

Our research will be based around five programmes:

- 1) *The scale and nature of UK spatial disparities*: To what extent are spatial disparities the result of composition (heterogeneous individuals or firms being in different places) as distinct from place-based effects (differences in outcomes for identical individuals or firms in different places)? Are these differences offset by amenities or the costs of living and producing?
- 2) *The causes of place-based effects*: Through what channels do place-based effects arise? The interaction between labour and skills will be one focus. Another will be firm innovation, enterprise and investment.
- 3) *Housing and land markets*: How do real estate markets function to determine the offsetting costs?
- 4) *Structure and evolution of the spatial economy*: What are the implications for the spatial structure and evolution of the economy and for the linkages between places? How are the answers to these questions changing in response to globalisation, technological change and other factors?
- 5) *Spatial economic policy and governance*: What role does government play in shaping these inequalities? What policies and governance arrangements are most appropriate to tackle them?

## Research programme

Five inter-linked research programmes focused on the central questions:

- To what extent are spatial disparities the result of the sorting of more productive sectors, firms or workers versus causal place-based effects on outcomes? Are these differences offset by the costs of living and producing? What other factors matter for the value of places and for wellbeing? Are the answers changing over time? Programme 1 on the *scale and nature of UK spatial disparities* focuses on these issues.
- Through what channels do place-based effects arise, does sorting play a role, and are there feedbacks between the two? How do land and real estate markets function to determine the offsetting costs? What role do market failures and policy play? Individuals and the interaction between migration, labour and housing markets will be one focus. Another will be firm innovation and enterprise and the commercial land market. These projects are necessarily overlapping, but we structure our research by analysing *the causes of place-based effects* in Programme 2, while Programme 3 considers *housing and land markets*.
- What are the implications for the spatial structure and evolution of the economy and for the linkages between places? Why are the resulting spatial disparities important? How are the answers to these

questions changing in response to globalisation, technological change and other factors? These questions are covered in Programme 4 on the *structure and evolution of the spatial economy*.

- What role does government play in shaping these inequalities? What policies and governance arrangements are most appropriate to tackle them? Has devolution ameliorated or accentuated disparities? Programme 5 on *spatial economic policy and governance* focuses on these issues.

An overview of the programmes and projects is provided in the following table.

Programme and Projects	Leader	Other researchers	Institutions
<b>Scale/nature of disparities</b>	Gibbons		
1A Sorting versus place	Gibbons	Blackaby, P. Murphy, Overman, Rice	Oxford, LSE, Swansea
1B Earnings, prices, QoL	Blackaby	Gibbons, Overman, P. Murphy	LSE, Swansea
<b>Place-based effects</b>	Gibbons		
2A Innovation and knowledge	Harris		CPPR
2B Entrepreneurship	Silva		LSE
2C FDI	Wren	Harris	CPPR, CURDS
2D Skills	Champion	Coombes, Gibbons, Gordon, Rice	CURDS, LSE, Oxford
2E Agglomeration economies	Rice	Overman	LSE, Oxford
2F Institutional and social	Pose	Hilber, Storper	LSE
<b>Housing and land markets</b>	Cheshire		
3A Housing supply	Hilber	Cheshire, Muellbauer, A. Murphy, Nickell	LSE, Oxford
3B Land use	Cheshire	Hilber	LSE
<b>Structure and evolution</b>	Overman		
4A Intra-urban	Gibbons	Overman	LSE
4B Linkages and adjustment	Muellbauer	Fingleton, A. Murphy, Overman	CPPR, LSE, Oxford
4C Globalisation	A. Murphy	Muellbauer, Overman	LSE, Oxford
4D History	Cheshire	Overman	LSE
<b>Policy and Governance</b>	Overman		
5A Spatial economic policy	Overman	Project leaders	All
5B Governance	Pike	Rodríguez-Pose, Gordon, Tomaney	CURDS, LSE

## PROGRAMME 1: THE SCALE AND NATURE OF SPATIAL DISPARITIES

The UK government aims to: "Make sustainable improvements in the economic performance of all English regions by 2008, and over the long term reduce the persistent gap in growth rates between the regions". Most of our research will concern the determinants of these spatial differences and the policy implications. We will

start, however, by undertaking a detailed examination of the scale and nature of UK disparities and how these are changing over time. In particular, we will examine to what extent spatial disparities in income are the result of composition as distinct from place-based effects and how variations in the cost of living and amenities change our understanding of spatial disparities.

### **1a) Sorting versus place based effects (Gibbons, Blackaby, Rice, P. Murphy, Overman)**

Distinguishing between these explanations for the evolution of spatial differences is crucial for thinking about the appropriate policy response. If composition dominates then we need to focus on why places are different (e.g. why some regions have many jobs in the finance sector; some neighbourhoods have many high skilled workers). If place-based effects dominate, then we need to understand the processes that result in essentially identical individuals having different outcomes depending on their location, and how policy might change this. From an economic perspective, the case for tackling the latter is stronger a-priori than the case for tackling the former. From a social and political perspective, tackling both may be desirable.

For spatial differences in income (our focus), the key factors are the productivity of different workers and their likelihood of being in work. Thus, identifying the role of sorting and of place-based effects requires measures of productivity and employment rates (or worklessness) for occupation/skill groups at the local level. Existing evidence uses sub-regional data, basic productivity measures and crude occupation/skill breakdowns (Blackaby and Manning, 1990; Rice, et al 2006). This project will make use of newly available micro-geographic data which provide more precise locations, greater detail on occupation/skill (NES/ASHE/APS) and allow better measurement of productivity (ARD). The exact spatial scale and degree of industrial, occupation/skill detail will be determined by data availability (there are particular issues with accessing the LFS local identifiers which will impact on our ability to consider skills). However, by trading-off one against the other (e.g. crude skill decomposition, high spatial disaggregation and vice versa) we will be able to make a more precise assessment of the role of composition versus place-based effects than hitherto possible. Moreover, the availability of panel data will allow us to consider changes in spatial disparities and answer questions such as: Is sorting becoming stronger, leading to a more spatially concentrated distribution of occupations/skills? How is the pattern of place-based effects evolving? How are life chances affected by place of birth? Answering these questions will provide valuable insights to feed into the analysis of causal mechanisms in programme 2.

