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Pushing water uphill: containment policies doomed to fail

London has had a green belt for seventy years making it the ‘canary in the coal mine’ for ‘zero land take’. Because of strong demand for housing space, rising prosperity underlies rising urban land demand so rigid physical limits increase real prices over time. Agglomeration economies ensure economic growth is disproportionately focused on our biggest cities. Thus policies limiting land supply cause ever increasing problems of housing unaffordability, inequity and foregone prosperity, eventually overwhelming rigid growth boundaries. If reducing urban land take is the aim, other instruments are needed, but current justifications for zero land take need re-examination.

Keywords: urban land take, housing demand, green belt, housing affordability, demand for land

Land take entails the conversion of land to artificial surfaces, which impairs the valuable ecological functions of lands. (European Environmental Agency, 2023)

Introduction

Behind the aim of ‘net zero’ lies hard science. Stem CO₂ emissions and global warming or humanity, indeed the planet, will be in an even more severe crisis than it is already. The aim of ‘no net land take by 2050’ (EC, 2016) has no such basis in hard science and even less in social science. Gross land take does not involve the wholesale replacement of ‘ecologically valuable land’ with ‘artificial surfaces’: even the administrative area of London, the Greater London Authority (GLA), is 65 per cent ‘green’: that is, is covered with vegetation (Generalised Land Use Data, 2005). Even in a densely populated country such as England only 4.17 per cent of the surface was covered by ‘artificial surfaces’ – buildings, roads or railways (Foresight Land Use Futures Project, 2010). Decoville and Feltgen (2023) report that across the European Union’s (EU) hundred largest cities, rates of ‘soil sealing’ range from 32 to 73 per cent implying London, at 35 per cent is towards the lower end.

Equally, while forests and unimproved grasslands or wetlands soak up rain and are ecologically rich and diverse, intensively farmed land is not. Modern arable land is amongst the most environmentally damaging land uses of all. There is no biodiversity,

there is intense chemical runoff and poor water retention (Firbank et al., 2011). Gardens and parks are in comparison oases of biodiversity. Since more than half the urban land take in the 27 member states of the EU between 2012 and 2018 – according to European Environmental Agency (2023) – was from previously arable land, one might even judge the land transferred to urban use represented an environmental improvement.

The aim of ‘no net land take’ is, in the EU at least, the aim of policy even if the exact definition of no net land take is fuzzy and how it might be implemented and monitored even fuzzier (see Decoville and Feltgen, 2023, for more discussion of these issues). The purpose of this article is not to try to clarify the aims of the policy more precisely but rather – in more general terms – examine how it might work if actually implemented. I will explore this using the example of England and in particular London. The reason for that is not Anglo-centricity but because England has had what is, in effect, a policy of ‘no net urban land take’ in place since 1955 – indeed not ‘no net land take’ but no land take *at all*. It is called the green belt policy, strengthened since the mid-1990s, with a ‘brownfield first policy’, demanding at least 60 per cent of all new development should be on previously used sites (Spry, 2021).

What happens if urban land is limited by fiat: the example of London?

If London’s current green belt (see Figure 1) had been imposed in 1855 instead of 1955, it would have had no effect either on the physical extent of London or on the supply of houses or other types of property. At that time most journeys to work were by foot. Islington was an only partly developed suburb, less than 5 km north of the city, still with a flourishing local diary industry. Its new, mainly middle-class, white-collar householders, walked to work. The inner boundary of London’s post-1955 green belt, except for a small enclave or two down the Lea valley, is another 10 km further north of Islington, and in 1855 homes there were too remote to give much access to London’s jobs. What this tells us is that the effect of any given, static limit on land conversion, any growth containment boundary, indeed any supply restriction, is not fixed but determined by the economic circumstances of its time and place. Its long-term effects will vary with the pressure of demand for space to live or work in. In turn that demand derives from the level of income in the area (as is explained below, it is income that really is important), the pressure of population and transport infrastructure.¹

