0.00572	-0.0226	0.0232	0.277
Observations	5309	5309	5309	3263	2046	1179

Note: All specifications control for individual characteristics, parental characteristics, and macroeconomic factors. Low-income (high-income) is defined as individuals whose parents make less than (greater than or equal to) 4MKRW monthly. Standard errors are clustered at the municipality level and obtained via 2,000 bootstrap replications. * $p < 0.10$,** $p < 0.05$.

V.B Intensive margin

In the previous section, I provide evidence that parental housing wealth delayed the labor market entry of Korean college graduates. Now I turn to investigate the role of parental housing wealth in determining job search duration of college graduates. The outcome of interest is the time to a first job, which measures the number of months from the job market entry (a year before graduation) to first employment. All specifications include the same set of control variables used in the previous analysis. To understand the effects of parental housing wealth on search duration as the intensive margin of job search, I focus on college graduates with job search experience only. The analysis excludes full-time students because schooling mechanically extends search duration.[32] I also exclude 135 individuals whose search duration cannot be identified due to incomplete information.

Table 5 presents the results. Column 1 to column 3 show that a 10 percent increase in parental housing wealth increases time to first employment by roughly one month, but only the estimate

[32]The GOMS does not ask participants whether they enrolled in school full-time. I treat all individuals in school at the time of the survey as full-time students unless they had a full-time job.

in column 2 is marginally significant. How large is this effect? Most studies in the UI literature document the estimated effect in terms of the harzard rate (Card et al. (2007), for example), but a notable exception is Landais (2015), who shows that a $1 increase in weekly UI benefits prolongs the paid unemployment duration by 0.04 week in the United States. A back-of-the-envelope calculation implies that a 10 percent increase in parental housing wealth in South Korea has the same effect as a $107 increase in the size of weekly UI benefits in the United States.

Next, I explore whether the effect of parental wealth on the duration of search differs across income groups in column 4 and column 5. It turns out that the overall wealth effect on the intesive margin of job search is mostly driven by graduates from low-income families. When parental housing wealth goes up by 10 percent, individuals in the low-income group on average spent 1.67 months more to land a first job. However, parental wealth have no impact on the duration of individuals from high-income families. The results are consistent with the existing evidence, showing that increased assets or UI benefits affect individuals who are likely to be credit-constrained (Card et al., 2007; Chetty, 2008; Basten et al., 2014). Column 6 confirms that the effect does not exist among renters whose housing wealth gains are essentially zero.

Thus far, I use a 2SLS regression to show that a greater level of parental housing wealth allows college graduates to spend more time to find a job. The analysis implicitly assumes that failing to find a job at the time of the follow-up survey is a rare event and occurs for a reason unrelated to housing wealth. Alternatively, I can estimate a survival model to address the right-censoring issue. The Cox proportional hazard model is widely used in the literature because it does not require any assumption about the baseline job finding hazard. However, it is not straightforward to address endogeneity in the Cox proportional hazard model because the model is semiparametric and nonlinear.[33] Instead of estimating the structural parameter, I estimate the following reduced-form stratified Cox proportional hazard model:

$$\lambda_i(t|X_i) = \lambda_0^m(t) exp(\beta_0 + \beta_1 \Delta hprice_{h,j,t} + \Gamma X_i + \phi \Omega_{k,t} + \eta_c + \eta_j + \eta_t + \mu_i) \tag{3}$$

where $\lambda_i(t|X_i)$ is the employment hazard of individual i in month t, conditional on a vector of covariates, X_i, and $\lambda_0^m(t)$ is the baseline hazard specific to college major m.

[33] Control function approach is one way to address potential endogeniety in the survival analysis framework (Terza et al., 2008). However, the notion of endogeneity itself is odd when the model does not have an error term.

