Fitting a Quart in a Pint Pot?

Development, Displacement and/or Densification in the London region

An analysis of the implications of how a recent London population growth largely driven by International migration has been accommodated, and its implications for the use of trend-based projections of domestic migration in the 2014 Further Amendments to the London Plan

Ian Gordon

LSE London research group
and Spatial Economics Research Centre
London School of Economics
I.R.Gordon@lse.ac.uk

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1. Introduction

Since the creation of a (mayoral) Greater London Authority in 2000 it has encouraged a view of London as an autonomously dynamic economy with minimal impacts on the rest of the Greater South East. One side-effect is to encourage a city-state mythology among external critics, identifying London with the interests of its problematic financial sector, and/or treating Londoners' relaxed attitude to diversity and internationalism as a deviant distortion of broader national sentiments.

However prejudiced such outside perceptions might be, exaggeration of London's effective independence has actually produced some substantively distorting effects in relation to the strategic responsibilities with which the GLA is charged. Under both Mayors these have included tendencies for planning documents (including the 2014 draft 'further alterations) 'to understate both:

- the extent to which the turnaround in London population trends since the late 1980s has been attributable to international migration (largely independent of the city's economic dynamism); and
- the degree of integration of housing markets across the wider metropolitan region, and indeed the whole Greater South East, with its implications for how such population growth effects are likely to be diffused

In purely statistical terms, there is a clear recognition of the importance of both London's positive migrational balance from international flows and of the net outflow of migrants to other parts of the UK (preponderantly to areas within commuting reach of London) as components of the (past and future) balance of demographic change – and thus of housing need. These are treated, however, as independent elements to be forecast (or mechanically 'projected') on the basis of recent trends. What is lacking is any serious consideration of the processes underlying these two kinds of flow - including the dynamics of settlement among migrant communities – or the possible implication of these for how such 'trends' may be affected by the set of policies (of the GLA, central government and other authorities within London's extended region) impinging on available housing market opportunities..

The latest round of planning work (MoL, 2014) seems to be more seriously concerned over the question of how the large population growth now forecast for London is actually to be accommodated within its borders – if not whether it actually will be. Given that these forecasts simply project forward recent trends, from a period when construction rates have not been particularly high, two fundamental questions seem to have been begged, namely: how has this recent growth actually been accommodated within the city; and how likely are the processes which enabled

this actually (and acceptably) to continue operating in the same way. The research summarily reported in this short paper starts to address these questions, focusing particularly on evidence on recorded changes between the 2001 and 2011 Population Censuses.

Two particular reasons for emphasising the need to understand how recent population growth within London has been accommodated are that:

- it has occurred despite a clear failure to secure the rates of growth in the dwelling stock that earlier GLA estimates of housing need would suggest to be required; and that
- in the decades before the turnaround, London's steady population contraction was widely understood as the consequence of constraints on the ability to satisfy rising demands for living space from increasingly affluent Londoners.

Taken together, these suggest a serious possibility that this recent population growth may have been enabled by factors and processes – perhaps linked to the circumstances of newly arrived international migrants – which will not necessarily continue to operate in the same way. In the rest of this paper, we investigate this, firstly by making a statistical distinction between three ways in which population changes in any area get accommodated (section 2), then examining evidence on each of these in turn, for London and other parts of the Greater South East (sections 3-5), and finally identifying significant differences that these suggest for patterns of change in population and housing need (in London and other parts of the Greater South East) relative to those implied by projections of recent migration trends. A central message is that the scale of population growth achieved in London since 2001 has depended upon increases in crowding of the dwelling stock (by new migrants from poor countries), which should not be expected to be repeated over the Plan period. In the very recent period, taken as the basis for projection of migration trends, a further important factor - which also should not be assumed to continue - has been the impact of stagnant/falling real incomes on the average Londoner's ability to secure additional living space.

2. Accommodating Migrants in a Dense City

In broad terms the accommodation of migrants into an area gets achieved through a combination of:

- altering the density at which residential space is occupied (densification[1]);
- inducing additions to the local stock of accommodation (development); and/or
- displacing some demand to other areas (displacement).

