

Article

# Impact of inclusion of additional price quotes on Consumer Prices Indices

This article sets out the impact of implementing an improvement in the Consumer Prices Index including owner occupiers' housing costs (CPIH; the lead measure of inflation in the UK), the Consumer Prices Index (CPI) and their supplementary indices.

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# 1 . Abstract

This article sets out the impact of implementing an improvement in the Consumer Prices Index including owner occupiers' housing costs (CPIH; the lead measure of inflation in the UK), the Consumer Prices Index (CPI) and their supplementary indices.

This change is planned for February's indices in 2018 and is designed to improve the representativeness of price movements of volatile items (specifically fruit and vegetables) in the CPIH and CPI baskets by including additional price quotes collected over more than one working week. As the CPI is identical to the Harmonised Index of Consumer Prices (HICP), this improvement will also help us to better meet EU regulations. This change will not be applied to the Retail Prices Index (RPI).

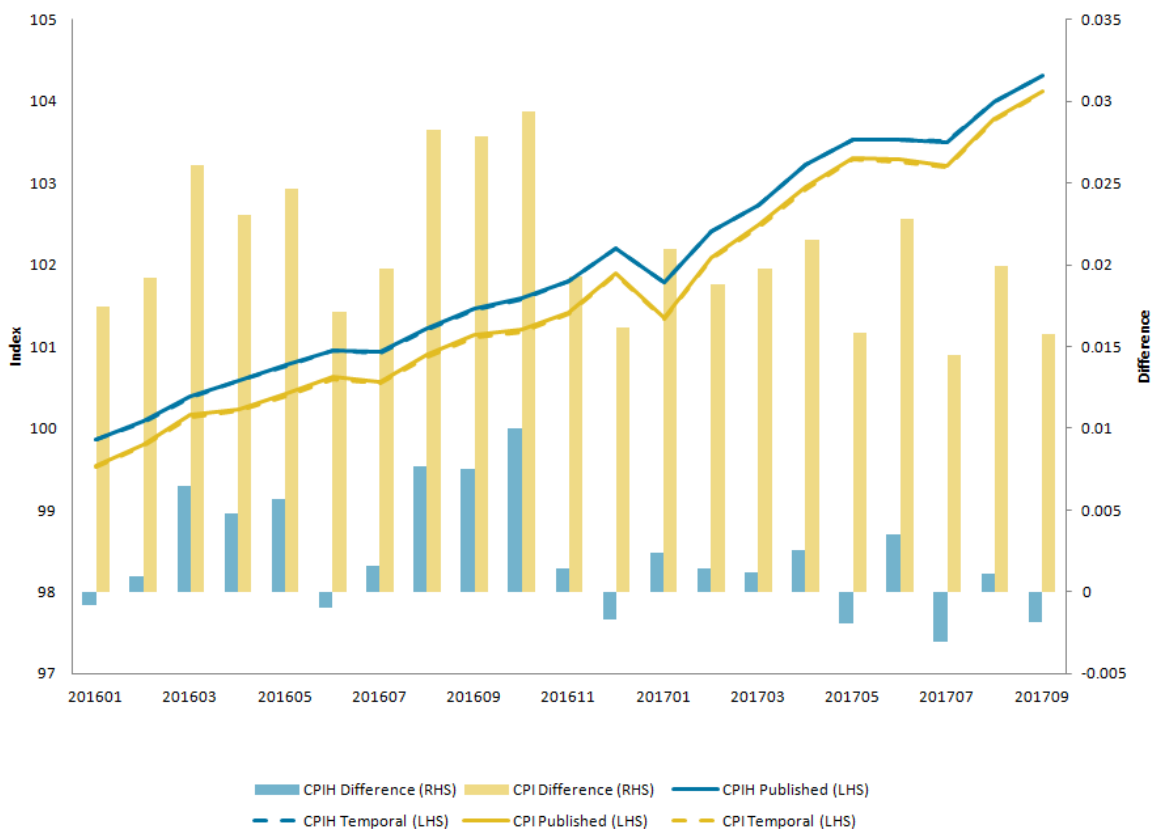
## 2 . Introduction and summary

In March 2018, we will publish Consumer Prices Index including owner occupiers' housing costs (CPIH) and Consumer Prices Index (CPI) using additional price quotes for fruit and vegetable items, collected on the Friday preceding index day (the second or third Tuesday of the month).

This article presents analysis of data collected during a parallel run period from January 2016 to September 2017. Based on these results, the expected impact of this change on the all items CPIH and CPI indices and 12-month growth rates is minimal, with the greatest difference in the indices at 0.010 index points (ip) and 0.010 percentage points (pp) in the 12-month growth rate (on the CPIH in October 2016) as shown in Figures 1 and 2. Note that the results show the impact of these changes over the parallel run period between January 2016 and September 2017. Neither CPIH nor CPI will be revised to incorporate these changes.

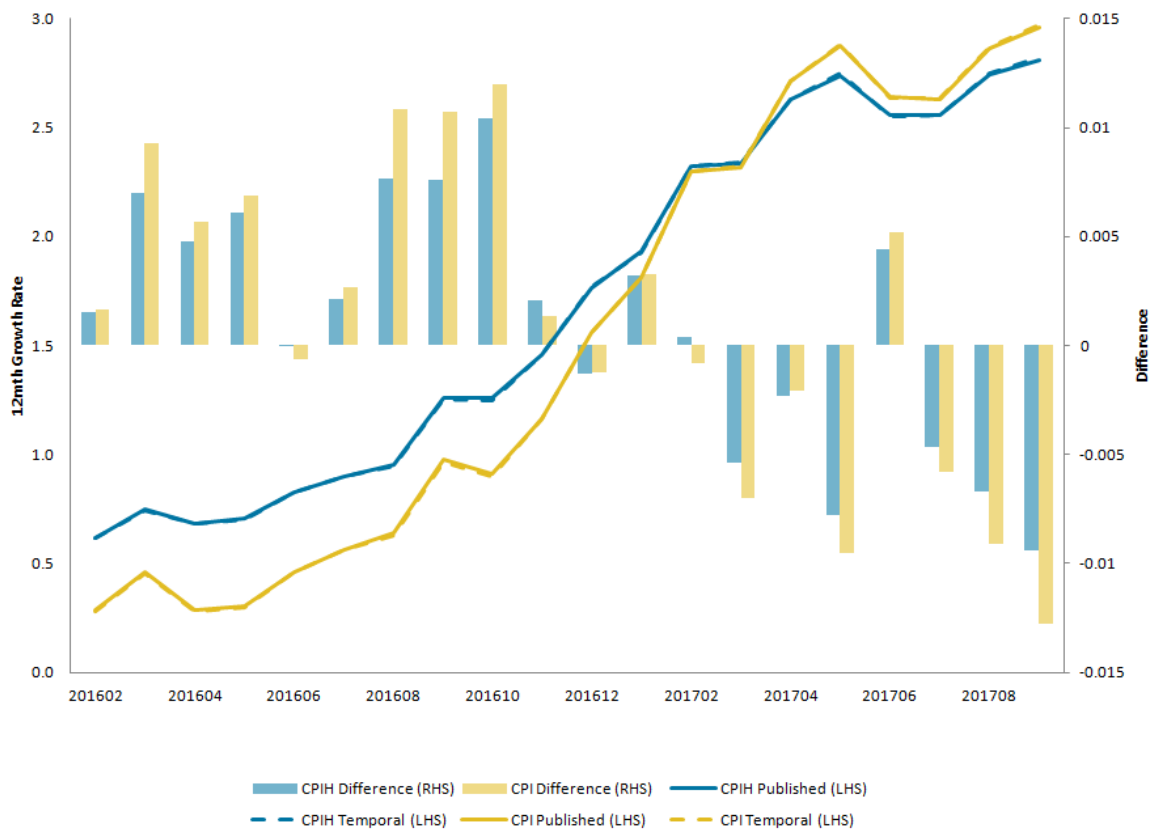
**Figure 1: CPIH/CPI all items indices (with and without additional quotes)**

