The housing market

Developments in the housing market have important implications for the economy as a whole and for policy. Apart from the direct effects such as investment in dwellings (which accounted for more than 70% of total personal sector savings last year) there are a number of ways in which the housing sector interacts with the rest of the economy. For example, an increase in house prices raises personal sector wealth, thus possibly influencing households' consumption/savings decisions. Recent changes in the mortgage market, following a period of deregulation and intense competition, have made this wealth more accessible. Also, if house prices rise faster than earnings, upward pressure on wage settlements may result, perhaps over and above that which emerges through the contribution of higher housing costs to the retail price index. In addition, variation in the rates of growth of house prices across different regions may reduce labour mobility, thus reducing the efficiency of the national labour market. These developments are important and have wide-ranging implications for monetary policy. First, the sensitivity of personal sector behaviour to changes in interest rates has almost certainly grown in recent years.[1] *Second, the use of interest rates to reduce inflation may have repercussions for the housing market as a whole—as regards demand for and supply of both new dwellings and improvements to the existing stock and the operation of the mortgage and credit markets.*

This article[2] *examines developments in the housing market over the last two decades, considering the various factors which have been important in explaining changes in house prices, housing starts and completions, and housing investment. As well as considering the long-term prospects for the market, a short discussion of likely short-term developments in the light of recent interest rate rises is included: this analysis suggests that the housing market will slow considerably this year. The implications of such a slowdown for the growth of consumers' expenditure and for the labour market are also considered. Finally, the article discusses some of the policy implications of this analysis.*

The decline of the rented sector

Recent developments in the housing market have been dominated by changes in the owner-occupied sector, given the long-standing reduction in the private rented stock, and in the 1980s in the public rented stock as well.[3] The recent decline of the private rental market represents little more than a continuation of a long-run trend. At the end of the Second World War around half of the housing stock (more than 6 million dwellings) comprised this type of accommodation, but by 1960 the sector had declined to close to 4 million dwellings, accounting for a quarter of the total stock. Less than half of the increase in the owner-occupied total that occurred during the 1950s came from new building, the rest coming from sales of rented housing (on a scale larger than the public sector sales over the last decade). Table A shows that the decline in the private rental market continued, if at a slightly slower pace, throughout more recent decades, so that by 1987 less than 2 million dwellings were of this tenure. (There has, however, in recent years been an increase in the number of dwellings rented from housing associations. The figures for England show a rise from 300,000 to 482,000 in the ten years to December 1987.) Although much of the decline in the private rented stock is due no doubt to the restriction of rent increases and the curtailment in profit opportunities that this may entail,[4] it is also likely to reflect the growth in public sector housing provision which occurred on a large scale immediately after the war

Table A
The stock of dwellings in Great Britain: distribution by tenure, 1950–87

Thousands; *percentages in italics*

	1950	1960	1970	1980	1987
Form of tenure					
Owner-occupied	4,100	6,805	9,356	11,791	14,287
Rented from local authorities or new town corporations	2,500	4,320	5,698	6,550	5,771
Rented from private owners	6,200	4,170	3,677	2,678	2,228
Other tenures	1,100	920			
Total	**13,900**	**16,215**	**18,731**	**21,021**	**22,287**
As percentages of total					
Owner-occupied	*29.5*	*42.0*	*50.0*	*56.1*	*64.1*
Rented from local authorities or new town corporations	*18.0*	*26.6*	*30.4*	*31.1*	*25.9*
Rented from private owners	*44.6*	*25.7*	*19.6*	*12.7*	*10.0*
Other tenures	*7.9*	*5.7*			

(1) See M J Dicks, 'The interest elasticity of consumers' expenditure', Bank of England *Technical paper*, no 20.

(2) Written by M J Dicks of the Bank's Economics Division.

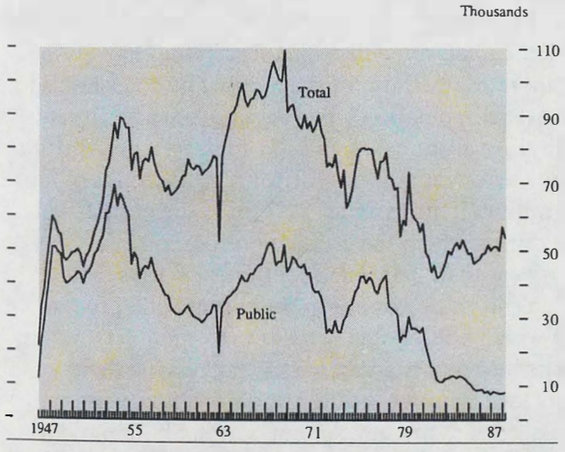
(3) This does not mean, however, that attention should be restricted to examining owner-occupation, particularly since the government in its 1987 White Paper *Housing: the Government's proposals* (Cm 214) made it clear that it wishes to encourage new investment in the private sector rental market.

(4) For a discussion of the numerous changes which have taken place in the regulations relating to the letting of private property see P Minford, M Peel and P Ashton *The housing morass: regulation, immobility and unemployment*, Hobart Paperback 25, 1987.

and which must have been taken up largely by households who would previously have expected to rent in the private sector. Slum clearance was also an important factor, since it removed over a million dwellings from the private rented sector.

Chart 1 shows annual public and private housing completions over the past four decades. Particularly noteworthy is the sharp decline in public sector housebuilding in recent years, which has been accompanied by a policy of increased sales of council houses and the charging of rents that are closer to market levels. This policy, taken together with last year's extension of the Business Expansion Scheme (which gives tax relief to individuals investing in companies formed to provide private rented acommodation) and a Housing Act which puts into place a new legal framework which should

Chart 1
Public and private sector completions



permit the private market to operate more freely (through the use of assured and shorthold tenancies—the former with rents freely negotiated but security of tenure protected, the latter with no security beyond the period of the tenancy but with the right for either party to seek registration of an appropriate rent), is designed to encourage growth in the privately rented housing market. The outcome is likely to depend to a large extent, however, on the expected rate of growth of house prices; given the tax advantages which favour owner-occupation and the risks associated with private sector lettings, future expansion of this section of the housing market is likely to be on only a small scale unless landlords and their financial backers expect house prices to continue rising.[1] For this reason it seems reasonable to concentrate attention on the market for owner-occupied dwellings, particularly since fluctuations in house prices appear to be generally well-explained by developments in this section of the market.

The growth of owner-occupation

Table A illustrates the growth of owner-occupation in recent decades, and the particularly fast rate of increase during the 1980s. Even after allowance has been made for the million or so transfers of ownership as a result of sales of council houses, it is clear that the trend rate of increase has accelerated sharply since the early 1980s. In looking for factors which explain this rise, it might be expected that, as in the market for most goods, both demand and supply considerations are important. The housing market needs especially careful consideration, however, since it has a number of special features.

