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Social and economic drivers of land use change in the British space economy

Andy C. Pratt

Department of Geography and Environment, London School of Economics, Houghton Street, London, WC2A 2AE, UK

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ABSTRACT

This paper considers factors influencing change that will affect future working patterns and practices, leisure time, employment levels and influential sectors within a 50-year time horizon (2010–2060). The main section of this paper sketches out the drivers (demographics, technology, industry and employment) and their implications for the future of work, employment, and leisure, whilst the next section draws together the implications and underlines the likely impact on land use. Finally, some more radical and non-normative, non-trend, events are introduced as a test of the robustness of the discussion.

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Introduction

This paper begins by reflecting upon the dynamic of change in the recent past, and to what extent past changes set the mould for future development, and by considering potentially novel dynamic elements. It adopts a normative approach informed by social theorists of post-industrial society who outline the growth of non-manufacturing activities, and the likelihood of a shift of investment and political resources to education and science. This approach is blended with analyses of the international restructuring of economic activities associated with globalisation, in particular those of the spatial division of labour. Additionally, we consider the strategic importance of the international production chain of goods, and the competition for competitive advantage in high value added goods, and the processes that control their production chain. There is a veritable library of books and papers that discuss the subtleties of these approaches, and their strengths and weaknesses. However, they are deployed here as a means of generating broad empirical parameters of economic change for the future.

The UK has experienced a long-term shift in its economic base from the 1930s onwards, and that accelerated in the 1970s: namely a shift away from manufacturing industries, a further decline of agricultural work, and a rise of service sector activities. Looking at the British space economy, we see that as international competition grew in the 20th century, UK manufacturing began a long-term decline. This decline was especially marked in the regions and reached its most extreme in the 1970s. A subsequent wave of

industrial and service reorganisation associated with a deepening globalisation process led to the outsourcing of routinised activities to the regions, to metropolitan cores outside London, and subsequently to far-flung global locations. Geographers have summarised this wider process as the spatial division of labour (Massey, 1984; Massey, 2007). This process has important consequences. It compounds regional disadvantage through the concentration of low skills and by limiting the basis of local economic activity. On the other hand it concentrates national, and increasingly international, headquarters of leading industries in London, and to a significant lesser extent, in other metropolitan regions. This process was given a supercharged input with the 'Big Bang' of 1987, which paved the way for London to benefit from a massive growth in financial services. During the 1990s, London's massive loss of its last substantive manufacturing jobs was matched in numerical terms by financial services growth (Gordon et al., 2002). Critically face-to-face activities continue to be concentrated in London (Amin and Thrift, 1992). Accordingly, there has been massive demand for highly priced urban land, even in a highly wired economy based upon online trading.

These transformations are significant, and contain some important subtleties that give us a clue to future changes. The shift to the knowledge economy is not simply a substitution of technology for labour, although this has happened. It is more accurately viewed as a reconfiguration of the nature of work and production, and critically involves a restructuring of where added value activities take place in the production chain. New activities associated with distribution, logistics, marketing, and design are increasingly the source of added value, and of competitive edge (see Walker, 1985). Whilst manufacturing is not a significant part of the UK economy, production in China is part of the UK value chain.

E-mail address: a.c.pratt@lse.ac.uk.

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It is noteworthy that the current numbers of people at work, and the proportion of the population that are economically active, is the highest ever recorded (27.3 million¹). However, these headlines obscure the fact that this growth comprises a dramatic increase in part-time work, and a decline in males in employment and a rise in females. These changes are correlated with the traditional gender division of labour. Men dominate manufacturing activities, but these have shown significant decline. Moreover, the regions outside the South East have been affected by manufacturing decline, but without compensating growth in the service sector. In some cases the substantial growth that has occurred in services has not been sustained, as these activities are subject to international competition.

Key drivers and trends

In this section I will review the four main drivers of change in economic activities: demographic, technology, industrial and employment. Our concern is not simply with scale but also with the likely character and quality of change. In each case I outline the key characteristics of the driver and consider a range of likely and unlikely parameters. Beginning with demographic change makes it possible to gain an insight into the demand for jobs and other activities in the future based upon cohort analysis. The key cohort is the current crop of GCSE students; this group will be retiring at the end of the period under consideration.