January 2016 to September 2017, UK



**Figure 2: CPIH/CPI all items 12-month growth rates (with and without additional quotes)**

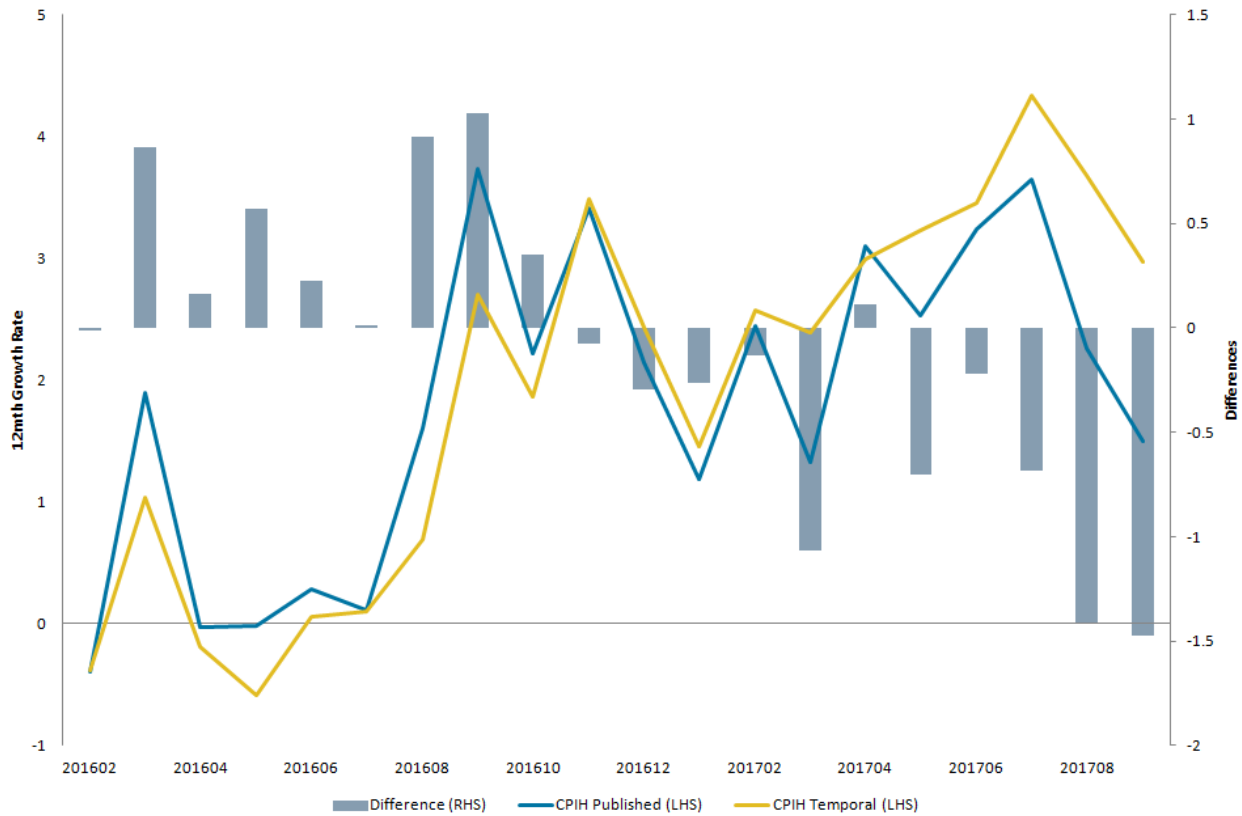
February 2016 to September 2017, UK



An impact is expected at the lower Classification of Individual Consumption According to Purpose 4 (COICOP4) level for 01.1.6 Fruit and 01.1.7 Vegetables including potatoes and tubers. The maximum differences in the annual growth rates seen during the parallel run period were negative 1.473pp for fruit (in September 2017) and 0.675pp (in October 2016) for vegetables, with average absolute impacts of 0.529pp and 0.227pp for fruit and vegetables respectively (where 12 periods saw differences above zero, in the headline annual growth rates, and eight periods below zero), as shown in Figures 3 and 4. Note that CPIH and CPI are the same at the COICOP4 class level, so only CPIH data are now presented.