Densification can be seen as occurring in two ways**:** through the willingness of migrants themselves to occupy particular spaces more densely than other local residents would choose to (migrant densification); and through responses across the broader local population to intensified competition for residential space (market densification). Actually the first of these could operate in reverse (migrant de-densification) where a more affluent group of incomers chooses a less dense pattern of occupation – with conspicuous examples among recent foreign migrants into Kensington/Chelsea (or earlier domestic gentrifiers into Islington). But migrant densification is likely to be very much more common for those arriving in this region from overseas.

Operationally, residential space is defined here in terms of the stock of rooms. **Development** thus includes home extensions as well as infills, conversions from other uses/vacancy etc. – all of which might otherwise be seen as involving densification – provided that the net additions to the room stock were attributable to migrant-induced additions to demand for residential space.

The third (arithmetical) contributor to the accommodation equation is **displacement**, defined here in terms which do not entail either duress or a necessary loss of welfare, but simply some shift in the balance of residential movement into/out of an area (by people other than new overseas migrants) attributable to the impacts of international migrants on local markets. In principle these markets could be labour markets, with displacement reflecting competition for an inelastic supply of jobs, but in this context at least it is very much more likely to be the inelasticity of residential space supply that is responsible for displacement between areas.

Such displacement clearly raises second-order issues of accommodation in the areas to which demand is diverted - to be resolved (again) by a combination of market densification, induced development and a further round of displacement. The ramifications of what is not absorbed through migrant densification within the neighbourhood of their settlement, or matched by induced development in relatively close areas with supplies of unconstrained land, are thus liable to be reflected in both market densification and development effects spread across surrounding regions.

[1] This use of 'densification' in relation to the occupation of a given stock of accommodation is much narrower than common usage in relation to planning policies or their impacts, which include additions to the stock within an area – here labelled as 'development'.

Dynamics: Migration of any kind has evolving impacts over time, as each cohort of migrants moves through their life cycle, and the preferences/ aspirations/information shaping their residential decisions evolve. Where rates of primary migration are fairly stable, the familiar outcome is one in which there is a great deal of residential flux, and steady expansion in the urbanised area, but with much more stability in aggregate patterns of movement and of areal differentiation (by age, family/social status etc.).

Where waves of overseas migration are involved, with many coming from much poorer countries - as in the London region over recent decades – the dynamic effects may be a good deal more complicated, requiring closer attention in order to judge how future patterns of population and household change are likely to evolve. One reason is simply that these flows are a great deal more volatile, both because of the role of external crises in triggering particular waves, and because the impact of migration controls has been quite variable/uncertain. The other is that the large initial differences in aspirations and economic power that underlie migrant densification at the time of settlement are liable to be substantially eroded as migrants become integrated, leading to larger impacts in terms of displacement, induced development and some market densification as (poor) migrants' space standards converge on those of the native population. If large cohorts of such migrants continue to appear, they too may be packed in densely within the existing housing stock of destination areas such as London, but it cannot be assumed that those arriving earlier can still be accommodated in that way.

Patterns of Change 2001-11:: Evidence on the roles of densification and development in accommodating recent population growth of different kinds can be found by looking at the detailed pattern of change at neighbourhood scale (Local Super Output Areas in the Census jargon) across the Greater South East between the last two Censuses . This analysis focuses particularly on changes between 2001 and 2011 in:

- the total number of rooms in each area, and
- its relation to numerical changes in each of five population groups:
  - the UK-born;
  - migrants who had arrived in the country before 2001,
    - from poor countries and
    - from rich countries; and
  - migrants entering the country between 2001 and 2011,
    - from poor countries and
    - from rich countries.

Tables 1 and 2 summarise the broad patterns of change in these terms at a sub-regional level, for 4 broad rings of the (administratively defined) Greater South East (GSE)[2]. Specifically Table 1 shows that over this decade there was significant population growth right across the GSE super-region, though proceeding most rapidly in areas near the core (Inner London particularly). Over the GSE as a whole, and for Greater London too, this was entirely attributable to growth in numbers of the foreign-born – principally among those born in poor countries (most strikingly in Outer London) but also for those born in other rich countries (particularly in Inner London). For the UK-born a significant outward shift was evident, from Outer London both to the Outer metropolitan ring and beyond this to the Rest of the Greater South East. Across Inner London there was virtually no net change in the numbers of UK born, though this may well have concealed significant inward flows of young people from other UK regions, balanced by an outward shift of more mature groups to rings further out in the GSE.

