3 February 2023

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Dear Simon and Rhys,

This letter covers changes to the suite of consumer price inflation statistics in 2023. This is an updated version of the letter previously sent on 30 November 2022. For ease we highlight the three main changes relative to the previous letter here:

- the outcome of the ONS decision not to implement new data for second hand cars at this time to allow time for further quality assurance to ensure that any changes result in an improvement in quality and do not increase the risks to the monthly publication round;
- details of the final impact analysis of rail fares on all-items RPI to reflect improvements to outlier detection and systems; and
- additional detail on the annual weights update to highlight changes to data sources used to calculate the weight of housing depreciation.

i. Issue

A request for the Bank of England to assess the changes to the Retail Prices Index (RPI) proposed by UK Statistics Authority (the Authority) for implementation in 2023.

ii. Action

To note the contents of this letter, which is being sent to acknowledge the requirements under Section 21 of the Statistics and Registration Service Act 2007. In previous years it has initiated the Authority's consultation with the Bank over whether any proposed changes to the RPI would constitute a fundamental change in the index which would be materially detrimental to the interests of holders of relevant index-linked gilts, and hence trigger the redemption clause.

iii. Timing

For response by 6 February 2023.

iv. Context

In November 2020 we published a [response](#) to the consultation on reforming the Retail Prices Index methodology. This consultation was run jointly with HM Treasury (HMT) and sought views on the manner in which we should implement our plans to reform RPI (by bringing in the methods and data sources of the Consumer Prices Index including owner occupiers' Housing costs, CPIH). HMT sought views on whether and when the change should be made between 2025 and 2030. The (then) Chancellor responded that, while he saw the statistical arguments of our intended approach to reform, he was unable to consent to the implementation of such a proposal before the maturity of the final specific index-linked gilt in 2030.

It is UK Statistics Authority policy to address the shortcomings of the RPI in full at the earliest practical time. Considering the outcome of the consultation, the change that we propose can legally and practically be made by the Authority in February 2030. Since the earlier 2012 consultation on RPI, our policy has been to only make "routine" changes to RPI unless such changes would impede the development of our other consumer price inflation statistics.

There are increasing challenges associated with maintaining the RPI's current methodology until 2030; challenges which are particularly acute in the context of the [large-scale transformation project](#) for CPIH and CPI, which we will be delivering from 2023 onwards. To not make such changes to RPI would require us to maintain a separate data collection for RPI, duplicating efforts and increasing the risk of error in these indices. Taking into account also our intention to address the shortcomings of RPI in full in 2030, we are developing a framework to determine which changes we will propose for RPI for implementation from 2024 onwards.

We propose several changes to the RPI this year, based primarily on the view that:-

1. In order to not make such changes, resource would need to be diverted to maintain price collection for RPI separately, which would hinder the development of our other consumer price inflation statistics, increase the risk of error in RPI, CPIH and CPI, and would not reflect value for money, and

2. that these changes do not reflect a partial reform of RPI as, whilst these changes represent a significant improvement in the methods and data sources for a specific part of the basket, the shortcomings of the RPI that we have [previously identified](#) remain; we maintain that the RPI is a poor measure of inflation, and our policy remains to address its shortcomings in full in 2030, as described above.

We have made these decisions to allow us to begin the delivery of the transformation of our consumer price inflation statistics in 2023, as planned. These decisions may or may not be in line with the decision-making framework for RPI changes which we are currently developing, taking into account feedback from our user groups. These decisions also should not be seen as establishing a precedent for the kinds of changes that will be made to RPI in future years, as we implement further transformational changes into our consumer price inflation statistics. We discuss the planned changes in more detail below.