As discussed above, co-funding from the WAG will be used to undertake more detailed analysis for Wales. The National Economic Development Strategy, A Winning Wales (2002) set out a policy framework for economic development. The policy was updated in 2005 (c.f. Wales: A Vibrant Economy and Wales: A Better Country). Within these documents, the explanation given for low GDP, employment levels and wage rates include issues related to the industrial and occupational structure, proximity to economic mass, skill levels (including the "long tail of people with low skills"), lack of enterprise and the health status of the potential

workforce. That is, they point to both compositional (e.g. occupation/skill) and place-based factors (remoteness). Given this, we will undertake supplementary analysis to consider the role these dimensions play in explaining the difference between economic performance in Wales and other regions in the UK. In addition we will use the WAG funded Welsh boost of the LFS to consider differences across the 22 Unitary Authorities *within* Wales. Results from this analysis will be used to identify issues of specific interest in the Welsh context. This could suggest useful additional disaggregation for research elsewhere and help identify other areas of our research programme where more detailed analysis of Welsh data may be useful.

### **1b) Earnings, prices and the quality of life (Blackaby, Gibbons, P. Murphy, Overman)**

This project will extend the research in project 1a by considering the way cost-of-living and amenity differences change our understanding of spatial inequalities (focusing on earnings and worklessness). In a spatial context, there are two explanations for wage and unemployment differentials for otherwise identical individuals. First, the existence of such differentials may follow from workers' maximisation of utility, which includes factors other than just wages. For an individual, wages may be only one of several factors that determine welfare. Risk of unemployment, cost of living or moving, and amenity differences (such as climate, countryside, culture, crime, public utilities, etc) may all matter and real wage differences may no longer provide the only motivation for individuals to migrate or stay in the same location. Second, spatial wage differentials may follow from shifts in demand that induce temporary disequilibrium. As a result wage and unemployment differentials may be divided into equilibrium differentials which follow from differences in amenities and disequilibrium components caused by demand shocks. The existence of persistent differentials should only follow from heterogeneous amenities or very slow adjustment to shifting demand. Clearly, the source of spatial wage and unemployment differentials has implications for the appropriate policy response. For example, if amenity and cost of living differences offset wage differences spatial disparities in the latter may not warrant policy intervention. But if, for example, equilibrium spatial disparities are due to high moving costs (e.g. as a result of inelasticities in relevant housing markets or social housing allocation (see project 3a)) or slow adjustment in disequilibrium there is a clear role for policy.

This project will assess the extent to which these two different sources explain UK spatial disparities. We will pool the General Household Survey (GHS) from 1972 to the present to create a 'pseudo longitudinal dataset'. Additional data will be added and matched at the regional level. This data will include, house prices, cost-of-living, unemployment, unemployment duration and other amenity data (such as crime, pollution, population density, road congestion, climate etc.). A more spatially disaggregate analysis, over a shorter time span, will also be undertaken using the LFS and NES/ASHE. The role of demand side factors in influencing spatial differences in earnings will be investigated by examining the relationship between earnings and unemployment (see Blackaby et al (1991)). Combining data on workers who move from the NES/ASHE, with highly localised house price information from the land registry price-paid dataset, will allow us to examine the

role of housing costs (the most important cause of spatial variations in the cost of living) in offsetting earnings differentials. Finally, remote sensing data on land use (see Burchfield et al., 2006) combined with the house price data will allow us to consider the amenity value of undeveloped land and the role this plays in offsetting earnings differentials. This project will paint a much richer picture of the nature of UK spatial disparities.

## **PROGRAMME 2: THE CAUSES OF PLACE-BASED EFFECTS**

Programme 1 is concerned with describing the UK's changing spatial disparities and decomposing them in to sorting versus place-based effects. Programme 2 will turn to the channels through which these place-based effects occur and the interactions between these causal mechanisms and sorting processes. We will focus on four of the Treasury's productivity drivers (innovation, enterprise, investment and skills) and two additional drivers (agglomeration externalities and social capital) that are particularly important in the spatial context.

### **2a) Innovation, knowledge and productivity (Harris)**

Technological progress is one of the main drivers of economic growth (HM Treasury, 2001). For firms, increased innovative activities (e.g. R&D spending) increase not only the level of innovation but also capabilities and absorptive capacity, better placing firms to internalise knowledge from outside (e.g. technology transfers). In turn, this increases the ability of firms to benefit more from globalisation (Harris and Li 2005a,b; 2006). At the regional level, increased R&D spending by firms, leading to greater innovation, absorptive capacity, and internationalisation, is likely to create a virtuous circle of further positive impacts on R&D, and therefore a movement upward in the growth path of the region's economy. Determining if and how policy might influence this process is difficult, however, because of a lack of detailed empirical evidence of the factors that determine business innovation at the firm level and, in particular, the extent to which these differ across space (Cooke and Morgan, 1994; Asheim and Gertler, 2005). This project will address this lack of evidence, by developing models of firm innovation and then estimating these using UK micro-data.

The underlying theoretical model will be based on extensions to the dynamic optimisation approach (Klette and Griliches, 2000), currently being developed. The approach will be consistent with resource-based theories of the firm, as well as Schumpeterian models of development (Harris and Trainor, 1995). The basic empirical approach will be similar to Crepon, et. al., (1998) and subsequent applications (see Hall and Mairesse, 2006, for a survey). Establishment level data from CIS4 will be used to consider what determines business R&D spending and innovation. In addition to R&D spending, CIS4 provides data for other relevant determinants (e.g. firm size, sector, exporting, ownership characteristics, market failures such as the cost of finance and government support). We will also include measures of agglomeration and diversification (OECD, 1999), as well as spillovers involving technology/knowledge transfers (Audretsch and Feldman, 1996). The former will be derived from the ARD which can be linked to CIS. In addition, it is possible to link micro-level data comprising financial information from the ARD and the BERD for the years 1996-2003. This dataset can be used to

estimate the link between the R&D capital stock and productivity, using either a 'knowledge production function' and/or the 'two faces of R&D' approach (Wieser, 2005; Griffith et. al., 2004; Cameron et. al., 2005) which explicitly allows for lagging regions to benefit from technology transfers and thus 'catch-up' with the leading region and therefore captures the role of R&D as a key variable determining absorptive capacity. The types of models that will be considered are set out in Harris et. al. (2005).