London’s first suburban railway lines were built because there was demand for cheaper housing with more space and with gardens, further out. The new railways

¹ Interest rates are important but only in the short term. In the long term there is mean reversion: interest rates in Britain in 1995 were virtually the same as in 1972 (see Phaup, 2015) and in 2008 virtually the same as in 1956. Falling interest rates were mainly important in magnifying demand and so nominal and real house price increases throughout the period from 2008 to 2021, after which the cycle turned and historically low interest rates ceased.

were followed by the tube (metro) and, after that, the development of modern roads and cars. While these transport innovations hugely increased the supply of urban, developable land, making land – so housing – cheaper, they were the response to demand. But because they facilitated London's spread and growth they expanded the size of the labour pool available to London's economy. This not only reduced the real cost of that labour and powered London's agglomeration economies and growth but fed back to further urban growth and demand for yet more transport infrastructure to open up more urban land. Demand created supply but the growth that supply facilitated, in turn, increased demand.

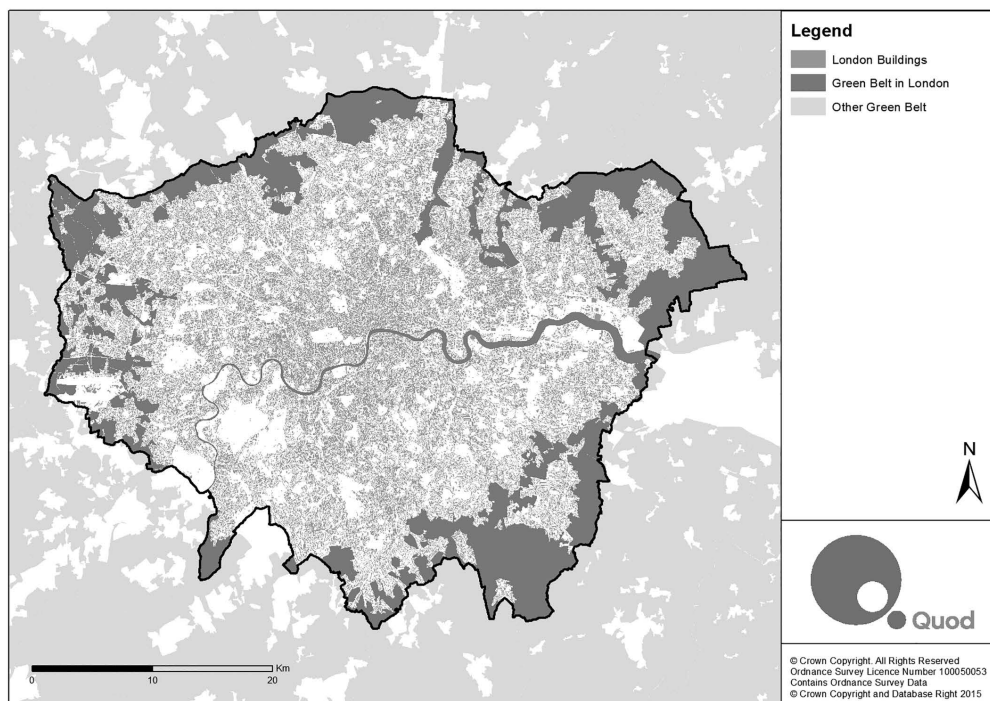


Figure 1 The metropolitan green belt and buildings within the Greater London Authority boundary
Source: Cheshire et al., 2015

That process stopped in 1955. As London and its population continued to get richer and grew in the more than two generations following the imposition of London's green belt in 1955, so the effective constraint on the supply of space it represents has become more and more binding. What would have been irrelevant in 1855, hardly noticeable in 1955, was already causing affordability problems in 1973. As Hall et al. (1973, 268) noted: 'Soaring land prices [...] the planners [...] were wrong in terms

of thousands of percentage points as far as land prices were concerned. [...] Green Belts became [in the 1950s] political weapons in [...] a fight against takeover attempts [of rural counties] by the cities'. Measured in the conventional way – by the ratio of median house prices to median incomes – by 2021 London had some of the least affordable housing of any city in the world. According to the Office of National Statistics (ONS), the price of a house at the median of the price range in London was almost 13 times the median income of a London resident, up from a value of 4 in 1997. Poorer Londoners were even more badly hit. By 2021 the ratio of the median lower quintile house price to lower quintile earnings for Londoners was over 13.5.

