

ADVISORY PANEL ON CONSUMER PRICES – STAKEHOLDER

Proposals to produce and publish seasonally adjusted CPI & CPIH

Expected publication: Alongside minutes.

Purpose

1. This agenda item will be used to present our proposals for publishing monthly seasonally adjusted (SA) CPI and CPIH price series alongside our existing consumer price inflation measures. These have been developed from the [commissioned report](#) by the National Institute of Economic and Social Research (NIESR), guidance from internal methodology experts, and feedback from the Panel and other users.

Actions

2. Members of the Stakeholder Panel are invited to:
 - a) Provide final thoughts on our high-level proposals
 - b) Provide feedback on options we are still considering:
 - Publication strategy
 - Revisions frequency
 - Revisions to historical SA data
 - Adjusting policy influenced prices

Overview of our high-level proposals

3. The ONS should pursue the publishing of monthly SA price series for both CPIH and CPI.
 - This is in response to stakeholder requests for these data which will provide an additional signal of underlying inflationary pressures and economic trends, aiding in analysis, monetary policy assessment and business planning.
4. We will use the international standard of X-13 ARIMA–SEATS to produce SA CPI and CPIH data which splits each price index into a modelled SA series (trend + irregular components) and seasonality.
 - Seasonal patterns are found to exist in UK monthly CPI data with between 75-80% of the series found to be seasonal using standard statistical tests (Source: NIESR). We would leave unadjusted the remaining “non-seasonal” series.
5. Price indices in scope for seasonal adjustment would cover those currently published in [Consumer price inflation tables](#) 37 (CPIH: Detailed indices to 3 d.p: 1988-2025) and 38 (CPI: Detailed indices to 3 d.p: 1988-2025) and would include:
 - The All Items index to the class level 4-digit series in the Classification of Individual Consumption According to Purpose (COICOP) structure.

- 51-54 aggregate indices that are published within these tables. These include aggregates that exclude policy driven prices e.g “*CPI excluding Housing, Water, Electricity, Gas & Other Fuels*”.
 - Data from 1988 to the latest month.
6. Seasonal models are to be re-estimated annually.
- This aligns with practice across other monthly ONS outputs and provides a good estimation of seasonal adjustment throughout the year whilst effectively managing resources against the incremental value of more frequent modelling.
7. The ONS is to use the latest software of JDemetra+ to model seasonality using X-13 ARIMA–SEATS and RJDemetra+ to embed this into monthly production.
- This software, developed by the National Bank of Belgium in collaboration with the Deutsche Bundesbank, Insee and Eurostat, facilitates the seasonal adjustment of many timeseries in accordance with the Guidelines of the European Statistical System (ESS).

Publication options: Stakeholders are asked to provide further feedback on how we publish the SA price series

8. The following options have been considered for publishing CPI and CPIH data:
- a. Introduce the SA estimates as a “statistics in development” dataset and seek user feedback before incorporating into our monthly bulletin
 - Separates out new SA CPI data from existing CPI tables but increases number of outputs and processes within the production round.
 - b. Introduce the SA estimates into our monthly bulletin and tables, including Main Points, immediately
 - There is a concern here around including revisable and, initially, non-accredited SA data into a well understood CPI bulletin that commentates on accredited non-SA CPI data that adhere to a strict no revisions policy. This would involve a lot of work and communications to ensure smooth embedding into the bulletin.
 - c. Add two new tables, for CPI and CPIH, to the [Consumer Price Inflation Tables](#) to provide SA versions of the Non-SA price indices in Tables 37 & 38, but not incorporate into Main Points or other bulletin text for now
 - Provides clear and accessible SA prices data to technical users through existing data tables and is manageable from a production perspective

Additional growth metrics of seasonally adjusted prices (e.g 12m rate/3m rate/1m rate) depend on individual user need and can be discussed based on the option we pursue.

