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Population density, fertility, and childcare services from the perspective of a two-region overlapping generations model

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**Population Density, Fertility, and Childcare Services**  
**From the Perspective of a Two-Region Overlapping Generations Model<sup>†</sup>**

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**Abstract**

In countries confronting the issue of low fertility, as Japan is, dual trends showing higher regional population density associated with lower fertility rates are being confirmed. It is therefore an important theme for analysis to deepen discussions related to reducing regional fertility disparities by increasing fertility through the implementation of comprehensive childcare support policies, which might facilitate the striking of a balance between child-rearing and work, even in highly populated regions. As described herein, we constructed a simple theoretical two-region overlapping generations (OLG) with attention explicitly devoted to population density and land price. Using this theoretical setup, we analyzed how the fertility rate is affected by population density and land prices. Our findings are as follows. First, considering congestion costs, the fertility rate is depressed by high population density. However, childcare services might mitigate such effects. Second, enriching regional childcare services raises the relative population density of its region. Third, the optimal regional tax rate to finance childcare services is independent of other regions' regional tax rates and childcare services. Therefore, adopting an optimal regional tax rate is a dominant strategy.

**JEL:** H40; J13; J61; R10; R12; R23

**Keywords:** population density, fertility, congestion, migration, childcare services, overlapping generation (OLG)

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