Demographic change

The UK population is slowly growing, but at a declining rate. Birth rates hover around replacement rate, so the key factors are migration and the decline of the death and birth rates (falling 29% and 14% respectively in the last 50 years). Accordingly, a real issue will be an aging population. Between 1950 and 2000 the number of people over 65 grew by 70%; in 1960 11% of the population were over 65, and by 2040 current estimates are that 25% of the population will be in this category (Kinsella and He, 2009). Added to this, life expectancy is rising, growing by around 10% in the last 50 years. Thus we can see that, the recession aside, 2010 is likely to be the high water mark for employees in employment. The increases in economic activity rates of the past 50 years (see below) will probably go into reverse during and after the present recession. This trend will be gradually amplified by the huge burden that will be imposed upon society by the growing numbers of the aging population. It is likely that considerable numbers of people will become informal careers, although there will also be a huge expansion of demand for health care and residential care.

Migration is the other aspect of demographic change that will become more critical. Changes in migration are the factor at the margin of demographic change in the UK. If birth rates remain low, then without migration there may be a shortage of employees, or at least a tightening of labour markets. The nationally important growth of economic wealth in the London and the South East has been sustained by huge migration (internal and external). As financial services jobs were created, and manufacturing jobs were lost, unemployment was a consequence, often hidden by aggregate growth. Moreover, the South East has had a massive distorting effect on national labour markets as it has drawn in UK regional migrants, especially those with higher skills. Some of these migrants have returned to the regions as part of the 'escalator' effect² (Fielding, 1992). However, London continues to be a

net beneficiary of migration from the regions, and from international migration. The recent rise in migrants from the EU accession countries has been eroded both by the recession and by the cyclical nature of this migration. These economic migrants tend to return home within a short period. The first destination of migrants has been overwhelmingly London. Clearly, future international migration patterns are impossible to predict. However, it does seem as if the UK will be strategically reliant upon migration, and political support is likely to be lent to it. Internal migration may be a different story.

It is likely that these employment patterns will stabilise. Pressures to work longer will intensify because of current and future deficits in the pension system. Likewise, the housing debts incurred during the 1990s and more recently will remain an issue for household budgets. It is likely that there will be a repeat of the periodic crises of negative equity, and that these will periodically stall housing markets. The adverse ratio of earnings to house prices means that there will have to be an increase in the provision of social rented housing if a future workforce is to be housed, especially those entering the labour market.³ The location and funding of this housing will be an issue. Those who are most vulnerable to being squeezed out of urban housing markets are key workers, or low paid public sector workers, without whom cities will cease to function.

Despite the economic cycles, the UK population has become wealthier at an aggregate level, although the social and spatial distribution of wealth is little changed.⁴ But although the population has more disposable income, social mobility has failed to keep pace. Social and economic divisions, which are sharpest between London and the regions, are a critical point. Increased income means more leisure spending, and more consumption generally. One particular aspect of this has been a dramatic rise in the number of cars, currently in excess of 23 million, creating pressures on transport infrastructure and a massive modal split in favour of the car. The time is fast approaching when the excess number of cars in relation to road space will increase travel times, and the convenience of cars will be threatened.

Social changes may stimulate different demands for housing. The trend has been towards single person flats and smaller households, despite a relatively stable population. Forecasts suggest a 29% rise in households by 2031. The real question concerns the location of demand for new homes. The focus on economic growth in the South East has both elevated house prices there, and created huge pressures on land supply. This may become a limiting factor for the growth of the South East. In the regions there is considerable slack in supply, and over-supply in many places.⁵ Demand for these houses will to a great extent depend on the prospects for sustained economic growth in the regions outside the South East.

One of the clearly signalled problems concerns loan restrictions that may encourage family members to remain in households longer, depressing new household formation. A similar process may lock out migrants from the South East, and force youth to migrate from the South East. The cost of university education may

they are able to 'cash in' on their subsequent return to the regions or other countries.

³ In 2008 the ratio of first time buyer house prices to income in London—the least affordable region—was 4.8. This is unsustainable if mortgage offers cannot rise much above 3. Source: Nationwide Building Society.

⁴ See the report on social mobility (Cabinet Office, 2008, "Getting on, getting ahead"). Elliott (2007) 'Inequality at same level as under Thatcher' <http://www.guardian.co.uk/business/2007/may/18/politics.socialexclusion>. A critical impetus to change in social mobility is widening access to and the quality of education. Gains in social mobility will be dependent on education investment, and, as we have noted, access to Southern labour markets.

⁵ The North East has the slowest predicted rise in households; however, it is predicted that there will be a 16% growth in the NE over the period 2006–2031.

¹ Unless otherwise indicated data is sourced from *Regional Trends*—various dates.