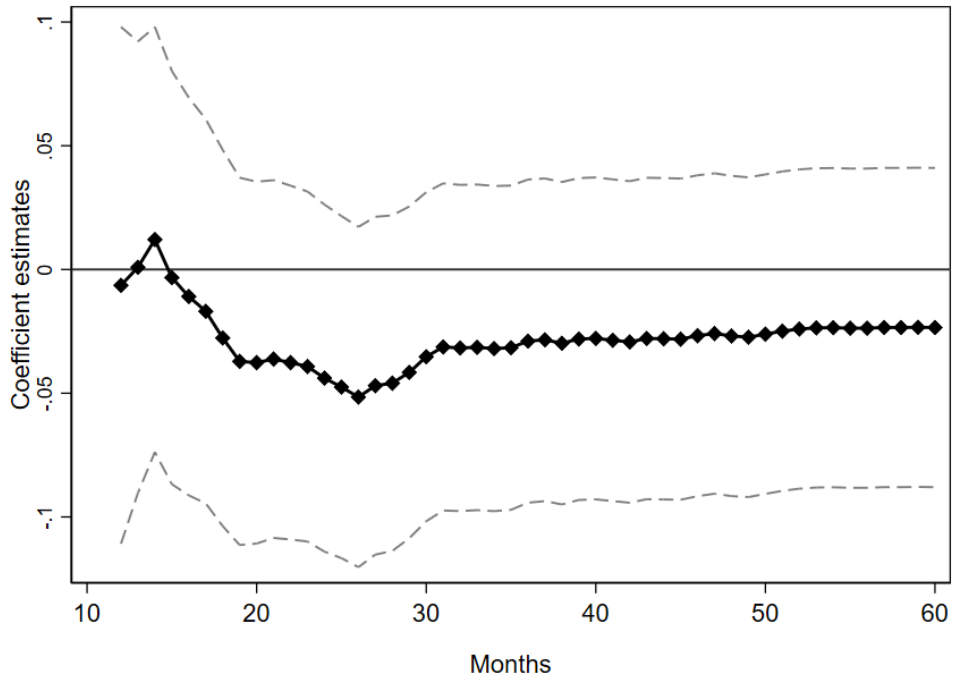
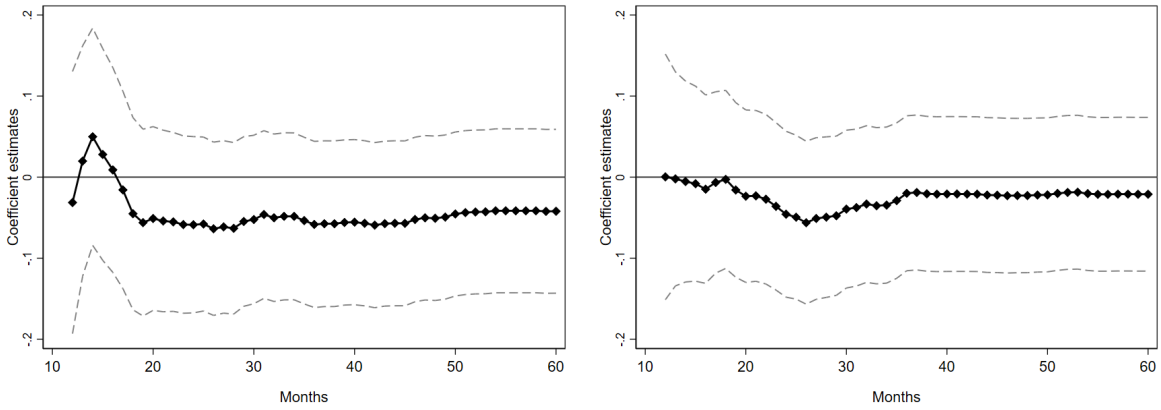


Figure 6: The effect of local home prices on time to first employment

Note: Each diamond is the coefficient estimate for the instrument from the stratified Cox proportional hazard model. Dashed lines are 95 percent confidence intervals associated with the estimates. The X-axis represents the month at which the duration variable is censored. All specifications include the same set of control variables and fixed effects as in the baseline specification (column 2, Table 3).

