Communities
and Local Government

Housing and Regional Economic Disparities
Economics paper 5

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This research was commissioned by the previous government.

The findings and recommendations in this report are those of the authors and do not necessarily represent the views of the Department for Communities and Local Government.

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Foreword

Using evidence and analysis is at the heart of what we do in Communities and Local Government (CLG). The Department has a large and active research programme covering a wide range of policy issues, and economic analysis forms an important part of that work. We need to rigorously assess the costs and benefits of government policy, understand the choices and tradeoffs in reaching policy decisions, and consider how regulations and incentives might affect behaviour.

We are publishing a series of Economics Papers, highlighting key pieces of analytical work undertaken within or on behalf of the Department. These papers will range across the broad policy spectrum for which the Department is responsible, including spatial policies, housing, planning, migration, regeneration, cohesion, and local government.

This paper is the fifth in the CLG Economics Papers Series. Regional economic disparities are a long-standing feature of the UK economy, and regional house price differences or planning policy are often cited as contributing factors. Housing is likely to contribute to regional disparities, but there is a danger of blaming housing for more deep-seated social issues. Although policy undoubtedly is important, this paper points to the more subtle influences of housing markets in economic outcomes. In particular, the role of housing in influencing human and physical capital stocks is examined. While more research is required, this report argues that history matters and that there are no quick fixes.

We hope that you find it of interest, and would be happy to receive comments and reactions to this and subsequent papers in the series.

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Executive Summary

Regional disparities have been a long-standing feature of the UK economy. The differences are sometimes summarised as a North-South divide, although this is an oversimplification, since the northern regions include areas of considerable wealth, whereas London encompasses some of the most deprived areas of the country. Nevertheless, convergence tests indicate that regional differences in per capita GDP are persistent and difficult to change, despite the aim of policy to reduce spatial inequalities.

Housing is often seen as a factor that contributes to the regional dispersion of economic activity. Some commentators have pointed to the differences in regional house prices as an influence, through inhibiting labour mobility. Others highlight housing policy, for example, the possible regressive effects of local taxation or the impact of land-use controls. Although policy undoubtedly is important, this paper points to the more subtle influences of housing markets in generating persistence in economic outcomes.

If housing affects long-run regional growth rates, its influence is mainly through the human and physical capital stocks. In general, the literature has more to say about the former than the latter. Although the quality of housing may affect the resident labour force through its influence on health, education and labour productivity, the main regional impact on human capital arises through migration. To understand the role of housing in migration and location decisions, the fundamental characteristics of housing and households have to be recognised. The key characteristics of the housing stock are longevity and spatial fixity. These physical features are enhanced by the nature of property rights and the planning system. This implies that spatial structures in any area, typically, change only slowly – areas are locked into patterns that only vary significantly over decades or even centuries. Therefore, history matters. Furthermore, as discussed below, households often exhibit an attachment to their current location, because they are unwilling to disrupt ties with family and friends. Most household moves are, therefore, short distance – even many of those that are inter-regional. Given the combination of spatial fixity of area structures and household immobility, it is scarcely surprising that patterns of wealth and deprivation are difficult to change through policy.

Although empirical evidence is inconclusive, it can be argued that housing affects the physical capital stock of industrial and commercial companies; in principle, either crowding out or crowding in could take place. The traditional view is that tax subsidies to housing lead to a market distortion and to under-investment in so-called productive capital. But more recent work stresses the

role of housing wealth as collateral for business start ups and the attraction of high-quality neighbourhoods and housing to skilled workers. In this case, jobs may have to move to workers rather than the other way round. The combination of these factors can generate increasing returns, which, once they have become established, are difficult to change.

There is a danger that regional house price differences are seen as the cause of differences in regional growth rates, rather than an outcome. Differences in price levels are to be expected because of variations in income, accessibility and climate, for example. In fact, the paper suggests that, at least across the four southern regions, housing markets adjust fairly well to external shocks, although this does not mean that there are no affordability problems. Rather processes of inter-regional migration and variations in headship rates ensure that price changes are similar across these regions. But there is less evidence that adjustment is smooth between the southern and northern regions and there are good reasons why this occurs. Conventional approaches have stressed the role of expectations in discouraging households from moving from the South to the North, despite lower prices, contributing to divergence rather than convergence. However, without minimising the importance of expectations, as noted above, this report emphasises the role of property rights, transactions costs, history and spatial lock in.

Residential structures are locked in more than commercial structures, partly because property rights are more dispersed in the former. Even in response to very large shocks, there is evidence that the structure of cities does not fundamentally change. The rebuilding of London following the Great Fire provides one example, where the city was mainly reconstructed along the old medieval street patterns, rather than adopting Wren's grand designs. Vienna following the break up of the Austro-Hungarian Empire provides a second example. More detailed econometric work in the literature has examined the effects of Second World War bombings on the population and industrial structures of Japanese and German cities. There is evidence of a return to pre-war positions. Although it is certainly possible that cataclysmic shocks shift spatial structures to a new equilibrium, it is, by no means, guaranteed.

Transactions costs take a variety of different forms; stamp duty, solicitors' fees and other moving costs are only the tip of the ice berg. More importantly, transactions costs arise from search costs; households are more informed about locations close to home, because the costs of search rise with distance. More basic are the costs associated with attachment to place, arising from closeness to family and friends. The value of these externalities is specific to the individual and is, consequently, not reflected in the market price the seller receives for the property. Consequently mobility is reduced. Perhaps even more fundamental is the empirical finding that

mobility falls once households have reached middle age. Age – our own history – provides a major lock-in effect. This is important for policy; first, at the urban level, it becomes difficult to attract middle-aged households back from the suburbs in order to promote mixed neighbourhoods. Second, it may be difficult to persuade middle-aged households to move from the South to the North. Third, given an ageing population in the future, mobility may fall further.

As the quotations at the start of Chapter 3 suggest, if the analysis above is correct, the problem is that there is only a limited amount that housing policy can do to change the regional distribution of economic growth quickly. The paper suggests that land-use planning contributes to the lock in of spatial structure, by extending the effective life of properties. The distortionary impacts of the property taxation system, notably council tax, have received particularly attention and have an impact on expected capital gains. Although not a reason for doing nothing, it has to be recognised that there is a limit to what can be achieved by conventional fiscal and monetary policy instruments.

Chapter 1

Introduction

It is a common belief that the structure of English housing markets contributes to long-standing disparities in economic growth between the regions. This paper attempts to assess the evidence for and against this view[1]. It is not, however, sufficient simply to highlight regional differences in house prices or other housing indicators, since these may be a *result* of differences in regional growth rather than a *cause*. Also, regional prices may simply reflect variations in climate or location. In order to establish that housing has an independent causal effect, structural characteristics of regional housing markets have to be identified that have permanent effects on economic performance. Alternatively, the transmission mechanisms have to be highlighted. A number of possibilities are prime candidates – (i) transactions costs, which are widely interpreted here to include lock in through history, property rights and attachment to place; (ii) regionally varying policy constraints of which land-use controls are one example, but spatially-varying property taxes are another and, indeed, national fiscal and monetary policies may have spatially-varying effects; (iii) spatially-varying informational asymmetries, which arise from search costs; (iv) the relationship between housing and endogenous growth/decline.

These possibilities are likely to have their strongest effects by influencing the human and physical capital stocks in each region. In practice, far more evidence exists on the former through migration flows. In turn, an important branch of the literature on regional growth disparities concentrates on the factors that affect the steady state growth paths; the human and physical capital stocks are central determinants. It follows that, in principle, housing may affect each region's steady state growth.

Chapter 2, therefore, introduces the basics of the growth convergence literature and demonstrates how housing may affect the steady state growth rate for each region. It, therefore, provides context for the remaining chapters, which explore the transmission mechanisms described above. Transactions costs play a particularly important role in the story and, in our view, insufficient attention has been paid to the issue. But, as noted above, transactions costs have to be interpreted widely to include the role of history, persistence and lock-in as an

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[1] Note that the paper concentrates on regions. In general, it does not digress into the wider literature on the relationship between housing and cities or neighbourhoods, although there is, at times, some overlap. Furthermore, the paper is not concerned with the literature on housing and the national economy, except where there is a spatial dimension. Consequently, the paper does not consider in detail the large number of studies on housing and consumption or the implications of the sub-prime lending crisis.

explanation of the stability of spatial structures. This is discussed in Chapter 3 using, as a starting point, the model of history versus expectations, developed by Krugman (1991). The chapter also discusses the expanding quantitative literature on long-run change and spatial persistence. The essence of these approaches is that change only takes place very slowly and policy has to think in terms of decades if reductions in diversity are to take place – a view recognised in the 2006 *State of the English Cities* report produced by ODPM. One of the important features of housing is that its structure slows down the pace of change; there are no quick fixes because the housing stock is long-lasting.

Chapter 4 considers the relationship between housing and regional human capital – which affects steady-state growth – concentrating primarily on migration. The chapter also distinguishes between inter-regional and international migration and includes an update on sub-national house price studies that have been published since an earlier review for DETR, (Meen and Andrew 1998). Chapter 5 takes a different primarily time-series empirical approach and develops a simple two equation model of the housing market and migration, which allows us to test whether regional housing markets are convergent or divergent and highlights the key parameters for any analysis. One of the questions it addresses is why the four southern regions of England appear to exhibit very similar behaviour, whereas there appear to be differences between the South and the remaining regions, sometimes characterised by the so-called ripple effect.

Chapter 6 considers the evidence on the relationship between housing and the physical capital stock. The theoretical discussion is set in the context of two sector growth models, although there is little empirical evidence to support the constructs in the UK. The chapter also discusses the question of whether jobs go to workers rather than *vice versa*. High-skilled workers may be attracted to regions of the highest environmental quality, where others of similar status already live, generating a form of agglomeration economy. If workers, therefore, become "fixed", more mobile capital may be attracted to the same locations. The chapter also discusses briefly the extent to which housing can be used as collateral in the start up of new businesses and also the role of housing regeneration initiatives in giving rise to externalities, which provide an improved environment for companies. Chapter 7 draws overall conclusions from the study and also discusses the role of policy.

Chapter 2

Regional Convergence or Divergence?

The starting point is whether, at the aggregate level, regional variations in real per capita GDP have converged, diverged or remained the same over time. In later chapters, the contribution of housing to these trends is considered. Traditionally, two main views exist, based on either the neoclassical growth model, Solow (1956), with diminishing returns, or on endogenous growth models, which generate cumulative causation, originally associated with the work of Myrdal (1957) and Kaldor (1972). The neoclassical growth model suggests convergence is more likely to occur among regions. In principle, housing influences may operate in either direction.

Barro and Sala-i-Martin (1991, 1992, 1995) distinguish between two different types of convergence: σ-convergence and β-convergence. σ-convergence involves a decline over time of the cross-region dispersion of GDP per head. β-convergence suggests that the poorest regions are growing faster than the richest. Empirically, β-convergence indicates that there is a negative relationship between the initial level of per capita income and its rate of growth over time (equation 1).

$$\frac{1}{T}\ln(y_{i,t+T} / y_{i,t}) = \alpha - \beta \ln(y_{i,t}) + \gamma X_{i,t} + \varepsilon_{i,t} \tag{1}$$

where (i) represents the spatial entity (region); $y_{i,t}$ is per capita GDP; ε_{it} is an error term; $X_{i,t}$ is a vector of variables that control for differing steady-state growth rates across the areas. These include differences in human and physical capital. The dependent variable is measured over a time interval of T years. Therefore, according to (1), growth rates can vary because of differences in the factors that determine the steady-state growth paths or because of differences in the initial positions.

A distinction needs to be made between *absolute* and *conditional* convergence. The former takes place when poorer regions or countries grow faster than the richer whatever their characteristics, whereas the latter implies that a region grows faster the further it is from its own steady state. This gives rise to the possibility that, under conditional convergence, richer regions could still grow faster than poorer regions according to differences in structural and policy variables that affect each region's steady state. There is no necessary tendency to

convergence if regions have different steady states (Aghion and Howitt 1999). Barro and Sala-i-Martin (1995)[2] find that internationally across 90 countries, the average growth rate of GDP is positively correlated with education, life expectancy, the investment to GDP ratio and the terms of trade and negatively to the ratio of public expenditure to GDP, which all affect the steady state. This gives rise to the possibility that housing might be an additional (untested) influence on the steady state.

But estimates of β based on cross-section equations have been subject to important criticisms. Perhaps the most controversial is whether the results are affected by Galton's Fallacy (see Quah 1993). This implies that a negative value of β may still be consistent with an absence of convergence and stability in the distribution. This is shown formally in Hart (1995). A second issue in conventional convergence models concerns measurement errors, Hart (1995), Friedman (1992). Measures of per capita GDP at two points of time may reflect the state of the cycle. There is no guarantee that the two dates will reflect equal states. More generally, the closer together are the two dates in the regression, the more likely it is that transitory, rather than permanent factors will be captured. As noted below, most UK studies in the literature use fairly short data periods due to data limitations.

For the purposes of this paper, the conditioning variables entering the (X) vector are of considerable importance. In particular, we wish to know whether a range of housing market variables affect the regional steady-state growth paths. Evans and Pentecost (1998), for example, employ measures of the human and physical capital stocks[3]. No UK study appears to have included housing indicators directly, although housing may, of course, affect both human and physical capital. Consequently, the following chapters attempt to identify the routes by which housing affects (i) the human capital stock and (ii) the physical capital stock. In the first case, the impact of housing variables on migration (both domestic and international) is particularly important. Under the latter, the extent to which mobile capital moves towards the location of high-skilled workers and whether endogenous growth occurs is relevant.

In the international literature, there are a large number of empirical tests on different data sets. Barro and Sala-i-Martin (1991) found evidence for the UK regions between 1950 and 1990 that absolute convergence had occurred, although doubts have subsequently been raised about the quality of the regional data used in the study (Evans and Pentecost 1998). Since the original study, UK-based research has, typically, provided less support for the convergence hypothesis. Chatterji and Dewhurst (1996) looking at county and regional data

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[2]   Reported in Aghion and Howitt (1999), who also point out that the causation may be in the other direction.

[3]   In fact, Evans and Pentecost find no significant effect from either variable, although there are difficult measurement problems for each.

for 1977 to 1991 find no support for convergence over the whole period, but some catch up in periods in which the economy is turning down. Using more carefully constructed UK regional data than Barro and Sala-i-Martin, over the period covering the mid seventies to the mid nineties, Evans and Pentecost (1998) suggest that there has been σ-divergence over the whole period, but there is possibly some evidence of absolute and conditional β-convergence. McGuinness and Sheehan (1998), using UK data for the period 1971-1995 examine both cross section and time series evidence for convergence. Time-series data provide only limited evidence of regional convergence and the results are difficult to interpret with no clear patterns. The cross-sectional results found no significant evidence of β-convergence. Finally (employing a different methodology), using earnings data for the period 1982-1997, Duranton and Montastiriotis (2002) suggest a worsening of regional inequalities, associated with the distribution of the educated workforce and increasing returns to education.

Given the focus of this paper, the impact of housing on the human capital stock through labour mobility is a particularly important issue for regional growth differences. Whereas, traditionally, most research has concentrated on the effects on productivity arising from agglomeration economies in production, recent research has turned to the consumption benefits that arise from the concentration of population in cities. Glaeser and Gottlieb (2006) argue that the density of cities and the facilities available extend the scope for social interactions amongst the population, making them particularly attractive. These benefits can lead to a concentration of high-skilled workers in particular areas and have helped the resurgence of US cities.

Population structures in any area, by definition, depend on rates of natural increase and migration (both inter-regional and international). London, for example, benefits from a strong natural increase, because its population is relatively young. Therefore, it experiences a high birth rate and a low death rate. It also benefits from strong international migration. Inter-regionally, London experiences inflows from the younger age groups, but loses population to the surrounding regions as they age, adding to the pressures on the South East. But, the smaller the spatial scale, the more important are migration flows relative to natural rates of increase, because most moves in the UK and in other countries are short distance. Also short distance moves are determined primarily by the wish to improve housing and neighbourhood conditions rather than by labour market considerations. Therefore, the population structure of any area is determined by the combination of millions of different household location decisions and these location decisions are interdependent. For example, there is evidence that households wish to locate in areas with a concentration of like-minded individuals.

Many branches of location theory suggest that these decisions lead to clusters. Standard residential location theory implies that, under some conditions, wealthier households are more likely to be concentrated in the suburbs of a city and the poorer in the centre (Muth and Goodman 1989). More recent research, which takes into account neighbourhood quality, questions this conclusion (see Brueckner *et al* 1999), but still finds that clusters of households of similar socio-economic status are the more likely spatial outcome. These conclusions are reinforced by the influential work of Schelling (1971) and more recent work on social interactions (e.g. Durlauf 2005, 2006). Therefore, just as firms generate clusters in order to take advantage of agglomeration, so do households. Furthermore, although corporate agglomeration is generally considered to be advantageous to growth, household clustering may generate diseconomies as well as economies. The positive externalities may arise, for example, through the provision of support and information networks. If these were to be the only effects, there would be little reason for government policy aimed at promoting integrated communities. Social exclusion and segregation would be other words for clustering, but would not necessarily be harmful.