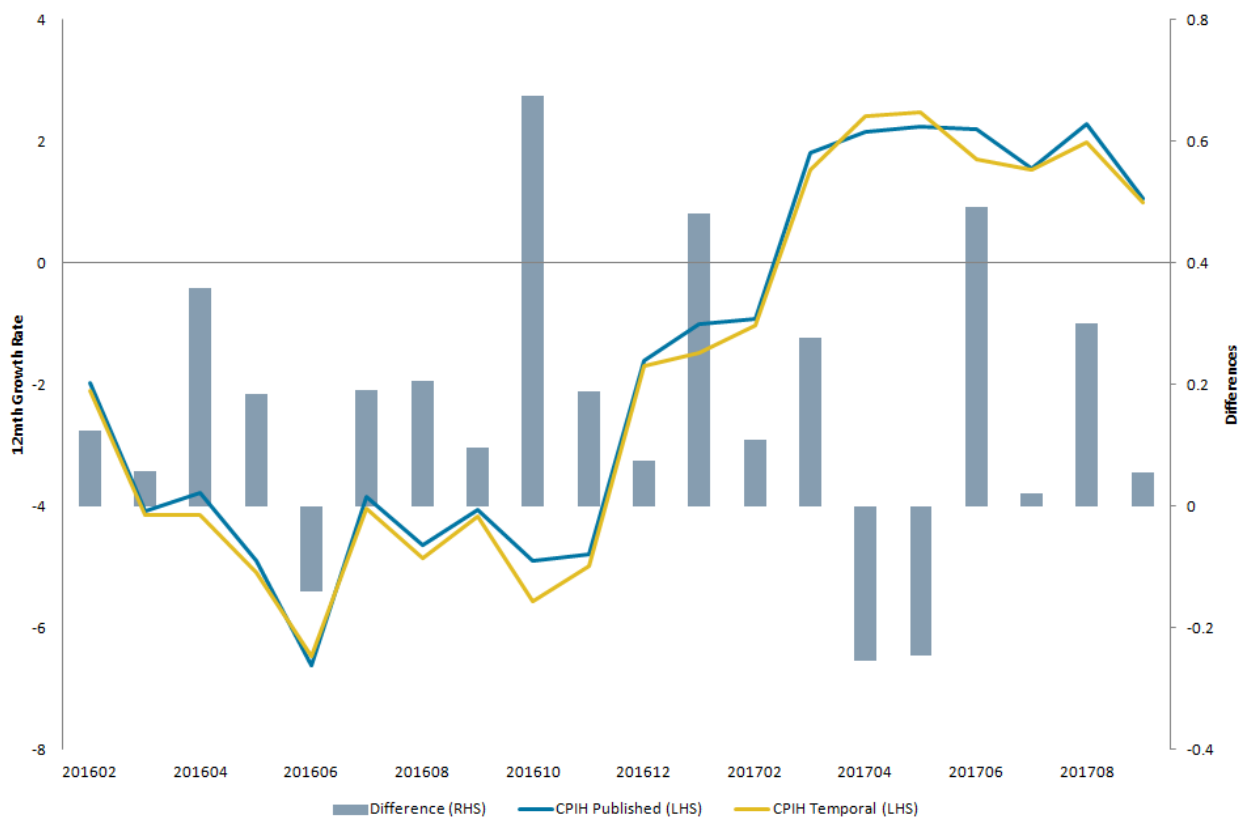
**Figure 3: CPIH COICOP class 01.1.6 fruit 12-month growth rates (with and without additional quotes)**

February 2016 to September 2017, UK



**Figure 4: CPIH COICOP class 01.1.7 vegetables 12-month growth rates (with and without additional quotes)**

February 2016 to September 2017, UK



## 3 . Background and explanation of changes

For practical and cost reasons, price collection for the majority of items in the Consumer Prices Index including owner occupiers' housing costs (CPIH), Consumer Prices Index (CPI) and Retail Prices Index (RPI) baskets is conducted at the same time (on or around index day, the second or third Tuesday of the month).

In late 2010, a pilot price collection of additional quotes for fruit and vegetable items, which are considered to be particularly volatile, was initiated to better understand the potential bias caused by a single day collection and to develop an understanding of any practical issues associated with a multi-day collection.

Initially this involved collections of fruit and vegetable prices on the Friday before, and the Friday after, index day at a sub-sample of regions and collection locations. This second Friday was dropped at the end of 2013 after findings showed the differences between two and three collection days were minor, allowing us to extend the study across other regions without incurring further additional costs.

In 2016, the pilot study was rolled out to a full parallel collection of additional Friday quotes for 48 fruit and vegetable items, across all collection locations.

In total, in 2017, the Fruit class (Classification of Individual Consumption According to Purpose (COICOP) code 01.1.6) accounts for 7 parts per thousand (ppt) of the CPIH all items index (9ppt of CPI) and the Vegetables class (01.1.7) 10ppt of CPIH (13ppt of CPI).

We now plan to implement these additional Friday price quotes in the CPIH, CPI and their supplementary indices. This change will take effect in February's index, published in March 2018. As the CPI is identical to the Harmonised Index of Consumer Prices (HICP), this change will also help us to better meet EU regulations, in particular 701/2006 (temporal coverage of price collection), which states that where products are known to typically show sharp and irregular price changes within the same month, price collection should take place over a period of more than one working week. The regulation specifically states that this rule shall apply to the following:

- energy products (temporal quotes already collected by Office for National Statistics)
- fresh food, such as fruit and vegetables

## 4 . Analysis of impact

To assess the impact of this change, we used a parallel system to re-calculate the Consumer Prices Index including owner occupiers' housing costs (CPIH) and Consumer Prices Index (CPI) using additional price quotes collected during the parallel run from January 2016 to September 2017. Charts in this article present this systematised data including additional quotes against published CPIH and CPI series.

Figures 1 and 2 present indices and 12-month growth rates for the published All Items CPIH and CPI series and their equivalents including additional quotes for fruit and vegetable items, along with the differences between these series (including and excluding additional quotes) on the right-hand axis. The impact in both cases is negligible. The average of the absolute differences in the annual growth rates for CPIH is 0.005 percentage points (pp) (0.006pp for CPI) and they do not exceed 0.010pp in CPIH (0.013pp in CPI).

Figures 3 and 4 present the annual growth rates and differences for published and parallel CPIH series including additional quotes for the Classification of Individual Consumption According to Purpose (COICOP) classes 01.1.6 Fruit and 01.1.7 Vegetables (including potatoes and tubers). Here the differences are more pronounced. The maximum differences in the annual growth rates seen during the parallel run period were 1.473pp for fruit (in September 2017) and 0.675pp (in October 2016) for vegetables, with average absolute impacts of 0.529pp and 0.227pp for fruit and vegetables respectively.

## 5 . Analysis of impact on the Fruit class

Figures 5 to 8 present indices and differences for published and parallel CPIH series including additional quotes for the COICOP 01.1.6 Fruit class, a breakdown of the component fruit items contributing most to the index differences, as well as examples of specific fruit items (peaches and nectarines, and strawberries) making the largest contributions.