² Where people migrate to London temporarily (perhaps for a couple of years) to achieve improvement in experience and responsibility, or simply income, which

also exacerbate this shift in demand from single occupied stock in inner urban areas, with a possible shift towards local university entrance. This would have a massive impact on provincial university town housing markets, where much accommodation is currently provided for student rental.

Another key demographic characteristic of the next 50 years will be the growth in the proportion of the aged population. The pattern of care chosen will determine how this demand is manifest in housing terms, but if current trends continue more sheltered accommodation will be required, and services will increasingly have to orientate to the aged. This may mean a reversal of the car-borne living that we are currently experiencing.

Technology

Technological change is mediated by social and institutional processes that may aid or hinder its rate of development, or crucially modify its eventual form. In this section we cover three categories of technology: Information, Energy and Health.

There has been much speculation about the impact of technologies on work. The simplest model is that of labour substitution; however, the usual course is the development of new products and new possibilities which were not initially envisaged. The classic case has been the development of the computer: the initial notion was of an automated calculator, but the industry, and the lifestyle it has created, have had a far more pervasive impact. In recent years there has been much commentary about the possibilities of virtuality and the reduction of the need to be physically present: this in turn has led to speculation about urban life and land use, best exemplified by the notion of the 'death of distance' (Cairncross, 1998). A number of research projects have pointed out that such a projection is misplaced (Pratt, 2000).

Evidence points to a future of more complex organisational modifications. People will work both remotely and at home. It is clear that the 'hot-desking' worker is one consequence. Research also indicates the emergence of nomadic workers: workers who have no base but who work in several locations as needed (Perry and Brodie, 2005). There is also the case of the home worker, who will commonly be based part of the time away from home at a work base and part of the time at home. All of these variants do point to the end of the factory, or office, as we know it: a large building where all workers have a desk, and which they call their place of work. We might describe the new built form that may emerge as the 'hot office,' a central node that workers can check in and out of and get the critical 'face-time' they need. In addition, a number of knowledge-intensive tasks will always rely upon repeated face-to-face communication. Such activities will generate a need for clusters of workspaces, that critically may be as much about socialising as working. It is likely that these clusters will require prime inner city sites. In parallel we would expect a similar worker support and socialising structure to emerge around the places of residence of 'home workers' to provide their social milieu (Pratt, 2008). The positive element might be that some home working may reduce demand for transport systems.

Other authors have explored the impact of the energy crisis on cities. The biggest debate is about compact cities—the notion that a concentration of land uses will bring about a decreased demand for travel and energy use (Breheny, 1992). This notion assumes simple radial commuting patterns and the possibility of controlling land uses for living and working across several labour market segments, neither of which seem consistent with the likely outcomes. The outcome is just as likely to be more commuting (see Jarvis and Pratt, 2006). Moreover, the focus on energy usage and generation suggests that open rather than compact cities are more efficient for energy generation. This points to the self-sustaining, or renewable

energy generating, city being more akin to the sprawling land uses that planning systems have sought to resist.

One potential change that might re-configure the relationship of the South East to the regions is train travel. The current network is congested.⁶ A step change such as new investment in high-speed links with major cities in the North could have a potential regenerating effect, but may take a long time to develop.⁷ As we know from the New Towns programme, and especially Milton Keynes, there is a long initial phase of commuting before people relocate.

We can expect to see social polarisation exacerbated by access, or not, to transportation. The increasing disarticulation of home and work is generating relative 'transport poverty' where some people are less able to afford to travel to access services or jobs. The fundamental challenge is one that will be felt by all of society: namely the increasing disconnects, and potentially increased time needed to travel, between the activities necessary for daily life. The degree to which transport poverty, or environmental constraints, or simply congestion, will precipitate a crisis is an issue that land use planners will be presented with.

Finally, we can consider health technologies. These are critical as they are likely to reduce death rates, and lead to people living longer. This will further exacerbate the aging crisis that society already has to look forward to. This may impact on land use in two main ways. First, there will be increased pressure for residential homes, whether new or converted from existing buildings. Second, there will be demand for new and existing residential properties to be adapted to cope with an increasingly immobile population. Mobility for the elderly will become a key issue in terms of access to local services. All of these changes could be exacerbated by the failure of the pensions system to provide support for these future pensioners (given that they may not have adequate pensions, and no state pension), compounded by the fact that the working population will be smaller in both absolute and relative terms.