Government concern arises from the potential *diseconomies* that also result from the clustering of the disadvantaged. But, in terms of economic efficiency, the evidence that space matters for individual outcomes is limited and is difficult to test. Furthermore, little consideration is generally given to the potential efficiency losses arising from the dilution of communities of highly skilled workers if mixed communities are promoted. But an important branch of the literature points to various forms of social pathologies that may arise from the clustering of the disadvantaged – for example, crime, poor educational performance and high rates of out-of-wedlock births. Galster (2002) suggests three behavioural mechanisms that generate these pathologies – collective socialisation, contagion and gaming. The importance of these effects depend on the extent to which individuals come into contact with a peer group and the extent to which the group can exert influence or impose threats on the individual. The group has to reach a critical mass before it exerts influence on the behaviour of others.

Amongst the issues to be considered in subsequent chapters is whether migration flows promote or hinder regional convergence. A distinction needs to be drawn between movements at different spatial scales. Using micro data from the BHPS, Meen and Andrew (2004) and Andrew and Meen (2006) suggest that flows between the London and the South East (broadly part of the same travel-to-work area) can, under some circumstances, lead to processes of cumulative disparities between Inner London and the South East once the effects of out-flows of high-skilled labour on local deprivation is taken into account. On the other hand, using regional time-series data, Meen (2008) argues that changes in house prices, migration, housing availability and household formation act together to promote

equilibrating forces across the southern regions. But the evidence how these forces act between the South, Midlands and North is less clear cut. In particular, flows may be affected by different expectations of capital gains, which run counter to population movements towards lower priced regions. More broadly, it is possible to observe *intra*-regional divergence, but *inter*-regional convergence. Local poverty traps are one example. Typically, the dispersion of deprivation is greater at the neighbourhood level than the local authority or regional levels. Using the 2007 Index of Multiple Deprivation, for example, the standard deviation across the English Super Output Areas is 15.71[4] compared with 8.81 across the local authorities. In general, the broader the spatial scale, the lower is the expected dispersion.

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[4]   This is almost unchanged from a value of 15.74 in 2004.

Chapter 3

Spatial Structure and the Role of History

"Cities are complex, self-organising market driven systems of economic, social, technological and social relationships. They differ in their economic, social and institutional structures. Each is the product of a unique history of development. These differences persist over time, so there are strong tendencies making for 'path dependence' in the patterns of size, function, and specialisation among cities. There are corresponding differences between cities in their capacity to adapt to changing technological, economic and market conditions and opportunities." (ODPM 2006, p66).

"… our evolutionary approach to the analysis of city economies has emphasised the significance of their long-term historical trajectories. They have arrived where they are today as a result of the long-term interactions between their particular circumstances and the external forces that have impacted on them. This approach shows not only that history matters, but that it takes a long time to develop along a particular path. It also shows that policy-makers and policies need similar long-term perspectives to achieve changes in those paths. There are no quick fixes that will turn around lagging city economies." (ODPM 2006, p108)

This chapter begins to examine the transmission mechanisms whereby housing affects regional growth differences. One of the key characteristics of housing is its longevity, so that the spatial structure of the housing stock cannot be changed quickly. This implies that history becomes important and spatial structures exhibit persistence and spatial lock in. As the quotations above recognise, persistence suggests that any policy interventions take a long time to have a significant effect.

Summarising the literature, which attempts to explain the spatial distribution of economic activity, Davis and Weinstein (2002), point to three theoretical approaches – increasing returns, random growth and locational fundamentals. Increasing returns models are commonly associated with the work of Krugman (1991) and Fujita *et al* (1999). Under certain conditions, increasing returns models generate path dependence and lock-in to a particular spatial structure, determined by initial conditions[5]. It might be thought that the natural advantages

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[5] However Martin and Sunley (2006) argue that, although potentially important, path dependence and lock in, commonly used in evolutionary economics and many other fields, are not always well defined and need further development and careful application in economic geography.

of any area, e.g. closeness to natural resources, ports, transport hubs, or soil fertility, ensure that such locations are able to establish an advantage which they sustain over long periods of time, because of the externalities associated with agglomeration. In this case, history and path dependence are crucial to explaining regional spatial structure. However, multiple equilibria are a standard feature of increasing returns models and it is possible that if all agents have common expectations, these can be self-fulfilling and may overcome the advantages that some areas have in terms of history. This is the "History Versus Expectations" argument of Krugman (1991a), and derives conditions under which history or expectations are likely to be the most important, depending, for example, on the mobility costs of labour changing between industrial sectors. Krugman demonstrates that if mobility costs are high, the economy adjusts only slowly and history is more likely to be decisive.

The two sector models employed in the analysis rarely consider housing factors, although we might speculate that the housing market, in terms of relative housing costs, transactions costs or availability, could contribute to keeping migration costs high, promoting spatial lock in. On the other hand, expectations of differing regional capital gains from housing might be a factor that weakens the role of history. But we stress that this is speculation. Few attempts have been made to integrate housing fully into the Krugman framework. Nevertheless, transactions costs are a central element of housing economics. Apart from the direct costs in terms of stamp duty and solicitors' fees etc, the psychological costs of moving away from family and friends are highlighted in the literature. These have two effects. First, moves are typically short distance – an issue explored further in Chapter 4; second, housing consumption is "lumpy" since transactions costs generate a hurdle, which households have to overcome. Therefore, rather than adjusting consumption patterns smoothly in response to new opportunities, housing choices remain sub optimal for lengthy periods of time. This can include living in sub-optimal locations. More generally, housing decisions may exhibit David's (1985) QWERTY keyboard effect, where the transactions costs associated with adopting new technologies (or in this case new locations) are too high for change to take place, even if change is optimal. In addition, property rights generate further transactions costs and contribute to an explanation of why city structures change only slowly. For example, Sir Christopher Wren's 17th century grand reconstruction plan for London after the Great Fire was never adopted, partly because of the diversity of property rights. Similarly late 19th century plans for slum clearance in London were slow and piecemeal because of the difficulties of agreeing compensation packages amongst diverse property interests (Yelling 1986). All these contribute to a lock in of spatial structure.

Increasing returns are also a feature of models that stress the interdependencies of household location decisions. The literature takes its antecedents from the influential work of Schelling (1971), whose central insight was to demonstrate that, even if individuals wished to live in integrated communities, the sum of individual decisions would typically lead to highly segregated communities if there was only a weak preference that some proportion of one's neighbours should be of similar status. Schelling's original work was set in a non-stochastic framework, but later extensions to a stochastic world (Young 1998, 2001) demonstrate the important property that models with social interactions exhibit segregation as the stochastically stable state. Meen and Meen (2003) review the central elements of the literature. At the policy level, this has at least four implications: (i) it is difficult to generate mixed communities through government policy interventions; (ii) heavy concentrations of highly skilled workers in certain areas are likely to be the norm; (iii) The statuses of areas can change through a sequence of random shocks, but these changes are unlikely to take place frequently; (iv) a series of random shocks can establish the initial advantages of an area, independently of the initial natural advantages of the area.

Using techniques from complexity theory, Arthur (1994, Chapter 4) demonstrates this last point in a model of industrial location, although the model is equally applicable to migration flows. Arthur points to two views of the world on the spatial ordering of industry. The first suggests that spatial order is pre-ordained on the basis of natural endowments, but the second (whilst still recognising the importance of endowments) emphasises agglomeration economies. In the extreme version of this view, firms could initially become established anywhere, but once historical accident chooses the initial location, other firms will also be attracted, establishing a dominance of like firms in that area. Under this view, the rise of Silicon Valley, for example, was largely a matter of chance. Similarly, the location of early migrants may be random, but agglomeration economies in terms of information networks or security ensure that later migrants head for the same locations. Arguably, models of this form are particularly relevant to international migrants and explain why new migrants head for locations with strong concentrations of the same ethnic group.

A second approach to explaining spatial structure considers random growth and provides a possible explanation of Zipf's Law; this states that "for most countries the size distribution of cities strikingly fits a power law; the number of cities with population greater than S is proportional to 1/S" (Gabaix 1999, p739). To illustrate[6], take a country such as the US and rank the cities by population, so that, for example Number 1 is New York. Now, if the log rank of each city[7] is plotted against the log of its population, the relationship is typically a straight

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[6]   The example is taken from Gabaix.

[7]   e.g. New York is ln(1) on the vertical axis.

line, with a slope of -1. This is an example of Zipf's Law. The question, however, is what processes are likely to generate this striking relationship, which appears to hold over time and across different countries. Gabaix argues that the finding is consistent with Gibrat's Law. Under Gibrat's Law, although cities may grow and decline stochastically, they exhibit homogeneous growth processes with a common mean (equal to the mean city growth rate) and variance. In particular, growth does not depend on initial city size. If Gibrat's Law holds, in the steady state, Gabaix shows that the distribution of cities will follow Zipf's Law. Therefore the statistical regularity of Zipf's Law is transformed into a testable economic explanation.

In fact, power laws have much wider applications than cities and are sometimes illustrated, using the analogy of a sand pile, Bak and Chen (1991). Suppose grains of sand are dropped one at a time onto a table. As the grains accumulate, a pile will develop. However, after a critical point, avalanches will occur with sand cascading down the sides of the pile. In fact, it is impossible to predict whether any given avalanche will be large or small in terms of the number of falling grains. But the number of avalanches of each size will follow a power law with small avalanches much more likely to occur than large avalanches. More precisely, the power law takes the form: $N=1/x^{\alpha}$, where (N) is the number of avalanches of each size, (x) is the size of the avalanche and (α) is the exponent of the power law. The equation implies a log-linear relationship between the number of avalanches and their size. Power Laws have now been widely used; for example, the sizes of volcano eruptions and earthquakes are believed to follow power laws. It has also been suggested that stock market prices follow power laws (Liu *et al* 1999) – small price changes occur much more frequently than large changes.

A third explanation of spatial structure is in terms of locational fundamentals, which are related to the natural advantages that any area might possess – access to ports, rivers, etc. One of the questions in the literature is the extent to which areas, initially established because of these advantages, have managed to preserve the position over time, even if the initial advantages have become irrelevant for subsequent development. Empirical studies of this form have used much longer data sets than typically appear in time-series econometrics. At the extreme, Davis and Weinstein (2002, 2008) use Japanese data from the Stone Age to the modern era. But studies from the 19th century and early 20th century are more common. Long data sets allow research to consider two key questions: (i) the extent to which spatial structures persist and exhibit path dependence; (ii) the extent to which structures change in response to large external, exogenous shocks. The latter also allows studies to identify the possibility of multiple equilibria – if the shocks are large, cities are more likely to jump to a new equilibrium. The work of Davis and Weinstein (2002, 2008) and Bosker *et al* (2007) concentrate on the effects of World War II bombing – the former in

the case of Japan and the latter for Germany. These were, obviously, very large shocks and on a much greater scale than those experienced in England during the Blitz. Given the widespread destruction of residential and industrial structures, it might be expected that the city population distributions would be permanently affected. Nitsch (2003) concentrates on a different shock – changes in the population of Vienna following the break up of the Austro-Hungarian Empire after the First World War.

Nitsch finds that the population of Vienna initially declined after WWI, but stabilised subsequently at a higher level than would have been expected from its underlying characteristics. He interprets this as evidence of spatial lock in. Davis and Weinstein conclude that the growth rates of bombed Japanese cities recovered in the post-war period, despite the widespread destruction. The tests are based on a random walk model. If population growth exhibits a random walk, then temporary shocks, such as a war, have permanent effects. But Davis and Weinstein (2002) reject the random walk and observe that, by 1960, US bombing had little effect on city size. Therefore, there is considerable persistence in historical city structures. They argue that locational fundamentals are a part of the explanation. Davis and Weinstein's 2002 paper assumed a single unique equilibrium to which city structures returned after shocks. However, their 2008 paper tests for multiple equilibria, but found no support. By contrast, Bosker *et al* (2007) find evidence of two stable equilibria in Germany. Consequently, in this case, large shocks may be sufficient to shift city population distributions to a new equilibrium.

A more descriptive approach to long-run city change can be found in Glaeser (2005, 2005a). The first paper considers the historical development of New York and the second Boston. Glaeser argues that, despite the current strength of both cities, over the long term, the two have experienced different trajectories. Apart from short periods, New York has experienced almost continuous growth, whereas Boston had to re-invent itself in order to counteract declining fortunes. Initially, both cities had natural advantages, for example, the superiority of New York's deep water port and its connection to the Great Lakes, or Boston's religious foundations, which promoted social cohesion and put an emphasis on education. However, their subsequent status is strongly related to their ability to attract high-skilled workers and to act as an information hub. This, in turn, depends on their attraction as consumer cities. Unsurprisingly, this is reflected in high house prices in both locations. In a wider study, Rappaport and Sachs (2003) also find evidence that the concentration of US activity on the coastal areas does not arise just from historical forces, but there is both higher productivity and a better quality of life. Long-run US studies by Simon and Nardinelli (2002) and Beeson *et al* (2001) also stress the importance of human capital. Furthermore, it appears that cities that

start out with high levels of human capital in the 19th and early 20th centuries have grown faster in subsequent periods, exhibiting a high degree of persistence.

Although the possible connection between housing transactions costs, mobility and path dependence is noted above, Glaeser and Gyourko (2005) suggest that modern work on urban dynamics ignores the link with housing and the physical structure of cities. But there are good reasons why physical structures contribute to historical lock in. In the Glaeser and Gyourko model, cities exhibit asymmetric responses to periods of growth and decline; because of the durability of the housing stock, cities grow faster than they decline, so that urban decline is persistent. This arises because, at least in the US case, new supply is elastic in the upswing when prices are rising faster than construction costs, but the stock of units is inelastic in the downswing since the existing stock cannot be reduced quickly, for example, by filtering and demolition. A consequence is that, positive shocks increase population more than prices, but negative shocks decrease prices more than population.

Although there are some doubts whether the model is quite so applicable to England, since supply is inelastic also in the upswing, (Meen 2005), the general point that there is a neglect of housing in theoretical models of urban and regional dynamics remains valid. There are, in fact, good reasons for believing that the lock-in effects generated by the housing stock are greater in England than in the US, since the average age of the housing stock is much older. As Table 1 shows, approximately 40% of the English stock was built prior to the Second World War. By contrast, although not shown in the table, less than 20% of the US stock was built prior to the war (American Housing Survey 2003, Table 1A-1).

Table 1 Age Distribution of the English Housing Stock (%)										
All households										
Year Built										
Tenure	Before 1800	1800-1850	1851-1900	1901-1918	1919-1930	1931-1945	1946-1964	1965-1980	1981-1984	1985 or later
All owners	2	2	8	7	6	14	20	21	5	14
All social sector tenants	0	0	2	3	4	12	32	27	7	12
All rented privately	4	3	15	15	8	10	13	13	5	14
All tenures	**2**	**2**	**8**	**8**	**6**	**13**	**22**	**21**	**5**	**14**

Source: Survey of English Housing 2004/2005

It also appears to be the case that the average life of dwellings is longer than might be expected from standard obsolescence conditions and is also longer than the average life of commercial developments. The optimal rule is that redevelopment occurs when the price of land for new development exceeds the price of land in its current use by the cost of demolition. (Brueckner 1980, Wheaton 1982, Rosenthal and Helsley 1994, Munneke 1996, Dye and McMillen 2007). But the interpretation of the rule is not necessarily as straightforward for residential as commercial property. First, the diversity of property rights in housing have already been noted earlier; this implies that the transactions costs (see Webster and Wai-Chung Lai 2003) associated with assembling sites for redevelopment are high and will, typically, lead to a postponement of rebuilding and to an increase in the average lives of existing dwellings. Second, the presence of conservation areas in neighbourhoods of historical significance has a similar effect, because of the need to take account of social costs and benefits in the redevelopment decision. Third, and not least, land-use planning regulations, for example, through Green Belt controls, lock in the spatial structure by limiting urban sprawl and increase the average life of existing dwellings by raising their price and by inhibiting the process of filtering, whereby obsolete dwellings are eliminated from the housing stock, Malpezzi and Green (1996).

In summary, there are very good reasons for believing that housing is a major contributor to spatial lock in, but a full theoretical model that integrates housing into increasing returns models, for example, does not exist in the literature. Consequently, in the next chapter, the paper turns to a further branch of the literature that looks at the inter-relationships between housing and labour markets, primarily from an empirical perspective.

Chapter 4

Housing and Human Capital

4.1 The Determinants of Migration Flows and the Role of Housing

Chapter 2 highlighted the importance of human capital for regional growth differentials. But human capital can increase either through raising the skills of the indigenous population[8] or through migration of the high skilled. This chapter concentrates on the role of migration and the extent to which housing shortages or costs hinder equilibrating population flows.

