

# Index of Private Housing Rental Prices, Historical Series

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## Abstract

The Index of Private Housing Rental Prices (IPHRP) measures the change in price of renting residential property from private landlords. The index is published as a series of price indices covering Great Britain, its constituent countries and the English regions.

## Acknowledgements

1. The Index of Private Housing Rental Prices has been developed by Office for National Statistics (ONS) in collaboration with Valuation Office Agency, Scottish Government and Welsh Government.

## Introduction

This article publishes for the first time changes in private housing rental prices for Great Britain and its constituent countries and regions. This new price index builds on the development work to include owner occupiers' housing costs in the CPIH measure of consumer price inflation and in response to recommendations made in the [2012 review of official housing market statistics](#) by the National Statistician. Price indices are available for Great Britain (from January 2011), England and the English regions (from January 2005), Wales (from January 2009) and Scotland (from January 2011).

IPHRP is produced from a number of administrative sources and is classified as experimental by ONS. It has yet to be assessed for compliance with the [Code of Practice for Official Statistics](#) and is not classified as National Statistics. A complete description of the methodology and the sources used is included in the appendix of this article.

## What is the Index of Private Housing Rental Prices

The Index of Private Housing Rental Prices (IPHRP) is published as a number of experimental price indices that track the changes in the price charged for renting private housing. This index does not

measure change in price in rental agreements, but instead the change in price in both new and existing rental prices.

IPHRP is released as an experimental statistic. This is a new official statistic undergoing evaluation and therefore it is recommended that caution is exercised when drawing conclusions from the published data as the index is likely to be further developed. Once the methodology is tested and assessed, and the publication meets user needs, the IPHRP it will be assessed against the Code of Practice to achieve National Statistic status.

The IPHRP is constructed using administrative data. That is, the index makes use of data that is already collected for other purposes in order to estimate rental prices. The IPHRP excludes properties rented by housing associations and local authorities, and any other forms of social housing. The production of this index is possible due to the development of the owner occupier housing (OOH) component of the CPIH measure of consumer price inflation. IPHRP makes use of the same data sources. However there are slight differences between the methodology of the IPHRP and that of the private rental series of consumer price indices to allow IPHRP to be published at a regional level. The methodology is explained in detail in the appendix of this article.

The methodology of the IPHRP is composed of two main parts: weights and indices. Expenditure weights are calculated on a yearly basis and reflect the expenditure of the regions and countries of Great Britain on rented private housing. Indices are calculated monthly and show the rental prices paid relative to January 2011. Indices are calculated within country and region for each property type (properties that are either detached, semi-detached, terraces or flats). The indices are aggregated first across furnished and unfurnished data, and then across the different property types in order to calculate indices for each region and country. Both these aggregations are carried out using expenditure weights. For example, an index for the South West is calculated by aggregating the indices for furnished and unfurnished South West private rented properties. Then, these indices are aggregated across property type: detached, semi-detached, terraces and flats. This aggregation uses expenditure weights for the South West for each property type. The use of weights ensures that the contribution of each series is proportional to the total private rental expenditure in the region. Once region and country indices have been calculated, indices such as England or Great Britain are constructed by aggregating the individual indices using expenditure weights. A Northern Ireland IPHRP index is not currently produced.

The sources of private rental prices are Valuation Office Agency (VOA), Scottish Government (SG) and Welsh Government (WG). All three organisations deploy rental officers to collect the price paid for privately rented properties. These rental prices are used to construct the rental price indices. For England the indices are calculated by VOA using a matched sample of properties. Each rental property in this sample is kept for 18 months after which it is replaced by another rental property of equivalent characteristics unless there is an update on its price. Any rental price changes before replacement or due to the replacement are used to calculate the rental price changes. The same matching and production of price indices from Scottish Government and Welsh Government data is carried out by ONS. The specific methodology used for IPHRP is discussed in the methodology document in the appendix of this article.

The sources of expenditure weights are Department for Communities and Local Government (DCLG), Scottish Government, Welsh Government and VOA. DCLG produces estimates of

the private rental dwelling stock for England and its regions. Scottish Government and Welsh Government produce estimates of private rental dwelling stock for Scotland and Wales. In the case of England, in addition to the dwelling stock from DCLG, data from the English Housing Survey is used to estimate the proportion of property types that are privately rented over time. Similar data are used from the Scottish House Condition Survey in order to produce proportions of privately rented property types. The Welsh Government provides an estimate of the proportion of property types that are privately rented from administrative data on rental price market evidence, of which fair rent properties (properties let before 15 January 1989 to which some rent controls apply) and individually rented rooms are excluded. Average yearly rental prices from VOA, Scottish Government and Welsh Government are multiplied by the dwelling stock estimates to calculate total private rental expenditure at region and country level.

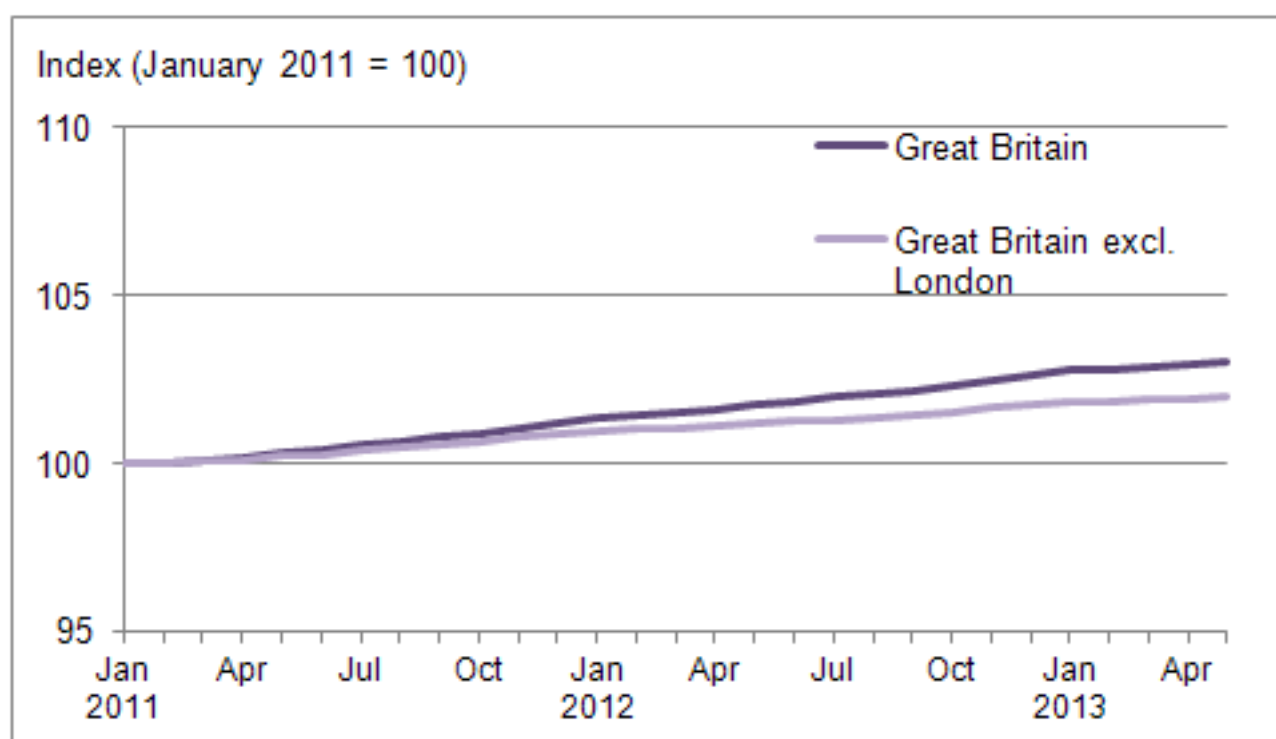
The IPHRP series start in January 2005 for England and the English regions, in January 2009 for Wales, and in January 2011 for Scotland. The Great Britain series starts in January 2011. These different start dates reflect the periods for which consistent private rental price data are available from the different sources. All the indices have been rebased so that January 2011 has an index value of 100.

## Great Britain rental prices

In Great Britain the private rental price series starts in January 2011. This is the date for which all the sources for all constituting countries are available. This index has seen small and continuous increases since January 2011 (Figure 1).