**Figure 5: CPIH COICOP class 01.1.6 fruit indices (with and without additional quotes)**

January 2016 to September 2017, UK

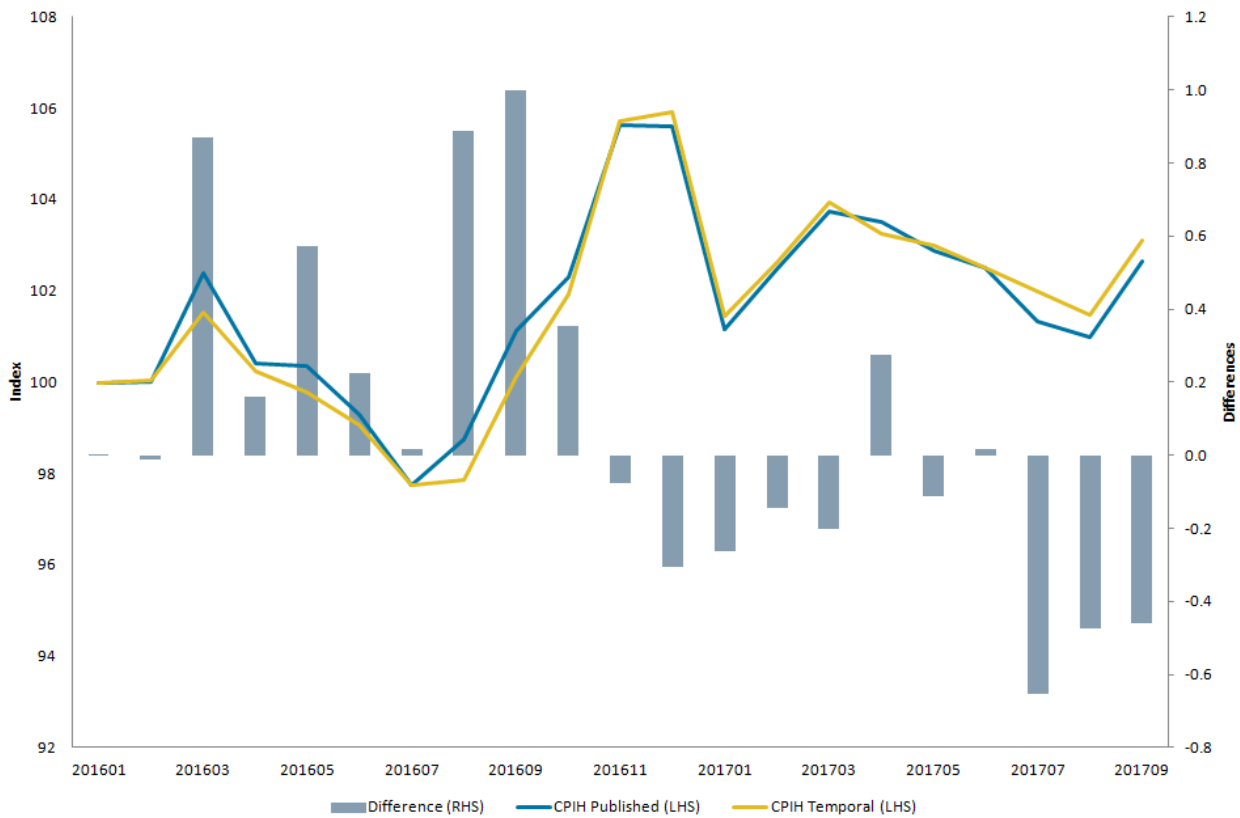


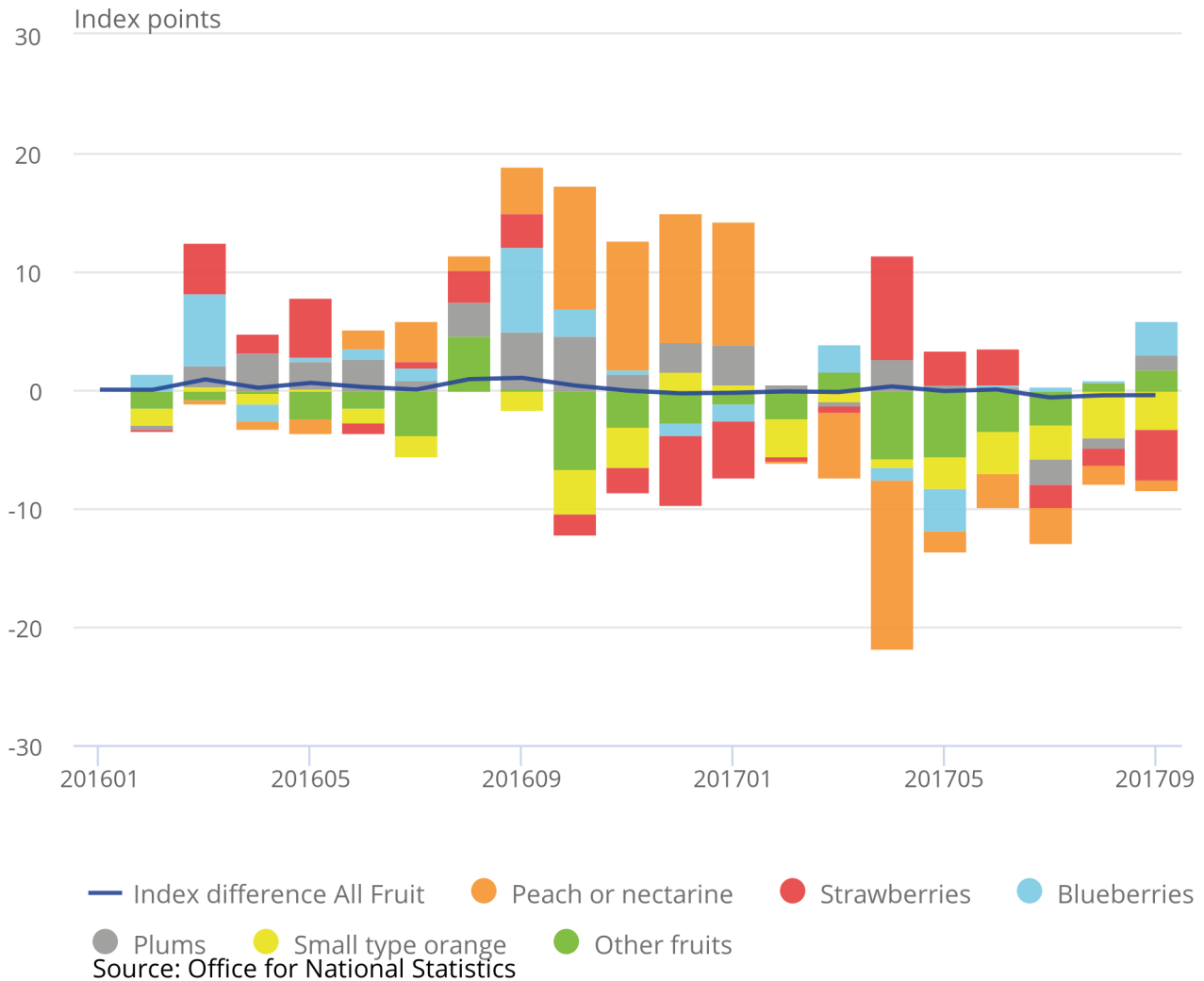
Figure 5 shows indices and differences between the published and parallel CPIH series for the COICOP 01.1.6 Fruit class. The result is broadly similar to that seen in Figure 3 (showing the equivalent annual growth rates), with maximum difference of 1.000 index points (ip) (in September 2016) and average absolute difference of 0.337 ip over the parallel collection period.

