

Land-use planning, land supply, and house prices

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Abstract. There are clearly significant social benefits to land-use planning, but there may also be significant private and social costs which need to be taken into account. In this paper we explore the relationship between land-use planning, the supply of housing land, and the supply and price of housing. It is based on two pieces of empirical research. In the first study, an investigation was conducted of the extent to which land supply, and particularly the operation of the planning system, had affected house prices in Britain during the 1980s, and how far planning had placed a constraint on land supply or simply reorganised that supply. In the follow-up study a single planning area was looked at to examine the extent to which increased land allocations in one area can compensate for constraints on land supply in another. We conclude that the planning system imposes significant costs, which include the exacerbation of price increases in periods of economic growth, but without being able to generate higher housing output during recession. In addition the planning system tends to foster a narrower range of housing types and densities than would be expected in its absence, and so restricts the choice available to consumers.

Introduction

The land-use planning system in Britain is seen by many commentators as a model. Some regard it as a very positive one, which has limited urban sprawl and conserved the countryside while maintaining a desirable mix of activities within the urban area. Others see it in far more negative terms, as providing heavy constraints on development, particularly on the supply of housing, and as a result significantly increasing prices and reducing productivity (Whitehead and Cross, 1991).

In the later part of the 1980s these tensions became particularly transparent, as demand both for commercial and for housing property rose rapidly; commercial rents, house prices, and especially land prices increased at unsustainable rates; and great pressures were put on the land-use planning system both to release more land and to maintain the quality of the existing environment by restricting development. At the same time, in part as a result of more general privatisation measures, attempts were made to generate more affordable housing (in this context defined as housing whose availability could be restricted to those in need) through the planning system rather than through direct provision and allocation (RICS, 1992).

It was in this context that in 1990 the Department of the Environment (DoE) commissioned a study of the relationship between the land-use planning system, land supply, and house prices from Gerald Eve and the Property Research Unit, University of Cambridge (Gerald Eve, 1991). The main purposes of this project were to investigate the extent to which land supply, and particularly the operation of the planning system, had affected house prices in Britain during the 1980s and,

in so doing, to evaluate the extent to which planning had placed a constraint on the supply of housing land or had simply reorganised that supply. The study consisted of four main elements: the development of an analytic framework and, thereafter, a set of hypotheses about the way in which the system operates; a review of the relevant literature to determine which relationships were already understood; an analysis of national and regional data to clarify what had been happening over the decade; and a set of case studies of local land and housing markets in four areas which differed in relationship both to the extent of demand and to the planning stance of the local authority. After the publication of the Gerald Eve report, the Joseph Rowntree Foundation commissioned a further study, of land supply and housing within a local market, to examine the differential effects of planning constraints at the local level, and particularly the extent to which land allocations in one area can substitute effectively for constraints in another (Jackson et al, 1994).

In this paper we discuss some of the findings from these projects and draw more general inferences about the effects of the British system of planning for housing. We clarify how land and house prices moved during the 1980s and therefore the nature of the stresses being examined. Drawing on a short review of relevant literature, we then specify a simple analytic framework. This in turn provides a framework for discussing the major findings from the two projects. In the final section some more general conclusions are put forward about the way in which the British land planning system operates with respect to housing provision.

Trends in housing and land prices during the 1980s

House prices in Britain rose consistently in money terms during the early part of the 1980s but did not start to rise significantly in real terms until 1986 (see table 1). Over the next three years they rose by almost 100% in money terms and by over 40% in real terms, only to fall back again both in money terms and in real terms after 1989. These rapid increases started in the south of the country, not only in the South East but particularly in East Anglia, and spread relatively slowly to the North where prices have also fallen much less sharply. These increases were accompanied by a considerable expansion in activity both in terms of transactions

Table 1. House prices (1985 = 100) (source: CML, 1993).

Year	Yorkshire and Humberside	East Anglia	South East (excluding Greater London)	United Kingdom	Retail price index
1981	78	72	70	73	80
1982	79	74	71	75	86
1983	88	81	80	84	90
1984	94	89	91	92	94
1985	100	100	100	100	100
1986	109	116	118	114	103
1987	118	139	144	133	108
1988	139	189	187	167	113
1989	194	221	216	202	122
1990	211	197	198	199	134
1991	220	191	187	196	141
1992	216	181	175	189	147
Average 1992 price (£)	52278	56718	74347	60821	

and in levels of new building (a more detailed discussion of national and regional data can be found in Monk et al, 1991).

