Influences of lending growth and house prices on fertility 1992-2020: Evidence from a panel of OECD countries

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Introduction

The aim of this paper is to assess the importance of housing market conditions on fertility trends. More specifically two mechanisms will be explored. First, the effect of house prices, where it is possible to consider both a negative and a positive effect of increasing house prices on fertility. Second, an effect of lending to household. Here a positive effect is expected, on the one hand because favourable credit conditions will make it easier for individuals to acquire a family dwelling, on the other hand because families that increase in size tend to increase their housing consumption, and this will tend to increase housing debt. The latter effect implies that lending will respond to changes in fertility, and thus lending growth should not be seen as influencing fertility. However, lending is also strongly influenced by credit policies and by macro-economic conditions. And this makes it interesting to explore the extent to which lending growth and fertility trends are correlated.

Housing shortages as a possible reason for low fertility has been discussed at least since the 1980s. One example is Rindfuss, Morgan, and Swicegood (1988) “First births in America”. They stress that ”an important component of being able to afford parenthood is being able to afford housing. The United States has a conjugal family ideology that stresses independence of the nuclear family from broader kin networks The young couple must have sufficient resources to rent or, as has become an increasing expectation, to buy suitable and adequate housing”. p. 21. They also include “rapid changes in the cost of housing” as a macro factor that can influence the transition to parenthood, p. 38, as well as period fertility rates, p. 93. And they include increases in housing prices and rising interest rates among the factors that could have produced declines in first birth probabilities in the 1970s, p. 118. “First births in America” is a highly cited book in the demography and family studies literature. Still, in the citing literature the question of housing affordability is seldom raised. Prominent exceptions include (Billari & Liefbroer, 2007; Mills, Rindfuss, McDonald, Velde, & Force, 2011; Sobotka, Skirbekk, & Philipov, 2011). Instead, studies that focus on employment, income, and education dominate.

The same is true also for (Sobotka et al., 2011). In this paper there is an extensive discussion of how housing availability is an important mechanism for how fertility can be affected during an economic crisis. Still, in their conclusions they fall back to the position that “the most important reason why recession is likely to exert downward pressure on fertility is the rise in unemployment and in job instability”, p. 291. And in the citing literature only a tiny proportion put weight on the housing argument.

A possible reason for this is that concepts such as housing affordability, housing shortages, very expensive housing, or housing availability can be difficult to identify empirically in existing data. An additional challenge is that there are structural differences between housing markets that can impede the formulation of empirical models that are valid across different institutional contexts. As a consequence there are relatively few studies of the relationship between housing availability and fertility over the business cycle, and this can explain why Sobotka et al drop housing considerations from their conclusions.

Earlier studies

Housing

The relationship between housing and fertility has been a topic of growing interest among researchers across various disciplines. This literature review aims to synthesize the findings from the abstracts provided, focusing on the different strands of theories and results, with a special emphasis on the role of financing in driving housing decisions and its impact on fertility.

Housing Affordability and Fertility A significant number of studies have explored the link between housing affordability and fertility rates. Researchers have found that high housing costs can negatively impact fertility decisions, particularly among younger generations (Kearney et al., 2022; Malmberg, 2010; Mulder & Billari, 2010). For example, Mulder and Billari (2010) identified a specific "difficult" homeownership regime, characterized by a high share of owner-occupation and low access to mortgages, which is associated with lower fertility levels. Similarly, Kearney et al. (2022) observed that the decline in U.S. birth rates since the Great Recession can be partially attributed to rising housing costs.

Housing Tenure and Fertility Another strand of research has focused on the relationship between housing tenure (e.g., homeownership, renting) and fexility. Several studies have found that homeownership is positively associated with fertility intentions and outcomes (ICrishnan, 1995; Mulder & Lauster, 2010; Vignoli et al., 2013). For example, Vignoli et al. (2013) showed that Italian couples who feel more secure about their housing situation are more lilkely to plan for a first child in the short run. However, some studies have also highlighted the potential negative effects of homeownership on fertility, particularly when housing costs are high.

Housing Market Dynamics and Fertility Researchers have also investigated the impact of housing market dynamics, such as house price fluctuations, on fertility. The findings in this area are mixed, with some studies suggesting that rising house prices can have a positive effect on fertility through a wealth effect (Lovenheim & Mumford, 2013; Dettling & ICearney, 2014), while others have found a negative relationship due to the increased cost of living (Clarlx, 2012; Pan & Yang, 2022). The heterogeneous effects of housing market dynamics on fertility may depend on factors such as homeownership status, income levels, and local economic conditions.

