Applied Geography 49 (2014) 54–57

Contents lists available at ScienceDirect

Applied Geography

journal homepage: www.elsevier.com/locate/apgeog

Social participation and social capital with equity and efficiency: An approach from central-place theory☆

Daisuke Nakamura*

Department of International Liberal Arts, International College of Arts and Sciences, Fukuoka Women's University, 1-1-1, Kasumigaoka, Higashi-ku, Fukuoka, 813-8529, Japan

Keywords:
Sustainable urban and rural growth
Transportation and communication
Central-place system
Spatial organisation

A B S T R A C T

A great deal of attention has been paid to the efficiency of the analysis of sustainable urban and regional growth. This includes social participation and social capital, which require a consideration of equity. In this paper, an approach from central-place theory for sustainable urban and regional growth is examined, taking into consideration relevant variables such as ageing, social interaction and accessibility. A lack of consideration of equity could cause several social exclusion problems, and these problems could develop into spatial consumer exclusion. Solutions for these problems would not only improve equity but also efficiency, and the outcome would addresses the necessity of an alternative spatial formation based on a wider-regional rural central-place system according to given economic, social and spatial configurations.

Introduction

A lack of attention to equity causes spatial consumer exclusion, which is a situation where there are consumers who are not reachable by particular goods and services due to high transportation costs or the enormously large size of the market area (Nakamura, 2010). This can be seen where the spatial organisation of the region is not well organised due to prevailing economic and geographical constraints. A well-organised region may have its own higher standard of quality of economic activity as an attractive force of the region, which can be typically found at the central place in an economic plain. The notion of centrality in an economic space has been examined using central-place theory, which was systematically studied by Lösch (1944 [1954]) in terms of market areas. While such hierarchical systems still exist in a real spatial structure, the theoretical evidence tends to be weaker. This is explained by urban futures in the e-economy, the erosion of urban nodes at the lowest level, and the blurring of the central place system based on the analysis by Geenhuizen and Nijkamp (2004: 80). Such urban features may also reduce the presence of spatial consumer exclusion as advanced social and economic systems.

By contrast, it is commonly found in some areas with a declining population that there is no access to specific places; for instance, to supermarkets, which are called 'food deserts.' Accessibility problems with respect to necessary goods and basic human services can be more serious in nonmetropolitan areas. The future of nonmetropolitan areas has been investigated using various empirical approaches, see Mulligan (2013). In addition, several empirical studies on how social minorities in Canada and the United States have different shopping patterns from the mainstream can be found in Berry and Horton (1970). The problematic issue of declining consumers in central-place theory is referenced in Hodge (1965) and Stabler (1986) for the case of Saskatchewan in Canada. This issue is also often termed the 'location-allocation problem.' A series of location-allocation models was developed and expanded by Massam (1975; 1980; 1993), O'Kelly (1987), and Rushton (1987).

Massam (1975) provided a solution to a specific problem for a particular facility by using location-allocation models for local schools, clinics, hospitals, fire stations, and day-care centres. In addition, Massam (1980) presented a solution to the choice of locations for local community service centres on the Island of Montreal in Canada. Furthermore, Massam (1993) investigated the locations of public facilities that attract rural population by means of multi-criteria decision aid models. Based on central-place theory, O'Kelly (1987) suggested that the impact of accessibility on demand levels varies according to the type of good. In this respect, he insisted on the importance of examining an explicit model of consumer interaction behaviour. As an application of location-

☆ This article belongs to New Urban Worlds: Application, Policy, & Change.

* Tel.: +81 9015043680.
E-mail address: dnakamura@fwu.ac.jp.

0143-6228/$ – see front matter © 2013 Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.apgeog.2013.09.008

allocation models in consumer behaviour, Rushton (1987) investigated the improvement of accessibility to primary health care for the case of Iowa by modifying the objective function of the conceptual model framework.

As a model with alternative consumer behaviour patterns, Berry and Parr (1988) explored multi-purpose shopping involving functions of different hierarchical levels and expanded this to the change in urban hierarchies. They also investigated spatial planning in the absence of balanced hierarchies, which are composed of counter-magnets, secondary cities, and rural service centres. The last level of planning as rural service centres, which involves providing basic human services to rural populations, can be closely connected with the notion of equity in this paper. As the methodological connectivity between equity and central-place theory has not yet been theoretically investigated in depth, it is necessary to explore an alternative spatial organisation under a well-balanced development between efficiency and equity, which includes social participation and social capital.