First, housing is a basic necessity to most households, so that changes in the size of the adult population and/or the number of households are likely to be important determinants of the long-run total demand for housing (covering *all* forms of tenure).[2] Obviously this depends to a large extent on how household is defined, since under some definitions (including that used in the United Kingdom) it is possible for more than one household to share a dwelling. It is also, of course, possible (at least in the short run) for households to be homeless. Second, one year's supply of new housing generally represents only a small fraction of the total housing stock, arising, in part, from the fact that housing is a durable good. When taken together with the fact that houses usually take between one and two years to build, this implies that short-term fluctuations in demand have a relatively large and immediate effect on house prices, even though the long-run supply price elasticity may be large and, even in the short run, demand (and supply by landlords) may be sensitive to price expectations, which should reflect the stock-adjustment process. Much will depend upon how much land is made available following a rise in the price of housing (and hence on the flexibility with which land can be used for residential rather than other purposes), which will in turn depend upon how quickly applications for planning permission are decided and on the proportion granted.

Finally, owner-occupiers are both consumers of housing services and investors in housing as an asset. The virtual absence of a rental market or of a futures market (either in housing or in instruments linked directly to (regional) house prices) makes it difficult to hedge against risk associated with fluctuations in house prices. (Either, or both, could have a beneficial impact on the efficiency of the housing market, and hence welfare.) Nevertheless, developments in the mortgage market are beginning to open up more opportunities to home-owners, which should allow greater diversification and risk-sharing.[3] Investors wishing to reduce their investment in housing can, of course, 'trade-down' (by buying a cheaper

(1) A much more detailed study of the prospects for this sector of the housing market is contained in C M E Whitehead and M P Kleinman, 'The viability of the privately rented housing market', to appear in, *Housing and the national economy*; edited by J Ermisch, to be published by Gower.

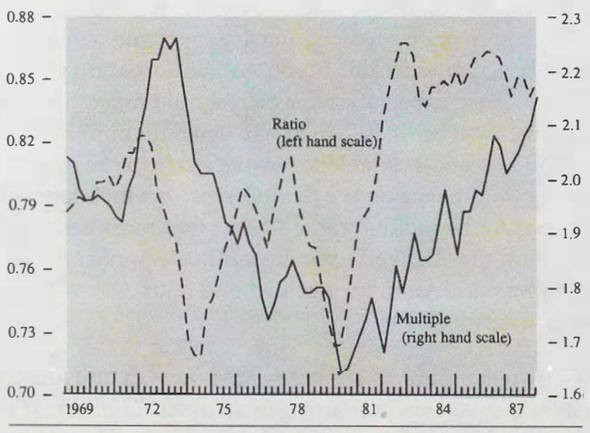
(2) See M J Dicks, 'The demographics of housing demand: household formations and the growth of owner-occupation', Bank of England *Discussion paper*, no. 32.

(3) For example, past capital gains can be realised by withdrawing equity and using this money to invest in assets other than housing. This might reduce the owner-occupier's vulnerability to shocks from changes in house prices if he/she can find assets whose returns are less than perfectly correlated with house prices although, of course, his/her direct exposure to house prices has not changed. It is also now possible for some borrowers to share capital gains (or losses) with lenders, although such practice is normally restricted to certain classes of borrower requiring a large income multiple in order to enter the housing market (eg nurses).

dwelling), but transaction costs (and associated costs of moving) are high, so that this is in practice seldom done on investment grounds alone. Moreover, the possibility of raising the value of a house by making improvements means that it is easier for owners to increase rather than to decrease their investment in housing.

As owner-occupation has grown and prices have risen, so housing has taken a greater share of the household sector balance sheet. At the same time, mortgage debt has risen considerably faster than incomes.[1] This suggests that developments in the mortgage market are likely to have a large impact on the housing market—indeed the effect may be growing since house purchases are now more often associated with the need for households, especially first-time buyers, to borrow large income multiples. Hence, both loan-to-income multiples and loan-to-value ratios have tended to rise during the 1980s (see Chart 2). This contrasts with periods in the past when mortgages were often rationed by lenders setting maximum loan-to-income multiples and/or loan-to-value ratios and restricted below levels that would have been desired in a free market, thus constraining households' consumption/saving behaviour.

Chart 2
The loan-to-value ratio and loan-to-income multiple for first-time buyers



The demand for housing

In the absence of rationing, the total demand for housing will depend upon both the total number of households requiring accommodation and the quantity of housing each household requires. Clearly demographic factors—not only the overall population but also its age and sex structure—will, therefore, be an important aspect of total housing demand. The United Kingdom's population has risen from close to 50¼ million in 1951 to around 56¾ million in 1986, an increase of some 13%. Within this period, however, there was a significant slowing in the rate of growth during the 1970s with a pick-up in more recent years. One reason for these fluctuations is the changing age structure of the population—between 1951 and 1981 the total population rose by 10%, but the number of persons aged under 18 rose by less than 8% while the number over retirement age rose by 42%. The growth in the number of people aged 60–70 is likely to lead to an increase in trading-down, resulting in a rise in the number of large properties supplied to the market and a simultaneous increase in demand for smaller dwellings.[2] Demand will also be affected, however, by changes in the number of new young households that are formed.

The changing age distribution of the population gives rise to changes in the demand for housing since the process of household formation and dissolution has a fairly rigid, age-specific structure. In addition, however, economic and social factors play some part in determining changes in 'headship' rates (the ratio of the number of households to the size of the population). The aggregate headship rate has risen from around 34% in 1971 to nearly 39% in 1985, implying an increase in the number of households of more than 3½ million (a little under 20%) over the period—an interval during which the population rose by only ¾ million (less than 2%). The economics of household formation can be thought of in the context of a process through which households convert their members' time and goods into non-marketable 'output' giving their members satisfaction.[3] At the same time, however, individuals desire privacy, so that optimal household size depends upon the costs of increasing the household by one member (in terms of lost privacy) being balanced by the benefits (in terms of extra 'output'). Cross-section data provide evidence of strong income effects on household formations, but research carried out using US data has suggested that it is also important to take into account the costs of independence (mainly in terms of housing costs).[4] Time-series evidence for the United Kingdom suggests significant roles for incomes, rents and mortgage costs as well as social factors (such as changes in marriage and divorce rates).[5] Overall, roughly half of the rise in the number of households which occurred during the 1970s and the first half of the 1980s appears to have resulted from demographic factors (changes in the population size and its age distribution) and the remainder from economic and social factors. Although population growth is expected to slow significantly during the late 1990s, the slowdown in the rate of household formation is likely to be much less marked (provided incomes, rents and

(1) For a fuller discussion of recent developments in the balance sheet, see 'The financial behaviour of the UK personal sector, 1976–85' in the May 1987 *Bulletin*, pages 223–33.

(2) This trading-down may also accentuate regional pressures if many of those wishing to retire want to move to the same area, while a rise in the number of last-time sellers (an increasing proportion of whom are likely to have been owner-occupiers) will lead to a greater volume of bequests, thus influencing younger households' consumption/savings decisions.

(3) For details of such an approach see, for example, J Ermisch, 'An economic theory of household formation', *Scottish Journal of Political Economy*, vol 28, no 1, February 1981.

(4) See, for example, A Börsch-Supan, 'Household formation, housing prices, and public policy impacts', *Journal of Public Economics*, vol 30, no 2, July 1986.

(5) Detailed results are presented in M J Dicks, 'The demographics of housing demand'. Of course, changes in marriage and divorce rates which affect the demand for housing may not be independent of changes in its supply.

housing costs rise at rates similar to those experienced over the last two decades)—implying that the long-run demand for housing is likely to remain strong. In the short run, however, fluctuations in economic conditions will play an important part in influencing the demand for housing.