The Role of Financing in Housing Decisions and Fertility A growing body of literature has explored the role of financing in driving housing decisions and its subsequent impact on fertility. Access to mortgages and other forms of housing finance has been identified as a crucial factor in enabling households to purchase homes and potentially influencing their fertility decisions (Mulder, 2013; Brauner-Otto, 2023). For example, Brauner-Otto (2023) found that access to housing finance is associated with the timing of first births, with the relationship varying across different welfare regimes and housing systems.
Additionally, some studies have specifically examined the impact of mortgage market deregulation and credit supply shocks on fertility. Daysal et al. (2021) found that mortgage rate pass-through has a positive effect on birth rates among households eligible for rate adjustments in the U.IC. and U.S. Similarly, Hacamo (2021) showed that increased access to mortgage credit due to banking deregulation in the U.S. had a positive effect on the total number of children born.

The literature on housing and fertility has revealed complex relationships between housing affordability, tenure, market dynamics, and fertility decisions. The role of financing, particularly access to mortgages and credit supply shocks, has emerged as an important factor in driving housing decisions and subsequently influencing fertility outcomes. However, the effects of housing and financing on fertility can vary depending on the specific socioeconomic, institutional, and cultural contexts of different countries and regions.

Employment

The relationship between economic conditions, especially unemployment, and fertility has been a major focus of demographic research in recent decades. Many studies find that fertility tends to be pro-cyclical, rising during good economic times and declining during economic downturns and recessions (Sobotka et al., 2011; Örsal & Goldstein, 2018). The Great Recession starting in 2008 prompted renewed interest in this topic, with evidence that it led to fertility declines and postponement in many countries (Comolli, 2017; Matysiak et al., 2021).

However, the fertility response varies across contexts. In the Nordic countries, the impact of the Great Recession on fertility was more modest and short-lived compared to other parts of Europe, likely due to strong social safety nets and family policies in those countries (Comolli et al., 2021; Jónsson, 2018). The effect also differs by parity, age, gender, and education level. First births tend to be more affected than higher-order births (Goldstein et al., 2013). Younger and more educated individuals often postpone fertility the most during economic uncertainty (Miettinen & Jalovaara, 2020). Men's unemployment sometimes has a stronger negative effect than women's unemployment (Örsal & Goldstein, 2018).

While national-level economic indicators like GDP and unemployment are commonly used, more granular measures reveal additional insights. For example, Seltzer (2019) found that changes in industry composition and loss of manufacturing jobs had a larger impact on reducing fertility than the unemployment rate itself.

Beyond objective measures, perceived economic uncertainty also plays an important role in depressing fertility (Comolli, 2017; Vignoli et al., 2020). Vignoli et al. (2020) show that individuals' fertility intentions depend on their level of subjective well-being and perceived economic insecurity, not just unemployment itself.

The employment status and earning potential of women is another major factor shaping fertility. As women's labor force participation and earning power has increased, the relationship between women's employment and fertility has become more complex. Andersson (2000) documented pro-cyclical fertility in Sweden, with women's earnings positively related to fertility. However, the type of employment matters - temporary contracts and

unstable jobs are linked to fertility postponement, especially for highly educated women (Alderotti et al., 2021; Cheng & Hsu, 2020).

Policies and institutions also mediate the relationship between economic conditions and fertility. Strong social safety nets, childcare availability, and gender-egalitarian family leave policies can provide a buffer during economic uncertainty (Comolli et al., 2021). Alderotti et al. (2021) find that the negative impact of employment instability on fertility has intensified in recent decades and is strongest in Southern European countries with weaker support systems.

Campisi et al. (2023) use geo-spatial models to demonstrate how the fertility response to the Great Recession varied sub-nationally across Nordic regions based on localized economic and social contexts.

In summary, this literature reveals the dynamic, multifaceted connections between economic conditions and fertility. While downturns generally depress fertility, the impacts vary across time, place, and subgroup based on individual characteristics, perceptions, policies, and local contexts. Continued research using novel data and methods is needed to further disentangle these complex relationships.

Lending Growth as a Determinant of Fertility

While the relationship between house prices and fertility is well-established in spatial analyses, time series data reveal a more complex dynamic. House price trends exhibit greater stability than fertility trends, suggesting that lending growth—rather than house prices in isolation—may better explain temporal variations in fertility. The key mechanism operates through young households' access to family dwellings, mediated by mortgage availability.

