The long-term consequences of youth housing for childbearing and higher education

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Abstract

The lack of housing in areas where young adults have greater opportunities to study and get work complicates young adults’ entry into the adulthood. Difficulties in accessing housing may therefore delay childbearing and may negatively have an effect on education opportunities. To increase housing accessibility, some municipalities have earmarked apartments for young adults. These “youth dwellings” are criticized for being small and not necessarily facilitating family formation and fertility, better suiting students’ needs. We have in this paper compared the long-term pattern of childbearing and education for young adults that entered their housing market through small cheap youth housing with those youngsters that received a rental apartment from the ordinary housing stock. To be able to draw the conclusion that differences in fertility and educational pattern between these two groups comes from the different housing situation and not from differences in in preferences when it comes to childbearing or individual prerequisites for higher education, we have used a geocoded data and information on the individual’s family background as well as a matching technique to create a comparison group that are similar to the treatment group in several aspects. The present results indicate that building affordable housing that is small and space efficient is sufficient and positive if the aim is to promote higher education. Affordable housing is on the other hand not enough to promote childbearing, instead, it seems to inhibit childbearing until there is a possibility of moving on in the housing career. Our result also indicates that the next step need not necessarily be homeownership, as earlier research has indicated. Entering the housing market via youth housing and then being able to move on to rental

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1. Introduction

The increase in adult children living with their parents has raised important questions regarding household formation. Furthermore, the lack of housing in areas where young adults have greater opportunities to study and get work complicates young adults’ entry into the housing market. Earlier research has found that housing and childbearing are closely connected and difficulties accessing the housing market may possibly lead to delayed childbearing (see, e.g., Mulder, 2006, 2013; Pinnelli, 1995; Castiglioni & Dalla Zuanna, 1994; Krishnan & Krotki, 1993; Clark, 2012) and may negatively influence education opportunities (see, e.g., Cunningham, Harwood, & Hall, 2010; Dworsky, 2008; Garriss-Hardy & Vrooman, 2005; Crowley 2003; Conley, 2001; Rosenbaum, 1995). But is affordable housing sufficient to promote childbearing and education?

Leaving the parental home occurs for various reasons, the role of available housing likely differs for each reason. Young adults who want to leave home for education have little latitude for postponement and are likely to move even if they have to accept substandard housing (Mulder, 2006, p. 406). Those who want to leave the parental home for household formation have more latitude to wait until they have found suitable or/and affordable housing. For example, it has been demonstrated that higher housing costs are associated with lower probabilities of leaving the parental home to live with a partner, an association not found for those leaving the parental home to live alone (Mulder & Clark, 2000).

Family formation has been demonstrated to be connected to homeownership tenure. Studies have also found that the decisions to become a homeowner and have children are made simultaneously (Malmberg, 2010, Enström Öst, 2012a, Kulu & Steele, 2013). Furthermore, it has been demonstrated that the likelihood of having children is greater for homeowners and that the transition to first-time homeownership often occurs in anticipation of parenthood (Mulder & Wagner, 2001; Feijten & Mulder, 2002, Mulder, 2006, Kulu, 2008, Holland, 2012). However, having small amounts of equity in one’s home reduces the ability to realize a desired move (Ferreira, Gyourko, & Tracy, 2010). An affordable housing market may enable smooth entrance into the housing market, perhaps via a small cheap apartment, enabling later progress in the housing career to higher-quality housing (Mulder, 2006, 2013). If young people succeed in leaving the parental home and enter the housing market in a small dwelling, this may positively affect childbearing if subsequent access to high-quality housing is easy. However, if such housing is scarce, prices are high, and/or mortgage providers are strict, young people might postpone childbearing until they find a house suitable for family formation, which may reduce the number of children born (cf. Chiuri & Jappelli, 2003). Similarly, Vignoli, Rinesi, and Mussino (2013) find that women who feel more secure about their housing conditions are more likely to plan to have their first child. Simon and Tamura (2009) and Clark (2012) have explicitly investigated the effect of housing costs
on childbearing. Both studies show that first birth is significantly delayed in an expensive housing market. Liu and Clark (2016) demonstrates that an increase in the cost of renting is predicted to decrease the number of children born by renting households. However, the effect of higher house price is ambiguous and depends on the initial holdings of housing and the willingness to substitute between children and other goods.