Since over a short period the number of completions of new dwellings will only be a very small fraction of the total housing stock, changes in the overall demand for housing will play a large part in determining the average price of existing dwellings. Supply conditions will also be important, however, since they will affect price expectations. Overall, demand is likely to depend particularly upon real income per household (and perhaps also changes in its distribution) and housing costs.[1] The latter comprise debt-service costs (or the opportunity cost of funds invested if no mortgage funds are borrowed) plus costs of depreciation and maintenance, plus housing taxes (rates) but minus expected capital gains—all measured for the 'average' dwelling and in real terms. Most studies assume adaptive expectations (ie that expectations adapt, with a lag, to past price changes) in attempting to incorporate expected capital gains, with more sophisticated approaches yet to yield significantly better results.[2]

Developments in the mortgage market

In addition to taking into account those factors which affect the demand for housing (and hence the demand for mortgage finance), it is also necessary to consider changes in the supply of these funds if house prices are to be well explained. Prior to the 1980s, mortgage borrowing was periodically restricted through the building societies' use of informal rationing schemes (it was also restricted at times by official ceilings and/or lending guidance). In part this strategy was designed to help protect existing borrowers from rises in the mortgage rate. Nevertheless, it sometimes resulted in long mortgage queues and considerable variation in loan-to-income multiples and loan-to-value ratios. These fluctuations in mortgage supply undoubtedly contributed to the variability in effective housing demand and so played a large part in explaining the two house price 'booms' which occurred in 1972–73 and 1978–80 and the subsequent 'slumps' during which falls in real house prices occurred.

More recently, there has been a period of rapid structural change and innovation in the mortgage market, resulting largely from a number of measures liberalising financial markets and encouraging greater competition. The abolition of the 'corset' in 1980 and the banks' re-entry into the mortgage market during 1982 led to the break-up of the building societies' interest rate cartel as rationing ceased to be feasible. Since then, the societies have generally attempted to meet the demand for mortgage funds, taking as given the structure of interest rates. In particular, the fact that they have been able to use wholesale funding has allowed a move from asset management to liability management to take place. Increased lending has resulted in reduced mortgage queues and higher loan-to-income multiples and loan-to-value ratios. Indeed most measures of rationing suggest that the market is now free of arbitrary constraints.[3] To some extent, however, this depends on how rationing is defined. Clearly it is still the case that lenders offer maximum loan-to-income multiples rather than charge different interest rates according to the perceived risk of the borrower and/or amount lent. (Indeed, if anything lower rates are available for larger loans, presumably reflecting lower administrative costs per pound.) Moreover, although some insurance contracts associated with default risk are now available (for example, against unemployment) and much mortgage lending is underwritten, the market is still less sophisticated than that which has developed in the United States, so that households' choice remains restricted to some degree.

Despite these caveats it is clear that the gap between notional and effective demand has narrowed. Admittedly, the fact that owner-occupiers tend to move only infrequently (once every four to seven years on average)—because of high transaction costs—implies that the time taken for full adjustment (to desired levels of capital gearing) might be expected to be long, and it may perhaps be that adjustment to changes which occurred in 1982 is only now nearing completion. Moreover, the fact that mortgages are set in nominal terms means that a second form of rationing occurs whenever there is inflation, in that households find the real value of mortgage debt is eroded while real earnings growth is likely to be less adversely affected, if at all, since nominal earnings generally rise at least as fast as prices.[4] If the inflation rate varies, and lenders are concerned with loan-to-income ratios of outstanding mortgages, then neither income gearing nor initial loan-to-income ratios are necessarily very good proxies for rationing. However, the severity of this second form of rationing is likely to have been fairly limited in recent years given the low inflation rate and rising income multiples. Moreover, the sharp rise in net cash extraction[5] suggests that households

(1) Some models also permit a role for net household formation. See, for example, R Buckley and J Ermisch, 'Government policy and house prices in the UK: an econometric analysis', *Oxford Bulletin of Economics and Statistics*, vol 44, no 4, November 1982.

(2) See, for example, D F Hendry, 'Econometric modelling of house prices in the United Kingdom', in *Econometrics and quantitative economics*, edited by D F Hendry and K F Wallis, Basil Blackwell, 1984. Note that a correctly specified model needs to include expected supply *and* demand factors if it is to derive consistent price expectations. Moreover, a model which assumes adaptive expectations is likely to find it difficult to distinguish between the effects of changes in price expectations and lags due to transaction costs.

(3) See G J Anderson and D F Hendry, 'An econometric model of UK building societies', *Oxford Bulletin of Economics and Statistics*, vol 46, no 3, August 1984; G P Meen, 'An econometric analysis of mortgage rationing', Government Economic Service Working Paper No 79; J B Wilcox, 'A model of the building society sector', Bank of England ***Discussion paper*** no 23; and S G F Hall and R A Urwin, 'A disequilibrium model of mortgage lending', Bank of England mimeo.

(4) Obviously the ability to service debt depends also upon the interest rate charged, and hence on the monetary authorities' reaction to higher inflation.

(5) Defined as the difference between the net increase in the stock of loans for house purchase and the private sector's net expenditure on additions to the stock of owner-occupied houses, including improvements. For a fuller discussion see, 'The housing finance market: recent growth in perspective' in the March 1985 *Bulletin*, pages 80-91.

are increasingly able to raise capital gearing to desired levels (without necessarily needing to move). The removal of mortgage lending guidance in January 1987 will have facilitated this reduction in liquidity constraints, which in the past impinged heavily on households.

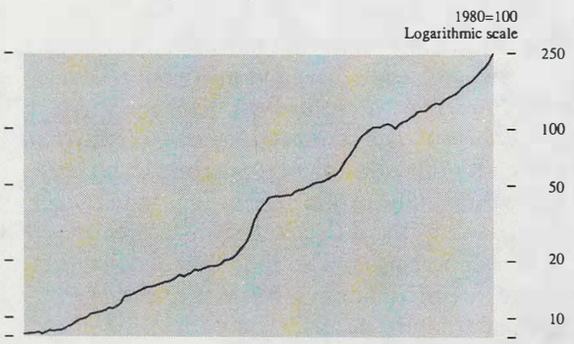
All of these arguments suggest that a model of house prices conditional on mortgage lending among other factors might have performed less well in predicting prices in recent years since, while, in the past, changes in mortgage supply would have corresponded almost one-for-one with changes in housing demand (and hence have 'caused' house price changes[1]), more recently some of the change in supply represents increased demand for financial assets or perhaps for goods and services. Thus, although it is still true that mortgage lending 'facilitates' house-buying for the majority of buyers, the correlation between changes in housing demand and mortgage supply may well be weaker than in the past.[2]

Explaining changes in house prices[3]

