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The introduction of price signals into land use planning decision-making: a proposal

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Abstract

Although directed to the British system of Town and Country Planning the analysis and suggestions made in this paper have relevance for many OECD countries, including some with systems of land use regulation which have evolved entirely independently of the British. The paper starts by characterising the basic features of the British planning system and explains in brief outline how it works viewed from the resource allocation point of view of an economist. A conclusion is that the system explicitly excludes any price signals. The next section sets out a way in which by using the price premiums of neighbouring parcels of land zoned for different uses, information generated by price signals could be integrated into the decision-making processes of the planning system. The third section summarises the analysis and evidence supporting the need for such an adaptation of the planning system and explains the main problems that have arisen as a result of excluding price information in determining land supply.

The Introduction of Price Signals into Land Use Planning Decision-making: a proposal

1. Introduction

The setting up of the Barker Enquiry in 2003[1] signalled not the end of an era but the beginning of the end of an era. Land use planning is about the allocation of a scarce resource to different uses but historically it has operated in a specialised arena of its own. As is argued below the system explicitly excludes price information. Yet it has fundamental implications for both prices and, in wider terms, for economic competitiveness. Again, as is shown below, the effects on prices are incremental over time. Historically they have not been such as to attract the attention of mainstream economists or economic policy makers: until now. Now the impact on housing markets, and even on wider issues of macroeconomic policy and savings behaviour, has escalated to the point where land use planning has got onto the agenda of economic policy makers and finance ministers. This is not just the case in Britain. It is also true in the US: the June 2003 issue of the *Federal Reserve Bank of New York Economic Policy Review* was entirely devoted to the economic impacts of land use regulation. The Koreans are holding a high level policy symposium on the effects of land use regulation on the international competitiveness of the Korean economy in 2004. Planners have to adjust to a world in which the economic as well as the planning logic of what they do is not just analysed but central to their concerns. This paper suggests a way in which economic information could be effectively introduced into planning decision making while leaving most of the socially valuable functions of planning in tact.

The basic structure of land use planning in Britain was introduced in the 1947 Town & Country Planning Act. Although it has been amended and modified since then it has remained unchanged both in terms of its fundamental aims and mechanisms. It is almost certainly the least changed feature of the sweeping changes introduced by the 1945 Attlee government. Its main aims were encapsulated in 'The Containment of Urban England' (Hall *et al* 1973): these were to: define urban envelopes outside which development would not be permitted; maintain open space both internally within built up areas but more particularly in Green Belts and other less stringently protect swathes of agricultural land surrounding urban areas; to promote 'orderly development'; protect visual amenities; and prevent development in designated areas of countryside of special scenic importance[2]. Although the proposals outlined in this paper are focused on the British context, since systems based on the 1947 British system of Town and Country Planning were subsequently implemented in many other countries, the arguments made here have relevance far beyond Britain. Indeed with changes in the US and the growing application of growth boundaries to communities there, they have increasing relevance to systems of land use regulation not derived from the British experience.

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[1] Established by Gordon Brown in his Budget speech: the enquiry was into the operation of the British housing market. Its remit specifically related to the potential impact of land use planning on housing supply and the instability of the British housing market. The final report is due in March 2004 but an interim report was published in November 2003 (Barker, 2003)

[2] This is intentionally a simplified summary omitting some elements which were much discussed at the time (such as 'betterment' and development by the State) in order to focus on essential elements which have remained. In addition the discussion below in relation to the differences between the British system where the emphasis is on flexible development control in contrast to other systems which rely on the certainty of a zoning system overstates the contrast.

The process and procedures set up to make decisions within the new 1947 planning system were defined in purely administrative, legal and physical terms. Judgements as to whether development would reduce amenities or cause transport problems were on the basis of professional norms which were defined in physical terms but the parameters of which rested on purely subjective and/or aesthetic values. The system was developed on the basis of concepts such as 'housing need' (rather than demand), and on design norms with, for example, densities defined on physical criteria – so many dwellings per acre. Concepts such as 'visual amenity' had - and continue to have - an important role but were subjectively defined. Although in determining how much land to designate for housing development, population change and migration were allowed for, these were not modelled in ways that were becoming commonplace in labour economists' studies of migration in which real labour market opportunities, differential house prices and, more recently, quality of life and local public goods (Gyourko & Tracy, 1991) played an important role; rather, they were modelled mechanically from supposed givens such as employment or 'land availability'. Similarly the driving force behind changes in 'housing need' (which were translated into changes in land availability via constant physical densities) in a locality was seen as changes in household numbers not changes in real incomes.

The whole planning system has thus grown up without any account being taken of price information or other economic indicators. The system decides the physical quantity of land to be made available for any given use but market forces then allocate such land to competing bidders. Moreover no account is taken of the possibility that the most profitable use of land may be to leave it undeveloped so as to maintain the option of later development (Titman 1985). Land which has been made available for housing (or any other specified use) is deemed to be a part of 'land supply' even though the owners of the land may rationally choose to keep such land vacant. This leads to a situation in which planners rationally decide that there is sufficient land available for housing (for example) because projections of household numbers at permitted densities can be accommodated on the land which has been designated but the available land is not developed either because the owners of designated land have objective functions which include other factors than direct monetary returns or – more probably given the pattern of land prices that has resulted from the constraints imposed on land supply – choose to keep the land vacant to retain the option of more profitable development at a later date.