**Figure 1: IPHRP indices, Great Britain**

January 2011 to May 2013



Source: Office for National Statistics

**Notes:**

1. Not seasonally adjusted

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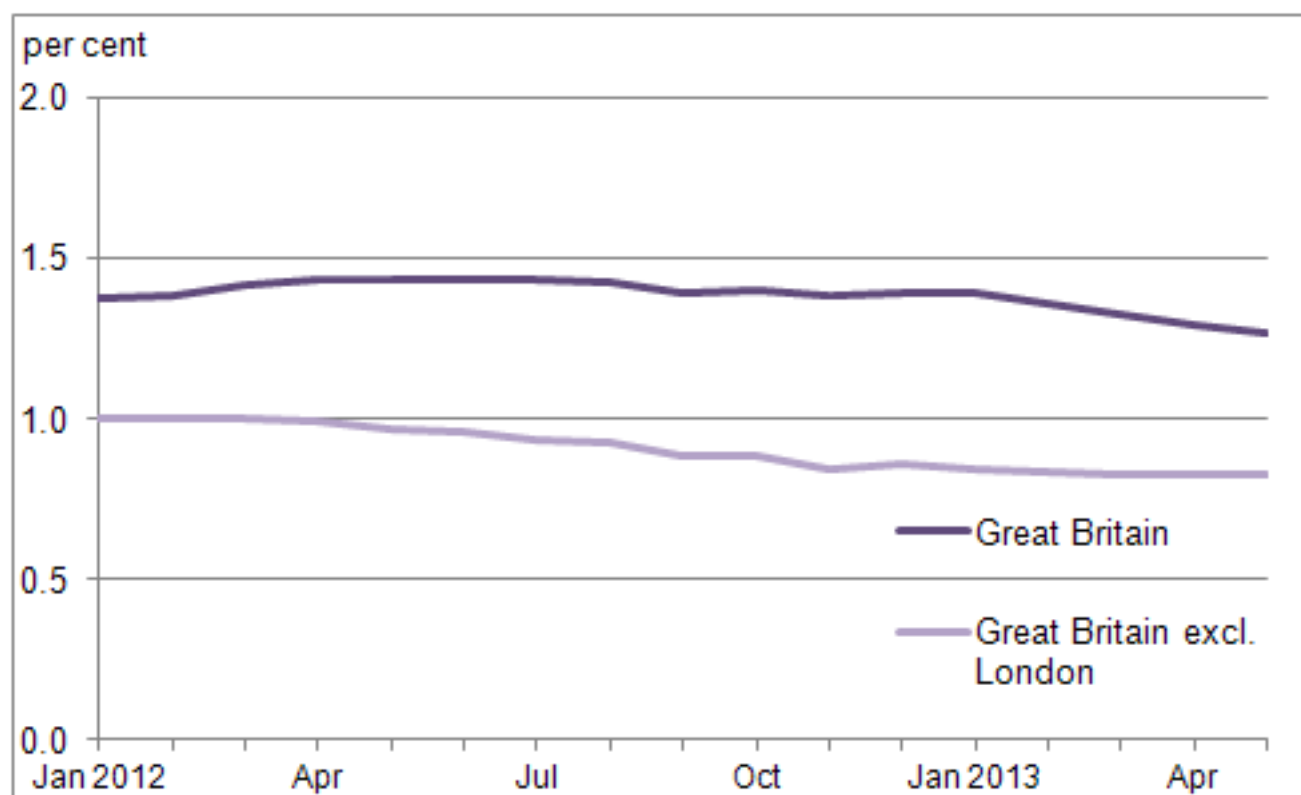
(20 Kb)

Between May 2012 and May 2013 Great Britain private rental prices grew by 1.3%. For example, a property that was rented for £500 a month in May 2012 which saw its rent increase by the Great Britain average rate would be rented for £506.50 in May 2013.

Rental prices for Great Britain excluding London grew by 0.8% in the same period (Figure 2). This difference is due to the higher inflation experienced in London when compared to the rest of Great Britain and its large weight in the Great Britain index. The large weight that London has in the overall index reflects its high average rental prices and its large volume of private rented property.

**Figure 2: IPHRP change over 12 months, Great Britain**

January 2012 to May 2013



Source: Office for National Statistics

**Notes:**

1. Not seasonally adjusted

## Download chart

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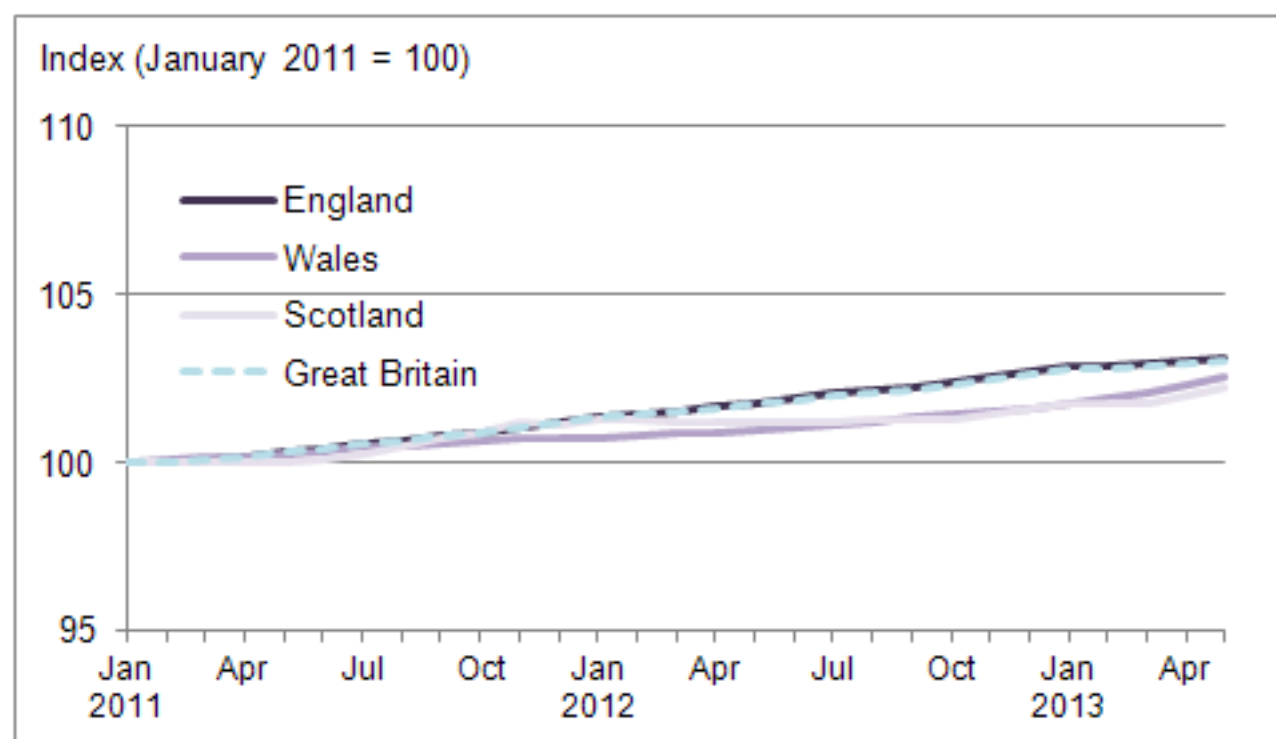
(19.5 Kb)

## Rental prices for constituent countries of Great Britain

All the countries that constitute Great Britain have experienced rises in their private rental prices since 2011, which is the first year for which a Great Britain index is available (Figure 3). These movements are reflected in increases in the rental price levels, with England rental prices increasing more than those of Scotland and Wales.