Impact of COVID-19 on our routine processes for consumer price inflation statistics

Since our last letter to you in December 2021, we have largely been able to carry out our routine activities without the need for the contingencies that were implemented in response to the coronavirus (COVID-19) pandemic. This includes the continuity of data collection, methods for dealing with prices that we have not been able to collect, and the updating of annual weights to reflect significant changes in consumer spending patterns. Contingency plans were communicated through correspondence with the Deputy Governor in April 2020, then again through our usual annual correspondence in November 2020 and December 2021. Nevertheless, there remain some activities where we have not yet fully resumed our pre-pandemic approach. I will describe these in more detail in the sections that follow.

v. Ongoing collection of prices

Over the course of the COVID-19 pandemic, we were flexible with our approach to data collection in response to changing Government guidance. We have now resumed our price collection in physical stores, reflecting the absence of movement restrictions in 2022.

vi. Annual basket and weights update

The standard procedures for the annual updating of the baskets are well rehearsed. Although fixed within each year, the contents of the baskets of goods and services and their associated expenditure weights are updated annually to ensure that they are representative of household spending patterns. The updating mitigates potential biases that might otherwise occur from not allowing for changing consumer expenditure habits.

The annual update of the suite of consumer price inflation statistics will take effect with the February 2023 indices, which will be published on 22nd March 2023. An accompanying article describing the changes to the baskets will be published on the ONS website about a week earlier. A full description of the reweighting and updating process can be found in the basket article and the weights article for 2022. The items in the Consumer Prices Index including owner-occupiers' Housing costs (CPIH), Consumer Prices Index (CPI) and Retail Prices Index (RPI) baskets will be updated in 2023, so that they remain representative of consumer spending and trends.

However, our suite of consumer price indices use a Lowe index methodology, meaning that expenditure data from before the base period are used to weight consumption classes. Given the sizeable shifts in consumption patterns observed during 2020 and 2021, our usual weights update process was adapted for 2021 and 2022, for the CPIH and CPI, to ensure that the expenditure weights used adequately reflected expenditure in the base year. The RPI process remained, and continues to remain, unchanged, as discussed in the correspondence for the year 2021.

Our approach for the construction of CPIH and CPI weights for 2022 is consistent with international guidance, as well as the most up to date Household Final Consumption Expenditure data (HFCE) released in December 2022.

Despite the absence of COVID-19 pandemic restrictions in 2022, it is still necessary to maintain our adapted weights updating process. This is because the HFCE data that we would typically use refer to the year 2021,

when some COVID-19 restrictions were in place. Therefore, spending in the base year, which is 2022, is likely to be distributed in a different way to that suggested by the 2021 data.

For the upcoming 2023 weights for CPIH and CPI, we will therefore update the 2021 HFCE in consumption classes where there have been notable shifts in consumer spending since 2021. The most recent HFCE estimates for the first 3 quarters of 2022 will be used as the primary data source for these adjustments, with other data sources (such as retail sales and financial transaction data) used to supplement HFCE estimates where there is limited information. Quarter 4 spending will need to be estimated by applying the typical seasonal growth. This approach is coherent with previous Eurostat guidance provided for the internationally comparable Harmonised Index of Consumer Prices (HICP, which is the same measure as our CPI).

As with last year's weights update, the RPI will continue to be weighted principally using annual Living Costs and Food survey data at a lag of 6 months. This means that the 2023 weights will be based on spending patterns between July 2021 and June 2022 and will therefore reflect spending patterns immediately after the period of movement restrictions that were imposed during the course of the COVID-19 pandemic.

The RPI also uses other data from market research and administrative sources, mostly for the more granular series. These are being updated in the usual way with the latest available data, where necessary taking on new data sources. For transparency, we highlight a change to the data sources for housing depreciation given this is the largest single component of RPI. The weight has previously been based on taking the value of household's net capital stock of dwellings and deducting estimates of the net capital stock of dwellings in the privately rented sector, to get an estimate of the owner-occupiers' stock. Following the discontinuation of the privately rented sector estimate we propose to split the net capital stock of dwellings proportionately according to estimates of the number of properties in the owner-occupied and privately rented sector.

