“HOME-OWNERSHIP, POVERTY AND EDUCATIONAL ACHIEVEMENT: SCHOOL & NEIGHBOURHOOD EFFECTS”

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Abstract
One of the significant characteristics of many poor neighbourhoods is that the schools which serve them are characterised by poor performance in terms of attainment and other measures. This feature is seen as critical in the reinforcement of disadvantage, its transmission between generations, and as a barrier to social integration. Government policies in the UK have increasingly targeted improved school standards and performance, while other policies on urban regeneration and housing may interact with this issue. This paper examines the particular role of home ownership tenure alongside the other factors (notably poverty) which affect school attainment. After reviewing existing literature it presents new analyses of attainment based on linked pupil, school and small area-level datasets for selected areas in England. This provides some evidence to support the contention that home ownership has an additional effect on school attainment, beyond that explained by poverty and other associated variables, although there is some uncertainty about how separable these effects are at school or neighbourhood levels. It also points out the significant role of changing tenure mix in housing regeneration in transforming the overall profile of neighbourhoods and schools.
1 Introduction

The issues facing deprived neighbourhoods are well known, and make sobering reading. Virtually every social problem – crime, joblessness, poor health - is substantially worse in deprived areas. It is clear that this applies to the under-achievement of children at school, and to popular perceptions of school quality and performance. At the same time, concentrations of poor households facing material and other deprivations are clearly bound up with the operation of the housing market and tenure systems. In most countries, such neighbourhoods comprise predominantly rented housing, and in Britain they are increasingly associated with social rented housing.

If the housing system is substantially responsible for socio-economic segregation and polarisation of neighbourhoods, could different housing policies produce more benign effects? If the effects of housing outcomes spill over into other areas of social policy, such as education, and threaten the achievement of societal goals, the case for different approaches may be strengthened.

It is widely believed that housing, as one of humanity’s basic needs, is foundation to learning. On one hand, homelessness and other forms of acute housing need could impact seriously on children’s education. Households which have a place to live but limited space may not provide an environment conducive to study. At another level, through ownership of housing as an asset, individuals or families can improve their well-being and in other ways help develop the potential of their children. Arising from this, the concept of a home of one’s own, however humble, is deeply prized by individuals and families across many cultures (and survey evidence confirms the strengthening of this view over time in Britain). This chapter examines the proposition that compared to those living in rented accommodation, and for whatever reason, homeowners’ children tend on average to do better in school; and, further, that schools with more pupils from home owning backgrounds will help all of their pupils to do better.

These issues are of concern in current social research and policy and pose both intellectual and policy challenges. Better understanding is prerequisite to devising strategies to tackle the problem. We present later on the results of an analysis of school pupil attainment in England designed to test our proposition while shedding broader light on the drivers of school performance. As a prelude to that analysis, we review relevant literature by examining the way school and non-school factors affect educational attainment and the specific role of housing tenure. This review shows how the level of poverty or deprivation, exclusion, aspects of home ownership and neighbourhood characteristics affect educational attainment. We then discuss the methodology adopted for modelling attainment, explaining the rationale of approach and the data sources and case study areas employed (s.3). Section 4 describes the modelling results, starting with salient features of the ‘basic model’ inherited from earlier work, and then showing how homeownership and other relevant ‘quasi individual’ or school-level factors impact when introduced into the model. It goes on to discuss possible interactions with other variables, the impact of school-level ownership on non-owners’ children. Section 5 draws conclusions based on both the literature and the analysis.
2. Review of Factors Affecting Educational Attainment

Educational attainment is viewed in the broad sense as being able to successfully complete a course of study and obtain a qualification, which may lead eventually to a job using the skills acquired. Both school and non-school factors influence children’s educational attainment. School factors include human, physical and financial resources and non-school factors are those that relate to background of the child such as child’s personal character, and the socio-economic and educational background of parents. Figure 1 shows a framework of linkages between school and non-school factors and educational attainment. It shows how the key factors interrelate - school factors directly affect educational attainment and non-school factors manifest through variables (poverty and/or exclusion) that are interdependent.

**Figure 1: A Framework for Educational attainment**

Each of these dimensions represents an input towards educational attainment and is considered important in its own right. But much research (Thomas and Mortimer 1996; and Reynolds et al. 1996) suggests that non-school factors are a more important source of variation in educational attainment than differences in the quality of education received. A more detailed review of non-school factors is undertaken later. However, we begin with a brief discussion of school factors.
School factors

In this respect school resources include quality of teaching, facilities, and management. Educational attainment could be improved through employment of good teachers, but this may not come easily, and may be particularly difficult in schools in unfavourable market situations where it is difficult to recruit experienced staff. The debate on effects of school resources on attainment is on-going. In the mid 1980s Hanushek (1986) concluded that there is no strong and consistent relationship between school resources and performance. However, after reanalyses of the same sample, Hedges et al. (1994) shows consistent and positive relationship between resources and educational attainment. A recent study by Bramley et al. (2004) also shows positive relationship between educational spending per pupil and attainment level at local educational authority level in England. Bramley et al. (2004) presents a picture of where school resources are going and what is being achieved. This study shows that between 1996 and 2001 there was an increase in spending in most deprived wards compared to most prosperous wards and improvement in attainment levels during the same period increased more in the most deprived wards than most prosperous wards.

The image conveyed by an area may constitute a ‘resource’ in terms of contribution to feelings of self-esteem and thence to improved attainment. Gibson and Asthana (1998) observed that the more socially disadvantaged the community served by a school, the very much more likely that the school under-achieve. Lupton (2004) reached the same conclusion after comparing attainment levels between institutionally stable and well regarded schools and schools with poor reputation (with similar levels of background deprivation).

The role that school management plays towards overall school progress and educational attainment is deemed very vital. The Office for Standards in Education (OFSTED) (2001) report on Secondary Schools in England suggests that deprived socio-economic context does not in itself determine school failure, and that an important (sometimes dominant) explanation for poor quality of schools in disadvantage areas has been internal problems, mainly accounted for by poor management and professional practice. This naturally reflects the orientation of the an inspectorial service, but also builds on earlier work such as Rutter (19xx) which pointed to the importance of leadership, ethos and organisation. However, while poor school management could pose potential constraint to educational attainment, deprivation and lack of finance can make schools harder to manage.