The housing market in Sweden, especially in the capital Stockholm, is increasingly difficult for young adults to enter (Bokriskommittén, 2014; Swedish union of tenants, 2015). This market is characterized by increasing prices and housing costs and by housing construction that has lagged behind population growth (The Swedish National Board of Housing, Building and Planning, 2013). Queues to obtain rental apartments are growing and cooperative apartment prices are high. Studies indicate that a generation of young people may have little or no chance of accessing the housing market unless they are rich, well paid, or/and have generous and wealthy parents (cf. Enström Öst, 2012b).

Fertility research commonly relates the relatively high Swedish fertility to the characteristics of the Swedish welfare regime that, for example, may promote female labour-market attachment by making it easier to combine work and family life (see, e.g. Andersson & Scott, 2007). However, along with indications of an inaccessible housing market for young people, the average age at which women bear their first child has increased in Sweden by approximately one year over a five-year period (cf. Andersson, 1999, 2000; Statistics Sweden, 2011). Recent years have also seen reports of students in higher education being forced out of larger cities, such as Stockholm, because of difficulties finding accommodation. To try to increase the accessibility of the housing market, housing projects targeting young adults have been started in Sweden. Several municipalities have earmarked small apartments for young adults to help them compete for an access to rental apartments.

By examining a housing project for young adults in Stockholm, initiated as early as 1996, this study advances our understanding of whether building small apartments for young adults may solve problems related to housing shortage for young. This study will investigate the causal effects of youth housing on higher education and parenthood. To our knowledge, no earlier studies have this focus.

The dataset for this study contains information on young people who gained access to the housing market in 1996 via a particular youth housing project in Stockholm. This study explores the development of their fertility pattern and education level during a time period of 14 years after they entered the housing market and compares them with the fertility and educational pattern of a matched group of young people similar in several respects. Matching is used to evaluate the effect of youth housing by comparing those young adults that moved into the youth house in 1996 with those young adults that moved into an ordinary rental apartment the same time period. The goal of this matching procedure is, for every young adult that moved into the youth house, to find at least one young adult with similar observable characteristics against whom the effect of youth housing can be assessed. With the data available for this project we can match on explanatory variables five years before the youth house was defined. By this matching procedure, it enables a comparison of outcomes among young adults moving into youth housing and young adults that moves into the ordinary rental housing stock to estimate the effect of youth housing reducing bias due to confounding.

The present result indicates that having access to small youth housing reduces the probability of becoming a parent. However, if the rest of the housing market is mobile, i.e., enables young adults to move on in their housing careers, the total effect on becoming parent is positive. The effect from living in youth house on completing higher education is positive and independent of
the mobility of the rest of the housing market. This result confirms that the housing market has repercussions for both the fertility and the educational patterns.

The paper is organized as follows: The next section discusses the theory of household formation and the Swedish housing market during the study period and describes the studied youth housing case. Section 3 presents the data and the empirical strategy and Section 4 presents the results. The paper ends by presenting the conclusions and discussing the policy implications of the present findings.

2. Background

2.1. Theory of housing and household formation

A large body of empirical work emphasizing the role of life course events on mobility, such as leaving the parental home and get birth to a child (Clark & Dieleman, 1996). Transition to life stages involving higher levels of commitment, such as parenthood, lead to requirements for long-stay housing and to changing preferences over dwelling attributes. However, desires for mobility may be prompted by a wide range of life events, but desires cannot always be realized. Income and wealth constraints, transactions costs that vary with tenure, social ties, the supply of dwellings and the functioning of the housing and mortgage markets all affect whether a desired move will in fact be realized (Kiel, 1994; Linneman & Wachter, 1989; Stein, 1995; Venti & Wise, 1984; Wheaton, 1990; Helderman et al. 2004; Belot & Ermisch, 2009; Ermisch & Washbrook, 2012).