The pattern of land prices was similar but exhibited much greater volatility (see table 2). Land prices rose more rapidly than house prices in the early part of the decade and took off earlier in 1985. Between 1985 and 1988 they rose by 130% in money terms. Since 1988 they have now fallen back by almost one third, while transactions have gone down by more than two thirds. Again East Anglia saw the largest and most rapid rises, 160% in three years, whereas the peak was not reached in the North until 1990, by which time prices on average had fallen 25% from their peak.

One outcome of these changes was to make housing much less affordable in terms of price/earnings ratios (see table 3). Again the national changes, in themselves large, hide large regional differences, with ratios rising to 5.5 in the South East and

Table 2. Housing land price and transactions (1985 = 100) (source: Housing and Construction Statistics, 1992).

Year	Number of transactions England	Yorkshire and Humberside	East Anglia	South East (excluding Greater London)	England
1981	64	53	48	44	56
1982	75	68	51	48	60
1983	97	74	56	58	78
1984	83	83	64	76	76
1985	100	100	100	100	100
1986	124	93	103	107	121
1987	126	106	183	160	173
1988	133	151	303	217	231
1989	83	219	367	201	227
1990	57	303	273	154	176
1991	42 ^a	237	173	170	156
Actual price 1991 (£)		274212	258108	645003	310950

^a Assuming the same for the second half.

Table 3. The relationship between house prices and earnings (source: derived from data provided by the Department of the Environment/Building Societies Association 5% Sample Survey, and the Department of Employment).

Period	Average house price		Average earnings		House price/ earnings ratio
	£	percentage change (YoY)	£	percentage change (YoY)	
1981	24188	2.5	7497	11.5	3.23
1982	23644	-2.2	8165	8.9	2.90
1983	26469	11.9	8693	6.5	3.04
1984	29106	10.0	9447	8.7	3.08
1985	31103	6.9	10069	6.6	3.09
1986	36276	16.6	10790	7.2	3.36
1987	40391	11.3	11648	8.0	3.47
1988	49355	22.2	12782	9.7	3.86
1989	54846	11.1	14014	9.6	3.91
1990	59785	9.0	15371	9.7	3.89
1991	62455	4.5	16830	9.5	3.71
1992 (q1)	61124	0.8	17636	7.0	3.47

q1 first quarter; YoY year on year.

4.9 in East Anglia, as opposed to only 3.3 in Yorkshire and Humberside. As a result many households who would have expected to have afforded owner-occupation in the mid-1980s found themselves excluded.

In these circumstances it was not surprising that the government should wish to examine the sources of these changes, and particularly the extent to which the operation of the land-use planning system has exacerbated the extent of volatility and has constrained investment and generated higher prices instead of enabling expanding demand to be met by greater output. It was in this context, at the height of the boom, that the research project was set in motion. Thereafter, prices and transactions were to fall dramatically as general measures of affordability improved.

Relevant findings from the literature

The purpose of the literature review was to examine which relationships were well established so that these could be used as a starting point for our own research. It was not our intention to provide a critical appraisal of all relevant literature, but rather to build on well-founded hypotheses in order to develop our own eclectic approach.

Within the British literature, there is a wide range of views about the relationship between land-use planning, land supply, and house prices. These have been typified by what had become known as the Evans-Grigson debate which in many ways defined the basic question the research was expected to answer. Grigson puts forward what might be called the 'planning' view, which suggests that modifying land supply through the land-use planning system cannot affect house prices because prices are demand determined, and supply does not adjust significantly and quickly. Any change resulting from planning will be too small to affect the overall market (Grigson, 1986). In accordance with this view, the national housing system is regarded as a single market, so that changes in one area will be absorbed without cost into other areas. Planning is seen as having mainly positive effects, organising demand and urban form. At the other extreme, Evans puts forward a more 'economic' approach suggesting that the land-use planning system affects both the overall extent of land supply and the extent to which supply can respond to changes in price (Evans, 1987). In this case, supply can adjust and so affect prices, but it will adjust less flexibly because of the planning system. Housing and land markets are seen to be segmented, so that changes in one location will not be fully offset by compensatory responses elsewhere.

Arguably, Grigson's view is a short-term perspective where, because supply cannot adjust and demand is expected to increase as a result of nationally based factors, investment outcomes are wholly price related, and the planning system does not affect that price. Evans, on the other hand, takes a longer term view in which supply can adjust, although much of the effect is still in terms of price both because of market segmentation and particularly because of planning restrictions. In both these papers the elasticity of land supply and the responsiveness of the planning system are discussed, and hence they are relevant to our own study.