### Figure 3: IPHRP indices for Great Britain and its constituent countries

January 2011 to May 2013



Source: Office for National Statistics

#### Notes:

1. Not seasonally adjusted.

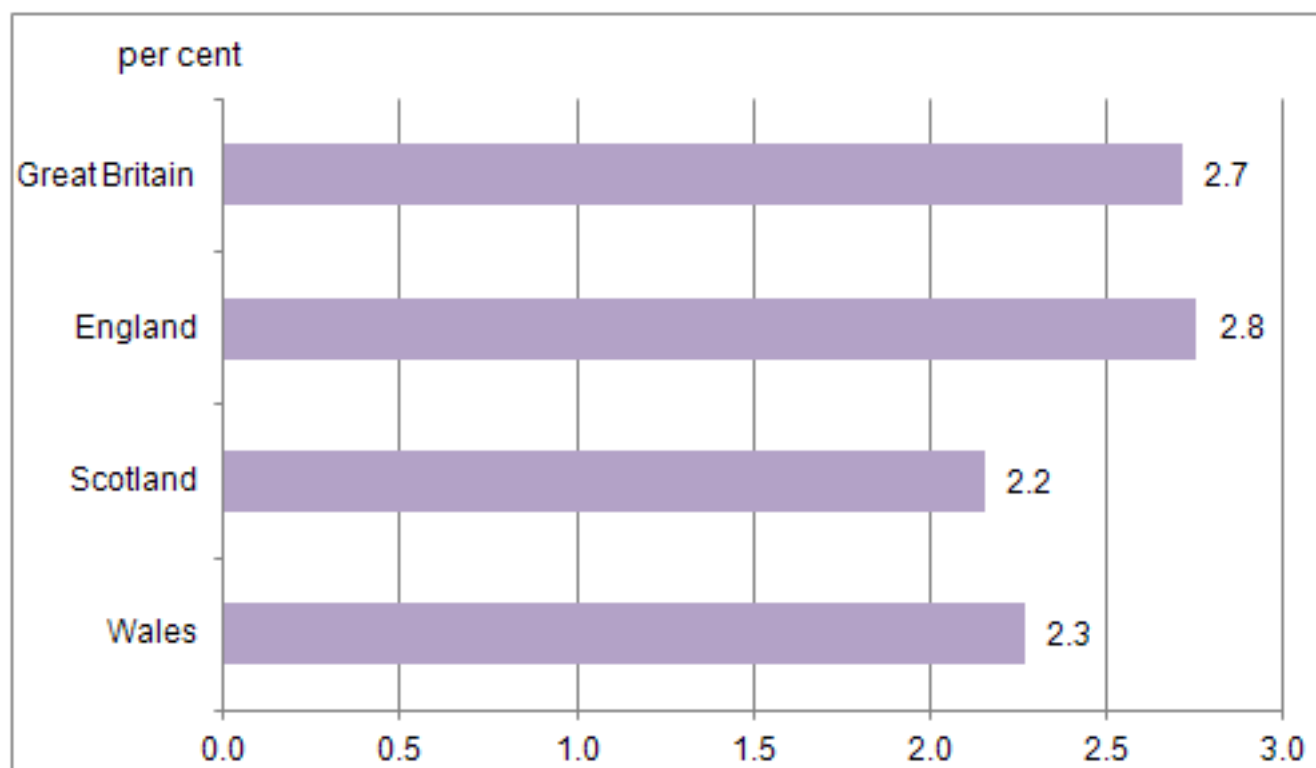
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(21 Kb)

Between May 2011 with May 2013 rental prices have increased by 2.7% in Great Britain (Figure 4). For the same period, rental prices increased by 2.8% in England, 2.2% in Scotland and 2.3% in Wales.

**Figure 4: IPHRP change between May 2011 and May 2013, Great Britain and its constituent countries**



Source: Office for National Statistics

**Notes:**

1. Not seasonally adjusted.
2. The bars represent unrounded figures.

**Download chart**

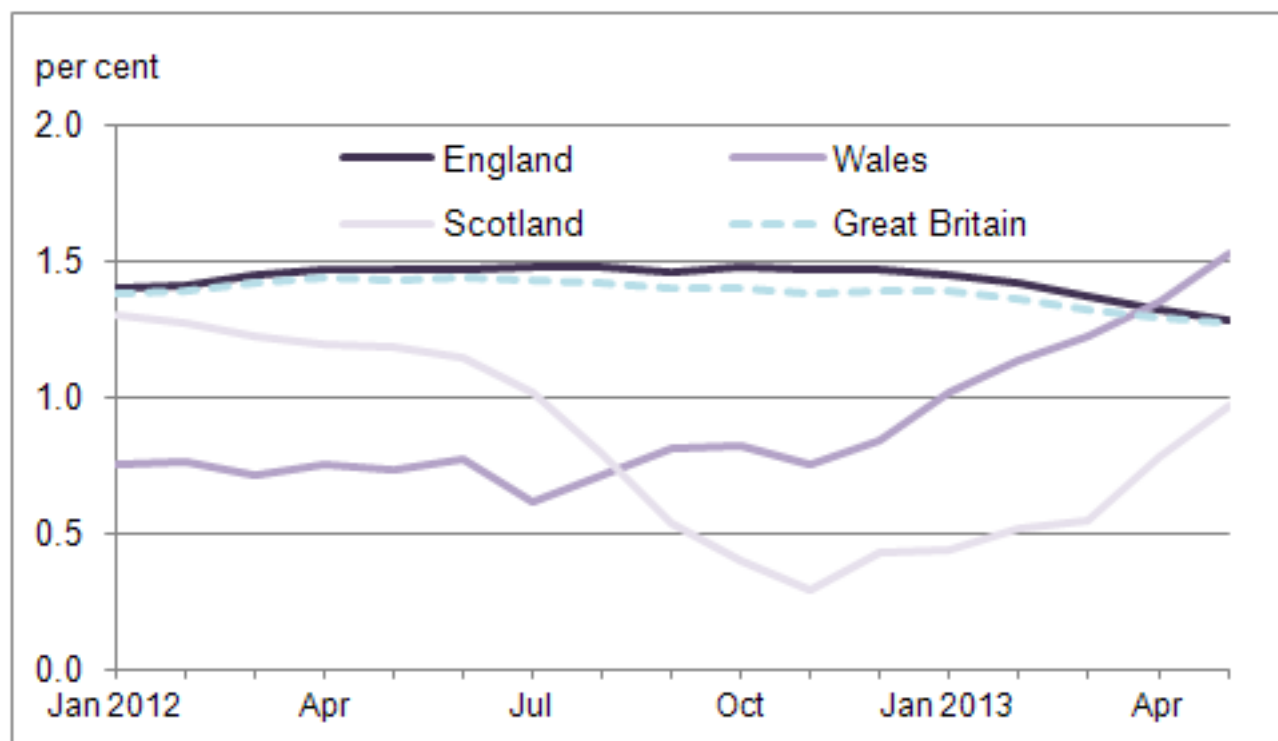
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(18 Kb)

With the exception of April and May 2013, the annual rate of change in the IPHRP has been higher in England than in Scotland or Wales (Figure 5). However, the annual rate of change has been increasing in Wales and Scotland since late 2012.

**Figure 5: IPHRP change over 12 months, Great Britain and its constituent countries**

January 2011 to May 2013



Source: Office for National Statistics

**Notes:**

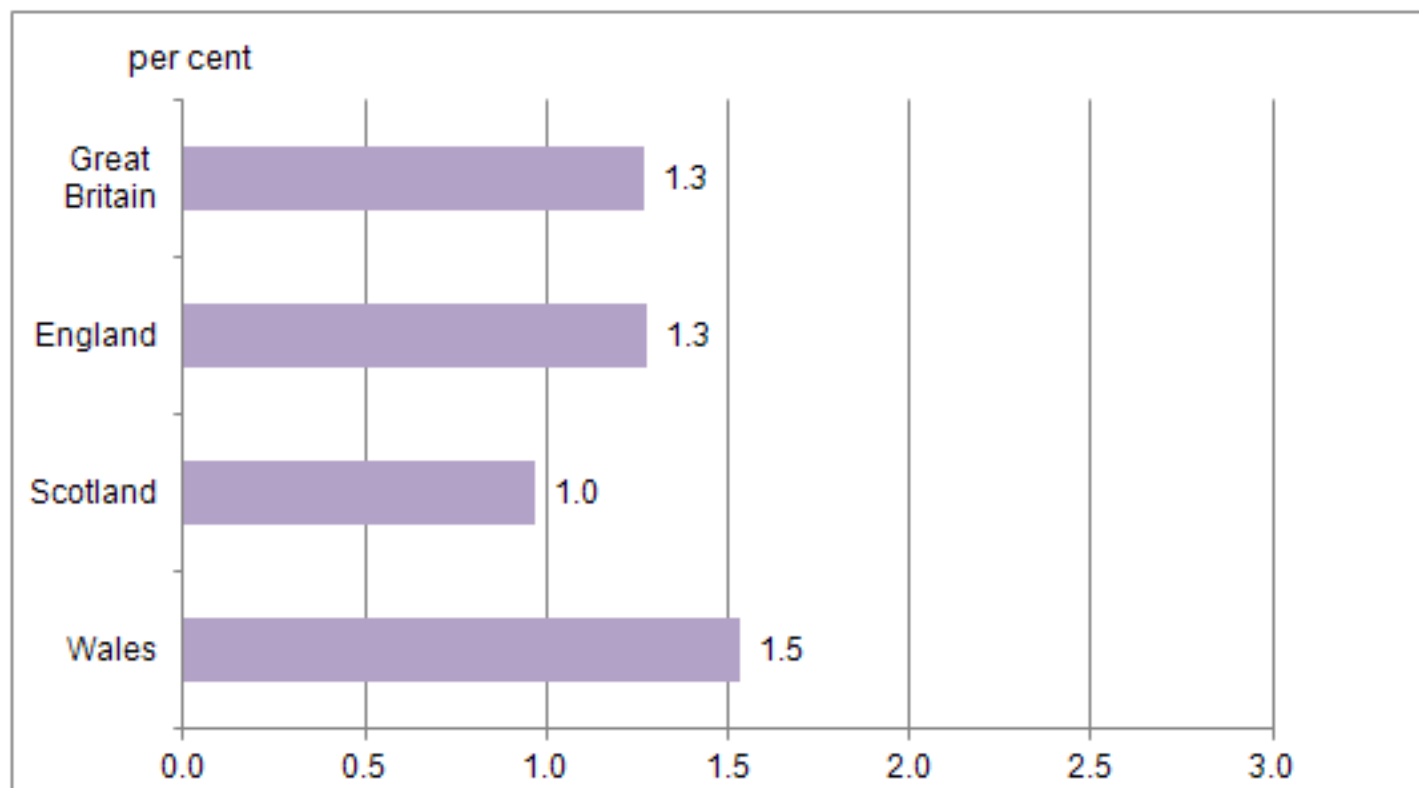
1. Not seasonally adjusted.

