

Childcare Support and Regional Fertility Gaps under Monopolistic Competition

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Extended Abstract

1. Motivation

Fertility decline is a structural phenomenon observed across advanced economies. In Japan and other developed countries, birth rates are persistently lower in large metropolitan areas than in rural regions. At the same time, economic activity increasingly concentrates in urban centers due to agglomeration economies. These two stylized facts—urban agglomeration and urban fertility decline—raise an important question: how do agglomeration forces interact with household fertility decisions, and how do childcare support policies operate within such spatial structures?

Existing research has examined fertility responses to income transfers and childcare subsidies. Separately, the new economic geography literature has analyzed how monopolistic competition and transport costs generate spatial concentration. However, few studies integrate endogenous fertility decisions into a spatial general equilibrium framework with agglomeration effects. Moreover, the regional distributional consequences of childcare policies remain underexplored.

This paper addresses these gaps by constructing a two-region general equilibrium model with monopolistic competition and endogenous fertility.

2. Model Structure

The economy consists of two regions, indexed by $i = 1, 2$. Labor is immobile across regions but mobile across sectors within each region. There are two sectors:

1. A homogeneous agricultural sector under perfect competition.
2. A differentiated manufacturing sector under Dixit–Stiglitz monopolistic competition with iceberg transport costs.

Households derive utility from agricultural consumption, a CES composite of differentiated goods, and the number of children. Raising a child requires time, reducing available labor supply. Let τ denote the time requirement per child. Government childcare support reduces

this requirement by s_i , which may vary across regions. The household's time constraint implies a trade-off between labor income and fertility. Firms in the differentiated sector face fixed and marginal costs, leading to endogenous firm entry and region-specific price indices. Larger regions host more firms, lowering the price index and increasing real income.

3. Mechanism

Two opposing forces shape regional fertility outcomes.

First, agglomeration increases consumption variety and lowers the price index in larger regions, raising real wages and consumption utility.

Second, higher real wages increase the opportunity cost of time devoted to childrearing. Since each child requires time, the effective cost of fertility rises with wages.

Under plausible parameter conditions, the opportunity cost channel dominates, resulting in lower fertility in the larger region in equilibrium.

4. Policy Analysis

We analyze a childcare policy that reduces the time requirement per child. Comparative statics show:

$$\frac{\partial n_i}{\partial s_i} > 0$$

Fertility increases in response to childcare-time reduction.

In high-wage regions, the opportunity cost of time is greater; thus, reducing time requirements generates a larger marginal fertility response. When the policy is implemented in the larger region, fertility rises more strongly there than in the smaller region, potentially narrowing regional fertility gaps.

We also compare this policy to direct income transfers. Unlike time-reduction policies, income transfers do not directly affect opportunity costs and are less effective in high-wage regions.

5. Transport Costs and Robustness

When transport costs are low, price index differences between regions shrink. In this case, fertility differences are driven more directly by wage effects. The qualitative result—that childcare time reduction in larger regions reduces fertility gaps—remains robust.

6. Contributions

This paper contributes to three strands of literature:

1. Fertility and family economics, by emphasizing time costs rather than income effects.
2. New economic geography, by embedding endogenous fertility decisions into monopolistic competition models.
3. Regional policy evaluation, by highlighting the spatial distributional effects of childcare policies.

7. Conclusion

The model demonstrates that urban-targeted childcare time reduction policies can increase fertility in large regions and reduce regional fertility disparities. These findings suggest that childcare support can function both as a pronatalist instrument and as a spatial policy tool in economies characterized by agglomeration.

Future research may incorporate interregional migration, dynamic population adjustments, and empirical calibration.