**Figure 6: CPIH COICOP class 01.1.6 fruit components contributions to differences in index values (between published and series including additional quotes)**

January 2016 to September 2017, UK

Figure 6: CPIH COICOP class 01.1.6 fruit components contributions to differences in index values (between published and series including additional quotes)

January 2016 to September 2017, UK



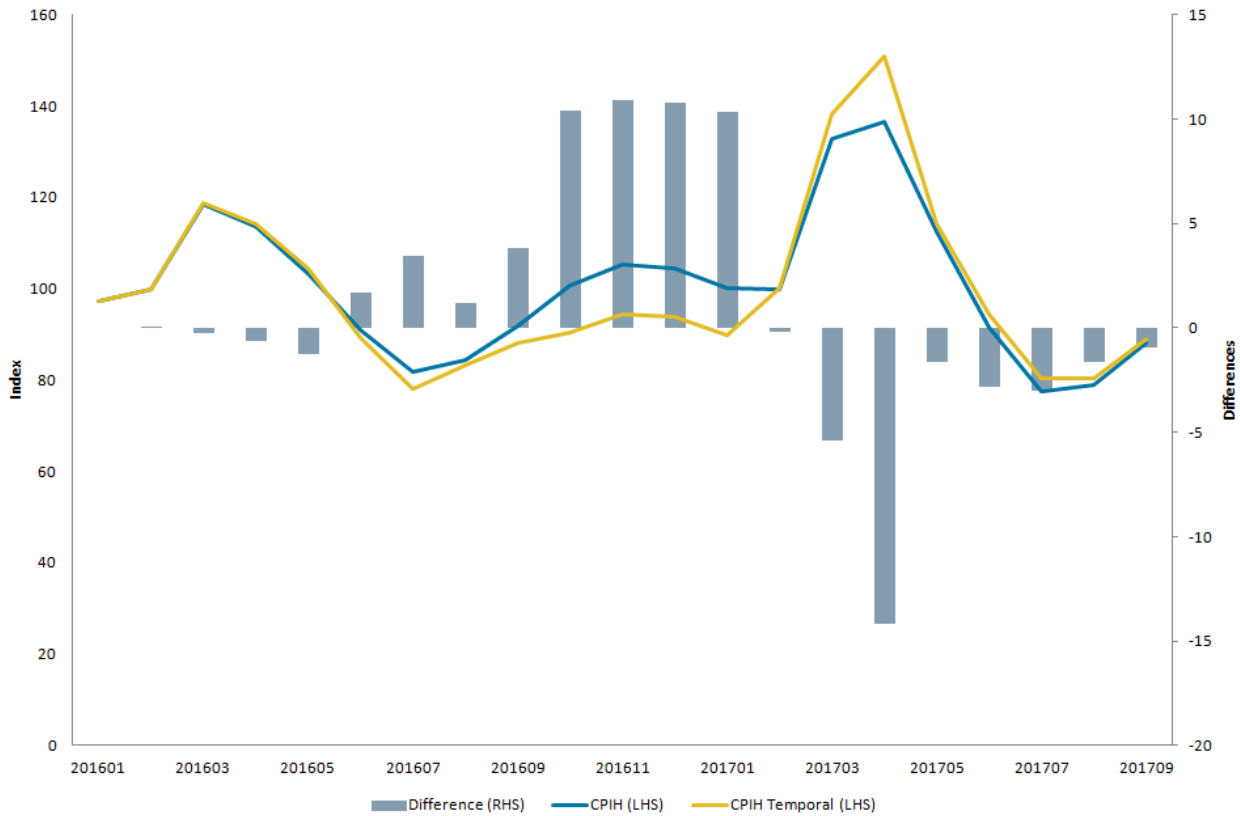
Source: Office for National Statistics

Figure 6 shows the contribution of each fruit item to the differences. We see it is largely driven by peaches and nectarines, and strawberries making the largest contributions to change (negative 14.205ip and 8.627ip respectively) in April 2017.

Figures 7 and 8 show the item indices for peaches and nectarines, and strawberries and the differences between the published and parallel CPIH series.

Figure 7: CPIH COICOP item ID 212727 peach and nectarine indices (with and without additional quotes)