Figure 6 summarizes the estimation results. The X-axis represents the month at which the duration variable is censored. Therefore, each estimate corresponding to month t captures the effect of parental housing wealth on the job finding hazard during the first i month(s) of job search.[34] Parental housing wealth does not have a substantial impact within the first few months after leaving school, but it gest stronger as time goes by. The wealth effect is largest at 14 months after graduation and then declines slowly. However, the estimated effects are less precise than the OLS estimates. I aslo examine whether the effect varies across income groups in Figure 7. The results confirm that the effects is larger in low-income children, although the distinction is not clear because of the large standard errors.

[34] Chetty (2008) censored duration at 50 weeks to mitigate the influence of outliers. However, given the unusually long duration at the right tail, it is hard to determine ex ante *how long is too long*. Instead of picking a point arbitrarily, I test the sensitivity of the estimate to the choice of censoring timing.



(a) Low-income (b) High-income

Figure 7: The effect of local home prices on time to first employment: by income groups

Note: Each diamond is the coefficient estimate for the instrument from the stratified Cox proportional hazard model. Dashed lines are 95 percent confidence intervals associated with the estimates. The X-axis represents the month at which the duration variable is censored. All specifications include the same set of control variables and fixed effects as in the baseline specification (column 2, Table 3).

There can be multiple channels through which financial resources of parents influence the job search duration of their offspring. Danforth (1979) demonstrates that an increase in wealth raises one's reservation wage, and thereby leading to a longer search. But this is unlikely to be the case because I show that the reservation wage of Korean college graduates actually falls when the housing wealth of their parents increases.

Another channel that can explain the intensive margin response is job-related exam preparation. As I described in Section II.A, exams are one of the most popular ways of screening individuals who want to obtain public-interest jobs such as civil servants or teachers.[35] Because of the very low pass rate and fixed schedules for the exams, the majority of applicants who fail should wait for another a half year or more as long as they want to retake the exams. If changes in parental housing wealth affect young adults' decision to prepare for job-related exams as an alternative to traditional job search, it can prolong the time to first employment.

Table 6 presents some evidence supporting the narrative. The dependent variable is a dummy equal to 1 if an individual has ever prepared for any job-related exam, and 0 otherwise. Column 1 and 2 show that the probability of having prepared for job-related exams goes up by about 5.3

[35]Some exams are for professionals such as lawyers or accountants. However, individuals who prepare for those exams account for slightly over 10 percent of the estimation sample.

Table 6: The effect of parental housing wealth on exam preparation

	(1) Full sample	(2) Full sample	(3) Low income	(4) High income	(5) Renters
Housing wealth (in log)	0.5274*	0.5327*	0.9609**	0.1367	
	(0.2890)	(0.2756)	(0.4869)	(0.4485)	
3-year changes in home price					-0.0357
					(0.0217)
Municipality fixed effects	Yes	Yes	Yes	Yes	Yes
College fixed effects	Yes	Yes	Yes	Yes	Yes
Graduation time fixed effects	Yes	Yes	Yes	Yes	Yes
Grade point average	No	Yes	Yes	Yes	Yes
Regional time trends	Yes	Yes	Yes	Yes	Yes
F-statistic	85.41	85.36	29.31	30.47	
R^2	-0.00326	-0.00330	-0.0288	0.00739	0.347
Observations	5409	5409	3333	2076	1199

Note: All specifications control for individual characteristics, parental characteristics, and macroeconomic factors. Low-income (high-income) is defined as individuals whose parents make less than (greater than or equal to) 4MKRW monthly. Standard errors are clustered at the municipality level and obtained via 2,000 bootstrap replications. * $p < 0.10$,** $p < 0.05$.

percentage points for a 10 percent increase in parental housing wealth. The estimated effect is fairly large, considering that graduates who have ever prepared for a job-related exam consist of 25.4 percent of the sample. In addition, the results given in column 3 and 4 how that the effect is concentrated among low-income graduates. Overall, the results are in line with the intensive margin responses.[36]

Assuming that preparation for job-related exams as revealed preferences for public-interest jobs, the negative effect of parental housing wealth on the reservation wage documented in Panel A of Table 4 may reflect the consequences of occupational sorting to some extent. To test this hypothesis, I add a dummy for exam takers to the reservation wage equation and re-estimate the baseline specification using the low-income sample. The coefficient estimate for the exam taker dummy is -0.0199 with a p-value of 0.048, meaning that the hourly reservation wage of exam takers are two percent lower than their counterpart. But the inclusion of the dummy for exam takers has only a minimal impact on the estimated effect of parental housing effect.[37]

[36] Although I do not report the result, I also test whether parental housing wealth improves the chance of passing exams using the subsample of exam-takers. I do not find evidence that parental housing wealth raises exam pass rates.