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(20.5 Kb)

Between May 2012 and May 2013, rental prices grew by 1.3% in England, 1.0% in Scotland and 1.5% in Wales (Figure 6). May 2013 is the second consecutive period since January 2012 in which the annual rate of change in Wales was higher than in England.

**Figure 6: IPHRP change over the 12 months to May 2013, Great Britain and its constituent countries**



Source: Office for National Statistics

**Notes:**

1. Not seasonally adjusted.
2. The bars represent unrounded figures.

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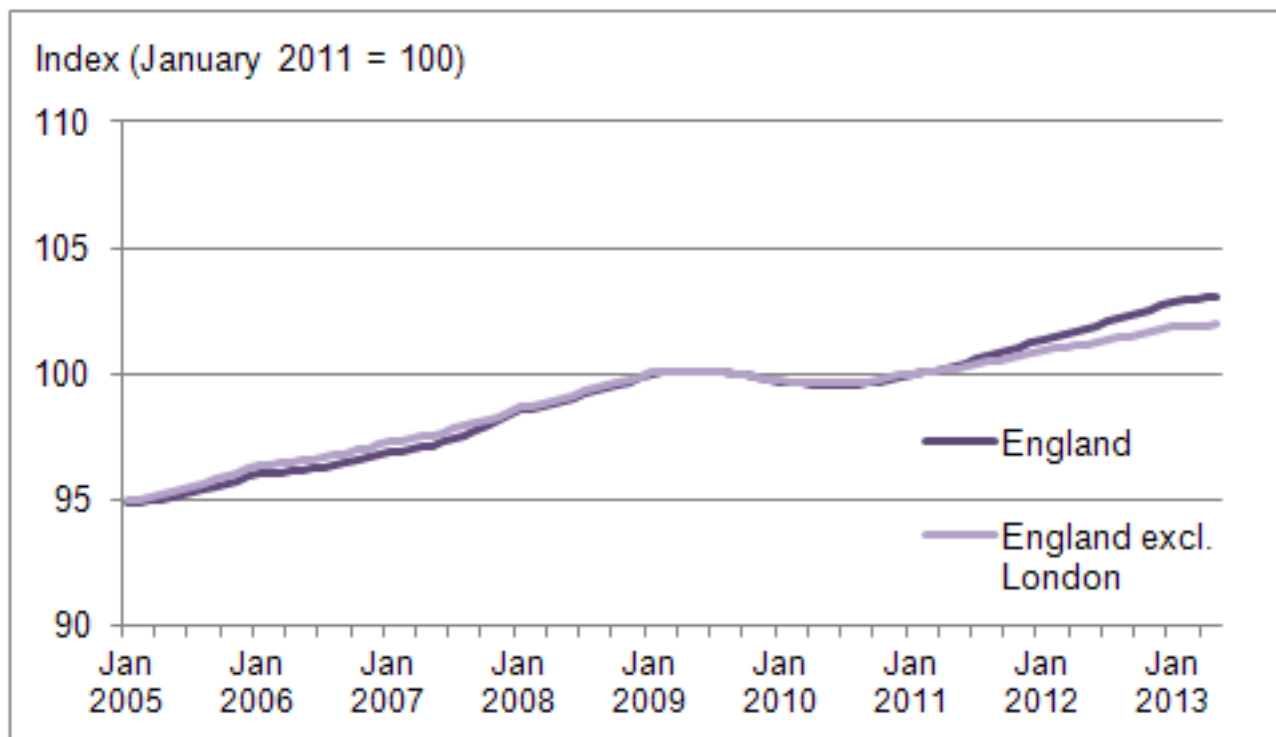
**Rental prices in England and its regions (2005-2013)**

The IPHRP series for England starts in 2005. Private rental prices in England show three distinct periods: rental price increases from January 2006 until November 2009, rental price decreases from December 2009 to November 2010, and increasing rental prices from December 2010 onwards (Figure 7). Of these three periods, 2008 showed the largest rental price increases. When London is excluded, England shows a similar pattern but with slower rental price increases.



## Figure 7: IPHRP indices, England

January 2005 to May 2013



Source: Office for National Statistics

### Notes:

1. Not seasonally adjusted

### Download chart

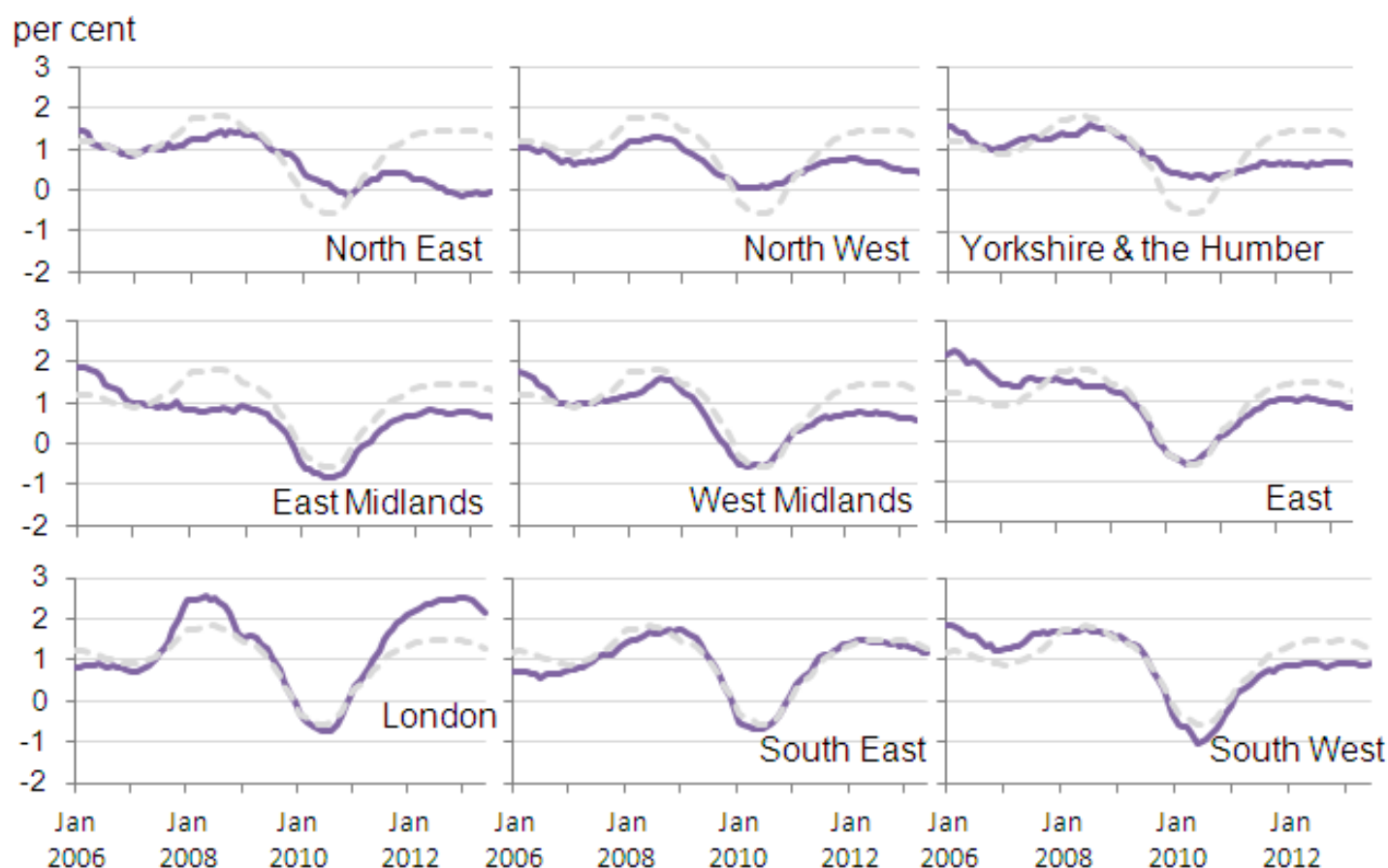
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(25 Kb)

Figure 8 shows the 12 month growth rate in the rental prices of each of the English regions. Each of the charts includes the England 12 month percentage changes in grey dotted lines.

