INDEX MONITOR

ACCORDING TO SOME HOUSE PRICE INDICES, PRICES ARE GOING UP; OTHERS SAY DOWN. SOME INDICES ESTIMATE THE AVERAGE HOUSE PRICE AS c.£220K – OTHERS ESTIMATE c.£170K. WHAT IS GOING ON?

Comparison of Indices

Did prices ***fall*** in September 2010 by 3.6% (Halifax); did they ***rise*** by 0.1% (Nationwide), or did they ***rise*** by 0.2% (LSL Acad)?

Disagreement rules, not only as to monthly *changes* in average house prices, but also as to average price *levels.* In this update of Index Monitor, we focus upon two particular issues which came to the fore following publication of the September indices:

- the Halifax report that prices fell by more in September than ever previously recorded by their index, whilst LSL Acad and Nationwide said prices held firm

- the LSL Acad HPI report showing that the average house price in England & Wales in August was £223,536 whilst the Land Registry index, *based upon the same data*, reported an average of some £167,500

Mervyn King must be as puzzled as he was in 1998 by what he had then described as an "unfortunate" divergence of the lender indices. Shrinking sales and shrinking numbers of mortgage offers, leading to shrinking data samples, make continued divergence inevitable. Six indexed house prices and one from a survey provide prices going every which way. In Index Monitor, we point out how our Comparison of Indices looks back at the accuracy of indices.

28th October 2013

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PREFACE

House price indices generate publicity valuable to providers. Most are estimated using data proprietary to the provider. The CLG House Price Index exists as a public "good", funded by government but uses proprietary mortgage completion data made available by a body of lenders. Proprietary indices, employing "own" data, use methodologies designed to estimate national results from what can be very small samples of data. The strength of the LSL Property Services/Acadata House Price Index (developed and privately funded for many years as a "good") is that it alone reflects *every single* residential housing transaction in England & Wales, recorded by the Land Registry (LR), using what are publicly available data, an academic provenance and independent commentary.

In the USA, the Case-Shiller index is published some two months in arrears as is the CLG index in the UK. Most UK indices compete for attention by being "first to market" led, currently, by the Rightmove index which provides asking price information long before each month end, with the possibility that sudden confidence changes in the latter stages of the month will not be reflected. Speed to market comes at a price and, likewise, the Nationwide index published at month end is unlikely to include every mortgage offer made in the month concerned. A price has to be paid, too, in using LR data, such is the delay which occurs before all transactions are reported. It was this delay, and an early LR failure to publish an electronic database, which meant that LR data were little used until Acadata developed the "index of indices" forecasting model. This model is still the basis for our initial monthly LSL Acad HPI "forecast" result – a result updated in every subsequent month until every transaction is reflected in the index.

Our LSL Acad HPI "forecast" is intended as a guide to the LSL Acad HPI "updated" result, available a month later. If we did not prepare a forecast, our index would comprise the LSL Acad HPI "update", a further month in arrears, but based upon c.85% of all transactions. Such an index could validly claim to be comparable in timing to the CLG and LR indices and to comprise the only house price index based upon final prices, using what would be close to the complete set of data.

Why the "ultimate" in LSL Acad HPI "ultimate"? Because LSL Acad HPI "ultimate" is simply the result of taking the average of the price at which every residential transaction in England & Wales took place, smoothed over rolling 3 month periods, mix adjusted to eliminate the effect of monthly changes in the types of properties sold and seasonally adjusted to account for e.g. summer price rises. We know of no better means of preparing the "true measure of house price inflation" called for by Mervyn King. What about using repeat sales regression (RSR) as in Case-Shiller and as in the LR index? In response, we would ask - why discard two thirds of the data in the search for properties for which a prior price has been recorded, as RSR requires, which means discarding a complete dataset in favour of a sample? Furthermore, in the case of UK data, an RSR initial index has to be based upon a repeat sales (c.1/3) sample, taken from the c.35% of current month transactions available at month end - say 11% of the complete set. Note that the USA lacks a national equivalent of the Land Registry and that the S&P/Case-Shiller index was designed to employ the data available for each metropolitan district.

House price indices offer a variety of information. The Rightmove HPI, based upon offer prices, and the Hometrack survey may be thought of as indicating market sentiment. The Halifax HPI and the Nationwide HPI, based upon mortgage offers, are commonly regarded as both providing quasi-final prices and "early warning" indicators. The LSL Acad HPI, CLG HPI and LR HPI alone are based upon final prices.