[37] The coefficient estimate for parental housing wealth is -0.3875 with a p-value of 0.063.

VI Does greater parental housing wealth improve labor market outcomes?

Given the evidence of parental housing wealth on the extensive margin of job search, I turn to examine whether parental wealth influences young adults' labor market outcomes. Nekoei and Weber (2017) show that the impact of UI benefits on job quality is unclear. While more generous UI benefits allow workers to target better jobs through the consumption smoothing mechanism (selectivity effect), low job availability and skill depreciation associated with prolonged unemployment worsen labor market prospects (duration effect). As a result, better insurance would lead to a better job only if the selectivity effect is stronger than the duration effect. The GOMS provides an extensive set of labor market outcomes of college graduates including salaries at the initial placement. Again, all specifications are the same as the baseline specification except the dependent variable.

Table 7 summarizes the results. First, parental housing wealth lowers the first job wage. Specifically, a 10 percent increase in parental wealth leads to a reduction in the hourly wage at initial employment by about 7 percent for the whose sample, and 12.5 percent for the low-income sample, respectively. The pattern is consistent with the reduction in the reservation wage among low-income children. Pecuniary compensation may not capture the overall quality of the match if those lower-paying jobs provide greater nonpecuniary benefits. To explore this possibility, I estimate the effect of housing wealth on young adults' work intensity measured by weekly working hours in column 2 and the relevance of college major in column 3. Unfortunately, the estimated effects are too imprecise to draw firm conclusions.

Lastly, I examine whether parental housing wealth affects the type of first employment. Parental housing wealth negatively affects the probability of working in a large firm (column 4) and being a regular worker (column 6), and positively affects the probability of getting a public interest job (column 5).[38] The effects seem to vary across income groups, but none of the estimates are statistically significant. Results from the placebo sample are available in the Appendix B.3. I do not

[38] A large firm is a firm hiring 300 employees or more.

Table 7: The effects of parental housing wealth on first job quality

	(1) Wage	(2) Working hours	(3) Major relevance	(4) Big firm	(5) Public job	(6) Regular job
Panel A: All samples						
Housing wealth (in log)	-0.7048*	-1.0564	-0.2587	-0.2668	0.3172	-0.2737
	(0.3806)	(10.2290)	(0.7237)	(0.3522)	(0.3031)	(0.2425)
F-statistic	80.93	81.11	81.19	81.67	81.67	81.18
R^2	0.00325	0.0276	0.0260	0.0162	0.0120	0.00532
Observations	5277	5307	5310	5268	5303	5311
Panel B: Low-income group						
Housing wealth(in log)	-1.2481**	6.1976	-0.2467	-0.6458	0.6270	-0.0956
	(0.6168)	(16.7444)	(1.0902)	(0.5499)	(0.4013)	(0.3674)
F-statistic	27.60	27.52	27.55	30.79	27.31	27.55
R^2	-0.0379	0.0214	0.0295	0.00523	-0.0101	0.00969
Observations	3242	3261	3263	3241	3257	3263
Panel C: High-income group						
Housing wealth(in log)	-0.1244	-7.2090	0.0411	0.1432	0.1744	-0.1441
	(0.4256)	(13.3254)	(1.0535)	(0.5107)	(0.3854)	(0.3609)
F-statistic	29.46	29.33	29.37	28.03	29.43	29.28
R^2	0.0284	0.0279	0.0246	0.0214	0.0272	0.00999
Observations	2035	2046	2047	2027	2046	2048

Note: All specifications control for individual characteristics, parental characteristics, macroeconomic factors, and regional time trends. Low-income (high-income) is defined as individuals whose parents make less than (greater than or equal to) 4MKRW monthly. Standard errors are clustered at the municipality level and obtained via 2,000 bootstrap replications. * $p < 0.10$,** $p < 0.05$.

find evidence that the change in the local house price affects labor market outcomes in the renter sample, except for working hours.