The research will identify (i) the determinants of innovation activities at the establishment level (including location and spillover effects), and thus how to overcome innovation barriers; (ii) the link between R&D and productivity, and thus the economic performance of establishments; and (iii) the particular role of absorptive capacity in overcoming barriers to innovation and its wider impact on productivity.

## **2b) Entrepreneurship (Silva):**

Since Marshall (1890) and Schumpeter (1911), entrepreneurship has been recognised as a crucial factor shaping economic success. Entrepreneurs are responsible for new firms and their competitiveness, innovativeness and job creation (see Acs and Audretsch, 2003, and Storey, 2006). In a nutshell, entrepreneurs are 'engines' of growth, and differences in levels of entrepreneurship have important implications for disparities across space. Reflecting this, the UK Government stresses the importance of local entrepreneurship for the spatial distribution of economic activities and has made the promotion of a widespread 'enterprise culture' a key policy objective: "Enterprise is central to the Government's approach to economic policy and to rebuilding communities" and that the aim is to build "a more enterprising society, in which all who have the initiative, skills and drive also have the opportunity to start and run a successful business" (DTI, 2007a). Special emphasis is put on enterprise in the most disadvantaged communities and areas with lagging economic performance (DTI, 2007b). Many other policy makers, at all levels of government, share these concerns.

As for innovation, however, a lack of consistent evidence on the determinants of spatial differences in levels of entrepreneurship hampers the formation of enterprise policies. Existing evidence is either drawn from case studies, or else is focused on enterprise-level data or aggregate information (such as Storey, 2006 and Saridakis et al. 2007). In contrast, in line with the recent policy interest in increasing "the number of people considering going into business" (DTI, 2007b), we will focus on entrepreneurs and their business decisions. In particular, we will examine how individual characteristics, such as skills or family circumstances, interact with location-specific characteristics, such as local networks, credit availability, entrepreneurial culture and social capital to determine differences in entrepreneurial activity and business performance, across UK regions and other more narrowly defined areas (such as metropolitan areas and counties/unitary authorities).

Our empirical approach will follow Guiso and Schivardi (2006) and Michelacci and Silva (2006), combining data about individual's characteristics and their business ventures with data on local conditions. Data will come from the 2001 Census, the LFS, and the BHPS. There will be a particular focus on the BHPS which contains data on individual characteristics, on the main economic activity (including entrepreneurial activities, dates

when a business venture was started/closed, income derived from it and number of people employed), in addition to the reasons for choosing to become an entrepreneur and spatial information (place of work, reasons why this location was chosen; place of birth, place of residence etc). The analysis will allow us to understand how the role of interaction between individual characteristics and local factors, and whether/why 'enterprise culture' tends to concentrate in specific areas. In addition, by observing individuals and their business ventures for many consecutive years, we will be able to monitor survival rates and assess their success, as measured by income and employment growth.

## **2c) Foreign direct investment (Wren, Harris):**

Investment is a key driver of local, regional and national economic growth (HM Treasury, 2001). In addition to indigenous investment (project 2b), FDI is seen as a key source of growth by government, (operating through UK Trade and Investment and the RDAs). Despite this consensus, policy is hampered by weak understanding of the processes by which FDI builds-up at a regional and sub-regional level and its contribution to local economic development. This project will draw on newly available high-quality micro-datasets to investigate the way in which FDI agglomerates at different spatial scales and the processes at work, as well as provide plant-based evidence on the benefits of international investment, including to indigenous industry.

The project will operate at two spatial scales: the regional and sub-regional; and at the plant level. These approaches are complementary, providing 'top-down' and 'bottom-up' understandings of the nature and contribution of FDI. On the one hand, it will offer 'macro-based' evidence on the way in which FDI operates at a regional scale, and how regions interact; while on the other hand it will offer 'micro-based' evidence, but with a focus on spatial differences. The 'macro-strand' will cover the 3rd FDI wave (since 1980) and aggregate UK Trade and Industry plant-level data for UK regions and industries to investigate geographical and industrial concentration (by number and investment scale) and its spatial autocorrelation. It will address important policy issues such as how FDI co-locates across regions, how regions interact, how FDI reflects the existing structure etc. It will explore the temporal pattern and competing theoretical explanations of classical and agglomeration factors, including place-based effects. It will initially be conducted for regions, for which a large dataset of around 12,000 FDI projects exists, and then explore these at a sub-regional level, e.g. local authority districts.

The second strand to the project will operate at the plant-level, merging data from the ARD with the CIS, BERD and WERS to investigate the role of FDI at regional and sub-regional levels, focusing on growth and productivity. We will use this data to test whether FDI plants are intrinsically 'better' than indigenous plants; if domestic plants in different regions benefit from technological spillovers, and examine if there is clustering of activity around FDI plants. In the absence of clustering FDI may merely crowd-out domestic plants.

Through these complementary 'macro' and 'micro'-based approaches, and making close reference to existing work of a theoretical and applied nature, the project seeks to provide a better understanding of the

nature and contribution of FDI to economic development, with implications for national, regional and other spatially-based policies across Great Britain.

## **2d) Skills, migration and urban labour markets (Champion, Coombes, Gibbons, Gordon, Rice):**

Education, skills and experience (human capital) play the lead role in determining earnings, employment and life chances (Blundell et al 2005, DfES 2006). Thus, areas with larger and faster growing human capital will thrive economically and socially. Spatial inequalities in human capital arise partly from location decisions of people and partly from differences in investment, so nurturing, retaining and attracting human capital matters for economic success at all spatial levels. But above and beyond this compositional effect, other factors make human capital crucial – particularly in the context of cities (Glaeser 2000): The industries underpinning growth in the knowledge-based economy depend on it (Florida, 2002, GLA Economics 2004; HM Treasury et al, 2006, 2007; Simmie et al., 2006) as does the local service sector (Sassen 2001, Manning 2004). At the same time, agglomeration and growth effects in successful labour markets accelerate local production of human capital through learning and upward mobility of workers (Fielding 1992, Glaeser and Marc 2001, Gordon 2002), intergenerational transmission, the quality of education institutions and neighbourhood/ peer effects (Heckman and Carneiro 2003, Blanden, et al 2005, Gibbons 2002, Gibbons and Telhaj 2006).