Migration has, in fact, been a central concern of the literature for more than a hundred years and some at least of Ravenstein's (1885) Seven Laws of Migration still appear relevant today. Notably, the First Law states that the great majority of migrants only move short distances and most moves are towards centres of absorption, such as centres of commerce and industry. Under the Second Law, growing towns or counties first absorb the migrants from their locality or borders before drawing in resources from more distant areas. As migrants move toward absorption centres, they leave gaps that are filled up by migrants from more remote districts. Consequently, there is a form of spatial contiguity and ripple.

Table 2 shows the position 120 years later and sets out a matrix of gross migration flows across the English regions in 2005; the data are taken from the National Health Service Central Register. From the table, it is clear that most migration is still to contiguous regions. For example, approximately 60% of total migration flows take place between the four southern regions (measured as the sum of inflows and outflows in the four regions as a proportion of total English inflows and outflows). Böheim and Taylor (2002) also find, using seven waves of the British Household Panel Survey from 1991-1997, that 66% of moves are within local authority districts, 16% are between local authority districts, but within regions and only 18% are between regions. Using a sample of Travel to Work Areas (TTWA) in the North and Midlands, Meen *et al* (2005) reach similar conclusions. In their sample, 76% of movers were within the same local authority district, 8% were to a different district within the same TTWA and 16% were to different TTWAs. The Survey of English Housing indicates that in 2005/6, 70% of movers travelled less than 10 miles. For social tenants, the figure rises to over

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[8] Housing can increase the human capital of the indigenous population since decent housing may improve educational or workplace performance and improve health. Since this is not distinctively regional in character, the literature is not discussed here.

80%. Furthermore, the same patterns emerge in other countries. Clark and Dieleman (1996), for example, reach similar conclusions for both the USA and the Netherlands.

Table 2 Migration Flows (2005, 000s)									
	Region of Origin								
	England	**NE**	**NW**	**YH**	**EM**	**WM**	**E**	**GL**	**SE**	**SW**
Region of destination									
England	.	33.3	83.1	83.0	88.9	84.9	113.7	227.0	181.4	91.1
North East	34.3	.	6.0	8.9	3.2	2.3	3.0	4.2	4.3	2.4
North West	84.8	5.9	.	17.4	9.3	12.3	7.4	13.1	12.0	7.3
Yorkshire and The Humber	86.4	8.9	17.8	.	15.9	7.8	8.8	10.9	10.9	5.4
East Midlands	99.2	3.0	9.1	16.5	.	15.6	17.1	13.3	17.7	7.0
West Midlands	82.6	2.2	12.0	7.3	14.1	.	7.8	13.0	14.1	12.1
East	131.4	2.6	6.8	7.0	13.3	7.0	.	60.0	25.7	9.0
London	148.1	4.7	11.9	10.4	10.8	11.8	29.4	.	53.5	15.6
South East	201.7	3.9	11.2	9.5	13.9	13.0	27.6	90.3	.	32.3
South West	117.7	2.1	8.2	6.0	8.4	15.1	12.7	22.2	43.0	.

Source: NHSCR.

Furthermore, English inter-regional moves are sometimes equated with longer-distance moves, but closer inspection reveals that even this is not necessarily the case. Inter-regional moves could simply involve short distance moves either side of administratively-fixed regional boundaries. Table 3 sheds some light on this; the table shows the percentage of inter-regional moves that are between adjacent local authorities lying on either side of a regional boundary. The table shows that the proportions range between 4% and 11% for regions as a whole, but there are important cases where the share is much higher. For example, 32% of moves between Yorkshire and Humberside and East Midlands are between contiguous local authorities on the boundary. The highest proportion of these moves is from Sheffield.

Table 3 LA to LA Migration Across Regional Boundaries (%)									
Per cent of Inter-regional moves to bordering LAs during the year ending June 2006									
	Region of origin								
Region of destination	**NE**	**NW**	**YH**	**EM**	**WM**	**E**	**GL**	**SE**	**SW**
North East		1.85	13.93						
North West	2.98		9.95	8.92	7.44				
Yorkshire & Humber	14.09	10.54		24.83					
East Midlands		13.83	31.76		16.00	16.95		10.03	
West Midlands		9.71		15.80				2.04	9.34
East England				13.33			17.91	8.50	
Greater London						13.58		11.79	
South East				8.25	1.75	9.91	14.83		8.13
South West					7.01			7.05	
Total persons migrating (Nos)	33,522	84,091	85,589	91,677	87,475	118,107	232,610	183,255	92,918
…to adjoining LA in different region (Nos)	1,450	4,460	8,660	10,140	4,830	10,200	25,580	13,920	3,850
… per cent	**4.33**	**5.30**	**10.12**	**11.06**	**5.52**	**8.64**	**11.00**	**7.60**	**4.14**

The starting point for most migration models is the standard neo-classical human capital model in which individuals move in order to maximise expected utility. In the simplest case, utility maximising agents compare the present values of earnings net of costs in different locations (i, j) as in (2).

$$PV_{ij} = \sum_t (W_{jt} - W_{it})/(1+r)^t - \sum_t (C_{jt} - C_{it})/(1+r)^t \qquad (2)$$

Where: W = real earnings; C = transactions costs; r = discount rate

Agents only migrate if the present value is positive and will choose the location where the present value is highest. In equation (2), the costs may include both the transactions costs associated with moving, but more importantly the psychological costs of moving. As argued earlier, households are reluctant to disturb ties with family and friends. This is a plausible explanation of the short moving distances above. There is evidence that, even in the Victorian era, this model provided a good explanation of rural to urban moving patterns. Using matched pairs of individuals in the 1851 and 1881 censuses, Long (2005) argues that migrants responded to market signals and their prospects were improved by moving to urban areas. Furthermore, those who chose to move were largely the cream of the rural labour market. However, the short distances moved at that time may be more a reflection of the poorer transport links as much as a reflection

of attachment to place. Particularly in the first half of the Victorian period, most individuals still walked to work.

Most modern work on migration, using both aggregate time series and micro data sets, considers a large class of variables in addition to labour market factors. Indeed, a controversy still exists on the extent to which migration is primarily a response to relative labour market conditions. A series of stylised facts can be identified[9]:

(i)   Private renters move more frequently than owners

(ii)   Social tenants have low rates of migration

(iii)   Negative equity reduces rates of mobility amongst owners

(iv)   High relative house prices discourage migration into an area, but this may be offset by expectations of capital gains

(v)   Migration into an area is deterred by housing shortages, but equally areas that experience excessive levels of vacancies are unattractive because they indicate decline

(vi)   Those in professional occupations have higher rates of mobility than the unskilled

(vii)   Migration is more difficult for dual income households because of the problems of job matching. Dual incomes also affect commuting patterns.

(viii) Migration falls sharply in middle age at least up to the age of retirement

(ix)   Migration is low for households with school aged children

(x)   Aggregate rates of home-ownership are correlated with high rates of unemployment.

The last of these has proved particularly controversial, given its policy implication that encouraging high levels of owner occupation raises unemployment, despite the fact that higher income groups are more likely to be owners. We return to this important discussion below.

Perhaps the most comprehensive recent study in the UK of the factors affecting moving decisions using micro data (BHPS) is that by Böheim and Taylor (2002), which includes most of the factors covered in points (i)-(x) and, therefore, acts as a convenient point of reference[10]. The results can be compared with the most comprehensive analysis on time series data – Cameron and Muellbauer (1998). In addition to labour market indicators (earnings and unemployment), this study

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[9]   This extends the list in Dohmen (2005)

[10] However, the study only includes those of working age and, therefore, excludes important flows on retirement.

includes a range of housing market variables, including relative house price levels, expectations of capital gains, tenure and housing market turnover.

There is little doubt that private renters have higher rates of migration than households in other tenures; this is true internationally as well as in the UK (see also Andrew and Meen 2006). It might, therefore, be concluded that a vibrant private rental sector is a necessary pre-requisite for a mobile labour force and the expansion of the sector through the provision of Buy-to-Let mortgages since the mid nineties has been beneficial. However, it is also the case that the young, who are more mobile (perhaps because they change job more frequently or have less attachment to place) are more likely to be in the private rented sector and, therefore, some care needs to be taken with the interpretation of the tenure effect. Nevertheless, since the moving costs in the private rented sector are much lower than in owner occupation, it would be surprising if tenure did not have some independent influence.

Studies also, generally, find social tenants to have low rates of moving. The early studies of Hughes and McCormick (1981, 1985, 1987, 1990) were particularly influential. But, Böheim and Taylor (2002) argue that social tenants have higher moving probabilities than owners with mortgages and there appear to be two possible causes. First, the study period is one where owners were facing negative equity, which locks households into their homes and reduces spatial mobility. Henley (1998), and Andrew and Meen (2006) also using BHPS data find strong support for the lock-in hypothesis. In the US, Chan (2001) also provides evidence that negative shocks to house prices generate reductions in mobility through spatial lock in. Second, Meen *et al* (2005) argue that the mobility of social tenants in the Midlands and North is relatively high *within local authority districts* where there are no housing shortages. Therefore, there is churn within the local authority stock. However, mobility of social tenants across local authority boundaries is low because of the administered nature of the system. The short distance of moves by social tenants noted above is one indicator. Detailed information on social sector turnover is provided in Pawson and Bramley (2000), who point to an increase in local authority relet rates in England from 47.8 per thousand dwellings in 1983/84 to 79.6 in 1997/98. On the face of it, this appears to point to a significant increase in local authority tenant mobility over the period. However, some care over interpretation is required, because the data are based on net relet rates. Consequently churn within the stock of a local authority is excluded. Nevertheless, Pawson and Bramley distinguish a number of reasons for the increase. Excluding policy induced change, (e.g. a boom in housing association construction, which, by definition adds to new lettings, cash incentives to tenants to leave, changes in temporary lettings and evictions), a high percentage of moves involve a change in tenure to the private sector, partly reflecting the bimodal age distribution of social tenants. In addition

to relets arising from deaths and transfers to private care homes for the elderly, mobile young tenants are particularly likely to transfer to the private sector. For this group, social housing is increasingly seen as a temporary sector until personal circumstances improve, rather than as a tenure for life. This trend has been reinforced by higher social sector rents over the period and an increasing view of social housing as "residualised" with a poor reputation.

At first sight, the view that high housing costs reduce in-migration would appear uncontroversial. The work of Bover *et al* (1989), and Cameron and Muellbauer (2001), for example, both provide support. In this case, high house prices are seen as a key factor in preventing labour market adjustment through migration. This was considered particularly important in the housing market boom of the late eighties when prices were rising much faster in the South than the North. However, it does not necessarily follow that high prices increase migration outflows. First, for those who are already owners in the region, an increase in prices is a benefit rather than a loss. More generally behaviour depends on expectations of relative capital gains between the regions, a point stressed by Cameron and Muellbauer (1998). Households currently based in the South East may be unwilling to move to the Midlands to benefit from lower costs (although Table 2 shows that approximately 30,000 did make this move in 2005) if they expect the South East to experience a faster capital gain in the future. This may well be a limiting factor on South to North migration, although it is hard to believe that it could be a major factor influencing moves between the southern regions since we show below that prices have risen contemporaneously at similar rates across these four regions.[11]

Again it would seem uncontroversial that housing shortages limit inflows into an area, although such effects will, of course, influence relative house prices directly. Böheim and Taylor find a significant relationship between inflows and the local vacancy rate, but, arguably, the response may be asymmetric. A rise in vacancies may free up properties for new migrants in the South, but in low demand areas, primarily in the Midlands and North, high vacancies can act as an indicator of cumulative processes of urban decline (Keenan *et al* 1999, Power and Mumford 1999). Overcrowding is also a potential indicator of housing shortages and both Böheim and Taylor and Andrew and Meen (2006) – the second study only examines London and the South East – include the number of persons per room. However, this measure could have two possible effects on mobility. Overcrowded households may desire to move to improve conditions, but the measure could also indicate poorer underlying economic conditions and, therefore, a reduced ability to move. In fact, the spatially-wider Böheim and Taylor study finds in favour of the former, whereas the narrower London study finds the latter.

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[11] It was also noted above that these account for approximately 60% of all moves in England.

Most analysis indicates that the high skilled in the UK have higher mobility rates than the low skilled (the key recent trends can be found in Champion 2005). Böheim and Taylor also find that manual workers have lower mobility and that moving is positively related to both skills and education. A series of papers by Faggian *et al* (2006, 2007, 2007a) considers the migration decisions of young graduates from home to university to subsequent employment, allowing an assessment of the contribution of education to the local knowledge and human capital base. The papers again confirm the high mobility rates of the highly skilled. But, perhaps surprisingly, no housing variables are included in the regressor sets in the studies as possible factors affecting the choice of graduate location.

Standard human capital models suggest that unemployed individuals are more likely to move in order to seek jobs than the employed. Most UK empirical work supports this view (Pissarides and Wadsworth 1989, Jackman and Savouri 1992, Böheim and Taylor 2002). However, the evidence also suggests that regions with high unemployment rates do not necessarily experience higher rates of migration than low unemployment regions. Jackman and Savouri also find that both relative house prices and tenure affect migration, although they argue that, in general, housing variables are less important than labour market influences.

Migration flows for multiple income households are complex. Household location patterns become a compromise between the optimal locations for each individual and are reflected in commuting. Basic location theory often assumes the existence of single worker households and a single employment node in the CBD. However, there are a large number of studies, which attempt to relax the assumptions and introduce dual income households and polycentric employment. In addition to migration flows, the literature considers both commuting patterns and the timing of job change relative to moving. Clearly, the two decisions can be divorced to some extent if individuals are prepared to vary the length of the commute. The literature on commuting and job mobility is summarised in van Ommeren (2000). Unsurprisingly, commuting distance appears to fall with the existence of multiple employment centres. The international literature suggests that commuting falls with a person's age, but rises with education. Benito and Oswald (1999) provide evidence for this in the UK and also suggest that commuting is substantially longer for home owners. The usual result of the space-access model that commuting rises with income no longer necessarily holds with polycentric employment. Most studies suggest that female commutes are shorter than males, although this may be because of lower wages and a propensity to work part time because of child care responsibilities. Cameron and Muellbauer (1998) also find that the decision to commute rather than live in an area is positively related to relative house prices.

This is strong evidence that age affects not only commuting distances, but also the propensity to move. Fielding's (1992) "Escalator Hypothesis" suggests that moving patterns in London and the South East exhibit age-related profiles. Broadly, young households are attracted to London at early stages in their labour market careers by the job opportunities that the capital brings, but at later stages as they have families, they leave the centre for the outer parts of the region. Furthermore once they reach the age of approximately forty, the propensity to move at all falls off sharply (Boheim and Taylor 2002, Andrew and Meen 2006). Consequently, it becomes very difficult for policy to attract middle-aged households back to the city. Evidence from the same two sources also suggests that moving is affected by the presence of children in the household. Up to school age, having children increases the probability of moving, perhaps in search of the best schools, but, having started school, parents become reluctant to move their offspring again.

Perhaps the most controversial finding is Oswald's (1996) conjecture that high rates of home ownership are associated with high rates of unemployment. The results were found to be robust to data for the UK regions as well as developed countries and the US states. The argument centres on labour mobility and the finding that home owners are less mobile than renters, because of the transactions costs discussed above (see Dohmen 2005 for the construction of a theoretical model consistent with the Oswald approach). Less mobile owners might be expected to experience a lower probability of employment, longer spells of unemployment and lower wages. Results on micro data are less supportive of Oswald's findings. Coulson and Fisher (2002), for example, find no support and argue that home owners experience better labour market outcomes in the US, standardising for individual characteristics. Again using US data, Green and Hendershott (2001) throw further doubt on the relationship. Although they are able to reproduce Oswald's results, they find that the relationship is non-existent for young and old households and only holds for the middle aged groups,(35-64). Furthermore, the result is subject to a selectivity bias. Because of the sunk costs faced by owners, only those intending to stay in an area for a lengthy period are likely to be owners. If they lose their job, they are unlikely to move not because they are owners, but because of the intrinsic characteristics of the households, including the demographic factors discussed above.

To complete the section, Table 4 sets out the stated reasons for moving in the 2005/6 Survey of English Housing, distinguishing between newly forming, i.e. those who have been in existence for less than a year, and continuing households. For the former, wanting to live independently is unsurprisingly high on the list, but for both groups, employment related reasons are a relatively small proportion, underlying the earlier results that most moves are only short distance.

Table 4 Reasons for Moving (2005/6)		
Main or only reason for moving 2005/6	**Continuing**	**New households**
	Percent	**Percent**
Different size accommodation	23.2	4.1
Personal reasons	20.8	27.1
Better area	11.9	3.6
Job related	12.0	13.7
Wanted to buy	5.3	3.1
Wanted to live independently	0.0	28.6
Other	26.8	19.7
Total	100.0	100.0

Source: Survey of English Housing 2005/6

4.2   The Effects of Migration on Housing

The previous section concentrated on the effects of housing markets (and other factors) on domestic migration flows. In this section, the relationship is reversed to examine the effects of migration on housing markets, notably on house prices. An earlier study, Meen and Andrew (1998), reviewed the literature on regional house prices up to that date and provides the starting point for this section.