Most of the more general literature does not address the relationship between land and housing markets directly. The literature on land prices tends to be concentrated on price determinations at the local level and is dominated by the neoclassical model of urban land use, in which the total supply of land in the city centre is fixed, so that the price and type of use are determined by demand (Alonso, 1964). At the periphery of the urban area, the supply of land is infinitely elastic, so that price is determined by the cost of transferring between uses. The model is

modified by various writers to include time, expectations, risk, and uncertainty, and to enable urban sprawl, vacant land, and the higher price of urban as compared with agricultural land values, even at the urban fringe, to be explained at least in principle (see, for example, Evans, 1983; Neutze, 1987; Wiltshaw, 1985). The planning system is often 'blamed' for these price differentials, but more complex models of the land market can also be used to explain and predict these outcomes without the need to postulate land-use planning (Needham, 1981).

Within this context many of the more formal discussions of the effect of administrative constraint come from the US experience of zoning. This suggests that prices within a zone increase as a result of zoning (Courant, 1976; Ohls et al, 1974; Peterson, 1974). These predictions are supported empirically by studies in which different zones are compared, and by pre-zoning and post-zoning studies (Beaton, 1991; Katz and Rosen, 1987; Mark and Goldberg, 1986; Pogodzinski and Sass, 1990; Pollakowski and Wachter, 1990).

In the United Kingdom the most important research based on this approach is that by Cheshire and Sheppard (1989; 1990). In this work an area of 'strong planning' (Reading) was compared with one of weak control (Darlington), while at the same time attempts were made to take account of other differences between the two towns that economic theory identifies as relevant, of which the most important were household incomes, population size and transport costs. Using hedonic pricing, they estimated that local planning regimes imposed price differentials of 2% to 12%, depending on house type, between Reading and Darlington. If the constraining effect of the green belt was also taken into account, the price difference ranged from 3% to 17%, whereas, if housing densities in Reading were allowed to fall to the values of those in Darlington, the price difference fell to between 1.5% and 11%.

The authors admit their results are not conclusive. The analysis compares equilibrium states, yet the evidence suggests that differences between Reading and Darlington in fact include a disequilibrium element. A crucial assumption underlying the entire model concerns the income elasticity of housing demand. If land supply rises and prices fall, people are assumed to 'trade up' and buy a bigger house which requires more land. It is not clear that this would happen in all cases, nor is it clear why, if bigger houses requiring more land are built, this would not offset the fall in house prices, at least partially. However, the two relevant issues to be explored in the present study are price differentials and densities in a different context.

An important piece of empirical research in the United Kingdom, undertaken by Bramley at the same time as the Gerald Eve research, falls within this framework, but in it cross-sectional data are used to attempt to determine differential effects between areas. Bramley approaches the problem from the point of view of the effect of the planning system on supply elasticities, which in turn determines the extent to which housing subsidies such as tax relief on mortgage interest will be capitalised into house prices (Bramley, 1989; 1992). He puts forward a model of the housing market in which the price of housing is determined by existing demand conditions and the number of new completions. New output is in turn determined by price, land supply (stock of land with planning permission and flow of new permissions), construction-industry supply factors, and population density. This model is tested with the aid of multiple regression analysis and data from ninety local authority districts. The results show that both planning stance and planning constraints are important in explaining local levels of housing output, but that the release of significant additional land would have little effect on prices.

Bramley (1993) is concerned partly with the same relationships as those in our own study. His regression analysis shows that empirical data for the degree of planning constraint were not statistically significant, but a dummy variable representing the local planning policy stance was. This is disappointing from our point of view because it suggests that empirical data on planning applications and permissions are not as good at explaining housing supply as a subjective and ultimately arbitrary measure is. However, it may be that when we use empirical variables in multiple regression much of the richness of data from planning files is lost.

The behavioural literature provides a very different approach to the examination of local land-price determination. In it a 'process' rather than a 'market' view of development (Drewett, 1973) is taken, and it is focused on the various stages which land goes through when converted from one type of use to another (Barrett and Whitting, 1980). It is generally descriptive rather than predictive. The emphasis is on the decisions made by the various actors involved in this process—landowners, planners, developers, consumers—and how these decisions alter in response to changes within the process and of external factors. The main findings from this approach are that the attitudes of decisionmakers and the characteristics of sites in each locality vary considerably, and imperfect knowledge and information are particularly important in determining outcomes. This implies that both the nature and the outcomes of planning constraints on housing land will differ significantly between localities (Rydin, 1985).

A third strand of literature can be found in the 'structural' approach which concentrates on the joint determination of land and house prices through the distributional struggle between landowners and housebuilders (Ball, 1983). This literature offers a useful critique of the comparative statics approach, although its long-run conclusions are remarkably similar. The empirical work based on structural analysis helps to show how the planning system has had to respond to wider political and economic influences (Barlow, 1990a). Empirical studies of other countries, such as France and Sweden, raise interesting questions but cannot readily be translated into the UK context (Barlow, 1990b).

