Efficiency, equilibrium and exclusion when the poor chase the rich

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A R T I C L E   I N F O

A B S T R A C T

Using a simple adverse selection model, we characterize equilibrium when the rich chase the poor. If communities are established by competitive entrepreneurs, the equilibrium exists, is unique, and is efficient. It involves either complete separation, or complete pooling. Different income groups may rank these qualitative outcomes differently. We show how restrictions imposed by a central government may alter the nature of equilibrium: such restrictions may be explained as the choice of a low-income majority altering the equilibrium to the pooling outcome which they prefer.

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1. Introduction

A significant, and common, extension of the Tiebout model considers residents who care about the average income of a community. When migration cannot be controlled directly, fiscal instruments may be used to exclude the poor. The model described below re-examines this phenomenon, emphasizing two main features, one normative and one positive. First, the degree of decentralization is examined as an equity issue, rather than as an efficiency issue. We show that both complete decentralization and complete centralization are constrained efficient, but that decentralization is at least as good an outcome for the rich. Second, many of the constraints imposed by higher-level governments on local governments can be explained as the consequences of a low-income majority choosing constraints that lead to an equilibrium which benefits them at the expense of higher-income residents.

When the difference between taxes paid per household and the cost of the public services provided to the household increases with income (within a jurisdiction) jurisdictions with high average incomes are more attractive to all prospective residents.[1] When

direct exclusion on the basis of income is not possible, the level of public spending can induce selection of residents. If the publicly provided output is a normal good, jurisdictions seeking to exclude low-income residents will over-provide this output.

We consider jurisdictions which are developed by competitive entrepreneurs. Even with free entry, an equilibrium must exist. This equilibrium is efficient in the sense that if direct exclusion is impossible, no other feasible outcome Pareto dominates the equilibrium. The equilibrium, however, favors the rich. Given free mobility of people among communities, no set of communities is better for the rich than that arising under free entry of private community developers.

Whether that equilibrium involves segregation by income class depends on the population composition.[2] If the rich are numerous enough, developers will be unable to attract them to segregated communities. The equilibrium has pooling.

We also show that rules set by the central government can affect the nature of the equilibrium set of communities. These restrictions may benefit the poor at the expense of the rich. Restrictions that make it more costly to attract the rich to segregated communities may induce developers to change their behavior, targeting the rich with heterogeneous communities—in which the poor still have no influence on local decisions concerning public spending.

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 [1] The preference for higher-income neighbors may also stem from peer-group effects in education, or from the higher status of living in a rich community. Our model is meant to capture any situation in which such preferences for high-income jurisdictions arise.

[2] As in models of competitive insurance provision under asymmetric information, for example

The constrained efficiency of the equilibrium applies only when transfers among jurisdictions are not allowed. If a central government imposes such transfers, both income classes may benefit: transfers from rich jurisdictions to poor ones weaken the threat of migration by poor people into rich communities. In doing so, the transfers may reduce distortions in the local public sector of rich communities sufficiently to more than compensate residents for the cost of the transfers.

2. Literature

Our interest in behavior when a resident cares about the incomes of other residents builds on the insights of Tiebout (1956), who mentions the desire to live near nice neighbors, though he did not pursue the implications of such preferences.[3] People who care about what types of people live in their communities may enjoy "gains from grouping" and an "associational surplus" (Fennell, 2009).

When the poor (potentially) chase the rich, the rich may attempt to reduce the attractiveness of their communities to the poor. We discuss below one such mechanism, over-provision of public services, a mechanism that is also analyzed by Wilson (1998). His assumptions ensure that efficiency requires homogeneous communities, and that the equilibrium is a separating one. Our analysis shows, in contrast, that efficiency may require pooling of the rich and the poor, and the equilibrium may have either pooling or separation. In an important extension to Wilson (1998), Hoyt and Lee (2003) show that a rich community may also subsidize private goods as an exclusionary device. Local governments can use additional mechanisms, such as restrictive zoning and housing codes. Valuable analyses include Hamilton (1975, 1976), Wheaton (1993), and Fernandez and Rogerson (1997).

A static model with voters who choose local policies, and policies which affect the inter-community migration equilibrium, is considered by Epple and Romer (1991), though they focus on intra-community redistribution rather than on public-good provision. A peer-group effect in schools, with residents voting on how much to spend on education, is studied by Epple and Romano (2003). But in their model residents vote on spending after they choose where to live, so that voters cannot use spending decisions to affect the composition of the schools. We, instead, allow people to move in response to spending decisions, and so spending can be strategic.