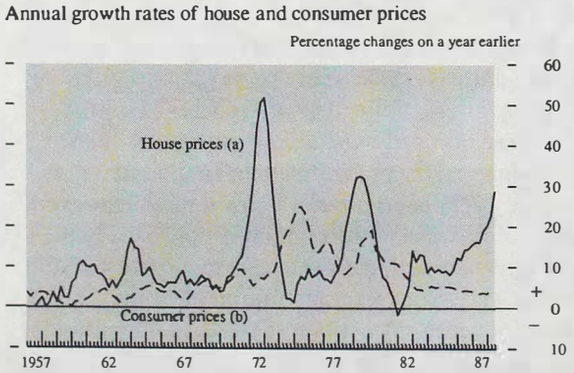
Chart 3 shows prices of existing houses (the Department of the Environment mixed-adjusted index based on completed transactions from 1968 onwards—before then the series is not mix-adjusted) for the period 1957 to 1988, and compares the annual rate of growth of this index with that of consumer prices (ie the consumers' expenditure deflator). This serves to illustrate the long-run upward trend in real house prices, although once adjustment is made for quality improvements the rise is somewhat less than has occurred in real incomes. It is clear that there have been marked fluctuations around this trend, as is evidenced by the two house price booms of 1972–73 and 1978–80 and recent strong growth. Each of the two previous booms was followed by a lull—during which nominal house prices remained steady—while consumer prices accelerated.[4] The declines in real house prices which resulted were substantial—of the order of a quarter in 1974–75 and an eighth in 1981–82—returning the house price/earnings ratio on each occasion to close to 3 (see Chart 4). Obviously there is some interest in whether or not future developments will involve a similar fall.

Chart 3
House prices and consumer prices

The price of existing dwellings (a)



Annual growth rates of house and consumer prices



(a) Department of the Environment mix-adjusted index, completions-based from 1968 onwards. Simple average index prior to that date.

(b) Consumers' expenditure deflator.

Chart 4
The house price/earnings ratio

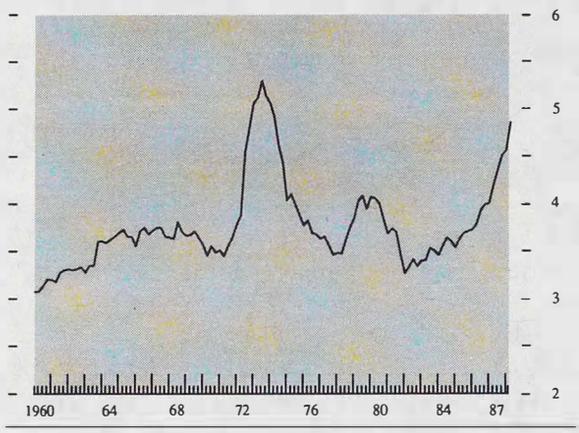
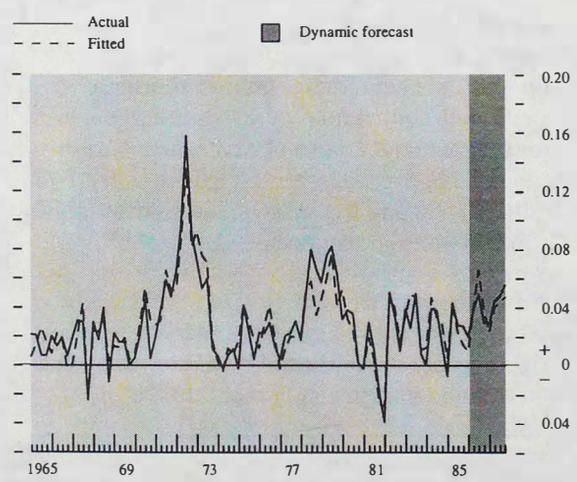


Chart 5
The price of existing dwellings[a]



(a) Actual is defined as $\Delta \log (PH)_t$.

(1) Note that, even in this situation, the direction of causation cannot be known for certain—it is possible that the demand for housing elicits additional mortgages (and not only vice versa).

(2) A model in which the effect of changes in rationing of mortgage funds on households' demand for housing and consumers' expenditure is presented in J Ermisch's paper 'Housing trends and issues arising from them': see footnote (1) on page 67.

(3) The econometric results contained in this section are based on research presented in more detail in the appendix and will be presented in full in a forthcoming Bank of England *Discussion paper*, 'A simple model of the housing market' by M J Dicks.

(4) Some commentators have suggested that house prices were likely to have been a causal factor behind the rise in consumer prices. The evidence for this view, however, is debatable—it has been argued, for example, that most of the rise in consumer prices can be attributed to the oil price shocks. See P A Rowlatt, 'Analysis of the inflation process', Government Economic Service Working Paper No 99.

Table B
Explaining changes in the price of secondhand dwellings

	Overall change in house prices(a)	Contributions(b) from:						
		Lagged dependent variable	Income per household	Retail prices	Real mortgage lending	Household income gearing	Other factors	Unexplained (residual)
1965	0.056	0.019	0.277	0.083	0.098	−0.072	−0.343	−0.004
1966	0.059	0.010	0.289	0.071	0.095	−0.073	−0.342	0.010
1967	0.056	0.015	0.298	0.041	0.152	−0.079	−0.385	0.014
1968	0.076	0.011	0.295	0.098	0.094	−0.083	−0.332	−0.006
1969	0.055	0.014	0.300	0.096	0.049	−0.089	−0.323	0.008
1970	0.077	0.009	0.328	0.139	0.059	−0.089	−0.325	−0.044
1971	0.163	0.022	0.309	0.163	0.089	−0.084	−0.323	−0.013
1972	0.410	0.054	0.405	0.139	0.175	−0.082	−0.333	0.052
1973	0.196	0.076	0.415	0.182	0.093	−0.096	−0.412	−0.060
1974	0.023	0.015	0.380	0.313	−0.076	−0.125	−0.490	0.005
1975	0.067	0.012	0.377	0.421	−0.102	−0.122	−0.478	−0.041
1976	0.088	0.015	0.382	0.260	0.009	−0.115	−0.449	−0.013
1977	0.077	0.014	0.344	0.228	−0.020	−0.128	−0.430	0.029
1978	0.211	0.024	0.411	0.146	−0.113	−0.112	−0.413	0.044
1979	0.277	0.057	0.431	0.297	−0.005	−0.131	−0.424	0.053
1980	0.108	0.044	0.438	0.265	0.010	−0.155	−0.490	−0.004
1981	0.020	0.013	0.412	0.210	0.079	−0.174	−0.543	0.024
1982	0.055	0.001	0.413	0.112	0.202	−0.196	−0.460	−0.016
1983	0.122	0.022	0.424	0.092	0.205	−0.179	−0.425	−0.017
1984	0.092	0.020	0.430	0.088	0.187	−0.193	−0.411	−0.029
1985	0.091	0.018	0.440	0.100	0.155	−0.239	−0.392	0.008
1986	0.137	0.023	0.461	0.063	0.242	−0.258	−0.374	−0.020
1987	0.176	0.031	0.473	0.078	0.199	−0.260	−0.366	0.020
1988	0.245	0.041	0.500	0.115	0.188	−0.256	−0.370	0.027

(a) Defined as $\Delta_4 \log(PH)_t$ where PH is measured at the fourth quarter of each year.
(b) Defined as the short-run (impact) effects of the regressors used. See the appendix for details.