As this table also shows, this population growth was accompanied in each sub-region by significant increases in the stock of rooms (in occupied dwellings), though with less variation in this than in rates of population growth – even though both were greatest in Inner London. For London as a whole the growth rate in rooms fell 5% below that in residents of private households – implying a substantial increase in crowding – whereas in other parts of the GSE, particularly beyond the outer metropolitan ring, numbers of rooms grew more rapidly than the population, lowering average densities of occupation – as might be expected with rising living standards.

Table 2 introduces a distinction between those of the foreign-born who had arrived post 2001, and who might thus be in their areas of original settlement, and those who were already in the country before then, and whose net changes will tend to reflect dispersals away from such areas[3]. For those coming from rich countries there seems to have been a dispersal from Inner to Outer London, modestly off-setting the strong concentration of arrivals in inner areas. The contribution of new arrivals from poor countries to growth over the decade was the dominant factor in all sub-regions, adding 15% to the Greater London population, and around 5% to that in the rest of the GSE.

How these different population groups contributed to, and were affected by, changes in overall levels of crowding – or what increases in the stock of rooms their changing numbers might have induced – cannot be directly seen from Census

[2] Comprising the (former) London, Eastern and South Eastern Government Office regions

[3] as well as the incidence of deaths and re-emigration. For this table (only) net dispersal effects have been estimated by deducting likely death/emigration rates, on the basis of national rates of shrinkage between those years in numbers recorded in the Labour Force Survey for a series of arrival periods and rich/poor country origins, applied to estimates of the relevant local numbers as at 2001.

tabulations. The next two sections thus turn to statistical regression analyses of these data, and some on relevant contextual factors, to try to establish the causal impacts of changes in population numbers and composition on the incidence of densification and development between 2001 and 2011. The basic observations are the 13 thousand or so neighbourhoods (LSOAs) of the GSE super-region, supplemented by some aggregated data at Local Housing Market Area (LHMA) level[4].

3 Explaining Variations in Densification 2001-11

Initial regressions (Table 3)showed proportionate rates of change at LSOA level in average persons per room to be substantially higher both in areas experiencing faster population growth and in those with better accessibility to jobs, though with some tendency also for convergence (i.e. for densities to grow least where they were already high in 2001). This suggests that both independent causes of faster population and an increased concern for job accessibility relative to living space may have played a role in the denser occupation of available living space within London over this decade.

When overall population change is split between the 5 groups we have distinguished, however, it becomes evident that the dominant element is that of new migrants (arriving in the UK between 2001 and 2011) from poor countries, who were accommodated primarily through denser occupation of existing residential space. Almost 60% of their numeric growth in residential neighbourhoods seems to translate into increases in density per room. Since LSOAs represent only very small parts of effective housing market areas, this should reflect (individual-level) migrant densification rather than (aggregate/ general) market densification. Another way of expressing the result is then that the average occupation of a given number of rooms by new migrants from poor countries was about 2.5 times that of established residents in the locality[5]. By contrast, it seems that new arrivals from rich countries did not significantly alter densities of occupation, while additions to the UK-born population had only a modest one.

Local changes in numbers of foreign-born residents who had arrived in the UK before 2001 had only an intermediate effect on densities, irrespective of where they had originally come from. In the case of those coming from rich countries, this might suggest that their densities of occupation actually increased with duration of stay. But we know that this is a very diverse group with many people staying for only short

[4] Using the lower level of the HMAs defined by Mike Coombes from CURDS at Newcastle University.
[5] Assuming that their arrival does not stimulate any additions to the room stock: if there had any substantial development effects the implied size differential would be greater.

durations – whereas arrivals from poor countries are much more likely to be permanent. In the rich country case we are likely therefore to be observing a difference between a population of new arrivals including a (relative affluent) group of short-term stayers and longer-term residents with different characteristics. In the case of migrants from poor countries, who represent the bulk of those coming to London, the evidence is consistent with an expectation that, as many of them advance beyond the bottom-tier jobs, in which half will initially have been employed, that their densities of occupation will also converge toward those of the UK-born population (as other evidence has suggested to be true for per capita household headship rates of migrants ; Whitehead, 2011[6]).