The literature examined here clearly suggests that the overall planning stance will have an effect on land and house prices and that this effect will vary between localities, as a result both of differences in process and of differences in constraint. The UK literature is however very limited, particularly with respect to quantitative as opposed to qualitative findings. Our starting point was therefore to specify some basic relationships in relation to the extent of planning controls and the effect on land prices, densities, house prices, and output. In contrast to previous studies, our approach was an eclectic one, drawing both on comparative static economics and on more behavioural approaches to the analysis of the development process.

The framework for analysis

The extent of control

The planning system can affect the supply of land made available for housing by:

- (a) restricting the total quantity of housing land across the country as a whole;
- (b) restricting the location of the land that is made available;
- (c) restricting the way that the available land is developed; and
- (d) changing the timing of development.

In principle, it would be possible for the planning system to impose a binding constraint on the total quantity of land made available for housing. In this case a given quantity of land, determined by the planning system, would be made available, whatever the price of that land. The price of housing land would then be wholly

demand determined. However, it is a reasonable hypothesis that total planned supply is, to some degree, responsive to changes in demand factors such as demographic projections, as well as to the extent of demand pressure. Indeed this is required by the government's Planning Policy Guidance (DoE, 1992) which provides the overall policy context for the planning system. Therefore, the total supply of land made available for housing, although less than in a free market, is expected to increase in response to increases in demand.

On the other hand, it is hypothesised that one plot of land and one type of dwelling (or a dwelling at one particular time) is not a complete substitute for another. Therefore a constraint in one location cannot be fully offset by increasing availability elsewhere either between regions or within a given locality. The same is true of dwelling type and timing of permission.

Because of this segmentation, tight constraints in relation to demand in one area may significantly restrict the supply of land available at any price in that area, and these constraints cannot be fully offset by easing constraints elsewhere. Land prices will therefore differ between areas as a result of the different extent of constraint relative to demand.

On the other hand, locations and house types are partial substitutes for one another, so the effect of a given constraint (assuming that demand is not modified) is twofold: (1) housing land prices increase in *all* locations and for *all* house types, as long as there is some substitutability; and

(2) relative prices increase more for the constrained location and house types to the extent that substitutability is not complete.

The extent of overall constraint (and changes in that constraint) on housing land will be reflected in the extent to which the price of land available (or potentially available) for housing is above that in its next best use, with the costs of transfer being taken into account. The extent to which substitutability is not complete will show up in differences in that price gap between different areas. It will also show up in differences between the value of land where permission has been granted for different types of development, low or high density, and in differences between the ratio of house prices to other costs.

Within this general framework, in our study we were concerned with clarifying the major linkages between the land market and the housing market. Thus we looked separately at:

- (1) the quantity of land made available through the planning system and the process by which it comes through the pipeline;
- (2) the demand for that land and therefore both the extent to which that land was taken up for development and the determination of land prices;
- (3) the way that land availability and price, together with additional planning constraints, interacted with demand for housing to modify the density and type of housing development which occurred; and
- (4) the effect on house prices and provision.

Land prices

Some of the land allocated for housing through the planning system will not be taken up because the residual value placed on that land by builders and developers is inadequate to make it worthwhile for landowners actually to supply it. This may be true because current opportunity costs are not covered, as consumers find allocated sites less desirable than those sites already developed or because site development costs are higher than average. It may also be because expectations of future prices differ between developers and owners.

Land may also be held back from development during a particular period because opportunities are greater elsewhere and developers face other constraints. These can be in terms of finance or skilled labour, or because of expectations of better possibilities in the future and differences between supplier and developer perceptions. Developers could be constrained also because delays in the planning system lead to a timing mismatch between allocation and demand. In particular, by initially imposing a hard and fast constraint on land release for housing development at the start of a boom in housing demand, the planning system may help to exacerbate land price volatility and thus speculative land holding.

The greater the extent of housing land 'technically available' within the land-use planning system (that is, allocated or granted planning permission) but not brought forward for development by owners or developers, the greater the effect of a given overall constraint. Especially in areas of buoyant demand, this is translated into higher land prices and lower levels of development; that is, the greater the mismatch between the allocated land that planners think is marketable and what actually is marketable, the greater the effective constraint on land supply.

Therefore one can hypothesise that a given overall supply constraint will generate higher land prices than might have been predicted simply on the basis of allocations in relation to planners' view of demand, as well as more rapid increases in periods of economic expansion. Moreover, these effects will be exacerbated by greater market segmentation.