Changes in the contents of the baskets and their associated weights are not significant beyond their primary aim of ensuring the continuous and proper representation of consumer expenditure habits.

vii. Location rotation and re-enumeration

Approximately 140 locations in the UK are visited each month as part of the local price collection. These locations are carefully selected according to retail turnover and controlled to avoid overlaps with current locations within the sample. To maintain the sample of locations, each year 30 locations are refreshed, either by excluding a location and replacing it with a new one (rotation) or refreshing the list of outlets in the existing location (re-enumeration). Due to movement restrictions in 2020, it was not possible for our field collectors to carry out this routine process for 2021 and, due to ongoing difficulties, a reduced number of 14 locations were re-enumerated for 2022 with no locations being rotated. We have however since refreshed a full 30 locations again in readiness for our 2023 collections.

Other changes to the suite of consumer price statistics in 2023

viii. Changes to the price collection and lead times for foreign holiday items

We are proposing changes to three of our foreign holiday items (hotels, self-catering, and cruises) which appear in the RPI, CPI and CPIH. Primarily, we plan to collect prices six months in advance of the holiday, rather than collecting all prices for a given year in an arbitrary order within August to February the year before. This will: bring these items in line with our other similar foreign holiday items (such as city breaks and late-booked

holidays), ensure greater consistency within a given price relative, more closely match consumer behaviour and enable us to conduct real time checks. Secondarily, we plan to collect the prices of holidays taking place in index week, rather than holidays taking place on/around the first of the month, to more closely align with the majority of the basket. We also plan to drop child prices from our collection for hotels, as data limitations mean that they form only a small part of our sample.

We have conducted an impact analysis by re-working a pilot collection, in which prices were collected three months before the holidays took place. This re-working comes with caveats (more detail in the Annex). This analysis is expected to overestimate the volatility of the proposed changes. Also, due to the current index method[1], extreme price relatives in one month will affect every other subsequent month in that year, and this should be taken into consideration when interpreting the impacts. Therefore, these estimates should be regarded as upper bounds. The analysis found that the mean monthly effect on the RPI all-items index level (Jan-87 = 100) for 2017-2019 was +0.004 index points, while the mean effect on the all-items annual rate was -0.016 percentage points, with a mixture of upward and downward effects observed. The changes introduced here can be implemented in Feb-24 data at the earliest, as the agreed method requires a year's worth of base prices before indices can be calculated. We intend to discontinue the traditional collections, starting with the one which would usually occur Aug-23 to Feb-24.

A more detailed analysis of the impact is provided in Annex A of this letter.

ix. Changes to the measurement of rail fares price indices

The following section describes changes we aim to make to the rail fares index in CPIH, CPI and RPI. We have been clear that our transformation is subject to continued systems development, research and impact analysis to ensure the quality of our statistics, which is our priority. We need to be fully assured that any changes will result in an improvement to the quality and reliability of the statistics and not increase the risk of error. As explained in the Impact Analysis publication on 28th of November, the final decision for the inclusion of alternative data sources for rail fares and second-hand cars categories will be published in February 2023 to give us the maximum opportunity for testing and quality assuring our systems and processes, while still giving users sufficient notice of the changes.

Currently the rail fares price index is calculated annually for Great Britain, by applying the increase in the cap on rail fares as reported each year (typically based on the previous year's July annual rate for the Retail Prices Index plus a fixed amount) in the month in which it comes into effect, which is usually the following January (March in 2021 and 2022). Northern Ireland price changes are sourced separately and are aggregated together with the constructed index for GB using appropriate weights.

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[1] Under the current methodology, price relatives are formed by comparing prices in the current month with prices for the same holiday in the same month a year earlier. This differs from the rest of the basket where price relatives are based in January of the same year. Seasonal weights are then used to calculate a rolling-year average of price relatives, resulting in a smoothed and non-seasonal index series. The methodology is described in more detail in section 9.5.7.1 of our Consumer Price Indices Technical Manual.

From February 2023 (published in March 2023) we intend to make use of rail fares data for Great Britain (GB), provided to us by the Rail Delivery Group and sourced from the rail industry's Latest Earnings Networked Nationally Overnight (LENNON) ticket revenue system; this system does not retail (as in, it does not act as a ticket selling platform). As they are transaction level data, they contain information on the cost and quantities of purchased tickets along with associated metadata related to the journey travelled. We have been provided rail transaction data for GB dating back to January 2019. Northern Ireland data will continue to be provided separately and will become a separately published index in the CPIH, CPI and RPI baskets.