Non-school factors

Associations between non-school factors and low levels of educational attainment have long been recognised in the sociological and education literature. Howard and Glennerster (2002) provide a list of key non-school factors that influence educational attainment: pupils’ characteristics such as prior attainment and gender; socio-economic position of parents such as employment and housing condition; parent’s educational attainment; family structure; ethnicity; and other parental interest. Thomas and Smees (1997) established that among non-school factors, prior attainment explains the greatest
proportion of variance in educational attainment at pupil level and indicated a high correlation between socio-economic variables and prior attainment. We now assess the particular impact of poverty and exclusion on children’s educational attainment and the role of tenure and neighbourhood condition on children’s education.

Effect of poverty and deprivation

Poverty is considered in the light of Townsend’s (1993) idea of poverty - ‘the lack of resources to obtain access to conditions of life that allows people to do as members of society’. The inability to participate in key socio-economic activities arising from constraint rather than choice reflects the extent to which people are disadvantaged by poverty and deprivation. Parsons (1999) has revealed that childhood poverty and educational experiences are very powerful influences on an individual’s life course (see also Hobcraft 2000). Poverty is in itself a barrier to equal educational opportunity- a hungry or malnourished child is unlikely to be good at concentrating on work at school; limited finances may affect a child’s school attainment since parents may not be able to afford the toys, books, sports equipment, home computers, and other learning resources like reference books that can aid success (Middleton and Asworth, 1997); and children from poor background may not afford to pay to attend major trips and other enrichment activities. Psycho-social effects of poverty may be even more significant (see below).

Much research provide evidence on effect of poverty on education attainment and shows that concentrated poverty tends to aggravate poor performance. Gewirtz 1998; Clark et al. 1999; and OFSTED 2000, have shown that concentrated poverty has an impact on what schools do, as well as directly on what pupils achieve. The Social Exclusion Unit (SEU 1998) found that five times as many secondary schools in ‘worst neighbourhoods’ had serious weaknesses than was typically the case, and children drawn from poorer families origin were more likely to have been in the lowest quartile of the educational tests compared to wider counterparts. Evidence from Glennerster (2002) shows from a study in England that, at key stage 3 (age 14), the median for schools with more than 40% Free School Means (FSM) (the most common measure of poverty for school pupils), was that no pupil achieved the expected performance level in English, compared with 83% in schools with less than 5% FSM. New evidence by Bramley et al (2004 forthcoming) shows that key attainment in 2001/2 increases from most deprived wards through most prosperous wards, as shown in Figure 2. The above analyses show a strong and consistent correlation between poverty and poor educational attainment, yet scholars have pointed out that these statistical relationships do not necessarily reveal the dynamics of how these factors actually operate in practice (Farrington, 1997) and have suggested that beside the direct effects, poverty interrelates with and/or generates other forms of disadvantage, which have an impact on individuals and families and therefore affect children’s educational attainment.
Indirectly poverty affects education performance by diminishing children’s capacity to exploit educational opportunities. The links between poverty and the likelihood of school failure may derive from the psychological and emotional outcomes of poverty and its effect on domestic and social lives. The level of a child’s emotional well being could affect interest in learning because a charged emotional environment, for example, may cause children to be anxious, traumatised, unhappy, jealous, angry or vulnerable, compared to where parents are materially well off, less stressed themselves and more able to secure a stable and comfortable environment for their children. Beresford et al (1999) explores the way poverty generates psychological pressures and stresses, which affect the quality of relationships, and reveals how financial pressure contributes to the social isolation of families and curtails their participation in community activities. Middleton et al (1994) also gave insights into how social pressures resulting from poverty impact upon children’s ability to concentrate upon school. In a recent research, Lupton (2004) describes how pupils from deprived background have severely disturbed behaviour and on many occasions are aggressive towards other pupils and staff; they often find it hard to accept rules, tend to be disruptive in lessons, find it difficult to concentrate and struggle to get through the school day smoothly on a regular basis. This picture is strongly supported by a recent qualitative study of children on the margins of school exclusion by Hilton (2005). The kind of process described by Lupton (2004) may be potentially damaging in schools with a high proportion of deprived pupil because, as suggested by Bramley et al (2004) and by evidence presented below, concentration of poverty in a school has a bigger negative effect than individual poverty itself.

**Effect of Exclusion**

Children’s development process, ability and motivation may be influenced by access and participation in key daily activities and interaction with people at home and in the community. Financial status and social standing are some of the key aspects that help
people to access and participate in many activities. With respect to social standing, it is well known in social theory that characteristics of a social environment in which one lived as a child has lifelong effects on behaviour and ability (Hobcraft, 2000). Hobcraft established that educational failure is strongly associated with the process of social exclusion and asserted that interaction of individuals in community networks is good, because it can create positive behaviour that helps in the process of child development. It could be argued that children participating in key activities such as leisure school trips could lead to greater exposure and interaction with others, which in turn may lead to high self-esteem and confidence in children; but the lack of access can lead to children lacking the vital capabilities that become manifest in cognitive development and educational access.

Some research highlights the point that access to finance to higher educational attainment (Koba and Paxton 2002). Financial exclusion denies people from participating in many everyday life activities. For example, savings is an almost universal aspiration - for the sense of security it gives and because it can reduce dependence on high-cost credit. Borrowing is also a fact of life, but people with no access to institutional finance tend to be exposed to expensive finance. The consequence of financial exclusion includes decreased security and little or no access to mainstream credit. A family experiencing financial difficulties and not able to receive assistance may face a charged emotional environment at home, which could affect children at home. Lupton (2004) describes how such difficulties at home play themselves out at school in concentration problems, attention-seeking behaviour, and difficulties adapting to a consistent rule structure.

Groups that are particularly affected by financial exclusion tend to be those on low income. These people are heavily concentrated in communities with high levels of overall deprivation. For instance, about 80% of financially excluded households live in council or Housing Association accommodation. The very nature of mortgages means that it is rare to be an owner-occupier and be in financial exclusion. This suggests that home ownership could be a potential gateway to financial inclusion (but the converse also applies). Thus, financial and social needs of children resulting from exclusion need to be addressed in order to have impact on educational attainment.