Overall, the evidence implies that while parental wealth extends young adults' transition from college to first employment, the extended search does not come with improved labor market outcomes. In general, this finding is consistent with existing evidence (Card et al., 2007; Lalive, 2007; van Ours and Vodopivec, 2008; LaLumia, 2013; Johnston and Mas, 2018). Interestingly, some results indicate that searching too long may deteriorate labor market outcomes at the beginning phase of one's career. It might reflect that the effect of the negative duration dependence can be very large in a competitive labor market such as South Korea where good jobs are taken quickly

and the stigma of long-term unemployment would be substantial so that it offsets the potential benefits of a longer search.

VII Conclusion

This study explores the effects of parental housing wealth on the job search behavior of Korean college graduates. I exploit within-municipality variation in the 3-year difference in per-unit house prices over time and housing types, which is arguably exogenous to the search behavior of college graduates. I find that an increase in parental housing wealth lowers the probability of having looked for a job after graduation and prolongs the transition from school to work. The extensive margin response is stronger for high-income children who continue to study in school after graduation. On the other hand, the intensive margin response is stronger for low-income children, although the estimate is not statistically significant. Job-related exam preparation offers a partial explanation for their longer time to first employment. Lastly, I find that parental housing wealth does not improve labor market outcomes. This study shows that the role of parental wealth in helping their children get a better job would be limited in a tight labor market such as South Korea.

I am open to an interpretation that some of the insignificant results including the intensive margin response may reflect that monetary support from parents is a substitute for coresidence (Rosenzweig and Wolpin, 1993). This is especially true for low-income families for whom a monetary transfer as parental support is a relatively expensive alternative to shared residence (Kaplan, 2012). If coresidence plays a sufficient role as insurance, the impact of parental wealth would be mitigated. However, parental wealth might have a greater impact on young job seekers who live alone. It is also worth emphasizing that I present the effects of parental housing wealth on the labor market outcomes at the beginning stage of one's career. Topel and Ward (1992) show that the job-to-job transition occurs mostly during the first ten years of one's career in the United States. Given the evidence that job mobility is the key to the wage growth for young workers Liu (2019), parental wealth might improve their children's job quality in the long-run. Unfortunately, the GOMS is not suitable to tackle the question, which I leave for future research.

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Appendix A Additional checks

This section aims to provide additional results regarding the robustness the effect of parental housing wealth on both the extensive and intensive margins of job search. In sum, the extensive margin response is robust to different samples and specifications. The intensive margin response is also robust positive, but none of the 2SLS estimates are statistically significant. Therefore, I will mostly focus on the extensive margin results given in the first column.

First, I test whether the results are robust to the inclusion of occupation fixed effects for both parents in row 2 of Table A.1. Both the extensive and intensive margin responses presented are very similar to the baseline estimates. In row 3, I replace regional time trends with region by graduation time fixed effects to account for the effects of local economic shocks to a region in a more flexible way. The extensive margin estimate is robust to nonlinear regional economic shocks, while the intensive margin estimate becomes somewhat smaller.

Next, I address the concern that the effects of parental wealth are contaminated by the Great Recession, which raised the youth unemployment rate in South Korea by 1.6 percentage points from the last quarter of 2008 to the first quarter of 2009. To check whether my findings reflect the consequences of the Great Recession, I exclude the sample of young adults who graduated from college in 2009. The results presented in row 4 show that removing the sample of 2009 graduates reduces the size of the estimated effects on both margins of job search noticeably, but the negative effect of parental housing wealth on job search experience is still substantial and significant.