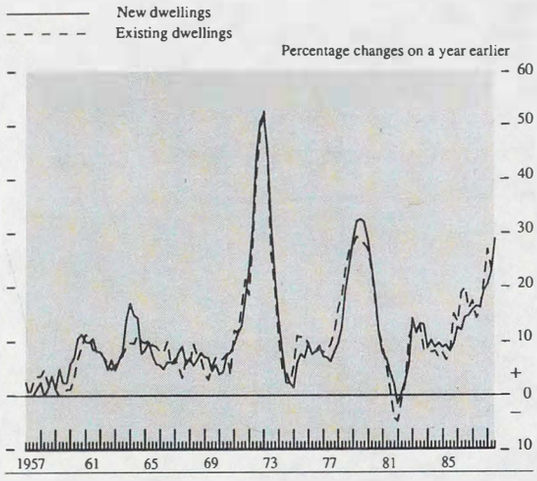
Econometric research (such as the model presented in the appendix) supports the view that real incomes, real mortgage lending, consumer prices and changes in households' income gearing (the ratio of interest payments to disposable income) contribute most to explaining short-run changes in the prices of existing dwellings (with demographics playing a role, too, in the longer run). In addition, a small role is found for mortgage rationing, although this effect is sensitive to the indicator used to represent the severity of rationing. It is also worth mentioning the need to include a *cube* term in real income (to allow for sometimes very rapid price adjustment to excess demand) if the two house price booms are to be explained satisfactorily. Such a term may be indicative of speculative activity in the housing market (for a 'catastrophe theory' justification of such a term in house prices see the article cited in footnote (2) on page 69). Table B gives details of the short-run (impact) effects of the explanatory variables used, while Chart 5 illustrates how well the model explains the past and predicts over the period 1985 to 1988 (given, of course, the actual values of the explanatory variables).

The stability of the model's parameters, despite the changes which have occurred in the mortgage market, is likely to be due to the fact that both a proxy for mortgage rationing and total mortgage lending have been included as explanatory variables. This stability also offers some hope that the model can be usefully employed to predict future developments. Such a forecast depends crucially, however, on what happens to the economy as a whole. As an example, were real earnings growth to slow slightly, interest rates to remain at current levels and the stock of outstanding mortgage lending to grow at rates similar to those in the first half of the 1980s, the model suggests that a substantial fall in real house prices could occur. Several important qualifications need to be borne in mind, however. First, house prices have seldom fallen in nominal terms—the last significant recorded fall was during the early 1950s. One reason for this is that, when downward pressure on prices emerges, potential sellers choose not to lower prices immediately but rather to stay in the market longer before selling/withdrawing (although they may eventually accept bids below their asking prices). Hence it is mainly *turnover* in the housing market which is depressed, with average house prices little affected. The housing market comprises two sectors which are broadly equal in terms of number of transactions—first-time buyers and existing owners trading up or down.[1] A substantial part of the first group is likely to be able to postpone a purchase if house prices are thought to be moving in their favour (eg stable in nominal terms), while only a small fraction of existing owner-occupiers will 'need' to move (say for job-related reasons). This suggests that a substantial reduction in turnover might be possible if downward pressure on nominal house prices were to emerge.

Secondly, there is the possibility of a response from some lenders to protect borrowers from the threat of higher interest rates. Given the increased competition in the mortgage market in recent years, it is likely that some lenders would offer at least some categories of borrower (such as recent first-time buyers) additional incentives to enter the market were the volume of mortgage lending to diminish. This could, for example, take the form of greater risk-sharing (say through the allocation of more funds to fixed-interest loans) or of more competitive charging (eg reduced mortgage rates for some borrowers) or of extending the term of existing mortgages.

(1) This is compatible with owner-occupiers moving every four to seven years, provided the total number of owner-occupiers is rising. For example, on the assumption that first-time buyers currently comprise 50% of the market and that there is a 7-year lag between moving, the total number of owner-occupiers would have to rise at an annual rate of close to 10% per annum—close to the actual rise which occurred between 1981 and 1987. Of course, this implies that the market is not at a full steady state.

Chart 6
The price of new and existing dwellings

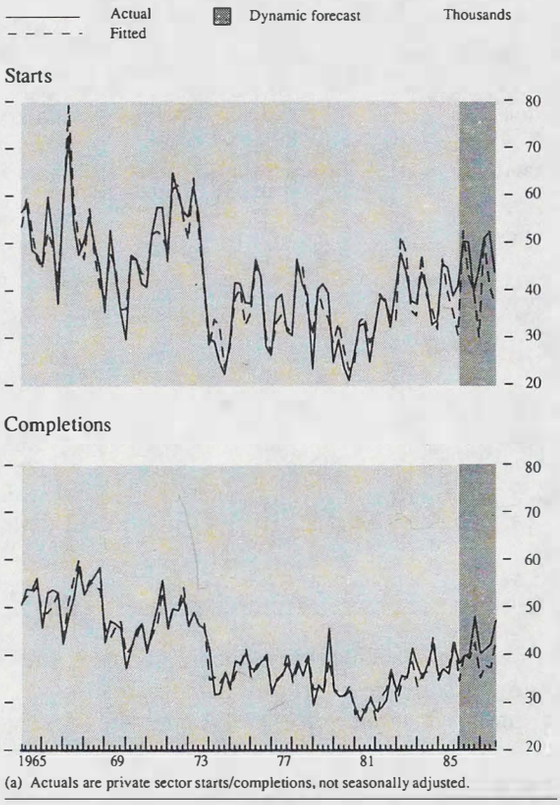


The supply of new housing

Were new and existing houses perfect substitutes, and suppliers of new housing competing in a free market (ie one in which they had not even local monopoly power), it might be expected that there would be little if any difference between their prices. Although it is certainly the case that movements in the two house price series are strongly correlated, so that generally this holds true, there have been periods during which gaps have opened up (see Chart 6). These have arisen because the price of new dwellings reflects not only demand factors but also influences from the supply side of the industry—primarily building costs (ie land, labour and raw material prices), which will affect starts; and also costs associated with stock-holding (which are likely to be high given the large stock of uncompleted dwellings and which will affect the rate of completions). This suggests that builders' supply of new dwellings is a function of the uncompleted stock, new house prices and costs of carrying stock (depending positively on the first two and negatively on the third), while the demand for new dwellings is likely to depend upon their price relative to that for existing dwellings (negatively), as well as on all those factors which influence demand generally (incomes, interest rates etc). Moreover, builders may consider adjusting their uncompleted stock. Such adjustments are likely to depend (positively) on the profitability of new building, as well as on their expectations of future demand. Given the identity linking changes in this stock with housing starts and completions (the difference between the two corresponding to the change in the stock), it is logical to envisage builders varying the speed with which they complete houses as costs and new house prices change. Using such a model (described in more detail in the appendix) it is possible to explain fluctuations in new house prices, housing starts and completions (and hence changes in the uncompleted stock) fairly accurately, as illustrated in Charts 7 and 8.