The most commonly observed feature of regional house prices in England is the so-called ripple effect and is typified by an initial increase in house prices in the South of the country during the early stages of a cyclical upswing, with the other regions catching up at a later stage. Consequently, although short-term price dynamics differ between the North and South, there appear to be processes operating that ensure long-run relativities are restored. In fact, whether regional prices do rise in line with each other is still considered controversial, although recent work by Cook discussed below sheds further light on this issue. A second set of patterns is typified by the fact that prices in the four southern regions of England have risen and fallen at a similar rate *contemporaneously*, i.e. there is little evidence of the spatial lag implicit in the ripple effect between the southern and northern regions. These movements are highlighted in Figure 1.

Figure 1 Annual Growth in House Prices
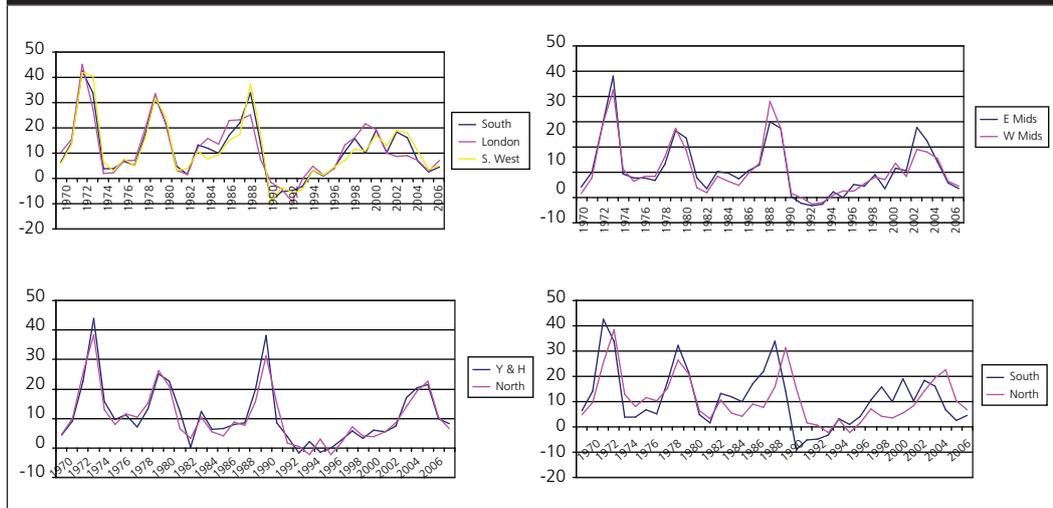
The first three frames of Figure 1 show annual percentage changes in nominal house prices in each of the regions, separated into three blocs – southern (London, South[12], South West), Midlands (East Midlands and West Midlands) and northern (North, Yorkshire and Humberside). The striking feature of the movements within the blocs is the similarity of the growth rates. By contrast, the final frame suggests that, over successive cycles, changes in prices in the North have lagged behind the South – this is the ripple effect.

The literature has adopted two broad approaches to the modelling of regional price dynamics. The first is concerned with statistical tests of the nature of regional spatial interactions between house prices. Much of this literature attempts to establish the nature of long-run, cointegrating relationships between the regions and the extent to which London is a leading indicator for the remaining regions. Since the previous literature review, the main advances in this direction have been the introduction of tests for asymmetric adjustment between periods of upswing and downswing (Cook and Holly 2000, Cook 2003, Cook 2006). Asymmetries are considered both for regions and vintages of properties. This series of papers suggest that asymmetrical adjustment does, indeed, occur, but differs between the regions, and, once this is taken into account, the evidence in favour of the ripple and regional price convergence is stronger.

However, this literature has little to say about the economic processes that generate the similarities and differences in regional house price movements. The second, rather smaller literature is concerned with the drivers of change. Perhaps unsurprisingly, since the earlier literature review, most empirical studies of house prices have been concerned primarily with macroeconomic issues. First, the literature examines the causes of the international house price boom

[12] Note that "South" is a consolidation of the South East and East Government Office Regions and the "North" amalgamates the North West and North East. The amalgamation is due to the change in boundaries in 1992.

and, in particular, whether this was generated by a bubble or can be explained by fundamentals. Cameron *et al* (2006) model the UK market; Meese and Wallace (2003) and Roehner (1999) analyse the Paris housing market; Case and Shiller (2003) and Hwang and Quigley (2006) the US; Boelhouwer (2005) the Netherlands; Abelson *et al* (2005) Australia; and Stevenson (2008) Ireland. Therefore, studies cover many of the countries that have experienced major booms since the mid nineties. In a survey of OECD countries, Girouard *et al* (2006) suggest that overvaluation is limited to a small number of countries, although they argue that the evidence uniformly points to overvaluation in the UK, Ireland and Spain. In the US, a study by Gallin (2006) has been influential; this investigates whether a cointegrating relationship exists between house prices and incomes down to the city level. Since the relationship between the two variables might be considered as one measure of fundamentals, the author's finding that cointegration does not exist might be considered as evidence of a bubble. However, Holly *et al* (2006), using an alternative methodology, find that a cointegrating relationship does exist between the variables at the state level. Furthermore, it is arguable whether income alone is an adequate representation of fundamentals. Studies such as Boelhouwer (2005) for the Netherlands and Meen (2008a) for the UK stress the importance of low nominal interest rates in explaining the post-1996 boom.

A second strand of the recent house price literature considers the effects of house prices on national economies. The importance of housing wealth as a determinant of consumers' expenditure, first, became an issue in the UK in the late eighties as an explanation of the strong boom in GDP (Maclennan *et al* 1998). However the issue has received greater international exposure recently with the observation that increases in house prices supported consumption at a time of falling stock market prices in the US. Whereas the original issue in the UK was that house prices added to the volatility in the economy, in the US, the question was one of support for the macro economy.

Consequently, a significant number of empirical studies of the relationship between consumption and house prices have recently been conducted, commonly in a VAR or VECM framework, for both the US and Europe (see Case *et al* 2001, Iacoviello 2000, 2003. Giuliodori 2004, Chen 2005). The studies generally find a significant relationship between consumption and the housing market, although of considerably varying strengths. A third theme has been the role of housing as part of a risk diversification strategy. Englund *et al* (2002) find no correlation between a housing index and stock prices in Sweden between 1990 and 2002 and a negative correlation with bonds and Treasury bills. Over a broader range of countries, Quigley (2006) reaches similar conclusions.

However, none of the above studies are explicitly concerned with the relationship between prices within countries at different spatial scales, although some employ spatially-distinguished panel data sets. In the UK, with the exception of the purely statistical approaches outlined above, there have been no studies of the determinants of regional house prices since the 1998 review, apart from unpublished studies by Cameron *et al* (2006) and Meen (2008). However tests of the ripple effect or, more generally, spatially lagged relationships have spread to other countries. For Ireland, Stevenson (2004) finds evidence of spatial diffusion originating in Dublin. Similarly Oikarinen (2006) shows that price changes diffuse outwards from the Helsinki Metropolitan Area, whereas Guirguis *et al* (2007) find spatial spillovers from Madrid. In summary, the most recent international evidence suggests that London, as a capital, is not alone as being a lead region.

But, again, these studies provide only limited evidence on the transmission mechanisms of price changes between regions. As Wood (2003) points out, the price relationship between London/South East and the remaining regions has not been constant, but has changed over time. Therefore, it is important to understand the nature of the housing market shocks. Meen and Andrew (1998) suggested a number of possible transmission mechanisms. First, one view is that households migrate to take advantage of differences in regional house prices and consequently arbitrage eliminates growth rate differentials. Any remaining longer-term differentials in price levels reflect the valuations of the characteristics of each location. The view is compatible with the models examined in the last section, but, as noted earlier, expectations of capital gains may offset the equilibrating effect of relative price differences. Again as discussed earlier, commuting flows also need to be taken into account. In England, the most obvious example is the relationship between London and the South East, where commuting flows are very strong. This implies that prices between the southern regions could be equalised as households move to the relatively cheaper areas in the South East (and East) and commute back to London. In fact, households do not need to move or commute to promote convergence. This could also be induced by variations in household formation rates between the regions. High housing costs may lead to sharing or individuals may remain longer with parents before forming separate households.

Second, search costs may contribute to the ripple. Households have more information on the state of local markets and, consequently, price diffusion over space is expected to take time. Third, equity transfer and downpayment requirements may have similar effects. Stein (1995) suggests that the observed positive correlation between house sales and prices is related to credit conditions. If, on moving between regions, existing owners have to make a downpayment, then sales and prices depend on the value of the house in the previous location.

Fourth, the observed pattern of house prices can, in fact, occur even if there are no spatial links between housing markets, if the regressors follow similar patterns. Since the elasticity of house prices with respect to earnings is high in the UK, changing spatial earnings patterns have an even larger effect on the spatial house price distribution. Cameron *et al* (2006) find the elasticity of house prices with respect to earnings is two – similar to the values found in national studies. Cyclical changes in the economy have often begun in the South with other regions catching up later. Similarly the economic slump of the early nineties was primarily concentrated in the South. However, there is still little direct evidence that regional earnings trends are consistent with those in house prices.

A final possibility is that the regions may have differential responses to national shocks (Meen 1999); perhaps the most obvious example is the responsiveness to real and nominal interest rate changes. This, in turn, implies that the coefficients in regional price equations are heterogeneous and spatially non-random. As a result, national shocks generate a distinct spatial pattern in house price movements The existence of regionally varying levels of indebtedness provides one reason, in terms of risk exposure, why the interest rate coefficients might vary between regions. Lamont and Stein (1999), for the US, suggest that cities where a high percentage of individuals are heavily leveraged are more responsive to city-wide shocks. Since leveraging cannot be changed quickly – mortgage debt to GDP ratios in the UK changed little in the market downturn of the early nineties – the mortgage market provides a further form of lock in. The fact that all empirical models of house prices include adjustment lags also suggests the importance of the transactions costs discussed above, including search costs.

Given the focus of this chapter, the key issue is the effect of migration flows on house prices – both domestic and international. The latter is considered in the next section. In fact, the impact of migration can only be inferred indirectly from empirical house price studies and has not been the focus of empirical work in recent years, although any well-specified model needs to allow for demographics as part of the structure. No UK study disaggregates household change between that arising from internal sources through changes in headship rates, for example, and that arising from migration. For the two recent UK regional studies, Meen (2008) finds that the long-run elasticity of house prices with respect to households is approximately 2, except in London where the elasticity is noticeably higher. The Cameron *et al* (2006) study uses population rather than households as a regressor, but the estimated elasticities are similar in size. Nevertheless, the evidence that is available indicates household formation and, therefore, migration has a significant effect. Consequently, not only is migration affected by housing market variables, but house prices are influenced by migration. A small illustrative model that captures the simultaneity is discussed in Chapter 5.

4.3   International Migration and Housing

Little is known in the UK about the effects of international migration on housing markets, nor how prospective international migrants are affected by housing conditions. Although surveys are available on the housing conditions faced by migrants – Spencer *et al* (2007), for example, examine the experiences of 600 migrants from Eastern Europe – the recent House of Lords report (2008) recognised the information gaps. Despite the fact that approximately a third of household growth in England over the next 15-20 years is likely to come from immigration, with a substantially higher proportion in London, there have been few attempts to model the impact on English house prices. The House of Lords report notes that, initially, migrants tend to consume lower levels of housing services (possibly implying overcrowding) than the UK born and are concentrated in the private rental sector, but over time, they tend to converge towards the tenure and housing consumption patterns experienced by domestic residents. However there are variations between nationalities.

Most of the international literature on migration and housing concentrates on tenure and originates from observed differences in homeownership between white and black residents in the US (Straszheim 1975, Bianchi *et al* 1982). Straszheim (1975), for example, finds that after controlling for income and various demographic variables, rates of homeownership for black households are lower than for whites. A number of studies subsequently confirmed this finding. In the USA, differences in homeownership attainment remained largely stable with a 25 percentage point cross-sectional gap between whites and blacks/Hispanics during the 1970s, 80s and 90s (Buist *et al* 1994). In a more recent study, Gabriel and Rosenthal (2005) confirm that the gap remains despite the overall expansion in ownership under the Bush and Clinton administrations. A number of studies have examined the impact of immigration on aggregate ownership trends (Borjas 1985, 2002, Alba and Logan 1992, Buist *et al* 1994, Coulson 1998, Myers and Lee, 1998, Painter *et al* 2001, Toussaint-Comeau and Rhine 2003, Myers and Liu 2005, McConnell and Marcelli 2007). Outside the US, Bourassa (1994) examines immigration and tenure choice in Melbourne and Sydney. Laryea (1999) examines the homeownership patterns of immigrants in Canada.

Concerns about the effects of immigration on housing costs in the UK are not new. In 1888, for example, the House of Commons appointed a Select Committee to report on emigration and immigration, whereas the House of Lords ran a parallel committee to investigate sweated labour arising from immigration (Fishman 1988, Chapter 3). The concerns of these committees were the same as today's House of Lords Committee – the effects of migrants on housing conditions and on the wages of the domestic poor. But providing quantitative evidence of the impact is difficult. First, over the last hundred years,

immigrants have arrived for a variety of reasons, partly political e.g. those seeking refugee status, partly economic (economic migrants were higher in periods of low UK unemployment and labour shortages in the sixties and seventies) and have also been affected by legislation. Therefore, *a priori*, it seems unlikely that housing issues are a key driver for most migrant groups thinking of entering the UK. Second, the effects on housing markets do not depend only on numbers, but also on household formation rates, the extent of sharing and tenure choices. As noted above, these differ from UK residents, particularly in the short run, although tenure differences may last for decades.

Figure 2 sets out the gross immigration flows, combining Total International Migration (TIM) data (1991-2006) and International Passenger Survey (IPS) data (1971-1990). The key features of the data are, (i) net flows were modest until the mid nineties; (ii) net flows rose to approximately 150,000 per annum in 1998, and (iii) to over 200,000 from 2004.

Figure 2 Gross Inflows and Outflows – UK
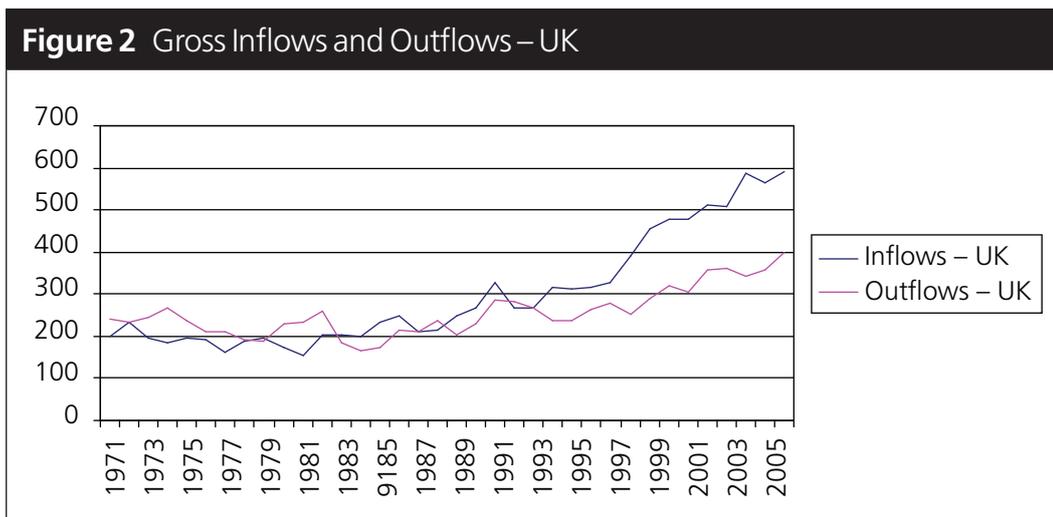
The 2008 House of Lords report quotes evidence that only a small element of the worsening of affordability since 2000 can be attributed to immigration. Furthermore, the evidence stated if net migration were to be zero over the next 20 years, compared with a projection of 190,000 per annum, prices might be approximately 13% lower than would have been the case. At first sight, this appears to be modest, but the impact may be more subtle than this suggests. The House of Lords reports that the increase in rents at the bottom end of the distribution has been weaker than might have been expected since the turn of the century. But, for the US, Saiz (2007) finds significant effects from immigration on property values – an increase in immigration equal to 1% of a city's population raises prices by approximately 1%. A possible explanation for the weak English result is that the effects of international migration are diffused over the regions. Hatton and Tani (2005) find empirical support for this view and provide evidence that the net inter-regional migration rate is negatively

related to the net international immigration rate. This implies, for example, that international migrants, who disproportionately head for London when they first arrive, generate outflows of domestic populations to the surrounding regions. Consequently, the rise in housing costs in London might be limited, but some increases in costs in other regions are also likely to be experienced.