**Figure 8: IPHRP change over 12 months by English region**

January 2006 to May 2013



Source: Office for National Statistics

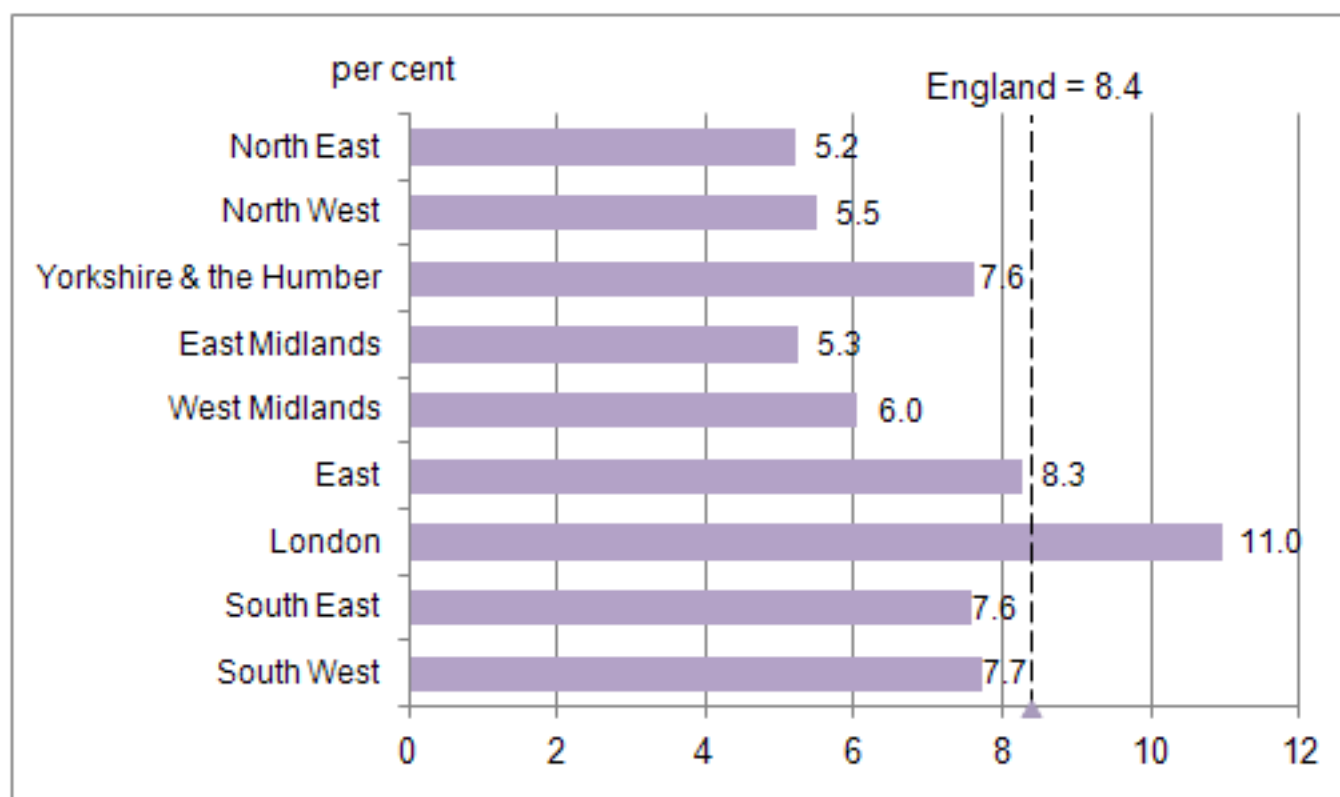
**Notes:**

1. The dotted grey line shows the average England 12 month percentage change
2. Not seasonally adjusted.

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(37 Kb)

Over the eight years between May 2005 and May 2013, rental prices increased by 8.4% in England (Figure 9). The largest increase in this period was in London at 11.0% followed by the East at 8.3%. The smallest rental price increase was in the North East at 5.2% followed by the East Midlands at 5.3%.

**Figure 9: IPHRP change between May 2005 and May 2013 by English region**

Source: Office for National Statistics

**Notes:**

1. The dotted line represents the England average.
2. Not seasonally adjusted.
3. The bars represent unrounded figures.

**Download chart**

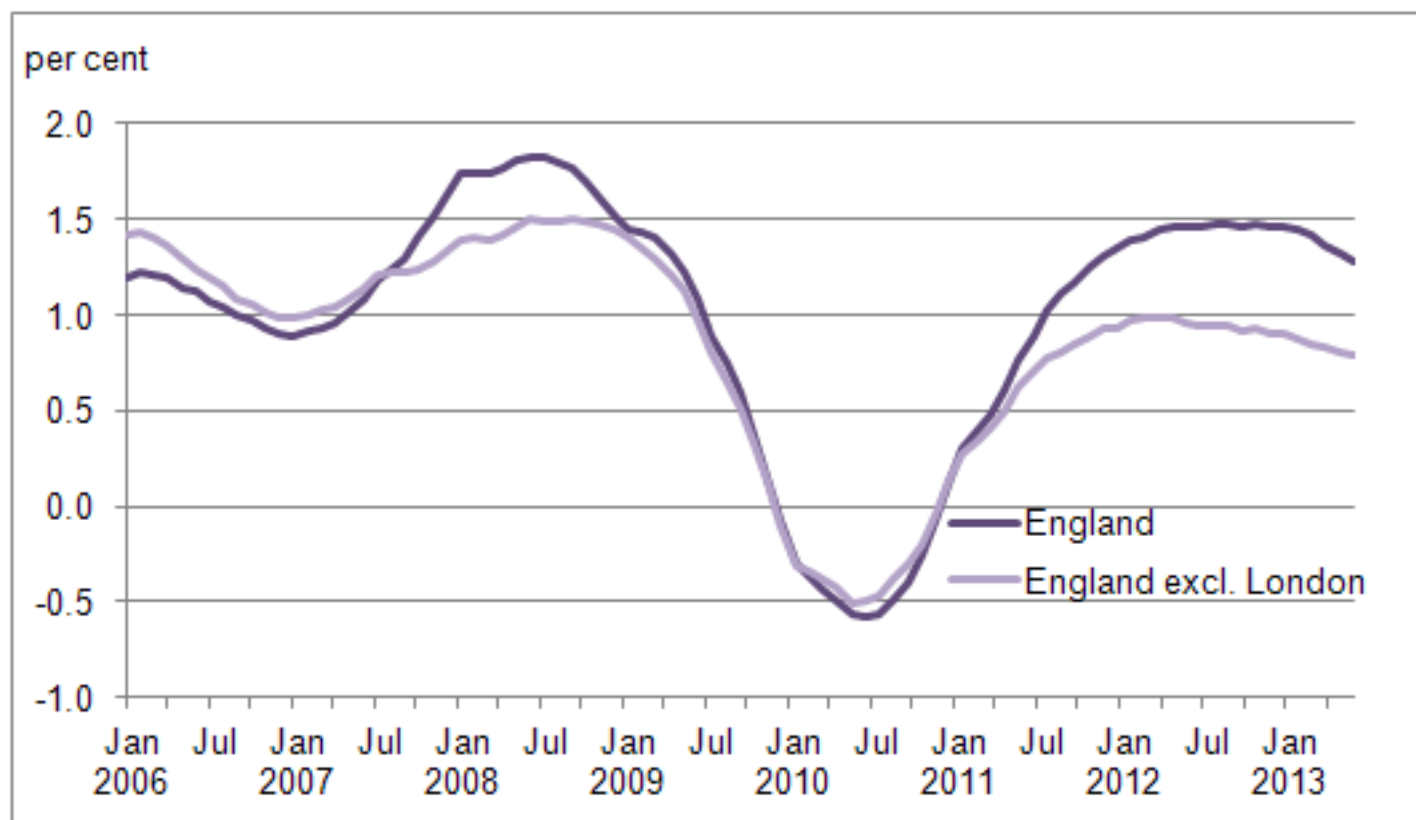
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Since the beginning of 2012 English rental price increases have been stable at around 1.5% year-on-year, with May 2013 rental prices being 1.3% higher than May 2012 rental prices (Figure 10). Excluding London, England showed an increase of 0.8% for the same period.