**Role of housing tenure**

One obvious condition to satisfy to avoid social exclusion is a place to live. For this and other reasons home ownership is deeply prized by many and it is the dominant form of housing tenure in the UK, accounting for over 69% of tenure and a rising proportion of people aspiring to become homeowners. Most aspire to be homeowners because of perceived benefits, including more choice, better investment opportunities and greater ability to borrow against future income (Whitehead 1979). Several recent studies particularly in the US (Aaronson 2000; Boehm and Schlottman 1999; Green and White, 1997; and Harkness and Newman 2001), have also found home ownership has positive effects on children’s educational attainment and development. These studies have shown that homeownership enables people to achieve a relatively high sense of freedom and enhances financial status because of the underlying distribution of income and wealth
associated with it. It also helps build ‘social capital’ in a neighbourhood of owners. These attributes make homeownership a desirable tenure that can help in many ways to improve children’s educational attainment. For instance, it is a potential source of wealth that offers financial opportunities to the family and allows parents to invest in children’s education. A financially stable parent can devote more time for children by say helping with schoolwork and participating in programmes that affect their children’s education. But we must not ignore the downside of risks of negative equity and unaffordable mortgage repayment.

**Neighbourhood effect**

From the point of view of social capital accumulation, homeownership may impact on children’s educational attainment through benefits derived from neighbourhood of homeowners. Because homeowners normally live in the same dwelling longer than those renting, homeowners are likely to be more residentially stable and social networks among home owning families in a neighbourhood is likely to be more stable than that of those renting. Arguably, greater stability would help strengthen the neighbourhood’s social network, and a stronger network causes a variety of positive social outcomes such as local parent-teacher organisation etc. that could lead to progress in children’s education. Stronger local social networks may also counter negative neighbourhood effects, for example crime, vandalism, drug abuse and other antisocial behaviour, through informal mechanisms of social control, peer group effects and alternative role models. If the rate of homeownership is higher, we would expect that the neighbourhood’s social network will be stronger and the outcome would be a positive effect, although that will depend on variety of factors such as length of time in the area, age and so forth (for rather mixed evidence, see Atkinson & Kintrea 2001, but also Bramley & Morgan 2003). Neighbourhood image can also affect children’s educational attainment. Hawarth (2002) demonstrated that living in a stigmatised neighbourhood can engender low esteem. Educational attainment in such areas is often low. For instance, in a study of social exclusion and neighbourhoods in England, Lupton (2002) shows that attainment at school is low in stigmatised areas.

There is of course a strong association between tenure and social economic class. This is confirmed, for example, by analyses of the Scottish Household Survey data for 1999/00, which shows that 85.7% of people in the highest social class in Scotland are homeowners compared to only 46.1% in the lowest social class (2001/02 data are similar). It has long been known that social class, and associated factors like parental educational background, are important non-school factors in affecting educational attainment. Over time, the causation runs both ways, as better educational attainment feeds through to improve the occupational outcomes and class position of later generations. If there is a strong association between tenure and socio-economic class, then changing the tenure mix of neighbourhoods and schools is likely to be associated with better attainment outcomes in those schools. Whether this is more than a simple mix effect, and whether there are more virtuous spillover effects in neighbourhoods and schools, to the benefit of children from poorer and lower socio-economic backgrounds, is a more open question. Also very interesting is the question of whether households with relatively poor or middling
economic circumstances would benefit from more opportunities to enter owner occupation, and whether their children would thereby achieve more at school. Given that homeownership is a potential source of assets and other financial opportunities, this could help reduce the poverty risk and benefit children’s development, particularly their educational performance. This suggests that programmes that help families become homeowners might better serve to improve children’s educational attainment and other outcomes than certain other programmes.

Overview

The above discussion, informed by a far from exhaustive literature review, shows linkages between factors that affect educational attainment and the dynamics of how these factors may interrelate. Most literature on the subject shows that the main problem pertains to poverty and exclusion, but also that some school factors play a part. Given the attributes of home ownership, it can help education attainment of poorer areas and people, in at least two ways. First, more households could become owner-occupiers, given the right opportunities, and this would (over time) influence their attitudes, behaviour, stability and security so that their children would be more likely to succeed; and secondly, more mixing of tenures, with non-owner-occupiers in previously poor areas, should influence neighbourhood peer group values/behaviour within school ethos, process and expectations so that attainment is improved for both owner-occupiers’ children and other children.

3 Methodology

Aim of investigation

Our aim is to assess the impact of homeownership on children’s educational attainment. We recognise from the above review that attainment is subject to a wide range of influences, with home ownership only one factor among many. We suggest that home ownership may influence attainment both directly and indirectly, and may be associated with other neighbourhood effects. Our approach is to examine the effects of home ownership in the context of a more general model explaining educational attainment. This model tests and allows for other factors, including specific characteristics of pupils (e.g. language, special needs, prior attainment), and characteristics of schools, as well as the neighbourhood conditions including the poverty rate, homeownership rate and residential stability. In general, this statistical model is intended to reveal whether a particular variable, such as home ownership, has an effect on attainment once allowance has been made for other determinant factors, some of which may be partly associated with the factor we are interested in. So, for example, poverty or residential instability may be associated with both school attainment and home-ownership.

We obtained data from various sources identified below and used multivariate modelling techniques (linear regression and logistic regression) to try to explain variations in attainment for individual pupils. This takes account where appropriate of the multi-level
nature of the data and possible differences in effects at different levels. The analysis is
built on the experience of recent analysis of the National Pupil Database (NPD) data for
five areas in England reported in Bramley et al. (2005, Chapter 3). We are now extending
this analysis in modified form to certain areas in Scotland, using relevant but somewhat
different data sources there, but in this chapter we report solely on the English results.

**Data sources**

In order to tease out the statistical relationship underlying school attainment, we utilise
data at the level of the individual pupil, which have recently been compiled on a common
basis nationally in England as the National Pupil Database (NPD). These record a number
of attributes of all individual pupils, including their attainment in Key Stage Tests or
examinations, as well as certain key socio-demographic attributes (age, gender, ethnicity,
eligibility for free school meals) and educational attributes (whether classified as having
different levels of special education need, language). They also contain attached data for
the higher-level units of which that pupil is a part (particularly, the school). Because the
NPD contains the pupil’s home postcode, it is also possible to attach attributes of the
pupil’s residential neighbourhood. We do this effectively at two levels, firstly for the
broader neighbourhood defined by ward and secondly for the smallest census unit (output
area), which may be likened almost to a street block (average population 100 persons, 40
households). At ward level we are able to utilise a range of data derived from Censuses
and from administrative record systems, particularly where these have been made
available through the Government’s Neighbourhood Statistics programme. An example is
the Indices of Multiple Deprivation (IMD 2000).