A spatial diffusion process of this form is also a feature of the CLG Affordability Model (the basic structure of the model is set out in Meen *et al* 2005a, 2008). All models are subject to significant error margins, but as an illustration, Figure 3 assumes a 50,000 per annum increase in gross in-migration[13] over a 20 year simulation horizon. Since a high percentage is likely to be located initially in London, the largest effects on house prices are in this region (Figure 3a). However, prices also rise (to a smaller extent) in the other regions. This is, partly, because some of the international migrants are based outside London, but also because of the spatial diffusion from London.

Figure 3a Effects of 50,000 pa Increase in Migrants – House Prices (% differences from a base scenario)
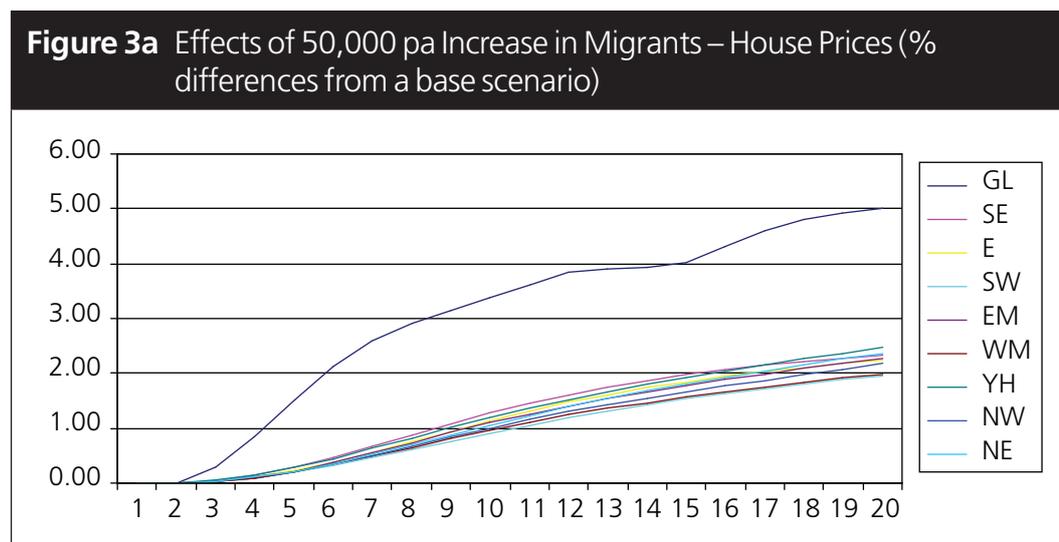
This can be seen in Figure 3b, which shows the net inter-regional population flows; London loses population to the remaining regions and the contiguous regions make the biggest gains. Figure 3c shows a further feature of the adjustment process, through changes in the rate of household formation. As housing costs rise in response to immigration, not only does spatial diffusion take place through migration, but household formation *within* regions is expected to fall. Domestic households may be crowded out and have to remain with parents or share for longer. In Figure 3c the total number of *households* rise nationally by approximately 280,000 in the final year (summing over the regions); but over a 20 year period the number of migrant *individuals* is assumed to increase by a million (50,000*20). Although the extent of crowding out depends on the headship rate (or average household size), the figures imply a significant degree of crowding

[13] The simulation also assumes that none subsequently returns home so that the net increase is the same as the gross increase.

out. For example, if the average household size is 2.3, this would imply a direct increase in households from migration of approximately 435,000. The difference from 280,000 is a rough indication of the degree of crowding out. More precise estimates depend on the detailed parameters of the model.

In summary, the effects of immigration may, indeed, be limited in terms of house prices and rents, but there are likely to be wider effects on household formation and spatial diffusion.

Figure 3b Effects of 50,000 pa Increase in Migrants – Net Regional Flows (differences from base scenario)

Figure 3c Effects of 50,000 pa Increase in Migrants – Household Formation (differences from base scenario)
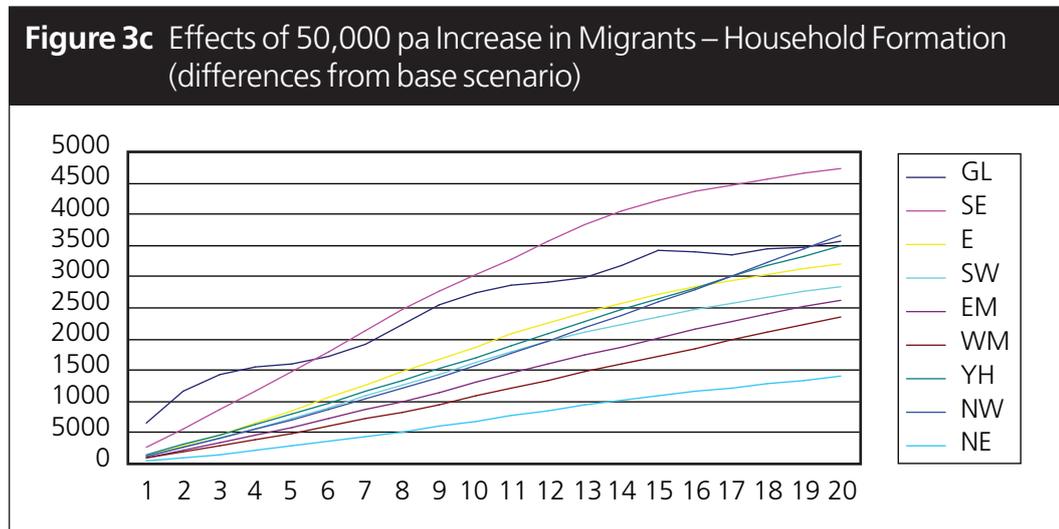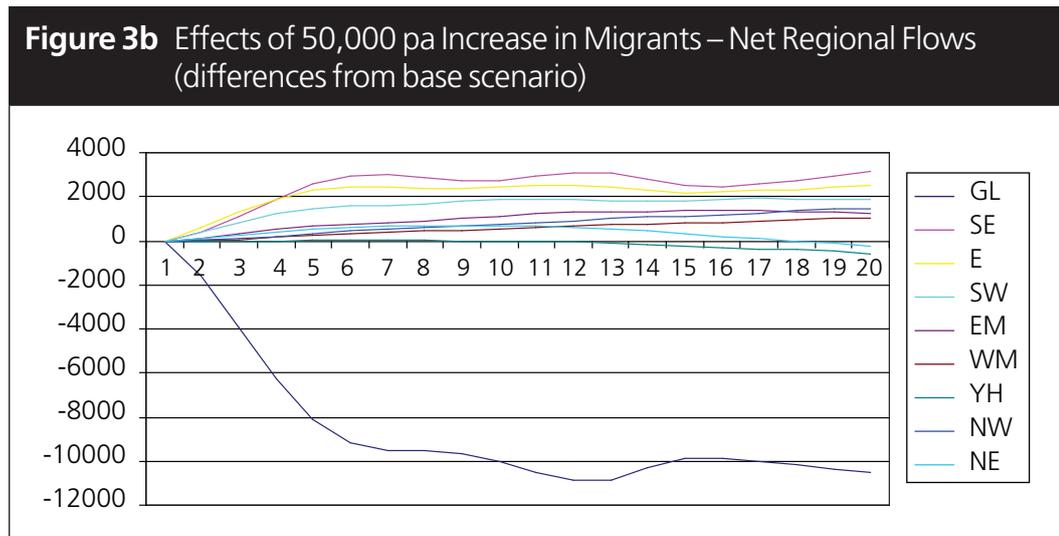
Two further features of international immigration are of importance for the regional distribution of human capital – the skill mix and the tendency for migrants from particular countries to be concentrated in certain areas, consistent with the agglomeration economies discussed in Chapter 3. The existing spatial concentrations are described in detail in Kyambi (2005).

Using Labour Force Survey (LFS) data, Table 5 sets out the sample distribution of new migrants by English region of destination. The final column gives the correlation with the *stocks in 1991* and shows strikingly that the spatial distributions of new migrants are highly correlated with those in place in 1991.

The LFS also allows the identification of migrant skills. Dustmann and Fabbri (2005) use stock information from the LFS to compare the characteristics of British-born white individuals with different groups born abroad. They find that it is, by no means, true that migrants have universally lower levels of qualifications than the UK born. For example, they find that the proportion of graduate women amongst immigrants is higher than for UK born women. Nevertheless, some groups do still have high proportions with no qualifications.

Table 5 New migrants, Regional Distribution (sample numbers)										
LFS Dec/ Feb	**Arrival Year**	**North East**	**North West**	**Yorkshire & Humber**	**East-Midlands**	**West-Midlands**	**Greater London**	**South East**	**East**	**South West**	**Corr.**
1992/93	Before 1992	162	710	556	550	938	3626	1834	298	520	
1992/93	1991	3	30	14	9	25	188	61	11	12	0.98
1993/94	1992	6	25	23	15	11	142	59	7	26	0.98
1994/95	1993	2	23	30	8	25	161	60	17	7	0.98
1995/96	1994	3	29	28	9	24	188	68	15	25	0.98
1996/97	1995	10	19	20	7	24	194	89	10	19	0.99
1997/98	1996	8	16	18	16	31	168	79	17	18	0.99
1998/99	1997	11	25	10	6	25	176	93	19	14	0.98
1999/00	1998	6	13	21	29	10	185	75	34	19	0.96
2000/01	1999	8	19	22	23	33	216	101	28	25	0.99
2001/02	2000	6	27	35	30	34	259	101	20	26	0.99
2002/03	2001	14	27	75	44	32	260	109	25	20	0.96
2003/04	2002	16	25	59	27	40	165	96	27	24	0.97
2004/05	2003	19	28	53	43	51	225	122	16	32	0.99
2005/06	2004	18	27	62	49	44	204	140	37	39	0.96

Source: LFS December-February, various years

Table 6 provides information on skills, again from the LFS, using a selection of SEC classifications. The table refers not to new migrants, but to the total stock, disaggregated by country of birth. Results are also compared with the UK born. The first two columns show percentages of migrants at the top end of the

distribution and the final two columns set out the bottom end. The high status of migrants from Ireland, Australia etc. particularly stands out and, perhaps with the exception of European migrants in recent years, there is little evidence that migrants are disproportionately working in routine occupations. Furthermore, for European migrants, a distinguishing feature is the wider dispersion of statuses than for the UK born. Although there is a higher percentage at the lower end, there is also a higher proportion at the top end.

Table 6 SEC Classification of Migrants (2003-2006, %)				
	Higher Manag. Prof.	**Lower Manag. Prof.**	**Semi-Routine**	**Routine**
UK	13.23	27.36	13.78	9.54
Ireland, Australia, Canada, NZ, USA	24.15	32.44	8.87	7.09
Africa, West Indies, Latin & South America	16.35	27.94	15.05	8.23
Asia	17.89	23.30	16.27	9.73
Europe	16.63	22.23	13.98	13.92

Source: LFS

Chapter 5

A Simple Model of Regional Housing Markets and Migration

In Chapter 4, it was suggested that house prices affect migration and migration affects house prices. Therefore, it is useful (i) to obtain a feel for the possible size of the effects, (ii) to consider the conditions for regional convergence in prices and migration, since they affect the human capital stock in each region. Furthermore, given the arguments in Chapter 4, we also ask to what extent is regional adjustment truly inter-regional or is it partly an illusion caused by the nature of regional boundaries? In addition to the short distances of moves already discussed, it was shown in the context of international migration shocks that part of any adjustment occurs through changes in household formation rates within the region. Furthermore, Meen (1999) argued that part of the explanation for the ripple effect lies in spatially heterogeneous responses to national monetary shocks.

The chapter begins with a basic two-equation model of regional housing in order to demonstrate the conditions under which housing markets are convergent or divergent. The model determines house prices and the number of households in each region. Arguably, the model should be extended to include earnings, since there is evidence that earnings are affected by housing costs (Bover *et al* 1989, Cameron and Muellbauer 2001). However, the key issues can be demonstrated in the more limited framework.

For simplicity, assume there are only two regions (i, j) and the parameters of the house price equations are the same in each[14]. The price differences between the two regions can be written as (3):

$$\Delta(g_i - g_j) = -\gamma_1(g_i - g_j)_{-1} + \gamma_2[(hh_i - hh_j) - (hs_i - hs_j)]_{-1} - \gamma_3(UCC_i - UCC_j)$$
$$+ \gamma_4(Z_{1i} - Z_{1j}) + (\varepsilon_{1i} - \varepsilon_{1j})$$

(3)

where:

G = real purchase price of dwellings

HH = number of households

HS = number of dwellings

UCC = housing user cost = $(i\text{-}\pi\text{-}\dot{g}^e)$

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[14] In fact, Meen (2008) shows empirically that this is not a valid simplification and the assumption is relaxed later.

π = general rate of inflation

i = nominal interest rate

$\dot{g}^e$ = expected real capital gain on housing

Z = set of exogenous variables, e.g. real earnings, unemployment

ε = error term

lower case denotes logarithms

In (3), the first term on the right-hand side represents an error-correction term (sometimes known as a bubble-burster, Abraham and Hendershott 1996). Also as discussed earlier, transactions costs imply slow adjustment to shocks in each time period. The specification of the second term as (*hh-hs*) ensures homogeneity so that a doubling of the number of dwellings and the number of households has no effect on prices. In the third term, since the market interest rate is common to all regions, the user cost primarily reflects differences in the expected capital gain.

Equation (4) sets out a similar difference equation for the change in the number of households. In addition to the error correction term (again this emphasises the importance of transactions costs), households in each region depend negatively on relative house prices, positively on relative housing supply availability, and negatively on the user cost, which implies a positive relationship with expected capital gains.

$$\Delta(hh_i - hh_j) = -\beta_1(g_i - g_j)_{-1} - \beta_2[(hh_i - hh_j) - (hs_i - hs_j)]_{-1} - \beta_3(UCC_i - UCC_j)$$
$$+ \beta_4(Z_{2i} - Z_{2j}) + (\varepsilon_{2i} - \varepsilon_{2j})$$

(4)

Consequently the two equations determine house prices and household formation, conditional on the supply of housing and a set of other exogenous variables. However, the change in households can be disaggregated further into three components – (i) inter-regional migration flows; (ii) international migration flows; (iii) changes in regional household representative rates[15]. The final factor is rarely considered in regional models, but Chapter 4 suggested that they are an important element of regional adjustment processes.

There is limited evidence that international migration numbers are affected by housing markets, but since the last chapter suggested that migrant household formation and tenure are responsive to housing costs, we assume that (4) represents a weighted average of all three components that contribute to total household formation. Using equations (3) and (4), the conditions for long-run convergence and divergence depend on the signs of $\gamma_1, \gamma_2, \beta_1, \beta_2$.

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[15] Strictly, the model should also include birth and death rates and, although these do show some regional variation – particularly in London – they are not considered here.

Equations of this form are implicit in the CLG Affordability Model[16], which can be used to illustrate the key transmission mechanisms of shocks to regional housing markets. The first change discussed here is an increase in the level of housing construction. In most of the literature, construction would be considered as endogenous to the model, but one of the key concerns of the Barker Review of Housing Supply (2004) was the lack of responsiveness of supply to increases in prices over the last fifteen years; in other words the price elasticity of supply has become close to zero (Meen 2005). In these circumstances, it is a reasonable simplification to treat supply shocks as exogenous.

The simulation below shows the effects of a 50% increase in the construction of private new homes in all regions simultaneously. The increase is limited to a ten year period, which implies that the *flow* of construction returns to base after this period, but the housing *stock* is permanently higher. The first frame of Figure 4 indicates that the percentage change in prices, relative to base, is similar across all the regions. The long-term effects are smaller than the ten year impact, because lower prices induce new households to be formed, but the increase in construction is assumed to end after ten years. The change in the housing stock relative to households is shown in the second frame. Overall, the common regional patterns, a feature of the ripple effect, are induced by a combination of equilibrating inter-regional migration and regionally-varying household formation rates.

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[16] The Affordability Model is much more detailed. For example, household formation is modelled on micro data. Nevertheless, the key elements can be captured by (3) and (4).