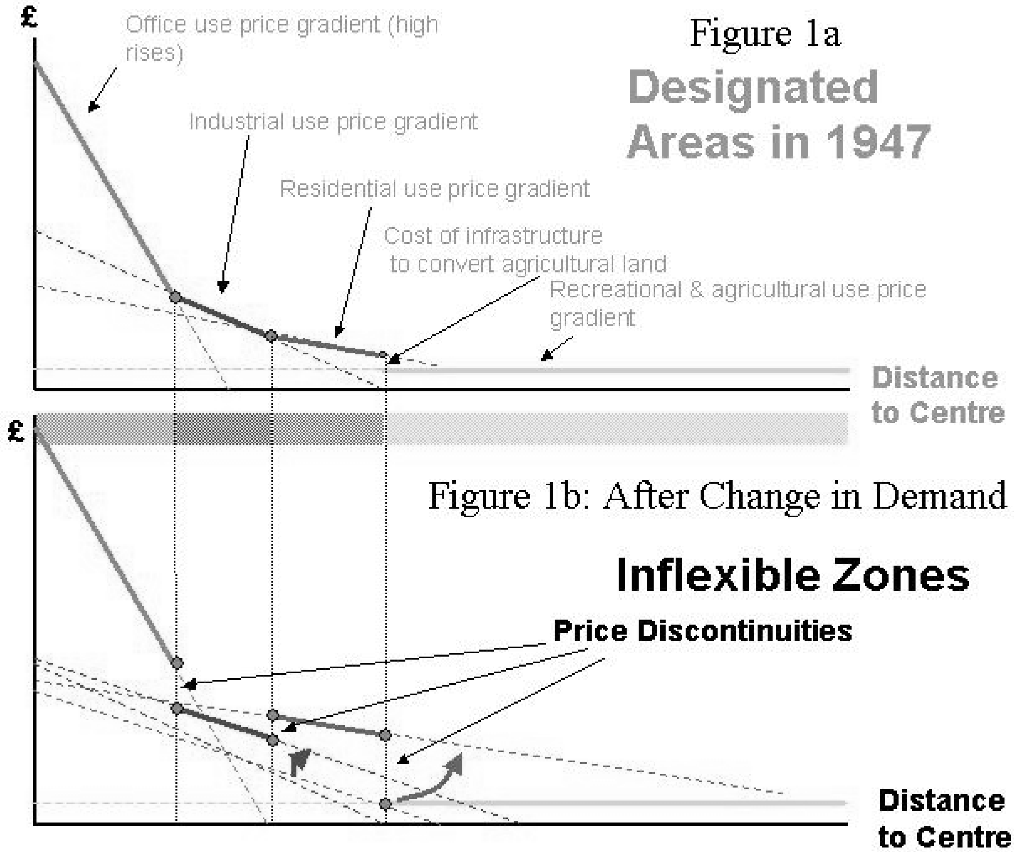
A further feature of the British planning system is that it rests on the process of 'development control'. Development is legally defined so that it is a right separated from freehold tenure of land. 'Development' is defined to mean any change of designated use. This means that freehold tenure does not include rights to change the use of land. 'Uses' are themselves legally defined so that the supply of land for each legally defined 'use' is separately controlled by the planning system. Thus land which is designated for agricultural use cannot be converted to housing use without specific planning permission from the planning authority; but nor can a newspaper shop be converted into a betting shop or an estate agents without planning permission; nor an industrial building into offices or into housing.

It is worth highlighting two aspects of this system which are peculiar to Britain (and to planning systems modelled on the 1947 Act elsewhere in the world). The first is the specific separation of ownership from development rights and the particular legal definition of what constitutes 'development'. The second is the process of 'development control' whereby permission has to be individually obtained for any change of use defined as 'development'. This is in distinction to planning systems which use 'zoning' (as in the US) or a 'Master Plan' (applied in most of continental Europe) in which if a form of development is within the rules

applying to that parcel of land then it can automatically be undertaken so long as it conforms to the plan and to other local regulations (such as safety or building regulations).

As is shown in section 3 below, the allocation of land supply for each urban purpose by fiat quite independently of price has resulted over time in the emergence of very substantial price discontinuities for adjoining parcels of land. This is because although the total supply of land for each category of use in each locality is allocated independently of price, the market then allocates the determined supply of land for each use through the price mechanism to competing occupiers or developers. These price discontinuities, therefore, reflect the current expected degree of supply constraint on land for each type of planned use in each locality. So they provide a flexible price signal which will vary both over time and between cities yielding information about the relative scarcity of land for specific uses at that particular location and time. A stylised example is illustrated in Fig 1. Fig 1a shows the zones determined at some date soon after 1947 accommodating three land uses – commercial, industrial and residential. At the containment boundary there was a discontinuity between the prices of agricultural land and land serviced for residential development because of the infrastructure costs embodied in the value of serviced land. Over time it is assumed as incomes rise and the structure of the local economy changes, the demand for commercial land and for residential land rises relative to that for industrial and agricultural land. For the purpose of simplicity and exposition it is assumed the zones of each land use do not change to accommodate these changes in demand. The prices of land for commercial and residential use are consequently bid up leading to the emergence of discontinuities in the land values of adjoining parcels of land in different use zones.