The purpose of the lowest level linkage is to provide a quasi-individual measure of
housing tenure and certain other attributes. The NPD does not directly record housing
tenure, nor a number of other potentially significant factors such as parental
qualifications, but this very small area linkage provides an opportunity to provide a first
approximation.

**Background to Modelling Attainment**

There has been extensive research which seeks to use statistical modelling to unpick the
determinants of school effectiveness and school outcomes, in the UK, US and elsewhere.
This body of research is developing rapidly as better data become available and policy
interest intensifies. A useful recent review of this literature is provided by Vignoles et al
(2000; DFEE research brief 228). They find that much of the research is inadequate in
terms of theoretical background, over-aggregation of data, and not using the most
appropriate statistical techniques, although some recent studies are better. Many earlier
studies reached negative conclusions about the effects of school resources on attainment,
but more recent and better-specified studies are tending to find some positive effects from
factors like class size, teacher experience and pay, and specific interventions. These
authors argue for the commissioning of substantial further research with a longitudinal
element linking pupil level records of attainment and background, school/class level
resource measurement, and area level background. This study attempts to follow this
guidance, within the limits of data and time resources. It builds on previous work by one

The conceptual framework adopted, implicitly or explicitly, in most of this work is that of ‘educational production functions’. This derives from micro-economic theory, originally developed to analyse firms and industries but subsequently extended into other areas including households and public services, which seeks to explain outputs as a function of the quantities of various inputs applied. In the education context, the outputs of greatest interest are the attainment levels achieved by pupils, which would more generally be termed ‘outcomes’. Schools may be conceived as firms or plants, but this approach has always recognised that the range of inputs is broader than in the industrial context, including critically the ‘quasi-inputs’ supplied by households in the form of varying degrees and kinds of support to children in the educational process. This level of support has been shown by much previous research to be strongly related to such factors as poverty/affluence, parental educational level, family type and size, housing circumstances and so forth. Children vary in their innate abilities or specific learning difficulties, and may also be affected by cultural differences which may be related to ethnicity, class, or neighbourhood peer group effects.

The production function approach draws attention to issues of the functional form of relationships. In particular, key inputs may be subject to increasing or decreasing returns, implying a need to consider non-linear relationships. Furthermore, the influence of one type of input may be contingent upon the presence of other inputs or the structure of the industry or firm, leading to the case for interactive types of relationship to be modelled. In our work reported here we test for non-linearity in some key relationships of interest, those relating to school-level concentrations of poverty, school resources, and school size.

In the case of schooling, the production process is long-term and cumulative. Attainment at one level will be strongly conditioned by prior experiences and attainment earlier in the school or pre-school career of the pupils involved. This points towards the need, ideally, to track individual pupils longitudinally. Even where this cannot be done directly, such effects may be captured indirectly, for example by relating outcomes at one stage to characteristics or performance of earlier stages of education in the same place, or to more general neighbourhood characteristics. In this study, we use one key longitudinal relationship with prior outcomes (at primary KS2) when modelling secondary attainment (at KS4), but otherwise rely mainly on the indirect approach.

Much earlier research focussed on quite aggregated data on outcomes and determinant factors, for example at the level of local education authorities (LEAs) or schools. However, this is open to the criticism of ‘ecological fallacy’, whereby an aggregate correlation may not actually represent a direct influence at the individual level. Some of the relationships of interest are clearly individual – e.g. from specified learning difficulties or language background to learning outcomes. However, other relationships apply at a higher level of aggregation – e.g. the influence of concentrations of poverty within schools or neighbourhoods on outcomes. Ideally, we should follow a modelling
strategy which enables both types of influence to be separately identified. The general term for such a strategy is ‘multi-level modelling’ (Goldstein 1995, Sniders & Bosker 1999, Hepple & Rees 1998). In this study we adopt this strategy, although we do not follow its full ramifications to their ultimate limit.

**Structure of Models**

Specifically, we model individual pupil outcomes at Key Stages 2 (age 11) and 4 (age 16) as a function of the following classes of factor:

a) Individual pupil attributes, such as gender, ethnicity, language, learning difficulty (SEN) and poverty (proxied by Free School Meals eligibility, FSM for short)

b) Structural characteristics of schools attended, such as size, occupancy, age range, denominational status, special classes

c) Spending resources of schools

d) Special policy measure designations of schools (e.g. EiC, EAZ,)

e) The concentration of pupils with particular attributes in each school (i.e. aggregated average scores of variables from (a) above)

f) Socio-demographic attributes of the neighbourhoods (wards) in which pupils live

The variables derived from 2001 Census output area level, such as home ownership, are as suggested above ‘quasi-individual’, a sort of hybrid of (a) and (f).

The models are multi-level in the sense that they combine data from the individual level with data from two distinct but overlapping higher levels, the school and the neighbourhood, and they permit the separate identification of relationships operating at these different levels. This is more clearly so in relation to the school level, where aggregated individual characteristics are included alongside their individual level effects. With regard to the neighbourhood variables, these combine the influence of these factors both at individual and area level (our dataset does not identify these attribute values for individual pupils’ families). In formal terms, our models are hierarchical random-effects models, an appropriate choice given our interest in group-level effects (Sniders & Bosker, 1999, p.43). We considered but rejected the option of including LEA-level dummy variables (fixed effects), but these would have disguised the influence of factors like expenditure which vary significantly between LEAs. There is a case for considering models with varying slopes for particular variables, perhaps between different classes of school (the number of individual schools in the dataset is very large), although we have not pursued this so far.

There is a case in models of this kind for recognising that certain variables are endogenous, that is determined by other variables in the system. Ignoring this can lead to misspecification and biased or misleading results. This argument has been applied, in this context, especially to the treatment of school expenditure/resources, which tend to be
determined by funding formulae which reflect pupil and school characteristics which are in the model. A general solution to this kind of problem is to treat the system as a simultaneous equation system and to estimate it using a technique such as instrumental variables/two-stage least squares. In practice, we do adopt this approach to the expenditure variable, but note that this is a school-level variable modelled at this higher level. Regression models are developed to predict school expenditure per pupil using school and LEA level variables, including interaction terms with LEA to reflect differences in funding formulae. These predicted values are then substituted in the multi-level outcome equations. Consideration was given to modelling certain other key variables as endogenous in a similar way, particularly poverty (FSM) and special educational needs (SEN). However, this was rejected on the grounds that we did not have enough fine-grained individual/household attributes to predict these individual-level variables efficiently within our dataset. The actual individual values on these factors contain much information which would be lost to the model if we only used crudely predicted values (however, a possible compromise might be to model the school level concentrations of these factors as endogenous).