London: the canary in the coalmine

So far the focus has been on London and there is good reason for this. Not only is it one of the largest cities in Europe, it has had a containment boundary in (the same) place longer than any other city in an Organisation for Economic Co-operation and Development (OECD) country. So it is the canary in the coal mine: what its green belt has done to London is a plausible guide to what fixed limits on urban land take will, over time, do in other large, rich and growing cities.

Moreover its containment policies have history. They are much older than most people realise. From 1580 to 1605 Queen Elizabeth I tried repeatedly to stop the outward growth of London, imposing minimum sizes for building plots and ultimately outlawing building within 11 km of the city walls (Turner, 2016). Any new building that was constructed in contravention to this edict would be demolished. Within a few years, however, the demolition could be avoided by paying a substantial fine. This attempt to stem London's growth finally came to an end following the Great Fire of 1666. This destroyed some 80 per cent of the old fabric of London and led to a frantic rebuilding. There were new by-laws – building regulations – to reduce fire risk – but the prohibition on 'suburban' building lapsed. The value of land outside the city walls was greatly boosted and the fortunes of the owners of farmland in the ring around the city – such as the Grosvenors² – were made.

The nineteenth-century vision of green belts as the 'green lungs' of the city lasted up until 1955 in Britain. The London Society's 1919 plan for London proposed a modest belt of publicly accessible or publicly owned land about two miles wide. This began to be implemented by the old London County Council which was instrumental in getting the Green Belt Act onto the statute book in 1938. By the time of the Abercrombie plan for Greater London (Abercrombie, 1944, 110), 20,000 hectares of land had been bought around London and dedicated as public open space (for early history of this see Cheshire, 2015).

2 The family owning the marshy land farmland now covered by Mayfair and Belgravia and owned by the Duke of Westminster.

In 1955, however, the then Conservative government transformed the concept into great tracts where all new development was to be prohibited, and urban land take effectively stopped. The first green belt was London's, some 17 times bigger than the then administrative area of London, stretching from the North Sea to the boundaries of Aylesbury, far beyond even the extent of the Greater London region defined by Abercrombie (1944). The declared purpose (Hall, 1974, 162) may have been to 'stop further urban development' but the political reality was to stop encroachment into the 'Home Counties' where the prosperous had already made their homes, taking advantage first of commuter rail, then the car and the expanding road system.

This purpose of British green belt policy continues. It was confirmed in the National Planning Policy Framework (NPPF) of 2012 and re-affirmed in its 2019 revision. The purpose of British green belts as they have existed since the late 1950s is not to provide amenity land or land for public solace and recreation. It is simply to stop the outward extension of large built-up areas and prevent neighbouring towns merging into one another (NPPF, 2012, para 134). The purpose is for there to be empty spaces between existing cities and to protect the home counties and other visually rural counties bordering large cities from urban encroachment.

