

The information content of regional house prices: can they be used to improve national house price forecasts?

By Rob Wood of the Bank's Structural Economic Analysis Division.

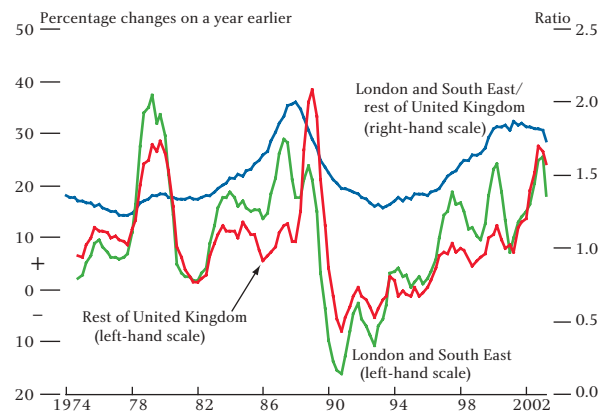
It is often suggested that house price movements in the South East lead, or even cause, movements in the rest of the United Kingdom. If this were the case then house price inflation in the South East would be useful when forecasting national house price inflation. There are plausible channels through which such a 'ripple effect' could operate. But tests for patterns of regional price changes consistent with the effect give mixed results. There is evidence that regional price changes were consistent with the South East playing a leading role in the late 1980s/early 1990s, but not during other periods. So it is important to understand the nature of the shock to the housing market before concluding that a given house price change in London and the South East has implications for house prices in other regions.

Introduction

House price inflation in London and the South East has outpaced that in the other regions of the United Kingdom in recent years (see Chart 1). On the basis of the Nationwide index, the ratio of house prices in London and the South East to those in the rest of the United Kingdom rose from 1.27 in 1993 Q2 to 1.86 in 2001 Q2, close to the historical high of 2.00 in 1988 Q1.⁽¹⁾ Since 2001 Q2, the rate of house price inflation in the rest of the United Kingdom has surpassed that in the South East and the ratio fell to 1.73 in 2003 Q2. But if the rate of inflation in the South East were to fall sharply, would that necessarily be a precursor to a slowdown in the rest of the United Kingdom? This is often described as a 'ripple effect': house price movements in the rest of the United Kingdom following, or perhaps being caused by, house price movements in the South East. If regional house price inflation in the United Kingdom does indeed follow such a pattern, then house price inflation in London and the South East would be useful when forecasting national house price inflation.

Chart 1 suggests that house price inflation in London and the South East may have led that in the rest of the country by, perhaps, one to two quarters in the downturns in the late 1970s and late 1980s/early 1990s. However, during the mid-1990s house price inflation in London and the South East rose above and then fell back in line with that in the rest of the United Kingdom, without any obvious ripple-out. Moreover, the most

Chart 1
House prices in London and the South East and the rest of the United Kingdom^(a)



(a) Using the Nationwide measure of house prices.

recent period of very strong house price inflation, which started in mid-2001, has been broadly based; and house price inflation in London and the South East does not appear to have led that in the rest of the country in the recent, so far relatively short, slowdown. So Chart 1 suggests that the ripple effect, if it does exist, may be a complex process.

This article considers what might explain a ripple effect, and whether there is evidence that it has in the past operated consistently enough for regional house price inflation rates to help forecast national house price inflation.

Why might there be a ripple effect?

There is ample evidence that the UK housing market is characterised by frictions such as search costs,

(1) The ODPM and Halifax indices show similar patterns.

transactions costs and incomplete information: if it were not, house prices would adjust very quickly to shocks and a ripple effect would be impossible. But what are the various channels through which price changes could ripple out from one region to another?

First, the housing market in some regions may react faster than others to a national economic shock. This could occur for a variety of reasons. Demand shocks could translate more rapidly into price increases in some regions than others because housing supply conditions are different. Households in some regions may react more rapidly to information than those in other regions. Such a difference in the regional speed of response to shocks could cause a ripple effect in the house price data even if there were no causal linkages between regions.

Second, there could be a ripple-out in prices if there were a ripple-out in the determinants of housing demand, for example incomes or employment. It is sometimes suggested that London and the South East lead the economic cycle. A rise in incomes and employment in those regions could be followed after some time by similar increases in other regions, perhaps because wealth from London and the South East is slowly dispersed to other regions. Incomes and employment would affect house prices in each region. So the ripple-out in the determinants of housing demand would also lead to a similar ripple in house prices. This channel could operate if one region consistently leads the economic cycle, or if one region were hit by a localised shock.