**Attainment measures**

At both primary and secondary level we model two different measures of attainment: the average score per pupil in the cohort (counting KS2 levels as the score, or average GCSE points), and the binary variable of achieving level 4 in the three main tests at KS2 or achieving 5 or more grades A-C at GCSE. (In all cases the whole cohort is counted, including those not entered for the tests or absent). For the score indicators, which are continuous, we use least squares linear regression. For the binary level indicators, after an initial exploration using linear regression (i.e. a linear probability model) we use logistic regression fitted using a maximum likelihood, an appropriate and widely-used form of regression applicable to binary dependent variables. Logistic regression predicts the log-odds of achieving the target level, and results must be transformed back to proportions when calculating the size of particular impacts.

**Case study areas**

Our starting point for this study is a set of models developed in a previous project (Bramley et al 2005), which was mainly concerned with understanding the drivers of school attainment variations in different areas, and in particular the roles of deprivation and education expenditure. The previous study focussed on five areas in England – Bradford, the London Borough of Brent, East Kent, Liverpool and Nottingham. Given its focus on deprivation this selection is somewhat biased towards relatively deprived localities. However, taken as a whole this sample represents a range of regions, urban and rural conditions, deprivation profiles and patterns of educational provision.

Data were obtained from the local authorities on school budgets and spending (for 2000/01), and these were linked to data from the first available set of NPD data which include as noted above school attributes, pupil attributes and individual pupil attainments. Other data were derived from the 1991 Census, Neighbourhood Statistics and IMD 2000 sources, chiefly at ward level. In the previous project 2001 Census data were not
available, but for this study we have added a set of measures (including housing tenure) for 2001 at the smallest areal unit of ‘output areas’. The complete NPD dataset for these areas comprises over 300,000 records, but we focus here on two single-year cohorts of pupils: those taking Key Stage 2 tests at age 10/11 in 2001/02, and those taking Key Stage 4 examinations (alias GCSE) at age 15/16 in 2001/02. For the latter cohort, NPD also included those individual pupils’ prior attainment at KS2 five years earlier, in 1996/7. The effective samples for these two cohorts, allowing for missing data, are 20,495 and 16,626 respectively.

4. Results of Modelling

Salient features of ‘basic model’

In the previous project models were derived, by a process of experimentation, which appeared to give a reasonable account of the influence of relevant factors on attainment at the two stages considered. We take these models as our starting point for this exercise. Although we are mainly interested in the influence of certain new variables, particularly home ownership, it is useful to start by noting some of the main features of the basic models as previously derived.

The primary attainment (KS2) models explain about 35% of the variance in scores at individual level using about 26 variables drawn from the six groups (a) to (f) identified above. A somewhat lower proportion of variance in binary attainment of ‘Level 4’ is explained. The secondary attainment models (KS4) explain around 50% of the variance in scores, using a larger number of variables (29), with again a somewhat lower proportion of variance explained for binary attainment at 2 levels considered (5+ Grades A-C, and 5+ grades A-G). The higher level of explanation of secondary attainment is mainly due to the ability to include prior attainment in this model, and this is indeed the most powerful single explanatory factor.

The individual variables are the group which have the strongest effects in the models. It is those relating to special needs (SENSTAGE), poverty (FSMD) and language (NOTENGSP) which have the strongest effects. All of these depress attainment, as expected. One ethnic category, Indian and Chinese pupils, do significantly better. Surprisingly, girls appear to do less well at KS2, allowing for all these effects. One aggregated school level measure, the proportion in poverty (SFSM), has a powerful negative effect (although there is some evidence that this effect may be non-linear). At the mean the impact of a 10% higher incidence of FSM through the school-level effect would be 3-4 times the individual level effect. This finding, replicated in the other models, seems both plausible and important in policy terms.

Even though prior attainment is controlled for in the secondary (KS4) model, most of the other factors like poverty continue to exert a powerful influence on the gain in attainment at secondary level, in a similar fashion to their impact in the primary sector. Poverty is strongly negative at individual and school levels, for example, with the school-level effect being even stronger here. However, there are some noticeable differences in the gender and ethnic effects.
Greater school expenditure per pupil is associated with moderately higher attainment scores in both primary and secondary sectors. Size of school has a negative (but non-linear, diminishing) effect on attainment, while very small secondaries do less well. Some types of denominational schools appear to do better. The presence of special classes is a positive factor at secondary level, which may be of policy significance in developing learning support strategies.

Area (ward level) effects which are negative for primary attainment include low social class, housing mobility and the multiple deprivation score (IMD), although the latter is only marginally significant. Most deprivation effects are probably captured by free meals. Positive effects at this level include the proportion of flats and the estimated participation in private education. Additional ward factors significant in the secondary sector include deprivation measures and a number of housing variables: detached houses increase attainment whilst flats reduce it, as does a lot of vacant housing and a lot of mobility.

Having established these basic models as a starting point, we now proceed to modify these by introducing owner occupation measures and by replacing some older (1991-census-based) ward measures by some more contemporary (2001 Census) data at output area level.

**Introducing home ownership into the model**

Taking our basic model as a starting point, we first introduce our ‘quasi-individual’ owner occupation variable based on the percentage of owners within the output area of residence of the pupil. We also include three other output area level variables: the percentages in good health, working, and with no qualifications. While the first column in Table 1 shows statistics for the basic model, the second column shows the model with these additions, and also shows the coefficient, t-statistic and significance for the owner occupation variable. Two models are shown for primary, the OLS model for KS2 scores and the logistic regression model for attaining Level 4 at KS2 (for the logistic regression models we show the exp(B) transformation of the coefficient instead of the t-statistic).

For secondary, we show the OLS model for GCSE points score and the logistic regression for attaining 5+ grades A-C.

The third column of Table 1 shows the models adjusted to exclude 1991 ward level variables, as a basis for comparison with subsequent models. The fourth column includes the school level aggregated owner occupation variable plus another OA-level variable, the breadline poverty indicator for 2001. The final column shows a more parsimonious model including both owner occupation variables but excluding some generally insignificant variables in the earlier models.

