

Seasonal adjustment: 2008 annual review

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The Bank of England has recently reviewed the seasonal adjustment of its published series. This article outlines the scope of the review and summarises the changes made.

At the time of the switch to using X-12-ARIMA in 2004, the Bank undertook to review all of its series for seasonality on a regular basis¹. Since 2005, a thorough review of seasonally adjusted series has been carried out annually. Such reviews form part of the Bank's new Data Quality Framework, announced in the March edition of this publication². The 2008 review focused primarily on two classes of series:

- Those which appear on the Bank's statistical releases, as well as those that have generated significant user interest in the past;
- A selection of less prominent series where diagnostic tests produced by X-12-ARIMA had indicated that the existing seasonal adjustments could be refined in some way.

Based on these criteria, 82 series were given a full review this year. Seasonality tests were run on all these series to determine whether they should continue to be adjusted. For each of the series that was shown to be seasonal, the following settings were considered: the choice of ARIMA model; the inclusion of trading day and Easter regressors³; outliers; and the length of trend and seasonal filters.

Table 1: Number of series changing as a result of the 2008 annual review⁴

Change	Number of series
ARIMA model changed	53
Outliers changed	24
Trading day variables added	9
Trading day variables removed	5
Easter effect variable removed	8
Changes to trend or seasonal filters	5
Changed from seasonal to non-seasonal	1
Changed from non-seasonal to seasonal	2

Twenty-one series had their settings left unchanged following the review. For the remaining series, most of the alterations were relatively minor, reflecting the work done in previous reviews to monitor the quality of the

adjustments. Table 1 summarises the main changes that were made.

As shown in the table, one series that had hitherto been adjusted was found to be non-seasonal, and conversely two series that were previously non-seasonal were now judged to warrant seasonal adjustment. The affected series have been highlighted in this publication and on the Bank's Interactive Database to explain the revised treatment.

These changes are being introduced in April 2008, when data for March 2008 are first published.

X-12-ARIMA updates

The December 2003 article stated that the Bank would consider each year whether to introduce any updates to X-12-ARIMA that had been released. Although the US Census Bureau (USCB) has recently introduced an updated version, X-12-ARIMA Version 0.3, the Bank decided not to apply its new features immediately in its seasonal adjustment. However, the USCB plan to release a new package, X-13A-S, and the Bank is participating in a Government Statistical Service (GSS) Task Force to evaluate the impact of the new package on published data. More information on this work can be found in the article 'A work programme in financial statistics – April 2008', in the same issue of this publication⁵.

The Bank will apply cost-benefit analysis in its assessment of future updates to its seasonal adjustment software, to ensure that any improvements to published data are sufficient to justify the costs.

⁵ See

<http://www.bankofengland.co.uk/statistics/ms/articles/art2apr08.pdf>

¹ See paragraphs 29-30 of "Change of Seasonal Adjustment Method to X-12-ARIMA", *Monetary and Financial Statistics*, December 2003: <http://www.bankofengland.co.uk/statistics/ms/articles/artdec03.pdf>.

² For more information, see the article "Assessing data quality", *Monetary and Financial Statistics*, March 2008: <http://www.bankofengland.co.uk/statistics/ms/articles/art1Mar08.pdf>.

³ These regressors perform a calendar adjustment of the series, removing the effects of the day of measurement of a series (i.e. the last day of the month), the number of working days in the month (for a series adjusted as a flow), and the position of Easter. More information can be found in the articles <http://www.bankofengland.co.uk/statistics/ms/articles/artdec03.pdf> and <http://www.bankofengland.co.uk/statistics/ms/articles/art2apr05.pdf>.

⁴ Series affected by multiple changes are included more than once.