Office for National Statistics

Article

Changes to National Accounts: Imputed Rental

Explains the improvements to data sources and methods in the calculation of owner occupied imputed rental. These will be introduced when revised figures for the UK National Accounts, consistent with Blue Book 2016, are published on 30 June 2016.

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1. Executive summary

This article explains the improvements to data sources and methods in the calculation of owner-occupied imputed rental. These will be introduced when revised figures for the UK National Accounts, consistent with Blue Book 2016, are published on 30 June 2016. These will change the level and growths of the current price (CP) and chained volume measures (CVM) of gross domestic product (GDP).

As outlined in the Impact on GDP current price annual estimates, 1997 to 2011 article, published on 24 February, these changes will have a substantial impact both on imputed rental itself and on total current price GDP. As the source of volume data is mostly unchanged, the impact on the chained volume measure of GDP will be much smaller, as described in more detail in the Impact of Blue Book 2016 changes on chained volume measure gross domestic product estimates, 1997 to 2011 published on 23 March.

Because the current price series was already constrained into line with the Consumer Price Index (including Housing) CPIH from 2010 onwards (which is closer to the improved method now being introduced), revisions to growth in that period are smaller, though the level is changed in line with the new data. Prior to 2010 the growth and the level are now being aligned with the prices measured in administrative data rather than the Living Costs and Food Survey (LCF).

2. Introduction

Owner-occupiers' imputed rental is an estimate of the housing services consumed by households who are not actually renting their residence. It can be thought of as the amount that non-renters pay themselves for the housing services that they produce.

As such, imputed rental should represent the economic value per period to home owners of their dwellings, equivalent to if they were to rent out their properties. By definition, however, a homeowner does not receive payment on their property, and so the payment must be "imputed".

Measurement of imputed rental is important to ensure that, for comparisons over time and between countries, the valuation of housing services is calculated on a consistent basis. Different countries and periods will have a different composition of owner-occupied housing and rentals. For example, two home-owners would still consume the same amount of housing services as if they both rented their homes to each other, and we need to include these services in the national accounts.

Imputed rental represents around 10% of GDP as measured by expenditure.

3. Previous data sources and methodology

Before 2010, the existing estimates of actual and imputed rental are based on price information from the Living Costs and Food (LCF) survey and housing stock levels from the Department for Communities and Local Government (DCLG).
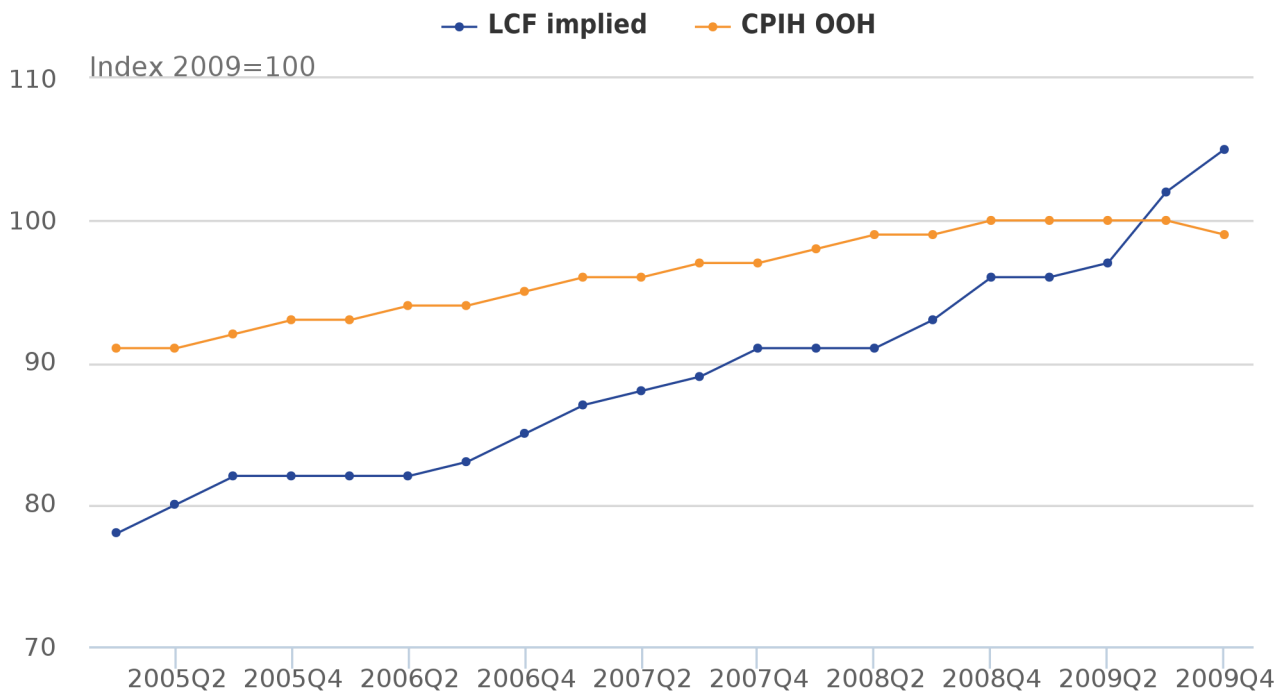
The LCF data are based on around 400 households' rental prices per quarter, including those renting from public sector and housing associations and also including both furnished and unfurnished properties.