9. Communications are required alongside the initial publication of SA estimates. ONS plan to:

- Publish reference papers and minutes from April's upcoming Advisory Panels on Consumer Prices, both Technical and Stakeholder.
- Publish a revisions policy specifying the nature and timings of revisions, specifically noting that these revisable SA data should not be used in contracts.
- Consider wider communications (e.g blogs and webinars) to give details on the project background and user guidance.

Revisions policy: Stakeholders are asked to provide further feedback to decide on a revision frequency and the option of a revision window

10. Revisions are a natural part of seasonal adjustment and arise from both the annual process of model re-estimation and each month with the replacement of forecasted data with actual data.
11. We can revise previously published data with each monthly publication or annually after each modelling round. There is a trade-off here between data stability, by with fixing data over the year, versus the accuracy and ease of production that comes publishing the latest data each month. Both options have precedent within the ONS and in other NSI's SA CPI series. Monthly revisions are recommended by NIESR.

Table 1: Comparing aspects of an annual revision frequency against monthly frequency

Option	Revisions	Seasonal models review	Data Stability	Real time accuracy	Ease of Implementation	ONS outputs
1. Monthly revisions	Monthly	Annual	Change each month	Highest	Higher	Real Time Indicators/SARPIY
2. Yearly revisions	Annual benchmark	Annual	Stable over year	Slightly Lower	Lower	House price Index, National Accounts

12. Additionally, we would propose a revisions window to fix historical data. Even as forecasted data have been replaced by actual data, this older data can be altered from new model specifications in the annual re-estimation round. After a certain point however, data stability provides more value than revisions.
- We propose further analysis to determine the window length and to gauge the nature and scale of revisions over time.
 - Our previous seasonally adjusted RPIY output ([SARPIY](#)) was adjusted as far back as there were significant changes, usually within the previous 12 months, whilst the ONS's House Price Index has a 1 year revision window. NIESR analysis suggests "revisions are in general small for the index level".
 - Statistics Canada revises for the last three years while the Bureau of Labor Statistics in the USA revises data for the last 5 years.
 - Would revising historical data at any point provide value (such as the "open window" for revision used in National Accounts)?

Policy effects: Stakeholders are asked to provide feedback on our proposal to account for policy influences in SA price series

13. For prices which are set by government policymakers or regulators, typically annually in April, we propose to manually add regressors for known policy timings that are likely to result in outliers and level shifts. This allows us to better measure statistical and predictable seasonality within each index and adjust for it.
- This provides a consistency of the modelling approach for the three types of seasonality previously identified by Stakeholder Panel members previously:
 - “organic” seasonality that is driven primarily by market forces (e.g clothing).
 - “policy-orchestrated” seasonality where annual tax rises are the main driver of seasonality (e.g water supply).
 - “policy-induced” seasonality where policy responds to underlying market forces, both of which can influence prices (e.g gas and electricity).
 - This aligns with how other most NSIs treat policy impacts within SA CPI.
 - The 51 to 54 defined aggregates in scope for SA will provide additional information on indices that remove some policy influences e.g *“CPI excluding Housing, Water, Electricity, Gas & Other Fuels”*.
 - The option of removing Division 4, *“Housing, water, electricity, gas and other fuels”*, from the scope of seasonal adjustment because it contains certain policy driven prices was rejected.
 - This was based on Stakeholder feedback which highlighted Division 4 also contains items predominantly driven by market forces, such as solid and liquid fuels, whilst not factoring in policy impacts in other divisions, such as Tobacco Duty in Division 2.

Direct vs Indirect estimation: Stakeholders have previously stated a preference for the Indirect method, which we hope to pursue if the data allows

14. Stakeholders have previously expressed preference for the perfect “adding up” of indirect estimation present in non-SA CPI data and which allows for consistency for analysis across the COICOP hierarchy. This is traded off against the best possible direct estimation of the “All items” CPI and CPIH indices.
15. Indirect estimation tends to be used across ONS SA outputs where context and data allow, for example in GDP and Retail Sales timeseries in National Accounts where additive hierarchies exist, and in our previously produced SARPIY. However, there is no consensus on a direct or indirect approach when comparing SA price outputs across other NSIs.
16. Using the Indirect method, however, raises concerns over residual seasonality in higher level aggregates that are built up from component series and the additional complexity in accounting for this. This has been an issue in recent seasonally adjusted GDP data and although we can use internal experience in how best to control for this, we propose to first understand the nature of this in the UK's CPI data.