Figure 1: The Emergence of Land Price Discontinuities in the Face of Fixed Supply



2. Introducing price signals

This observation provides a potential means of introducing economic information into the system of planning decision making in a politically neutral and quasi-objective way. At present local planning authorities in determining their decisions exclude all factors which are not defined as 'material' to the case to be decided. Factors which constitute such 'material considerations' are defined within the planning legislation and are taken into account since, if they are not, the decision of the planning authority is liable to be overturned on appeal. Nevertheless planning authorities are quasi-political bodies and since they are very local – Districts - they are under pressure from local interests. Local interests are highly asymmetric and heavily biased to reflect those who suffer the costs of development rather than the interests of those who may benefit[3].

The planning system is designed to generate amenity benefits and it can be shown that it does. Open space and the separation of industrial from residential development are valued. The problem is that given the constraints on land supply that have been entailed in generating these benefits it seems that – at least in areas of high demand - there is a substantial, indeed serious, net welfare loss associated with producing them. Householders in areas such as Reading would be significantly better off if constraints on land supply were relaxed (see Cheshire and Sheppard 2002).

The suggestion here is that the premium in land prices for one use over another at zone borders should itself constitute 'a material consideration' which planning authorities would be required to take into account in determining development decisions. If the premium exceeded some specified threshold then there **should be a presumption that development permission would be granted** unless, and only unless, it could be shown that the excess premium reflected amenity or economic values generated by retaining the land in its current use; and that these **amenity values exceeded the current premium**.

To implement such a change would require three problems to be solved. The first would be to provide a neutral mechanism for estimating current land values in any given use. Two methods suggest themselves. The Valuation Office through the district valuers already provides a service along these lines. Selective results are reported twice a year in their *Property Market Report* but in fact estimates are produced for all Districts. An alternative might be to require the would-be developer to provide market evidence and/or independent valuation evidence with respect to the premium. This has recently been made easier by the disclosure of price information by the Land Registry. The planning authority could of course, challenge such evidence. It would be reasonable to measure the mean premium over, say, two years rather than rely on a signal of perhaps a purely temporary shortage of supply. Markets can change rapidly, especially given the constraints on supply that have been accumulating since 1947 with the consequent price volatility and probably an increasing role of expectations about future price movements.

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[3] There is an endemic problem in the planning process of internalising externalities. The cost of new residential development, for example, will include disruption during construction plus loss of amenities for existing residents if, for example, they lose views or access to open space. These are not just losses of amenities but financial losses too since these values are capitalised into house prices. As Fischel (2001) argued, the fact that houses are non-liquid, immobile but major components of most individuals' asset structures makes the defence of their value very important. Benefits will be widely spread in slightly lower regional house prices and a more competitive regional economy. In some cases (Terminal 5 at Heathrow might be an example) benefits are spread geographically even wider than the sub region or region.

The second problem would be to determine the value of the **threshold,** a premium over which would constitute a 'material consideration' generating a presumption of permission being granted. There is a strong argument that this threshold should be set at the same level over the whole country because if set at the local level there would most likely be attempts to manipulate it to maintain the status quo. On the other hand – and perhaps politically helpful in getting the mechanism accepted – the threshold could be determined as a function of local house affordability.

Bringing new land into urban use imposes significant infrastructure costs. It would seem appropriate that the would-be developer should pay these. The full infrastructure costs, however, include not just those relating to the site itself and connecting it to road systems and utilities but the full financial costs to the community at large including additional policing, education, regional transport infrastructure etc made necessary by the development. It is useful to think about these two types of infrastructure costs separately as:

1) Infrastructure directly associated with bringing the site into use (internal transport, sewage etc plus costs of connecting these services to local networks); and
2) The wider financial costs to the community external to the site itself.

The first set of costs is already paid ‘in kind’ by the developer so that there is an incentive to develop sites where such costs are minimised. The amount involved is determined both by the nature of the site (‘brownfield’ sites tend to be significantly more expensive to develop than ‘greenfield’ ones) and the regulatory standards that are imposed by public authorities. The second set of costs should take the form of an *Impact Fee* paid to the local authority.

At present there is a very imperfect system based on the idea of ‘planning gain’ and implemented through ‘Section 106 Agreements’ negotiated between the local authority and the developer. The aim is to negotiate some community benefit such as open space or affordable housing which the developer will pay for. These agreements have high transactions costs associated with them and are very imperfect. If changes to the planning system such as those proposed were implemented, the windfall gain from obtaining planning permission would be significantly eroded or eliminated making it more difficult to obtain substantial gains from such agreements. Moreover the outcome they produce depends on the skills of the negotiators and the particular circumstances of the parties involved, including current local political priorities and the news value of the agreements. Thus as well as being very imperfect in terms of outcomes Section 106 Agreements generate a significant barrier to entry for new developers. They generate economies of scale for developers. The larger developers are the more expertise they acquire both in terms of knowledge allowing them to target Section 106 Agreements to the particular concerns of local authorities and in terms of their ability to negotiate outcomes favourable to the developer.