The size, information, and dynamic nature of new data mean that new systems, and processes are required to enable quality and robust calculation of price indices. Integrating new, dynamic data sources into consumer prices also means our index methods need to be updated to make the best use of them.

Over the past few years, we have compared a variety of different methods, including traditional fixed-based methods, chained methods and multilateral methods. In our early work we produced a [framework for understanding and studying these methods](). We worked with the Economic Statistics Centre of Excellence (ESCoE) to commission an [expert-led review of multilateral index methodology]() by Fox, Levell and O'Connell. We also took our empirical analyses to our [Technical Advisory Panel on Consumer Prices]() and to the consumer price inflation-themed [Ottawa Conference (PDF, 794 KB)](). The result of this work is for the Office for National Statistics (ONS) to use the GEKS-Törnqvist, a 25-month window and a mean splice on published series as the index methodology choices for integrating weighted alternative data sources. The GEKS-T makes use of most of the data whilst eliminating chain drift (within a window), and the mean splice is preferred because it performed better than other splicing methods. The impact analysis for this item was presented in Annex B of the previous draft of this letter. The impact analysis has now been updated and will be published in our [forthcoming article]().

Further analysis suggests that, had the new rail fares indices been implemented in RPI between January 2019 and August 2022, the all-items monthly rate would only have been affected in May 2021, reducing the rate by 0.1 percentage points. The all-items annual rate was unaffected. This analysis should be treated as indicative; for example, the imputations made for unavailable items over the COVID-19 pandemic have not been recreated based on the revised rail fares data.

Our quality assurance has involved a readiness assessment covering five areas: the quality of our data, methods, systems, business processes, and user readiness.

For rail fares, the quality assurance we have done has resulted in high confidence in the data, systems behaviour and reliability. The indices have been successfully produced on the new systems using three years of real data. We have also reviewed our contingency plans and have in place mitigating actions should any issues emerge during the monthly consumer prices statistics publication round. The project decision was to proceed with incorporating the rail fares data.

For second-hand cars, the data and methods are more complex. Our quality assurance has highlighted issues that may affect the quality of statistics that have not yet been fully resolved and which we aim to address over 2023. As a consequence, we will not incorporate the new second-hand cars data at this time.

Therefore, we intend to incorporate the new rail fares data in the CPIH, the CPI and also the RPI, following the annual governance process, from February 2023 (published in March 2023).

Ongoing quality improvements and developments in consumer price statistics

Quality improvement continues to be integral to our work in Prices Division and across ONS. We continue to maintain high standards through external accreditation of our suite of inflation statistics and housing index (ISO 9001:2015) and have also recently assessed our outputs using Statistical Quality Maturity Models (SQMMs) achieving one of the highest scores across all ONS statistics assessed. We have a quality improvement plan in place and are making some substantial improvements to the way that we process, calculate and quality assure our statistics over the coming years, our highest priority deliverables are outlined in this section.

x. Quality improvements in the Living Costs and Food survey (LCF)

The Living Costs and Food survey (LCF) data underly the construction of weights in the RPI and are also used to inform weights at the lowest levels of the CPIH and CPI hierarchies (where HHFCE data are not granular enough to provide this information).

In July 2021, the Office for Statistics Regulation (OSR) published a report assessing the Living Cost and Food Survey (LCF) for compliance with the Code of Practice for Statistics. This report identified two requirements and three considerations for improvements to be made to ensure that the LCF and its outputs continue to be fit for purpose. A progress report in response to OSRs assessment was published in October 2022 detailing our ongoing work and actions.