In this aim it largely works. Concorde comparably fulfilled its design brief: it flew safely and faster than sound, so it 'worked'. That it failed dismally on economic grounds and was an environmental disaster did not mean it did not work in terms of its design brief. So it is with the green belts. Over the period 2018 to 2022, green belts covered 12.4 per cent of the surface of England in exactly those locations where housing demand was greatest and housing most unaffordable (Cheshire, 2018) so without the barrier they represented, exactly the area in which house building would have been most strongly concentrated. According to land use change statistics (DLUHC and MHCLG, 2023), however, only 2 to 3 per cent of new houses were constructed on this 12.4 per cent of England, and of that 2 to 3 per cent, half were built on 'brownfield' land within green belts, i.e. on land previously developed. And so, unintentionally, its green belt has forced the expansion of a city like London to jump over Surrey, Hertfordshire and Essex to Hampshire, Northants and Cambridgeshire; even Oxfordshire, Gloucestershire and Suffolk – even York, one of the fastest growing commuter stations to London in England (see Cheshire, 2018) and, since 2019, one of the few areas in northern England where falling housing affordability rivals the home counties (Cheshire and Hilber, 2024). British green belts act as containment boundaries.

Why containment ultimately fails

The explanation for the ultimate failure of any containment boundary in the modern world is really encapsulated in the history of London's Tudor 'green belt'. The economic, social and demographic factors driving London's growth were unstoppable.

One only has to try to imagine modern London confined to an area of land bounded by the mediaeval city walls. By accepting the commutation of the punishment of demolition to a hefty fine, seventeenth-century governments had recognised the reality long before 1666.

Any arbitrary physical limit on a city's extent inevitably becomes more restrictive as long as those factors driving the city's growth continue. In 1580 there was little conception of 'agglomeration economies' – the fact that people are both more productive the larger a city is (see, for example, De la Roca and Puga, 2017; Donovan et al., 2024) and they have more choices, not just in consumption, but also cultural activities and social choices (see, for example, Glaeser and Gottlieb, 2006). These agglomerating factors mean that the largest cities tend to grow ever larger. They are more productive and offer better life chances.

With the restructuring of modern economies away from manufacturing – in which agglomeration economies are slight – to cultural and traded services – in which they are very important – so the forces driving the growth of Europe's largest cities have become substantially more powerful. Indeed, to an extent, international differences in economic structure explain difference between countries in the dominance of their largest cities. Germany does not have a London not just because it is a federal state but because manufacturing is still a relative dominant economic activity. Moreover, until the public health revolution of the nineteenth century and the investment in public sewerage and clean water supplies, cities genuinely were unhealthy places to live. Queen Elizabeth's proclamation of 1580 made explicit mention of the need for 'the preservation of her people in health' by limiting London's population (Turner, 2016).

The late nineteenth and twentieth centuries, however, not only saw the technological ability to overcome the main health dangers of large, densely crowded cities, but radical improvements in transport technology greatly reduced the real costs of expansion, boosting agglomeration economies and releasing central urban space for specialised jobs while workers were freed from living within walking distance of their workplaces (for a detailed recent analysis, see Heblich et al., 2020).

Expanding population, however, is only a surprisingly small (to most people) part of the reasons for cities' increasing demands for land on which to expand. By far the more important factor is rising real incomes. There are several studies estimating the relationship between income and the demand for houses – the income elasticity of demand. A survey by Auterson (2014) has a table summarising a number of previous estimates and shows a range from 2.9 (André, 2011) to 1.6 for Cameron et al., 2006. It also cites an estimate by Meen (2013) of 2.7 who, in previous work, had estimated a lower value of 1.3. Auterson's own estimate of the income elasticity of demand for housing was 2.7. A central estimate, therefore, would be about 2. That means if incomes increase by 10 per cent then people spend 20 per cent more on housing.

All these studies are aimed at macroeconomic modelling of the ‘housing market’, however, as a consumption sector, treating ‘housing’ as a homogeneous good. Cheshire and Sheppard (1998) applied an alternative approach derived from hedonic modelling, using a microeconomic framework. The model was estimated on the basis of individual house transactions and the characteristics not just of the particular houses but of their buyers. The characteristics of buyers included income, age and family composition so it was possible to adjust for demographic factors influencing demand as well as for incomes. More significantly housing was conceived of as a composite good, with many characteristics, in differing conditions of supply, each yielding value to the house buyer and having a specific price. In this framework, the overall price of a house is the sum of the prices paid for its many valued characteristics. There have been many studies of this type investigating the price of different housing characteristics and all find that location with respect to job opportunities (as predicted by the standard urban monocentric model) is important as is the quality of local amenities and public goods such as parks, better schools and characteristics of the neighbourhood.