The main key of this analysis is that infrastructure elements include residential utility maximisation factors such as amenity, well-being and quality of life (QOL). Social participation and social capital are also components of these elements. For details of social participation, see Kourit and Nijkamp (2013) with respect to the involvement of human activity in socioeconomic externalities. Another important aspect, social capital, deserves attention as there are several different viewpoints, such those given by Putnam (1993; 1995; 2000), Bourdieu (1986), and Olson (1982), which were compared and contrasted in detail by Beugelsdijk (2003). In this paper, we present the notion that social capital on its own, representing the agglomeration of human activity, can create more efficient regional economic activity, which can be related to urbanisation economies as spatially constrained external economies of scope according to the categorisation by Parr (2002).

Many countries, particularly developed countries, are facing potentially problematic issues with respect to ageing, which raises concerns over the diversity of population, social interaction and accessibility. A disorganised social and spatial arrangement also causes a problem with social exclusion, such as spatial consumer exclusion. The main objective of this paper is to reduce the equity-related problem, which may eventually improve efficiency by shrinking the mismatch between demand and supply in social participation. For instance, job creation for senior citizens utilising the potential labour force, and well-organised job opportunities and better income distribution systems can create better social and economic systems.

The components of this paper can be summarised as follows. First, a location model given rural areas in which the population is decreasing is examined, which is followed by a hypothetical analysis of a wider-regional coordination of accessibility to a variety of goods and services. In addition, policy implications as an alternative spatial configuration are studied with the notion of a wider-regional rural central-place system. Finally, further avenues are explored before concluding comments are made.

A location model

This section analyses sustainable urban and regional growth given a sufficient consideration of equity and efficiency. The problem with accessibility to goods and services can be relevant to changes in the spatial attributes of a region. For instance, the initial size of a representative region is assumed to have a circular formed area, radially expanded from a central place. As the population and economic activity increases, the spatial allocation of individuals and producers disperse across the plain, and eventually a large market area is formed. However, there are several problematic issues here, as follows. Urban growth occurs when the population increases and this brings an expansion of the physical size of the economic space. When the physical size enlarges, transportation costs and distance increase if these are taken on average. This may cause spatial consumer exclusion, where some economic agents are not accessible to certain goods and services. Here, it is commonly assumed that producers are solely interested in increasing their own profit, and spatial consumer exclusion does not matter to producers.

Spatial consumer exclusion can be explained as follows. When the size of a region rapidly expands, the relevant market area cannot catch up with the density of demand and transportation costs. This particular situation can be illustrated by the monocentric central-place system as shown in Fig. 1. In the figure, it may be assumed that the solid circle represents the maximum market-area radius for a producer who distributes goods or services, and the dashed circle is the optimal market-area radius for the producer. In such a case, outside the dashed circle, economic agents cannot access the goods and services that are exclusively served by this specific producer. As a result, spatial consumer exclusion is present unless the producer maximises their profit rather than sales revenue.

In order to remove such exclusion, one solution is to create a community-level central place so that minimum necessary goods and basic human services, which may be directly relevant to meet the well-being of local households that are assumed to require face-to-face transactions, are fully served by each local central place.

Another solution is to enhance the regional transportation network so that each economic agent can have more convenient access to goods and services. In addition, it may be plausible to consider that the full function of a community-level central-place system is not sustainable due to insufficient economies of scale, as illustrated in Fig. 2. In the figure, the line w represents the minimum sufficient level of well-being attainment, the refract line v depicts the actual level of well-being, the double-circled site shows the central place, and the single dots are community-level central places in rural areas.

This can be interpreted as meaning that economic agents who locate the area $v > w$ may obtain satisfactory levels of well-being. In other words, regions locating at $v < w$ need to arrange self-sufficient well-being establishments. This becomes more evident as the distance from the centre increases (see Parr, 2012). In the figure, the solid curves represent maximum feasible self-sufficient well-being arrangement in rural areas, which are much lower than w due to insufficient economies of scale. In addition, it can also cause the limitation of economies of scope that interrupt a wide variety of choices for available goods and services. Eventually,

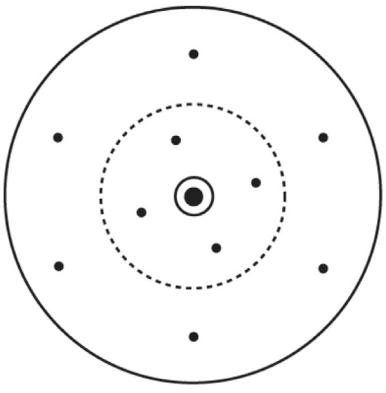

Fig. 1. Monocentric system and spatial consumer exclusion.