



House prices and birth rates: The impact of the real estate market on the decision to have a baby[☆]



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ABSTRACT

This project investigates how changes in Metropolitan Statistical Area (MSA)-level house prices affect household fertility decisions. Recognizing that housing is a major cost associated with child rearing, and assuming that children are normal goods, we hypothesize that an increase in house prices will have a negative price effect on current period fertility. This applies to both potential first-time homeowners and current homeowners who might upgrade to a bigger house with the addition of a child. On the other hand, for current homeowners, an increase in MSA-level house prices will increase home equity, leading to a positive effect on birth rates. Our results suggest that indeed, short-term increases in house prices lead to a decline in births among non-owners and a net increase among owners. The estimates imply that a \$10,000 increase leads to a 5% increase in fertility rates among owners and a 2.4% decrease among non-owners. At the mean U.S. home ownership rate, these estimates imply that the net effect of a \$10,000 increase in house prices is a 0.8% increase in current period fertility rates. Given underlying differences in home ownership rates, the predicted net effect of house price changes varies across demographic groups. In addition, we find that changes in house prices exert a larger effect on current period birth rates than do changes in unemployment rates.

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1. Introduction

This project investigates how changes in Metropolitan Statistical Area (MSA)-level house prices affect household fertility decisions. The conceptual approach is based on an economic model of fertility that recognizes that changes in house prices potentially have offsetting effects on fertility. Assuming that children are normal goods, and recognizing that housing is a major cost associated with (additional) children, an increase in the price of housing will have a negative substitution effect on the demand for children in the current period, all else equal. This is true for both potential first-time homeowners (i.e., current non-owners who would buy a house with the addition of

a child) and current homeowners who might buy a larger house with the addition of a child. On the other hand, for a homeowner, an increase in MSA-level house prices increases home equity. This could lead to an increase in birth rates among homeowners through two channels – a traditional wealth effect and/or an equity extraction effect. In either case, when house prices increase, homeowners might use some of their new housing equity to fund their childbearing goals. The net effect of house prices on aggregate birth rates will depend on individuals' responsiveness along these margins and rates of home ownership.

We are interested in identifying the causal relationship between movements in local area house prices and current period fertility rates. Conceptually, we are examining how short-term fluctuations in house prices affect current period fertility rates, separately for owners and non-owners, all else equal. Our main analyses focus on the housing price cycle of 1997 to 2006, a period of general housing price growth. We additionally separately consider the adjacent housing market cycles characterized by falling house prices. We begin our empirical investigation with a set of ordinary least square (OLS) regressions of MSA-demographic group-level fertility rates on MSA-level house prices interacted with a baseline measure of MSA-group-level home ownership rates, controlling for time-varying MSA conditions, and MSA fixed effects. To address the possibility that other local factors are biasing our OLS estimates we implement an instrumental variable (IV) strategy that exploits exogenous

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variation in house price movements induced by variation across MSAs in their housing supply elasticity, as measured by Saiz (2010).

Both OLS and IV results indicate that as the proportion of individuals in a demographic cell who are home owners increases, an increase in house prices is conditionally associated with an increase in current period fertility rates. This is consistent with a positive “home equity effect” that dominates any negative price effect. The data also indicate that as the proportion of homeowners approaches zero, an increase in MSA-level house prices leads to a decrease in current period fertility rates, which is consistent with a negative price effect among non-owners. In general, the main results hold across race/ethnic groups and are equally driven by first, second, and higher-parity births.

These main results are statistically significant and economically meaningful. Employing our regression estimates in a straightforward simulation exercise, we find that a \$10,000 increase in house prices is associated with a 5% increase in fertility rates in MSA cells with 100% ownership rates. For MSA cells with zero percent home ownership rates, we estimate a corresponding decrease in fertility rates of 2.4%. For an MSA-group, as the home ownership rates increase from 30 to 40%, the net effect of a \$10,000 increase in house prices becomes positive. Under the assumption of linear effects, these estimates suggest that all else held constant, the roughly \$108,000 average increase in house prices during the housing boom of 1997 to 2006 would have led to a 9% increase in births over that time.¹

The main contribution of the paper is to provide an empirical examination of how aggregate movements in house prices affect aggregate level birth rates. First, as an issue of economic demography, it is informative to understand how movements in the real estate market affect current period birth rates, overall and for various demographic subgroups. Second, within the research literature on the nature of the demand for children, an examination of the effect of house prices on the fertility outcomes of homeowners constitutes a useful test of wealth effects. Third, our paper highlights the importance of including housing markets in any model of how economic conditions affect fertility outcomes. In fact, as an empirical matter, we find that changes in house prices exert a larger effect on current period birth rates than do changes in unemployment rates. Fourth, our results potentially speak to the role of credit constraints, and imperfect capital markets, in affecting the timing of fertility decisions. This is an issue that features prominently in the literature on the cyclical nature of fertility timing, as reviewed in Hotz et al. (1997). Our finding of a positive effect among home owners suggests that some individuals may consume out of home equity to fund their childbearing goals. And finally, there is a literature on the tendency of individuals to consume out of housing wealth. To our knowledge, that literature has not previously considered children as a potential “consumption” good in this regard. Our results provide clear empirical support for the idea that house prices impact birth rates in a statistically significant and economically meaningful way.