The contribution of the Cheshire and Sheppard (1998) study was that it not only had data on a wide range of the physical and locational characteristics of the houses but also on the characteristics of the buyers, so was able to estimate income and price elasticities for disaggregated housing characteristics. Of the physical characteristics of houses, space within them was most important. It was possible to estimate with some precision the price per square metre and how that varied with the total size of the house and of its garden. It was also possible to estimate with precision the price paid per square metre of garden and how the two prices interacted: the price of an additional square metre of space in a house increased if the garden was bigger up to a certain point. That is, as with almost all the price estimates, they were non-linear with respect to quantity, and many interacted with the quantity of other attributes.³

This is relevant to the issue at hand because the nature of the study made it possible to estimate price and income elasticities of demand for both the internal space in a house and for the size of its garden. Since the samples related to two different housing markets and were split, at the sample means, between higher income and lower income groups, there were four estimates for both the income and price elasticities of demand. The income elasticity estimates were all in the range 1.8 to just over 2 (except for the estimate for garden space in Darlington which was over 3 but had a higher standard error associated with it). What this tells us is that as people become richer, they disproportionately demand more housing space in terms of both the structure but also in terms of garden size.

3 Perhaps not surprisingly – but often ignored – the price paid for better local schools varied not only with the number of children but with the probability that the quality of the school would be maintained in the future: the evidence showed people appeared to be paying for ‘expected’ school quality.

Rising incomes in society in general, and in bigger cities in particular, drive the demand for more residential land. If the supply of land is restricted by growth boundaries or green belts, therefore, the price of land and housing simply rises and will go on rising relative to incomes and other prices so long as incomes rise. A fixed containment boundary is like a dyke against rising sea levels. The ‘dyke’ may be stronger because of more effective enforcement or undermined by inefficiency and corruption but it does not get bigger. If the water level continues to rise, the ‘dyke’ is eventually overwhelmed.

It is income growth not population that drives demand

Planning systems tend to operate on physical entities: boundaries, numbers of households, numbers of jobs, buildings. As is convincingly explained by Bertaud (2018), the conceptual framework of planning hardly allows for economic forces or the operation of markets. The number of houses planned for is usually determined by so-called ‘housing need’ in turn derived from numbers of households, rates of household formation and sometimes, not always, net migration – despite that itself being jointly caused by house building. Build houses in a constrained region and people will come. The quantity of land implied by the measure of ‘housing need’ is determined