Row 5 examines whether my estimates are confounded by delayed graduation. In the main analysis, I assume that all college graduates enter the labor market a year before graduation. However, the gains in parental wealth may allow their children to postpone graduation until they are "ready". If this is the case, endogenous labor market entry would overestimate the extensive margin response but understate the intensive margin of job search. To explore the possibility, I exclude male and female graduates who spent 9 and 7 years or more in college from the sample, respectively. The resulting estimates are very close to the baseline estimates, suggesting that endogenous labor market entry is unlikely to be a serious concern in this study.

Some of the graduates who have looked for a job were students with a full-time job. Those individuals account for about 6.7 percent of the sample used in the duration analysis. In the main

Table A.1: Robustness of the effects of parental housing wealth on job search

Additional checks	(1) Job search experience	(2) Duration
(1) Preferred specification	-0.5408**	9.8882*
	(0.2551)	(6.0068)
F-statistic	86.17	81.32
Observations	6225	5309
(2) Adding parental occupation fixed effects	-0.5281**	9.6036
	(0.2629)	(6.5270)
F-statistic	83.43	77.24
Observations	6223	5307
(3) Add region×graduation time fixed effects	-0.5421**	8.6706
	(0.2489)	(5.6113)
F-statistic	81.14	75.80
Observations	6225	5309
(4) Exclude 2009 graduates	-0.4578**	7.6730
	(0.2218)	(5.2376)
F-statistic	174.7	164.9
Observations	4240	3642
(5) Exclude late graduates	-0.5105**	9.3926
	(0.2584)	(5.8200)
F-statistic	77.01	75.05
Observations	6040	5141
(6) Exclude students		11.0503
		(7.6964)
F-statistic		64.62
Observations		4954
(7) Exclude the bottom one percent	-0.5856**	7.1517
	(0.2378)	(4.7748)
F-statistic	54.25	36.50
Observations	6193	5282
(8) Exclude the top one percent	-0.6164**	13.3615
	(0.2915)	(32.0576)
F-statistic	72.83	9.969
Observations	6209	5258

Note: All specifications control for individual characteristics, parental characteristics, and macroeconomic factors. Standard errors are clustered at the municipality level. * $p < 0.10$,** $p < 0.05$.

analysis, I classify them as in the labor force based on their survey responses, but the distinction between students and workers is not clear-cut after college graduation. In particular, many graduate students working as a teaching or research assistant classify themselves as a full-time worker in the GOMS. In row 6, I examine whether my finding on the intensive margin of job search is robust to the exclusion of student employees. Excluding students observation enlarges both the size of estimate and standard errors.

My final robustness check is motivated by Young (2022), who shows that an instrument can easily become weak when researchers remove only one or two clusters (or observations) located at the end of the instrument distribution. To test whether my instrument is subject to the criticism, I estimate my preferred specifications for both margins of job search without observations located at the bottom one percent (in row 7) or at the top one percent (in row 8) of the distribution of my instrument. I confirm that the negative effect of parental wealth on job search experience is robust to the exclusion of individuals whose parents experienced very large gains or losses from their residential properties.

Although I prefer to interpret the results from 2SLS estimation, there are a couple of gains from estimating the reduced-form equation where the key regressor is the instrument. First, the reduced-form estimation does not necessiate the use of estimated housing wealth, so it removes the concerns related to the 2SLS estimation. Note that the exclusion restriction is still implicitly assumed. Second, the reduced-form estimates are robust to the potential weak instrument problem (Angrist and Pischke, 2009).

For these reasons, I estimate the reduced-form specifications corresponding to each row of Table A.1. The results given in Table A.2 show the same signs as the results from 2SLS estimation. The reduced-form estimates exhibit a similar or stronger statistical significance as well. In general, the results presented in Table A.1 and Table A.2 suggest that my findings are robust to different specifications and unlikely to be contaminated by other causes such as the Great Recession or endogenous labor market entry.