Mulder (2006) has explored the relationship between housing and household formation. Obviously, to move from parental homes and form households, young people need somewhere to live. In a well-functioning housing market, housing demand equals housing supply and all households can access housing that meets their needs. However, housing prices, housing supply, and the ability to obtain housing loans are limiting factors, especially for young adults who have had limited time to accumulate savings for home down payments. Some young adults may therefore postpone household formation if they cannot find suitable affordable housing. The degree to which the availability of housing affects household formation, however, probably depends on the urgency with which people want to form new households. Young adults who need to move, for example, for work or higher education, might have little latitude for postponement and may therefore move even though they must accept substandard housing. However, those moving to cohabit, marry, or have children may have more latitude to wait until they find suitable housing. Furthermore, young people who succeed in leaving parental homes, for example, to live in student housing or smaller apartments, might still postpone childbearing if they think housing of a certain quality is a precondition (see, e.g., Ineichen, 1979, 1981; Ström, 2010). Lovenheim and Mumford (2013) also find a statistically significant positive relationship between house price changes and fertility for homeowners. However, no statistically significant negative relationship between house price changes and fertility was found for renters. Dettling and Kearney (2014) find that high housing prices have a negative effect on the fertility of renters but a positive effect for home owners.

2.2. The Swedish housing market

The Swedish housing market has three dominant tenure forms: single-family housing, cooperative multi-family housing, and multi-family rental housing. All rental housing units are subject to rent control. In the case of cooperative housing, the property is owned by a cooperative asso-
Each resident owns a share of the cooperative and occupies an apartment with tenancy rights nearly as strong as those of full ownership. Cooperative housing is traded on an ordinary free housing market and in practice is regarded as a form of owner-occupied housing, although this is not precisely correct from a judicial perspective. The standard of housing is generally high in Sweden, irrespective of tenure type.

The housing market in Sweden has undergone several gradual and substantial changes in recent decades. The government housing policy of granting substantial subsidies to all new housing construction changed in the early 1990s, and subsidies were gradually phased out over a decade without being replaced with other investment incentives. This has resulted in the low production of new housing of all types, and housing construction has lagged population growth since 1991, as well as very high house prices and housing costs.

Swedish house prices increased by over 200% in the 17 years from 1996 to 2013, a period when general consumer prices increased by only 60%. Furthermore, the price level of houses in the first quarter of 2015 was 12 percent higher than in the first quarter of 2014. However, this trend is even stronger in the market for cooperative apartments where the prices was 17 percent higher during the first quarter of 2015 than in the corresponding quarter of 2014 (The Swedish National Board of Housing, Building and Planning, 2015). After the 1991 tax system reform, which led to sharply increased rents (Englund, Hendershott, & Turner, 1995), the vacancy rate in the rental sector started to climb and was quite high by 1998. Since then, vacancy rates have decreased and today several counties in Sweden report a housing supply shortage (The Swedish National Board of Housing, Building and Planning, 2015). In 2015, only 40 percent of Sweden’s young adults lived in a home of their own. This is the lowest percentage ever measured in Sweden (Swedish union of tenants, 2015). Furthermore, in 2015, 20% of young adults who had children lived with a relative, in a rented room or in a student residence.

Stockholm is the largest and most dynamic regional housing submarket in Sweden; it is Sweden’s most heterogeneous in terms of tenure forms, price variation, and neighbourhood structure, though, from an international perspective, it is comparatively small, homogenous, and easy for housing consumers to conceive of and analyse. The official recommendation to those who want a rental apartment in inner Stockholm is to register as an applicant and stay on a waiting list. Over the last two decades, in-migration to Stockholm has increased substantially. With population growth substantially exceeding housing supply growth, the Stockholm housing market is now suffering from a pronounced housing shortage (Andersson & Söderberg, 2012). About 520,000 people were waiting for an apartment in Stockholm County in January 2016 and the average waiting time for a rental apartment in the region exceeds eight years. When it comes to student housing, approximately 80,000 students are waiting for only 12,000 student dwellings.\(^1\)

2.3. “Youth house”

In 1995 a housing company in Stockholm decided to earmark an entire 150-apartment property in inner Stockholm for young adults aged 18–25 years. These apartments had formerly been earmarked for nurses working at the nearby hospital. The apartments were all small, i.e., 30 square metres in floor area comprising one room with a kitchenette, and were deemed fit for youth by the housing company. Earmarking these apartments for young adults therefore required no major or costly renovations by the housing company.