January 2016 to September 2017, UK

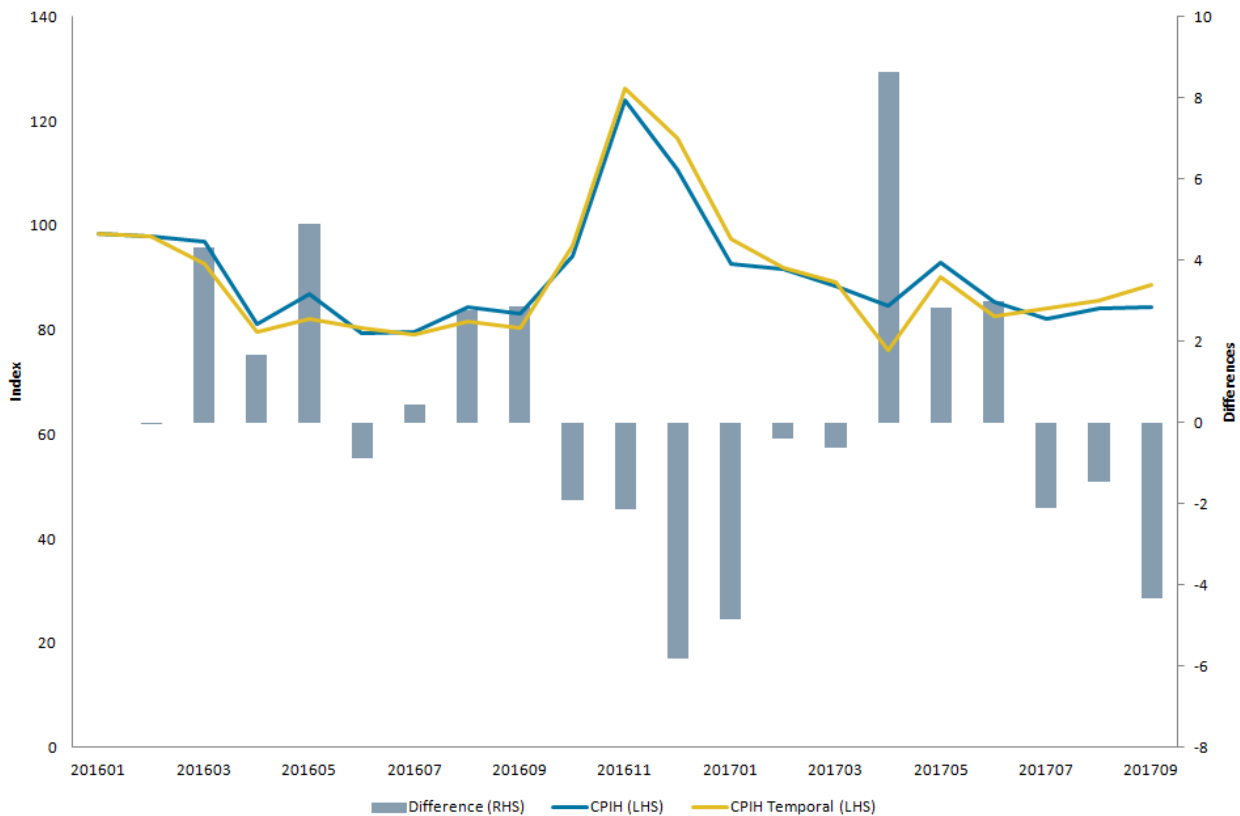


In Figure 7 the maximum difference for peaches and nectarines is negative 14.205ip (in April 2017) and the average absolute difference is 4.033ip (where the differences are greater than zero for eight periods and less than zero for 13 periods).



**Figure 8: CPIH COICOP item ID 212720 strawberries indices (with and without additional quotes)**

January 2016 to September 2017, UK



In Figure 8 the maximum difference for strawberries is 8.627ip (in April 2017) and the average absolute difference is 2.660ip (where nine periods show differences above zero, and 12 periods have differences below zero), over the parallel collection period.

## 6 . Analysis of impact on the Vegetables class

Figures 9 to 12 present indices and differences for published and parallel CPIH series including additional quotes for the COICOP 01.1.7 Vegetables class, a breakdown of the component vegetable items contributing most to the index differences, as well as examples of specific vegetable items (pre-packed salads and courgettes) with the largest contributions to the differences.