Densities

As the demand for better quality housing increases with rising affluence, one would expect the demand for plot size, for dwelling size, and for quality of provision to increase. On the other hand, higher land prices can be expected to result in higher densities, as developers attempt to substitute away from land to other factors. In addition the planning system directly affects type and density. In particular at the upper end of the market it often constrains plot size, increasing both the density of new development and the relative price of better quality existing units. At the other end of the market, low-income households can be expected to demand small plots at high densities, but the planning system often restricts densities to maximum levels, thus frustrating this demand. Without measuring income and price elasticities of demand, we cannot make detailed predictions about expected changes in density. We can, however, predict that in a growing economy, densities will not only be higher because of increased demand in the face of an inelastic land supply, but also be less varied than in the absence of constraints.

House prices and provision

By means of restrictions both on the total quantity of land available and on the type and location of development, the total quantity of new housing units actively provided will be reduced. For a given demand for housing, average house prices will therefore be higher. Moreover, because the quantity of land cannot be adjusted as easily as the quantities of other inputs, as house prices rise, the proportion of that price attributable to land will increase. As the extent of the constraint varies between areas, this proportion will also differ between areas.

Because price increases may feed on themselves, stimulating speculative demand, short-term price movements can be perverse. In particular, expectations of future price rises (including those arising from changes in the planning system) may lead suppliers to keep land and housing off the market, and thereby exacerbate price effects. Market segmentation and heterogeneity may also be important. For instance, if land supply is increased in a popular area, the resultant potential

house-price reduction, by drawing demand into that area, will limit the extent of price reduction. At the limit, prices in that area may not decline in relative terms to any observable extent. If, on the other hand, land is made available in an area of relatively low demand, prices may fall in this area without bringing into the area significant additional demand from more desirable locations, and thus increase price relativities.

Taking all these linkages into account, we postulate that the most important factors relating the planning system and land supply with house prices are:

- (1) the extent of the overall constraint on land availability and how this varies between areas relative to demand;
- (2) the extent of substitutability between areas and types of dwelling, most importantly in terms of demand, but also in terms of land supply;
- (3) the extent of substitutability of land for structure, and the size and nature of that structure;
- (4) the extent of speculative effects on price, on differential evaluations of price between land owners and developers, and on bringing forward land for development in the short term; and
- (5) the extent to which volatility increases costs and speculative effects and so limits building activity.

It is these relationships which were examined in the research undertaken: in four case-study areas for the DoE; and in two areas within Cambridgeshire for the Joseph Rowntree Foundation.

Main findings of the research

The main body of research carried out for the DoE consisted of four case studies, two in the South East, and two in Yorkshire and Humberside. The areas were chosen to lie along a spectrum from high demand or high constraint to low demand or low constraint. Reigate was near the high demand or tight constraint end of the spectrum—Wokingham, also in the South East, and Beverley in the North were in the middle and regarded as similar to one another—whereas Barnsley was perceived to be at the low demand or low constraint extreme.

For these case-study areas, data were collected about the planning regime, the numbers of planning applications and their outcome, the attitudes of builders and planning officers, and the number, types, and densities of dwelling built, as well as about land and house prices over a twenty-year period.

The national study

Planning stance

There was evidence of increased responsiveness by the planning system to changes in demand over the period, but still within a framework of overall constraint. In Reigate, which is surrounded by green belt almost everywhere, the pattern of planning applications followed the rise in house prices in each of the three periods of house-price boom: 1971–73, 1978–80, and 1986–88. In the early part of the study period, planning decisions took a long time, and lagged applications by almost two years. This delay was reduced by the end of the 1970s, and during the 1980s the planning system became much more efficient in processing applications. The result was that, although during the early 1970s completions did not rise at all in response to the extremely steep increase in demand, by the end of the 1970s completions were able to come onstream in time for developers to benefit from the next boom. This improvement in timing was continued in the 1980s.

In Wokingham, large-scale land release was included in local plans so that there were apparently few constraints. However, the process of development during the 1970s was plagued with problems relating to ownership and infrastructure. As a result, the increase in planning applications was very small in response to the increase in house prices. But by the end of the 1970s these problems with land supply had been ironed out and there was a regular stream of applications, reflecting a planned expansion rather than a response to short-term market pressures. In this, Wokingham was an example of new housing development which was strongly planning led rather than market led.

At the other extreme, in Barnsley, there was also a large and consistent land release, and in addition there were a large number of outstanding planning permissions. Despite this, there was an element of constraint in that planning policies attempted to channel new housing development towards selected locations relating to employment generation rather than housing market demands. Thus, there is less overall restraint than in the South East, but the planning system was still restricting developers' choice of sites.