A large literature examines, as we do, entrepreneurial behavior in the local public sector. Important examples are Berglas (1976), Berglas and Pines (1981), Scotchmer and Wooders (1987), Brueckner and Lee (1989), Scotchmer (1997), Conley and Wooders (1998). Much of that literature assumes entrepreneurs are "small," taking the utility attained by different types of people as given. In contrast, entrepreneurs in our model consider explicitly how their policies affect people's location decisions.[4]

An important result in our paper is that constraints imposed by a central government on spending by local governments can increase efficiency and have strong distributional effects. Constraints on local governments have been studied by others. Nechyba (1997) asks why state governments undermine local property tax systems through income tax-funded grants and state-imposed caps on local property tax rates. He shows that competition among local governments to attract rich residents leads each to set the local income tax to the inefficiently low level of zero, thereby justifying interference by a higher level of government. Fernandez and Rogerson (1996) show that if local governments rely on a linear income tax, then communities will stratify by income, leading each community to spend too little on education. Redistribution by the central government, or central government requirements on minimum spending levels, can ameliorate the inefficiencies. We, in contrast, compare the welfare of the poor and of the rich under homogeneous and heterogeneous communities, and explore policies of a central government (such as caps on local spending) that the rich or the poor may favor.

Models of urban location resemble standard models of adverse selection, such as competitive insurance markets.[5] In those models, an insurance company tries to attract low-risk buyers by offering an inexpensive policy with low coverage, as well as a high-cost full-coverage policy which is preferred (weakly) by high-risk buyers. Our analysis differs in several ways. First, we will find overprovision in equilibrium, rather than underprovision. Second, in insurance markets a consumer cares about the price he pays and the coverage he receives; he is otherwise indifferent about who else buys the same insurance policy. In our analysis, a resident's utility is a function of the types of people who live in the same community. Third, in models of adverse selection, an equilibrium may not exist. In these models, the firms have two strategic variables (price and quantity in insurance markets). A firm's ability to alter both those variables, so as to attract "better" customers from rivals, is what eliminates the possibility of a pooling equilibrium. In our model, the income in a community corresponds to the quality variable in standard adverse selection models. And the level of public output will correspond to the price in insurance models. But this community income is not a direct strategic choice of firms here. It is the result of residents' location decisions, based on the strategic choices of all firms. The nature of residents' location choices means that the equilibrium can have pooling. The desire by the rich to avoid such an equilibrium, and the desire by the poor to establish it, lead to the behaviors we discuss below.

The interaction of voting and migration is well analyzed, among others, by Ellickson (1971), Westhoff (1977), Rose-Ackerman (1979), Epple et al. (1984, 1993), and de Bartolome (1990). A local official may bias services with the aim of attracting people who would likely vote for the incumbent, and encourage the out-migration of political opponents. That strategy was adopted by Mayor Curley of Boston, who used wasteful redistribution to his poor Irish constituents, accompanied with incendiary rhetoric, to encourage richer citizens to emigrate from the city, thereby shaping the electorate in his favor (see Glaeser and Shleifer (2005)). A model which resembles Glaeser and Shleifer's in considering how current policy affects migration and thus future policy is Brueckner and Glazer (2008). Lastly, voters at the federal level may favor a minimum federal standard for local provision of a public good when the median voter in the federal electorate has preferences that can differ from the median voter in the district in which he resides. See Cremer and Palfrey (2000).

3. Assumptions

3.1. Entrepreneurs

Entrepreneurs can costlessly form new communities. In forming a community, an entrepreneur commits to providing a specified

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[3] Strahilevitz (2006) pursues the idea in examining the amenities some developments provide.

[4] Our model considers a continuum of people of each income class, and a finite number of entrepreneurs. Because constant returns to scale in population are assumed for the local public output, scale of jurisdictions is indeterminate. What matters to prospective migrants, and to entrepreneurs, will be the average income in some jurisdiction. With a finite number of entrepreneurs, entry (or changes in public output provision) by a single entrepreneur will have a non-trivial effect on the average incomes of all populated jurisdictions.

[5] The classic paper is Rothschild and Stiglitz (1976). Dionne et al. (2000) survey this literature.