Macroeconomic Mechanisms
Housing loan stocks increase when buyers acquire mortgages exceeding sellers' outstanding debt, a condition arising from mortgage amortization or accumulated housing equity. When younger households purchase units from downsizing older households or estates, lending growth facilitates intergenerational housing transfers. Additional pathways include rental-to-ownership conversions, new construction financing, and dwelling expansions. Consequently, elevated lending growth should enhance housing availability for younger cohorts, though this effect may be offset by concurrent house price increases.
However, rising house prices are not uniformly detrimental. Price appreciation can incentivize downsizing among equity-rich households, stimulate construction, and reduce expected ownership costs through anticipated capital gains. Therefore, controlling for house price levels is essential when examining lending growth's effect on fertility.

Microeconomic Considerations
At the household level, assuming stable prices, lending growth indicates a positive flow of new homeowners acquiring family-appropriate dwellings. If inadequate housing constitutes a barrier to childbearing, sustained lending growth should progressively remove this constraint, yielding positive fertility effects.
Moreover, mortgage decisions and fertility intentions are inherently interdependent. When households assume substantial debt to acquire family dwellings, this decision likely reflects coordinated planning regarding current or anticipated childbearing. The temporal correspondence between housing adjustments and family size changes suggests these decisions are not independent over time. Thus, lending growth data indirectly capture household childbearing intentions, functioning as both a macroeconomic indicator and a reflection of fundamental household decisions.

Lending Growth as a Proximate Determinant
Drawing on Bongaarts' framework of proximate fertility determinants—immediate biological and behavioral factors such as union formation, contraceptive use, and postpartum infecundability—lending growth can be conceptualized as a quasi-proximate determinant. While less immediate than traditional proximate causes, lending growth closely tracks housing space acquisition, which typically accompanies family expansion. Critically, lending growth may serve as a more observable indicator of underlying expectations and preferences that fundamentally drive fertility decisions.

Cyclical Dynamics and Policy Implications
Lending growth occupies a central role in business cycle theory, originating with Wicksell's analysis of interest rates and inflationary dynamics. Modern central banks manipulate lending rates to dampen economic fluctuations, creating correlations among macroeconomic variables that complicate causal inference regarding pro-cyclical fertility movements.
Importantly, lending growth responds to policy interventions independent of household-level considerations. Rapid lending growth combined with house price appreciation triggers anti-overheating measures, while recessions prompt lending stimulation. Credit market deregulation can also accelerate lending. When policy shifts influence fertility through lending channels, lending growth approaches a true causal factor.

Empirical analysis

In the empirical analysis we take advantage of existing fertility data, provided by the United Nations and by the Human Fertility Data Base, and of an international collection of financial data: The Jordà-Schularick-Taylor Macrohistory Database. This allows us to estimate both pooled models and panel models of housing market and fertility interactions, using both TFR and parity specific fertility as dependent variables. The pooled analysis using OLS shows a positive effect of lending growth on change in TFR and a negative effect of house prices on TFR, using data for 18 OECD countries for the period 1994-2020. The same pattern is found if country specific effect of lending growth and house prices on change in TFR are estimated, with a somewhat less consistent effect of house prices.

Positive effects of lending growth and negative effect of house prices are also found on first birth intensities using a pooled grouped Poisson regressions on data for 13 OECD countries for years between 1992 and 2020. However, for second birth intensities and third birth intensities the effects of house prices are positive, and the effect of lending growth is negative.

With change in first birth *intensity* as dependent variable and using OLS to estimate country specific effects, the parameter estimates for lending growth are positive but significant (at the 5% level or better) only for 5 out of 13 countries. House prices also have negative estimates for first birth intensities in 9 of 13 countries, 4 of which are significant on the 5% level.

Using Poisson regression to estimate country specific effect on birth parities we find negative effect of house prices on first birth parities (for 10 of 13 countries), but positive effect on second birth parities and third birth parities (for 11 and 10 countries) respectively. For real loan growth the country specific Poisson regression estimates do not provide consistent results across countries.

These results can be summarized as follows. For change in TFR and first birth intensities there appears to be a clear positive correlation with lending growth. Moreover, there is evidence of a negative effect on change in TFR and on first birth intensities from house prices. Similar patterns cannot be claimed for second birth and third birth intensities. Here, house prices instead seem to have a positive effects.

The importance of this finding is that it suggests that the housing market is central for the way fertility changes are linked to macro-economic change. This aligns with findings in the literature arguing the housing availability is a factor that has strong influence of fertility decisions. These findings also have strong potential policy implication. The findings point to increasing housing prices being as a possible explanation for the postponing of first births, especially in metropolitan areas, and that policies that increase the supply of affordable family housing could be efficient for reversing trends towards lower fertility. Moreover, the paper suggest that measures that makes it harder for young individuals to access housing finance can have a negative effect on fertility. Today, potential negative effects on fertility tend not to be included in decision about interest rates and credit market restrictions.

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