Partly for these reasons cities are increasingly seen ‘as the dynamos of national and regional economies’ (Parkinson et al., 2006). But these processes can also contribute to a stretching of already wide spatial inequality in human capital in Britain. In particular, London has seen strong increases in the proportion of qualified and high-occupation workers relative to most other larger cities (Duranton and Monastiriotis 2002, Champion et al., 2007). Programme 1 will describe these patterns and consider the role of place-based effects versus composition. This project will turn to the mechanisms of place-based effects for human capital with two overarching aims. First, to understand whether spatial disparities in human capital arise primarily from migration, or from differences in ‘indigenous’ human capital’s capability and incentives to reproduce itself. Secondly, to understand the impact of local human capital (at all spatial scales) on the reproduction of human capital, and on individual productivity and other labour market outcomes.

We envisage three main strands. The first will focus on the ‘escalator’ effect: whether different places offer different opportunities for career progression, whether occupational and earnings trajectories differ between incumbents and in-migrants, and the role of self-selection of ‘upwardly-mobile’ migrants. The results will show to what extent migration for career progression exacerbates spatial human capital disparities. Analysis will be based on individuals and age-based ‘cohorts’, tracking educational progress, labour market development and geographical mobility over time, using the LS, NES, ASHE and BHPS. The second strand will consider the reproduction of human capital, in particular the role of investments within the family and in schools, and how these play out in terms of spatial disparities in education and training. This strand also deals with externalities in the formation of human capital, working through neighbourhoods and schools (Gibbons and Telhaj 2006)

and through labour market incentives (Rice, 1999, 2006). This strand will use the rich data on young people in the YCS, in the LSYPE and in administrative data for schools and post-16 education (NPD, ILR), linked at area level to information from the LFS and NES/ASHE. The third strand will consider whether local human capital influences productivity and wages through external (place-based) effects. This work extends work by Kaplanis (2007) using the NES/ASHE data to explore how individuals' labour market outcomes change in response to changes in local labour market composition. Part of the strategy across the whole project will be to look at the effects of shocks to the local supply of qualified people induced by policy changes, e.g. through the differential impact of the Education Maintenance Allowance or through allocation of university places.

## **2e) Agglomeration externalities (Rice, Overman):**

Projects 2a-2d focus on particular drivers (knowledge, entrepreneurship, investment, skills) and the role that particular agglomeration externalities may play in determining their influence on the level and growth of spatial disparities. This project will take a different cut at the same issue and study the role of access to economic mass in generating place-based advantages (Rice et al, 2006) and thus the overall effect of agglomeration externalities on the level and growth of local productivity. Projects 2a-2d for their part will be concerned with the specific mechanisms by which economic mass impacts on economic performance. The intention is that by developing the projects in tandem, we will be able to compare across projects to answer several key questions. First, what is the relative importance of the different mechanisms identified in explaining the overall productivity effects from agglomeration? Second, how does the answer to this question vary with spatial scale? Third, do the specific mechanism that we have focused on in programme 2 fully account for the overall extent of agglomeration externalities or do we need to look for additional drivers?

Thus, this project will act as a crucial cross-cutting analysis allowing us to draw out broader policy and analytical implications from different projects. At the same time, the results are of direct policy relevance. Infrastructure is a key determinant of the extent to which different locations can access economic mass. The crucial role that infrastructure plays has been highlighted by the recent Eddington study (HMSO, 2006) and is the subject of ongoing interest by the DfT. Recent academic research (Ioannides et al, 2007) suggests that ICT also has a role to play here and there is clear policy interest in, and action on, this dimension too (see, e.g. Yorkshire Forward's NYNet and WAG's Broadband Wales amongst many others).

Despite a large theoretical literature that considers the role of access to economic mass in generating place-based advantages (Duranton and Puga, 2004) there is very little evidence on the importance of these effects in the UK (exceptions are Graham, 2005, 2006; and Rice et al 2006). This project will use data from the ARD, NES and ASHE to provide such evidence. Measures of productivity (labour value added and total factor productivity) will be constructed from the firm level datasets. We will then seek to explain differences in levels and growth rates of productivity at both the firm and the regional level. The firm level analysis will consider the role of both firm and location characteristics (including access to economic mass) in determining firm level

productivity and whether agglomeration effects vary with firm/industry characteristics (Henderson, 1997). Is it the case, as is frequently suggested, that agglomeration effects are more significant for the so-called innovative industries? The regional level analysis will focus on location characteristics to see whether the aggregate relationship is simply the average of the firm level effects or whether general equilibrium interactions change the nature of the relationship. We will consider the spatial scale at which the relationships hold and whether they differ across firms, skill types and locations.

## **2f) Social capital (Rodríguez-Pose, Hilber, Storper):**

Projects 2a-2e aim to identify the extent to which traditional economic drivers generate place-based effects. This project will broaden out our analysis to include an area of increasing academic and policy attention: institutions, networks, and social capital as mechanisms to “promote innovation, spread best practice, build capacity and skills, and tackle poor performance” (CLG). Much recent research has focused on the roles of community (informal, group-based associations, networks, and social capital) and society (formal, transparent, rules-based institutions) in development. For the most part, however, this research has been polemic, arguing either for the role of community (Pyke et al 1990; Putnam 1993 and 2000; Saxenian 1994) or of society (Cooke and Morgan 1998; Amin 1999; Easterly 2000; Aghion, Alesina, and Trebbi 2002; Rodrik et al. 2004) – i.e. social capital vs. formal rules and institutions – and positioning the two in opposition. Yet in reality, community and society coexist and interact at all territorial levels and this interaction shapes socio-economic cohesion and outcomes at the local level (Storper, 2005; Rodríguez-Pose and Storper, 2006).

Given this, the project aims to push the theoretical and empirical boundaries of our understanding of institutions, by developing and testing theories and models of community and society as complementary forces whose balance and interactions shape the medium and long-run development prospects of territories through their effects on the key institutions which underpin growth. The empirical research will focus on developing operational models of community and society and testing their predictions. Data will be mainly derived from the ECHP, which not only provides information at the household level that can be aggregated at a regional level, but also allows for comparative analyses across 15 EU countries. The research will assess how social capital affects key economic issues such as problem solving, microeconomic efficiency, and social policy. The research will also explore to what extent formal rules and institutions, e.g., those that generate barriers to mobility (e.g., rent control, social housing, or homeownership) causally affect social capital accumulation. One particular focus will be on explaining the significant spatial differences in social capital across Europe.