The results show that for primary pupils both quasi-individual owner occupation and school level owner occupation improve the performance of the models, with the final parsimonious model the best. The increments in r-squared measures are small but worthwhile. The effect of the school-level owner occupation measure is greater in both OLS and logit models than the quasi-individual effect, but both are statistically significant. There is a parallel here with the poverty effects, which are also greater at
school level. To give a feel for the magnitude of these effects, a 20% point rise in the owner occupation rate would raise KS2 scores at the mean by 3.5%, with most of this effect from the school level. The effect on the proportion attaining Level 4 would be to increase this by 5.7% points or 9.7% of the mean value.

For secondary pupils, quasi-individual owner occupation improves the models, but school level owner occupation does not really add much. In the case of GCSE points scores, the individual owner occupation variable has a larger coefficient and is more statistically significant than the school level variable, which is positive but marginal. In the case of attaining 5+ grades A-C, the model shows a positive and significant individual effect partially offset by a negative, but not statistically significant, school-level effect. The magnitudes of the secondary effects are smaller than those for primary. On points scores, a 20% point rise in owner occupation would only increase scores by 0.55% at the mean. On attainment of 5+ grades A-C, there would be an increase of 1.3% on the proportion attaining this level at the mean. One possible explanation for the weaker school-level effect is that secondary schools are larger, and perhaps therefore less homogeneous.
Table 1: Summary of Impact on Models of Introduction of Owner Occupation variables and other model changes

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Basic</td>
<td>+ OO &amp; Drop old inc School</td>
<td>Drop more other OA ward vars</td>
<td>level OO vars</td>
<td>level vars</td>
</tr>
<tr>
<td>OLS Model for KS2 Score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adj r-squared</td>
<td>0.354</td>
<td>0.359</td>
<td>0.356</td>
<td>0.357</td>
<td>0.356</td>
</tr>
<tr>
<td>F ratio</td>
<td>435</td>
<td>383</td>
<td>419</td>
<td>394</td>
<td>493</td>
</tr>
<tr>
<td>Coefficient % owners (OA)</td>
<td>0.0082</td>
<td>0.0077</td>
<td>0.0070</td>
<td>0.0030</td>
<td></td>
</tr>
<tr>
<td>t-statistic</td>
<td>6.9</td>
<td>7.0</td>
<td>5.6</td>
<td>2.8</td>
<td></td>
</tr>
<tr>
<td>significance</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.005</td>
<td></td>
</tr>
<tr>
<td>Coefficient % owners (School)</td>
<td>0.0180</td>
<td>0.0171</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>t-statistic</td>
<td>6.9</td>
<td>6.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>significance</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

Logistic Regression Model for KS2 Level 4

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>-2 log likelihood</td>
<td>21531</td>
<td>21248</td>
<td>21286</td>
<td>21255</td>
<td>21289</td>
</tr>
<tr>
<td>Cox &amp; Snell r-squared</td>
<td>0.253</td>
<td>0.257</td>
<td>0.256</td>
<td>0.257</td>
<td>0.256</td>
</tr>
<tr>
<td>Nagelkerke r-squared</td>
<td>0.354</td>
<td>0.350</td>
<td>0.348</td>
<td>0.359</td>
<td>0.348</td>
</tr>
<tr>
<td>% correct predictions</td>
<td>75.3</td>
<td>75.3</td>
<td>75.2</td>
<td>75.2</td>
<td>75.2</td>
</tr>
<tr>
<td>Coefficient % owners (OA)</td>
<td>0.0054</td>
<td>0.0051</td>
<td>0.0049</td>
<td>0.0021</td>
<td></td>
</tr>
<tr>
<td>Exp(B)</td>
<td>1.005</td>
<td>1.005</td>
<td>1.005</td>
<td>1.002</td>
<td></td>
</tr>
<tr>
<td>significance</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.030</td>
<td></td>
</tr>
<tr>
<td>Coefficient % owners (School)</td>
<td>0.0109</td>
<td>0.0099</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exp(B)</td>
<td>1.011</td>
<td>1.010</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>significance</td>
<td>0.000</td>
<td>0.000</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
OLS Model for GCSE (KS4) Score

Adj r-squared 0.504 0.513 0.510 0.510 0.507
F ratio 436 417 510 482 589
Coefficient % owners (OA) 0.063 0.065 0.064 0.064
  t-statistic  8.8 10.2 9.1 10.7
  significance 0.000 0.000 0.000 0.000
Coefficient % owners (School)  0.049 0.036
  t-statistic 2.0 1.6
  significance 0.042 0.109

Logistic Regression Model for 5+ Grade A-C at KS4

-2 log likelihood 15388 15210 15255 15250 15321
Cox & Snell r-squared 0.367 0.371 0.369 0.370 0.367
Nagelkerke r-squared 0.490 0.496 0.494 0.494 0.490
% correct predictions 79.4 79.5 79.3 79.3 79.3
Coefficient % owners (OA)  0.0077 0.0080 0.0082 0.0084
  Exp(B)  1.008 1.008 1.008 1.008
  significance 0.000 0.000 0.000 0.000
Coefficient % owners (School)  -0.0061 -0.0065
  Exp(B) 0.994 0.993
  significance 0.191 0.133

Our preliminary conclusion on the basis of these tests using English NPD data is that owner occupation does have a measurable and significant positive impact on school attainment, even allowing for a wide range of other factors known to be influential. The impact appears to be greater at primary level than for secondary pupils. In the case of primary, the effect of having more owner occupier pupils in the school is bigger than the effect of the being an owner occupier pupil directly (or, strictly, coming from a street or block with a high percentage of owner occupiers). This is not the case with secondary pupils, where the effect is mainly a quasi-individual effect, and where school level effects are marginal and may not be significant. The size of the impacts of owner occupation is not very large, particularly in secondary schools, but this ignores the possible indirect effects via other variables which will be related to owner occupation, including poverty. This point is developed further below.

Other relevant factors and interactions

From the discussion in section 2 of this chapter it is clear that there is a number of ways in which owner occupation may affect educational attainment. Some of these effects may work indirectly via other variables, some of which may already be included in our attainment models. For example, owner occupation is likely to be inversely related to
poverty and wider deprivation measures, to lack of qualifications, and to some aspects of special educational needs. This may mean that, when we introduce owner occupation into the models, while the owner occupation variables may show up as significant, they may also displace some of the explanation previously provided by other variables in the model. There is some general evidence that this may be going on from the fact that the overall fit of the models does not increase markedly when we include owner occupation. We have attempted to check for this by looking to see whether, in the successive models referred to in Table 1, the coefficients and significance levels for other variables change. On the whole, the conclusion from this inspection is that, for most of the key variables we are interested in, there are not large changes and the basic model is relatively stable.

