FORECASTING COUNTY-LEVEL UNEMPLOYMENT ACCOUNTING FOR SPATIAL CORRELATION

Dustin Sweet

Dr. Peter Mueser, Dissertation Advisor

ABSTRACT

This paper analyzes the effect of including a spatial component in models that predict monthly county-level unemployment in Missouri.

The initial analysis seeks to explore the general spatial structure of unemployment using spatial covariance measures, correlation statistics, and Moran's I, which is the most commonly used measure of spatial association. The effects of counties being similar in nature are also considered.

Following these analyses, regression models are estimated that predict monthly unemployment for counties using both spatial and non-spatial, both fitting separate models for each county and model that constrain parameters to be similar across counties. In addition to investigating the importance of spatial ties, models that investigate the extent to which similarities in industry or related characteristics can be used in models.

Finally, the accuracy of out-of-sample forecasts is examined for both spatial and non-spatial models. It is found that while evidence of a spatial component does appear in the results, its ability to contribute to statistical modeling or forecasting accuracy is mixed.