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\(^1\) Source: The Stockholm Housing Service.
The property, located in inner Stockholm and built in the 1950s, has been subject to no default-enhancing renovations since completion. To obtain one of the units, which are all rental apartments, young adults must apply at the housing company or at the housing service that allocates vacant rental apartments in Stockholm. Applicants aged 18–25 years who register interest and wait the longest will receive a vacant apartment.

The rents for these youth apartments could be considered quite low, especially relative to the costs of the housing alternatives available to these young adults. Most rental apartments in that same area but in the ordinary housing stock, i.e., not earmarked apartments, have undergone default-enhancing renovations with the result that their rents have increased significantly. The waiting time for such apartments is over 15 years, indicating that this is an attractive area to which young adults without the possibility of obtaining an earmarked apartment would normally have difficulties gaining access, unless they can buy an apartment, which is very expensive. A one room rental apartment in the ordinary housing stock is also on average 10 square metres larger than the apartments in this Youth House.

3. Data and empirical strategy

3.1. Data and sample

The dataset is extracted from a database provided by Statistics Sweden. This database contains information on all individuals who have resided in Sweden, including their demographic and socioeconomic situation as well as geocoded data with coordinates and neighbourhood area codes for where the individuals live. Using this database, it is possible to link records between individuals and generations, because the data include a household identity code and, for every individual born after 1932, a specific identity code for the individual’s mother and father.

The sample used in this study consists of young adults aged 18–25 years who moved into the property earmarked for young adults (“Youth House”) in Stockholm in 1996. These individuals were defined by identifying the geographic coordinates of the property, which is located near a large hospital and is surrounded by a green area. No other residential properties are located immediately adjacent to the Youth House. Since we in our data also have the geographical coordinates for everyone, we have been able to define the young adults living a maximum of 30 m from the property geographical coordinates in 1996, i.e., those 112 young adults aged 18–25 years who moved into Youth House in 1996.

This group of young adults will constitute the treatment group of this study. We will follow them in our data until they have a first child, complete their higher education, or fourteen years have elapsed (i.e., until 2010). Their childbearing and education patterns will be compared to those of a matched group of young adults, i.e., a comparison group of young adults similar to members of the treatment group in several respects but who did not move into youth housing. The matching procedure for defining the comparison group of young adults is explained in the next section.

3.2. Propensity score and matching

We are in this paper interested in comparing the long-term pattern of childbearing and education for young adults that entered their housing market through small cheap youth housing with those who did not and instead received a rental apartment from the ordinary housing stock. However, those individuals that choose to live in small cheap youth housing may differ from those that prefer
other rental apartments in terms of different attitudes towards education and family formation, for example. A simple comparison of their education and childbearing pattern would then be biased by these confounding variables. This confounding by indication is almost invariably present in non-randomised studies.

Rosenbaum and Rubin (1983) proposed the use of propensity scores as a method for allowing for confounding by indication. Propensity may be defined as an individual’s probability of being treated with the intervention of, in this case, entering the housing market through youth housing, given the information available about that individual. The propensity score provides a single metric that summarises all the information from the explanatory variables. Individual subjects may have the same or similar propensity scores, yet some will start their housing career in youth housing and others will not. An assumption of propensity score analysis is that a fair comparison of treatment outcomes can be made between subjects with similar propensity scores who either did or did not start their housing career in youth housing. The propensity score may be estimated for each subject from parametric regression in which the treatment is the dependent variable. A feature of this approach is that explanatory variables are selected based on their ability to predict exposure to the intervention of interest.

Matching is a popular approach employed to include propensity scores in the analysis, and empirical examples can be found in very diverse fields of study. Matching requires that each treated individual is matched with one or several individuals having the same or similar propensity score. By contrasting the outcomes between treated and untreated sets of individuals with similar propensity for treatment, we can estimate the average treatment effect.

3.2.1. Strategy used

To create a balanced (see, e.g., Rosenbaum and Rubin 1983) comparison group of young adults in this study, we use the following strategy.