Third, the first and second channels could be complemented by demand-driven links between the regional housing markets—such as migration, commuting and investment flows—and by the way in which expectations of capital gains are formed. In particular, migration and investment could be characterised as homeowners in London and the South East moving to another region or buying second properties in another region following a house price rise in London. This would bid up prices in other regions directly through the increased demand; if the second homes were not rented out it would also increase prices

indirectly in the other regions by reducing excess housing supply.

Workers in the United Kingdom tend to live a significant distance from their workplace, particularly homeowners living in the South East. Oswald and Benito (1999)⁽¹⁾ report that, in 1997/98, the average one-way commute to work was 33 minutes in the South East and 21 minutes in the rest of the country. 25% of graduate men in the South East spent at least two hours a day travelling to and from work, and 30% of all workers in the South East had a one-way commute of more than 45 minutes. This implies that a significant proportion of workers in London lives in a region other than London (most probably the South East, South West, East Anglia, and the East Midlands—see Cameron and Muellbauer (1998, page 8)). Consequently, a shock to the London economy, say a large number of City redundancies, could be transmitted to the housing market in neighbouring regions via this group of workers without any interregional migration or investment taking place at all. This mechanism could operate to a more limited extent in other regions of the United Kingdom.

If, finally, the South East were hit by a localised economic shock that raised housing demand and house prices in the region, expectations of house prices, and therefore capital gains, in other regions may rise in anticipation of a ripple-out in incomes and employment and of increased migration and investment flows. Indeed, if one region reacted much faster or earlier than others to a national shock, the expectations channel could cause prices to ripple out before the shock affected economic conditions (eg unemployment) in all regions. In other words, economic agents might interpret house price changes in the South East as a forward-looking indicator for house price changes in their region.⁽²⁾

Evidence

In principle, a ripple effect could originate in any region. But it is generally assumed that it begins in London and the South East. For example, Meen (1999, page 733) describes a ripple effect as ‘the propensity for house prices to rise first in the south east of the country during an upswing and to gradually spread out to the rest of the country over time’. So a big hurdle for any

(1) The authors use data from the British Household Panel Survey.

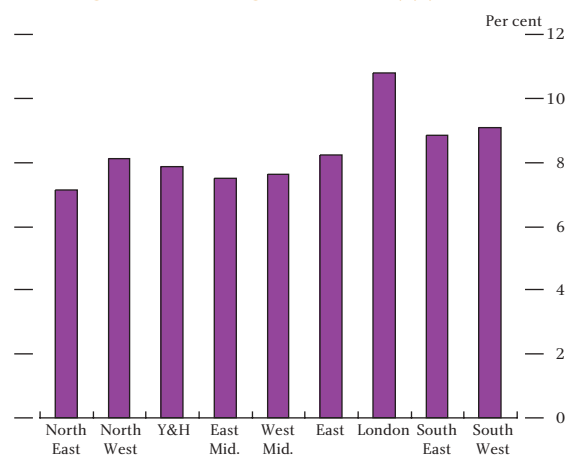
(2) A less rational expectations effect can also be postulated. In particular, evidence from the United Kingdom and the United States suggests that people form price expectations on the basis of past price movements (Case and Shiller (1988), Muellbauer and Murphy (1997), Shiller (1990a, 1990b)). A rise in house prices in London could cause house prices in other regions to increase through backward-looking expectations, even if people had no knowledge of the shock to the system.

explanation of the ‘standard’ ripple effect is to explain not just why house prices might ripple out from one region to another but also why house prices would usually change first in London and the South East.⁽¹⁾ In discussing the evidence for the various transmission channels we therefore focus on why London and the South East might lead the process.

First channel: rapid response

There are plausible reasons why the housing market in London and the South East may respond more rapidly to national economic shocks than that in other areas. First, the market in London and the South East may be more sophisticated, in the sense that information is reflected more rapidly in house prices there, and the market may be more liquid. Turnover, measured by the ratio of the number of owner-occupied property transactions to the owner-occupied housing stock, is highest in London and the South East (Chart 2) which could in turn mean that information relevant to house price prospects is reflected more quickly in prices there. But turnover does not vary much between regions and is also relatively high in the South West—so that region should also react rapidly to new information.

Chart 2
Total residential property sales of owner-occupied dwellings as a proportion of owner-occupied housing stock (average turnover 1999–2001)^(a)



(a) Total residential property sales of owner-occupied dwellings are calculated as total residential property sales plus the change in the stock of local authority and social housing.