The main driving force behind changes in the price of new dwellings turns out to be changes in the price of existing houses (see Table C). However, during the late 1970s

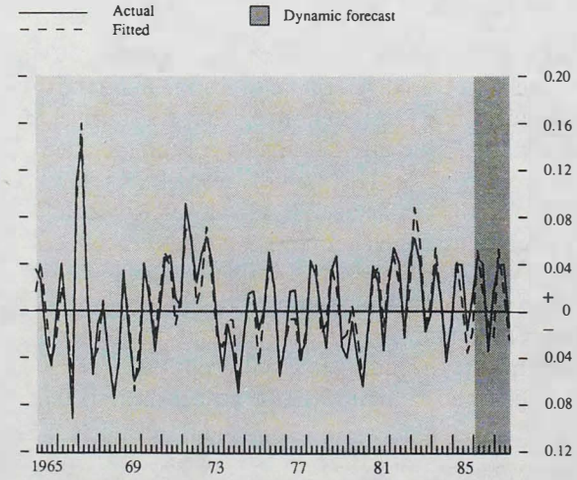
Chart 7
Housing starts and completions [(a)]



(a) Actuals are private sector starts/completions, not seasonally adjusted.

slower real income growth, higher after-tax interest rates and reductions in the stock of completed dwellings all contributed to the gap which opened up between the two price series (with new house prices increasing slightly less quickly than those of secondhand houses). Comparing the 1980s with earlier periods, it is clear that a higher rate of increase of real construction costs (measured by an index of building materials costs) has tended to increase new house prices, but this has been offset to some extent by the effects of rising interest rates. In recent years strong real income growth has also increased the upward pressure on prices.

Chart 8
Changes in the completed stock of dwellings[(a)]



(a) Actual is defined as $\Delta U_t/U_{t-1}$.

Table C
Explaining changes in the price of new dwellings

	Overall change in house prices(a)	Contributions(b) from:								
		Price of existing dwellings	Gap between price of new and existing dwellings	Income per household	Uncompleted stock of dwellings	Construction costs(c)	After-tax interest rates	Stock of completed but unsold dwellings	Other factors	Unexplained (residual)
1965	0.087	0.041	0.088	0.006	−0.021	−0.060	−0.066	−0.025	0.151	−0.027
1966	0.054	0.043	0.028	0.007	0.008	−0.067	−0.070	−0.026	0.124	0.006
1967	0.064	0.041	0.067	0.003	−0.024	−0.081	−0.072	−0.032	0.150	0.011
1968	0.066	0.055	0.045	0.004	0.010	−0.088	−0.074	−0.025	0.099	0.040
1969	0.067	0.040	0.080	−0.002	0.024	−0.085	−0.081	−0.029	0.123	−0.003
1970	0.037	0.056	0.048	0.015	0.018	−0.096	−0.085	−0.033	0.174	−0.059
1971	0.194	0.119	0.041	0.001	−0.003	−0.084	−0.087	−0.018	0.217	0.009
1972	0.395	0.297	0.070	0.030	−0.028	−0.089	−0.083	−0.011	0.197	0.012
1973	0.177	0.142	0.099	0.031	−0.037	−0.092	−0.093	−0.019	0.164	−0.018
1974	0.022	0.016	0.129	−0.007	0.006	−0.043	−0.111	−0.065	0.109	−0.012
1975	0.104	0.049	0.071	−0.000	0.022	0.007	−0.107	−0.070	0.130	0.003
1976	0.082	0.064	0.052	−0.003	−0.010	−0.028	−0.104	−0.035	0.164	−0.019
1977	0.110	0.056	0.031	−0.022	0.009	0.006	−0.111	−0.032	0.146	0.027
1978	0.236	0.154	−0.056	0.031	0.001	0.027	−0.090	−0.019	0.149	0.040
1979	0.247	0.201	−0.038	0.018	−0.006	0.025	−0.115	−0.012	0.172	0.001
1980	0.110	0.078	−0.006	0.013	0.006	0.033	−0.149	−0.031	0.178	−0.012
1981	−0.043	0.015	0.010	−0.011	0.016	0.035	−0.142	−0.095	0.164	−0.034
1982	0.101	0.040	0.068	−0.004	−0.012	0.012	−0.145	−0.114	0.179	0.077
1983	0.080	0.089	0.051	0.005	−0.023	0.010	−0.111	−0.087	0.193	−0.046
1984	0.067	0.067	0.088	0.005	−0.012	0.026	−0.118	−0.078	0.100	−0.010
1985	0.140	0.066	0.120	0.009	0.001	0.040	−0.139	−0.065	0.136	−0.028
1986	0.147	0.099	0.036	0.012	−0.015	0.039	−0.127	−0.067	0.133	0.035
1987	0.190	0.127	0.037	0.010	−0.012	0.036	−0.125	−0.071	0.113	0.075
1988	0.224	0.178	0.014	0.020	−0.020	0.043	−0.115	−0.073	0.093	0.084

(a) Defined as $\Delta_4 \log(PN)$ where PN is measured at the fourth quarter of each year.
(b) Defined as the short-run (impact) effects of the regressors used. See the appendix for details.
(c) Measured as deviations from mean contribution ('other factors' adjusted accordingly).

Nevertheless, as is clear from Chart 6, whatever happens to the price of second-hand houses over the next year or so, much the same outlook has to be expected for new house prices. If, for example, prices were to slow, this would reduce the profitability of building new houses—which would reduce the rate of completions significantly, were it not for the fact that interest rate effects on the uncompleted stock are so strong. Substantially higher costs of stockholding would then give builders a strong incentive to cut back on starts but keep completions running close to current levels, in order to reduce the uncompleted stock as quickly as possible. Such an outlook is broadly in line with recent forecasts from the industry.[1] It is also supported by historical evidence. If comparison is made between the upswings of demand from the early 1960s to the mid-1980s, then builders' response can be seen to be subject to increasingly long lags, presumably to see how strongly based the up-turn is. Experience in 1973 and 1974 may well have been influential here. In a long-delayed response to the boom, large numbers of houses were started; but the market turned, sales slumped, builders were left with large amounts of unsaleable dwellings, financed at interest rates that had risen sharply, and many went bankrupt. Recollections of that experience may explain why the boom of 1977 to 1979 went nearly all into prices and very little into output; and why in the boom of the 1980s private sector completions did not rise decisively beyond the levels of the mid-1970s—until 1986.

The long-run elasticity of housing starts to house prices implied by the model presented in the appendix, of close to one-half, is considerably smaller that comparable estimates for the United States[2] (which have been as high as 3). This probably reflects the comparative shortage of residential land in this country, particularly in the South East, which has resulted in land prices rising even faster than house prices in boom periods (and doubtless too the responsiveness (or otherwise) of builders, many of whom hold sizable stocks of land). Any feedback effects from higher land prices to house prices appears to be very weak (although clearly the profitability of housebuilding must ultimately be affected). A problem arises for policy-makers who need to decide how much land should be used for residential purposes because of the 'insider-outsider' problem—those who already own houses (the 'insiders') benefit from rising house prices if supply is restricted and so have a strong incentive to prevent demand from 'outsiders' being met by additional supply. Moreover, even if there is general agreement that more houses need to be built, few want them in their own 'back-yard'.