**Figure 10: IPHRP change over 12 months, England**

January 2006 to May 2013



Source: Office for National Statistics

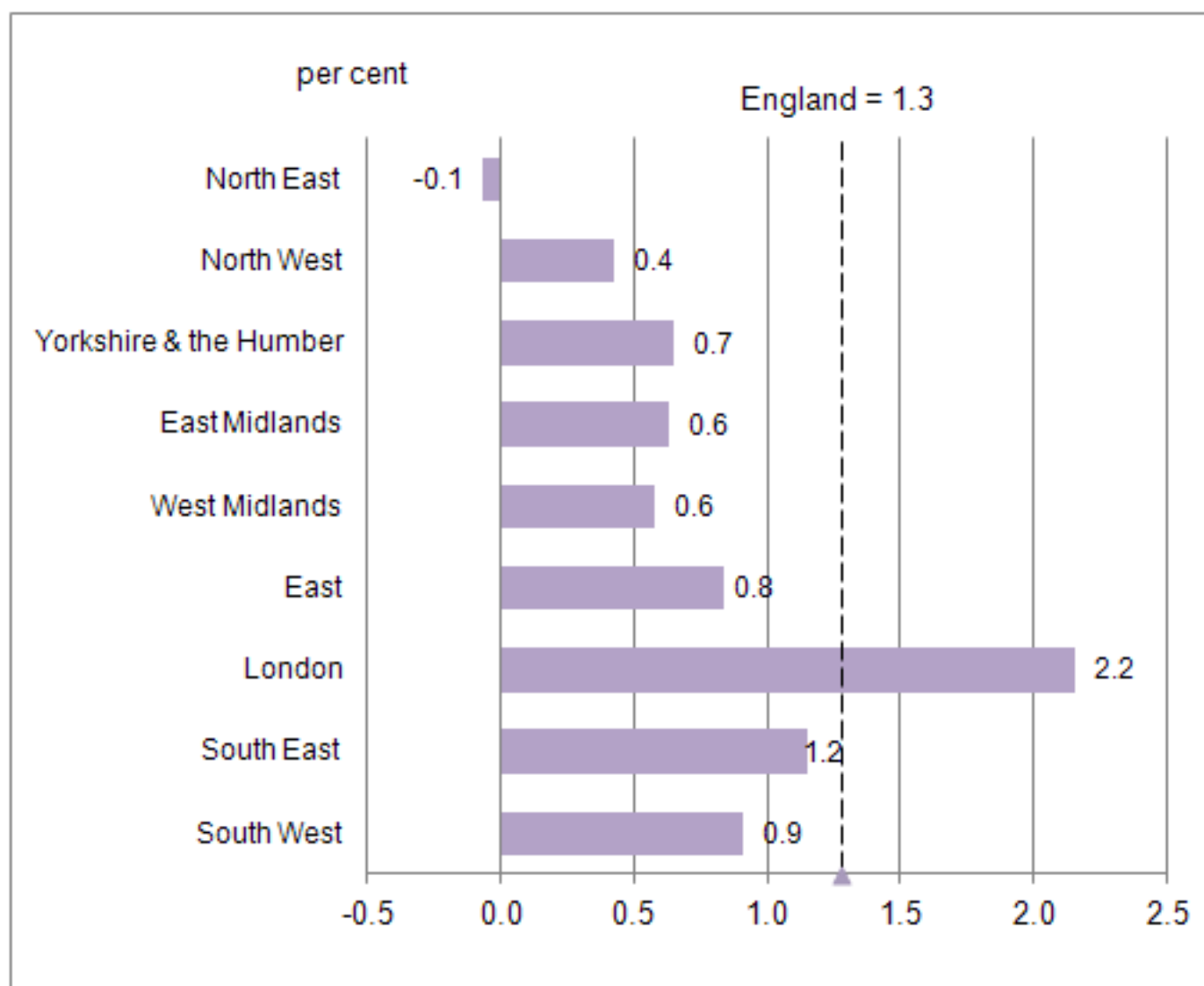
**Notes:**

1. Not seasonally adjusted.

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From May 2012 to May 2013 private rental prices increased in eight of the nine English regions (Figure 11). The largest rental price increases were London at 2.2% and the South East at 1.2%. Rental prices decreased by 0.1% in the North East for the same period. Rental price increases have been stronger in London and the South East than the rest of England since January 2011.

**Figure 11: IPHRP change over the twelve months to May 2013 by English region**

Source: Office for National Statistics

**Notes:**

1. The dotted line represents the England average.
2. Not seasonally adjusted.
3. The bars represent unrounded figures.

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**Expenditure weights**

The IPHRP uses expenditure weights in order to calculate average Great Britain and England indices and index movements (Table A). For 2013 England is the main contributor to the Great Britain index with a weight of 92.5%, both due to its large private rented dwelling stock and the fact

that average private rents in many English regions tend to be higher than private rents in Scotland or Wales. In the Great Britain index for the same period Scotland has a weight of 4.8% and Wales a weight of 2.6%.

Within England, the distribution of expenditure weights varies across regions. The largest contributor to Great Britain expenditure weights is London (34.6%) followed by the South East (15.8%). London is atypical to the rest of England, being the only region where owner occupiers make up less than half of the dwelling stock. London also has the largest number of private rent dwellings (880,000 according to [DCLG dwelling stock estimates](#)), and the highest average rental prices according to [Valuation Office Agency Private Rental Market statistics](#). The combination of a large volume of private rented dwellings and high average prices leads to London having a very high expenditure on private rented housing.

**Table A: Great Britain expenditure weights by country and English region**

Percentage of total Great Britain private rental expenditure

	Expenditure weight
<b>England</b>	<b>92.5%</b>
North East	2.3%
North West	7.1%
Yorkshire & the Humber	6.6%
East Midlands	4.7%
West Midlands	5.5%
East	8.0%
London	34.6%
South East	15.8%
South West	8.1%
<b>Scotland</b>	<b>4.8%</b>
<b>Wales</b>	<b>2.6%</b>

#### Download table

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(29 Kb)

#### Data tables

[Data tables for the current month](#) include the historical monthly indices and percentage change over 12 months for all regions and countries.

## Background notes

### 1. Publication of IPHRP

The development of official statistics to cover the private housing rental market and the production of a private housing rental price index was one of the recommendations of the [National Statistician's Review of Housing Market Statistics](#). This first, experimental, IPHRP release is aimed towards the production of such an index, and development of the index will take place in order to further satisfy user needs.

The production of this index is possible due to recent developments of the housing components of the consumer price indices, and although the same data sources are used by both, the methodology of the IPHRP has been developed in order to produce region level series. IPHRP will be published on a quarterly basis to facilitate user feedback. Once the index has been evaluated, it may be published monthly.

### 2. Experimental status

ONS has designated the IPHRP as experimental statistics. The results presented in this article are subject to revisions if improvements in the methodology are identified. Results should be interpreted with this in mind.

In future publications improvements to the methodology may be made and these could lead to revisions. All revisions to the index will be announced in the background notes section.

### 3. Relevance of the index

The IPHRP has multiple potential users ranging from the assessment of returns from housing investments or buy-to-let property to the setting or updating of social housing rental prices. Currently the IPHRP is the only statistic with Great Britain coverage on private housing rents. Additionally, it is based on actual paid rents instead of advertised rents (with the exception of Scotland, which is based on advertised rents).

### 4. Other rental price statistics

There are other official statistics available for rental prices:

[Valuation Office Agency](#) (VOA) publishes [private rental market statistics](#). These cover the average prices paid for renting private housing in England to the level of region and local authority. The composition of the sample used for this publication varies over time and therefore makes it hard to produce reliable comparisons over different time periods.

[Department for Communities and Local Government](#) (DCLG) publishes [social rent statistics](#). These cover average prices paid for renting both local authority and private registered provider (housing association) properties in England. These are collected from the continuous recordings of lettings and sales in social housing (CORE) and are available at regional and local authority level.

[Scottish Government](#) publishes [social rent statistics for Scotland](#). These cover the average weekly rents paid for local authority and registered social landlords, and are available at area level.

[Welsh Government](#) publishes [social rent statistics for Wales](#). These cover the average weekly rents paid for local authority and registered social landlords, and are available at area level. Available in StatsWales.

## 5. Sources

The current sources of private rental prices are Valuation Office Agency for England, Scottish Government for Scotland and Welsh Government for Wales. Private rented dwelling stock estimates are sourced from the Department of Communities and Local Government, and Welsh Government. The distribution of property type by country and region is sourced from the English Housing Survey, the Scottish House Condition Survey and Welsh Government. Estimates of the proportions of properties that are rented furnished and unfurnished are produced from the Living Costs and Food Survey. Estimates of the expenditure on property that is rented furnished and unfurnished are sourced from the National Accounts.