## **PROGRAMME 3: HOUSING AND LAND MARKETS**

Programme 2 considers place-based effects, the benefits of living or working in one place rather than another. Programme 1 considers whether the costs of locating in ‘advantaged’ places partly offset these benefits. In this Programme we focus on increasing our understanding of the sources of those costs, adjustment to them and

the role of policy by investigating the functioning of land and real estate markets. Whilst this is an area where there is much existing research, the following two crucial policy-relevant issues require further consideration.

### **3a) Spatial variations in UK housing supply (Hilber, Cheshire, Muellbauer, A. Murphy, Nickell)**

The UK planning system is widely viewed as inflexible. Historically it ignored market signals and has failed adequately to cope with changing socio-economic conditions. As outlined in the two Barker Reviews (2004, 2006b), this rigid supply regime causes the UK to have some of the most expensive residential and commercial space in the world. Space costs and price volatility differ vastly between and within regions and little is known about the extent to which spatial differences in supply regimes contribute to these differences. Since spatial adjustment is predicated on housing costs amongst other factors, any differences in regional supply should be expected to influence spatial adjustment to disparities. This project will assess the inter- and intra-regional differences in the responsiveness of housing supply and investigate the underlying causes of these differences. The project will push the theoretical and empirical boundaries of our understanding of the causes and effects of spatial differences in supply regimes and test whether differences in policy across space impacts on supply elasticity or space price. The project goes significantly beyond the Barker review analysis in that it will highlight the role of space, pioneer new methodologies to measure impacts and develop a political-economy framework to understand the differences in decisions taken by planning authorities. The research will provide important insights into the spatial differences in the effects of various national and local policies.

The research will draw on a variety of data sources at the region, city-region and planning authority level (including residential price data from IPD, Land Registry, Nationwide, CLG, Valuation Office; construction cost data from Davis Langdon and Gardiner and Theobald; and Remote sensing land-cover data from Landsat.) These data will be used to assess the effects of different local supply regimes on housing prices using four different approaches. The simplest will use planning data to identify measures of planning restrictiveness to see how these are related to house prices, affordability, responsiveness etc. The second approach will estimate a 'regulatory tax' for each regional housing market (e.g. Glaeser et al., 2005). The third approach will use a structural model to estimate regional-level housing supply elasticities (see e.g., Bramley and Leishman 2005, Leishman and Bramley 2005, Hilber and Mayer 2004 and also project 4b). The final approach will use detailed land use data from satellite imagery and apply a monocentric city model to examine regularities between various obvious urban economic variables, 'land take' and house prices (Angel et al. 2005, Sheppard 2007). From this one can estimate for any city how much its urban area 'should have expanded' given changes in household numbers, incomes etc. The proposed research applies this method to a sample of British urban regions, to see how their areas have expanded compared to how they 'should have expanded' and relating that to house prices etc.

Theoretical research will build on Hilber and Robert-Nicoud (2006) to model planning decisions at the local authority level as the outcome of a political process. Among other factors, the research will explore the role of

social housing on these decisions. The predictions will be tested by analysing the determinants of the estimated spatial differences in the rigidity of the supply regimes (Cheshire and Hilber, 2007).

### **3b) Land use planning, retail and productivity (Cheshire, Hilber):**

There is significant interest in the economic effects of land use regulation in the UK (Barker, 2004; 2006b). Research to date has, however, focused on housing. The only work on a commercial sector, offices, concluded that planning constraints increased space costs very significantly (Cheshire & Hilber 2007). However, there is some evidence that the impact on the UK retail sector may be even greater (Cheshire et al, 1986). Since that research, restrictions on development, especially out of town development, have been significantly tightened. Moreover, as suggested by, e.g., McGuckin et al (2005), productivity gains in retail may have been a source of differential growth for the US compared to Europe. It is also plausible that both space and location may be more difficult to substitute in retail use than in other economic uses of land. A justification for such tight controls is that these reduce travel costs and energy use and maintain accessibility for poorer city residents without cars. On the other hand poorer residents may pay even higher prices, if retail is less productive and if formats are smaller and more specialised; there could be more trips generated and energy use could be increased. The proposed research would generate data against which to evaluate the impacts of accepted policies on these variables.

This project will provide the first measures of the effects on retail space costs of UK land use policies, including those restricting out of town development. It will explore the impacts of any such costs on retail productivity and the wider implications of that for households and the economy. In addition, it will quantify the environmental impacts of policies restricting out of town development. The Barker review could only flag such impacts as possibilities, since it had no research available to it analysing the impact of planning on retail. The project will collect entirely new data and will pioneer new methodologies to measure impacts. Additionally, it will complement project 3a in developing a political-economy framework to understand differences in decisions taken by planning authorities.

The empirical research will first identify both the intra- and inter-regional spatial differences in the rigidity of planning regimes for retail. It is expected that there are significant differences across the UK in the extent to which planning policies have restricted the supply of retail space and imposed town centre first policies. The impact of any supply restrictions would be estimated in three ways. The first would be an adapted form of the Glaeser et al. (2005) 'regulatory tax' measure using value data from CBRE, Hillier Parker, Jones Lang LaSalle and KingSturge and construction cost data from Davis Langdon and Gardiner and Theobald; the second would use observed and estimated land price discontinuities between retail and alternative uses. The third would be comparisons between the costs of retail space in selected British locations and carefully selected and matched international comparators. Given methodological difficulties and data problems it is important to have alternative estimation procedures to compare results. The resulting measures of impact on space costs would

then be compared to indicators of planning constraints on retail development – both in aggregate and by type of location - in the relevant planning, or set of planning authorities. Using the ARD, RICS and other specialised commercial data they can also be related to indicators of factor productivity in retail such as sales per m<sup>2</sup>, labour productivity and purchase per customer visit. In addition, information on customer trip length and retail re-stocking trips would be sought from commercial sources. These indicators would then be analysed for two purposes. The first would be to investigate any relationship between constraints on retail space, the price of retail space and the size and productivity of retail units. The second would be to investigate impacts on customer journeys and re-stocking trips (numbers and lengths) of retail unit size/space costs and location. In addition, the outputs of this project would provide additional data for the political economy analysis proposed in project 3a.