Our monthly Comparison of Indices, published on our website and shown within Index Monitor, reports the accuracy of all indices, including our own LSL Acad HPI "forecasts", all of which we compare with LSL Acad HPI "ultimate". Do the lender indices have quasi-final price status? Comparison of Indices shows how well, on average, the lender indices match the final LR price movements, as measured by LSL Acad HPI "ultimate". To assess indices as "leading indicators", we also provide on our website an Annual Comparison of Indices in which lags of one, two or three months are introduced to assess the relationship between the lender indices and final prices at LR up to 3 months later.

Testing with what accuracy an index can measure house price inflation became possible when LR made available their "price paid dataset". Our Testing Indexation paper describes how we used the Halifax, Nationwide and CLG indices, together with LR prices underlying our index, to revalue a large number of properties. Using the first-sale prices recorded on the dataset and the indices, the properties concerned were revalued and our calculated revaluations were compared with the second-sale prices reported on the Land Register.

To conclude, we believe that all indices are valuable. But indices need to be understood. The average price of apples is unlikely to tell us exactly the average price of oranges. The purpose of Index Monitor is to assist the reader in extracting the information of interest to him/her from published material.

The LSL Property Services/Acadata House Price Index is freely available and will be sent monthly upon request. The methodology is described in our Meissner Satchell paper which is also available on request to information@acadata.co.uk.

1. COMMENTARY

1.1 DIFFERENCES BETWEEN THE HALIFAX HPI, THE NATIONWIDE HPI AND THE LSL PROPERTY SERVICES/ACADATA HOUSE PRICE INDEX

The lender indices and LSL Acad HPI differ as to % Monthly and % Annual house price changes, average prices and also as to monthly transactions. We comment as follows:

1.1.1 House price changes

- Halifax reports the average price of properties "*upon which they made loans"* in the month concerned as does the Nationwide
- LSL Acad HPI reports a "forecast" of *"the average price of all properties sold"* in the month concerned

The above wording emphasises that, not only does a difference exist in what the indices report, but that a timing difference exists insofar as the mortgages which the lenders offer will become sales recorded at the Land Registry some one to two months later.

A Halifax HPI or a Nationwide HPI average price is one that is hedonically adjusted and reflects the value weightings attached e.g. to each bedroom and bathroom. This is the ideal way in which to construct an index if sufficient property characteristics data are available. The number of transactions upon which each lender index is based is no longer reported. Suppose 50,000 mortgages were offered in the UK; a lender with a 10% market share would have 5,000 prices upon which to base the index. These prices will reflect the lending policy which drives the type of products upon which offers are made and which, in turn, attract specific customers and properties for the month. A policy which favoured lending to a borrower able to show that the price of the house concerned has been reduced might induce a fall in the index. Low volumes will induce volatility in any index, especially those based upon small samples. Both lenders are drawing attention to quarter on quarter results, comparable to the LSL Acad HPI use of three month rolling average prices, suggesting that price changes over a quarter are less volatile and more reflective of the true underlying trend in house prices.

1.1.2 Average house prices

- the lenders report not only % Monthly price change but also average prices for properties *subject to a mortgage*
- LSL Acad HPI reports % Monthly price change and average prices for *all properties sold, including those sold for cash*

Additionally, Halifax and Nationwide calculate a "standardised" average price. This employs the index change to update a past "standardised" house price - in the case of Halifax their standardised house price was calculated in 1983. Standardised average prices fall far below the mix adjusted average prices provided by Communities and Local Government (CLG HPI) developed by the Office for National Statistics, and the LSL Property Services/Acadata House Price Index.