First, we identify where the individuals who moved into the Youth House in 1996 grow up, i.e. we identify the geographical coordinates for the individuals’ parental homes five years before they moved into the Youth House, i.e. in 1991. We then identify all young adults under 25 years old, with no children and with no higher education, who lives within 100 m of each individual in the treatment group in 1991. The propensity scores, i.e. the probability of entering the housing market through Youth housing, are estimated for all these youngsters as well as for the treated. The propensity score has been estimated using a Probit model in which the dependent variable is the probability of moving into the Youth House in 1996. The covariates included in the model are sex, age, and final primary school grade as well as family income, parental homeownership status, and whether the parents live in single- or multifamily housing. All covariates refer to the situation in year 1991, five years before the Youth House was defined.

After having estimated the propensity scores for all youngsters, we perform a 10 nearest-neighbor matching to identify those young adults under 25 years old with no children and no higher education living close to each individual in the treatment group with a similar propensity score and five years before the Youth House was created. Nearest-neighbor matching identifies a control case with a propensity score closest to that of each treatment case (see, e.g., Gu & Rosenbaum, 1993). Here, we match with replacement, meaning that after a control case is used as a match, it is put back into the sample, and can be used again to match other treated units as well.

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2 We also estimated a logit model to compute the propensity scores; this did not alter the results.
Table 1
Balance of the variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean, treatment group</th>
<th>Mean, comparison group</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex [female = 1 and male = 2]</td>
<td>1.56</td>
<td>1.58</td>
<td>−0.19</td>
</tr>
<tr>
<td>Age [year]</td>
<td>20.78</td>
<td>20.82</td>
<td>−0.14</td>
</tr>
<tr>
<td>Final primary school grade [min = 1 and max = 5]</td>
<td>3.18</td>
<td>3.08</td>
<td>0.14</td>
</tr>
<tr>
<td>Family income [SEK/year]</td>
<td>711.54</td>
<td>727.49</td>
<td>−0.22</td>
</tr>
<tr>
<td>Parental homeowner status [Owned housing or</td>
<td>0.38</td>
<td>0.37</td>
<td>0.06</td>
</tr>
<tr>
<td>cooperative = 1, rental = 0]</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parents live in single-family house [Single-family house = 1, multi-family house = 0]</td>
<td>0.30</td>
<td>0.29</td>
<td>0.17</td>
</tr>
<tr>
<td>N</td>
<td>112</td>
<td>985</td>
<td></td>
</tr>
</tbody>
</table>

Rubin’s B = 5.7
Rubin’s R = 1.01

After this matching procedure, we have tested whether the treated and control groups are balanced with respect to the observed characteristics. The result is presented in Table 1.

Table 1 show the means of the variables for the treatment and matched control groups and our balancing test of the explanatory variables cannot reject equality of means between the treated and the matched comparisons; the t-values indicate no significant differences between these groups, indicating the presence of assessed balance. With 112 individuals in the treatment group and 985 in the comparison group, 170 of the comparisons appear more than once in the matched data. For a sample to be considered sufficiently balanced, Rubin (2001) recommends that Rubin’s B, i.e., the absolute standardized difference of the mean linear index, of the propensity score between the treated and (matched) control groups, be less than 25 and that Rubin’s R, i.e., the ratio of the variance of the propensity score index, between the treated and (matched) comparison groups, be 0.5–2.0. Both those recommendations are fulfilled, so the matching procedure is deemed satisfactory.

3.3. Empirical strategy

A Cox proportional hazard model is used to estimate the transition to parenthood and completion of higher education. A Cox regression model requires no assumption as to functional form and is not biased by right censoring. The dependent variable used in the empirical analysis is the hazard rate:

$$h(t; X(t)) = \lim_{\Delta t \to 0} \frac{P(t, t + \Delta t \geq t; X(t))}{\Delta t},$$

where \(T\) is the time (year) of the birth of a child or of completing higher education, \(t\) is any fixed point of time under risk, and \(p(t, t + \Delta t)\) is the probability of the event occurring in interval \((t, t + \Delta t)\). \(X(t)\) is the vector of covariates. The variable of main interest is a treatment variable indicating whether the individual moved into Youth House in 1996, i.e., whether the individual belongs to the treatment group, or whether they instead moved into the ordinary housing stock.