This analysis of turnover is complicated by the existence of dwellings owned by local authorities and of social housing. The number of these dwellings varies a great deal between regions: from 27.7% of the housing stock in the North East to 13.6% in the South East. It is not clear how to treat such dwellings. It is possible to

purchase some local authority dwellings, but they may be less representative of the wider market in a region than owner-occupied dwellings. For instance, the purchase price of such dwellings is likely to be significantly below the market price for similar dwellings (due to the discounts offered by the right-to-buy scheme). Chart 3 shows that *total* turnover as a proportion of the *total* dwelling stock varies less between regions than the ratio of owner-occupied transactions to the owner-occupied stock. Turnover in London is less remarkable on this basis, because it has the second highest number of local authority and social dwellings as a proportion of the dwelling stock (26% compared with 27.7% in the North East).

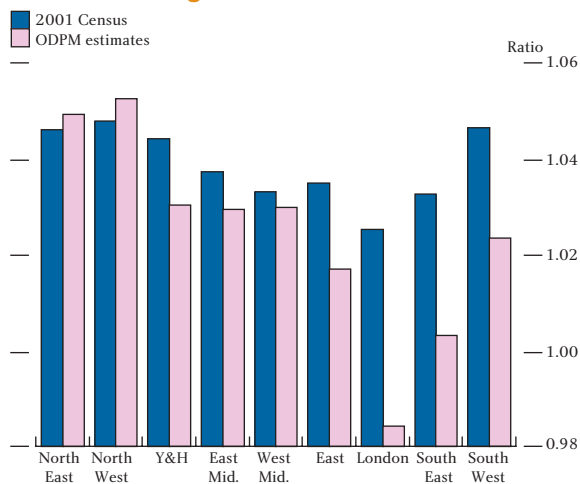
Chart 3
Total residential property sales as a proportion of total housing stock (average turnover 1999–2001)



The speed of response of prices in each region to a shock might also depend on the amount of spare housing capacity available in each region. Increased demand could lead prices to rise earlier in a region with a small number of vacant dwellings, because there would be less spare capacity in the system to soak up the increased demand. Chart 4 shows that London and the South East have a lower surplus of dwellings relative to household numbers than other regions. But while Chart 4 is suggestive of a faster response in house prices in London and the South East, it is still difficult to draw direct conclusions from it because the relationship between vacant dwellings and the speed of price response is not straightforward. In particular, in some regions households might find it more difficult to find suitable dwellings because, for instance, they may be less widely advertised. So the stock of vacant dwellings could be higher in some regions than others, for the

(1) It is worth noting that such a ripple effect requires that house prices in London and the South East react first to national shocks, not that London and the South East are more responsive than other regions to national shocks, such as a change in interest rates.

Chart 4
Ratio of dwellings to households



same speed of response of prices to a shock, because the equilibrium stock of vacant dwellings might also be higher in those regions. Furthermore, there might be large stocks of uninhabitable houses in some regions which would not be a source of supply in the short run. The high price of houses in London and the South East increases the incentives to renovate derelict houses quickly, which might account for the relatively low level of spare capacity.

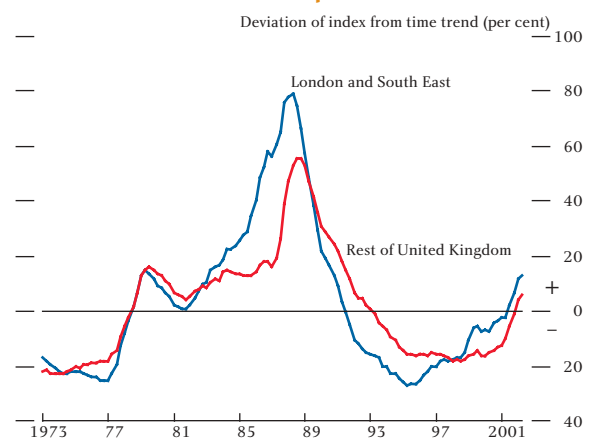
Increases in price as a result of any mismatch between demand and available supply should encourage new construction, which should over time dampen any initial price response to a change in demand. But the evidence suggests that it is more difficult to expand the housing stock quickly in the South East than in other regions due, possibly, to planning restrictions (see Meen (1996a)). So prices there may show a more persistent reaction to shocks.

These two factors—the availability of vacant dwellings, and the responsiveness of construction activity—may be important determinants of the speed at which house prices respond to economic shocks.⁽¹⁾ They may at least explain why house prices in London and the South East are more cyclical than in other regions (see Chart 5), even if they do not explain why they might lead those in other regions.

Second channel: regional leads

There are few studies of whether London and the South East consistently lead the economic cycle,⁽²⁾ and there is little support for the hypothesis that those regions have

Chart 5
Detrended nominal house prices^(a)



(a) Using the Nationwide measure of house prices.

been subject to local economic shocks more frequently than other regions. This is not to say that London and the South East have never been hit by local economic shocks, nor that they have not on occasion led the economic cycle. Indeed, over the period covered by the Nationwide house price data, they may well have done so on at least one occasion—the late 1980s—and this needs to be borne in mind when interpreting later results. But those regions are not the only ones to have experienced shocks and it is difficult to see why they would be the only regions to be hit consistently by local economic shocks. Given the lack of evidence, we cannot, of course, rule out this channel. But it does suggest that ripple effects are probably not caused by the second transmission channel.

