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A SPATIAL MICROSIMULATION MODEL FOR SOCIAL POLICY EVALUATION

1. INTRODUCTION

Evaluation is a critical step in the analysis of social policies which, itself, can influence public thinking (Unrau, 1993; Manski and Garfinkel, 1992). Policy-relevant spatial modelling is an expanding area of research, which has a lot of potential for the evaluation of the socio-economic and spatial effects of major national social policy programmes. However, traditional modelling approaches to social policy analysis usually focus on the impact on the socio-economic structure of the population and they have tended to ignore the geographical dimensions of social policies. In particular, the focus has usually been on the redistributive effects of government policies (such as budget changes and social security benefit policies etc.) between households, but there has generally been a paucity of studies that investigate the spatial impacts of these policies.

This article highlights the importance of evaluating the spatial impact of national social policies. In particular, we demonstrate how spatial microsimulation modelling methodologies can be used to perform detailed micro-spatial social policy analysis. In Section 2, we briefly review existing geographical approaches to social policy analysis. Section 3 introduces the microsimulation method and Section 4 describes *SimLeeds*, which is a spatial microsimulation model aimed at modelling the Leeds urban economic system. Then, Section 5 shows how we used *SimLeeds* to analyse the spatial impacts of social policy change. In particular, *SimLeeds* is employed to analyse the impact of recent UK budget changes on various Leeds localities. Further, *SimLeeds* is used to estimate the impact of the proposals for social change suggested by rival political alternative parties. Finally, Section 6 offers some concluding comments.

2. GEOGRAPHICAL APPROACHES TO THE EVALUATION OF SOCIAL POLICIES

It has been argued elsewhere (Ballas and Clarke, 2001a; Hamnett, 1997) that, although there have been a number of studies exploring the geography of the changing welfare state (Bennett 1980; Curtis 1989; Pinch, 1997) and the geography of poverty and income inequalities (Atkinson, 1996; Green, 1996 and 1998; Hills, 1996; Joseph Rowntree Foundation, 1995; Philo, 1995), there is a general paucity of information relating to the geography of household income, wealth, taxation and welfare benefits. Here, we briefly review past geograph-

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ical approaches to social policy and welfare analysis. Bennett's (1980) comprehensive work on the geography of public finance is a good starting point. He proposes for a geographical analysis of public finance, which comprises the analysis of the spatial patterns of revenue raising, public expenditure and the spatial balance between revenue and expenditure. Bennett adds a spatial dimension to traditional public finance analysis by including questions that are concerned with the distributions of expenditure, wealth and income between people, another set of questions concerned with the spatiality of this distribution. In other words, he puts the question of how burden and public expenditure vary as a function of geographical location:

> ". . . *who gets what benefits from public finance* as a function of *where* the individual lives and *where* the industrial enterprise is located"
>
> (Bennett, 1980, p. 1; emphasis in the original)

According to the *welfare economics* perspective to social policy analysis (Bramley and Hill, 1986; Musgrave and Musgrave, 1984), the state has three main functions: *allocation*, *distribution* and *stabilisation*. Bennett (1980) examines these state functions in a geographical context and he investigates the spatial aspects of public goods, revenue burden and benefits (see also Pinch, 1997).

It should be noted that a very important research area in the analysis of social policy is the measurement of inequalities and poverty. It has long been argued that there is a need for detailed geographical analysis of poverty at various scales. McCormick and Philo (1995) discuss the geographical dimensions of poverty and point out that much of the poverty in the UK is hidden, in the sense that *poor* people and localities are largely invisible. Further, they argue that poverty in these localities is not only the result of economic decline, reflected as shifts in demand for specific labour market skills, but also it is the cause of the decline. In particular, it seems that there is a vicious circle of poverty in these areas:

> "Reducing the purchasing power of low-income households – which are likely to spend money locally rather than saving it, spending it elsewhere or using it on expensive imported goods – damages the economies of the 'poor places'. A gradual process of uncoupling hence occurs between local and national economic trends, such that improvements in the latter may no longer feed through into any improvement in the former."
>
> (McCormick and Philo, 1995, p. 11)

In addition, Martin (1995) argues that there have been sustained inequalities in the distribution of income across the regions of Britain and stresses the increasing North-South divide. Using income inequality statistics he demonstrates the disparities between the North and South region and he discusses the political and economic causes of these disparities. Moreover, McKendrick (1995) points out that a less obvious, but equally significant division is that

between the Celtic nations of the UK (Scotland, Wales and Northern Ireland) and England.

At a smaller area level, Green (1996) argues for a spatial perspective on poverty and wealth and presents selected evidence on changes and continuities in poverty and wealth between 1981 and 1991 at the spatial levels of *electoral ward, local authority district* and *local labour market area*. In addition, Goodwin (1995) examines the distribution of poverty at the intra-urban scale. He points out that one of the problems faced by those attempting to investigate urban poverty is the lack of any systematic small area level data on household income, wealth or living standards.

> ". . . an immediate problem faced by those attempting to assess the extent and the shape of urban poverty is the difficulty of obtaining reliable data on variables such as income, especially at those geographical scales which allow comparisons to be made within, as well as between, urban areas."
> (Goodwin, 1995, pp. 66–67)

Further, he addresses the problems of the most appropriate geographical scale for the analysis of urban poverty and, although he presents mapping scores of standard deprivation indices for Greater London wards, he also stresses the importance of the subjective dimensions of deprivation:

> "People experience these deprivations differently, and we should perhaps speak of their varying *experiences* of poverty. Different groups are affected in different ways, although some sections of society are more prone to poverty than are others." (Goodwin, 1995, p. 78; emphasis in the original)

Another example of poverty analysis at the ward level is the work of Dorling and Tomaney (1995). Their analysis was based on the 'five great evils' of *want, ignorance, idleness, squalor* and *disease*, as defined by William Beveridge in the 1940s (Dorling and Tomaney, 1995). Using data from five different sources, they generated contemporary indicators for these 'evils' at the ward level for England and Wales and they produced cartograms reflecting the geographical complexity of poverty.

Nevertheless, there is a general lack of work on analysis of poverty and the evaluation of social policies at the household or individual level. A notable exception here is the work of Noble and Smith (1996) who examined the spatial patterns of income and wealth in Oxford and Oldham at the intra-urban level, using data from the housing benefit/council tax benefit (HB/CTB) systems at the individual claimant level in an anonymised form. Further, they used these data to distinguish which claimants are in receipt of Income Support (IS) from those who are otherwise on low income and receive HB/CTB. Moreover, they used the postcode attribute of each individual record to assign to a respective enumeration district (ED). They then constructed an index of low income and performed a cluster analysis, comparing the intra-town spatial

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