Interaction between the housing market and the rest of the economy

Consumers' expenditure

The liberalisation of the credit markets that has occurred during the 1980s has enabled households to build up both sides of their balance sheet—using mortgage debt to finance investment in housing. The limited supply response, due in part to the restrictions on the amount of land available for residential use (which are most severe just where demand for housing has risen quickest), has meant that house prices have risen considerably faster than consumer prices throughout the past five years. The resulting real capital gains have obviously raised households' wealth but it is unclear how big an effect this

(1) See *Construction Forecasts 1988–89–90*, National Economic Development Office, December 1988.
(2) See, for example, R Topel and S Rosen, 'Housing investment in the United States', *Journal of Political Economy*, vol. 96, no. 4, August 1988.

has had on consumers' expenditure. In the case of spending on durables it is possible to identify a significant effect from the flow of mortgage lending,[1] which is partly the result of complementarity between house-buying and the purchase of such durable goods as furniture and floor-coverings and partly due to net cash or equity withdrawal. Net cash withdrawal (as defined in footnote (5) on page 69) is largely accounted for by sales by 'last-time sellers'. The resulting bequests are likely to be held mainly in the form of financial assets rather than being spent (although the econometric evidence here is fairly weak[2]). That element of net cash withdrawal which is likely to represent 'leakage' from the housing market (ie equity withdrawal[3]) is likely to be relatively small. Estimates of equity withdrawal are only available, however, for the period 1977–84—an insufficiently long period on which to base econometric analysis. In any case, it is likely that some of these funds have been used to make improvements to the housing stock and that official statistics may, therefore, underrecord the true amount of housing investment that has taken place.[4]

As regards consumers' expenditure on non-durable goods and services, the evidence for an effect from the housing market is much weaker,[5] although it is true that most econometric models failed to predict the strength of spending in recent years. Of course, it is not necessary for households to borrow against increases in real housing wealth in order for their consumption/saving decisions to be affected—some households may simply choose to save less because they feel wealthier. Another possible explanation for reduced savings is that households have grown more confident about future real earnings growth. Obviously, the larger these 'confidence' effects, the greater the impact of a change in house prices on consumers' expenditure. Against this, however, it has to be noted that it is possible to overstate the likely confidence effects because of problems with reconciling measures of savings derived from different sources of statistics.

There are, however, other reasons for believing that the links between the housing market and consumption have grown more important in recent years. While the liberalisation of the financial markets has reduced the proportion of households that are liquidity constrained, the spread of mortgage-financed owner-occupation means that the consumption/saving decisions of more households are now influenced by changes in interest rates, implying a growing (ie more negative) interest elasticity of consumers' expenditure over time. Econometric evidence for these effects[6] (on both durable and non-durables spending) suggests that, ignoring changes in confidence, interest rates may already be high enough to ensure a slowdown in consumers' expenditure during 1989.

The labour market

Much research has been devoted in recent years to investigating the links between the housing and labour markets. One of the least controversial results to come out of this work is that the existing council house system reduces the movement of manual workers between regions.[7] This is partly because the local authorities' policy of keeping rents below market levels results in excess demand for this form of accommodation (and hence queues). Were tenants able to move easily between regions this would not be a problem. However, existing housing mobility schemes operate on such a small scale that council tenants have little option but to restrict job search to their local area, so as not to risk losing the advantage of subsidised rents. Obviously, the government's policy of increasing public sector rents and selling council property will raise mobility to some extent, but it has also been suggested that the proportion of the public housing stock which local authorities should make available to migrants from other areas should be raised.[8]

More controversial than these findings is the suggestion that the efficiency of the labour market has been reduced in recent years by the large gap that has opened up between house prices in southern and northern regions.[9] This argument relies upon the deterrent effect of high house prices in the 'booming' region (ie the 'South') on potential migrants to the region, so that even if a new equilibrium is reached in the long run the costs associated with the 'over-shooting' of house prices are high.[10] Time-series evidence is, however, somewhat at odds with that from cross-sectional studies. These suggest that house prices have no effect on migration, over and above their effects on real wages.[11] If high regional house price differentials do restrict migration, then clearly government attempts to encourage the expansion of the private sector rental market could help improve the functioning of the labour market. Regional house price differentials seem likely to narrow, as the rate of increase of prices in London and the South East looks set to fall much faster than elsewhere.

Conclusions

This article has examined developments in the housing market over the past two decades, suggesting that

(1) Instrumented or lagged in regression work.
(2) For a longer discussion of these issues see M J Dicks, 'The interest elasticity of consumers' expenditure'.
(3) For a full definition see A E Holmans, 'Flow of funds associated with house purchase for owner-occupation in the United Kingdom 1977–1984, and equity withdrawal from house purchase finance', Government Economic Service Working Paper No 92.
(4) See P Spencer, 'UK house prices—not an inflation signal', Credit Suisse First Boston, 1987.
(5) For a discussion of some attempts to do so see M J Dicks, 'The interest elasticity of consumers' expenditure'.
(6) Again see M J Dicks, 'The interest elasticity of consumers' expenditure'.
(7) See, for example, G A Hughes and B McCormick, 'Do council housing policies reduce migration between regions?', *The Economic Journal*, vol 91, December 1981.
(8) See footnote (4) on page 66. For econometric evidence of these effects see P Minford, P Ashton and M Peel, 'The effects of housing distortions on unemployment', Centre for Economic Policy Research Discussion Paper No 191.
(9) See, for example, O Bover, J Muellbauer and A Murphy, 'Housing, wages and UK labour markets', Centre for Economic Policy Research Discussion Paper No 268.
(10) An illustration of a model with these features is contained in J Ermisch, 'Housing trends and issues arising from them'.
(11) The real problem may not, in any case, be the regional variation in house prices as such, but the lack of such variation in wages (see, 'Regional labour markets in Great Britain' in the August 1988 *Bulletin*, pages 367–75).

short-run fluctuations in the demand for housing are largely responsible for changes in house prices. Growth in the number of households and in real incomes explains much of the long-run trend in house prices, with starts responding only very slowly to changes in the profitability of house-building, largely because of restrictions on the supply of land available for residential use and the limited response of builders (many of whom hold stocks of land). During the 1960s and 1970s mortgage rationing by the building societies meant that the supply of mortgage funds available for house purchase was an important determinant of house prices. One implication of higher capital gearing is an increase in the proportion of households for whom interest rate changes are important, although, since rents too would respond to real interest rates in due course, the spread of owner-occupation is unlikely to have made much difference (if any) to the long-run effects of real interest rates on household behaviour. (There may be short-run effects, however, if the effects on owner-occupiers are quicker than on tenants.) The high sensitivity of the housing market to interest rates is such that, once the recent mortgage rate rises feed through to households' debt-service costs,[1] a reduction in activity in both the housing and the mortgage markets (including housebuilding) is likely. As well as reducing turnover, the slowdown could be sufficient to reduce house prices, certainly in real terms. Although housing starts might then fall, completions would probably still be held close to current rates since builders would seek to reduce their stocks of uncompleted dwellings.

The growing sensitivity of households' decision-making to interest rate changes suggests that the rate of growth of consumers' expenditure is also likely to slow significantly this year. Gauging the precise impact is difficult, however, since although it has been suggested that the earlier buoyancy of spending was related to housing activity, there are good reasons for doubting that there are strong direct links between consumers' expenditure on *non-durable* goods and services and the housing market.

Finally, a slowdown in the housing market is likely to help improve labour mobility since it can be expected to help narrow regional house price differentials. It has been suggested that faster growing house prices in the South relative to the North are one of the factors explaining the rigidity of nominal earnings growth—although here too the evidence is less than clear. One rather more commonly held view which points to improved labour mobility, however, is that policy to encourage a resurgence of the private sector rental market, combined with sales of council housing and the raising of public sector rents, should improve the functioning of the housing market. These effects may well be fairly limited, however, particularly as the viability of a private rental market may well depend to a large extent on landlords' expectations of capital gains.