Third channel: migration, investment and commuting

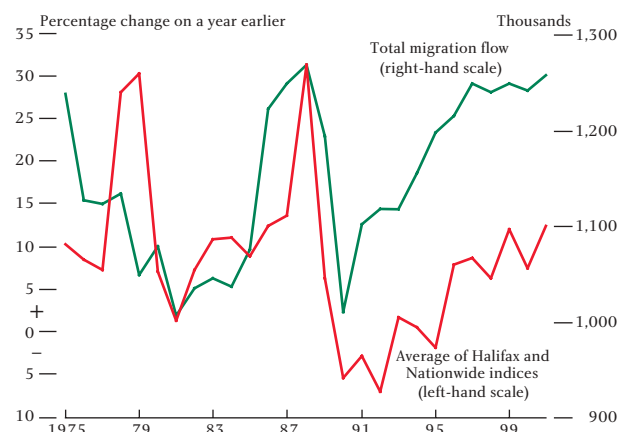
There were four separate effects within the third channel. We discussed the evidence for the prevalence of commuting in the South East above, so we consider only the other three effects here. Migration and investment flows could aid a ripple effect by increasing housing demand in one region and reducing it in another. However, they are often rejected as a possibility because interregional migration and investment flows in the United Kingdom are weak. Charts 6 and 7 show that, while total interregional migration flows tend to move with house price inflation, the net migration inflows to each region (from all other regions in the United Kingdom) are small relative to the stock of dwellings.⁽³⁾ But that may not be a sound basis on which to reject the hypothesis, for two reasons.

(1) See Capozza *et al* (2002).

(2) Two academic papers that partially deal with the issue, Byers (1991) and McGuinness and Sheehan (1998), do not suggest that one region leads the others.

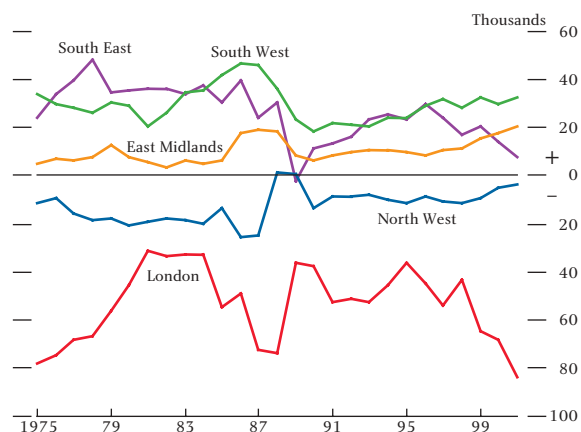
(3) For instance, the average annual net migration inflow (between 1975 and 2002) to the North West was 13,000 people, compared with a stock of 2.98 million dwellings in 2002.

Chart 6 Regional net migration inflows^(a) and house prices



(a) Total of migration inflows to all UK regions from other UK regions. Migration figures estimate by ONS from re-registrations recorded at National Health Service Central Register. Figures exclude international migration and are subject to revision in light of the Census results.

Chart 7 Annual regional net migration inflows^(a)



(a) Excluding international migration.

First, people do not need to move for their housing demand to have an effect on prices in another region. Homeowners in a region should revise their asking prices upwards following a price shock in a neighbouring region, in the knowledge that they can achieve a higher sale price for their property because people may want to move between regions. Alternatively, small initial migration flows may be sufficient to indicate to homeowners that demand for property in their region is increasing, so they can expect to achieve a higher sale price. The same applies for investment.

Second, even if the ripple effect did exist we might not expect there to be much migration between the large regions often used in the analysis. Instead, we might expect the majority of people to move only a short distance, with few crossing the borders between regions;

the benefits from moving can be expected to decrease rapidly with the distance of the move.⁽¹⁾ In this case, only those people close to the regional borders would be expected to move to another region and therefore be recorded as 'migrating'.

The evidence for the importance of the migration and investment channels is therefore difficult to assess. We cannot rule them out without significant further investigation.

Finally, there may be a direct expectations channel. This could, in principle, be examined by using the Royal Institution of Chartered Surveyors (RICS) monthly housing market survey to test whether people's expectations about house price inflation appear to be related to past house price inflation in other regions, especially the South East. Unfortunately, the available data cover only a short period, October 1998–December 2002, so we would not yet be able to generate useful results from such tests.