This work will ultimately improve the quality of our suite of consumer price statistics and reduce the risk of errors in the calculation of expenditure weights.

xi. Development of the private rental series

We have investigated new methodologies to improve our private rental prices statistics, which feed into the Owner Occupier Housing (OOH) component of the CPIH as well as the private rental components of the RPI, CPIH and CPI. We have extended the timeline in our latest development plan given the importance of these statistics to allow time to appropriately quality assure the new methodology and develop a sustainable system on a strategic platform to support their ongoing production.

xii. Transformation of consumer price statistics using new data and methods

We continue our endeavour to obtain point-of-sale transaction (scanner) data feeds from UK retailers and have made substantial progress in accessing both historic and regular feeds of these data, currently covering up to 50% of the grocery sector. These data will be aggregated with traditionally collected data in calculating price indices for food and non-alcoholic beverages, alcohol, and tobacco. We plan to continue to improve our coverage of this sector using scanner data in the coming months and years.

As part of our wider transformation, we will begin incorporating alternative data sources into the CPIH and CPI from 2023, through the sources described in viii and ix.

We are also investigating the use of web-scraped data collection for some other sectors, but due to complexities of methodologies needed for use with these data they will not be incorporated into our headline statistics until 2024 at the earliest. Experimental indices will continue to be published as part of our research series in the interim.

xiii.   Improvements to the scrutiny process

The current scrutiny process is an important part of our production as it prevents incorrect prices from impacting the published RPI, CPIH and CPI figures. Due to the human nature of many of the errors that occur, and the need to make decisions that don't always have a clear outcome, this cannot be easily automated. An intensive manual process is therefore completed monthly to investigate any observations deemed as outliers, to either validate, correct, or remove the associated prices and/or metadata.

As detailed in our letter of 1 December 2021, this scrutiny process was reviewed over the course of 2021, and we concluded that the manual process was still of fundamental importance, but some improvements could be made. We are currently finalising these improvements and working to embed this process into production. Therefore, as per our previous correspondence, in 2023 we plan to:

a)   move the scrutiny onto a new system with an improved user interface and functionality, including improved reporting of changes
b)   bring some of the process forward so that it occurs earlier in the production round, allowing time for additional checking
c)   improve training and supporting information provided to price collectors, particularly regarding accurate assigning of indicator codes (used to provide additional information as to whether a product is on sale or a replacement, for example)

These changes will allow us to streamline the process and improve traceability of any changes made, ultimately providing additional reassurances over the quality of price quotes and quality adjustments being made in our suite of consumer price statistics.

xiv.   Barcode pilot collection

Since July 2021 our field collectors have been collecting barcodes alongside prices for a small sample of retailers and items, with the aim of providing an effective means of matching products collected in the field with those provided to us through scanner data. Matching products between the field collection and scanner data can serve as an important cross-checking tool in the short-term. The barcode collection will become part of the live CPI local collection from January 2023.

Please let me know if you have any queries or would like to discuss any of the changes raised in this letter further.

A copy of this letter goes to Simon Kirby, Carleton Webb and Simon Dolan at the Bank of England, to Thomas Yeomans at the Treasury and to Sam Beckett, Mike Keoghan, Grant Fitzner, Jason Zawadzki and Chris Payne here at ONS.

Yours sincerely,

Michael Hardie

Matthew Corder

Head of Prices Division, Office for National Statistics

Annex A – Impact analysis for changes to foreign holidays items

Data and method

The proposed changes will not alter the existing methodology, but rather change how far in advance prices are collected. However, the best data we have for conducting an impact analysis, a pilot collection with a 3-month lead time that ran between 2016 and mid 2022, was collected based on a methodology which allowed quality changes in the holidays being priced within a year. Therefore, we needed to decide how to repurpose this data so it could give a reasonable impact analysis.

As part of the existing methodology[1], we compare prices of holidays taking place in a given month to the price for an identical holiday taking place a year ago. However, applying this level of strictness to the pilot data results in too few data points to conduct a meaningful comparison. Therefore, for the purpose of this analysis, we tolerated changes in room type, airline quality and departure day. This provided us with sufficient data points for hotels and self-catering (cruises lacks sufficient data points for a meaningful analysis), but as a result, we expect these tolerated quality changes to generate more extreme price relatives than we would observe if the change were implemented. Furthermore, even with this tolerance, some countries in some months had very few price relatives, leading to volatile indices. This is sometimes compounded by small sample sizes in some months for the published versions of these three items, which the reworked pilot data is compared to.

