Measuring the Effects of Growth Controls on New Residential Development (14)

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During the last decade, the state of Maryland was one of the fastest growing states in the United States. In response, the state has implemented an aggressive "smart growth" initiative. One of the most popular smart growth policies, adopted by several counties in the state of Maryland, is an Adequate Public Facility Ordinance (APFOs). An APFO is a spatially delineated land use control that aims to prevent development from occurring in areas where certain public services are at risk of becoming crowded. An example of an APFO is a standard on elementary school capacity which limits the amount of new development at the school district level. Despite their extensive use, very little is known about the effects of these policies.

Over the years researchers have attempted to measure the impacts of land use controls. The key econometric difficulty in this literature results from the fact that the growth controls emerge in a non-random fashion throughout the landscape. This means that not all the areas in a county have the same likelihood of being under moratoria. In the context of adequate public facility ordinances for elementary school, for example, this problem arises because faster growing school districts (and sometimes richer school districts) are more likely to become under moratoria than other school districts in the county. Our major concern is that the decision of adopting such growth controls is clearly endogenous and yet, to date, the entire empirical literature on growth controls has treated them as exogenous variables. As a consequence, previous studies find no impact (and sometimes the wrong impact) of growth controls on the rate of new development.

We overcome these problems using recent "matching methods", as opposed to traditional regression analysis. Matching methods represent a non-parametric alternative to linear regressions. The logic of matching methods is rather simple: First, we match policy areas on the predicted probability of being under moratoria, which is a function of their observed characteristics. Second, once we have the distributions of estimated propensity scores of policy areas that are under moratoria and policy areas that are not, we compare the two densities and measure the extent of their differences. This difference represents the impact of moratoria on new residential development. Unlike traditional regression analysis, this method removes from the analysis policy areas that prior to the adoption of the moratoria are not "similar" in observed characteristics to those that adopt.

We illustrate the advantages of this technique using spatially disaggregated data on new residential development in Howard County, Maryland and comparing the estimates from propensity score matching to estimates based on the standard linear regression specification in the literature.