**Figure 9: CPIH COICOP class 01.1.7 vegetables indices (with and without additional quotes)**

January 2016 to September 2017, UK

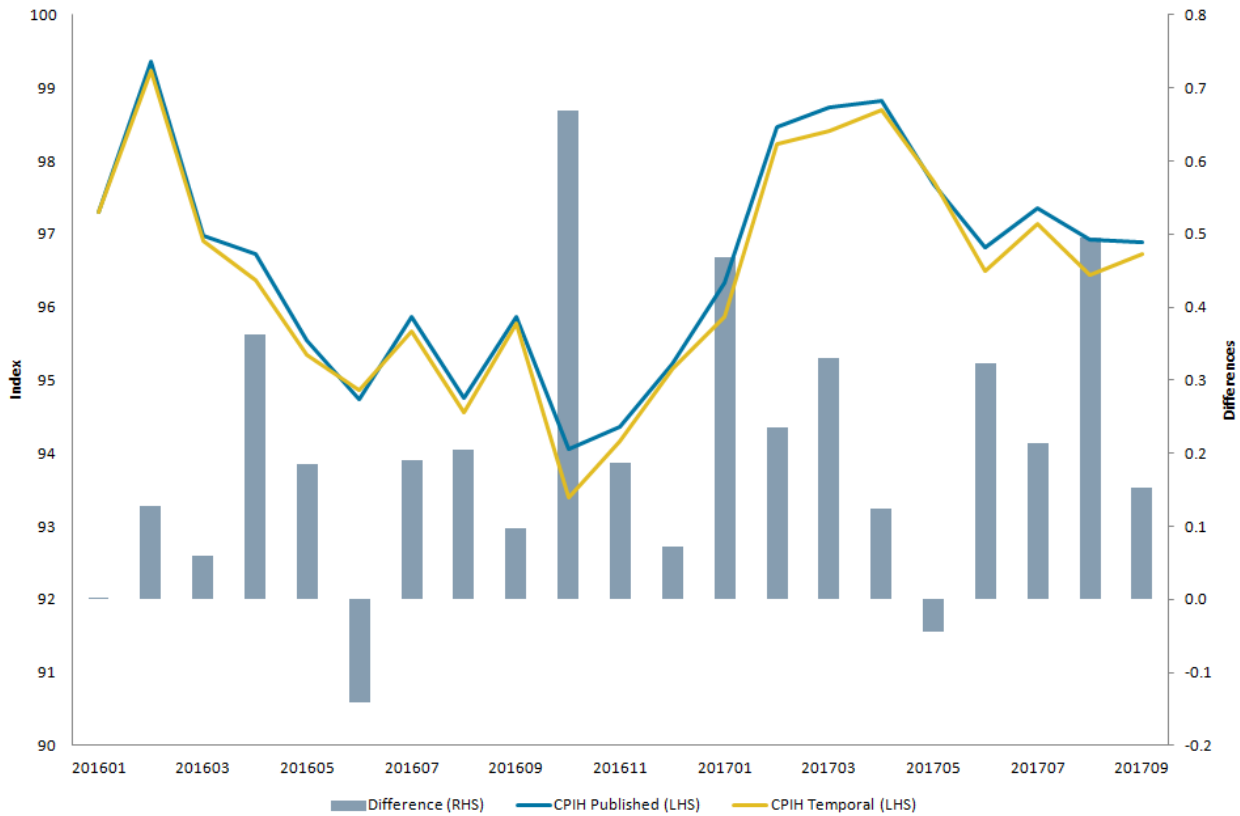


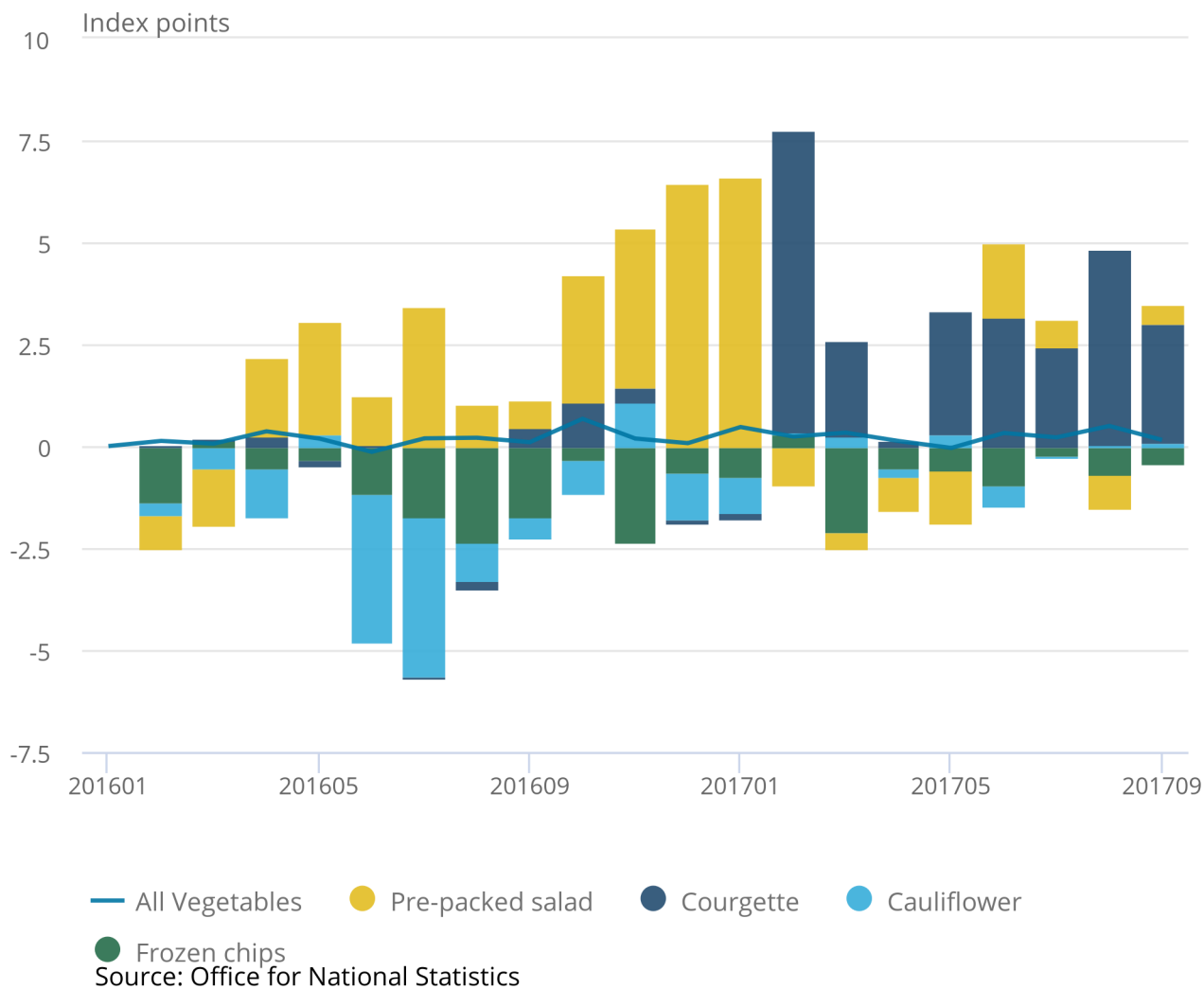
Figure 9 shows indices and differences between the published and parallel CPIH series for the COICOP 01.1.7 Vegetables (including potatoes and tubers) class. The result is broadly similar to that seen in Figure 4 (showing the equivalent annual growth rates), with maximum difference of 0.669 index points (ip) (in October 2016) and average absolute difference of 0.223ip over the parallel collection period.

**Figure 10: CPIH COICOP class 01.1.7 vegetables components contributions to differences in index values (between published and series including additional quotes)**

January 2016 to September 2017, UK

Figure 10: CPIH COICOP class 01.1.7 vegetables components contributions to differences in index values (between published and series including additional quotes)