Housing land prices and the land market

One way of assessing the effect of the land supply constraint is to compare the housing land price with the value of the land in its next most valuable use. Usually the previous use was agriculture, although this was not the case in Reigate, where agricultural sites were unimportant and urban sites were the main source of housing land. Nearly 20% of housing units were built on former commercial sites in Reigate during the 1980s. In three of the case-study areas, agricultural land prices reflect what could be expected to be the relevant opportunity cost of housing land.

Table 4. Housing and agricultural land prices in the four case-study areas (1975–1990) (source: Gerald Eve, 1991).

	Housing land price/ha (£)	Agricultural land price/ha (£)	Agricultural land prices as percentage of housing land prices
Reigate			
1975	75 000	1 630	2.2
1980	97 000	3 460	3.6
1985	629 000	4 450	0.7
1990	972 000	4 940	0.5
Wokingham			
1975	67 000	1 980	3.0
1980	219 000	6 180	2.8
1985	474 000	5 560	1.2
1990	1 070 000	6 790	0.6
Beverley			
1975	19 000	1 750	9.2
1980	88 000	4 300	4.9
1985	140 000	5 300	3.8
1990	480 000	4 940	1.0
Barnsley			
1975	27 000	1 450	5.4
1980	38 000	4 450	11.7
1985	80 000	5 580	7.3
1990	210 000	6 180	2.9

In Reigate they provide a maximum estimate, as the relevant alternative valuation (commercial land) would be even higher. Despite the special case of Reigate, agricultural land prices can be taken as the relevant opportunity cost of housing land because it is normally the cheapest and easiest land to develop for housing. Therefore the difference between the price of housing land and the price of agricultural land is some measure of the constraints imposed on housing land supply by the planning system together with other factors, such as the cost of infrastructure.

Table 4 shows agricultural land prices as a proportion of housing land prices in each of the four case-study areas. The agricultural land prices were provided by the Valuation Office of the Inland Revenue, and represent their estimate of the 'ceiling' values of agricultural land over the twenty-year period. In each case the location of this land was at or near the urban fringe and the valuation specifically excluded the 'hope' value.

These figures suggest that, even though at a behavioural level the planning system became more responsive, at a more general level the system was becoming tighter, especially in the South East. Undoubtedly the extreme findings in 1990 reflected a disequilibrium position. Even so, the general trends seem clear.

The process by which these prices were determined was addressed through the housebuilders' survey which confirmed previous studies and indicated that builders perceive competition for land as being very intense. Developers decided their bid price for land in the first instance by adopting the residual valuation model. This involves estimating the sale price of the finished houses from current prices in the housing market, subtracting all costs of production including interest and profit, leaving the balance available for land purchase.

However, the survey indicated that for many developers this had been merely the first step. They frequently did not believe that they could obtain land at the residual price. A higher bid was therefore calculated by reducing costs, particularly profit margins, and by reducing the production process to the shortest possible time in order to arrive at a residual valuation that might enable them to secure the land. In addition it appeared that most builders built in expectation that house prices would continue to rise. Builders in the survey generally denied this, but it is the best possible explanation for experienced developers bidding for sites at prices which would produce no profit unless house prices increased.

Densities and house types

The case-study data clearly showed that the planning system affected the form of new housing production and the density of development both directly, through the specific details of planning permissions, and indirectly, by increasing the price of land and therefore the incentive to reduce the quantity of land employed in the product mix. Housing densities increased both in the South East and in Yorkshire and Humberside during the study period, but a much greater increase occurred between the 1960s and 1970s when densities rose by 50% or more on typical estate developments. During the study period, the increase was greatest in Reigate, but was also significant in Wokingham and Beverley. Developers thus found it more difficult to build large houses in the South East, notwithstanding the likelihood that demand for such houses increased with rising affluence. In Reigate smaller types of unit were also produced. More detached houses were built in Wokingham, but these were small units on small sites. It was only in Beverley that there had been an increase in the quality of larger house types built, which suggests that expected demand pressures were here transposed, at least to some extent, into investment rather than prices.

Market segmentation

Reigate and Wokingham were chosen because they are at similar commuting distances from London and therefore can be seen as substitutes. The question was whether, for example, a three-bedroom detached house in Wokingham is seen as an exact substitute for the same house in Reigate. If so, restricting building in Reigate while allowing supply to adjust in Wokingham would enable investment in Wokingham to offset the house-price effect in Reigate. Equally, if supply were constrained in Reigate but there was no capacity to generate offsetting increases in housing supply in Wokingham, prices of similar dwellings would rise in both areas, but differentials would remain the same. If, on the other hand, markets were segmented, price differentials would increase as a result of changes in demand, and overall investment would be lower as there would be no transfer of that demand.

