

Public Abstract

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My dissertation is about using regional economic modeling for economic impact analysis, forecasting, and for better understanding the local economy. In the first essay, I developed a nonspatial version of a community policy analysis model for Missouri counties. The model recognized the intersectoral linkages in the Missouri economy. The model consists of four modules: labor market, demography, housing market, and local public finance. Employment and total personal income drive the model. The model predicts reasonably well that increases in local employment lead to increases in local population, housing demand, local revenues, and demand for public services.

However, by not considering the effects of space, the impact analysis and forecasting capabilities of my first model may not be as accurate as needed. Therefore, in my second essay, I introduce a spatial dimension into my model by specifying and estimating generalized spatial three-stage least squares procedures. The results show significant cross-county interactions within Missouri in terms of the supply of public goods, labor mobility, retail trade, and the choice of residential location.

In my third essay, using South Korean regional data, I compared the forecasting accuracy of non-spatial, spatial lag, spatial error, and spatial lag and error models using in-sample data. I also compared the impact estimates of nonspatial and spatial models. The spatial components appear to improve the accuracy of the intra-county impacts. It appears that the estimated parameters tend to be sensitive to the specification of weight matrices, if the sizes of spatial units are heterogeneous and vice versa.