Summary

Unless there is an exogenous change in people's expectations of the equilibrium level of house prices, a national or local economic shock is required to start the ripple effect process. Given such a shock, there is some evidence that house price ripple effects could operate through the first channel (rapid response) but our discussion suggested that ripple effects are probably not caused by the second channel (regional leads). It is difficult to find evidence to suggest that the third channel (migration, investment and commuting) would not operate, but this analysis is not conclusive. So we now turn to testing the regional house price data directly for evidence of the existence of systematic patterns consistent with the ripple effect. Have regional house prices in fact moved in ways consistent with a ripple effect?

Tests for ripple effects

A ripple effect would result in regional house prices moving in a predictable pattern. There would be temporary changes in relative regional prices but stable long-run relative prices; and house price changes in London and the South East would consistently lead, or cause, changes in prices in the rest of the United Kingdom. A 'perfect' ripple effect would also be

(1) Tangible factors such as the cost of the move and the costs of search and intangible factors related to moving away from a current residence (eg familiarity with the area, with the home, memories etc) can be expected to increase with the distance of the destination from the homeowner's current home.

Table A
Regional house price causality test results

Paper	Sample period	Data frequency	House price index (a)	Conclusion (b)
Rosenthal (1986)	1975–81	Monthly	Average price, ODPM	✗
Hamnett (1988)	1969–87	Annual	Average price, ODPM (c)	✗
Giussani and Hadjimatheou (1991)	1968 Q1–1988 Q4	Quarterly	Average price, ODPM	✓
MacDonald and Taylor (1993)	1969 Q1–1987 Q4	Quarterly	Average price, ODPM	✓
Alexander and Barrow (1994)	1968 Q2–1993 Q1	Quarterly	Average price, ODPM	✓
Meen (1996b)	1969–94	Quarterly	Mix-adjusted price, ODPM	✓
Munro and Tu (1996)	1969 Q1–1993 Q4	Quarterly	Average price, ODPM	✓
Ashworth and Parker (1997)	1981 Q1–1992 Q4	Quarterly	Average price, ODPM	✗
Meen (1999)	1973–94	Quarterly	Mix-adjusted price, ODPM	✓

(a) ODPM refers to the house price index now based on the Council of Mortgage Lenders (CML) 5% sample survey produced by the Office of the Deputy Prime Minister (ODPM). This index has, in the past, been referred to as the DETR, DTLR and Building Societies sample survey index.

(b) ✓ indicates that the evidence was found to be in favour of a ripple effect. ✗ indicates the evidence was not in favour of a ripple effect.

(c) Hamnett (1988) did not use any tests. Instead the author analysed charts and tables of regional annual house price changes.

characterised by price changes occurring first in the South East, then in regions close to the South East, then finally in regions furthest away from the South East, rather than all regions following the South East with the same or geographically random lags.

Most available investigations base their work on standard statistical regions or government office regions, which do not represent regional housing markets particularly well. In fact, there is little reason why we would expect housing markets to be segregated according to the geographical boundaries of the standard statistical regions.⁽¹⁾ Additionally, robust regional house price data are available only at a quarterly frequency. The use of quarterly rather than monthly data could mask any patterns consistent with the ripple effect, although if the ripple effect operated so rapidly that it was undetectable with quarterly data it would not be very useful for forecasting purposes. With these problems in mind we can now assess the available evidence.

First test: econometric tests for the leading regions

Econometric methods can be used to test whether house price inflation in one region can significantly help to explain future house price inflation in other regions. For instance, we could test whether house price inflation in the South East can help explain future house price inflation in the North West. These tests are commonly

referred to as ‘Granger causality’ tests, although a positive result does not prove that house prices in one region cause those in another region in a structural sense. Instead it just suggests that house prices in one region contain information useful for forecasting house prices in another region (that result is consistent with causality, but does not prove its existence).

The results from a wide array of papers, most but not all of which use Granger causality tests, are summarised in Table A,⁽²⁾ and provide significant evidence in favour of the ripple effect. However, even the most recent papers do not consider price changes after 1994, so the results may be dominated by the late 1980s’ experience. Moreover, Granger causality tests⁽³⁾ are sensitive to the precise specification of the test and the results may also be sensitive to changes in the sample period and house price index used.