Local house-price data suggested that there is considerable substitutability between Reigate and Wokingham (the case-study areas in the South East), but not between Beverley and Barnsley (the case-study areas in the Yorkshire and Humberside region). The detailed data suggest that the substitutability in the two areas in the South East was strongest for smaller dwellings, and decreased as the size and quality of houses increased. The price differential between Beverley and Barnsley also increased as housing size increased. This suggests that segmentation becomes greater as dwellings become less standardised and particularly as specific locations are seen as valuable assets. However, it is acknowledged that Barnsley and Beverley may not be such close substitutes as Reigate and Wokingham because of the composition of local demand.

House prices

The final issue was the extent to which the number of new houses built and the price of new houses were influenced by land supply. The case studies showed that the impact on house prices of restricted land supply was greater in the South East, where land constraints of all types (including planning but also other factors) appeared to have increased house prices by as much as 35–40%. In Yorkshire and Humberside, the effect on house prices was considerably less, although it had increased during the latter part of the 1980s. To offset these effects would require significant additional land release, on a national scale and over a considerable time period. Large land release in one locality on its own would not be sufficient to reduce average prices significantly, even in that locality. Constraints on land supply would have to be relaxed significantly throughout the South East to have any major impact on average house prices there. Moreover, even if a reduction in house prices could be achieved by expanding land supply, this could be expected to lead to an increased demand for larger units, offsetting part of the house-price decline.

The Cambridgeshire study

In the Cambridgeshire study we aimed to examine the question of market segmentation at the local level in order to evaluate the extent to which land release in one area could offset planning constraints in another within a given employment area. We concentrated on two areas, Fenland and South Cambridgeshire, which are in close proximity within a single County Structure Plan area, but which have contrasting planning stances at the local level.

Land release

Between 1981 and 1991, land release by the planning system in Fenland exceeded the levels proposed by the Structure Plan, and rose sharply in the second half of the decade (see table 5). In contrast, in South Cambridgeshire the stock of outstanding

permissions fell during the decade. The number of houses built in Fenland was well above Structure Plan forecasts; in South Cambridgeshire they were slightly below Plan levels.

Table 5. Outstanding planning permissions in Fenland and South Cambridgeshire (1981–1991) (source: Jackson et al, 1994).

Year	South Cambs	Fenland	Year	South Cambs	Fenland
1981 q2	2 538	2 322	1986 q4	2 831	2 797
1981 q4	3 429	2 241	1987 q2	2 690	2 878
1982 q2	3 903	2 300	1987 q4	2 359	2 631
1982 q4	3 658	2 286	1988 q2	2 088	3 386
1983 q2	3 408	2 396	1988 q4	1 935	4 205
1983 q4	3 387	2 345	1989 q2	1 982	5 268
1984 q2	3 020	2 001	1989 q4	2 112	6 264
1984 q4	2 913	2 091	1990 q2	2 128	6 211
1985 q2	2 918	2 181	1990 q4	2 232	6 306
1985 q4	2 790	2 148	1991 q2	2 187	6 801
1986 q2	2 914	2 511	1991 q4	2 142	6 571

q2 second quarter; q4 fourth quarter; South Cambs South Cambridgeshire.

Housing land prices

At the start of the decade, housing land prices in Fenland were only about four times the level of prices for agricultural land, which suggests that, given other constraints, there was little planning constraint in the supply of land for house building (table 6, see over). At the same time, in South Cambridgeshire, housing land prices were approximately five times the level of those in Fenland, and some twenty times the level of agricultural land prices. During the housing boom up to 1988, housing land prices in both areas increased dramatically. The increase in average prices in Fenland between 1981 and 1989 was of the order of £120 000 per acre, compared with an increase of £290 000 per acre in South Cambridgeshire. The proportional increase was, however, much greater in Fenland compared with that in South Cambridgeshire (1100% as against 700%), because of the much lower base price.

House prices

Average house prices in the two districts displayed similar trends through the decade (the average rise was 240% in Fenland compared with 220% in South Cambridgeshire). Average house prices in South Cambridgeshire were £36 000 in 1981 compared to £20 000 in Fenland. The difference in average house prices between the two districts then increased to £46 000 in 1989. There was little significant variation found in the price trends for particular kinds of dwellings.

The differences in land and house prices increased in this period, which in turn meant that the proportion of the house prices represented by land acquisition costs increased very significantly during the boom. Once the market turned down, land prices fell proportionately less in Fenland than in South Cambridgeshire, and are still well above agricultural land prices. The Cambridgeshire project confirmed many of the findings from the national project, and showed that there was considerable substitutability between areas but that overall planning constraints generate significant pressures both on land prices and on house prices.

Table 6. Housing land prices in Fenland and South Cambridgeshire (1981–1991) (source: Jackson et al, 1994).