Since the aim of the proposed change is to move in the direction of a more objective, common currency of decision making it would seem far more appropriate to replace Section 106 agreements with a simple Impact Fee as is widely used in the US. Apart from the advantage of transparency Impact fees would generate a useful income stream for local government independent of central government and related to their needs. For residential development in southeast England total infrastructure costs (i.e. both type 1 and 2) are reported to be perhaps £400 000 to £500 000 per acre but more precise estimates would obviously be necessary. The level of Impact Fees should not be a matter of local discretion since if it were their value could be manipulated to prevent any development. But their value could vary from place to place, using agreed formula, to reflect the differential costs of new development in differing

regional contexts where, for example, infrastructure was already congested compared to other contexts in which there was spare capacity in the system.

Table 1: Some recent estimates of values of non-urban land

			Present value per ha	
Land Type	External Benefits	£ per ha per year 2001	PV @ 3.5%	PV @ 6%
Urban Core Public space	Recreation, landscape tranquillity	54,000	10,800,000	1,800,000
Urban Fringe (Greenbelt)	Recreation, landscape, ecology	889	177,800	29,600
Urban Fringe (forested)	Recreation, landscape, tranquillity, ecology	2,700	540,000	90,000
Rural forested land (amenity)	Recreation, landscape, tranquillity, ecology	6,626	1,325,200	220,800
Agricultural land (extensive)	Recreation, landscape, cultural heritage, ecology	3,150	630,000	105,000
Agricultural land (intensive)	Landscape	103	20,600	3,400
Natural & semi-natural land (wetlands)	Recreation, landscape, ecology, hydrology	6,616	1,323,200	220,500

Source: Riley (2002): derived from ODPM *Appraisal Guidance, Valuing the External Benefits of Undeveloped Land – a Review of the Economic Literature*

Thus an owner or developer could apply for permission for residential development on a site on the edge of Reading presently in agricultural use. The market price of agricultural land at the urban fringe is currently some £2,500 per acre while the price of residential land appears to be at least £2 million per acre (see the values for Shinfield in Table 5 or the current price of land on the Wokingham/Bracknell border). If the full costs of infrastructure were transferred to the developer then the combined value of both the direct site-related and community costs might be say, £500 000 with £200 000 representing the site costs and £300 000 representing the community costs. US research (see Ihlanfeldt and Shaughnessy, forthcoming) shows that Impact Fees are fully capitalised in the price developers pay for land. Since developers are already paying for the site-related costs, imposing an Impact Fee of £300 000 per acre could be assumed to reduce the market price of land to £1.7m in the example being considered (although there is the issue of any expected costs of Section 106 Agreements that might be capitalised into land prices in the present system). One could reasonably argue, therefore, that the appropriate **threshold** should be zero if an impact fee is imposed. Since, however, there are substantial short run changes in land prices (for each use) and perhaps other uncertainties then one might argue that one should select a 'conservative' threshold i.e. one that did not trigger development in response to short run cyclical changes in the market. In that case the threshold might be set at, say, £197 500 per acre. In the example being considered, therefore, there would be a presumption of development unless the amenity value associated with the land in its current agricultural use could be shown to exceed £1.5 million per acre.

Similarly, to take the current situation, there would be a presumption that the land on the Wokingham/Bracknell border, reported to be worth £3 million per acre for residential development but considerably less for its designated industrial use, could be developed for residential purposes. Since it was already designated for urban development it could be

presumed that there were no 'amenity benefits' associated with its current designation and that all the expected economic value associated with developing it for industry would already be reflected in its market price for industrial development. An Impact Fee should be imposed since there would be community-wide infrastructure costs associated with the development. Even if it had been developed for its current designated use there would have been a case of an Impact Fee.

This brings one to the third practical problem that would need to be solved: how amenity benefits could be estimated if the planning authority sought to object to the presumption of development. It is likely that such cases would arise. Where amenity benefits of open land accrue to local house owners then quite standard hedonic analysis can provide reasonable and defensible estimates of their value per acre. The great majority of non-urban land is in intensive agricultural use and provides low levels of such benefit (see, for example, Riley, 2002; or Cheshire and Sheppard, 1995). The values in Table 1 are per hectare not per acre and suggest the amenity value of intensive agricultural land is negligible and could therefore seldom be successfully cited as a public amenity defence for refusing development permission.

The likely result of implementing a change along the lines proposed would be that as the use of the new price information became established within the planning decision making process, new applications for development would be concentrated in locations in which permission would be automatic – i.e. on land currently in intensive agricultural use but with lower infrastructure costs; or land already designated for urban use but not for residential use. If this became the norm across the UK then not only would there be a rapid expansion of land supply for residential development but there would be a permanent change in expectations about future market values of land. Given the price volatility and very substantial long run real increase in developable land values the supply restrictions imposed since 1947 have generated, it is likely that expectations about future price movements have become influential drivers of behaviour for agents operating in the land market. So it would seem likely that a radical change such as that contemplated here would quite quickly substantially reduce the very large premiums now observed.