## 6. Accessibility

This bulletin includes data up to May 2013.

## 7. General

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8. Details of the policy governing the release of new data are available by visiting [www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html](http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html) or from the Media Relations Office email: [media.relations@ons.gsi.gov.uk](mailto:media.relations@ons.gsi.gov.uk)

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This document is also available on our website at [www.ons.gov.uk](http://www.ons.gov.uk).



## Methodology of IPHRP

### 1. Summary

The aim of the Index of Private Housing Rental Prices (IPHRP) is to track the change in price paid for renting private housing in Great Britain. These changes in price paid are reported as price indices at regional and country level. IPHRP does not publish rent levels or spatial indices that would allow comparisons to be made between countries and between regions.

The price-paid data of the IPHRP is based on the same price data sources as used in the housing component of Consumer Price Indices (CPIH). This reflects new developments in the methodology that were released in March 2013, namely the collection of private rental prices in England from Valuation Office Agency (VOA), Scotland from Scottish Government (SG) and Wales from Welsh Government (WG). For publishing the IPHRP at regional level, expenditure weights are produced by region and dwelling type. The sources for these weights are published dwelling stock statistics, and the English Housing Survey and the Scottish House Condition Survey.

Northern Ireland is currently excluded from the price index. This is due to coverage of Northern Ireland data being insufficient for inclusion as of May 2013. Northern Ireland Housing Executive (NIHE), responsible for collecting private rental data, is currently undertaking a programme of development to improve the timeliness and extend the coverage of Northern Ireland data. ONS will work with NIHE to include Northern Ireland data in the index.

IPHRP publishes:

- Aggregated index levels and year-on-year index movements for England and its regions from 2005 onwards
- Index levels and year-on-year index movements for Wales from 2009 onwards
- Index levels and year-on-year index movements for Scotland from 2011 onwards,
- Aggregated index levels and year-on-year index movements for Great Britain from 2011 onwards

### 2. Weights

Expenditure weights for the IPHRP are produced on a yearly basis. These weights are used to aggregate elementary indices so that the regions and dwelling types contribute to aggregate indices in proportion to their relative expenditures. For example, a region with a large amount of private rental housing such as London will have a larger contribution to the Great Britain index than a region with less private rental housing.

The main difference with the housing cost weights used in the Consumer Price Indices is that the IPHRP uses estimates of dwelling type at a regional level. This is necessary in order to produce an index of private housing rents that is published at region level instead of a single Great Britain aggregate.

#### 2.1. Weights - quantity data

Firstly, the total count of private rental dwellings for each country and English region is used from data published by DCLG (Live Table 109 for England and its regions and Live Table 107 for Scotland) and Welsh Government (the annually published dwelling stock estimates).

Secondly, the count of dwellings is split into a count by dwelling type: detached, semi-detached, terraced and flat. To split the data, proportions of dwelling type by region and country are calculated from the English Household Survey (EHS) data for England and the Scottish House Condition Survey (SHCS) for Scotland. These surveys collect, respectively, 18,000 and over 3,000 household interviews every year. Of this sample, 2,500 correspond to interviews to households living in private rental properties in England and over 300 to households living in private rental properties in Scotland. To reduce annual fluctuations of the split of dwelling type by region, a three year rolling average is applied to the proportions of dwelling type by region and country (Table 1 and Table 2). This follows the assumption that the types of dwellings that are privately rented will change at a slow pace. The rolling average also compensates for variation resulting from the EHS sample as it can become small for privately rented housing at a region level. The formula used for the three year rolling average is as follows:

### Equation 1

$$\text{proportion}_{i,j,y} = \frac{\sum_{t=y-3}^{t=y} N_{i,j,t}}{\sum_{t=y-3}^{t=y} \left( \sum_{j=1}^4 N_{i,j,t} \right)}$$

where:

$\text{proportion}_{i,j,y}$  = rolling average proportion of property type  $j$  in region  $i$  for year  $y$

$N_{i,j,t}$  = number of properties of type  $j$  in region  $i$  for year  $t$

The description for this equation is currently unavailable. ONS apologises for any inconvenience caused.

See Table 1 for an example, showing the West Midlands property type proportions from the EHS and the resulting rolling average:

**Table 1: Proportion of dwelling types for the West Midlands.**

Estimate from EHS micro-data. 3 year rolling average is applied before combining with stock data.

	% Flat	% Detached	% Semi	% Terrace
<b>2008</b>	25.2	15.1	25.8	34.0
<b>2009</b>	21.2	14.7	25.1	39.0
<b>2010</b>	27.6	12.4	21.3	38.7
<b>3 year average 2010</b>	24.6	14.0	23.9	37.6

**Table notes:**

1. Percentages may not add to 100 due to rounding.

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(27 Kb)

These rolling averages are produced for each year, as in Table 2:

**Table 2: Three year rolling average of dwelling type proportions for the West Midlands.**

	<b>% Flat</b>	<b>% Detached</b>	<b>% Semi</b>	<b>% Terrace</b>
<b>3 year average 2007</b>	22.9	10.3	24.2	42.6
<b>3 year average 2008</b>	24.1	13.3	22.9	39.8
<b>3 year average 2009</b>	23.6	14.3	25.0	37.1
<b>3 year average 2010</b>	24.6	14.0	23.9	37.6

**Table notes:**

1. Percentages may not add to 100 due to rounding.

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Once the rolling average split for dwelling stock at a regional level has been calculated, the proportions of this split are applied to the total private rented dwelling stock of the region. This gives us the total dwelling stock by dwelling type in each region (see Table 3).

**Table 3: Dwelling stock by dwelling type for the West Midlands.**

Proportion of dwelling type is applied to the total dwelling stock to calculate dwelling stock by dwelling type.

	<b>Total</b>	<b>Flat</b>	<b>Detached</b>	<b>Semi</b>	<b>Terrace</b>
<b>Percentage</b>	100%	22.9%	10.3%	24.2%	42.6%
<b>Stock 2007</b>	<b>250,000</b>	57,237	25,658	60,526	106,579
<b>Percentage</b>	100%	24.1%	13.3%	22.9%	39.8%
<b>Stock 2008</b>	<b>287,000</b>	69,106	38,079	65,580	114,236
<b>Percentage</b>	100%	23.6%	14.3%	25.0%	37.1%
<b>Stock 2009</b>	<b>326,000</b>	76,857	46,754	81,340	121,049
<b>Percentage</b>	100%	24.6%	14.0%	23.9%	37.6%
<b>Stock 2010</b>	<b>342,000</b>	83,971	47,824	81,746	128,459

**Table notes:**

1. Dwelling stock figure is private rental stock from DCLG Live Table 109.
2. Percentages may not add up to 100 due to rounding.

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Quantity data for Wales (provided by Welsh Government) drawn from market evidence and housing benefit referrals are used for the Wales dwelling type proportions. This data is only available for 2010-2012 so the three year rolling averages of dwelling type proportions are imputed backwards from this date. This data is considered experimental. Therefore the Wales dwelling type proportions are calculated following the same methods as for England and Scotland, but with a one year lag instead of a three year lag.

Northern Ireland is currently excluded from the index, although overall dwelling stock data is collected and published by Northern Ireland Department for Social Development for its future inclusion.

**2.2. Weights - price Data**

Average rental prices for unfurnished and furnished privately rented accommodation, split by property type, are provided annually by VOA for each of the nine English regions (previously Government Office Regions and identical in coverage to the statistical [NUTS1 regions](#)). The sample from which these prices are drawn is larger than the sample of matched rents that is used for calculating the index movements (section 3). VOA rent officers collect this data for Department of Work and Pensions that use it to set local housing allowance rates. To measure overall prices for privately rented accommodation in England, these prices are weighted using volume weights for furnished and unfurnished private rental properties. These furnished and unfurnished private rental volumes are calculated from Living Costs and Food Survey data and applied with a three year lag as the dwelling stock volumes. The formula for calculating average prices is as follows:

**Equation 2**

$$\bar{P}_{i,j,y} = \frac{(w_{furn,y} \times \bar{P}_{furn,i,j,y}) + (w_{unfurn,y} \times \bar{P}_{unfurn,i,j,y})}{w_{furn,y} + w_{unfurn,y}}$$

where:

$\bar{P}_{i,j,y}$  = average price for a privately rented property of type  $j$  in region  $i$  in year  $y$

$\bar{P}_{furn,i,j,y}$  = average price for a privately rented furnished property of type  $j$  in region  $i$  in year  $y$  (VOA)

$\bar{P}_{unfurn,i,j,y}$  = average price for a privately rented unfurnished property of type  $j$  in region  $i$  in year  $y$  (VOA)

$w_{furn,y}$  = furnished private rental volume weight for year  $y$  (LCF)

$w_{unfurn,y}$  = unfurnished private rental volume weight for year  $y$  (LCF)

The description for this equation is currently unavailable. ONS apologises for any inconvenience caused.