The relation between the incidence of recent in-migration from poor countries and densification appears consistent across the sub-regions of the GSE. For those from rich countries, however, there are substantial differences, probably reflecting the heterogeneity of this group. Thus across Inner London, where the main concentrations are found the effect of adding migrants from these countries appears the same as for growth in the UK-born, while in Outer London it is substantially higher, and in the rest of GSE about as strong as that of poor country migrants.

Controlling for these local effects of migration on densities, there is evidence also of a ('market densification') effect via population growth at the LHMA level adding to the overall pressure of demand for local housing. Taking account of this also raises the estimated proportion of the poor country migrant effect absorbed by densification (rather than development or displacement) to 80% . Because there still seems to be some tendency for densities to rise in areas with better job accessibility, this is not the only cause of the disparity in room density trends between Inner and outer parts of the GSE. But *in the short-medium term* the concentration of recent arrivals from poor countries in areas within Greater London does appear to have been the key reason why the city has been able to accommodate a rate of population growth running ahead of that in the housing stock.

4. Evidence of Migration Impacts on Development

Similar regression analyses of local rates of change in the stock of rooms between 2001 and 2011 yield less clear-cut results. In this case control variables were included to reflect variations in supply constraints on developable (or occupiable) space, as well as the density of room occupancy at the start of the period. All of these were demonstrably significant: growth in occupied rooms was faster in localities where less land was already urbanised or covered by planning constraints,

[6] and for those from poor countries initially crowded into the bottom tier of jobs (Gordon et al., 2007).

where assessed brownfield potential was greater, where there had been more vacant dwellings and/or where existing room densities were higher (Table 4). Some (rather weaker) positive relations were also suggested with the arrival rates of migrants, particularly from rich countries. But these apparent (migrant) effects were only evident at the local level, within particular LHMAs, and become completely insignificant at the level of local housing market areas, where they should actually become salient – and would have to be if there was to be any effect across London as a whole. At the London scale then it appears that additional development induced by demand from migrants made an effectively zero contribution to their accommodation.

5. Displacement Effects from International Migration

At the neighbourhood (locality) level, the likely significance of displacement effects – as the third of the means of accommodating migrants – could logically be inferred from what has been found for densification and development. But many other kinds of population change involve such local displacement, and what matters more in a planning context may be how far induced waves of displacement spread as shocks work their way through inter-linked housing markets. To get an appreciation of the strategic significance of displacement at a (sub-)regional scale it is necessary to look at time-series rather than cross-sectional evidence.

For Greater London as a whole the indications of strong displacement effects have long been evident from the mirror image patterns of net domestic and net international migration in time series graphs. At a more formal statistical level Hatton and Toni (???) have confirmed this with panel analyses for the set of southern regions, which suggested displacement effects of international on domestic flows averaging around ??%. The underlying expectation there was that displacement was likely to be a labour market phenomenon. In the London/GSE context, however, where most (cross-border) residential movement is housing rather than employment related, displacement effects and other shocks seem much more likely to be related to the housing market.

Accordingly, the regression analyses reported here related net within-UK migrational flows (for the years 1981-2011) for London and the rest of the GSE (RGSE) to four sets of influence:

- net international migration to each region (separately)
- a UK housing demand indicator (changes in private completions) as proxy for influences on current demands for additional space;
- relative dwelling-prices (comparing London with the RGSE; and the GSE as a whole with the UK); and

- relative unemployment rates (making these two comparisons again).

The results (in Table 5) suggest that for each of the latter two factors it is conditions at the GSE level which are relevant for both London and the RGSE (not differences between them), with lower relative unemployment rates and house prices at GSE level having similar positive effects on both parts of the super-region. This is consistent with the idea that the two regions are effectively integrated in housing and labour market terms, with net outflows from London to the RGSE reflecting a continuing disparity in space availability.

Fluctuations in their relative positions derive very largely from the two former factors. The more important is the general strength of (national) housing demand - reflecting cyclical and financial influences – which boosts outflows from London (and to a lesser extent the GSE as a whole) and inflows to the RGSE. But net international migration is also important, with evidence of significant displacement effects , after two years, from both London and the GSE as a whole – though not at all from the RGSE, consistent with the idea that such displacement stems from the tightness of space-constraints in a regional housing market.