Industry

The massive decline in the extractive and manufacturing activities and the loss of port activities has been most evident in the Northern regions and the core cities. The loss of three million manufacturing jobs has been more than replaced by service sector growth. However, the jobs have not been replaced like for like; a massive restructuring has taken place. Unlike other regions, London and the South East have more than compensated for their loss of manufacturing by the growth of the service economy, particularly in financial and business services. From the early 1970s to the 1990s, London lost most of its manufacturing jobs, but over the next decade this loss was replaced by the same number of gross jobs in other industries, leading to little net change. The industries that gained were those that were more productive, and which would continue to grow in later years. However, there was considerable displacement of workers and land use: the new jobs were not taken by the old workers, or in the same locations.

The headline shift from manufacturing to services in the UK regional economy has two dimensions: the relocation of production to the cheapest sites in global and national peripheries, and at the same time, the consolidation of control, research and development, into a few key sites in the core regions. This spatiality is expressed at an international scale (the outsourcing of production activities to China, or of routinised customer services to India), as well as the regional scale, where the Northern regions have been

⁶ Estimates point to the current rail network reaching full capacity in 2040. See Adkins (2009).

⁷ New high speed rail plan. See Adkins (2009).

the recipients, and subsequently losers to international competitors, of the back office activities of London and the South East.

London and the South East have consistently had the smallest proportion of manufacturing jobs throughout the past 50 years, currently 5% and 9% respectively. The highest concentration of manufacturing jobs is in the East Midlands (15%), closely followed by the West Midlands and the Northern regions.⁸ It is likely that these figures will continue to fall as the economy continues to be dominated by service activity. Parts at least of the service sector are the fastest growing, and have the greatest value added. In recent years the creative industries have been a surprise area of growth in all regions, but in particular in London and the South East, and have joined financial services, health and education as leading areas of expansion. Financial services and the creative industries are particularly dominated by the command and control, and research and development, located in the South East, making development in the regions dependent on decisions taken there. These regions did not fare so well as the South East. Their manufacturing decline was partially replaced by back office activities, which themselves remained vulnerable to further relocation. This has led to the regions having a relatively weaker competitive position. Overall, this shift has hardened the 'North-South' economic divide that first characterised economic decline in the 20th century and has continued to characterise the growth of the 21st century. For example, many of the newer jobs were created on outer-urban industrial estates and science parks at motorway interchanges. The key growth of high technology jobs was concentrated along the M4 and M11 corridors.

This spatial pattern seems to be entrenched. It is one that can only be exacerbated by the economic restructuring outlined above, and that characterises the industries that will deliver growth and income in the 21st century. The gross value added per head in London and the South East stands at 166, and 106 respectively (if the UK is 100): the North East, North West, and Yorkshire and Humberside languish at 79, 87, and 85 respectively. Accordingly, the vast tracts of industrial zoned land in the Northern regions will progressively be transferred to other uses, such as retail and housing.

Interwoven in this process has been the reorganisation of retailing and distribution. The first supermarkets emerged in the UK in the 1960s, and by the 1980s the out-of-town superstore. Big-box retailers have been facilitated by changes in logistics (McKinnon, 1989) like those that have affected manufacturing, including the adoption of just-in time systems and regional and national warehouse hubs (Lowe and Wrigley, 1999; Wrigley and Currah, 2006). In spatial terms this has led to the progressive abandonment of city centre locations first for 'big-box' goods, and then for all retail. This has led to a further 'hollowing out' of city centres, and pressure on motorway intersections to take on the role of new employment hubs.

A likely trend will be the consolidation of services at single nodes. All of this raises the prospect of what North American authors have referred to as 'edge cities' (Garreau, 1991), cities that are polycentric or rather are all edge and no centre. This may happen in the Manchester-Leeds conurbation and London. It is likely that a version of 'smart growth'—a privately managed urbanism that aspires to 'non-sprawl'—may take off in such locales (Beauregard, 2002, 2006).

Employment

The structural shift in employment has led to massive changes in labour markets. The most notable is the increase in participation

rate⁹; however, looked at more closely this is mainly accounted for by the entry of more women into the labour market, to a point where there is now something close to gender equality in gross employment. But the types of jobs that women are doing are more likely to be less than full time, lower paid, and impermanent. Women are over represented in the new manufacturing and service sector growth, especially in retailing. At the same time, men who lost jobs have not had such success in re-entering the labour market (Young, 2002). Of course, these patterns are further amplified in both a metropolitan and a north-south split.

