What mechanisms link house prices to fertility? A multilevel analysis

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Introduction

Fertility levels have fallen in many rich societies since 2010 (Human Fertility Database, 2023). During the same period, strong increases in house prices and rents have resulted in a growing shortage of affordable housing for young adults (OECD, 2022). Although links between house prices and fertility are frequently assumed (Kohler et al., 2002), surprisingly few studies exist that explore the consequences of changes on the housing market for fertility (Mulder, 2013). Moreover, the few studies that are available have not examined the individual-level mechanisms that drive the link between house prices and fertility outcomes. To address these research gaps, we use register data from the Netherlands that contain information on individual and regional housing characteristics on the full population of childbearing age for the period 2006-2022. We hypothesize that fertility has declined (more) in regions where house prices increased (more), and we use data on individuals' housing characteristics and household formation to test different mechanisms that may explain this effect. In particular, the detailed individual-level data at our disposal allow us to include a more comprehensive set of housing characteristics than what has usually been considered, including not only indicators of homeownership but also of the type (e.g. single- or multi-family), size, and cost of housing. The results will provide insights into how developments on the housing market influence fertility trends and can inform policy-makers about how housing policies may facilitate young adults in fulfilling their fertility desires.

Theoretical background

Most studies on the impact of house prices on fertility expect that high or increasing house prices will result in a postponement of parenthood and/or a reduction of completed fertility (Florida et al., 2021; Brauner-Otto, 2023). In line with this expectation, the starting point of our study is the hypothesis that *(H1) individuals who live in regions with high or increasing house prices are less likely to have a child.*

Next, we outline several mechanisms that may drive this negative house price effect. First, in areas and times with high house prices, it is harder to find housing that is perceived as suitable for raising children. Many potential parents wish to fulfil certain housing prerequisites before having a(nother) child, such being a homeowner, having a separate room available for each child, or having access to a garden (Lauster, 2010). Previous studies have shown that fertility tends to be higher in child-friendly housing, such as owner-occupied (Öst, 2012) and single-family homes (Chudnovskaya, 2019). As it becomes more difficult for young adults to attain such child-friendly housing when house prices are high, we predict that *(H2) the negative house price effect on birth*

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rates is partly explained by the lower propensity of young adults to live in child-friendly housing in more expensive housing market regions.

Second, higher house prices require young adults to spend a larger share of their income on housing, which leaves less room for saving and for investing in children (Flynn, 2017). This applies to homeowners who will have to pay higher mortgage payments and other housing expenses, but also to renters whose rents will most likely be higher in areas and times with high house prices, where they are often forced to depend on an expensive private rental sector (Hochstenbach, 2022). A lack of financial resources that can be spent on children will in turn most likely decrease fertility, consistent with traditional economic theories (Becker, 1960) and recent findings (Cowan and Douds, 2022; Van Wijk et al., 2022). We therefore expect that *(H3) the negative house price effect on birth rates is partly explained by the higher cost of housing in more expensive housing market regions*.

Third, high or increasing house prices may not only have a direct effect on fertility, but may also decrease fertility indirectly by preventing young adults from leaving the parental home and by inducing delays in cohabitation (Flynn, 2017). Previous studies have found that higher costs of housing are associated with a lower likelihood of leaving the parental home to live with a partner (see Mulder, 2013, for a review), and we may therefore expect that *(H4) the negative house price effect on birth rates is partly explained by the lower propensity of young adults to leave the parental home and to form unions in more expensive housing market regions.*

Finally, the mechanisms discussed above will likely be most relevant for explaining fertility decisions among renters. In fact, high house prices may even increase fertility among homeowners – particularly among those who bought a home before house prices started to rise – as a result of increases in home equity (Dettling and Kearney, 2014). We therefore expect that *(H5) the negative house price effect on birth rates is stronger among renters than among homeowners*.

Data and methods

We use data from Statistics Netherlands' System of System of Social statistical Datasets, a system of interlinked registers that contains information on the complete population of the Netherlands (Bakker et al., 2014). For each year between 2006 and 2022, we select all individuals who are of childbearing age (ages 15-50 for women and 15-60 for men), for whom we link information on fertility, housing characteristics, wealth accumulation, household and partnership dynamics, and control variables. Some analyses will be restricted to the period after 2012, for which more detailed information on individual-level housing characteristics is available.

In all models, the dependent variable denotes the birth of a child in the year following the measurement of the independent variables. We run parity-specific models to explore variations in the effects on first, second, and third and later births.

House prices are measured as the average sales price of existing homes in the NUTS-3 region in which an individual resides. We will distinguish variation in house prices between regions and within regions over time. Child-friendly housing is measured through indicators of homeownership, the type of housing (i.e. an apartment, terraced house, or (semi-)detached house),

and the property size. The cost of housing is measured using different variables for renters and homeowners. For renters, we link information on whether individuals live in social or private housing to data on the average rent in these types of housing by region. For homeowners, we use individual-level data on the size of the mortgage debt. Household formation is indicated by a variable that distinguishes between individuals who are living in the parental home, living alone, cohabiting, or married.

Several control variables are included in the models. At the individual level, these include age (squared), migration background, educational attainment, educational enrolment, employment status, and income. At the regional level, we add variables that measure unemployment rates and religiosity to control for potential contextual effects that are unrelated to housing. Finally, year dummies are added to control for the time trends in fertility.

Multilevel event history models, with person-years nested in NUTS-3 regions, will be estimated using logistic regression to examine how the parity-specific birth rate depends on housing characteristics at the individual and regional level. Separate models are estimated for men and women. The KHB method (Karlson et al., 2012) will be used to determine the extent to which the house price effect is mediated by the individual-level characteristics. Model 1 includes regional house prices and the control variables. In Model 2, individual-level housing variables that measure homeownership, type of housing, and property size are added to the model. Model 3 adds the indicators on the cost of housing. In Model 4, the variable that indicates household formation is added to the model. Finally, Model 5 adds a cross-level interaction between regional house prices and individual-level homeownership.

Expected results

Register data are prepared for analyses at the moment (fall 2023) and are expected to be ready for use by November/December 2023. In the meantime, preliminary analyses at the national and regional level provide some first indications of the links between house prices and fertility. At the national level, it was found that the association between house prices and the total fertility rate (TFR) changed from positive to negative around 2012, when house prices started to rise rapidly but fertility declined (Figure 1). At the regional level, preliminary results for the 40 NUTS-3 regions in the Netherlands during the 2011-2022 period show that the TFR declined (more) in regions where house prices increased (more). This effect was statistically significant and of moderate size; specifically, a house price increase of €100k (which was not uncommon during this period, see Figure 1) was associated with a decline in the TFR of 0.043 children per woman. These aggregate-level results provide some first evidence for the expectation outlined in hypothesis H1 above that rising house prices are associated with declines in fertility. The multilevel analyses in the present study will show whether these results hold when using individual-level data, how effects differ by parity, and which mechanisms are shaping these associations.

Figure 1 – Development of the TFR and house prices in the Netherlands, 1995-2022

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