All of the papers use either the average-price or mix-adjusted price ODPM indices.⁽⁴⁾ Assessing the tests in Table A, however, is not straightforward because the two indices can give very different estimates of house price inflation from quarter to quarter (see Chart 8). In addition, the average price may reflect changes in the mix of houses being sold while the way the mix-adjusted index is constructed means it gives more weight to price changes of expensive houses than of cheap houses (see Thwaites and Wood (2003) for more details). So it is

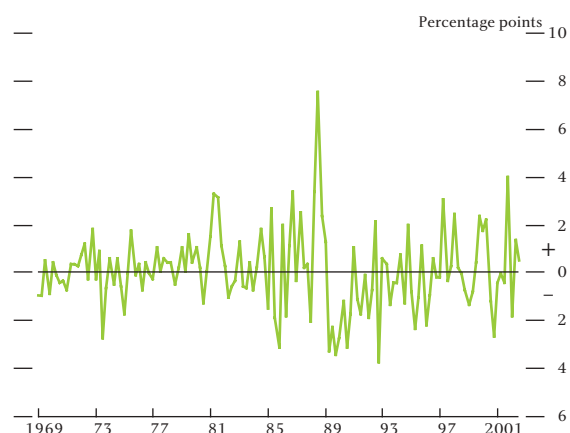
(1) Munro and MacLennan (1986) show how a regional approach ignores substantial local variation in housing market conditions and can lead to incorrect conclusions regarding price movements within the region. We can also emphasise this point by taking the West Midlands as an example. The region includes 38 local authorities encompassing the large rural counties of Herefordshire, Worcestershire, Shropshire, Staffordshire and Warwickshire and the seven metropolitan boroughs of Birmingham, Coventry, Wolverhampton, Dudley, Sandwell, Solihull and Walsall (see www.advantagewm.co.uk). Even if the ripple effect does exist it is difficult to imagine house prices in these various parts of the West Midlands moving together consistently enough to allow the so-called ripple effect to be detected from the regional house price data.

(2) The conclusions of the papers are not just a simple yes or no and are complicated by the regions used, and by whether they are aggregated into South versus North or just use standard statistical or government office regions, so it is difficult to do them justice in a simple table. Table A is a reasonable summary of the results, but readers should consult the original papers for the detail of the conclusions and tests used.

(3) Although the results from Granger causality tests are not used as the only evidence in the various papers, they do tend to be used more than any other type of test.

(4) The average-price index is calculated from the simple average price of all dwellings in the ODPM sample. The mix-adjusted index takes some account of the changes in characteristics (such as type of dwelling and its region) in the sample each quarter. See Thwaites and Wood (2003) for more details.

Chart 8
Difference between quarterly national house price inflation measured by the mix-adjusted and average-price ODPM indices



possible that these results are being driven by changes in the mix of houses sold or by the price of expensive houses.

We have repeated the tests on the regional Nationwide, Halifax and mix-adjusted ODPM indices. We extended the sample period to 2002 Q4 and, in addition to considering the evidence over the full sample period, experimented with different specifications and with subperiods of the full sample.

In principle, the Nationwide and Halifax indices are probably more appropriate than the ODPM index when testing for ripple effects, as both aim to measure the price of a typical transacted house with a representative mix of attributes. So the effect on the index of a change in the price of a house will not depend on the value of that house (see Thwaites and Wood (2003) for more details). However, the samples used to construct these indices may not be as representative as those used for the ODPM index, which includes transactions recorded by almost all lenders, rather than just those recorded by a single lender. Additionally, the Halifax index is only available from 1983; and although the Nationwide index is available from 1973, the current hedonic regression technique has only been used to calculate the index from 1983 onwards. Prior to 1983 prices were mix-adjusted by floor space, house type and region. Nevertheless, the Halifax index now provides 20 years of data and the sample size is large. The Nationwide

index is useful for comparison although we need to keep in mind that the method has been changed since 1973.

The results of the tests, reported in Tables B, C and D, are mixed.⁽¹⁾ The tables are arranged such that, in general, 'South to North' relationships are recorded above the diagonal and 'North to South' relationships are recorded below the diagonal. The tests on the Nationwide and ODPM indices give more evidence of South to North causality than North to South but the result is not clear-cut. There are 48 and 46 highly significant (significant at the 0.1% level) relationships above the diagonal in Tables B and C respectively, but there are five and seven below the diagonal in Tables B and C respectively. The Halifax index gives significant evidence of North to South as well as South to North causality. There are 34 highly significant relationships above the diagonal in Table D and 15 below it. These pictures become less clear-cut if we also consider less significant relationships: for instance, if we also consider relationships significant at the 1% level.

Further tests, not presented here, show that the results for all indices are sensitive to the time period used: there is evidence for the ripple effect in the 1984–93 period, but there is little evidence for the periods 1973–83 and 1994–2002.

The existence of significant North to South and two-way relationships is not necessarily inconsistent with the ripple effect from the South East outwards that we have in mind. For instance, high house price inflation in Wales appearing to cause low house price inflation in the South East might occur because price changes take some time to ripple out to Wales. By the time a rise in prices in the South East causes rises in Wales, the South East may be experiencing a slowdown in house price inflation.