There are National Parks, Areas of Outstanding Natural Beauty (AONBs) and other areas with specific protection (such as Sites of Special Scientific Interest) in regions of high demand. The values of beautiful views also get capitalised into land and house prices, as does immediate access to a major natural amenity, so sites in such protected areas command a substantial premium. As a result owners of land in such sites might well try for permission to develop. It would probably be administratively and politically easiest to simply deem that amenity values in all such existing specially protected areas were sufficient to constitute a public interest reason for refusing development. The exceptions might be Greenbelts and AONBs. They cover large areas of high demand regions and their boundaries have been determined within the logic of the existing Planning System. A major feature of this has been - as noted above - to define ‘urban envelopes’ beyond which development is not to be permitted. As a result the boundaries of Greenbelts and AONBs have tended automatically to coincide with the existing urban envelope boundaries even though some of the land adjoining the envelope boundary may have only a low amenity value. It often has no particular rights of access and is in intensive agricultural use. In the case of Greenbelt and AONB land, therefore, it might make sense to apply the test of amenity value in current use.

If designated areas (or at least National Parks and a limited set of other designations of most community value) were automatically deemed to generate sufficient amenity value to justify

any premium no matter what that might be then there would almost certainly be pressure for the designated protection of additional land. It would seem appropriate to make the extension of such specially protected areas, therefore, conditional on showing that the amenity values per acre exceeded the development values minus the threshold of full infrastructure costs.

3. The economic background

a) housing and land markets

Over the past 35 years there has been an increasing body of economic literature applying hedonic analysis to the housing market. The theoretical basis of this literature was provided in Rosen (1974) although as an empirical technique hedonic analysis precedes Rosen by more than 45 years. The basic idea is to conceive of complex goods such as houses as being composed of a bundle of attributes each of which commands a price that can be estimated and for each of which a conceptual and in principle identifiable market exists with its own supply and demand characteristics. In the case of housing the most important categories of attributes are those that relate to the physical structure (such as space, number of rooms, specification or design) and those that relate to its location (such as the character of the neighbourhood, the access it provides to the centre of employment, the quality of local schools or access to locationally fixed environmental amenities). For a recent literature survey and summary of progress in the hedonic study of housing and housing markets see Sheppard (1999).

There have now probably been thousands of hedonic studies of housing markets undertaken around the world and no credible study has been done which has not found a strong and significant attribute price for internal space within the house. Far fewer studies have been done which include garden space[4] but those which have been done similarly find that garden space itself is an attribute which commands a price. Table 2 shows a selection of attribute prices and changes in them estimated for the Reading area at two different dates, 1984 and 1993.

It is immediately apparent that prices for attributes that can be considered as in elastic supply, provided through a market process and produced by industrial means (such as central heating or simple changes to construction/design such as the number of bedrooms) fell in real terms between 1984 and 1993. In contrast the price of those attributes not provided through markets but via fiat through the planning system, rose substantially in real terms. Not only that, but the price of garden space rose proportionately most where the supply was most constrained by the planning system: that is at the edge of the urban area where the containment policy was felt most strongly. Garden space nearer to the centre, although it cost more per square metre in absolute terms, increased in price proportionately less. The price of local public goods 'bought' through the housing market, such as access to the best secondary school, rose more or less in line with incomes. This is consistent with most of the costs of private schooling of similar quality - an obvious substitute - taking the form of labour costs.

[4] Since economic theory tells one that the price of housing land will vary systematically with distance from employment centres it is not possible to estimate the price of garden space without also including the exact location of the house with respect to the centre(s) of employment. This also means that in any urban area there is not one price of land but a price function with respect to distance/location. It is consequently far more demanding to estimate both in terms of data requirements and estimation techniques.

Table 2 : Changes in prices of selected attributes: Reading housing market, 1984-93

	1984	1993	% Change
Income (pre-tax)			
from sample	£13,694	£28,969	111.5
South East (*Regional Trends*)	£12,896	£22,027	70.8
Price Level (1987=100)	91.0	141.9	55.9
Sample mean house *price*	£51,066	£94,990	86.0
Reproducible attributes			
Central heating	£4,954	£5,997	21.1
Bedrooms	£2,599	£2,801	7.8
Bathrooms + WC	£4,687	£6,229	32.9
Planning amenities			
Less industrial land	£74	£224	202.7
More open accessible land	£51	£227	345.1
More closed unbuilt land[1]	£102	£60	- 41.2
Space (price per m^2)			
Garden Space :			
at centre	£49.5	£152.3	207.9
at periphery	£4.5	£22.9	404.9
median distance	£12.8	£32.1	151.5
Internal floorspace	£171	£425	148.5
Local Public Goods			
Best secondary school	£7,090	£13,414	89.2

[1]Mainly agricultural land to which there are no significant rights of public access. [2] An estimate from data for 1999-2000 shows this price to have risen to £23,763.