Figure 4 50% Increase in Housing Construction in All Regions – (i) House Prices, (ii) Ratio of Housing Stock to Households
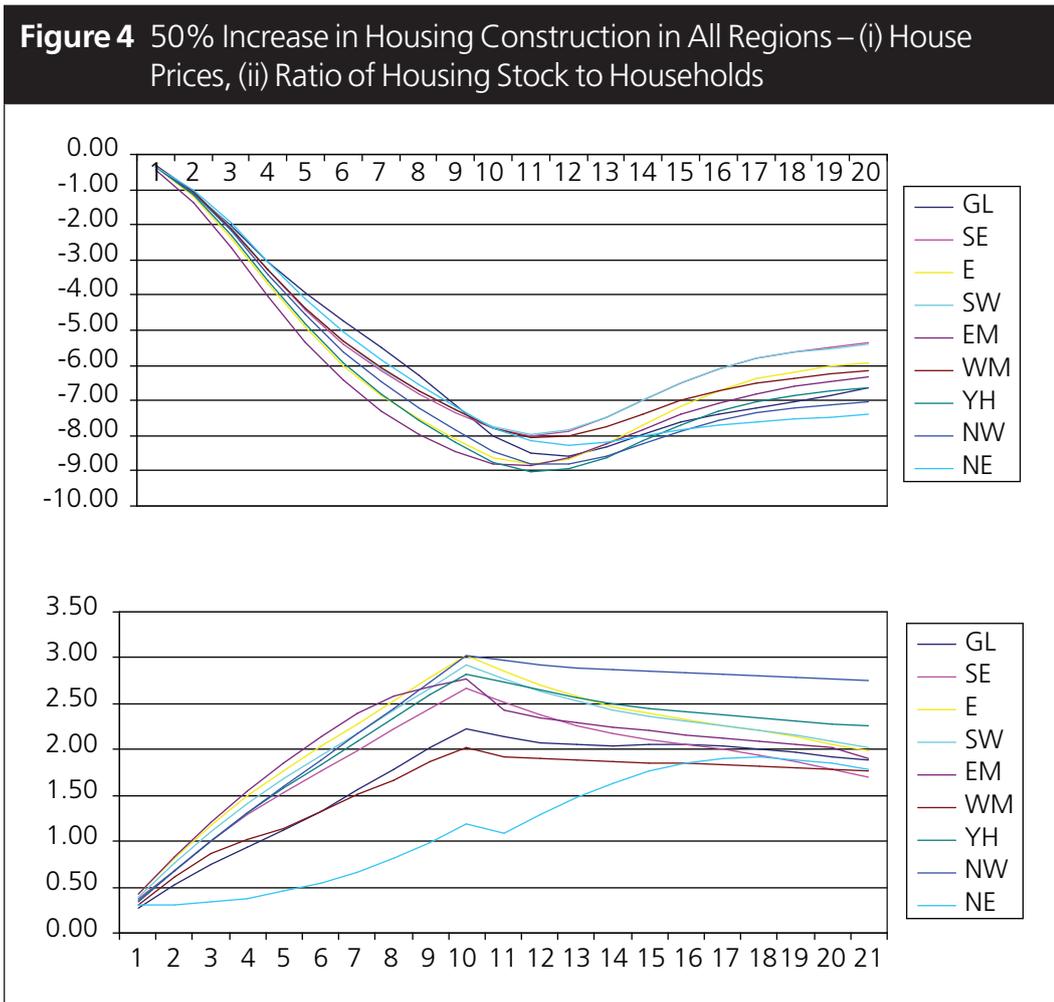
In practice, over the past, the percentage increases in housing construction have been related across the English regions. The annual percentage changes in private completions since 1991 are graphed in Figure 5. This is the period, which has been particularly singled out for its weak supply responsiveness. Further information on the contemporaneous correlations is shown in Table 7. With the notable exception of London, most regions have experienced some relationship with the growth rates in contiguous regions. The highest is between the South and South West. On an earlier vintage of data, Meen (1996) investigates the spatial lags in more detail. But the correlations in construction may indicate a feature of contiguous areas, particularly if they constitute a common travel to work area. If construction is limited to a localised area, the area will attract population inflows from surrounding districts as relative prices fall. The potential migration flows ensure that construction and prices are correlated.

Figure 5 Annual Percentage Change in Private Completions (1991-2006)
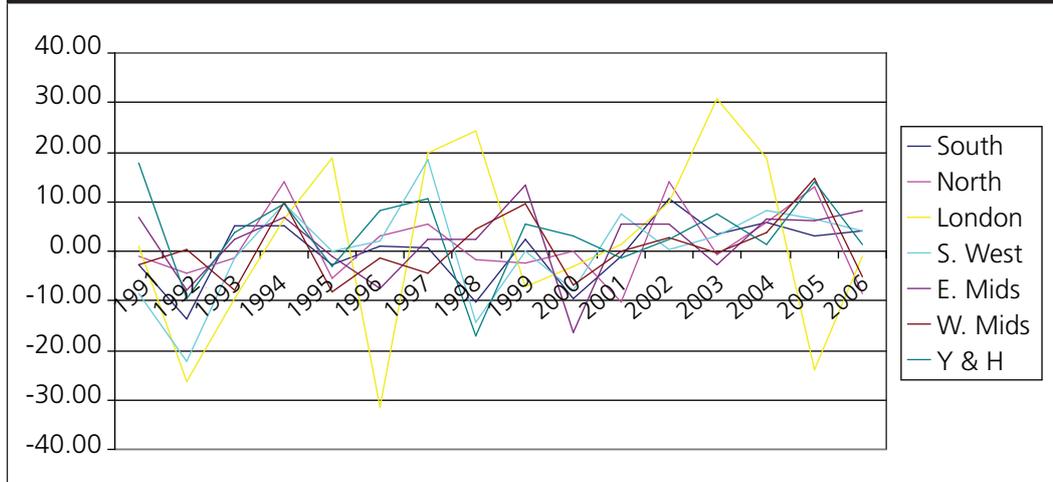
Table 7 Contemporaneous Correlation in the Growth Rates of Private Completions (1991-2006)

	London	South	SW	EM	WM	YH	North
London	1.000000	0.158135	0.260158	0.191259	–0.159197	–0.174462	–0.009928
South	0.158135	1.000000	0.718465	0.587349	0.223232	0.517896	0.483992
SW	0.260158	0.718465	1.000000	0.405728	0.130560	0.535664	0.358612
EM	0.191259	0.587349	0.405728	1.000000	0.479694	0.214226	0.143737
WM	–0.159197	0.223232	0.130560	0.479694	1.000000	0.143120	0.560632
YH	–0.174462	0.517896	0.535664	0.214226	0.143120	1.000000	0.442056
North	–0.009928	0.483992	0.358612	0.143737	0.560632	0.442056	1.000000

Overall, it appears from the simulation and the high correlation in price movements that housing market equilibrating processes in response to supply changes work fairly well. Nevertheless, despite high levels of poverty within some boroughs of London to which housing contributes[17], earlier chapters have identified a number of reasons why housing adjustment between North and South may not be as smooth as between the southern regions.

First, it was noted in the last chapter that expectations of capital gains are more likely to differ between the North and South and fears of relative capital losses are likely to lock households into the southern regions even if the *levels* of prices are higher. Second, considerable emphasis has been placed in this paper on different forms of transactions costs, which lock households into the current or neighbouring areas. These include search costs (which increase with distance) and attachment to place. Furthermore, the historical physical fixity of place means that locations cannot quickly change their attractiveness to potential migrants.

[17] Andrew and Meen (2006) show how cumulative processes of growth and decline can occur between Inner and Outer London.

New construction is only a small percentage of the existing stock of dwellings in any location. Typically, it takes decades if not centuries to change an area fundamentally. Third, agglomeration economies imply that "first movers" may suffer disadvantages. For example, threshold models, of which gentrification is an example, suggest that an area has to attract a critical mass of movers before it begins to take off.

Most of these points suggest that convergence may eventually occur, but it could take a very long time. For example, Orford *et al* (2002) highlight the stability of spatial poverty patterns over the last hundred years in England, although they find a degree of convergence over that period. For example, 76% of the richest wards in 1896 remain in the richest quartile in 1991, but only 55% of the poorest wards in 1896 remain in that category in 1991.

But a further reason exists why, in the short run, prices might increase first in the Southern regions with the Northern regions catching up later, i.e. the ripple effect. As outlined in Chapter 4, regions can respond in different ways to common national shocks. This requires the relaxation of the assumption of common coefficients used to derive equations (3) and (4). As noted earlier, coefficient heterogeneity may arise because of lock in to the existing level of debt gearing, which can only be changed slowly. Using the model in (3) and (4)[18], Figure 6 shows the regional house price responses to a temporary (two year) one percentage point increase in the mortgage interest rate. For clarity, the figure concentrates on differences between the North West, East Midlands and London. In the graph, London reacts first and the effects are greatest, whereas the effects are smallest in the North West. Once again, the simulation suggests that the ripple effect might, at first sight, appear to be a symptom of an inter-regional adjustment process, but could also be caused by differences in intra-regional adjustment.

Figure 6 Mortgage Rate Shock (% changes in house prices from base scenario)

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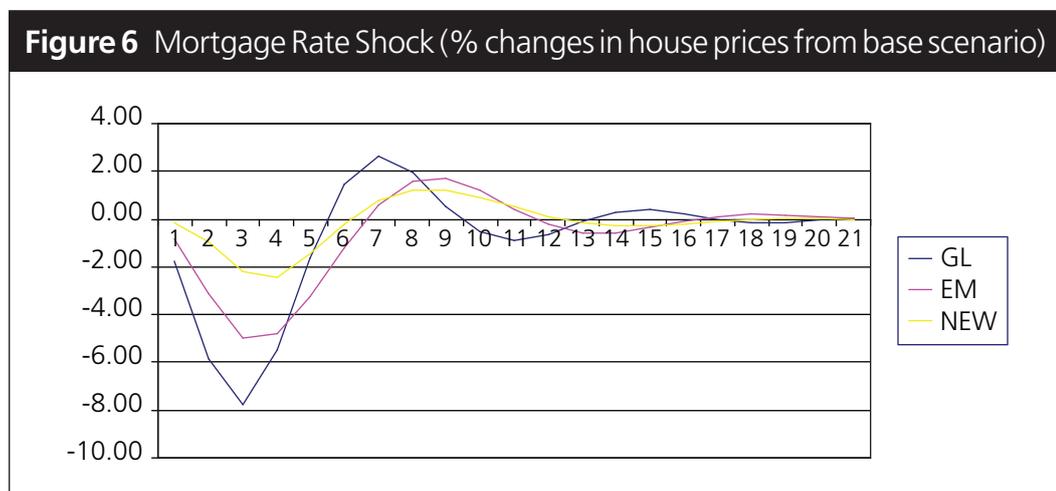
[18] Parameter values for the equations are set out in Meen (2008).

Chapter 6

Housing and Physical Capital

Whereas there is a substantial theoretical and empirical literature on the relationship between housing and human capital through migration, the evidence on the relationship between housing and physical capital is less well developed. Therefore, some of the conclusions of this chapter are speculative. Nevertheless, several strands of research can be identified, which have a bearing on the question. These include:

(i)   Two sector general equilibrium models of housing and the economy and endogenous growth models

(ii) Social capital and regeneration

(iii) "jobs to workers" or "workers to jobs"?

(iv) housing as collateral

Neither (i) nor (ii) have a specific spatial dimension, but provide a starting point. In a series of US models constructed during the seventies and eighties, the literature pointed out that, particularly at times of high inflation, tax subsidies to owner occupation distort relative asset prices – notably a rise in the relative price of housing. This, in turn, leads to a shift in resources away from so-called productive business investment towards housing (see for example, Ebrill and Possen 1982, Hendershott and Hu 1981, 1983, Summers 1981, Kau and Keenan 1983). Returning to this literature more recently, Capozza *et al* (1998) show that the price effect depends on the supply response. Given similar tax advantages and inflation rates in the UK, the same conclusions were reached on UK data by Buckley and Ermisch (1982). Therefore, this early strand of research stressed the possible crowding out effects of housing through distortionary fiscal policy. Housing and business investment are negatively related.

A more recent line of research attempts to construct two sector growth models – housing and the rest of the economy – and sheds further light on the crowding out question. Theoretical research by Turnovsky and Okuyama (1994) can be used to demonstrate that, in the long run, the effects of housing subsidies depend on constraints on the mobility of labour between the two sectors. If labour is mobile between the two sectors, then the real price of housing is unaffected by tax subsidies to housing, but prices change under immobility. In neither case is business investment necessarily adversely affected; rather this depends on the effects of subsidies on the marginal productivity of capital. Only if this changes

– for example, if the subsidy is financed by a tax on profits or by a rise in interest rates – is investment reduced. However, the model is based on the assumption of constant returns to scale and housing has no role to play in the production of non-housing goods. These assumptions are relaxed in Brito (2002), allowing the author to demonstrate, in the context of an endogenous growth model, the effects of shocks to housing on the economy's long-run growth path and, indeed, these turn out to be positive. However, both the constant returns and endogenous growth models are theoretical and there is no evidence of the quantitative importance of housing in the UK from this direction of research.

Quantitative evidence of increasing returns and cumulative causation has to come from different fields of research. One approach considers the effects from regeneration schemes on wider private sector property values. Pryce (2004) confirms that there is little empirical evidence available for the UK. However, he points to the fact that an increase in new housing supply may have two effects, first, a conventional direct negative effect on prices in the area where the construction takes place and, second, a positive effect in neighbouring areas, which experience spill overs. He suggests that the neighbourhood effect depends on the nature of the sub market. Although the effects are likely to be small in areas that are already wealthy, they have the potential to be strong in deprived areas. Empirical evidence is available from the US. Schill *et al* (2002), for example, argue that New York's 10-year revitalisation programme produced positive spillovers onto neighbouring areas in terms of raising property prices. More generally, hedonic house price studies widely include neighbourhood indicators and spatial lag terms that attempt to capture externalities; these are typically found to be important. Although these studies concentrate on the induced effects on neighbourhood housing values, general area regeneration would be expected to help commercial property values as well. Under conventional development models, rising property values would be expected to promote further industrial and commercial building. In principle, cumulative causation may be promoted. A possible caveat to this view is introduced by the possibility of thresholds, Galster (2002), Beroube (2005), Meen *et al* (2005), Meen (2009). Under this view of the world, areas have to reach a take-off point before regeneration expenditures are effective. Therefore, the spill over benefits in the most deprived areas may be limited.

A further strand of the literature considers the extent to which cumulative causation emerges from a tendency for mobile capital to move to the areas where high-skilled workers are already located. High-skilled workers may, for example, be concentrated in certain areas because of the agglomeration economies of co-location or because of the attractions of consumer cities or the quality of housing, neighbourhoods, transport links or, perhaps, climate.

In the literature, this is considered as a Chicken and Egg question or whether jobs move to workers or workers move to jobs. As noted in the last chapter, the conventional assumption of monocentric residential location theory is that all employment is based at the city centre and employees have to commute to jobs. But modelling becomes more complex in the more realistic case where industrial location is, itself, an endogenous process. Firms may respond to the location decisions of households or both may be jointly determined. It cannot be assumed, therefore, that industrial location is an exogenous factor to which population responds. Early US models, such as those of Muth (1971), suggest joint movements, so that models of employment and population change have to be constructed in a simultaneous framework. Core-Periphery models under increasing returns to scale (Krugman 1991) also imply that firms and households will tend to locate together to take advantages of scale economies in both factor and goods markets.

The assumption that employees move to jobs is therefore, by no means, universal in the literature. However a number of US studies have attempted to distinguish whether "workers follow jobs" or "jobs follow workers". Early studies by Steinnes (1977, 1982), for example, conduct causality tests in a joint model of population change and employment in the manufacturing, retail and service sectors. He finds that, in manufacturing, jobs typically move to workers. Further tests by Cooke (1978) also found evidence in favour of jobs following population in manufacturing. Counter evidence comes from Thurston and Yezer (1994), who disaggregate to finer industrial sectors and find evidence that employment decentralisation in some industrial sectors subsequently influences population suburbanisation, but little evidence that jobs follow population except in the retail and service sectors. More recently, Partridge and Rickman (2003), using a structural VAR approach across the US states find it slightly more likely that people are following jobs. However, there are few studies for the UK; an exception is Meen (2002), who investigates the relationship between housing and industrial output. Using cointegration methods, the research finds that in manufacturing at least, there is evidence that firms are attracted to areas of high-skilled employment.

A final issue relates to housing and business start ups. South East England has a particularly high rate of new firm formation compared with the other regions, particularly in the innovative high growth industries. This performance appears to be related to the presence of highly-skilled technical, managerial and professional groups from whom potential entrepreneurs emerge. Since these entrepreneurs start new firms close to where they live, areas of strong economic growth, high quality environments and amenities are reinforcing. A related argument is that housing wealth is used as collateral for the start up of small businesses. De Meza and Webb (1999) point out that there is empirical evidence

that capital market constraints prevent low-wealth individuals from starting new businesses. Explanations typically focus on capital market imperfections related to asymmetric information. However, housing equity is often used as collateral for new business loans. Black *et al* (1996) find that a 10% increase in the value of housing equity increases the number of new VAT registrations by 5%. Given the differences in regional prices, the housing market is expected to provide greater collateral support in the South.

Chapter 7

Conclusions: Does Housing Matter for Regional Disparities?