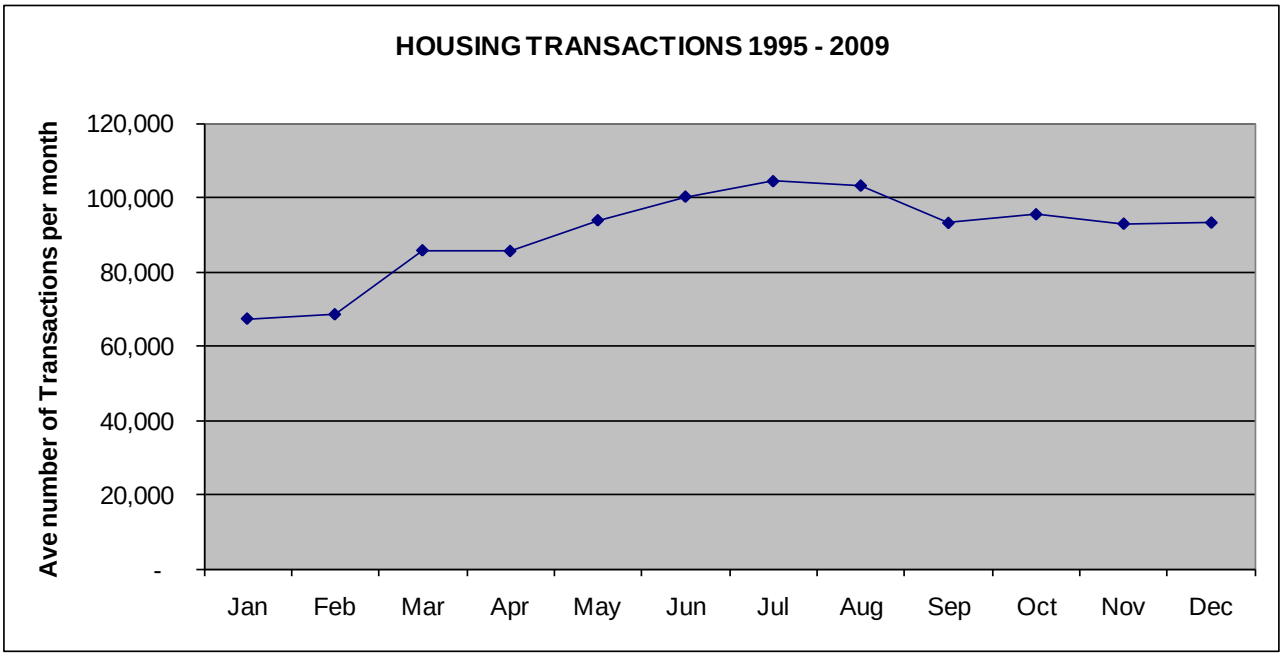
The LSL Acad HPI average price is essentially the average price provided to us by LR themselves, which we have smoothed to minimise volatility, seasonally adjusted to eliminate purely seasonal changes and mix adjusted so that e.g. a swing to sales of detached houses in one month does not distort the average.

1.1.3 Monthly Transactions: as with prices, different data provide different information. For example, in September, the:

- Halifax HPI reported Bank of England 47,372 "*mortgages approved*" ... in ***August***
- LSL Acad HPI estimated a rise to *66,000* ***September*** *transactions, including those for cash*

In explanation, our estimate of 66,000 seasonally unadjusted transactions in September was based upon those reported to the Land Registry by the month end and our projection of those, yet to be reported, based upon past trends. For interest, we estimate 63,800 transactions in all in August. The difference of 25% between our August estimate and the Bank of England number of mortgage approvals represents those approvals which were not completed and, largely, those which were cash sales. The difference between the two reports was, therefore, entirely credible.

The September LSL Acad HPI News Release statement included "Traditionally, the number of homes sold in September falls from the August level and has done so in thirteen of the last fifteen years." This fall can be seen in the following "Housing Transactions 1995 – 2009" chart based upon Land Registry data.



1.2 DIFFERENCES BETWEEN THE LSL PROPERTY SERVICES/ACADATA HOUSE PRICE INDEX AND THE LAND REGISTRY HPI AVERAGE PRICES

The contrast between the average prices published by the LSL Property Services/Acadata House Price Index and those reported by the Land Registry House Price Index has recently come to the fore.

1.2.1 August prices The latest exact comparison possible is of the August LSL Acad HPI average £223,536 with the August LR HPI average £167,423 – a difference of £56,113 or 25.1%. Both averages are for England & Wales; both use the same transacted house prices for the same monthly periods as recorded on the Land Register. In both cases, the average calculations have available the c.85% August transactions reported to the Land Registry by 30th September. Both indices are based upon the same data (note 1) below. However:

1.2.2. Simple average versus standardised average prices

1.2.2.1 Simple average prices as in LSL Acad HPI

LSL Acad HPI takes the average prices provided by the Land Registry and:

- minimises volatility by smoothing the prices over a rolling 3 months
- adjusts for purely seasonal variations or changes caused solely by a change in the type of property sold (note 2)
- provides results very close to the simple average prices which the Land Registry *themselves calculate* for the BBC and which are not derived from its index (note 3), and to those provided by Communities and Local Government (CLG HPI) (note 4)
- uses the monthly change in the average price to calculate the index

1.2.2.2 Standardised average prices as in LR HPI

LR HPI selects the c.35% of properties for which two or more prices are known to calculate the index and:

- estimates a "standardised average price" (note 5). A "standardised average price" might best be thought of as a "notional average price" - one which might be aimed at providing the best measure of the price of an "average" house, itself something which is hard if not impossible to define, rather than the average of the prices at which properties are sold. The procedure used by LR is to update a base April 2000 geometric average price monthly according to the change in the index. The base geometric average price was itself, in April 2000, already some 20% below the mix adjusted average price of the LSL Acad HPI (note 6). It is this difference which largely accounts for the difference between the current Land Registry HPI "average" price and those shown by the LSL Acad HPI.

note 1 LR HPI "Ist published" uses a c.35% sample being those properties sold in the month for which a prior price is available; the LSL Acad HPI for each current month is a forecast result
note 2 seasonal and mix adjustment
note 3 link to:
http://newsvote.bbc.co.uk/mpapps/pagetools/email/news.bbc.co.uk/1/shared/spl/hi/in_depth/uk_house_prices/html/houses.stm of which we show an extract in note 7 below
note 4 CLG HPI was developed by the Office for National Statistics and, like LSL Acad HPI, uses a mix adjustment methodology
note 5 LR HPI uses the index to calculate the standardised average price which results from the RSR methodology and the April 2000 "standardised" price; our estimates suggest that the weight of data employed to calculate the LR HPI at county/London borough level lags some two months behind the months to which the index is ascribed
note 6 to calculate a geometric average take the log of each house price; calculate the simple average of the log values; convert back from the average log price, to get back to real values.

- at April 2000 the LSL Acad HPI simple arithmetic average price was £103,206
- at April 2000 the LR HPI geometric average price was £82,251 (a difference of £20,955, making the LR HPI price 80% of the LSL Acad HPIprice)
- in August 2010 the LR HPI price was £167,423; the LSL Acad HPI price was £223,536 (a difference of £56,113 making the LR HPI price 75% of the LSL Acad HPI price)

note 7 The Land Registry publishes two sets of average prices – the "standardised" average price for the LR HPI and a simple average price for the BBC website. The latter prices are essentially identical to the average prices which we purchase from Land Registry and employ for the LSL Acad HPI. Were these BBC prices to be smoothed, mix and seasonally adjusted, we would expect them to show identical average prices to those shown by the LSL Acad HPI. Our average prices are best compared with the following regional Land Registry average prices for the BBC, rather than with those from the LR HPI. Please note that an average price for

England & Wales is not shown by the BBC.

ALL PROPERTIES: Click headings to re-order table				
AREA	AV PRICE	QUARTER	ANNUAL	SALES
Greater London	**£394,532**	-3.0%	12.0%	21,026
South East	**£272,405**	0.2%	13.2%	39,092
South West	**£225,596**	-1.0%	10.2%	18,597
East Anglia	**£202,516**	-0.3%	10.7%	7,934
West Midlands	**£174,123**	-0.5%	8.2%	12,912
East Midlands	**£165,002**	3.1%	7.7%	12,854
Northern Ireland	**£163,459**	-3.6%	4.2%	N/A
Yorks & Humber	**£160,482**	1.6%	9.0%	13,365
North West	**£159,793**	4.4%	8.4%	15,222
Wales	**£155,452**	2.5%	6.1%	7,567
Scotland	**£153,248**	3.6%	5.3%	19,004
North	**£150,192**	4.8%	7.1%	7,650

1.3 DIFFERENCES BETWEEN THE LSL PROPERTY SERVICES/ACADATA HPI PRICES AND TRANSACTIONS AND THOSE REPORTED BY ESTATE AGENTS