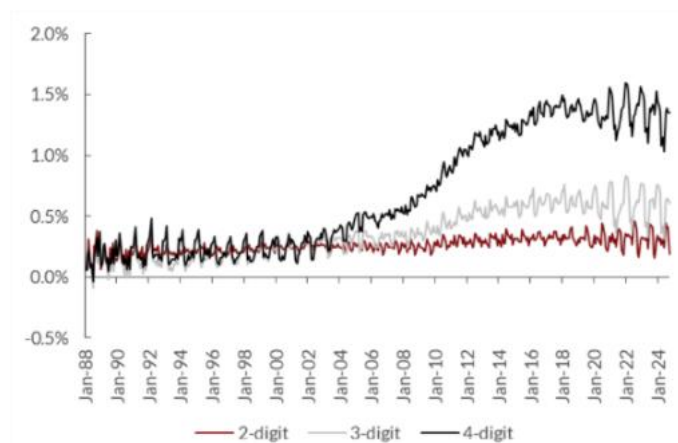
17. We propose a data-driven approach in committing to indirect estimation, specifically by answering:

- To what extent is there residual seasonality, in particular at the “All items” level?
- How do the two approaches compare in percentage and absolute differences?

18. NIESR have previously carried out similar analysis and found that direct estimation leads to series that add up “reasonably well” and indirect estimation aggregates perform well in SA diagnostics. They found a relatively small deviation of 1.5% at the 4-digit level between the two approaches in CPIH at the All Items level but with an increasing difference (“drift”) over time (Figure 1).

- We wish to replicate this analysis in our internal models and attempt to remove the drift element present in aggregating at the 4-digit level.

Figure 1: Deviations of direct from indirect estimation as a percentage: All items CPIH



Source: [Seasonal Adjustment of CPI and CPIH, NIESR Policy Paper 4.5, May 2025](#)

Overview of our technical implementation proposals

19. Timeseries break: We decided against the recommendation in the NIESR report to split the 1988-2025 timeseries into 3 modelling periods for seasonal adjustment before chain linking the resulting series together. Will propose instead to model a continuous timeseries and use a revision window to fix historical data.

- Stakeholder feedback suggested the recent split period was too short and that splits in the timeseries may mask patterns of economic activity in certain indices.
- A continuous timeseries is considered best practice and is used across other SA series in the ONS and for SA prices in other NSIs. This increases the sample for improved seasonal pattern detection and provides consistency across the years, whilst chain linking provides additional complications in production, methods and communications.

20. Index Day Price Variability: We carried out an internal investigation of whether to account for price movements relating to where the index day for price collection lies each month, e.g. air fare price collection close to Easter, into our SA models as a calendar effect. We decided against this in favour of analysing these impacts as part of the price collection design of certain items.
- Stakeholders suggested this effect is best accounted for in alternative collection methods which aim to remove these effects before adjusting for seasonality.
 - There is no evidence of other NSI's including index day regressors in their SA models, and it would add additional complexity to solve a relatively uncommon effect.
21. These suggested technical approaches reflect helpful discussions at the APCP-Technical meeting on 17 April 2026.

Planned next steps

22. Reflect on feedback on our proposals from April's Advisory Panels on Consumer Prices, both Stakeholder and Technical.
23. Complete analysis where data is required to guide a decision, specifically behind using a direct or indirect method of producing seasonally adjusted aggregates and specifying the length of a revision window.
24. After deciding on the final approach, we will:
- Build systems for monthly production.
 - Publish communications on the upcoming release of seasonally adjusted CPI and CPIH data including the project background, revisions policy and user guidance.
25. A tentative date for publishing seasonally adjusted CPI & CPIH is set for the second half of 2026.

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