2. Conceptual framework and related literature

There is a large literature in neoclassical economics investigating the nature and determinants of fertility in developed countries. In the simplest static approach to this question, parents are viewed as consumers who choose the quantity of children that maximizes their lifetime utility subject to the price of children and the budget constraint that they face. Children are conventionally thought to be normal goods, but an empirical puzzle presents itself in both time series and cross-sectional data, which tend to show a negative correlation between income and number of children.

There are two leading explanations for this observed correlation that maintain the basic premise of children as normal goods: (1) the

quantity/quality trade-off (Becker, 1960) and (2) the cost of time hypothesis (Mincer, 1963; Becker, 1965). The first refers to the observation that parents have preferences for both the quantity and quality of children. If the income elasticity of demand for quality exceeds the income elasticity of demand for number of children, then as income rises, parents will substitute away from the number of children, toward quality per child. The second hypothesis attributes the observed negative relationship between income and fertility to the higher cost of parental time experienced by higher income families, either because of increased market wage rates or because higher household income raises the value of parental time in non-market activities. There is a long and active literature that attempts to estimate the effect of changes in family income and of own-prices on fertility.²

There exists a closely related literature investigating the cyclical nature of fertility, which is a literature about fertility timing (e.g., Galbraith and Thomas, 1941; Becker, 1960; Silver, 1965; Ben-Porath, 1973). Changes in the unemployment rate are typically thought to affect the wages of women and their husbands. Under the standard assumption that women bear the primary responsibility for child rearing, it becomes optimal for woman to select into childbearing at times when their opportunity cost is lowest, that is, when economic conditions are least favorable. Another consideration affecting optimal timing with regard to unemployment rates is skill depreciation (Happel et al., 1984).³

In a world with imperfect capital markets and credit constraints, women might not be able to optimally time fertility with regard to opportunity cost and skill depreciation considerations. In particular, though some women might optimally choose to select into childbearing during economic downturns, they might not be able to afford to do this. Schaller (2011) provides a recent examination of this issue and explicitly considers the role of gender-specific labor market conditions. Her results confirm previous empirical findings that increase in overall unemployment rates are associated with decreases in birth rates. In support of the predictions of Becker’s time cost model, she further finds that improved labor market conditions for men are associated with increases in fertility, while improved labor market conditions for women have the opposite-signed effect.⁴

Conceptually, the question of how real estate markets affect childbearing is more straightforward to consider because changes in house prices do not affect the cost of parental time. Our conceptual framework is thus not encumbered by considerations of skill depreciation or opportunity cost of time. We motivate our empirical model and interpret our estimated effects simply in terms of housing costs (which affect the price of childbearing) and housing income effects (which affect ability to consume in the current period). Our focus on current period prices and contemporaneous fertility allows us to look separately for price and “income” effects. Changes in the real estate market are expected to generate price effects because housing costs are estimated as the greatest portion of the annual cost of raising a child: greater than food, child care, or education (Lino, 2007).

² The key empirical challenge in this literature is to find variation in family income or the price of children that is exogenous to women’s (or couple’s) preferences and the opportunity cost of women’s time. Many of these papers are reduced-form in nature, and include examinations, for example, of the effect of direct pro-natalist government payments (e.g., Milligan, 2005; Cohen et al., 2007) and of exogenous changes in income (Lindo, 2010; Black et al., 2011).

³ There exists a class of dynamic or life-cycle models of fertility decisions, which recognize that changes in prices and income over the life cycle may result in changes in the timing of childbearing, even if they do not cause completed lifetime fertility to change. The Handbook chapter by Hotz et al. (1997) provides an overview of these theoretical models. Heckman and Walker (1990) provide an empirical examination of the effect of income and wages on life-cycle fertility using data from Sweden.

⁴ Dehejia and Lleras-Muney (2004) suggest that relatively more white women opt into childbearing during economic downturns than black women; they attribute this difference to credit constraints facing blacks. Neither Schaller (2011) nor we find evidence in the data consistent with this idea. In particular, we find a statistically significant negative relationship between unemployment rates and birth rates among whites and a statistically insignificant relationship among blacks.

¹ The population weighted average home price change for the 154 MSAs in our sample from 1997 to 2006 was \$108,038.

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