January 2016 to September 2017, UK



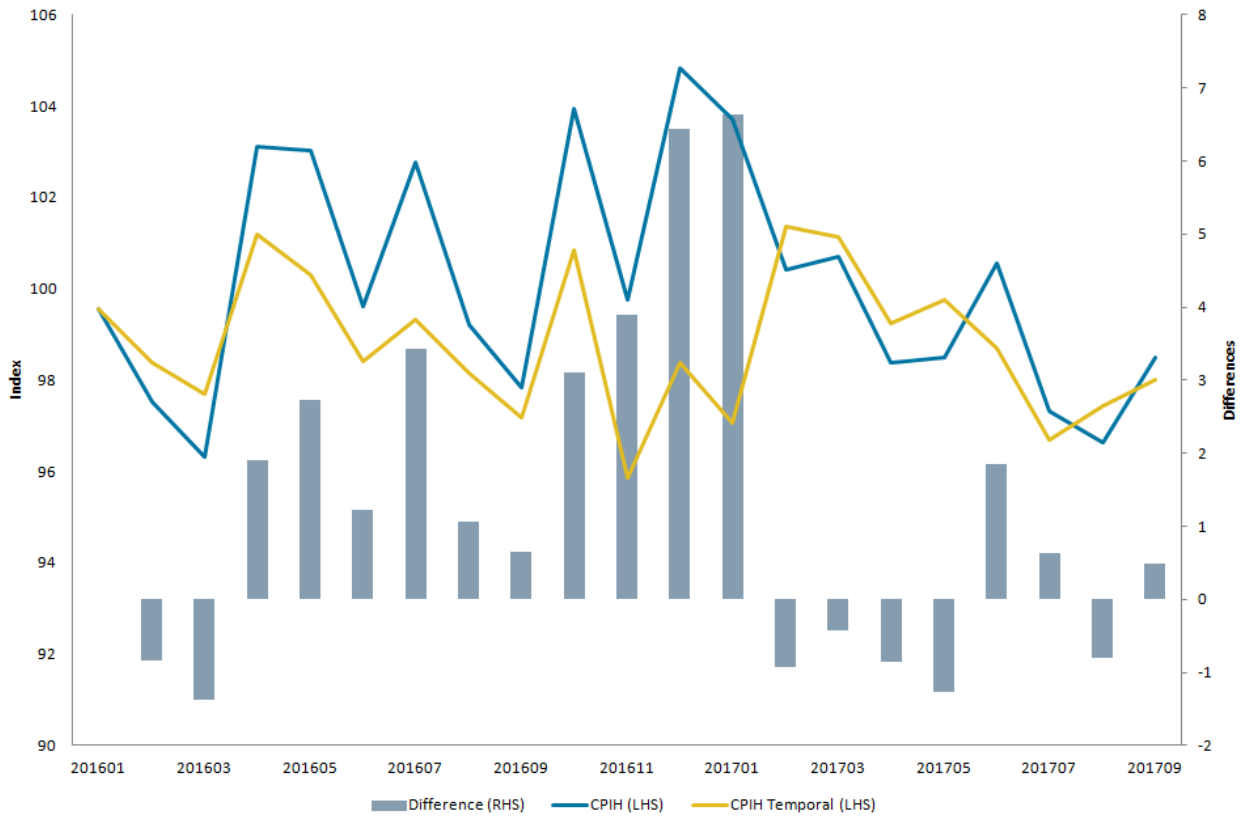
Source: Office for National Statistics

Figure 10 shows the contribution of each fruit item to the differences. We see it is largely driven by pre-packed salads and courgettes, making the largest contributions to change (6.630ip and 7.363ip) in January and February 2017, respectively.

Figures 11 and 12 show the item indices for pre-packed salads and courgettes, and the differences between the published and parallel CPIH series.

Figure 11: CPIH COICOP item ID 212527 pre-packed salad indices (with and without additional quotes)

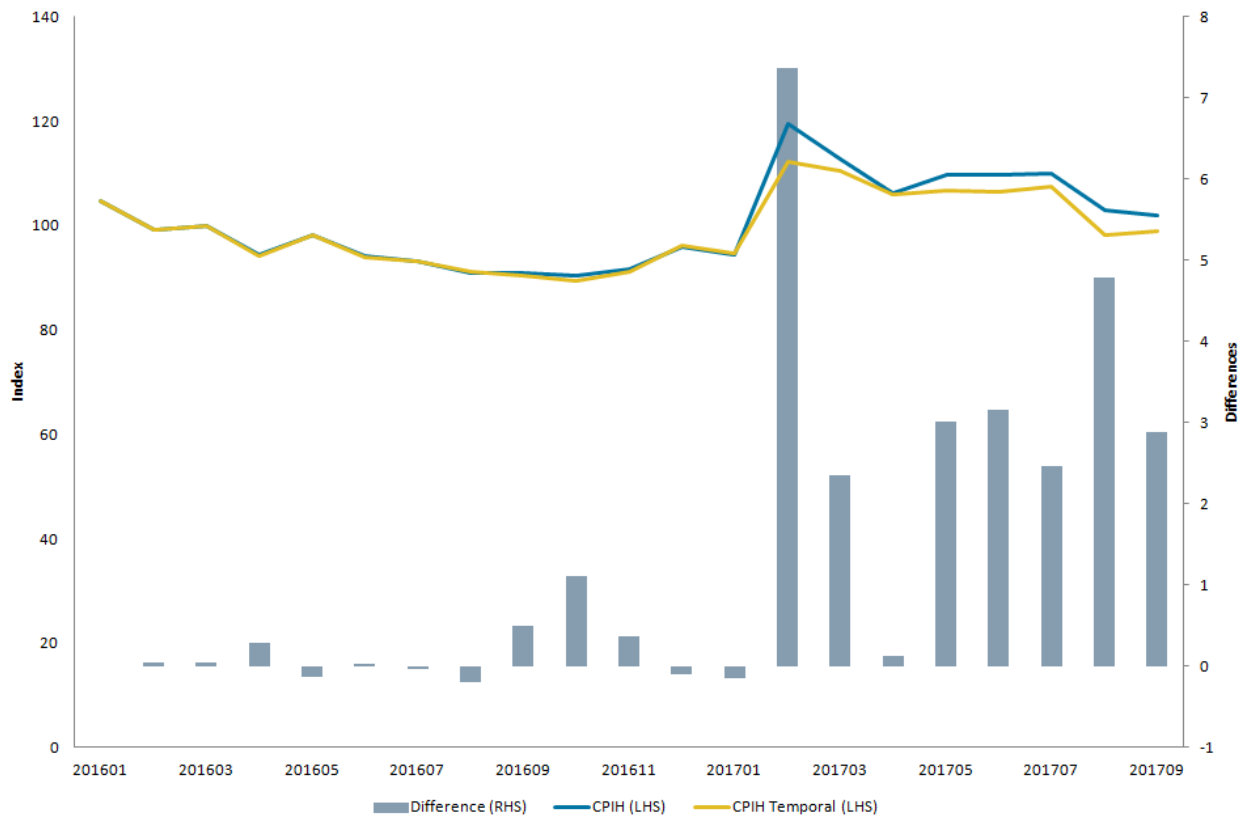
January 2016 to September 2017, UK



In Figure 11 the maximum difference for pre-packed salads is 6.630ip (in January 2017) and the average absolute difference is 1.930ip.

**Figure 12: CPIH COICOP item ID 212531 courgette indices (with and without additional quotes)**

January 2016 to September 2017, UK



In Figure 12 the maximum difference for courgettes is 7.363ip (in February 2017) and the average absolute difference is 1.3388ip, over the parallel collection period – it should be noted that Spain and Italy (the UK’s main suppliers of courgettes) experienced particularly poor growing conditions at the end of 2016 and beginning of 2017, resulting in a greatly reduced supply and increased prices.

## 7 . Conclusion

The introduction of additional Friday price quotes for volatile fruit and vegetable items improves the precision of the index, where intra-month price volatility is not accounted for. From January 2016 to September 2017, this resulted in a negligible impact on all items Consumer Prices Index including owner occupiers’ housing costs (CPIH) and all items Consumer Prices Index (CPI). However, impacts are seen at the Classification of Individual Consumption According to Purpose (COICOP4) Class level, where the annual growth rates are affected by up to 1.473 percentage points (pp) for fruit items and up to 0.675pp for vegetable items. The average absolute impact is 0.529pp for fruit and 0.227pp for vegetables. These impacts are driven largely by a few main items – peaches and nectarines, and strawberries for fruit; and courgettes for vegetables.

Overall, the findings presented in this article demonstrate that the additional price quotes collected on the Friday preceding index day capture more of the intra-month volatility of price changes in fruit and vegetables at the item level, whilst having little impact on the headline all items measures.