For the current price estimate, a rent-per-room figure is calculated using the LCF and then multiplied by the number of owner-occupied rooms given by DCLG.

For the chained volume measure (CVM), the owner-occupied housing stock estimate from DCLG is used, with an adjustment applied to reflect the assumption that there is a constant rate of improvement in quality.

When the CPIH was introduced in 2013, this showed a different evolution in prices for owner-occupiers (the OOH series) from the implied deflator calculated from the current price and CVM imputed rental estimates (see Figure 1).

Figure 1: Implied deflator (LCF method) and CPIH deflator for UK owner-occupied housing, 2005 to 2009 (2009=100)

Source: Office for National Statistics

We implemented an interim solution in Blue Book 2014, fixing the current price imputed rental series so that it grew in line with the slower-growing CPIH deflator. This improvement was implemented for 2010 onwards, as only this period was open for revision at the point of introduction. Although this improved the series for the most recent period, bringing it in line with the CPIH, it also led to a discontinuity (which has now been removed in the new method).

While this discontinuity mainly affected the current price series, it also indirectly affected total household final consumption expenditure (HHFCE) CVM estimates. This was because in order to prevent the 2010 discontinuity in the current price imputed rental series from unduly influencing total current price HHFCE growth, balancing adjustments were applied across HHFCE components for 2010. These totalled around £4 billion in current prices, but no more than £400 million in any given COICOP. The adjustments also affected the relevant CVM series and as they are now not needed as the discontinuity has been resolved, their removal has some impact on the total HHFCE CVM series.

4. New data sources and methodology

The new approach, to be implemented in Blue Book 2016, will use Valuation Office Agency (VOA) data and similar data from the devolved administrations, instead of the LCF. These sources have much larger sample sizes than the LCF (for example, around 500,000 properties per year in the VOA data), and this also allows us to use an improved methodology using stratification. In addition, only more representative properties (for example, no furnished dwellings) are used in the estimation.

The current price measure is calculated first. The population is stratified by region and dwelling type. The regions used are the 12 NUTS1 regions (that is, Wales, Scotland, Northern Ireland and the 9 English regions) and the dwelling types are flats, terraced houses, semi-detached houses and detached houses.

Within each of these strata, imputed rental is calculated as the average price of a privately rented unfurnished dwelling, multiplied by the number of dwellings. The price here comes from the administrative data sources, while the number of dwellings is still sourced from DCLG.

Total imputed rental in current prices is then the sum of the imputed rental across all the strata.

The OOH component of CPIH is then used to deflate the current price estimate to produce a chained volume measure of imputed rental.