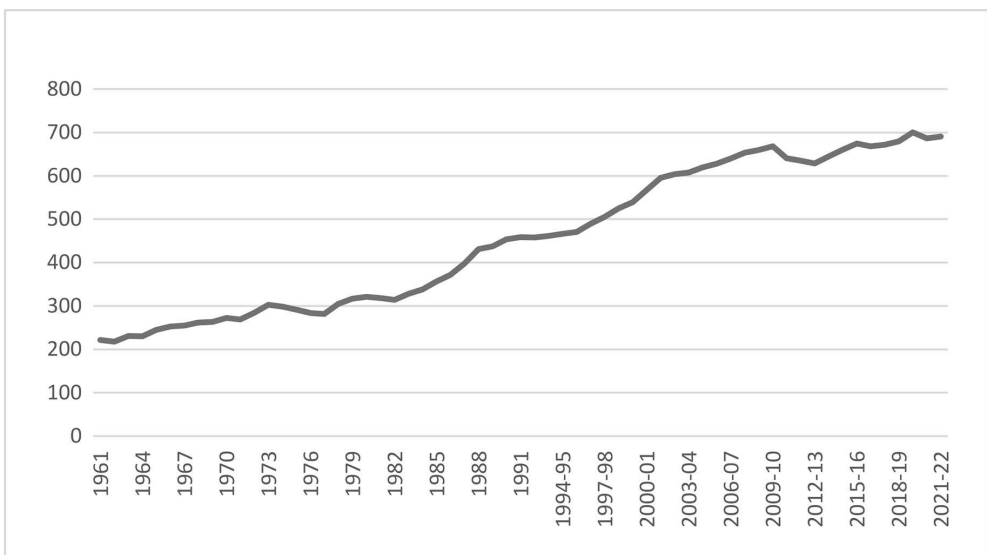


Figure 2 Why demand for housing space has risen: real household incomes in Britain since 1961

Note: Measured in £ per week at constant 2021–2022 prices

Source: Institute for Fiscal Studies 2023

by assumptions about densities or, in the US, by minimum lot size regulations or norms for floor-to-area ratios. As Bertaud explains, and any economist would recognise, housing and garden space are economic goods. This is implicit in the discussion above about the prices of housing characteristics and the income elasticity of demand for space. House prices are determined by the interaction of demand and supply and if supply is fixed – which is in effect what any containment boundary, certainly ‘no net land take’ attempts to achieve – then prices change only in response to changes in demand, and these are driven by changes in incomes much more than by changes in population.

Figure 2 shows the path of real household incomes in Great Britain since 1961, six years after the metropolitan green belt first fixed the supply of land for London’s future development. These are measured in pounds per week at 2021–2022 prices. The whole period until 2008/9, after the financial crash, saw real incomes per household increase threefold. After a downturn, they began to grow again from 2012–2013, if less rapidly. In the whole 250-year period since the Industrial Revolution, real incomes per capita have tended to increase but the rate of increase accelerated after the Second World War. The result is that over Britain as a whole there has been a rapid increase in the demand both for space in houses and in private space – gardens – around them.

Not only that, but partly reflecting agglomeration economies, this increase in real incomes has been focused on Britain’s biggest cities and, most strongly of all, on the London region. On a slightly different measure – regional gross disposable income per capita – the ratio of Londoners’ per capita incomes to those in the UK as a whole increased from 1.22 in 1997 to 1.37 in 2021. That is, real incomes have been rising across Britain as a whole but Londoners have been getting richer compared to those households in other regions, certainly since 1997 when consistent data became available.

Given the highly inelastic supply of houses and the almost completely fixed supply – since 1955 – of land to put houses on, house price increases largely reflect rising demand.⁴ Table 1 illustrates how it is income growth not population growth that has driven demand. Many people when asked will say that house prices in London have risen so much because of population pressure (sometimes adding a suspected role for immigration). But what Table 1 shows is that population growth had almost nothing to do with the increase in real house prices in London.

It is true London’s population grew quite rapidly in the thirty years to 2011 – by 20.5 per cent. Real house prices – that is removing the effects of general inflation

4 Houses are also, like other real estate, demanded for their asset value. Post the great financial crash of 2007/8 and the unprecedented quantitative easing and low interest rates generated as policy-makers sought to respond, the asset demand for housing came to be relatively more important and rates of return on all assets adjusted. But the basic reality of the British housing market still held: an almost fixed supply but rising demand – now augmented by exceptionally low interest rates and the move to real assets by investors – caused real prices to continue to rise. Since 2021 more ordinary conditions have reasserted themselves.

– grew ten times more, however, by 227.6 per cent. On the other hand, London’s population in the previous thirty years shrank by 16.9 per cent, yet real house prices still grew by 71.9 per cent. And over the whole period 1951 to 2011, London’s population hardly changed at all, yet real house prices increased by getting on for 500 per cent. Broadly house prices in London have doubled in real terms in every decade since the green belt was imposed, and population growth has had very little to do with it.

Table 1 Population change and real house price growth in the GLA Area

Period	per cent change population	per cent change real house prices
1981–2011	+20.5	+227.6
1951–1981	-16.9	+71.9
1951–2011	+0.1	+463.2

Reproduced from Cheshire, 2018.