Source: Reproduced from Cheshire and Sheppard 2004 forthcoming

Further insight into the reasons underlying this pattern of price changes can be got from Table 3. There have been very few hedonic studies which move on from estimating the price of housing attributes to estimating the structure of demand for those attributes. Table 3 reports estimates of income elasticities of demand for space – both internal and garden space – and two other attributes the supply of which is market determined. It will be seen that the demand for all four attributes is 'normal' – consumers seek to buy more of them as their incomes increase – and moreover that their estimated income elasticities of demand have increased over time with the exception of the demand for garden space in Darlington. Moreover the structure of demand – or at least the estimated income elasticities of demand for the median income household at each date – is comparatively stable across the three urban areas.

There seems, therefore, to be evidence supporting the conclusion that by restricting the supply of urban space in the face of rising real incomes and a normal income elasticity of demand for space – the operation of the planning system, especially in areas of high income and demand such as Reading - has caused the price of space to rise significantly. If this is correct then a further implication is that over time the price of housing land should have risen in real terms more rapidly than the price of houses. This is because houses are composite goods and there is

substitutability between attributes. If land becomes more expensive then more floors can be substituted for a larger floor plan, terraced or semi-detached houses can be substituted for detached houses or perhaps public open space can be substituted for garden space. Equally, more but smaller rooms with design features such as built-in storage can be substituted for larger rooms. So over time, if land prices rise as a result of a constraint on supply, design, densities and construction techniques are likely to adapt to substitute cheaper for more expensive attributes with the result that house prices rise less than land prices.

Table 3 : Estimated Income Elasticities of Demand for Selected Attributes of Housing: Reading, 1984 & 1993; Darlington 1984 & 1998; Nottingham 1998

Attribute	Reading		Darlington		Nottingham
	1984	1993	1984	1998	1998
Reproducible structure attributes					
Bedrooms	1.593	1.818	1.706	2.240	2.685
Bathrooms + WC	1.585	1.822	1.705	2.212	2.835
Space					
Internal space	1.592	1.789	1.751	2.249	2.518
Land area (size of garden)	1.678	1.791	3.755	1.973	2.592

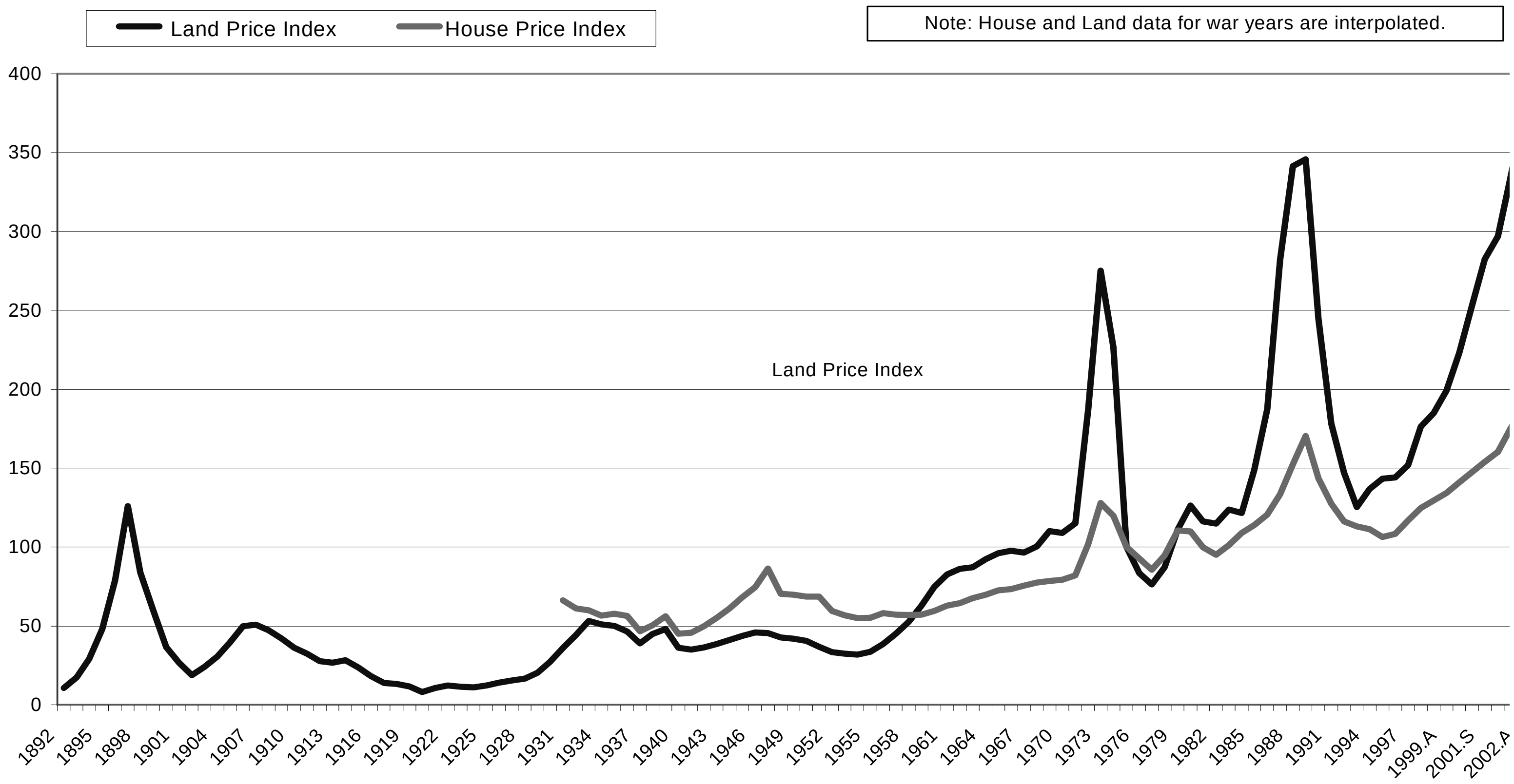
Source: Reproduced from Cheshire and Sheppard 2004 forthcoming