(1) This might have been expected to have occurred when the interest rate rises were announced. However, many households will not have faced increases in their mortgage payments until the spring of this year; some no doubt will not have anticipated the effects fully until faced with the new (higher) charges.

Appendix

A simple model of the housing market

Four equations and one identity are used to explain the price of existing dwellings (PH), the price of new houses (PN), housing starts (HS), housing completions (HC) and the uncompleted stock of dwellings (U). The latter evolves according to the simple identity;

$$\Delta U_t = HS_t - HC_t \qquad (1)$$

Next, models for ΔU and HC are given (so that HS has to be derived using (1)). Changes in the uncompleted stock are determined by the price of new houses relative to that for existing dwellings ($pn-ph$), after-tax interest rates ($r(1-T)$), real income per household ($y-ho$) and mean daily air temperature (WT). The precise specification is;

$$\begin{aligned}\Delta U_t = {} & U_{t-1} - \phi_0 + \phi_1 \Delta^2 U_{t-1} - \phi_2 (u-y)_{t-4} \\ & + \phi_3 \Delta WT_t - \phi_4 WT_{t-1} \\ & - \phi_5 (pn-ph)_{t-1} - \phi_6 (r(1-T))_{t-1} \\ & + \phi_7 B(y-ho)_t + \text{dummies}\end{aligned}$$

where lower case variables denote that logs have been taken and

$$B(x) = \tfrac{1}{4} \sum_{i=0}^{3} x_{t-i}$$

Housing completions are modelled conditional on the existing uncompleted stock (ie $K_t = HC_t/U_{t-1}$ is the dependent variable in the completions equation). This ratio is posited as depending upon real income per household, the price of new houses relative to that for existing dwellings, the real price of new dwellings ($pn-p$), the ratio of the number of owner-occupied houses to the uncompleted stock (H/U), changes in the number of households (ho), the number of households per dwelling ($ho-h$), the differential between earnings of manual and non-manual workers ($DEARN$), the unemployment rate (UR), real construction costs ($cc-p$) and real land prices ($lp-p$). The detailed specification is;

$$\begin{aligned}K_t = {} & \psi_0 + \psi_1 \Delta K_{t-1} + \psi_2 K_{t-2} \\ & + \psi_3 \Delta (y-ho)_t + \psi_4 (y-ho)_{t-1} \\ & - \psi_5 (pn-ph)_{t-4} - \psi_6 B(pn-p)_{t-1} \\ & + \psi_7 (H/U)_{t-1} + \psi_8 B(\Delta ho)_t \\ & + \psi_9 (ho-h)_{t-4} + \psi_{10} B(DEARN)_t \\ & - \psi_{11} (UR)_t - \psi_{12} (cc-p)_{t-1} \\ & - \psi_{13} (lp-p)_{t-1} + \text{dummies}\end{aligned}$$

where $K_t = (HC_t/U_{t-1})$.

The price of existing dwellings is determined largely by changes in income per household, retail prices (p), the

Table D
Results

Dependent variables

$\Delta U_t/U_{t-1}$ Parameter	Estimate	Standard error	K_t Parameter	Estimate	Standard error	Δph_t Parameter	Estimate	Standard error	Δpn_t Parameter	Estimate	Standard error
$\phi 0$	1.01	0.10	ψ 0	0.36	0.14	$\beta 0$	1.33	0.23	$\alpha 0$	0.65	0.14
$\phi 1$	0.21	0.06	ψ 1	0.27	0.11	$\beta 1$	0.22	0.08	$\alpha 1$	0.73	0.07
$\phi 2$	0.22	0.02	ψ 2	0.27	0.11	$\beta 2$	0.31	0.12	$\alpha 2$	0.51	0.09
$\phi 3$	0.003	0.001	ψ 3	0.24	0.08	$\beta 3$	0.61	0.21	$\alpha 3$	0.19	0.05
$\phi 4$	0.003	0.001	ψ 4	0.25	0.09	$\beta 4$	1.84	0.31	$\alpha 4$	0.49	0.20
$\phi 5$	0.30	0.07	ψ 5	0.23	0.08	$\beta 5$	1.44	0.26	$\alpha 5$	0.17	0.04
$\phi 6$	0.14	0.02	ψ 6	0.09	0.04	$\beta 6$	0.11	0.02	$\alpha 6$	0.004	0.002
$\phi 7$	0.25	0.05	ψ 7	0.13	0.04	$\beta 7$	0.15	0.07	$\alpha 7$	0.10	0.02
			ψ 8	0.24	0.07	$\beta 8$	0.006	0.002	$\alpha 8$	0.001	0.000
			ψ 9	0.25	0.12	$\beta 9$	0.011	0.004			
			ψ 10	0.002	0.001						
			ψ 11	0.005	0.002						
			ψ 12	0.13	0.06						
			ψ 13	0.04	0.02						
Summary statistics											
R^2	0.88			0.96			0.85			0.79	
Standard error of the equation (per cent)	1.60			1.27			1.26			1.42	
LM test against auto-correlation (critical value = 9.5)	1.4			1.7			5.2			6.4	
'Forecast' test for parameter stability (critical value = 15.5)	17.5			10.5			3.0			13.1	
Test against heteroscedasticity (critical value = 3.8)	0.1			0.4			0.3			0.3	

real mortgage stock ($m-p$), capital gearing per household ($m-ph-h-ho$), household income gearing ($GIGH$) and mortgage rationing (MR). In order to track the two house price booms, a cube term is necessary in lagged income (although throughout much of the remainder of the sample this term's contribution is close to zero). The precise specification is;

$$\begin{aligned}\Delta ph_t = {} & \beta_0 + \beta_1 \Delta ph_{t-2} + \beta_2 A_2 (\Delta (y-ho)_t) \\ & + \beta_3 (\Delta (y-ho)_{t-1})^3 + \beta_4 \Delta p_t + \beta_5 (m-p)_t \\ & + \beta_6 (m-ph-h-ho)_{t-4} + \beta_7 (y-ho)_{t-1} \\ & - \beta_8 GIGH_t + \beta_9 \Delta_2 MR_t + \text{dummies}\end{aligned}$$

where $A_n(x) = \frac{2}{n(n+1)} \sum_{i=0}^{n} (n-i)\, x_{t-i}$,

Finally, the price of new dwellings is determined given the price of existing houses. Deviations between the two occur as a result of movements in the uncompleted stock, income per household, real construction costs, after-tax interest rates and the number of completed but unsold dwellings (ud). The precise specification is;

$$\begin{aligned}\Delta pn_t = {} & \alpha_0 + \alpha_1 \Delta ph_t - \alpha_2 (pn-ph)_{t-1} - \alpha_3 u_{t-2} \\ & + \alpha_4 A_4 (\Delta (y-ho))_t + \alpha_5 (cc-p)_{t-4} \\ & - \alpha_6 (R(1-T))_{t-1} - \alpha_7 (u-y-ho)_{t-4} \\ & - \alpha_8 B(ud)_t + \text{dummy}\end{aligned}$$

More details of the theory behind the model (and the econometric results obtained in trying to estimate it) are contained in the paper cited in footnote (3) on page 70. Table D gives the parameter estimates obtained, together with the relevant standard errors and summary statistics of the model's performance.