Sources: Population censuses and Greater London Authority

Containment’s implications for the future

What this means is that with given policies, so long as the British economy grows, and in particular London’s does, real house prices will continue to increase. To some extent this in itself chokes off some of the growth, not only in London but in Britain as a whole, because rising real house prices make it more difficult for people to move to London. This increases the supply price of labour for the London economy. Since this is the most productive region of Britain, curtailing its growth causes growth over Britain as a whole to fall. There is a recent study by Puga and Duranton (2019) documenting this for the USA and estimating the net growth loss for the USA as a whole of the restrictions on housing supply there, especially in its largest and most productive city-regions, in New England and California.

However in the long term both the economic and political pressure for economic growth is inexorable. Despite some of the more extreme claims of the Green movement, countering climate change is likely to increase economic activity and the prosperity of our largest cities in the long run. So, while it is obviously impossible to predict with certainty, based on past history and economic and political realities, by far the most likely future for the next fifty to one hundred years is a continued rise in real incomes, even if with blips and perhaps a slower average rate of growth than between 1960 and 2010.

Rigid limits on land supply inevitably mean rising real house prices and rising costs of space. This generates two opposing pressures. On the one hand, older house owners, especially if they have paid off their mortgages, are quite happy with rising house prices and may even see that as a part of their pension planning. On the other

hand, younger people are increasingly priced out not only from home ownership but out of decent housing. Housing is the largest component of household spending in Britain, up from 11 per cent of an average household's spending in 2001–2003 to 17.5 per cent (excluding mortgage interest and council tax payments) in the most recent two-year period, with the poorest 30% of households spending, proportionate to their incomes, twice as much as the richest 10%. House price inflation has overwhelmed all other price increases over the past twenty years. Simultaneously, the rising price of houses hugely redistributes assets towards homeowners and constricts home ownership among younger generations. Of those now entering their sixties, 55 per cent owned a house by age thirty: for those now entering middle age, born in the early 1980s, the figure is only 27 per cent. This brings with it an increasing clash of interests between homeowners who are happy with higher house prices, and those desperate to find somewhere they can afford to live. There are also deep and damaging effects on both our economy and social cohesion. The housing shortage is most acute and housing most expensive in those areas where people are most productive and want to live, like London and the South East. This consequently hinders companies' ability to attract new talent.

Over time the party of the excluded – the young 'priced out' – increases in size relative to those who are happy with ever-rising house prices. Indeed, even some of the old may have empathy for their children who cannot afford decent housing or simply tire of hosting adult children in the family home. So as time passes the weight of public opinion in favour of easing restrictions on building will be likely to increase and eventually create the momentum for reform. Between 2010 and 2018 the Department of Communities and Local Government funded the British Social Attitudes Survey to ask specific questions about attitudes towards housing and house building. Those in favour of building more houses in their local areas increased from 28 per cent in 2010 to 47 per cent in 2013 and then to 57 per cent in 2018 while the proportion opposed fell from 46 per cent to 23 per cent. Precisely comparable information since 2018 does not seem to be available but interestingly an electronic poll of readers of *The Daily Telegraph* – prompted by an article by Jeremy Warner (Warner, 2016) advocating building on small parts of the green belt – produced an almost 50:50 split. *The Daily Telegraph* readers might be assumed to have been significantly weighted towards favouring rigidity on green belt policy.

As the aftermath of the Chesham and Amersham by-election of 2021 has shown (Cheshire, 2024), there is still a diehard group of green belt absolutists, but they prevailed in the unusual circumstances of the balance of power in the then composition of the Conservative Party in Parliament. In the long term it is unlikely they are on the side of history. The Labour Party is now cautiously calling for relaxation of rigid green belt containment. In his speech to the party conference in 2023, the leader of the Labour Party re-christened those parts of the green belt that might be suitable for development as the 'grey belt'. The shadow minister for housing and planning was

more precise and outspoken: he announced that a future Labour government would release green belt land ‘strategically [...] We do not have mechanisms for doing it in a strategic way – we are going to bite the bullet on that. We need to reintroduce elements of strategic planning’ (Matthew Pennycook quoted in Porter, 2023).