This volatility can be amplified by the agreed foreign holidays methodology, as an extreme price relative in one month will push that month's index up (assuming the relative shows a price increase), and then all subsequent months in that year will use that month's index as part of their rolling-year average, so will be higher as well.

Results

This analysis uses the years 2017 to 2019, due to pandemic restrictions disrupting meaningful analysis for 2020 onwards, and focuses on the RPI, which is the measure of inflation in which these foreign holiday items have the largest weight in pre-covid years (in 2019 the three items had a combined weight of 3.4% in RPI, 2.9% in CPI and 2.3% in CPIH). As noted above, this analysis only considers the effects from hotels and self-catering, due to insufficient data for cruises, however cruises has a weight less than half that of either hotels or self-catering.

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[1] See section 9.5.7.1 of our Consumer Price Indices Technical Manual.

Figure 1: impact analysis effect on RPI all-items annual inflation rate (to 1 d.p.)
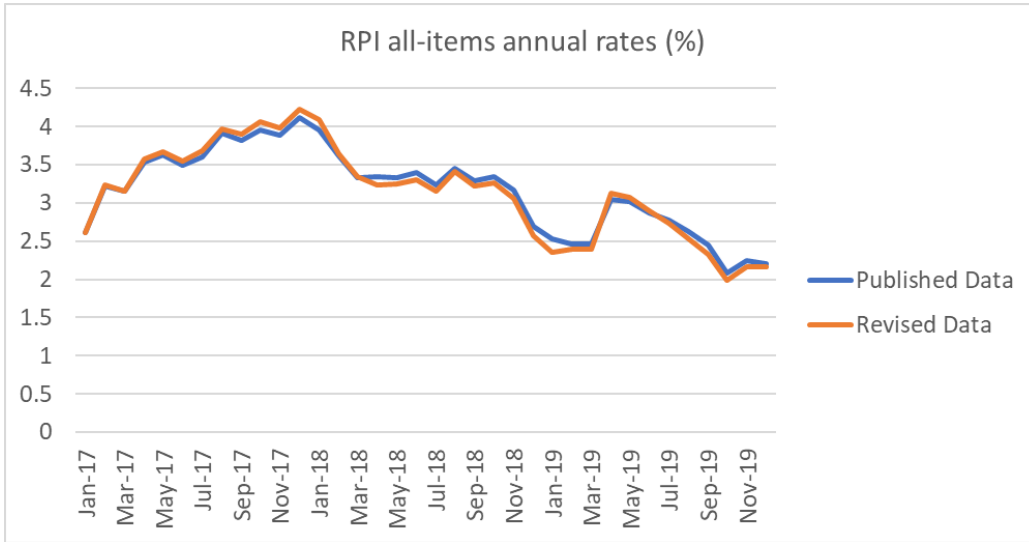
In 19 out of the 36 months shown above, there were effects on the RPI annual rate when rounded to 1 d.p., with 9 months seeing a +0.1pp impact and 10 months seeing a -0.1pp impact. The upward or downward tendencies within years are likely due to the interaction between data limitations and the existing methodology, as mentioned previously. For example, an extremely high price relative in April of one year can contribute to an unusually high monthly index in April, as well as in May, June, and subsequent months.

The average monthly effect on the unrounded RPI annual rate is -0.016 percentage points over those 36 months, while the average monthly effect on the RPI index level (Jan 1987=100) is +0.004 index points.

As for cumulative effect, in December 2019, the RPI index level was 291.9 in the published data, compared to 291.7 in the revised data, a decrease of 0.2 index points.

Interpretation

The volatility observed in this impact analysis seems likely to stem, in a large part, from the data limitations. Investigations into specific months of largest difference suggest they are mainly due to small numbers of quotes for one or more countries in the pilot collection, or the main live collection, or both.

A further reason to regard this impact analysis as an upper bound is that the pilot collection was conducted on a 3-month lead time, while the proposed new lead time is 6-months, and 6-months on average will be closer to the sort of lead times seen in the traditional collection process – which range from a few weeks to 17 months.