For London as a whole, displacement beyond the region seems to account for 40% of the 'accommodation' of the international inflow (with much apparently going beyond the GSE). Logically, from the disparities in the role played by densification, it would be expected that – over the medium term at least - this inter-regional displacement was particularly linked to rich country migration into London, but this cannot be demonstrated with existing time series data. Neither can the existence of delayed effects displacement from poor country migrants as their space expectations converge on those of other groups.

What is clear from this analysis is that the main causes of fluctuations in domestic migration to/from London have very little to do with specific conditions in London, and much more to do with two sets of external influences – from the macro-economy and international migration which can cause substantial fluctuations in the balance of such flows away from any underlying trend that can be counted on continuing over the long run.

6. Conclusion

This piece of research has several implications for the analytic basis of Mayoral Plans for London, including this set of further alterations, in relation to population and household projections and the way in which these are used in development of strategic policies for housing provision.

The most general of these implications is that, particularly in the context of London and the greater South East, it is inadequate, and potentially quite misleading, to generate (and rely upon) projections which simply and mechanically presume that population trends observed over a recent period of years will continue, without regard to the causal factors shaping and constraining those trends, and how tese are liable to change. That is most obviously (and damagingly) true where the base period is one of unusual macroeconomic conditions (in this case the years of depressed income levels and housing market activity since the 2007/8 financial crisis) and/or where the dynamics of change have been radically altered over a slightly longer period (as with the great surge of inward overseas migration from the late 1990s) with repercussions that will continue to work themselves out during the Plan period, with changing (rather than constant) implications for patterns of migration and household growth in and around London.

These dynamics matter crucially in the London case because shifts in the balance of migrational flows between the city and other parts of the UK are determined not so much by any discernible trends in the city's attractiveness or competitiveness, but ny how current circumstances affect by the interaction between Londoners' housing aspirations and the limits on space available within London. Population growth within London is not determined, or predictable, independently of developments on these two sides of the city's housing market.

One important aspect of this - which has been demonstrated for earlier (post-war) periods but is shown again here for the past 30 years – is that the achieved balance of net outward movement depends substantially on national factors which condition the current level of effective demand for extra housing space (represented here by changing levels of private housing completions across the country as a whole). Lack of growth in real incomes since 2007 have greatly depressed this and thus the level of out-flow to the rest of the country has been well below that to be expected in more typical periods of growth, such as are to be expected within the horizons of the Plan. Projections which ignore this, and rely on the continuation of recent trends are thus liable to substantially over-estimate future levels of population in London.

A second aspect, highlighted in this research, is that because net gains of population from overseas don't induce (nearly) proportionate additions to the housing stock – and housing availability does substantially affect population levels – these have led to substantial increases in the scale of net outward migration to the rest of the UK during the past 20 years or so. The extent of such 'displacement' to other parts of southern England is well below 1 for 1, however - more like 1 for 2 – primarily because new migrants coming from poor countries have accommodated themselves at much higher densities, in terms of persons per room. This reflects the fact that a large proportion of these only initially secure work in low paid jobs, well below the potential indicated by their level of education. That situation changes, however, and so do the housing circumstances in which they reasonably expect to live. Over the course of 20 years or so, but with half of the change occurring in the first 7 or 8, their housing space standards are likely to converge on those of natives (or rich country migrants). If nothing else changes, that will involve a substantial further boost to net

domestic outflows relative to the levels which are currently being projected – up to the point where the displacement effect (since their time of arrival) reaches 100%, less whatever small margin might be absorbed by induced additions to the housing stock within London.

For two reasons, then, the mechanical assumption that recent levels of net migration to other parts of the UK remain constant for the Plan period (like those of international migration) are likely to involve significant over-estimates of London population growth. In both cases this is because the realistic aspirations of London residents for extra housing space – beyond that made available within London – run beyond those which were realised in this period. In one case, affecting everyone, this is essentially because of the interruption of a normal (long run) growth in real incomes. In the other, affecting just those recently arriving from poor countries (in the global 'south' or the European 'east'), it is because their level of earnings, and housing aspirations, have been temporarily depressed by initial barriers to the degree of economic and social integration which can be expected in the longer run.