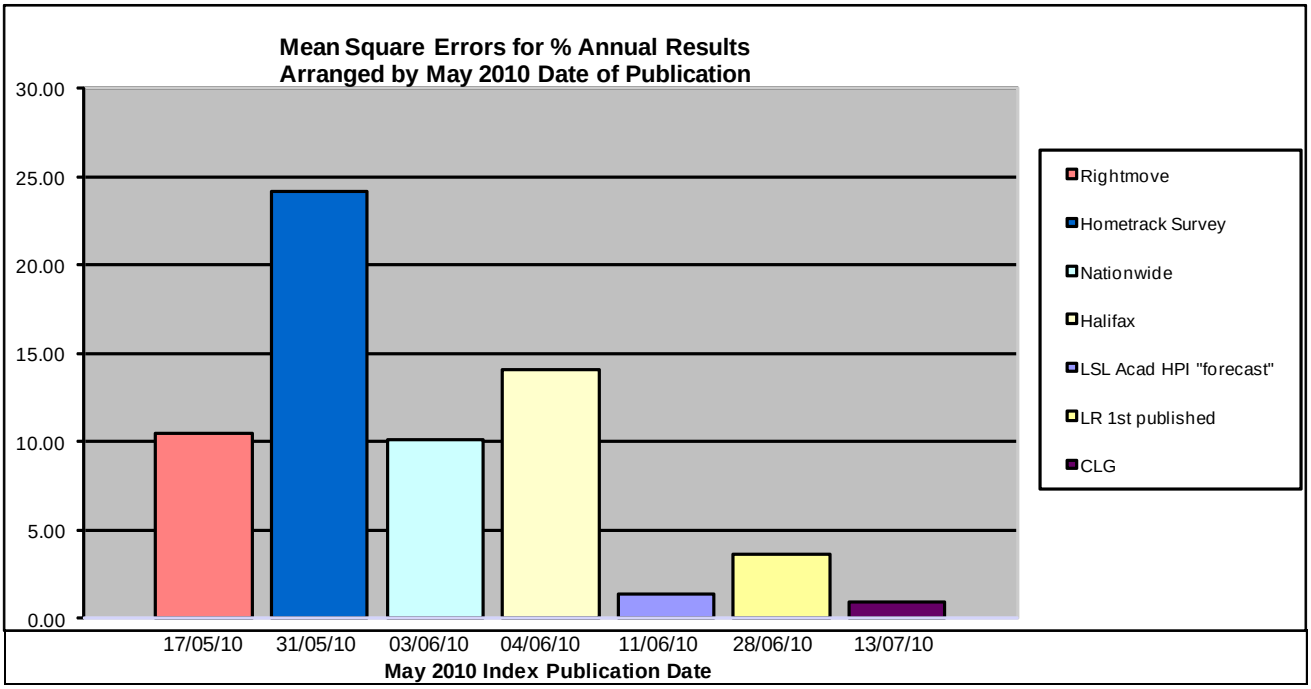
1.3.1 Housing Transactions No single estate agent provides national coverage and, like index providers, agents report on the data available to them. For example, an estate agent reporting that transactions have fallen, whilst LSL Acad HPI reports a rise, may be reporting agreements to transact which would pre-date LSL Acad HPI by at least one month, since the latter reports actual housing completions. An agent dealing at the top end of the market might have a different experience from one in, say, Brent, where transactions were up 62% in September compared with a year ago.