The arithmetic mean rental prices for Wales and Scotland are calculated directly from the monthly deliveries of data which their respective devolved government agencies deliver to ONS on an agreed monthly basis. These data are collected regionally by rental officers in those countries. In Scotland, it is based mainly on advertised rents whereas in Wales it is based on confirmed rents.

**2.3. Weight Construction**

The price information for a given year is based on the February – January period to match up with the time periods for which the weights are applied in index aggregation. For example, the average price for 2012 is based in the period February 2012 – January 2013.

In order to allow the production of timely expenditure weights, the expenditure shares for a given index year  $t$  are based on:

- average prices from year  $t-1$
- for England and Scotland, the quantity split from years  $t-3$  -  $t-5$  (rolling average)
- for Wales, the quantity split from 2011

Expenditure weights are then calculated by dividing the expenditure aggregate for each combination of region and country, and property type by the total UK level expenditure. All Great Britain expenditure weights add up to 100, with each of them being a fraction of this amount. The formula for this is as follows:

**Equation 3**

$$W_{i,j,y} = \frac{\bar{P}_{i,j,y-1} \times \hat{Q}_{i,j,y-3}}{\sum_{i=1}^{11} \sum_{j=1}^4 \bar{P}_{i,j,y-1} \times \hat{Q}_{i,j,y-3}}$$

where:

$W_{i,j,y}$  = expenditure weight for property type  $j$  in region  $i$  for year  $y$

$\bar{P}_{i,j,y-1}$  = average price for property type  $j$  in region  $i$  for year  $y - 1$

$\hat{Q}_{i,j,y-3}$  = estimated stock of property type  $j$  in region  $i$  for year  $y - 3$

The description for this equation is currently unavailable. ONS apologises for any inconvenience caused.

This weighting procedure gives 44 different expenditure weights, one for each of the four property types in each of the nine English regions, Wales and Scotland. A full set of weights going back to 2005 has been produced for England and its regions. A full set of weights that includes Wales and Scotland is available from 2011 onwards. This is the year for which large samples of private rental data become available for all Great Britain countries. Weights for Wales have been produced from 2009 onwards, coinciding with the availability of private rental data, and for Scotland from 2011 onwards for the same reason.

**3. Prices**

The price information used to compile the index is obtained by tracking the rental prices of a matched sample of properties throughout the year. This is done by using information gathered on a monthly basis by rental officers working for the VOA (England), SG (Scotland) and WG (Wales). When a rental price is collected it is assumed to be valid for 18 months. This is based on a report by the Association of Rental Letting Agents (ARLA), which stated that 71% of tenancies lasted between 13 and 24 months. If a rental officer collects a new price for a property in the sample, then the price of that property in the sample is updated to reflect this.

If a price quote for a property reached its 18 months expiration date and no price quote is available, a replacement of comparable quality is sourced. A replacement is defined as comparable if it has the same dwelling type, postal sector, number of bedrooms, level of furnishing (furnished/unfurnished) and has a price quote which is between 33% lower and 50% higher than the property being replaced.

Index series are produced for furnished and unfurnished properties, by property type and for each region. Furnished and unfurnished property price series are first aggregated to stratify the data, and after, the series are again aggregated by property type to produce the region and country indices.

This is the appropriate approach because the IPHRP is an index based on actual expenditure on private rents. That is, IPHRP measures the rental prices paid for all the private rented dwelling stock

for both existing agreed rents and new rents. IPHRP is not designed as an index that measures the average price of new rental agreements.

Northern Ireland is currently excluded as a very limited sample of private rental prices is available. This sample has been historically collected for consumer and retail prices.

Here is a summary table showing the historical availability of price information:

Year	England	Scotland	Wales
2005	VOA	[Grey]	[Grey]
2006			
2007			
2008			
2009		Scottish Government (Sep 2010 onwards)	Welsh Government
2010			
2011			
2012			
2013			

The IPHRP only includes price index information from the following sources: VOA for England from 2005, Welsh Government for Wales from 2009 and Scottish Government for Scotland from 2011. These sources have large sample sizes and provide consistent rental price index estimates. Earlier rental price index estimates are available from the rental officer price collections in Scotland and Wales, but this data is not used due to changes in the rental price collection services. Data following restructuring, after January 2009 in Wales and after September 2010 in Scotland, is considered most appropriate due to consistency in the collection methods and databases.

#### 4. Aggregation and Chaining

For each of the 44 region/property type combinations, two elementary aggregates are produced – one for furnished and one for unfurnished properties. These elementary aggregates are calculated with the Jevons formula (geometric average of price relatives). The geometric mean is used for consistency with the CPI series. Usage of a Carli formula (arithmetic average of price relatives) was considered but deemed inconsistent with other ONS statistics and international best practice.

VOA produces the elementary aggregate indices for each of the nine English regions on behalf of the ONS. The ONS produces the Welsh and Scottish elementary aggregate indices directly from micro data supplied by Welsh Government and Scottish Government. All these indices are provided split by property type.

Weighted arithmetic means are used to construct the weights, and to combine the furnished and unfurnished elementary aggregates, whereas a geometric mean is used to calculate the elementary aggregate indices. This is consistent with the general approach adopted in ONS consumer price indices.

In order to obtain the overall index for each of region/property type combination, the furnished and unfurnished elementary aggregate indices are combined using CPI expenditure weights for furnished and unfurnished private rents to produce a weighted index of both (see table 4). The formula for aggregation is as follows:

#### Equation 4

$$I_{i,j} = \frac{(\omega_{furn,y} \times EA_{furn,i,j}) + (\omega_{unfurn,y} \times EA_{unfurn,i,j})}{\omega_{furn,y} + \omega_{unfurn,y}}$$

where:

$I_{i,j}$  = in year index for property type  $j$  in region  $i$

$EA_{furn,i,j}$  = furnished elementary aggregate for property type  $j$  in region  $i$  (from VOA)

$EA_{unfurn,i,j}$  = unfurnished elementary aggregate for property type  $j$  in region  $i$  (from VOA)

$\omega_{furn,y}$  = CPI expenditure weight for furnished private rents for year  $y$

$\omega_{unfurn,y}$  = CPI expenditure weight for unfurnished private rents for year  $y$

The description for this equation is currently unavailable. ONS apologises for any inconvenience caused.

**Table 4: Aggregation of furnished and unfurnished indices**

Semi-detached houses in the West Midlands.

	Furnished index	Unfurnished index	Furnished weight	Unfurnished weight	Aggregate
<b>Oct-12</b>	100.1	100.6	0.4	0.6	<b>100.4</b>
<b>Nov-12</b>	100.2	100.8	0.4	0.6	<b>100.5</b>
<b>Dec-12</b>	100.3	100.8	0.4	0.6	<b>100.6</b>

**Table notes:**

1. Indices are not chain-linked.
2. Weights represent expenditure.



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These indices by region, country and property type are in-year indices based on January = 100. Property type indices are aggregated using the expenditure weights described in section 2.3, giving aggregate in-year indices for each region and country. An example of aggregation by property type is shown in Table 5. The formula for this is as follows:

### Equation 5

$$I_i = \frac{\sum_{j=1}^4 W_{i,j} I_{i,j}}{\sum_{j=1}^4 W_{i,j}}$$

where:

$I_i$  = in year index for region  $i$

$I_{i,j}$  = in year index for property type  $j$  in region  $i$

$W_{i,j}$  = expenditure weight for property type  $j$  in region  $i$

The description for this equation is currently unavailable. ONS apologises for any inconvenience caused.

**Table 5: Aggregating property type indices into regional indices**

Indices for West Midlands.

	Detached	Semi-detached	Terraced	Flat	Aggregate
<b>Weights</b>	1.2	1.5	2.0	1.2	
<b>Oct 2012</b>	100.4	100.4	100.3	100.5	<b>100.4</b>
<b>Nov 2012</b>	100.3	100.5	100.4	100.6	<b>100.5</b>
<b>Dec 2012</b>	100.3	100.6	100.5	100.7	<b>100.5</b>

**Table notes:**

1. The total of Great Britain weights adds to 100 and remains fixed throughout the year.
2. Indices not chain-linked.

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In theory any combination of the 44 cells can be combined to an aggregate index, but we currently produce:

- Great Britain
- England
- England excluding London
- Scotland
- Wales
- Each of the nine English regions
- Great Britain excluding London

The indices are chain-linked at the level of publication, with a base of January 2011 = 100. This is first January for which all improved data sources are available.