Compendium

List of Appendices

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Table of contents

1 . Appendix A

Difference between Lowe and Laspeyres

Within the year the Consumer Prices Index (CPI) is calculated using a Lowe formula, in the sense that it uses current-period price information alongside expenditure weights that are price-updated. This latter feature distinguishes it from a Laspeyres price index, which uses current period price information with observed, previous period expenditure weights. The Laspeyres is presented algebraically below in [A.1]:

Equation A.1

$$I_r^t = \frac{\sum_{i=1}^{n} p_i^t q_i^r}{\sum_{i=1}^{n} p_i^r q_i^r}$$

This formula can also be written in terms of expenditure shares and prices relatives, which indicates how the formula is applied in practice. This is outlined in [A.2]:

Equation A.2

$$I_r^t = \sum_{i=1}^{n} \left(s_i^r \cdot \frac{p_i^t}{p_i^r} \right)$$

$$\text{where } s_i^r = \frac{p_i^r q_i^r}{\sum_{i=1}^{n} p_i^r q_i^r}$$

The formula for a Lowe price index differs in the sense that the expenditure shares from an earlier period are price updated to deliver a set of weights for a period before the expenditure data for that period becomes available. This earlier period is denoted as b, shown in [A.3]:

Equation A.3

$$I_r^t = \sum_{i=1}^{n} \left(s_i^{rb} \cdot \frac{p_i^t}{p_i^r} \right)$$

$$\text{where } s_i^{rb} = \frac{p_i^b q_i^b \left(I_{b(i)}^r \right)}{\sum_{i=1}^{n} p_i^b q_i^b \left(I_{b(i)}^r \right)}$$

2 . Appendix B

Structure of the Classification of Individual Consumption According to Purpose (COICOP)

The table for Appendix B are available as a reference table download (30 Kb Excel sheet) within this release.

3 . Appendix C

Sensitivity analysis

This appendix provides further information about how this paper adjusts the methodology for those class-level categories where the CPI expenditure total is more than double the LCF total, and in which fewer than 20% of households report spending. The sensitivity analysis undertaken to ensure this adjustment has not biased the headline results is also outlined.

Table C.1 shows the class-level categories where the adjustment has been applied. The right-hand side outlines which other class-level categories are used as a 'proxy' to allocate the CPI expenditure according to the total of all these categories as a share of total expenditure. Proxies are chosen as follows: a) if the class-level category is contained within a group with other class-levels, the proxy is the sum of all classes of the group; and b) if the class-level category is the only class within a group, the proxy is the sum of all classes of the division. These proxies have been checked to ensure the distributions of expenditure by equivalised income decile and year are not biased by this allocation.

Table C.1: Class-level categories and their respective proxies

Class-level Category	Proxy
03.1.3	03.1.2 + 03.1.3 + 03.1.4
04.3.1	04.3.1 + 04.3.2
04.4.3	04.4.3 + 04.4.1
04.5.4	04.5.1 + 04.5.2 + 04.5.3 + 04.5.4
05.2.1	05.1.1 + 05.1.2 + 05.2.1 + 05.3.1 + 05.3.3 + 05.4.1 + 05.5.1 + 05.6.1 + 05.6.2
06.3.1	06.1.1 + 06.1.2.3 + 06.2.1.3 + 06.2.2 + 06.3.1
07.1.2	07.1.1a + 07.1.1b + 07.1.2
07.3.4	07.3.1 + 07.3.2 + 07.3.3 + 07.3.4
09.1.2	09.1.1 + 09.1.2 + 09.1.3 + 09.1.4 + 09.1.5
09.1.5	09.1.1 + 09.1.2 + 09.1.3 + 09.1.4 + 09.1.5
09.2.1	09.1.1 + 09.1.2 + 09.1.3 + 09.1.4 + 09.1.5 + 09.2.1 + 09.3.1 + 09.3.2 + 09.3.3 + 09.3.4 + 09.4.1 + 09.4.2 + 09.5.1 + 09.5.2 + 09.5.3 + 09.6.1
12.3.1	12.3.1 + 12.3.2
12.4.1	12.1.1 + 12.1.2 + 12.3.1 + 12.3.2 + 12.4.1 + 12.5.2 + 12.5.3 + 12.5.4 + 12.6.2 + 12.7.1
12.7.1	12.1.1 + 12.1.2 + 12.3.1 + 12.3.2 + 12.4.1 + 12.5.2 + 12.5.3 + 12.5.4 + 12.6.2 + 12.7.1

Source: ONS Calculations

As part of the plausibility tests, the condition was extended to include all class-level categories where CPI expenditure total is more than double the LCF total. This added eight class-level categories to the analysis. Table C.2 outlines these class-level categories and their respective proxies.

Table C.2: Sensitivity analysis of class-level categories, and their respective proxies

Class-level Category	Proxy
02.2.1	02.1.1 + 02.1.2 + 02.1.3 + 02.2.1
04.3.2	04.3.1 + 04.3.2
05.4.1	05.1.1 + 05.1.2 + 05.2.1 + 05.3.1 + 05.3.3 + 05.4.1 + 05.5.1 + 05.6.1 + 05.6.2
07.3.2	07.3.1 + 07.3.2 + 07.3.3 + 07.3.4
09.1.4	09.1.1 + 09.1.2 + 09.1.3 + 09.1.4 + 09.1.5
09.3.1	09.3.1 + 09.3.2 + 09.3.3 + 09.3.4
11.1.2	11.1.1 + 11.1.2
12.6.2	12.1.1 + 12.1.2 + 12.3.1 + 12.3.2 + 12.4.1 + 12.5.2 + 12.5.3 + 12.5.4 + 12.6.2 + 12.7.1

Source: ONS Calculations

This analysis enables us to conduct a sensitivity test to determine how the headline inflation results change according to which class-level categories the adjustment is applied. The results of this sensitivity analysis suggest that this assumption has little impact on the broad trends presented.

4. Background notes

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