COUNTY-LEVEL DETERMINANTS OF LOCAL PUBLIC SERVICES IN APPALACHIA: A MULTIVARIATE SPATIAL AUTOREGRESSIVE MODEL APPROACH

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Abstract We develop a multivariate spatial autoregressive model of local public expenditure determination based on the maximization of a strictly quasi-concave community utility function. The existence of spatial interdependence is tested for both the spatial error and spatial lag model. The full model is estimated by efficient GMM following Kelejian and Prucha (J Real Estate Finan Econ 17(1):99–121, 1998). The results indicate significant spillover effects among local governments with respect to spending on public services. The OLS estimates of the conventional (non-spatial) model and the corresponding maximum likelihood estimates of the spatial lag and the spatial error models are presented for comparison purposes. The GMM estimates are found to be more efficient.

JEL Classification C31 · O1 · R15 · R51

1 Introduction

Public–private sector interactions are common. For example, to create jobs, governments offer businesses incentives (Gabe and Bell 2004) and government tax, spending,
and regulatory policies affect private location and investment decisions (Bartik 1991, 2003; Drabenstott 2005; Bell et al. 2005). Level and composition of public expenditures and revenues are determined by local economic, demographic, and political characteristics (Inman 1987; Duffy-Deno and Eberts 1991; Fisher and Navin 1992; Falch and Rattso 1997; Merrifield 2000).

Fiscal transfers from higher level governments to lagging places also influence local public expenditures. The standard model assumes that local public expenditures differ across regions only because of differences in per capita income, population density, population, tax base, tax rates, demographic characteristics, labor market characteristics, and other socioeconomic and institutional factors, but theory and causal observation also suggest spatial dependence (Brueckner 2003; Lundberg 2006). Spatial spillovers occur because of policy interdependence or because of spatially autocorrelated shocks (Case et al. 1993).

The tax competition model accounts for spatial interdependence because local governments finance spending through taxing mobile capital. Therefore, their tax base depends on their own as well as other jurisdictions’ tax rates, and strategic interactions result (Wildasin 1986; Wilson 1999; Brett and Pinkse 2000; Brueckner and Saavedra 2001; Revelli 2005; Hayashi and Roadway 2001; Fredriksson et al. 2004). Figlio et al. (1999) find that decentralized welfare benefit setting lead states to respond more sharply to decreases in neighbor’s benefits than to increases (asymmetric response). In California, city land development restrictions raise land rent in its own and in neighboring jurisdictions. The positive externalities encourage strategic interaction in growth control decisions (policy interdependence) (Brueckner 1998).

Externality approach (spillover effect) models note that many public service expenditures also impact neighboring jurisdictions (Case et al. 1993; Murdoch et al. 1993; Ladd 1992; Revelli 2005). For example, Case et al. (1993) find that states’ per capita expenditures are positively and significantly influenced by their neighbors’ spending. Similarly, Kelejian and Robinson (1993) find that county police expenditures are positively and significantly influenced by neighboring counties’ expenditures on police.

A third alternative is the “political agency—yardstick competition” model, which assumes that voters in one jurisdiction use the performance of other governments as a yardstick to evaluate their government. Thus, local governments do not want to deviate “too far” from other jurisdictions and mimic each other’s behaviors. Besley and Case (1995) test this model and find that a state’s tax changes are positively and significantly related to neighbors’ tax changes.

The model developed in Sect. 4 incorporates expenditure spillovers into the conventional model. We hypothesize that county j’s public spending also depends on its neighbors’ spending. Neighbors are defined as counties that share common borders.

The remainder of this study is organized into seven sections. Section 2 describes the study area. A literature review of determinants of local public expenditures follows

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1 Drabenstott (2005, 2006), Glasmeier and Wood (2005), and Markusen and Glasmeier (2008) review how the US federal government supports lagging places. Dall’erba and Gallo (2008) document the role of the European Structural Funds as an instrument to support the development of the peripheral and less prosperous regions of the European Union.