There are one or two cases, however, where we can detect some interaction. School level poverty (SFSM) tends to have a smaller impact when school-level owner occupation is included. The ward-based IMD variable is also affected. Primary expenditure has a stronger effect when owner occupation is included, but at secondary level the effect of this variable is weakened in the logistic regression model. School level special needs effects are more strongly negative when owner occupation is included, in the case of secondary schools.

Looking more broadly at the impact of owner occupation, it must be recognised that if we were to try to simulate the impact of a change in owner occupation in certain types of areas, particularly deprived areas, this would be likely to be associated with corresponding changes in poverty and other factors which are significant in our models. This would mean that the overall impact of such tenure changes would be substantially larger than those direct effects quoted above, given the general pattern of the effects associated with such variables as poverty and qualifications. This point is illustrated by Table 2, which looks at the values of a number of key variables across the sample banded by proportions of owner occupation at school level.
Table 2: Selected Need Characteristics and Attainment levels by banded levels of home ownership

<table>
<thead>
<tr>
<th>Banded Ownership (School)</th>
<th>Ave % Owners</th>
<th>Free Meals School</th>
<th>Spec Need Stage</th>
<th>IMD Score</th>
<th>No Qualifs %</th>
<th>Attain Level</th>
<th>Attain Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;25</td>
<td>21.7</td>
<td>.64</td>
<td>.70</td>
<td>66.7</td>
<td>45.3</td>
<td>.59</td>
<td>11.21</td>
</tr>
<tr>
<td>25-50</td>
<td>39.2</td>
<td>.45</td>
<td>.72</td>
<td>57.5</td>
<td>43.2</td>
<td>.47</td>
<td>10.57</td>
</tr>
<tr>
<td>50-65</td>
<td>57.8</td>
<td>.29</td>
<td>.53</td>
<td>44.9</td>
<td>38.2</td>
<td>.57</td>
<td>11.09</td>
</tr>
<tr>
<td>65-80</td>
<td>73.0</td>
<td>.17</td>
<td>.36</td>
<td>36.2</td>
<td>33.9</td>
<td>.61</td>
<td>11.52</td>
</tr>
<tr>
<td>&gt;80</td>
<td>84.2</td>
<td>.07</td>
<td>.35</td>
<td>25.6</td>
<td>26.8</td>
<td>.76</td>
<td>12.55</td>
</tr>
<tr>
<td>All</td>
<td>61.8</td>
<td>.26</td>
<td>.50</td>
<td>42.4</td>
<td>36.3</td>
<td>.59</td>
<td>11.54</td>
</tr>
<tr>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25-50</td>
<td>42.0</td>
<td>.46</td>
<td>.64</td>
<td>57.7</td>
<td>42.4</td>
<td>.25</td>
<td>26.9</td>
</tr>
<tr>
<td>50-65</td>
<td>58.4</td>
<td>.31</td>
<td>.37</td>
<td>47.9</td>
<td>38.8</td>
<td>.34</td>
<td>32.1</td>
</tr>
<tr>
<td>65-80</td>
<td>73.1</td>
<td>.16</td>
<td>.23</td>
<td>33.5</td>
<td>32.7</td>
<td>.52</td>
<td>40.9</td>
</tr>
<tr>
<td>&gt;80</td>
<td>83.7</td>
<td>.05</td>
<td>.20</td>
<td>21.8</td>
<td>24.8</td>
<td>.69</td>
<td>47.7</td>
</tr>
<tr>
<td>All</td>
<td>63.8</td>
<td>.25</td>
<td>.34</td>
<td>41.5</td>
<td>35.8</td>
<td>.43</td>
<td>36.6</td>
</tr>
</tbody>
</table>

Table 2 shows that there is a strong relationship between the owner occupation share of schools and their shares of poor pupils (free meals), their shares of special needs, and their IMD scores. There is also a noticeable relationship with adults with no qualifications in their catchment areas. All of these factors, according to our models, help to account for the generally lower attainment levels in schools with lower shares of owner occupation, as shown in the last two columns of the Table.

Therefore, it is possible to argue that owner occupation may have more pervasive effects on attainment than those captured simply by the particular coefficients on ownership variables recorded in Table 1. This argument is essentially about processes at the area and school level. One can of course still argue that, at individual/household level, the causality may run from poverty or lack of qualifications to both home ownership and attainment. The poorest families will find it difficult to attain or sustain homeownership. A policy of tenure diversification may be seen as an exercise in reshuffling the pack, in terms of mix within schools. It may be expected to raise attainment levels in hitherto disadvantaged schools, but how far this spills over to benefit all pupils is unclear.

**Impact of Owner occupation on non-owners at school level**

This leads on to the question of whether we can use our data to test whether school-level owner occupation affects the attainment level of non-owner children as well as the children of owners. It is difficult to do this in a very satisfactory way, because we are still only using a quasi-individual measure based on the street or block scale of output areas. It
turns out that there are very few pupils in our English sample who come from output areas containing no or virtually no owners. In order to perform a test with a reasonably large sample it is necessary to set the cut-off quite high. We report now the results of applying our model to that subset of pupils who live in OAs containing less than 50% owner occupation.

Table 3 shows the key results in terms of the coefficients for the two ownership variables and their significance in four models, two OLS models for scores at primary and secondary level, and two logistic regression models for attainment of target levels in primary and secondary.

Table 3: Comparison of Impact of Owner Occupation variables in models for all cases and those from low ownership Output Areas