From a housing economics viewpoint, regions are artificial entities and do not correspond to housing market areas, housing sub-markets or travel to work areas. The reason that they are often considered as distinct is because (i) the administrative regions are important for policy; (ii) they are the finest spatial scale for which we have long runs of time-series data. But the limitations of the regional dimension for housing analysis need to be borne in mind. At a minimum, they are likely to introduce problems of spatial lags and spatial autocorrelation into empirical analysis. Furthermore, an easy distinction cannot always be drawn between the housing literatures on regions and cities. An obvious extreme case is that London is both a city and a region.

In order to examine the effects of housing on regional economic performance, we need to understand the impact on the human and physical capital stocks. Chapter 4 suggested that inter-regional migration flows are not necessarily long distance, but may be an artefact of the regional boundaries. Short distance moves are more likely to be housing than labour market related. Chapter 5 also indicated that the ripple effect may not only reflect inter-regional adjustment, but also intra-regional adjustment in response to national shocks and variations in household formation.

Any analysis needs to recognise the joint dependence of housing and the human and physical capital stocks. Just because we observe that regional house prices differ does not imply that housing is the cause of differences in regional growth rates. There is a danger that housing is blamed for more fundamental economic and social forces. Although there is little evidence that per capita regional GDP has converged in England using conventional tests, evidence was presented in Chapter 5 that housing market adjustment across the southern regions, in particular, is effective through a combination of changes in household formation, migration and commuting, price and supply variations. This is not to say, however, that there is not an affordability problem in the South; merely that the southern regions share the common problem.

But there is less evidence that adjustment is smooth between the southern and northern regions and there are good reasons why this should be the case. Conventional approaches have, perhaps, stressed the role of expectations in

discouraging households from moving from the South to the North, despite lower prices, contributing to divergence rather than convergence. However, without minimising the importance of expectations, this report has concentrated on a different line of argument that emphasises the role of property rights, transactions costs, history and spatial lock in. If history is important, then it is unsurprising that spatial growth patterns exhibit a high degree of persistence.

At its most basic, history matters because the physical structure of cities and regions cannot be changed quickly. Furthermore, residential structure is locked in more than commercial structure, partly because property rights are more dispersed in the former. The experience of architects and developers following the Great Fire of London in 1666 and attempts at slum clearance in the late 19th century provide examples. Both events showed the difficulty of changing the fundamental spatial structure. The report also examined the effect of persistence in international cities that faced major external shocks, notably the bombings in Germany and Japan in World War Two. Although it is certainly possible that cataclysmic shocks shift spatial structures to a new equilibrium, it is, by no means, guaranteed.

In addition, planning controls and conservation areas also extend the life of dwellings because they raise the point of economic obsolescence. Finally, the CLG Affordability Model suggests that in some regions, notably London, depreciation of dwellings is U-shaped rather than straight line. In other words, properties constructed in the Victorian era are valued more highly than those built in the 1960s and 1970s. Consequently, through the combination of these factors, it is unsurprising that the average age of the housing stock in England is high, and history limits the scope for change.

Transactions costs take a variety of different forms; stamp duty, solicitors' fees and other moving costs are only the tip of the ice berg. More importantly, transactions costs arise from search costs; households are more informed about locations close to home, because the costs of search rise with distance. Although internet property pages help, they do not completely eliminate the problem. More basic are the costs associated with attachment to place, arising from closeness to family and friends. The value of these externalities is specific to the individual and is, consequently, not reflected in the market price the seller receives for the property. Consequently mobility is reduced. Perhaps even more fundamental is the empirical finding that mobility falls once households have reached middle age. Age – our own history – provides a major lock-in effect. This is important for policy; first, at the urban level, it becomes difficult to attract middle-aged households back from the suburbs in order to promote mixed neighbourhoods. Second, it may be difficult to persuade middle-aged households to move from the South to the North. Third, given an ageing population in the future, mobility may

fall further. In general, the evidence suggests that moving probabilities are highest for young, high-skilled graduates without children, or at least children below school age. Perhaps, surprisingly, there is little if any evidence that housing market variables affect the location choices of new graduates.

There are good reasons to believe that increasing returns and cumulative causation are likely to be present, although distinguishing the role of housing is rather speculative and more research is needed. Given the fixity of spatial structure, areas that are physically the most appealing and have the highest quality housing are more likely to attract high skilled workers (Cheshire 1995 shows that high quality cities in Northern Europe have gained population compared with old industrial cities). US studies also suggest that physical structures have long-lasting effects on subsequent economic performance. But, if mobile capital is attracted to the location of skilled workers – jobs to workers – then cumulative growth may occur. Furthermore, high house prices in the South potentially provide collateral for business start up loans. Similarly, areas can experience cumulative processes of decline. Although concentrating on the sub-regional dimension, Meen and Andrew (2004) demonstrate how the moving patterns of the high skilled contribute to higher levels of deprivation in the poorest areas.

The fact that international migrant groups have a high degree of spatial concentration is well known. Furthermore, new migrants typically head for areas, which already have high concentrations. Because of the agglomeration economies arising from support networks, this is hardly surprising.

As the quotations at the start of Chapter 3 suggest, if the analysis above is correct, the problem is that there is only a limited amount that housing policy can do to change the regional distribution of economic growth. We noted above that land-use planning contributes to the lock in of spatial structure, by extending the effective life of properties and, consequently, potentially hinders migration flows. The distortionary impacts of the property taxation system, notably council tax, have received particularly attention in Muellbauer and Cameron (2000) and Muellbauer (2005). The impact of stamp duty on residential property is considered in Andrew *et al* (2003).

The economic effects of land use planning are discussed in detail in Barker (2003). Since the controls are more likely to be binding in the South, the economic distortions in terms of relative prices and the welfare losses are also greater in these regions. Making the planning system more responsive to market signals and speeding up the planning process has been a focal point of government policy since the publication of the two Barker Reviews (2004, 2006).

Muellbauer and Cameron (2000) put forward twelve arguments against the current council tax system. Amongst these is the fact that the tax is regionally regressive. As a percentage of property values, council tax is lower in the most expensive parts of London than in the poorest areas of the North. This is a consequence of the structure of the seven tax bands. Muellbauer and Cameron argue for a tax more closely related to property values, re-assessed every two to three years. Under the current system, the southern tax advantages are capitalised into property values and into expectations, generating even greater disparities between the regions. Stamp duty, by contrast, is heavily weighted towards the South. Andrew *et al* (2003) show that approximately 75% of revenue was collected from the southern regions in 2001/2, although the areas comprised less than half of transactions.

To conclude, both the planning and taxation systems do contribute to regional distortions. But there are still questions whether reform would fundamentally change the regional distribution of growth quickly. Housing is likely to contribute to regional disparities, but there is a danger of blaming housing for more deep-seated social issues. Although more research is required, the report argues that history matters and that there are no quick fixes.

References

Abelson, P. Joyeux, R. Milunovich, G. and D. Chung (2005), "Explaining House Prices in Australia: 1970-2003", *Economic Record*, 81(255): S96-S103.

Abraham, J.M., and P.H. Hendershott. (1996), "Bubbles in Metropolitan Housing Markets". *Journal of Housing Research* 7(2): 191-207.

Aghion, P. and P. Howitt (1999), *Endogenous Growth Theory*. The MIT Press. Cambridge, Massachusetts.

Alba, R. and J. Logan (1992), "Assimilation and Stratification in the Homeownership Patterns of Racial and Ethnic Groups", *International Migration Review*, 26(4): 1314-1341.

Andrew, M., Evans, A., Koundouri, P. and G. Meen (2003), *Residential Stamp Duty: Time for a Change*, CML Reasearch. London.

Andrew, M., and G. Meen (2006), "Population Structure and Location Choice: A Study of London and South East England", *Papers in Regional Science,* 85(3): 401-419.

Arthur, W.B. (1994), *Increasing Returns and Path Dependence in the Economy*. The University of Michigan Press.

Bak, P., and K.Chen (1991), "Self-Organised Criticality", *Scientific American*. 28: 26-33.

Barker, K. (2003), *Review of Housing Supply: Interim Report.* HMSO.

Barker, K. (2004), *Review of Housing Supply: Final Report – Recommendations.* HMSO.

Barker, K (2006), *Review of Land Use Planning. Final Report – Recommendations*. HMSO.

Barro, R, and X. Sala-i-Martin. (1991), "Convergence Across States and Regions", *Brookings Papers on Economic Activity*, 1: 107-182.

Barro, R., and X. Sala-i-Martin. (1992), "Convergence", *Journal of Political Economy*, 100(2): 223-251.

Barro, R., and X. Sala-i-Martin. (1995), *Economic Growth*. McGraw-Hill. New York.

Beeson, P.E., DeJong, D.N. and W. Troesken (2001), "Population Growth in U.S. Counties, 1840-1990", *Regional Sciene and Urban Economics*, 31: 669-699.

Benito, A. and A.J. Oswald (1999), "Commuting in Great Britain in the 1990s". *University of Warwick, Department of Economics mimeo.*

Beroube, A. (2005), *Mixed Communities in England: A US Perspective on Evidence and Policy Prospects*. Joseph Rowntree Foundation. York.

Bianchi, S., Farley, R. and D. Spain (1982), "Racial Inequalities in Housing: an Examination of Recent Trends", *Demography*, 57: 37-51.

Black, J., de Meza, D. and D. Jeffreys (1996), "House Prices, the Supply of Collateral and the Eterprise Economy", *Economic Journal*, 106: 60-75.

Boelhouwer, P. (2005), "House Price Fluctuations and the Disfunctionality of the Dutch Housing Market: Exploding House Prices versus Falling Housing Production", *paper presented to the Ramon Areces Seminar,* Madrid. April.

Böheim, R. and M. Taylor (2002), "Tied Down or Time to Move? Investigating the Relationships between Housing Tenure, Employment Status and Residential Mobility in Britain", *Scottish Journal of Political Economy*, 49(4): 369-392.

Borjas, G. (1985), "Assimilation, Changes in Cohort Quality, and the Earnings of Immigrants", *Journal of Labour Economics*, 3: 463-489.

Borjas, G. (2002), "Homeownership in the Immigrant Population", *Journal of Urban Economics*, 52: 448-476.

Bosker, M., Brakman, S., Garretsen, H. and M. Schramm (2007), "Looking for Multiple Equilibria when Geography Matters: German City Growth and the WWII Shock", *Journal of Urban Economics*, 61: 152-169.

Bourassa, S. (1994), "Immigration and Housing Tenure Choice in Australia", *Journal of Housing Research*, 5: 117-173.

Bover, O., J. Muellbauer., and A. Murphy. (1989), "Housing, Wages and UK Labour Markets." *Oxford Bulletin of Economics and Statistics* 51(2): 97-136.

Brito, P.M.B. and A.M. Pereira (2002), "Housing and Endogenous Long-term Growth", *Journal of Urban Economics*, 51: 246-271.

Brueckner, J.K. (1980), "Residential Succession and Land-Use Dynamics in a Vintage Model of Urban Housing", *Regional Science and Urban Economics*, 10: 225-240.

Brueckner, J., J-F. Thisse., and Y. Zenou (1999), "Why Is Central Paris Rich and Downtown Detroit Poor? An Amenity-Based Theory." *European Economic Review* 43: 91-107.

Buckley, R., and J. Ermisch. (1982), "Government Policy and House Prices in the United Kingdom: An Econometric Analysis." *Oxford Bulletin of Economics and Statistics* 44(4): 273-304.

Buist, H., Megbolugbe, I., and T. Trent (1994), "Racial Homeownership Patterns, the Mortgage Market, and Public Policy", *Journal of Housing Research*, 5: 91-116.

Cameron, G., and J. Muellbauer. (1998), "The Housing Market and Regional Commuting and Migration Choices." *Scottish Journal of Political Economy* 45: 420-446.

Cameron, G. and J. Muellbauer (2001), "Earnings, Unemployment, and Housing in Britain", *Journal of Applied Econometrics*, 16: 203-220.

Cameron, G, J. Muellbauer and A. Murphy (2006), "Was There a British House Price Bubble? Evidence from a Regional Panel", *Department of Economics, University of Oxford mimeo*

Capozza, D.R., R.K. Green, and P.H. Hendershott. (1998), "Tax Reform and House Prices: Large or Small Effect?" *Paper presented at the National Tax Association meeting*: Austin, Texas.

Case, K.E. Quigley, J.M. and R. Shiller (2001), "Comparing Wealth Effects: The Stock Market versus the Housing Market", *NBER Working Paper 8606.*

Case, K.E. and R.J. Shiller (2003), "Is there a Bubble in the Housing Market?", *Brooking Papers on Economic Activity*, 2: 229-362.

Champion, A. (2005), "Migration in British Cities 2005", *WPEG Seminar on Migration, HM Treasury, December.*

Chan, S. (2001), "Spatial Lock-in: Do Falling House Prices Constrain Residential Mobility?", *Journal of Urban Economics*, 49: 567-586.

Chatterji, M and J.H.L. Dewhurst (1996), "Convergence Clubs and Relative Economic Performance in Great Britain: 1977-1991", *Regional Studies*, 30: 31-40.

Chen, J. (2005), "Housing Wealth and Aggregate Consumption in Sweden", *Uppsala University Department of Economics, Economic Studies 91.*

Cheshire, P. (1995), "A New Phase of Urban Development in Western Europe: The Evidence for the 1980s." *Urban Studies* 32(7): 1045-1063.

Clark, W.A.V., and F.M. Dieleman. (1996), *Households and Housing: Choice and Outcomes in the Housing Market*. Center for Urban Policy Research: Rutgers.

Cook, S. (2003), "The Convergence of Regional House Prices in the UK", *Urban Studies*, 40(11): 2285-2294.

Cook, S. (2006), "A Disaggregated Analysis of Asymmetrical Behaviour in the UK Housing Market", *Urban Studies*, 43(11): 2067-2074.

Cook, S. and S. Holly (2000), "Statistical Properties of UK House Prices: An Analysis of Disaggregated Vintages", *Urban Studies*, 37(11): 2045-2055.

Cooke, T. (1978), "Causality Reconsidered: A Note." *Journal of Urban Economics* 5: 538-542.

Coulson, N.E. (1998), "Why are Hispanic- and Asian-American Homeownership Rates so Low? Immigration and Other Factors", *Journal of Urban Economics*, 45: 209-227.

Coulson, N.E. and L.M. Fisher (2002), "Tenure Choice and Labour Market Outcomes", *Housing Studies*, 17(1): 35-50.

David, P.A. (1985), "Clio and the Economics of Qwerty", *American Economic Review*, 75(2): 332-337.

Davis, D.R. and D.E. Weinstein (2002), "Bones, Bombs, and Break Points: the Geography of Economic Activity", *the American Economic Review*, 92(5): 1269-1289.

Davis, D.R. and D.E. Weinstein (2008), "In Search for Multiple Equilibria in Urban Industrial Structure", *Journal of Regional Science*, 48(1): 29-65.

Dohmen, T.J. (2005), "Housing, Mobility and Unemployment", *Regional Studies and Urban Economics*, 35: 305-325.

Duranton, G. and V. Monastiriotis (2002), "Mind the Gaps: The Evolution of Regional Earnings Inequalities in the U.K., 1982-1997", *Journal of Regional Science*, 42(2): 219-256.

Durlauf, S.N. (2005), "Complexity and Empirical Economics", *Economic Journal*, 115(504): F225-F243.

Durlauf, S.N. (2006), "Groups, Social Influences, and Inequality", in Bowles, S., Durlauf, S and K. Hoff (eds.), *Poverty Traps*. Princeton University Press. New Jersey.

Dustmann, C and F. Fabbri (2005), "Immigrants in the British Labour Market", *Fiscal Studies*, 26(4): 423-470.

Dye, R.F. and D.P. McMillen (2007), "Teardowns and Land Values in the Chicago Metropolitan Area", *Journal of Urban Economics*, 61(1): 45-63.

Ebrill, L.P., and U.M. Possen. (1982), "Inflation and the Taxation of Equity in Corporations and Owner-Occupied Housing." *Journal of Money, Credit and Banking* 14(1): 33-47.

Englund, P., Min Hwang and J.M. Quigley (2002), "Hedging Housing Risk", *Journal of Real Estate Finance and Economics*, 24(1/2): 167-200

Evans, J.L. and E.J. Pentecost (1998), "Economic Performance Across the UK Regions: Convergence or Divergence?" *Environment and Planning C*, 16: 649-658.

Faggian, A. and P. McCann (2006), "Human Capital Flows and Regional Knowledge Assets: A Simultaneous Equation Approach", *Oxford Economic Papers*, 52: 475-500.

Faggian, A., McCann, P. and S. Sheppard (2007), "Human Capital, Higher Education and Graduate Migration: An Analysis of Scottish and Welsh Students", *Urban Studies*, 44(13): 2511-2528.

Faggian, A., McCann, P. and S. Sheppard (2007a), "Some Evidence that Women are More Mobile than Men: Gender Differences in UK Graduate Migration Behaviour", *Journal of Regional Science*, 47(3): 517-539.

Fielding, A.J. (1992), "Migration and Social Mobility: South East England as an Escalator Region." *Regional Studies* 26(1): 1-15.