The new data sources for prices are used from 2006 onwards for English regions, while for the other countries they begin later. As such, we use backcasting (using the LCF data) in order to take the time-series back to 1997. The price data are also forecast to the latest period (where data are not yet available) at the strata level using standard ONS forecasting principles.

Similarly, the total stock by region data starts from 2006 and total stock by dwelling type is available from 1999. Backcasting is again used to take the series back to 1997 and are forecast to the latest period at a strata level, where data are not yet available.

Pre-1997 data will also be made available in line with other historic National Accounts series.

It is worth noting that the average prices used include all relevant dwellings in the region/dwelling type. This differs from the CPIH method, which uses matched-pairs of dwellings across time. This is because the CPIH is trying to isolate changes in price from changes in the quality of the product being sold. If rental prices went up because poor quality rentals were replaced with higher quality rentals, this change should not be captured in the CPIH as it is not a price change – but it would (and should) be captured within the National Accounts.

The previous imputed rental method largely assumed that the quality of owner-occupied housing increased at a fixed rate. In the new method, changes in the quality of housing stock are included in the CP series. The CVM series also includes quality changes in each period, because quality changes are not removed by the deflation process. This is as intended and should be reflected in both the current price and volume measures of GDP, as they represent an aspect of the real output taking place.

To create a quarterly path, the owner-occupied housing element of quarterly CPIH is used to estimate price changes within a year, benchmarked to the annual values, while the stock data are interpolated.

As well as owner-occupiers, who make up the bulk of the data, rental estimates are also imputed for rent-free dwellings and second homes.

The improvements to the value of imputed rental on second homes in the UK detailed in this article impact on the value of inward imputed rental and outward imputed rental (that is, the export and import of housing services related to foreign owned second homes).

Inward imputed rental is the value of the housing services that non-resident owners consume while occupying their own home in the UK. This is included in the National Accounts and Balance of Payments as an export of housing services. Inward imputed rental (the export of housing services) is estimated as a proportion of the total imputed rental for second homes in the UK and as such has been revised in line with the revisions to total imputed rental. In other words, a proportion of the second homes in the UK are foreign-owned so a proportion of the imputed rental of these homes is inward imputed rental.

Outward imputed rental is the housing service that UK home owners consume while occupying their second home abroad. This is included in the National Accounts and Balance of Payments as an import of housing services. Outward imputed rental (the import of housing services) is assumed to have a relationship with inward imputed rental (the export of housing services) proportionate to the ratio of the stock value of UK-owned second homes abroad to the stock value of foreign-owned second homes in the UK (for which the stock values are sourced from the English Housing Survey).

As such, the estimates of inward and outward imputed rental (that is, the import and export of housing services for foreign-owned second homes) are affected by this change to the imputed rental of second homes in the UK, even though the method for calculating the relevant imports and exports has not been altered. Similarly, the net trade balance on imputed rentals has therefore changed.