#### **PROGRAMME 4: THE STRUCTURE AND EVOLUTION OF THE SPATIAL ECONOMY**

This programme considers the implications of the costs, sorting and place-based effects, identified in programmes 2 and 3, for the spatial structure and evolution of the economy and for the nature of the linkages between places. In an ideal world, we would aggregate up the detail from programmes 2 and 3 to derive a complete model of the UK spatial economy. In reality, whilst we will be able to draw on these insights, we will still need to abstract from some of the detail to understand how the overall spatial economy is structured.

##### **4a) Intra-urban inequalities and changing urban form (Gibbons, Overman):**

Experiences and life chances vary more widely across neighbourhoods within cities, than they do across average individuals in different cities. Understanding how these intra-urban disparities originate and evolve over time is an important step towards identifying the appropriate policy response. Place-based effects and sorting have both been offered as explanations. For instance, the spatial concentration of the workless and unemployed is attributed by some to sorting of the less-employable into less desirable places (Cheshire, 1979, Buck and Gordon, 2004), but by others to disadvantages conferred by remoteness from jobs (Gobillon et al, 2005, Social Exclusion Unit, 2003). Regardless of the mechanism, the local supply of housing, amenities, jobs and transport – interacting with general changes in the wage structure - has crucial implications for intra-urban spatial structure. The aim of this project is to better understand the role of changes in these factors by studying how they influence the intra-urban pattern of wages, employment and house prices. We will consider these changes for major metropolitan areas in Britain using integrated micro data on the housing market (Nationwide, Land Registry), labour market (NES/ASHE/LFS) and plant location (ARD).

For example, by linking individual micro data (ASHE), house price data, plant location and workplace employment (ARD) we can examine whether changes in job availability (e.g. new office developments) change local wage or occupational structure. On the housing supply side, we will consult planning records (many now online) and collate information on changes to social/affordable housing to identify shocks to housing supply.

Land cover data (LandCover) may also allow us to detect land supply constraints. Integrating these data with the house price and labour market micro data will allow an assessment of the role of housing supply in changing house price and earnings profiles. If we can get access to geo-coding in the LFS, we will also be able to study the effects of these shocks on intra-urban patterns of worklessness and unemployment.

Of course, intra-urban disparities have long histories and are deeply entrenched which, given the data available, makes it difficult to trace out their origin and evolution in any detail over a long time scale. However, cities are constantly in a state of flux, and this project will see how the seeds sown by more recent shocks germinate into changes in wage and house price gradients and employment unemployment patterns.

#### **4b) Linkages and the structure of the spatial economy (Muellbauer, Fingleton, A. Murphy, Overman)**

Despite increasing policy interest, little is known about how the spatial economy adjusts to shocks and the nature of the linkages between places. A small literature (Blanchard and Katz, 1992; Decressin and Fatas, 1995) has used VARs (vector autoregressions: a time series technique) to examine the dynamics of regional disparities. VARs impose few restrictions, but identifying economic processes is difficult. At the other extreme, computable general equilibrium models (e.g. Harrigan et al. 1991) impose a lot of theoretical structure and make use of very detailed data to model the effects of shocks or policy. Crucially, both strands all but ignore agglomeration economies and the interplay of housing and migration (an important adjustment mechanism). In addition, this literature is in need of updating and application to the UK if the results are to inform policy. This project aims to do this using two complementary approaches. The first, coming from a macro-economic perspective will focus more on growth and the dynamics of linkages and adjustment. The second, more micro-economic approach has as its primary focus understanding the overall structure of the spatial economy.

The first strand will build on Cameron, Muellbauer and Murphy's work for the CLG Housing Affordability Study (Meen et al., 2004) to develop a dynamic model of regional differentials. We will combine features of a VAR capturing dynamics, with elements of a structural model. The existing equations for migration, house prices, earnings, employment and unemployment rates will be developed and augmented by equations for sectoral employment, house building, new business formation, gross fixed capital formation, occupational structure (e.g. proportion managerial and professional) and gross value added, so endogenising productivity growth. Special attention will be given to the employment rate, and thus worklessness, since this is a major way in which regional deprivation shows itself. Agglomeration economies will be explored, though these may be hard to distinguish from productivity trends. If possible, we will extend this research to consider shifts in intra-regional earnings inequality complementing research in project 4a. Empirical estimation will initially use easily available government office region (NUTS1) data. However, the 37 (NUTS2) sub-regions would permit more informative spatial disaggregation and we hope to undertake the analysis at this scale by pulling together data from a number of standard sources (LFS, ASHE, NES, the regional accounts, ABI, ARD and data on house prices). The resulting model will allow us to understand the rich interplay of labour and housing markets

with migration, both international and inter-regional, demographic change, regional growth and new business formation, and the impact of shocks from the global environment, which lies behind regional evolutions.

The second strand will consider an alternative way to study linkages by using a specific theoretical model to structure the analysis. Building on Fingleton (2005), wage levels, price indices and income levels will be endogenous outcomes of an applied NEG-based general equilibrium model (Fujita et al., 1999; Baldwin et al, 2003). Using a specific theoretical model has the advantage of being explicit about the nature of linkages, but the disadvantage that the empirical model will be poorly specified if the theoretical structure is not a good approximation to mechanisms that drive the structure of the UK spatial economy. The model will be applied at the level of British Unitary Authority and Local Authority Districts (UALADs) using secondary data from the Land Registry, the NES, Census, with some variable construction (e.g. travel time data for inter-area connectivity). The robustness of the model will be tested against alternative assumptions about transport costs, market structure etc. We will also use spatial econometric techniques to examine spillover effects due to displaced demand and supply in response to local price heterogeneity, or to omitted spatially autocorrelated variables. The effect of house prices (ignored in most NEG modelling) will be introduced through a reduced form spatial econometric housing market model, based on Fingleton (2006, 2007) and research in project 3a. The endogenous variables from the NEG and housing market models will provide maps of spatial variation in real and nominal wages, local income, price indices, house prices and housing affordability. The sensitivity of the outcomes to exogenous impulses, such as to connectivity between areas, will be examined.

#### **4c) The spatial impact of globalisation (A. Murphy, Muellbauer, Overman):**

Globalisation has important implications for the evolution of the UK spatial economy. The centre will already consider one important factor, FDI, in its work on the causes of inequality (project 2c). This project will consider two further aspects of greater openness: the impact of trade and market integration and the role of international migration. The focus will be on consequences for spatial disparities (justifying its place in programme 4 rather than 2) although we will also be interested in mechanisms. Clearly both strands of this project will be able to draw on work in project 4b on the structure and adjustment of the spatial economy.