Table A.2: Robustness of the effects of parental housing wealth on job search: Reduced-form evidence

Additional checks	(1) Job search experience	(2) Duration
(1) Preferred specification	-0.0223**	0.4055*
	(0.0089)	(0.2224)
Observations	6225	5309
(2) Adding parental occupation fixed effects	-0.0218**	0.3949*
	(0.0086)	(0.2257)
Observations	6223	5307
(3) Add region×graduation time fixed effects	-0.0228**	0.3625*
	(0.0088)	(0.2132)
Observations	6225	5309
(4) Exclude 2009 graduates	-0.0251**	0.4083*
	(0.0104)	(0.2385)
Observations	4240	3642
(5) Exclude late graduates	-0.0213**	0.3910*
	(0.0091)	(0.1994)
Observations	6040	5141
(6) Exclude students		0.4428*
		(0.2625)
Observations		4954
(7) Exclude the bottom one percent	-0.0265***	0.3613
	(0.0073)	(0.2235)
Observations	6193	5282
(8) Exclude the top one percent	-0.0261**	0.4130
	(0.0115)	(0.2687)
Observations	6161	5258

Note: All specifications control for individual characteristics, parental characteristics, and macroeconomic factors. Standard errors are clustered at the municipality level. * $p < 0.10$,** $p < 0.05$.

Appendix B Additional tables

Table B.1: Variable definitions

Name	Description
Male	A binary indicator for male individuals.
Age	Age at the time of the initial survey.
Major	Dummy variables for 35 college major in the estimation sample.
Number of household members	The number of household members living together, including himself/herself.
Rank	The ranking of college from which an individual graduated.
Time of graduation	Dummy variables for each graduation year-month (from August 2007 to February 2010).
Parental income (*Inc*)	Dummy variables for parental income categories at the time of college entrance described in Table 1.
Parental education	Dummy variables for final education of each parent (less than middle school, middle school, high school, vocational college or more).
Parental occupations	Dummy variables for occupation of each parent at the time of college entrance based on Korean Standard Classification of Occupations (9 categories).
Home ownership	An indicator of parental home ownership that takes 1 if parents own a home, 0 otherwise.
Housing types (*Type*)	Dummy variables for parental housing types (house, apartment, multi-family residential housing).
GPA	A continuous measure of the grade point average.
Loan take-up	An indicator of individuals who took out loans to pay for college.
Dual degree	An indicator of dual degree earners.
TOEIC	Scores for the test of English for International Communication (TOEIC).
I(Toeic > 0)	An indicator of individuals who had ever took the TOEIC test.
Working experience	An indicator of individuals who had ever worked during college years.
Study abroad	An indicator of individuals who had ever participated in language programs in other countries.
Qualification	An indicator of individuals who had earned at least one qualification.
High school types	Dummy variables for types of high schools.

Table B.2: The correlation between the short-run home price changes and informal network use

	(1)	(2)
3-year changes in home price	-0.0002	-0.0004
	(0.0103)	(0.0115)
Municipality fixed effects	Yes	Yes
Graduation time fixed effects	Yes	Yes
College fixed effects	Yes	Yes
Macroeconomic controls	Yes	Yes
Grade point average	Yes	Yes
Province time trends	No	Yes
Observations	6215	6215
R^2	0.0854	0.0856

Note: All specifications control for individual characteristics, parental characteristics, and macroeconomic factors. Standard errors are clustered at the municipality level. * $p < 0.10$,** $p < 0.05$.

Table B.3: The effect of parental housing wealth on first job quality: Placebo test

	(1) Wage	(2) Working hours	(3) Major relevance	(4) Big firm	(5) Public job	(6) Regular job
3-year changes in home price	-0.0370	1.7814*	0.0541	-0.0110	-0.0066	0.0198
	(0.0411)	(0.9848)	(0.0965)	(0.0495)	(0.0214)	(0.0321)
R^2	0.305	0.288	0.310	0.329	0.342	0.278
Observations	1198	1209	1210	1196	1209	1210

Note: All specifications control for individual characteristics, parental characteristics, macroeconomic factors, and regional time trends. Standard errors are clustered at the municipality level. * $p < 0.10$,** $p < 0.05$.