The impact on GDP from the changes to imputed rental exports is small. The impact on the balance of trade is no greater than £600 million in a single year, in current prices
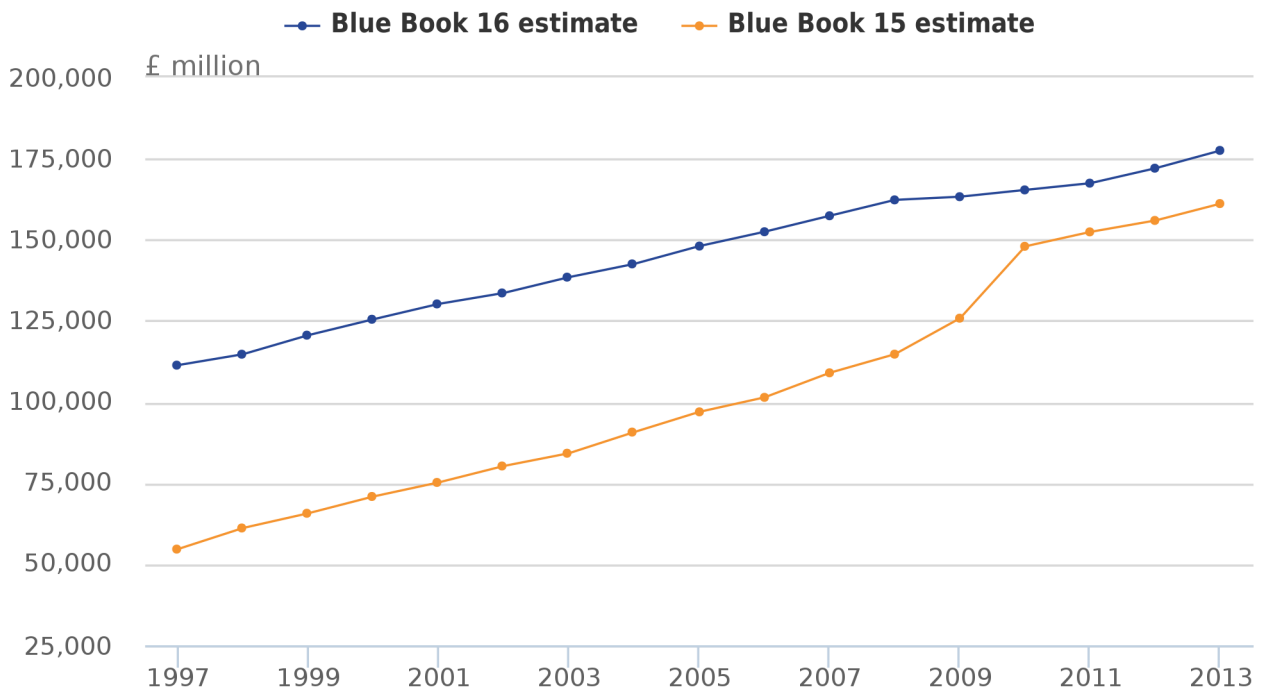
5. Conclusions and impact

These changes lead to significant improvements in the estimates of imputed rental. The administrative data is more comprehensive than the survey data previously used and allows us to improve the conceptual consistency between the data collected and the estimates being calculated. Further, because the method is naturally aligned with the CPIH, the discontinuity in 2010 can be removed and the whole of the series will be on a comparable basis.

The expected impacts of these changes on current price estimates in Blue Book 2016 are set out in the article Impact on GDP current price (CP) annual estimates, 1997 to 2011. Their effect is to raise the level of the estimates of imputed rental and to lower the growth of the pre-2010 series. Because of this lower growth rate pre-2010, the series diverge most in the earliest periods.