Research on the impact of trade (Wood, 1998, Feenstra and Hanson, 2003) neglects the fact that affected industries are often spatially concentrated so that large local effects may be felt even if the national effect is small. This raises important, yet unexplored questions about the interaction between trade and spatial economic policy. To address these, we will consider the extent to which rising disparities can be explained by trade and whether adjustment to trade depends on the degree of spatial concentration. Data on firm responses and the degree of concentration will come from the ARD merged with international trade data to examine the implications of globalisation and EU integration for UK sub-national disparities. This work has already been funded by the ESRC and would be incorporated in to the Centre's research programme (see co-funding).

The second strand of this project aims to quantify the effects of higher international migrant flows on regional economies focussing on regional migration, house prices, employment, unemployment and earnings. Cameron et al (2006) and Murphy et al (2006) find that, before 1997, the rate of UK house building broadly matched rising real income and population. However, since then the latter have greatly outpaced the former, driving up real house prices. Per capita income growth and population growth due to net foreign immigration, have both played a role. To date, little research has examined the link between international migration and the spatial economy focusing instead on the UK as a whole and ignoring housing (e.g. Barrell et al., 2007, Dustman and Fabbri, 2006)). To address this link, we will update work on regional migration by Hatton and Tani (2005) with a more complete treatment of labour market and expectations effects. Hatton and Tani (2005) find that an additional 100 immigrants into a region results in the displacement to other regions of between one-third and two-thirds of that number. Given the notorious lack of supply response in Britain (c.f. project 3a), it is perhaps not surprising to find a displacement effect of this magnitude. We will update this work using Total International Migration (TIM) data, which improves on the IPS data they used. In addition we will model the effects of international migration on regional house prices, earnings, employment and unemployment allowing for regional spillovers (as a result of commuting and other effects). We will also model demographics, so that the evolution of the spatial economy under various scenarios may be explored. Finally, we will use micro data from the LFS to examine the housing “careers” of immigrants. Even if most recent immigrants are renting, international migration will have a spillover effect on house prices. A by-product of this research will be an estimate of the macroeconomic effects of higher international migration on house prices, but the key benefit will be a greater understanding of the consequences of higher international migration for the regions.

#### **4d) Path dependency and the history of UK spatial disparities (Cheshire, Overman)**

Data availability means that projects 4a-4c will consider the structure and adjustment of the spatial economy over a relatively short period. But, as noted in 4a, disparities have long histories and are deeply entrenched. Thus, this project, will consider the long-run evolution of disparities in the light of structural changes. In the UK, current spatial disparities have persisted since the 1920s, although they show an almost complete reversal from those experienced before WWI (Royal Commission, 1909). Cheshire & Magrini (2006) found that of the major urban regions in Western Europe, less than a quarter had climates worse than their national means. This raises the possibility that the great industrial cities are just a short term blip in patterns of urban development, altering the spatial pattern of prosperity for the period of industrialisation. In a post industrial economy will the urban system tend to revert to its pre-industrial form or is path dependency so strong a force that it will persist in the form that arose during the Industrial Revolution? While of intrinsic interest, this question also has profound policy implications since the extent of path dependency conditions the ability of policy to change the trajectory of spatial growth patterns.

To address this question we will create two new data sets to address both the very long term issues and gain more detailed insights into the role of economic variables and British patterns. Data set 1 will have a limited range of variables (some exogenous variables, information on major shocks and some restricted economic variables) but will cover all major (more than 1/3 million population in 1981) urban regions of Western Europe from 1600 to the present day. Data set 2, for UK cities will include more economic variables, will cover all the medium and large urban regions (those over 150,000 in 1981) with data for the period since circa 1850. Historic population data for cities is available from two main sources, Chandler (1987) and Bairoch *et al*(1988); the data set for urban regions used in Cheshire & Magrini (2006) has data from 1950.

The data sets will be analysed to determine the extent of path dependency in urban dynamics, including the stability of spatial disparities since the late 19th Century and the extent to which the urban system of Britain and of Western Europe may (or may not) be reverting to pre-Industrial Revolution patterns. In particular we will consider whether industrial cities disturbed the long run dynamics of urban and regional development with high transport costs temporarily increasing the role of specific resources or ports. As structural transformation once again changes the function of cities the key question is whether this old structure will persist because of strong path-dependency or whether the urban system will re-form reflecting pre-industrial patterns or the new forces and patterns of relative cost. These issues, particularly the relationship between economic and demographic variables, will be explored in more detail but for a shorter period for UK cities.

## **PROGRAMME 5: SPATIAL ECONOMIC POLICY AND GOVERNANCE**

How should policy address spatial economic disparities? What governance mechanisms are most appropriate for development and delivery of policy? There will be some specific research but the programme is intended to cut across the centre's research to ensure it delivers on its policy orientated brief.

### **5a) Spatial economic policy (Overman, project leaders)**

This cross-cutting project will have two objectives. First, it will identify policies of relevance to specific projects and, where possible, help incorporate analysis of these policies in to our research. Second, it will identify and communicate the policy lessons emerging from our research. Of course, policy makers already commission evaluations of specific policies and the Centre should not be seen as a replacement for this. However, a key aim of the Centre is to deepen our understanding of the spatial impacts of specific policies. When commissioning evaluations, policy makers often provide administrative data which would allow innovative research to be undertaken, but the scope of, and time for, the evaluation are, for good reason, circumscribed. E.g., the DTI has already commissioned work from the LSE and CPPR that merged administrative data with performance data from the ARD to evaluate the impact of business support programmes on firm performance (e.g. Harris, 2004; Harris and Robinson, 2005, Martin et al, 2006). If the Centre can be used to facilitate greater access to this kind of administrative data, further research could be

undertaken which would improve the evidence base, by addressing complicated issues that are, by necessity, only partially dealt with in commissioned work. The second objective of this project is to ensure production of the “user friendly” outputs that will be key to stakeholder engagement (see below for more details on our stakeholder strategy).