Fortunately it is possible to test this hypothesis. Figure 2 shows land and house prices for England/England and Wales from 1892 to 2002 expressed in real terms with 1975=100. As can be seen the increase in land values (times a factor of 11 in real terms since 1955) greatly exceeded that of house prices (times a factor of some 3.4). Moreover if there is an increasingly tight constraint on the supply of space one would expect an increasing amplitude of the price volatility in the market. Adjustment to short run changes in demand has had to be increasingly through changes in price rather than quantity. This, too, is observed with the amplitude of the cycle increasing over time since the mid 1950s and being very much greater for land than it is for house prices. The point is that the planning system constrains the supply of space (rather than the supply of houses) but space is an attribute not only demanded but one which is highly income elastic in demand.

b) Discontinuities in the land value surface

A further implication of the operation of the planning system in high demand areas is that one is likely to observe substantial discontinuities in land values over very short geographical distances. This was illustrated in Fig 1 and results from the feature of the system discussed above: that it controls the supply of land for each category of use individually independently of price. Thus if housing land is kept in short supply relative to market demand, its price at the urban fringe will rise above the combined value of land for agriculture and the infrastructure costs associated with converting it to housing. Similarly, if land for any other designated use is constrained relative to demand for it to a greater degree than the constraint imposed on the supply of land for use in the adjoining zone, then its price will be bid up above that of land in the neighbouring zone but designated for some other use.

Figure 2: Real Land & House Price Indices (1975 = 100)



Housing land prices are from 3 sources: Vallis (1972) *Estates Gazette* – 1892 to 1969 England: *Housing & Construction Statistics* – 1963 to 1987 England & Wales; and *Property Market Report,* Valuation Office – 1983 to 2002
House Prices: ODPM: Table 502 Housing Market: House Prices from 1930.
Source: Reproduced from Cheshire & Sheppard (2004)

Observing such discontinuities is relatively easy at the urban fringe because the supply of agricultural land is not constrained by the planning system so in high demand areas the discontinuity is large. Moreover since housing is the dominant urban use there is relatively good information on its price at various locations. Table 4 shows estimates of land values in the Reading area for a range of separate uses at a given date – 1984. These estimates were prepared for a study on the economic effects of the planning system undertaken between 1983 and 1986 and were reported in Cheshire and Sheppard (1986). The non-housing land values were estimated by Healey and Baker while the housing land values represent the range reported by a number of local estate agents. The 'Zones' refer to zones of constant[5] value within the total area delimited by the planning system for each use. The higher value zones within each land use category tended to be nearer to the centre of the city. Some early estimates of the housing market impacts were published in Cheshire and Sheppard (1989).

Table 4 : Reading Land Prices: 1984

Land Use	**£ 000's per acre Current**	**£ 000's per acre 2002 prices**
Office use		
Zone 1	7 964-13 241[1]	15 748-26 183
Zone 2	3 806-8 370[1]	7 526-16 551
Zone 3	2 621-5 103[1]	
Zone 4	602-1 308[1]	1 190-2 586
Retail		
Zone 1a	28 779-34 151[2]	56908-67 531
Zone 1b	24 467-27 818[2]	48 382-55 008
Zone 2	12 807-15 794[2]	25 325-31 231
Zone 3	9 786-12 458[2]	19 351-24 635
Zone 4	8 941	17 680
Zone 5	3 020-3 927[2]	5 972-7 765
Zone 6	5 688	
Zone 7	2 539	5 021
Industrial		
Zone 1	400*	791
Zone 2	500*	989
Zone 3	450*	890
Residential		
Edge of existing urban area	120-205	237-405

Source: Cheshire, P. and S. Sheppard (1986)

*Estimated variance ± 5%

[1] Range of observations

[2] Range of estimates varying with exact location and floor plan size/access/permitted structure type

At the time of the study agricultural land values at the urban fringe (stripped of 'hope' value) were – as now - about £2,500 per acre and infrastructure costs were reported as being from £25,000 to £50,000 per acre at 1983 prices. It can be seen therefore that there was a net premium for residential land at the urban fringe of from £70,000 to £180,000 per acre[6].

[5] More precisely values which could not be reliably separated.