We will also include variables indicating when an individual moved from Youth House and to which tenure type he or she moved, i.e., other rental apartment, cooperative apartment, or owned housing. 78 percent of the individuals in the treatment group moved from the Youth House during the observation period. About 40 percent of those moved to cooperative or owned housing.
Note that, after matching a sample, one can simply use the difference between the treatment and control groups to estimate the average treatment effect. However, even if we have a matched comparison group, we still want to check whether other variables not included in the matching procedure may, over time, affect the childbearing decision or the decision to become educated, differently between the treated and the compared subjects. These variables are welfare benefits, income from work, and income from capital. However, including these covariates did not alter the result for the treatment variable or the conclusions of this study.

Young adults who remain childless or do not complete higher education are censored at the end of the observation period, i.e., in 2010.

When modelling a Cox proportional hazard model, a key assumption is the proportional hazards. Accordingly, we will perform some diagnostic tests for non-proportionality and estimate parametric models, i.e., the exponential and Weibull models.

4. Analysis

4.1. Becoming parent

Here we report the results of the Cox proportional hazard models. The tables present the hazard rates rather than the coefficients themselves. A hazard rate above 1 indicates increased risk and a hazard rate less than 1 decreased risk. The variable of main interest in all tables is Youth House, a dummy variable indicating whether the individual moved into Youth House in 1996, i.e., whether the individual belongs to the treatment group. Other variables of interest are, as earlier mentioned, a dummy variable indicating the time point when an individual first moved from Youth House (i.e., Youth House moved) as well as dummy variables indicating the type of tenure to which the individual first moved (i.e., Youth House moved to rental = moved to another rental apartment, Youth House moved to coop = moved to a cooperative, and Youth House moved to own = moved to owned housing).

Table 2 presents the results of the model with becoming parent as the outcome variable. Models 1 and 2 present the model results including a variable indicating the time the individuals move from Youth House. The results indicate that living in Youth House has a large significant and negative effect on childbearing comparing to those that instead moved into the ordinary housing stock, a result that is stable even when including covariates in the model. The hazard of becoming parent while in Youth House is 0.12. However, moving from Youth House greatly increases the hazard (a hazard of about 17) of becoming a parent, indicating the importance of a mobile housing market. This result remains when controlling for the type of tenure to which subjects move when they leave the Youth House (Models 3 and 4). The hazard of becoming parent are, as expected, largest for ownership. However, it is also surprisingly higher for those that move to cooperative apartments than for those that move into a rental apartment in the ordinary housing stock, a hazard of about 26 compared to 15 for rentals. The results are stable though the sample is quite small and even when including covariates in the models.

4.2. Higher education

Table 3 presents the results of the education model, i.e., the outcome of completing higher education. Here, unlike in the childbearing case, we observe a significantly increased risk of completing higher education for the treatment group, i.e., a positive effect of Youth House on higher education, corresponding to a hazard of approximately 2.6.
Table 2
Cox proportional hazard model – outcome becoming parent.

<table>
<thead>
<tr>
<th></th>
<th>Model 1</th>
<th>Model 2 with covariates</th>
<th>Model 3</th>
<th>Model 4 with covariates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Youth House</td>
<td>0.125*** (0.073)</td>
<td>0.124*** (0.072)</td>
<td>0.124*** (0.072)</td>
<td>0.124*** (0.072)</td>
</tr>
<tr>
<td>Youth House moved</td>
<td>17.455*** (10.408)</td>
<td>17.025*** (10.056)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Youth House moved to rental</td>
<td>–</td>
<td>–</td>
<td>15.153*** (9.170)</td>
<td>14.833*** (8.880)</td>
</tr>
<tr>
<td>Youth House moved to coop</td>
<td>–</td>
<td>–</td>
<td>25.580*** (16.847)</td>
<td>26.019*** (16.960)</td>
</tr>
<tr>
<td>Youth House moved to own</td>
<td>–</td>
<td>–</td>
<td>29.143*** (21.457)</td>
<td>27.240*** (19.947)</td>
</tr>
<tr>
<td>Covariates</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>No. of spells</td>
<td>6066</td>
<td>6066</td>
<td>6066</td>
<td>6066</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses. *** Significant at the 0.01%, ** 1%, and * 5% levels.
However, the variable indicating a move from Youth House was not significant in this case, indicating that a mobile housing market seems unimportant to the promotion of higher education. This result remains when controlling for the type of tenure to which subjects move (not presented here). None of those variables were significant.