#### **5b) Governance of spatial economies (Pike, Gordon, Rodríguez-Pose, Tomaney):**

This project will examine the governance arrangements for the delivery of spatial economic policy with a dual focus on devolution, and on bottom-up economic initiatives. Recent international comparative research has concluded that devolution has accompanied entrenched sub-national spatial disparities (Rodríguez-Pose and Gill, 2005). Another strand of research, on territorial competition has argued first, that the likely balance between positive, wasteful and zero-sum effects depends on a series of local, economic, and institutional factors (Cheshire and Gordon, 1996, 1998); and second, for the importance of (sub-) regional co-ordination (Gordon, 2007). Yet, we know little about the particular conditions under which devolved forms of institutional organisation and decision-making contribute to or ameliorate territorial inequalities in specific national contexts, or the role that local economic agencies can play in functional urban regions. This conceptual and empirical gap is especially pertinent in the UK policy context. According to HMT/DTI (2001:45) “Delivering economic growth and prosperity in every part of the country requires a strong institutional framework for delivery and formulation of regional and local policy.” This insight has been one of the underpinnings of devolved administrations in the UK and RDAs within England. But, “despite the increasing association between decentralization, efficiency and growth in the devolutionist discourse, there is little empirical evidence of a link among these factors” (Rodríguez-Pose and Bwire, 2004).

This project will address this evidence gap by building on work undertaken by John Tomaney for the ESRC’s Devolution programme. We will critically review the literatures on the relationships between the autonomy of sub-national units as economic actors and achievement of economic development/reduction in territorial disparities. This will include assessment of the international experience of different types of devolved institutional structures, their impact upon spatial disparities and scales at which spatial policy is directed in selected countries (e.g. Australia, Brazil, Canada, Germany, Spain). For the UK, we will assess the impact of the devolved multi-level governance system on spatial disparities, spatial externalities and sub-national economic performance. We will examine the impacts on economic performance of policies enacted by the devolved administrations and the structures of regional policymaking in England (e.g. Northern Way, RDAs, emerging city regions). The study will also undertake a quantitative (using primarily secondary data) and qualitative institutional and policy analysis in selected fields to assess the difference devolution makes in terms of shaping policy choices and outcomes. We will draw on the resulting evidence base to help consider the institutional implications of findings emerging from other Centre research.

## Glossary of Data Sets

<i>ABI</i>	Annual Business Inquiry: an annual ONS business survey.
<i>ARD</i>	Annual Respondents Database: Local unit-level (workplace) panel from 1973 to present containing information from various ONS business surveys.
<i>ASHE</i>	Annual Survey of Hours and Earnings: Replaced NES; from 2004; workplace and home postcode.
<i>BHPS</i>	British Household Panel Survey: panel of households from 1991 to present.
<i>CIS</i>	Community Innovation Survey: 4 yearly EU survey of innovation activity in enterprises. 2002-2004.
<i>ECHP</i>	European Community Household Panel: household panel survey for EU member states. 1994-2001.
<i>ILR</i>	Independent Learner Record: administrative data (DfES) on all pupils in education after age 16, including FE colleges and Work-Based Learning.
<i>LFS</i>	Labour Force Survey: survey of households and individuals, including earnings since 1992. Special Licence Access agreement provides Local Authority and other area codes.
<i>LS</i>	ONS Longitudinal Study: 1% population longitudinal data linking 1971-2001 Census data with data on births, deaths and health records.
<i>LSYPE</i>	Longitudinal Study of Young People in Education: covers ~15000 pupils in English schools at 14 (2004), follow up at 16 (2006) and more intended. Can link to admin. data on schools and pupils.
<i>NES</i>	New Earnings Survey: Individual-level panel data; 1970s- 2003; workplace postcode from 1996.
<i>NPD</i>	National Pupil Database: administrative data (DfES) on all state-school pupils in England
<i>YCS</i>	Youth cohort survey: provided panel of data on education, training and employment outcomes for sample of people from age 16 through to 20, with data on family and their education through to 16.
<i>WERS</i>	Workplace Employee/Industrial Relations Survey: surveys of workplaces; panel element; 1980-2004.

## Research Timetable

Project	Years	Milestones
1A Sorting versus place	1-2	<b>Year 1:</b> Data collection (1B); data analysis (1A); Draft outputs (1A) <b>Year 2:</b> Final outputs (1A); Data analysis and write up (1B). "Nature of spatial disparities report" to coincide with PSA 2 2010 target.
1B Earnings, prices, quality of life	1-2	
2A Innovation and knowledge	1-2	<b>Year 1:</b> Data collection and initial analysis (2A-2F) <b>Year 2:</b> Detailed analysis (2A-2E); Final outputs (2A, 2B, 2F), Draft outputs (2C-2E) <b>Year 3:</b> Final outputs (2C-2E)
2B Entrepreneurship	1-2	
2C FDI	1-3	
2D Skills	1-3	
2E Agglomeration externalities	1-3	
2F Institutional and social	1-2	

3A Housing supply	1-3	<p><b>Year 1:</b> Data collection and initial analysis (3A, 3B); development of political-economy framework (3A); Analysis of spatial variation in regulatory constraints (3B);</p> <p><b>Year 2:</b> Feedback initial results from 3B to 3A; Analysis (3A, 3B); Draft outputs (3A, 3B);</p> <p><b>Year 3:</b> Further analysis and final outputs (3A, 3B)</p>
3B Land use	1-3	
4A Intra-urban	1-3	<p><b>Year 1:</b> Data collection and initial analysis (4A, 4B); Analysis and final output impact of trade (4C); Matching of data and initial econometric analysis (4C). Initial econometric modelling European comparative work (4D)</p> <p><b>Year 2:</b> Further analysis and draft outputs (4A); Expanding model and greater spatial disaggregation, enhance software and integrate modelling approaches (4B); Further econometric modelling. Incorporate final models into regional simulation model. Draft outputs. (4C); Extension to UK, further analysis, draft and final outputs(4D)</p> <p><b>Year 3:</b> Final outputs (4A) Simulations, scenarios, counterfactuals, mapping of outcomes (4B); Simulation of scenarios for international migration. Final outputs (4C)</p>
4B Linkages and adjustment	1-3	
4C Globalisation	1-3	
4D History	1-2	
5A Spatial Economic Policy	1-3	<p><b>Year 1:</b> Help identify existing policy interventions for inclusion in analysis (5A);</p> <p><b>Year 2:</b> Secondary data collection and analysis (5B); Begin interviews (5B); Midway through year: Policy seminar on "Lessons for policy I" (5A)</p> <p><b>Year 3:</b> Finish interviews and write up (5B); Conference on "Lessons for policy II" (5A, 5B)</p>
5B Governance	2-3	