[6] An important point to note is that these reported prices are for a quasi market price of land incorporating the capitalised value of all the amenities, expected neighbourhood characteristics and local public goods such as schools. Market prices are to be distinguished from the concept of 'land price' as analysed in the classic monocentric urban model of Alonso, Muth or Mills which refers to the price of land as 'pure-space-with-

However there was also a premium for industrial land adjoining residential zones, for neighbourhood retail land internal to residential or adjoining industrial zones and for land for office use adjoining inner areas zoned for either residential or retail use. The highest priced land of all, however, was for prime retail sites in the main shopping streets in the town centre. Nevertheless at each border the premium was very substantial: at the residential : industrial it was more than £200,000 per acre and at the industrial : retail border more than £2,000,000 per acre. All these figures are at 1984 prices. The third column of the table converts these to 2002 prices simply using the RPI.

Table 5 : Some Residential Land Sales 1999-2002: Reading Area

Address	Size (Acres)	Land Sale Price £/m	Price Acre £/m	No of Units	Contract Date	Distance from Centre in metres
READING, Addington House, 67-73 London Street	0.56	0.750	1.34	n.a.	June 1999	600
READING, London Road/Silver Street (CITY POINT)	1.34	5.025	3.750	102 Flats	Sept 2000	600
READING, Shinfield Road, Met Office	44.6 Gross 19.37 Net	30.00	1.50	310 Houses	n.a.	2400
READING, 29 Queens Road,	0.53	2.12	4.00	46 Flats	Jan 2001	450
READING, 4 Gas Works Rd	1.03	3.60-4.12	3.50-4.00	86 Flats	Feb 2001	900
READING, 105/123 Queens Road	1.00	3.250	3.250	100/120 Flats	Spring 2001	450
READING, Berkeley Avenue, (CAPITAL POINT)	1.45	2.175	1.5	80 Flats	Oct 2001	1000
READING, Shinfield Church Farm	13.89 Gross 10.07 Net	24.3	1.750	140 Houses	Sept 2001	3000
READING, Shinfield, Hollow Lane	10.625 Gross 9.79 Net	19.58	2.00	105 Houses	Oct 2001	3000

Source: Campbell Gordon, Reading

Since about 1965 the economy of the Reading area has become increasingly specialised in the hi-tech and finance sectors. The sharp downturn that took place following 2000/1 has produced a new situation. Demand for housing appears still to be very high but prices developers are paying for sites zoned for industrial use have fallen sharply. Some recent reported prices for residential land in the Reading area are shown in Table 5. As can be seen these remain very high, reaching £4 million per acre in 2001. Since then they appear to have

accessibility-to-the-employment-centre'. This will typically be significantly lower. In the case of Reading it was estimated for 1984 as being from around £20,000 at the urban fringe rising to just over £200,000 per acre at the centre.

fallen back somewhat but the current price reported for a 1.5 acre site on the Wokingham/Bracknell border in August 2003 was expected to be some £3 million per acre[7]. This was for a site currently designated for industrial development, however, so the premium appears now to have gone the other way. There is a discontinuity in the price surface, with residential land commanding a significant premium at the border of the zone because of the sharp fall in interest for industrial development.

4. Conclusion

There is a serious and growing problem of land supply in Britain – most obviously for residential development in regions of high demand[8]. The constraints on land supply (more exactly the supply of space for residential use) have over time fed through to an increasingly inelastic supply of housing. This chiefly arises from the combined effect of there being a highly income elastic demand for housing and garden space (rather than for units of housing) together with a system of land use planning the major aim of which is to constrain space consumption irrespective of any price effects this may have.

Not only has this caused the real price of housing and housing land to rise substantially over the past 50 years but it has caused accelerating price volatility and very substantial price discontinuities for parcels of land which, while they are contiguous, are designated by the planning system for different uses.

These 'price premiums' provide direct information on the shortage of land in any locality for any particular use. Such price premiums should therefore be introduced as 'a material consideration' in the planning decision making process with a presumption that, if they exceed some predetermined threshold, permission to develop will be granted unless the amenity values generated by the land in its current use are sufficient to show that it is in the public interest to maintain the existing use and refuse development. Given existing knowledge of such amenity values it seems most unlikely that such an argument could be sustained in the case of intensively farmed agricultural land. If Impact Fees were introduced then there would be an argument that the acceptable threshold above which a premium would trigger a presumption of development should be set at zero although because of short run price fluctuations and uncertainties it might be thought more appropriate to maintain a threshold significantly greater than zero.

Apart from the value of introducing price signals into the planning decision-making process an advantage of the proposal outlined here is that it would achieve the same degree of relaxation more or less everywhere, as indicated by the patterns of price premiums observed. This would tend to equalise regional house prices over the long term and so allow greater labour mobility. This itself would help resolve the so called North-South divide, help resolve problems of the supply of so-called ‘key workers’ and housing affordability in regions of high demand and create greater labour market flexibility. The proposal would also have the considerable political merit of introducing a transparent, quasi-objective and so politically defensible mechanism into decisions about land supply. It would have parallels with making the Bank of England independent. It would help to distance land availability decisions from the political process.

[7]Conversation with Ian Campbell FRICS of Campbell Gordon 22 8 03: price quoted for land on the Wokingham/Bracknell border currently zoned for industrial - if re-zoned for residential.

[8] Space constraints in other uses should not be ignored and may have significant cost and economic implications. For example a recent study by Jones Lang LaSalle concluded that for comparable cities, the total occupation costs of office space in the UK were about twice those in other major EU countries.

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