4.3. Sensitivity tests

All the models were also estimated using the exponential and Weibull models. The Weibull model is more general and flexible than is the exponential model and allows for hazard rates that are non-constant but monotonic. The results of both these models were in line with those of the Cox model presented in Sections 4.1 and 4.2.

As already mentioned, a key assumption when testing such models concerns the proportional hazards. We accordingly performed the Schoenfeld residuals test, developed by Therneau and Grambsch (2000), to test the proportional hazard assumption. We found no evidence that the models with higher education as the outcome violated the proportional hazard assumption, nor that the models with the outcome childbearing that did not include the variable indicating a move from Youth House violated the same assumption. For the other models, the results of the Schoenfeld residual test indicated non-proportional hazards. One solution to this potential problem is to interact the variables displaying signs of non-proportional hazards with the natural log of time (Box-Steffensmeier & Zorn, 2001, p. 978) to explicitly allow the effect of the variable to vary across time. We did this for all variables that displayed signs of non-proportional hazards; this, however, did not alter the results. All the variables of interest were still highly significant, with the same estimate size as with the Cox model.

5. Conclusions and policy implications

The point of departure of this study was to examine the effect of youth dwellings, i.e., apartments earmarked for young adults, on young adults’ childbearing and education patterns. Youth dwellings are often small and lack proper kitchen facilities, and therefore do not necessarily facilitate family formation. If access to higher-quality housing is difficult because of scarcity, high prices, and strict mortgage provision, young people might postpone childbearing if housing of a certain standard is desirable when forming a family. However, young adults who leave the parental home for education may have little latitude for postponement and may therefore obtain an education despite living in substandard housing.

We have in this paper compared the long-term pattern of childbearing and education for young adults that entered their housing market through small cheap youth housing with those youngsters that received a rental apartment from the ordinary housing stock. To be able to draw the conclusion
that differences in fertility and educational pattern between these two groups comes from the different housing situation and not from differences in preferences when it comes to childbearing or individual prerequisites for higher education, we have used a geocoded data and information on the individual’s family background as well as a matching technique to create a comparison group. An assumption of propensity score analysis is that a fair comparison of treatment outcomes can then be made between subjects with similar propensity scores who either did or did not start their housing career in youth housing.

The present results indicate that gaining access to a small, low-rent inner-city apartment earmarked for young adults may promote higher education but negatively affect childbearing unless the rest of the housing market is mobile, i.e., enables young adults to advance in their housing careers. However, the effect of such housing on higher education is independent of mobility in the rest of the housing market.

So, what are the policy implications of our finding? The key policy implications of these results are that:

- Building affordable housing that is small and space efficient is sufficient and positive if the aim is to promote higher education.
- Affordable housing is on the other hand not enough to promote childbearing, instead, it seems to inhibit childbearing until there is a possibility of moving on in the housing career.
- Our result indicates also that the next step need not necessarily be homeownership, as earlier research has indicated. Entering the housing market via youth housing and then being able to move on to rental accommodation in the ordinary housing market also seems to have a positive effect on overall childbearing, although moving to cooperative housing or owned housing has an even larger effect.

These results may lead to a deeper understanding how policy makers may promote childbearing and higher education through the housing market, something that seems to be a necessity to attract and retain younger residents. Small apartments for younger people in an area where most elderly or families with children live may also create a good dynamic and a variety of people. It also creates a broader service and store range and a good basis for public transport.

However, the present results do not allow us to determine the driving force of the results achieved by youth housing. Is it that young adults do not find the general concept of youth housing compatible with childbearing, or is it that the dwellings are small and lack proper kitchen facilities, i.e., the housing size and standard do not meet the quality norms required for childbearing? Or does the relatively low rent make alternative accommodations seem too expensive, creating a lock-in effect that postpones childbearing? Answering these questions requires more data and further research into youth housing.

References