As far as assessments of housing need within London are concerned, these observations and arguments are double-edged, however. If (mechanical) population growth projections are substantially overstated, on this analysis it is because (in these two sets of recently relevant circumstances) effective housing demands for the average Londoner have been depressed relative to those which should be expected to prevail over the Plan period – and so consequently are the numbers moving out to satisfy these where housing supply is less constrained. Recognising this bias in the population projections for London does not, however, necessarily mean that household projections (or other measures of required additions to the accommodation stock) are also overstated. This is because the key argument is that the same factors are likely to have led to an under-estimate of *per capita* household headship rates, or other measures of space requirements (in terms of rooms or areas).

What the evidence does imply, however, is that using this kind of projection methodology for other areas within the Greater South East is doubly likely to involve under-estimates of required levels of housing need (and probably of effective demand too). This is because of the combination of substantial downward bias in assumptions about levels of net outward migration from London, and some depression of likely expectations about the per capita headship rates/space requirements.

Other factors may also play unexpected roles. It is for example at least possible that the present government's aspirations to radically cut-back on international inflows might be realised somewhen within the time-frame of the Plan (against demographers' current assumptions). But two more general implications of the current analyses will stand. One is that intelligently informed planning needs to pay much closer attention to the causal processes underlying population trends, rather than relying on crude extrapolations of what has been observed in a recent (arbitrarily chosen) run of years. The other is that actual population changes for

London, and its surrounding regions, reflect decisions of residents about what they can afford and where (not limited by administrative boundaries), interacting with those of others (and housing providers) right across this extended region which need to be the subject of integrated analysis (ideally on a co-operative basis), before strategic Plans for any of them are made, 'altered' or approved.

References

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Table 1

Rates of Change in Populations, Rooms and Density of Occupation by Sub-Region 2001-11

	Rooms In Occupied Dwelling	All persons in private households	Average Persons per Room	Persons Born in:		
				UK	Other Rich Countries	Poor Countries
Inner London	10.2%	14.7%	4.5%	0.3%	5.3%	9.3%
Outer London	5.9%	11.3%	5.4%	-2.3%	2.5%	11.4%
GREATER LONDON	7.5%	12.6%	5.1%	-1.3%	3.5%	10.6%
Outer Metro Area	6.6%	6.5%	0.1%	1.3%	1.0%	4.3%
Outer GSE	9.0%	6.8%	-2.2%	2.7%	0.8%	6.7%
GREATER SOUTH EAST	7.8%	8.8%	1.0%	0.1%	1.8%	8.8%

Source: 2001 and 2011 Published Tabulations – summarised from (unchanged) LSOA figures.

Notes: 1 All population change rates are calculated relative to overall local resident numbers in 2001; 2. Residents in communal establishments have been excluded from figures for overall change but not from the breakdown by country of birth; 3. the operational definition of rich countries includes Western Europe, the USA and the Old Commonwealth.

Table 2

2001-11 Net Change in Foreign Born as Percent of Total 2001 Population: by UK New Arrival and Estimated Dispersal Effects

	New Arrivals in UK from		Estimated Net Effect of Dispersal of pre 2001 Arrivals	
	Other Rich Countries	Poor Countries	Other Rich Countries	Poor Countries
Inner London	8.2%	16.2%	-0.8%	-4.9%
Outer London	2.6%	14.4%	1.1%	-1.2%
GREATER LONDON	4.7%	15.1%	0.4%	-2.6%
Outer Metro Area	1.3%	5.5%	0.5%	-0.5%
Outer GSE	1.3%	4.3%	0.2%	-0.6%
GREATER SOUTH EAST	2.5%	8.4%	0.4%	-1.3%

Notes: 1. see previous table; 2. 'new arrivals' are those resident in 2011 who reported arriving in the UK in/after 2001; 3. the dispersal estimate is calculated by deducting these new arrivals from the net change in numbers between 2001 and 2011, and an estimated correction for exits (by death/emigration) based on national rates for poor/rich country origin and entry cohort (derived from the LFS).