Second test: does regional house price inflation have explanatory power in a national house price equation?

We can also test whether past values of a particular region's house price inflation contain information useful for explaining current values of national house price inflation. We have carried out such a test by estimating

(1) The tests for causal relationships were carried out using four lags of the deviation of the natural log of seasonally adjusted regional house prices from their time trend. For such tests to be valid the series must be trend stationary processes (TSP). Augmented Dickey Fuller (ADF) tests strongly suggest the series are in fact difference stationary processes (DSP). But in principle the series should be TSP and these ADF tests have low power, so they will find it difficult to reject the hypothesis of a unit root. Nevertheless, to ensure the results presented are valid we also ran the Granger causality tests using the first difference of logged regional house prices. Such tests would be valid if the series were DSP. The results were very similar to those presented in the main text, suggesting that our assumption that house prices are TSP was not invalid, or at least was unimportant in these circumstances.

Table B
Granger causality test statistics for relationship in house prices between pairs of regions^(a)
using the Nationwide index for 1973 Q4–2002 Q4

From	To												
	GL	OM	OSE	EA	SW	EM	WM	W	Y&H	NW	N	Scot	NI
GL	–	*	*	**	**	**	**	*	**	*	**	–	*
OM	**	–	**	**	**	**	**	**	**	**	**	–	**
OSE	**	*	–	**	**	**	**	**	**	**	**	*	**
EA	–	*	*	–	**	**	**	**	**	**	**	*	**
SW	**	**	**	**	–	**	**	**	**	**	**	**	*
EM	–	**	**	–	*	–	**	**	**	**	**	**	*
WM	*	*	**	*	*	**	–	**	**	**	**	*	*
W	–	*	*	**	*	–	–	–	**	**	**	**	*
Y&H	*	*	**	*	–	*	–	**	–	**	**	**	**
NW	–	*	*	–	–	–	–	–	–	–	**	**	**
N	–	–	–	–	–	–	–	–	–	–	–	–	**
Scot	–	–	–	–	*	–	–	–	–	–	–	–	**
NI	–	–	*	–	–	–	–	–	*	**	–	–	–

(a) Light orange shading denotes significance at the 5% level, medium orange shading denotes significance at the 1% level, dark orange shading denotes significance at the 0.1% level.

Table C
Granger causality test statistics for relationship in house prices between pairs of regions^(a)
using the ODPM index for 1968 Q2–2003 Q1

From	To											
	GL	SE	EA	SW	EM	WM	W	Y&H	NW	N	Scot	NI
GL	–	*	**	**	**	**	**	**	**	**	**	*
SE	**	–	**	**	**	**	**	**	**	**	*	–
EA	–	–	–	**	**	**	**	**	**	**	–	–
SW	**	**	**	–	**	**	**	**	**	**	*	–
EM	**	*	*	–	–	**	**	**	**	**	**	–
WM	–	*	**	*	**	–	**	**	**	**	**	–
W	–	–	–	–	**	**	–	**	**	**	**	–
Y&H	–	–	–	–	–	*	**	–	–	**	**	–
NW	–	–	–	–	–	*	**	**	–	**	**	–
N	–	–	–	–	–	–	–	**	*	–	*	*
Scot	–	–	–	–	–	*	**	**	–	–	–	*
NI	–	–	–	–	–	*	**	–	–	–	–	–

(a) Light orange shading denotes significance at the 5% level, medium orange shading denotes significance at the 1% level, dark orange shading denotes significance at the 0.1% level.

Table D
Granger causality test statistics for relationship in house prices between pairs of regions^(a)
using the Halifax index for 1983 Q1–2002 Q4

From	To											
	GL	SE	EA	SW	EM	WM	W	Y&H	NW	N	Scot	NI
GL	–	**	**	**	*	*	*	*	–	*	–	–
SE	**	–	**	**	**	**	*	**	**	*	–	–
EA	*	**	–	**	**	**	**	**	**	**	*	–
SW	**	**	*	–	**	**	**	**	**	**	*	–
EM	**	**	**	*	–	*	**	**	**	**	**	–
WM	**	**	**	**	**	–	**	**	**	**	**	*
W	**	**	**	**	**	–	–	**	**	**	**	–
Y&H	**	**	**	**	*	–	**	–	**	**	**	–
NW	**	**	**	**	–	–	–	–	–	**	**	*
N	**	**	*	*	–	–	–	–	–	–	**	–
Scot	**	**	**	*	–	–	–	–	–	–	–	**
NI	**	–	*	–	–	–	–	–	–	–	–	–

(a) Light orange shading denotes significance at the 5% level, medium orange shading denotes significance at the 1% level, dark orange shading denotes significance at the 0.1% level.