Fishman, W.J. (1988), *East End 1888*. G.Duckworth and Co.

Friedman, M. (1992), "Do Old Fallacies Ever Die?", *Journal of Economic Literature*, 30(4): 2129-2132.

Fujita, M., P. Krugman, and A. Venables. (1999), *The Spatial Economy: Cities, Regions and International Trade*. MIT Press: Massachusetts.

Gabaix, X. (1999), "Zipf's Law for Cities: An Explanation", *Quarterly Journal of Economics*, 114(3): 739-767.

Gabriel, S.A. and S.S. Rosenthal (2005), "Homeownership in 1980s and 1990s: Aggregate Trends and Racial Gaps", *Journal of Urban Economics*, 57: 101-127.

Gallin, J. (2006), "The Long-Run Relationship between House Prices and Income: Evidence from Local Housing Markets", *Real Estate Economics*, 34(3): 417-438.

Galster, G.C. (2002), "An Economic Efficiency Analysis of Deconcentrating Poverty Populations". *Journal of Housing Economics*, 11: 303-329.

Girouard, N., Kennedy, M., van den Noord, P. and C. Andre (2006), "Recent House Price Developments: The Role of Fundamentals", *OECD Economics Department Working Paper No. 475.*

Giuliodori, M. (2004), "Monetary Policy Shocks and the Role of House Prices Across European Countries", *DNB Working Paper No. 15.*

Glaeser, E.L. (2005), "Urban Colossus: Why Is New York America's Largest City?", *FRBNY Economic Policy Review*, December: 7-24.

Glaeser, E.L. (2005a), "Reinventing Boston 1630-2003", *Journal of Economic Geography*, 5(2): 119-153.

Glaeser, E.L. and J.D. Gottlieb (2006), "Urban Resurgence and the Consumer City". *Havard Institute of Economic Research Discussion Paper No. 2109.*

Glaeser, E.L. and J. Gyourko (2005), "Urban Decline and Durable Housing", *Journal of Political Economy*, 113(2): 345-375.

Green R.K. and P.H. Hendershott (2001), "Home-Ownership and Unemployment in the US", *Urban Studies*, 38(9): 1509-1520.

Guirguis, H.S., Giannikos, C.I. and L.G. Garcia (2007), "Price and Volatility Spillovers between Large and Small Cities: A Study of the Spanish Market", *Journal of Real Estate Portfolio Managment*, 13(4): 311-316.

Hart, P. (1995), "Galtonian Regression Across Countries and the Convergence of Productivity", *Oxford Bulletin of Economics and Statistics*, 57(3): 287-293.

Hatton, T.J. and M. Tani (2005), "Immigration and Inter-Regional Mobility in the UK, 1982-2000", *Economic Journal*, 115(507): F342-F358.

Hendershott, P.H., and S.C. Hu. (1981), "Inflation and Extra-ordinary Returns on Owner-Occupied Housing: Some Implications for Capital Allocation and Productivity Growth." *Journal of Macroeconomics* 3(2): 177-203.

Hendershott, P.H., and S.C. Hu. (1983), "The Allocation of Capital Between Residential and Non-Residential Uses, Taxes, Inflation and Credit Market Constraints." *Journal of Finance* 38(3): 795-812.

Henley, A. (1998). "Residential Mobility, Housing Equity and the Labour Market." *Economic Journal* 108(447): 414-427.

Holly, S., Pesaran, M.H. and T. Yamagata (2006), "A Spatio-Temporal Model of House Prices in the US", *University of Cambridge Discussion Paper.*

House of Lords (2008), *The Economic Impact of Immigration, Volume1: Report*. Select Committee on Economic Affairs. HL Paper 82-I.

Hughes, G.A., and B. McCormick. (1981), "Do Council House Policies Reduce Migration Between Regions?" *Economic Journal* 91(364):919-39.

Hughes, G.A., and B. McCormick. (1985), "Migration Intentions in the UK. Which Households want to Migrate and Which Succeed?" *Economic Journal* 95(Supplement): 113-23.

Hughes, G.A., and B. McCormick. (1987), "Housing Markets, Unemployment and Labour Market Flexibility in the UK." *European Economic Review* 31(3): 615-45.

Hughes, G.A., and B. McCormick. (1990), "Housing and Labour Market Mobility." in J.Ermisch (ed.). *Housing and the National Economy*. Avebury.

Hwang, M. and J.M. Quigley (2006), "Economic Fundamentals in Local Housing Markets: Evidence from U.S. Metropolitan Regions", *Journal of Regional Science*, 46(3): 425-453.

Iacoviello, M. (2000), "House Prices and the Macroeconomy in Europe: Results from a Structural VAR Analysis", *European Central Bank, Working Paper No. 18.*

Iacoviello, M. (2003), "Consumption, House Prices, and Collateral Constraints: A Structural Econometric Analysis", *Journal of Housing Economics*, 13: 304-320.

Jackman, R. and S. Savouri. (1992), "Regional Migration in Britain. An Analysis of Gross Flows using NHS Central Register Data." *Economic Journal* 102(415): 1433-1451.

Kaldor, N. (1972), "The Irrelevance of Equilibrium Economics." *Economic Journal* 82: 1237-1255.

Kau, J.B., and D. Keenan (1983), "Inflation, Taxes and Housing: A Theoretical Analysis." *Journal of Public Economics* 21(1): 93-104.

Keenan, P., S. Lowe, and S. Spencer (1999), "Housing Abandonment in Inner Cities – The Politics of Low Demand for Housing." *Housing Studies*, 14(5): 703-716.

Krugman, P. (1991), *Geography and Trade*. Leuven University Press and The MIT Press.

Krugman, P. (1991a), "History versus Expectations", *Quarterly Journal of Economics*, 106(2): 651-667.

Kyambi, S. (2005), *Beyond Black and White: Mapping New Immigrant Communities*. Institute for Public Policy Research. London.

Lamont, O., and J.C. Stein (1999), "Leverage and House Price Dynamics in U.S. Cities." *Rand Journal of Economics* 30(3): 498-514.

Laryea, S. (1999), "Housing Ownership Patterns of Immigrants in Canada", *paper presented at the 3rd National Metropolis Conference*, Vancouver, Canada.

Liu, Y., Gopikrishnan, P., Cizeau, P., Meyer, M., Peng, C-K., and H.E. Stanley (1999), "Statistical Properties of the Volatility of Price Fluctuations", *Physical Review E*, 60(2): 1390-1400.

Long J (2005), "Rural-Urban Migration and Socioeconomic Mobility in Victorian Britain", *Journal of Economic History*, 65(1): 1-35.

Maclennan, D., J. Muellbauer, and M. Stephens (1998), "Asymmetries in Housing and Financial Market Institutions and EMU." *Oxford Review of Economic Policy* 14(3): 54-80.

McConnell, E.D. and E. Marcelli (2007), "Buying into the American Dream? Mexican Immigrants, Legal Status, and Homeownership in Los Angeles County", *Social Science Quarterly*, 88: 199-221.

McGuinness, S. and M. Sheehan (1998), "Regional Convergence in the UK, 1970-1995", *Applied Economic Letters*, 5(10): 653-658.

Malpezzi, S.and R.K. Green (1996), "What Has Happened to the Bottom of the US Housing Market?", *Urban Studies*, 33(10): 1807-1820.

Martin, R and P.Sunley (2006), "Path Dependence and Regional Economic Evolution", *Journal of Economic Geography*, 6: 395-437.

Meen, G. (1996), "Spatial Aggregation, Spatial Dependence and Predictability in the UK Housing Market." *Housing Studies* 11(3): 345-372.

Meen, G. (1999), "Regional House Prices and the Ripple Effect: A New Interpretation." *Housing Studies* 14(6): 733-753.

Meen, G. (2002), "On the Long-run Relationship between Industrial Construction and Housing", *Journal of Property Research*, 19(3): 191-211.

Meen, G. (2005), "On the Economics of the Barker Review of Housing Supply", *Housing Studies* 20(6): 949-971.

Meen, G. (2008), "English Regional Housing Dynamics", *paper presented to the ENHR Conference, UCD.*

Meen, G. (2008a), "Ten New Propositions in UK Housing Macroeconomics: An Overview of the First Years of the Century", *Urban Studies*, 45(13): 2759-2781

Meen, G. (2009), "Modelling Local Spatial Poverty Traps in England", *Housing Studies*, 24(1): 127-147.

Meen, G., and M. Andrew (1998), *Modelling Regional House Prices: A Review of the Literature*. Report prepared for the Department of the Environment, Transport and the Regions. The University of Reading.

Meen, G., and M. Andrew (2004), "On the Use of Policy to Reduce Housing Market Segmentation", *Regional Science and Urban Economics* 34: 727-751.

Meen, D. and G. Meen (2003), "Social Behaviour as a Basis for Modelling the Urban Housing Market: A Review", *Urban Studies*, 40: 917-935.

Meen, G., Gibb, K., Goody, J., McGrath, T., and J. Mackinnon (2005), *Economic Segregation in Britain: Causes, Consequences and Policy*. The Policy Press. Bristol.

Meen, G. et al., (2005a), *Affordability: Implications for Housing Supply*. ODPM. London.

Meen G, et al., (2008), *Recent Developments in the Communities and Local Government Affordability Model*. DCLG. London.

Meese, R. and N. Wallace (2003), "House Price Dynamics and Market Fundamentals: The Parisian Housing market", *Urban Studies*, 40(5-6): 1027-1045.

de Meza, D. and D. Webb (1999), "Wealth, Enterprise and Credit Policy", *Economic Journal*, 109: 153-163.

Muellbauer, J. (2005), "Property Taxation and the Economy after the Barker Review", *Economic Journal*, 115(502): C99-C117.

Muellbauer, J. and G. Cameron (2000), "Five Key Council Tax Reforms and Twelve Reasons to Enact them", *New Economy*, 7(2): 88-91.

Munneke, H.J. (1996), "Redevelopment Decisions for Commercial and Industrial Properties", *Journal of Urban Economics*, 39: 229-253.

Muth, R.F. (1971), "Migration: Chicken or Egg?" *Southern Economic Journal* 37: 295-306.

Muth, R.F., and A.C. Goodman (1989), *The Economics of Housing Markets*. Harwood Publishers.

Myers, D. and W. Lee (1998), "Immigrant Trajectories into Homeownership: a Temporal Analysis of Residential Assimilation", *International Migration Review*, 32(3): 593-625.

Myers, D. and C.Y. Liu (2005), "The Emerging Dominance of Immigrants in the US Housing Market 1970-2000", *Urban Policy and Research*, 23(3): 347-365.

Myrdal, G. (1957), *Economic Theory and Underdeveloped Regions*. Duckworth: London

Nitsch, V. (2003), "Does History Matter for Urban Primacy? The Case of Vienna", *Regional Science and Urban Economics*, 33: 401-418.

ODPM (2006), *State of the English Cities, Volume 1*. London.

Oikarinen, E. (2006), "The Diffusion of Housing Price Movements from Centre to Surrounding Areas", *Journal of Housing Research*, 15(1):3-28.

Orford, S., Dorling, D., Mitchell, R., Shaw, M., and G. Davey Smith (2002), "Life and Death of the People of London: A Historical GIS of Charles Booth's Inquiry", *Health and Place*, 8: 25-35.

Oswald, A. (1996), "A Conjecture on the Explanation for High Unemployment in the Industrialised Nations: Part 1". *Warwick University Economic Research Papers No. 475.*

Painter, G., Gabriel, S. and D. Myers (2001), "Race, Immigrant Status, and Housing Tenure Choice", *Journal of Urban Economics*, 49: 150-167.

Partridge, M.D. and D.S. Rickman (2003), "The Waxing and Waning of Regional Economies: the Chicken-Egg Question of Jobs versus People", *Journal of Urban Economics*, 53: 76-97.

Pawson, H. and G. Bramley (2000), "Understanding Recent Trends in Residential Mobility in Council Housing in England", *Urban Studies*, 37(8):1231-1259.

Pissarides, C.A., and J. Wadsworth. (1989), "Unemployment and the Interregional Mobility of Labour." *Economic Journal* 99(397): 739-755.

Power, A., and K. Mumford (1999), *The Slow Death of Great Cities?* Joseph Rowntree Foundation: York.

Pryce, G. (2004), *The Micro and Macro Effects of the Location of New Housing Supply.* Final Report to the Office of the Deputy Prime Minister.

Quah, D. (1993), "Galton's Fallacy and Tests of the Convergence Hypothesis", *Scandinavian Journal of Economics*, 95(4): 427-443.

Quigley, J.M. (2006), "Real Estate Portfolio Allocation: The European Consumers' Perspective", *Journal of Housing Economics*, 15(3): 169-188.

Rappaport, J. and J.D. Sachs (2003), "The United States as a Coastal Nation", *Journal of Economic Growth*, 8(1): 5-46.

Ravenstein, E.G. (1885), "The Laws of Migration", *Journal of the Statistical Society of London*, 48(2): 167-235.

Roehner, B.M. (1999), "Spatial Analysis of Real Estate Price Bubbles: Paris, 1984-1993", *Regional Science and Urban Economics*, 29: 73-88.

Rosenthal, S.S. and R.W. Helsley (1994), "Redevelopment and the Urban Land Price Gradient", *Journal of Urban Economics*, 35: 182-200.

Saiz, A. (2007), "Immigration and Housing Rents in American cities", *Journal of Urban Economics*, 61: 345-371.

Schelling, T. (1971), "Dynamic Models of Segregation", *Journal of Mathematical Sociology*, 1: 143-186.

Schill, M.H, I.G. Ellen, A.E. Schwartz, and I. Voicu (2002), "Revitalizing Inner-City Neighborhoods: New York City's Ten-Year Plan", *Housing Policy Debate*, 13(3): 529-566.

Simon, C.J. and C. Nardinelli (2002), "Human Capital and the Rise of American Cities 1900-1990", *Regional Science and Urban Economics*, 31: 59-96.

Solow, R. (1956), "A Contribution to the Theory of Economic Growth", *Quarterly Journal of Economics*, 70(1): 65-94.

Spencer, S., Ruhs, M., Anderson, B., and B. Rogaly (2007), *Migrants' Lives Beyond the Workplace*. Joseph Rowntree Foundation. York Publishing Services.

Stein, J.C. (1995), "Prices and Trading Volume in the Housing Market: A Model with Downpayment Effects." *The Quarterly Journal of Economics* 110(2): 379-405.

Steinnes, D.N. (1977), "Causality and Intraurban Location." *Journal of Urban Economics* 4: 69-79.

Steinnes, D.N. (1982), "Do People Follow Jobs or Do Jobs Follow People? A Causality Issue in Urban Economics." *Urban Studies* 19(2): 187-192.

Stevenson, S. (2004), "House Price Diffusion and Inter-Regional and Cross-Border House Price Dynamics", *Journal of Property Research*, 21(4): 301-320.

Stevenson, S. (2008), "Modeling Housing Market Fundamentals: Empirical Evidence of Extreme Market Conditions", *Real Estate Economics*, 36(1): 1-29.

Straszheim, M. (1975), *An Econometric Analysis of the Urban Housing Market*, National Bureau of Economic Research: New York.

Summers, L.H. (1981), "Inflation, the Stock Market and Owner-Occupied Housing." *American Economic Review, Papers and Proceedings*. 71(2): 429-434.

Thurston, L., and A.M.J. Yezer (1994), "Causality in the Suburbanization of Population and Employment." *Journal of Urban Economics* 35: 105-118.

Toussaint-Comeau, M. and S.L.W.Rhine (2003), *Tenure Choice with Location Selection: the Case of Hispanic Neighborhoods in Chicago*, Federal Reserve Bank of Chicago.

Turnovsky, S.J., and T. Okuyama (1994), "Taxes, Housing and Capital Accumulation in a Two-Sector Growing Economy." *Journal of Public Economics* 53: 245-267.

Van Ommeren, J. (2000), *Commuting and Relocation of Jobs and Residences*. Ashgate Publishing. Aldershot.

Webster, C. and L. Wai-Chung Lai (2003), *Property Rights, Planning and Markets*. Edward Elgar. Cheltenham. UK.

Wheaton, W.C. (1982), "Urban Residential Growth Under Perfect Foresight", *Journal of Urban Economics*, 12: 1-21.

Wood, R. (2003), "The Information Content of Region House Prices: Can They be Used to Improve National House Price Forecasts?", *Bank of England Quarterly Bulletin*, Autumn: 304 – 314.

Yelling, J.A. (1986), *Slums and Slum Clearance in Victorian London.* London Series in Economic Geography No. 10. Allen and Unwin. London.

Young, H.P. (1998), *Individual Strategy and Social Structure. An Evolutionary Theory of Institutions.* Princeton University Press.

Young, H.P. (2001), "The Dynamics of Conformity", in Durlauf and Young (eds.) *Social Dynamics*. The MIT Press, Cambridge, Massachusetts.

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