The discontinuity in the 2009 to 2010 growth rate has been removed as a consistent compilation methodology is now applied throughout the series (see Figure 2).
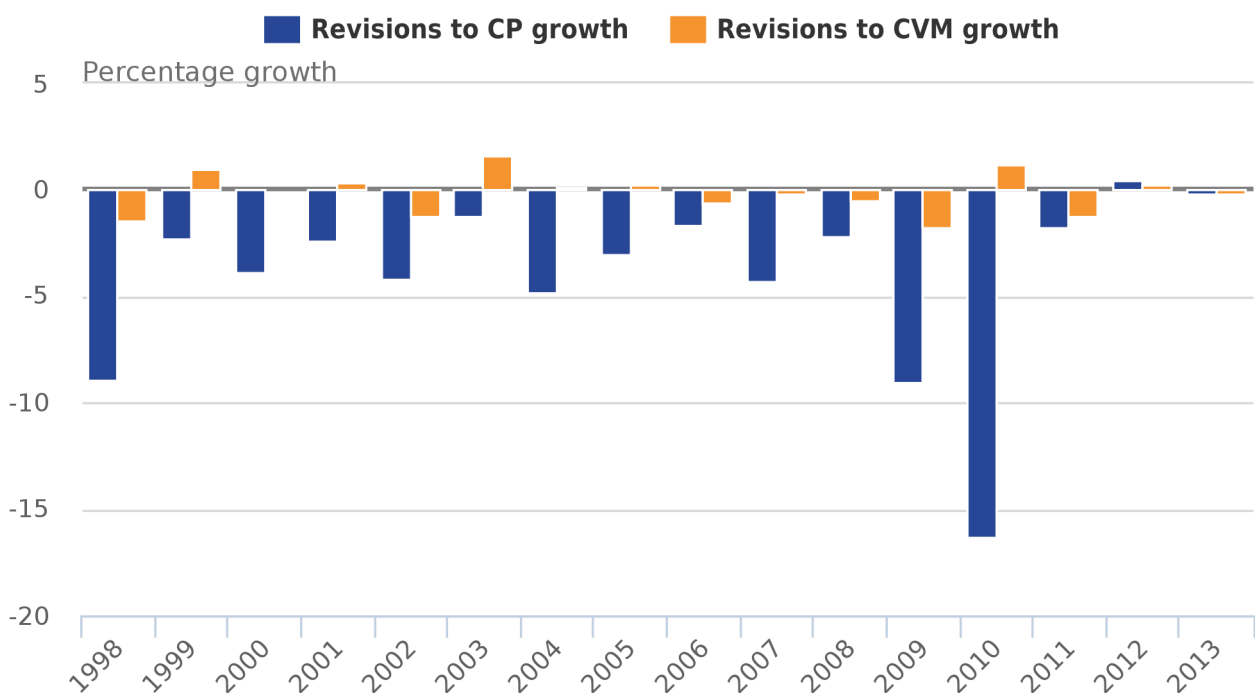
Figure 2: Commodity 04.2 - imputed rentals for housing, in the UK, current price, 1997 to 2014

Source: Office for National Statistics

These methodological changes also impact on the CVM series (see Figure 3). However, as much of the change is caused by switching from LCF price estimates to VOA price estimates, this does not impact as strongly on volume. As such, the revisions to the CVM growth rates are smaller than the CP growth revisions. This also lessens the impact on the estimate of top level GDP in real terms.

Figure 3: Commodity 04.2 - imputed rentals for housing, in the UK, chained volume measure year-on-year growth rates, 1998 to 2013

Source: Office for National Statistics

Generally, the differences in direction between CP and CVM revisions are due to the change in deflator – that is, the CPIH alignment – and as such the revisions in 2011 to 2013, where we were already CPIH aligned, are more similar. The largest outlier is 2010 and this is due to the unwinding of the discontinuity caused by the interim method, which had a much more significant impact on the CP estimates than on the CVM.

As can be seen, these methodological changes also affect the CVM series. However, as much of the change is caused by switching price estimates, the volume series is less affected. While over the long-term CVM growth is similar in both the old and new series, the inclusion of a measure of quality growth in the CVM makes the new series less constant, because quality changes are recorded as they happen rather than as a long-term average.

For example, a decrease in the deflator in 2010, alongside a relatively smooth CP series, gives an increase in CVM growth for 2010. As such, this change is driven by changes in the measured quality. (Also see Explaining private rental growth).

Further to these methodological changes, there are further revisions at total HHFCE level due to the unwinding of the discontinuity (as described in the Previous Sources and Methodology section) which affect the level of 2010 and therefore the growth rates in 2010 and 2011. These will affect both the CP and CVM levels of HHFCE in these 2 years by a similar amount to the methods change itself.

For further information on the impact of these changes on total GDP, see the Impact of Blue Book 2016 changes on chained volume measure gross domestic product estimates, 1997 to 2011 available on our website.

6. References

1. ONS (2016): GDP Current Price annual estimates, 1997 to 2011

2. ONS (2015): Practical Guidance on Modelling for National Accounts

3. ONS (2015): Methodological improvements to National Accounts for Blue Book 2015: Cross-Border Property Income

4. ONS (2015): Explaining private rental growth

5. ONS (2016): Impact of Blue Book 2016 changes on chained volume measure gross domestic product estimates, 1997 to 2011

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