The pattern of employment inevitably echoes industrial change. However, the shift in employment patterns highlights a shift in the nature of work, and who does it. The industrial restructuring noted above has been masked to an extent by these shifting patterns, especially the growth in female workers and of part-time work, and the loss of male full time work. Thus, unemployment in these regions is characterised by older male workers who are unlikely to ever work again, whilst employment is characterised by many new, female entrants to the labour market, who are working less than full time. The growth industries have been the back office activities and retailing and manufacturing to a far lesser extent. Thus the character of employment and unemployment is shifting. Economic activity rates have grown by 7% in the past 50 years and have grown especially rapidly for women and in the South. The other regions will thus be more sensitive to recession. Average hours worked have fallen slowly, by 3% on average (Young, 2002).

Another aspect of structural change in work has been the growth of more flexible working. This should be differentiated from part-time working and may involve sequential employment. However, it is characterised by a less stable employment pattern. This change has impacted most on high-level professions in the more innovative and growing areas of the economy and has a disproportionate impact on London and the South. It has been argued that such work patterns require workers to be present in particular locations, perhaps hot desks and work clusters that need to be in the South East. This has led to the emergence of new clusters of economic activity, something that governments have been keen to promote (see DTI, 2001).

It is clear from the previous section that changes in the organisation of work in order to be more competitive and to provide market leading products, have been significant. This is a trend that will continue. If we examine some of the leading edges of economic change, for example the knowledge economy, in particular the creative industries, we can perhaps get some idea of the character of changes that will be found more widely in the economy (see Jarvis and Pratt, 2006, on extensification: the temporal and material 'spill-over' of work into the home).

The main aim of companies is to reduce the risk of market fluctuation and of being left with greater overheads (of goods in storage, or people) that are not productive (Reich, 2000). The notion of 'just in time production' is a manifestation of this. What can be noted from many cultural businesses is that larger companies are seeking to outsource almost everything, the extreme case being where resources are pulled together for a single project (Pratt and Jeffcutt, 2009). Elsewhere, there has been much discussion of the development of project based companies where unique talent is assembled for a particular task, and disbanded directly the project is completed, after a few days or months (Grabher, 2002). An important consequence is for workers who are denied continuity of employment and other benefits. Many authors have discussed how such conditions lead to the development of 'portfolio careers' where

⁸ The UK average for manufacturing jobs is 11%, compared to 17% in 1991.

⁹ Currently 7% overall: 79% for men, and 70% for women.

workers are basically self-employed or freelancers (Leadbeater and Oakley, 1999; Pratt et al., 2007). Such uncertainty has significant implications for social welfare systems and the ability to take out loans, people working in this way need to be mobile.

Non-trend events

Cutting across the normative trends mentioned above are a number of non-trend events that we might consider as significant threats that should temper our discussion.

The first of these is a consequence of the global warming scenario that has already entered the land use system through transport and urban design. The question of sea-level rise and flooding could have major implications.¹⁰ Even modest increases in sea level rise and river flooding would imperil much housing land, as well as industrial and business services property. This would cause a land shortage as well as generating civil emergencies and costs. It might be that a strategic move to the hinterlands and regions could force a reconsideration of the relationship of London and the South East to the Midlands and the North.

The second issue concerns strategy regarding the availability of land suitable for residential development. Even if substantial amounts of brownfield industrial land are recycled as residential sites the more extensive land use demands of the future, especially those caused by the multiplication of households, could foreseeably present problems in particular locations where demand peaks.¹¹ This could put pressure on the conversion of land away from agriculture.¹² On one hand, increased productivity in farming has led to more productive use of land; on the other hand, there are countervailing threats that could increase demand for agricultural land. Foremost amongst these might be a significant shift in the balance away from an increasing reliance on food imports towards self-sufficiency. Such a shift could occur in response to national security concerns prompted by conflict that disrupted production from import nations, as a result of disruptions to international transport due to energy costs, or as a result of social and political concerns about environmental impacts of international food sourcing. A policy of national self-sufficiency would place huge pressures on the land use system not only in terms of food production but also in relation to leisure and recreation: a purpose for which the countryside is being increasingly used. Whilst social and environmental concerns would militate against the loss of 'trophy' countryside (national parks, green belts, AONB, etc.) this would create significant competition for land use elsewhere, notably close to cities.

Energy security and energy costs are also significant. Government strategies point towards a substantial nuclear component to future base load electricity provision. However, renewables will play a significant role. The pressure on land for wind power will intensify, and the same pressure will affect the use of inshore waters. There will be wholesale refurbishment and rebuilding of the energy infrastructure. Planning and land use control are likely to take on a strategic role in the management of this change.