<table>
<thead>
<tr>
<th></th>
<th>Primary All Cases</th>
<th>Primary Low Own</th>
<th>Secondary All</th>
<th>Secondary Low Own</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OLS Model for Score</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient % owners (OA)</td>
<td>0.0070</td>
<td>-0.0057</td>
<td>0.064</td>
<td>0.030</td>
</tr>
<tr>
<td>t-statistic</td>
<td>5.6</td>
<td>-1.7</td>
<td>9.1</td>
<td>1.5</td>
</tr>
<tr>
<td>Significance</td>
<td>0.000</td>
<td>0.097</td>
<td>0.000</td>
<td>0.139</td>
</tr>
<tr>
<td>Coefficient % owners (School)</td>
<td>0.018</td>
<td>0.023</td>
<td>0.049</td>
<td>-0.016</td>
</tr>
<tr>
<td>t-statistic</td>
<td>6.9</td>
<td>4.9</td>
<td>2.0</td>
<td>-0.4</td>
</tr>
<tr>
<td>Significance</td>
<td>0.000</td>
<td>0.000</td>
<td>0.042</td>
<td>0.718</td>
</tr>
<tr>
<td><strong>Logistic Regression Model for Level</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coefficient % owners (OA)</td>
<td>0.0049</td>
<td>-0.0051</td>
<td>0.0082</td>
<td>0.0048</td>
</tr>
<tr>
<td>Exp(B)</td>
<td>1.005</td>
<td>0.995</td>
<td>1.008</td>
<td>1.005</td>
</tr>
<tr>
<td>Significance</td>
<td>0.000</td>
<td>0.069</td>
<td>0.000</td>
<td>0.211</td>
</tr>
<tr>
<td>Coefficient % owners (School)</td>
<td>0.0109</td>
<td>0.0128</td>
<td>-0.0061</td>
<td>-0.0128</td>
</tr>
<tr>
<td>Exp(B)</td>
<td>1.011</td>
<td>1.013</td>
<td>0.994</td>
<td>0.987</td>
</tr>
<tr>
<td>Significance</td>
<td>0.000</td>
<td>0.001</td>
<td>0.191</td>
<td>0.140</td>
</tr>
</tbody>
</table>

In the primary school case (KS2), the quasi individual (OA level) ownership variable shifts from significant positive to marginally significant negative in its effect. We would expect this effect to weaken, because the range of variation in this variable has been sharply reduced within this sub-sample. We are much more interested in the coefficient on the school level ownership variable. This actually increases slightly in size in both OLS and logit models, and remains significant despite the smaller sample. So this provides positive evidence that having more children of owners in a primary school raises the attainment of pupils who are ‘probably not’ owners themselves.

The results in the secondary sector are different, but we would perhaps expect this given the pattern of results reported earlier (Table 1). The quasi-individual ownership variable
drops in size and significance, while the school level ownership variable becomes insignificant negative (in the OLS case) or remains insignificant negative (in the logit case). So the evidence does not support the proposition that having more children of owners in a secondary school raises the attainment of children who are probably not owners. Since these school level ownership effects are weak and ambiguous in the full sample, this negative finding is not that surprising.

5: Concluding discussion

School attainment has attracted increasing policy and research attention, because of a recognition that educational achievement is a key determinant of later life chances in terms of employment, occupational class, income and wider quality of life. Research on school attainment addresses both school-based and non-school factors. Although much of this research is motivated to identify structural policy, resource, organisational and teaching methods of improving school performance, it remains clear that non-school factors tend to be the dominant drivers of attainment. Factors like gender, ethnicity and class attract attention in this context, but arguably the most important non-school factor is poverty, which can impact on children through lack of material resources and support in the home, through stresses leading to behavioural difficulties, and through wider psycho-social processes of expectation, stigma and subculture which operate more at neighbourhood level. These latter factors are important because schools are to varying degrees tied to neighbourhoods.

Some authors have injected into this debate an interest in housing tenure as an independent factor impacting on school attainment, particularly the role of owner occupation as a positive factor. Most of this recent literature has been American. Home-ownership is suggested to be influential because of its association with better housing conditions, more residential and household stability, avoidance of financial exclusion and insecurity, and its effects on wider attitudes and behaviour. Policies to promote home-ownership reflect these and other concerns. For example, in a regeneration context tenure diversification is often promoted as a means to upgrade areas physically and in terms of their human/social capital, as well as their economic profile.

In this paper we have taken this hypothesis and subjected it to some initial testing in a UK context, focussing on a number of study areas in England. We utilise data from new sources, the National Pupil Database and the 2001 Census, linked to other data on school spending and neighbourhood deprivation derived from other recent research. We put forward a general modelling framework, consistent with the emerging paradigm in school attainment research, which views this as a form of production function with social ‘quasi-inputs’ alongside school structural and resource inputs. This framework entails working with multi-level data, including a substantial element of individual pupil characteristics nested in a structure of schools and neighbourhoods. Account is taken of possible endogenous factors and non-linearities. In this study we add to this basic framework a number of ‘quasi-individual’ factors, including home ownership, based on very small residential area characteristics.
Our basic finding is that home-ownership does have an additional, independent and positive impact on school attainment. The effect is stronger in the primary school sector, and in this case it is clear that the concentration of home ownership at school level contributes more than the quasi-individual ownership factor, although both operate. In the secondary sector the impact of home ownership is weaker, particularly the school-level effect. Home ownership does not dramatically increase the amount of variance explained, in models which already contain many variables, some of which are related to home ownership indirectly. However, most of these other effects, including poverty and school spending effects, are robust to the inclusion of home ownership. Nevertheless, there are some interactions and overlaps, and it is certainly clear that changing an area’s (and a school’s) homeownership profile would be likely to also change its profile in terms of other key variables, including poverty and parental qualifications.

A stronger test of the homeownership hypothesis is to see whether schools with more homeowner children help all their pupils to do better, including children who are probably not from homeowner families. Our attempt to test this is not perfect but it does appear to support the hypothesis in the primary sector, but not in the secondary sector.

It is relatively unsurprising that children from owner occupier homes do better, other things being equal. The school-level effects are more interesting. They suggest that homeownership has effects on factors which operate at school level, such as ethos, expectations, parental involvement, and behaviour. There is a strong analogy with the effects of poverty, which our models show to be also more powerful at school than at individual level. These two home influences may be working in similar but opposite ways. They may also operate similarly at the neighbourhood level, in terms of culture, behaviour, interactions and expectations outside the school gates but in ways which impact on achievement within schools.

It is interesting to speculate as to why owner occupation appears to be more significant in the primary sector. Primary schools are smaller, potentially more homogeneous, and more tied to neighbourhoods. Primary children may be more susceptible to influence, and less set in a particular achievement trajectory. It is certainly apparent (see Figure 2) that measures to improve attainment in poorer areas have enjoyed more success so far in the primary sector.

Ultimately, the case for owner occupation rests not just on these collective school or area-level effects, but also on possible causal linkages at the individual household level. Some argue that the act of becoming an owner occupier, which may be facilitated by policies which widen such opportunities, impact over time on household attitudes, behaviour and outcomes in such arenas as the labour market and community involvement. Our data do not permit us to test these hypotheses directly, although one might begin to approach this by looking at tenure changes and their relationship with migration.
References


Rutter, M. (19xx) Fifteen Thousand Hours. Penguin?