Table 3

Regressions of Persons Per Room Change 2001-2011 at LSOA Level Across the GSE

	1	3	5
Intercept	-0.039 (13.9)	0.030 (11.7)	0.018 (4.2)
Population Growth Rates: Overall	0.220 (67.0)		
Migrants to UK 2001-11 *Poor Countries*		0.587 (105.)	0.551 (89.5)
Rich Countries All areas		0.033 (1.6)	
Inner London			0.070 (3.3)
Outer London			0.193 (5.0)
Rest of GSE			0.456 (11.7)
Earlier Migrants *Poor Countries*		0.346 (30.4)	0.297 (25.7)
Rich Countries		0.334 (13.2)	0.376 (14.7)
UK Born		0.101 (26.4)	0.099 (25.9)
(in Communal Estabs)		-0.346 (33.7)	-0.348 (34.9)
Job Accessibility	0.140 (55.3)	0.101 (39.4)	0.082 (21.5)
Persons per Room 2001	-0.056 (8.2)	-0.220 (35.1)	-0.200 (30.8)
LHMA fixed effects	N	N	Y
Adjusted R squared	0.436	0.623	0.648
N	13302	13302	13302

Sources: Published ONS Census tabulations for all except: job accessibility newly computed from an array of DfT indicators on the Neighbourhood Statistics web-site.

Notes: 1. The regressions include all LSOA with unchanged boundaries; 2. LHMA definitions are from Mike Coombes (CURDS, Newcastle); bracketed values are t statistics

Table 4

Regressions of Rooms Growth Rates: LSOAs within the Greater South East

	LSOA (1)	LSOA (2)	LHMA
Constant	-0.031 (3.8)	-0.006 (0.6)	-.078 (1.2)
International Arrivals p.c. 2001-11			
Rich Country	0.204 (5.5)	0.196 (4.2)	0.033 (0.3)
Poor Country	0.059 (3.2)	0.070 (3.3)	-0.183 (0.7)
Green Belt, AONB, NP (%)	-0.042 (10.5)	-0.033 (7.1)	..
* Job Accessibility	..	..	-0.171 (3.4)
Non-urbanised land (%)	0.076 (18.0)	0.065 (14.0)	0.154 (5.3)
Brownfield dwelling potential (per hhld, Sqrt)	0.170 (26.6)	0.172 (26.9)	0.051 (0.6)
Dwelling vacancy rate, 2001 (%)	0.759 (15.6)	0.739 (14.6)	..
* Job Accessibility	..	..	2.94 (3.6)
Persons per room, 2001	0.128 (7.2)	0.137 (7.5)	0.160 (1.2)
Density of Rooms 2001: domestic building land	0.000 (6.9)	0.000 (7.5)	0.000 (3.6)
LHMA fixed effects	N	Y	..
N	12868	12868	73
Adjusted R squared	0.109	0.121	0.453
SE	0.108	0.107	0.017

Sources: Published ONS Census tabulations for all except: Land Use, Greenbelts and Brownfield potential From DCLG sources (statistics or digital maps)

Notes: **1. LSOA regressions** include all with unchanged boundaries and full data available (97% of all); 2. LHMA definitions are from Mike Coombes (CURDS, Newcastle). 2. Equations are estimated with IV, treating the two arrivals variables as endogenous, and using as instruments the base year proportion of residents born in the relevant group of countries, plus the job accessibility index (for the Rich country migrants) and average local rent levels for 2/3 bed properties (for the Poor Country migrants); 3 bracketed figures are t statistics.

Table 5

Regressions of Net Domestic Migration for London and Rest of the GSE 1981-2011 (000s)

	London (GL)	Rest of the Greater South East (RGSE)	Greater South East (GSE)
Constant	-54.6 (3.6)**	5.73 (0.7)	-56.6 (7.5)***
Net International Migration(t-2): London	-0.398 (3.4)**	0.092 (1.4)	-0.298 (3.5)**
RGSE	-0.166 (1.0)	0.218 (2.4)*	0.109 (1.3)
Δ UK Housing Demand (change in private completions 000s p.a.)	-0.780 (5.5)***	0.371 (4.8)***	-0.409 (4.2)***
Dwelling Price Ratio *(ln, t-1.5):* GL: RGSE	26.6 (0.5)	-26.1 (0.9)	..
GSE: UK	-192.6 (3.5)**	-170.8 (5.7)***	-360.9 (10.6)***
Unemployment Rate Difference: GL-RGSE	-2.58 (0.7)	-0.27 (0.1)	..
GSE-UK	-7.23 (1.9)	-9.42 (4.6)***	-18.4 (8.6)***
N	28	28	30
Adjusted R-squared	0.814	0.804	0.931
SE	9.9	5.4	7.4