Note: GL = London; OM = Outer Metropolitan; OSE = Outer South East; SE = South East; EA = East Anglia; SW = South West; EM = East Midlands; WM = West Midlands; W = Wales; Y&H = Yorkshire and Humberside; NW = North West; N = North; Scot = Scotland; NI = Northern Ireland.

variants of a simple house price equation. In this equation house prices are determined by average earnings and the real interest rate in the long run, but earnings growth and the lagged value of house price inflation help explain the short-run movements around the long-run equilibrium. To perform this test we added lagged values of a region's house price inflation rate to the short-run dynamics of house prices, and tested the significance of those variables.⁽¹⁾

Five regions were tested: London, the South East, East Anglia, the East Midlands and the North West. The results are presented in Table E and do not give strong evidence in favour of house price inflation in any region containing information that is useful for forecasting national house price inflation. There is some evidence that the South East and East Anglia may be leading regions, but only using the Halifax index and not for the second half of the sample. This is consistent with Chart 1 (which indicates that London and the South East only led the rest of the United Kingdom during the late 1980s) and the Granger causality tests.

There are some statistical problems with the equations used in Table E because the regional house price inflation terms are highly correlated with each other and with the lagged national house price inflation term. So it is difficult to isolate the explanatory power of any individual variable. We addressed this problem by estimating further variants of the equations,⁽²⁾ but the results were almost identical to those shown in Table E.

Table E
Collective significance of lagged regional house price inflation terms (Halifax/Nationwide) in national house price equation^(a)

Period	GL	SE (b)	Outer Met (b)	EA	EM	NW
1984 Q2–2003 Q1	✗/✗	✓/✗	-/✗	✓/✓	✗/✗	✗/✗
1984 Q2–1995 Q4	✗/✗	✓/✗	-/✗	✓/✗	✗/✗	✗/✗
1994 Q1–2003 Q1	✗/✗	✗/✗	-/✗	✗/✗	✓/✗	✗/✗

(a) ✓ indicates the terms were significant at the 5% level. ✗ indicates the terms were not significant at the 5% level.

(b) SE refers to the Halifax South East region but the Nationwide Outer South East Region.

Conclusions

A pattern of regional house price changes consistent with the so-called ripple effect has to be caused by a shock to the economy. In the past, the shock has often been a large rise in interest rates and unemployment. Following such a shock, there are three main channels through which a ripple effect could operate. Plausible arguments and supporting evidence can be advanced in favour of London and the South East reacting faster than other regions to economic shocks, and expectations, migration, investment flows and commuting could also have an effect. However, there is no evidence that a shock to the economy would always cause house prices to rise first in London and the South East, or that house prices are always consistently transmitted between regions via this channel.

We have used various tests to identify whether regional house prices have in the past moved in a way consistent with ripple effects. The results are mixed. There is more evidence of South to North than North to South causality, but the results are sensitive to the house price index and time period used. There appears to be little evidence of ripple effects operating post-1994, but significantly more evidence for the pre-1994 period. The sharp fall in house price inflation in the late 1980s and early 1990s was associated with a large increase in interest rates and unemployment that may have affected the housing market in London and the South East more quickly than other regions. This may explain why London and the South East appear to have led national house price inflation in the late 1980s.

So a ripple effect could, in principle, exist and there are plausible channels through which it could operate. But it is important to understand the nature of the shock that would be causing a ripple effect, before concluding that a given house price change in London and the South East has implications for house prices in other regions. House price changes could simply reflect local conditions and may not have any significant implications for other regions.

(1) The following equation was estimated for each region i :

$$\Delta h_{it} = c + \beta_1 \Delta h_{it-1} + \beta_2 \Delta \text{earnings}_{t-1} + \beta_3 (\text{hp}_{t-1} - \text{earnings}_{t-1}) + \beta_4 \text{RLR}_{t-1} + \beta_5 \Delta \text{hp}'_{t-1} + \beta_6 \Delta \text{hp}'_{t-2} + \beta_7 \Delta \text{hp}'_{t-3} + \beta_8 \Delta \text{hp}'_{t-4}$$

where all variables apart from RLR are in logs, t represents the time period, c is a constant, h_n is the average of the Halifax and Nationwide national house price indices, earnings is the average earnings index, RLR represents the real long-run interest rate and is defined as the ten-year index-linked bond yield, and hp is the regional house price index that the test is being conducted on. We tested, separately on Nationwide and Halifax regional indices, whether $\beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$.

(2) For example, one of the variants included only the second and fourth lags of the regional house price inflation rate.

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