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Community income distributions in a metropolitan area

Charles A.M. de Bartolome [a,*], Stephen L. Ross [b]

[a] *Department of Economics, University of Colorado, 256 UCB, Boulder, CO 80309-0256, USA*
[b] *University of Connecticut, CT 06269-1063, USA*

Abstract

We extend de Bartolome and Ross [C.A.M. de Bartolome, S.L. Ross, Equilibrium with local governments and commuting: Income sorting vs. income mixing, Journal of Urban Economics 54 (2003) 1–20] to the case when the income distribution in the metropolitan area is a continuous distribution. In particular, we consider a circular central city surrounded by a suburban community. All households must commute to the metropolitan center and public service levels differ in the two jurisdictions. There is intra-jurisdictional and inter-jurisdictional capitalization. Our model has an equilibrium in which the income distributions of the central city and of the suburban community *do* overlap. Our finding contrasts with the traditional finding of Alonso–Mills–Muth-type models of spatial sorting and of Tiebout-type models of fiscal sorting, both of which have been shown to predict that the income distributions of the two communities do not overlap. In addition, the model explains the fixedness in jurisdictional boundaries.
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1. Introduction

Because 80% of all US households reside in metropolitan areas, understanding how households distribute themselves between the jurisdictions of a metropolitan area is important. For example, a prediction of the effects on poor households of federal aid to central cities is likely to depend on the extent to which the programs induce poor households to relocate between the

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central city and the suburbs. In earlier work (de Bartolome and Ross [6]) we consider how households of different incomes distribute themselves spatially across a metropolitan area; that work considered a two income-class model in which households are either "poor" or "rich." This paper extends the work to the case when the income distribution is continuous.

Our motivation is to explain three stylized facts. The first stylized fact is that poorer households tend to be concentrated in the central city. Brueckner, Thisse and Zenou [5] write:

"Although some American central cities have rich enclaves, high-income residents in US urban areas tend to live in the suburbs."

Similarly, Glaeser, Kahn and Rappaport [14] describe:

"the well-documented fact that within US metropolitan areas, the poor generally live in central cities and middle-income individuals generally live in the suburbs."

The second stylized fact is that the sorting between the central city and the suburbs is incomplete. Epple and Platt [9] describe the incomplete sorting between suburban jurisdictions as

"...sorting by income [between communities] is incomplete. The incomes of the wealthiest households in communities with low average income typically exceed those of the poorest households in communities with high average income. For example, when the 92 municipalities in the Boston Standard Metropolitan Statistical Area (SMSA) are ranked by median income, Chelsea is the poorest and Weston is the wealthiest. Chelsea and Weston had median incomes in 1980 of $11 201 and $46 646 respectively. Yet 19% of the households in Chelsea had incomes above $22 500 in 1980, while 19% of the households in Weston had incomes below $22 500 in 1980."

Although this observation applies to suburbs, examination of census data shows that it also describes the sorting between a central city and its suburbs.[1]

The third stylized fact is a more detailed description of the income profile. Glaeser, Kahn and Rappaport [14] write:

"[We discuss] the income–distance relationship for four older metropolitan areas (New York, Chicago, Philadelphia and Boston). In these cities (and in most other older cities) there is a clear U-shaped pattern. The census tracts closest to the city center are often among the richest in the metropolitan area. The poorest census tracts come next with the bottom of the curve generally lying between three and five miles away from the central business district. After that point income rises again. In most cities, income begins to fall again in the outer suburbs."[2]

These stylized facts are not explained by the canonical models of Alonso [1]–Mills [17]–Muth [19,20] and Tiebout [25]. The Alonso–Mills–Muth model of a metropolitan area focuses on spatial structure and overlooks issues of public service provision. When choosing where to live, households are viewed as considering the trade-off of commuting costs and land prices.

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[1] Ross and Yinger [24] review the literature on sorting.

[2] A possible reason for the difference between the older cities and the newer cities is that the newer cities have more decentralized employment (as noted by Glaeser et al. [14]).