Finally, a more overt political shift may change the balance of economic power and the flow of migration. There are been ongoing discussions regarding place-based, or local, taxation. A local

or regional income tax might potentially reconfigure business and household costs. An immediate impact would be that London and the South East would become disproportionately expensive to live in, as the cost of public services and infrastructure was more effectively signalled by a tax charge. Likewise the regions would become more competitive in terms of business costs and residential costs. This might have an impact on rebalancing the regional pattern of development. Current discussions have viewed local income tax as a small component alongside council tax; the full impact would only be felt if local income tax were dominant.¹³

Conclusion: implications for land use

In this paper we have outlined the major drivers of future land use produced by changes in employment and industry in the UK. The paper has highlighted four areas of change from which significant pressure on land use might emanate. Our approach has been for the most part a normative one, bearing in mind that infrastructure sunk investment is very long term, and cannot easily be reversed. Moreover, the UK's core population dynamics seem to be stable although the aging population is likely to be an increasingly important factor driving land use demands.

We raise a number of issues concerning international and inter-regional migration to London and the South East, which will present continual pressure on land use there. We forecast a number of problems associated with the exacerbation of housing and housing land shortage in London and the South East (and the surplus elsewhere), which runs counter to migration pressures. In the South East and London these pressures are likely to become critical as congestion or energy costs make movement by car inefficient. Potentially this could threaten growth in the South East, and by extension, the growth of the UK economy, and is a serious threat.

We found that technology applied to the future of work might generate a dual shift towards, on one hand, home working (where there would be pressure on local planning rules) and, on the other hand, towards new multi-functional 'hot offices' in city centres. These buildings, or city quarters, would offer flexible space, rented by the hour to a variety of companies, their contactors, or simply to the growing body of freelance workers. Whilst the ubiquity of computing and communications technologies will tend to loosen spatial ties, a simultaneous countervailing trend will strengthen locational ties; albeit in a different manner. Permanent proximity to co-workers is likely to be replaced, for many, by the need to network with workers who need periodic briefing, meetings and face-to-face contacts.¹⁴

In terms of the regional distribution of industry, we felt that the evidence pointed to a continuation, or even a hardening, of the North–South divide into economic activity and economic opportunity. Indeed, London and the South East seemed destined to play an even stronger role in terms of the balance of growth, having most of the higher gross value-added sectors. Industries likely to be leading the economy in this period and these regions are the financial services, education, health and the creative industries. Retailing will continue to play a major role in the economy, as will logistics and distribution, although the latter may be threatened by congestion and energy concerns. Retail outlets and distribution hubs are likely

¹⁰ Current estimates indicate a sea level rise of 0.6m by 2100. See Nicholls et al. (2007).

¹¹ Whilst there could be sufficient aggregate supply, there is the potential for local supply-demand mismatches.

¹² A trend that has been small in absolute terms (2% loss in the last 20 years). Agriculture still accounts for 76% of UK land use. However, future pressures will be experienced most acutely, on the edges of urbanised areas, especially around London in the South East and the East of England.

¹³ The idea has been implemented in Sweden (see Loughlin and Martin, 2004), and has been variously considered by both the Liberal Democrats in England and the Scottish National Party (as a replacement to the property-based Council tax). The current Labour administration has discussed the idea as a supplement to Council Tax, see Waugh (2004).

¹⁴ See, for example, evidence from research on the emergent new media spaces (Pratt, 2001).

to favour extensive land uses on the edges of cities, leading to an extension of what US commentators term the Edge City.

The nature of work is also changing. We see the current period as the high point in terms of total full time employment. We expect a fall in total employment, and a fall in activity rates (especially as the aged population increases and more care workers are needed). Some parts of industry are now demanding more flexible work practices and combinations in which fewer hours are worked. In other cases the serial contracting model is stronger. The notion of the portfolio career is likely to become more pronounced. This will have a knock on effect of creating unstable demands for land use. Whereas in the past, stable numbers of employees worked from a factory, in the future the location and numbers of employees are likely to be more variable. This will make demand far more difficult to model.

Of course, these normative scenarios present only the core of what is likely to transpire. There is likely to be a considerable range of responses. We tried to modify our view by also considering some, low probability, non-trend events. It is these that had the potential to disrupt the normative position of the dominance of London and the South East and to create a land use crisis that would threaten the position of the South East, and the emergent balance of economic power and resources in the UK.

Q2 **Uncited reference**

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