Conclusions

Why physical barriers to urban development such as ‘containment boundaries’ ultimately fail is because as cities grow and prosper, their more numerous and more prosperous citizens not only demand houses, they demand more spacious houses and gardens too. Demand for space in and around houses – so, given limitations on supply, the price of space – is mainly determined by real incomes, not population growth (Cheshire and Sheppard, 1998). So long as there is economic growth, therefore, setting rigid boundaries on development is like trying to hold back the tide. There are all sorts of unintended consequences which in the end mean the policy collapses. In London’s case, real house prices doubled in every decade following 1955. Moreover far from ‘containing’ London, its green belt has caused it to leapfrog outwards with ultra long-distance commuting as people try to find affordable space (Cheshire, 2018). Far from producing compact cities, growth boundaries ultimately produce super low density, car dependent living as well as increasingly unaffordable and cramped housing.

Moreover, closely examining the case for ‘no net land take’ suggests it is an emotional, faith-based policy, rather than an evidence-based one, and is unsupported by scientific or socio-economic analysis. Urban land is already mainly – 65 per cent – green, and with strategic management could be considerably greener. Intensively farmed land, in particular, is one of the most environmentally damaging forms of land use there is. Limiting urban land take has major economic costs, is inequitable and also has welfare costs. Not only are house prices increased so people have to spend more on housing but the quality of houses is reduced (they are smaller with less green space around them), negatively affecting people’s welfare. A further consideration is any possible increase in homeworking post COVID-19. In as far as this becomes a long-term change rather than a short term adjustment (in my judgement it is still too soon to form a clear judgement on this), that would increase the demand for housing space and further re-enforce demand in green, peri-urban locations, further boosting demand for housing in locations where green belts or ‘containment’ now most severely restrict supply.

In addition there are other substantial economic costs in restricting space in large cities, including applying height restrictions. As cities are restricted in their size, so agglomeration economies are foregone. Estimates in the US – where policy is far less restrictive than in England – suggest a loss of economic output of some 13.5 per cent over an extended period (Hsieh and Moretti, 2017). The imposition of a policy of no net land

take will certainly reduce the welfare of Europe's citizens and make the EU less competitive in world trade but it will do so for very unclear, probably non-existent, environmental benefits. In addition it will be a policy with substantial costs but ultimate failure to achieve its objectives, as the example of London and its green belt shows.

But if society really wants to limit land consumption, urban economics does offer some methods such as taxing land consumption, which would work while causing less harm to the environment and welfare. Cheshire and Sheppard (2003) modelled the impact of taxing land conversion at different levels including at a rate sufficient to stop development at the present 'contained' margin. This concluded that taxes could achieve the same urban land take not only at a lower net welfare cost but in a more equitable fashion. The benefits of containment go disproportionately to rich house owners in the protected green hinterlands of cities while poorer people pay the costs in terms of more expensive, inferior housing, and since poorer people have to spend proportionately more of their incomes on housing, higher house prices disproportionately cost poorer households.

Equally, releasing land within walking distance of commuter stations – even if only in the Greater London region – would yield enough land to build some 1 million new homes while consuming only 1.8 per cent of the existing green belt (Cheshire and Buyuklieva, 2019). That total is estimated while retaining 10 per cent of the land released for new publicly accessible green space and avoiding building on any land with any marker of amenity use (such as areas of outstanding natural beauty or national parks, playing fields or parks) or environmental quality such as sites of special scientific interest, nature reserves or scarce habitat such as heaths or unimproved pasture. Such 'transit-oriented' development is more environmentally benign since it maximises the use of the most energy efficient form of transport – trains.

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