Year	Housing land price (£ per acre)	
	Fenland	South Cambridgeshire
1981	8400	42000
1982		56900
1983	16900	
1985	26100	89700
1987	57400	239000
1989	137800	335000
1991	61900	104000

Notes:

In some years there were very few housing land sales, therefore these data must be treated with caution.

There were too few agricultural land sales during the period to provide meaningful data. However, agricultural land prices during the period did not vary with the housing boom. Therefore we have taken agricultural land prices even on the most productive land in Fenland to be no more than £2000 per acre at any time during the decade. Nor do agricultural land prices vary particularly between Fenland and South Cambridgeshire, except that to the extent that the most productive land lies in Fenland, prices there are generally higher than in South Cambridgeshire.

Data we do have for agricultural land sales in Cambridgeshire as a whole are as follows (although again these must be treated with caution). The average price per acre for agricultural land (arable or bare land, or grassland or pasture land) was: £111.60 in 1986; £165.20 in 1987; £128.50 in 1988; £41.80 in 1989, but based on only four transactions. (Source: Farmland Markets, published biannually in February and August, Savills.)

Generous release of land by the planning system at district level cannot fully mitigate the effect of house and land price increases in a period of boom in the national house market. Nor is housing land in one area a perfect substitute for housing land in another, so that it is not possible to compensate fully for constraints in land supply in one area by releasing more land in another. Some of the demand which was suppressed in areas of constraint does, however, move to less constrained localities within the same employment area, and this is more noticeable at the bottom end of the market.

Conclusions

The empirical research discussed here was concentrated on the negative effects of planning constraints. The aim was not to examine costs and benefits, and thus to answer the question whether these constraints are socially desirable, but rather to examine the extent to which the planning system can be properly characterised as reorganising rather than constraining demand. If this were the case, the positive benefits of land-use planning could be achieved with relatively few costs, either to the consumers in the form of house prices or to the productivity of the economy as a whole. Land could be released in areas where there were few external costs to development, and constrained where environmental and community benefits would be lost without significantly increasing land and house prices overall.

Within this general question lay a rather different one relating to the nature of constraint. Planners often state that their aim is to ensure an adequate supply of land to meet demand, and thus that they place no overall constraint on the total

supply made available. Economists argue that this approach does not take account of the true nature of demand, and in particular that it excludes aspects of quality, location, and timing. Thus it is possible for planners to argue that they are placing no constraint on production, at least in some parts of the country, although in terms of the market very real constraints are being experienced and are reflected in higher prices and lower output.

The evidence from our two studies suggests that, although local housing markets are fairly open and, in planners' terms, constraints are small in certain (usually relatively undesirable) areas, the land-use planning system does impose significant costs. These are reflected both at the margins of urban areas, where housing land prices are far above the prices of agricultural land, and in the differentials in these ratios between areas.

The evidence also suggests that the ways in which the planning system operates tend to exacerbate price increases at time of economic growth but cannot help to generate higher levels of output during periods of stagnation. As a result, overall investment levels are further constrained and average prices are higher than in the absence of constraints.

Finally, the evidence suggests that the planning system tends to generate a narrower range of housing types and densities than would be expected if the market were allowed to operate more effectively. Perhaps more importantly it suggests that constraints in land supply have been enough to offset almost fully the increases in demand for lower densities which one would have expected to be associated with income growth over the last twenty years.

The changes that have been made to the legislative framework since 1990 are aimed at making the planning system more certain and therefore at reducing the costs of the system to developers. Under the Planning and Compensation Act (1991) the development plan will be the principle factor determining the outcome of a planning application 'unless material considerations indicate otherwise'. In Planning Policy Guidance 3 (DoE, 1992) local planning authorities are urged to ensure that adequate land is made available in these development plans. The fear, however, is that in the plans demand will be interpreted as planners, rather than economists, interpret it and, moreover, that plans will not be continually updated. If this is the case then the costs identified above will increase, particularly at times of expansion. It is too early to test this hypothesis empirically in the current environment of an overhang in supply. Even so, there are already signs of land price increases, although from a very low base.

The British experience is perhaps relevant more widely both because it is often the benefits of the planning system which are stressed and because Britain has experienced very considerable volatility in house prices and particularly in land prices. Our evidence suggests that, although clearly these cycles are demand led and are in part inevitable because supply can never adjust as rapidly as demand, the land-use planning system both exacerbates these cycles and increases the costs of production, while reducing the range of choice available to consumers. Although there are clearly significant social benefits to land-use planning, it is also clear that there are significant private costs which also need to be taken into account. The next stage should be to evaluate the quantitative effects in terms of numbers of units lost and types of unit supplied.

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