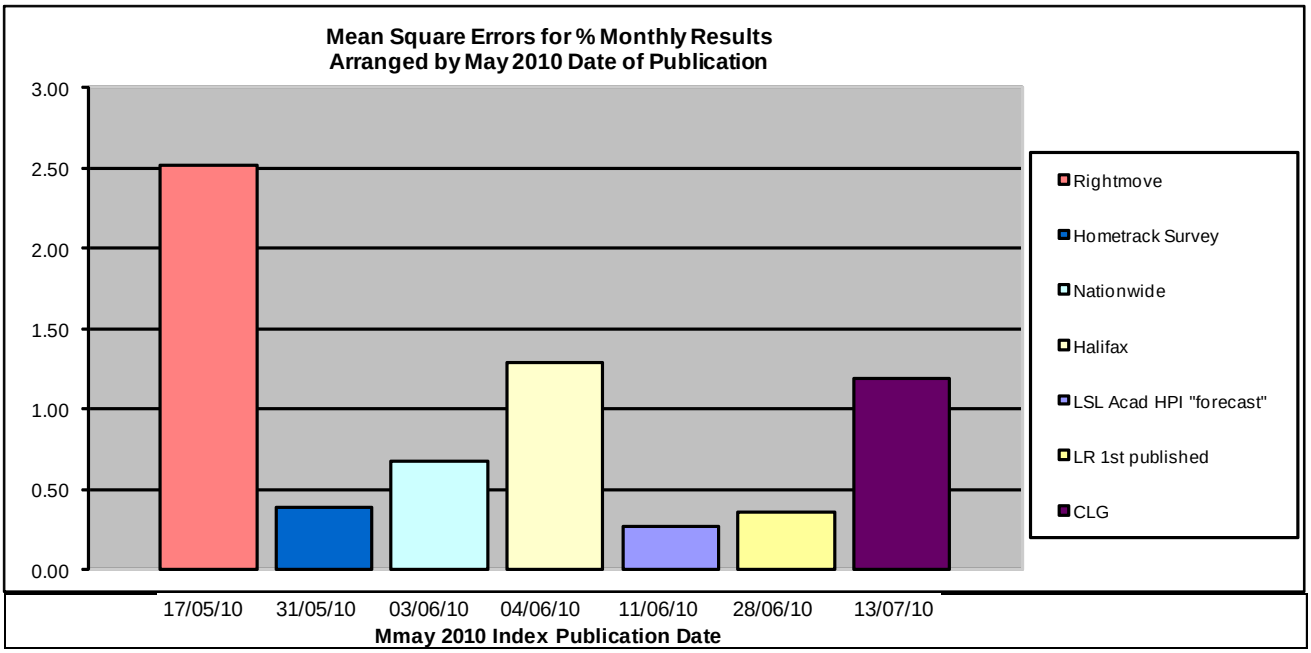
1.3.2 House price changes An estate agent primarily based in the prime residential areas of London may well experience price changes that are very different from price changes based upon national averages.

2. COMPARISON OF INDICES

2.1 "Mean Square Error" Charts

The procedure and charts below are explained in 3. We emphasise that we test annual and monthly house price inflation index measures only at national level. Because we are less concerned with speed of reporting and more concerned with tests of 'accuracy', our Comparison of Indices tests are made some four months in arrears, to allow the "ultimate" house price to emerge from the Land Registry data. Thus, at the end of September, the latest month that we use for comparison purposes is May, allowing four further months of data to have updated the LSL Acad HPI.





3. COMPARISON OF INDICES EXPLAINED

3.1 Mean Square Error

In Comparison of Indices, we calculate the difference between each index and our benchmark "ultimate" index at each month end and square the result, in order not to differentiate between a positive or negative outcome. We total and average the squared differences[1] over a five year period. The results[2] for e.g. May 2010 are depicted in 2.1 and show how each index monthly and annual inflation result accords with our LSL Acad HPI "ultimate" index. We place the indices in the order in which they are released.

[1] to provide a "mean square difference" for each of the indices

[2] The detailed Comparison of Indices with interactive charts is available on the Acadametrics website

3.2 Timelines

The different points in the house purchase timeline at which indices take their data are sometimes quoted as being material to the different results. Hence, we adjust our above results for anticipated lags, on an annual basis, (see the table below) and show the results on our website[3]. Lagging the Nationwide % Monthly results by one month reduces the mean square error results whilst those of other indices appear little affected.

COMPARISON OF INDICES - ANNUAL CHECK ON THE EFFECT OF LAGGING INDICES Q3/10

DIFFERENCE SQUARED	LSL Acad HPI "forecast"	LSL Acad HPI "updated" (85%)	Halifax	Nationwide	CLG	Rightmove	Hometrack	Str Av HFX&NW	3 Mth Av HFX&NW	LR 1st published	LR Latest
Annual											
no lag	1.39	0.69	14.07	10.13	0.96	10.51	24.17	10.10	8.83	3.60	3.37
1 month	1.39	0.69	14.46	10.16	0.96	10.20	24.67	10.26	9.20	3.60	3.37
2 month	1.39	0.69	14.99	10.21	0.96	10.54	25.61	10.51	10.04	3.60	3.37
3 month	1.39	0.69	16.00	10.53	0.96	11.39	26.77	11.13	11.55	3.60	3.37
Monthly											
no lag	0.26	0.21	1.29	0.68	1.19	2.52	0.39	0.66	0.24	0.35	0.34
1 month	0.26	0.21	1.29	0.65	1.19	2.72	0.39	0.64	0.24	0.35	0.34
2 month	0.26	0.21	1.31	0.70	1.19	2.59	0.39	0.68	0.27	0.35	0.34
3 month	0.26	0.21	1.33	0.69	1.19	2.59	0.38	0.69	0.28	0.35	0.34

affected by lag
unaffected by lag

3.3 LSL Acad HPI "updated" and LR "Latest"

3.3.1 LSL Acad HPI updating Supposing a September LSL Acad HPI "forecast", partially employing 35% factual data, has been published; the following sequence of updates will occur:

- In the October LSL Acad HPI "forecast", we show a September LSL Acad HPI "updated" using 85% factual LR data
- In the November LSL Acad HPI "forecast" we show a September LSL Acad HPI "updated" using 90% factual LR data
- In the December LSL Acad HPI "forecast" we show a September LSL Acad HPI "final" using 95% factual LR data

These updates will move progressively closer to the September LSL Acad HPI "ultimate", when every transaction has been reported. LSL Acad HPI "ultimate" may not be reached for as much as 12 months.

LSL Acad HPI "final" comprises a close guide to LSL Acad HPI "ultimate" for practical purposes.

3.3.2 LR HPI updating Like LSL Acad HPI, LR HPI employs a progressive updating procedure.

How LSL Acad HPI "updated" and LR Latest compare with LSL Acad HPI "ultimate" is shown in the 'Comparison with Leading Indices' tab within "Comparison of Indices".

4. DEVELOPMENT OF FORECASTS

Our monthly Development of Forecasts shows how the % Annual and % Monthly LSL Acad HPI results, for any given month, progress month by month, from the initial LSL Acad HPI "forecast", through two LSL Acad HPI "updated" and an LSL Acad HPI "final", to an eventual LSL Acad HPI "ultimate". Users may, thereby, judge independently at which date an annual or a monthly inflation result may be regarded as fully updated for practical purposes.

[3] The Annual Comparison of indices tables with lagging table is available from the Acadata website

ABOUT ACADATA

Acadata is the new name for Acadametrics, an analytics and research consultancy focusing on house prices and property portfolio risk, and with a 23 year co-operation with Dr Stephen Satchell, Economics Fellow at Trinity College, University of Cambridge. We are expert in the measurement and analysis of house prices. Our FTHPI, launched in 2003 by the Financial Times, pioneered the use of Land Registry data in a mainstream house price index. Following a 2010 sponsorship agreement with LSL Property Services PLC, FTHPI was published as LSL Acad E&W HPI, retaining full independence and with a monthly commentary by Dr Peter Williams. Our LSL Acad Scotland HPI was launched in 2011. As FTHPI, the index was chosen by the Chicago Mercantile Exchange for a possible future residential house price derivative, put on hold as a result of the financial crisis.

In addition to our valued work for LSL, we provide data to other significant parties in the housing sector. For example, Hearthstone PLC uses the LSL Acad E&W HPI and LSL Acad Scotland HPI as a benchmark against which to monitor the price performance of their residential property investments.

In 2009, Acadametrics and New York based MIAC Analytics joined forces to work on risk solutions, forming the top-flight consultancy MIAC Acadametrics Ltd (M|A). In October 2013, Acadametrics accepted an offer by MIAC Analytics to acquire the whole of M|A for which Dr Satchell will continue as consultant. Acadata will focus on house price indices and data, with Dr Satchell advising as necessary. For all risk-related work, including stress and scenario testing, collateral valuation and forecasting, please see **MIAC | Acadametrics** (M|A).

In addition to house price indices, Acadata provides the Acadata Prices and Transactions (APAT LGA) data showing property type prices for Local Government Areas from 1995, using Land Registry data* for England & Wales counties, unitary authorities and London boroughs, as well as data from 2003 for local authorities in Scotland*. APAT LGA includes an interactive chart facility.

Acadata also provides APAT POSTCODE data. These comprise average prices plus transactions for postcode districts and optional data for postcode sectors, towns, streets or defined areas of interest to a client. These are used for example by:

- developers considering a residential investment in a particular post code sector
- house builders needing to understand the price and transaction trends in a postcode district or sector
- estate agents considering opening a further branch and wanting to know how much residential property business has been done in the district over a long term period
- branch comparisons against local trends

We prepare indices for third parties. We also forecast house prices, in conjunction with M|A.

Our work has a strong academic foundation and our solutions are developed using our own resources under our “research first” policy. Further detail is provided on our website www.acadata.co.uk.