BANK OF ENGLAND

Seasonal adjustment: 2017 update

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This regular article reports on the annual review carried out in 2016 of the seasonal adjustment of the Bank of England's money and credit data and other series. It also provides an update on other seasonal adjustment workstreams.

Introduction

Seasonal adjustment aims to identify, estimate and remove regular seasonal fluctuations and typical calendar effects (e.g. numbers of trading days in a month) from time series data. This article describes the 2016 annual review and summarises its results. It also provides an update on other seasonal adjustment workstreams.

Annual Review Process

The Bank of England reviews the seasonal adjustment of published series on a regular basis. The frequency of reviews of particular series will vary, based on the usage of the series. The annual review is divided into three phases spread across the year, as detailed in Table 1.

For each data series reviewed, the following issues are routinely considered:

- presence of seasonality;
- seasonal adjustment settings:
  - choice of ARIMA model;
  - calendar effects[1];
  - outliers;
  - seasonal and trend filters;
- residual seasonality; and
- direct versus indirect adjustment (selected series only).[2]

Table 1: Phases of the 2016 review

Phase	Type of series covered	Period reviewed
1	Broad money and credit, notes and coin	Data up to January 2016 (implemented for December 2016 data)[3]
2	Balance sheet, industry analysis of deposits and loans, capital issuance, housing equity withdrawal and other series	Data up to May 2016 (implemented for August 2016 data)
3	Lending to individuals	Data up to September 2016 (implemented for December 2016 data)

Results of 2016 review

In total, 125 published series were reviewed in 2016, as detailed in Table 2. This resulted in changes to 36 existing published series (Table 3).

Of these, 32 series saw changes to their existing seasonal adjustment settings. In addition, 3 series not previously considered seasonal displayed seasonality when reviewed in 2016 and were assigned seasonal adjustment settings. There was also 1 previously seasonal series that was deemed to no longer be seasonal.

Furthermore, there are no newly published series that are being published on a seasonally adjusted basis as a result of this review.

[1] The effects of the 2002 Golden Jubilee and 2012 Diamond Jubilee were also considered. For further details, see 'Seasonal adjustment: Effects of the 2012 Diamond Jubilee', by Jenny Owladi, Bank of England *Bankstats (Monetary & Financial Statistics),* January 2013, available at: www.bankofengland.co.uk/statistics/Documents/ms/articles/art3jan13.pdf

[2] Some series can be adjusted either directly or indirectly (as the sum, or the difference, of their seasonally adjusted components). The method chosen depends on various properties of the series and its components, and the relationships between them. The Bank continues to monitor the adjustment structures of key series to ensure that these remain appropriate.

[3] These changes had been due to be implemented for April 2016 data, however these were delayed due to technical difficulties.

Table 2: Summary of series reviewed

	2015[4]	2016
Seasonal series – settings reviewed (this includes reviewing whether the series should still be seasonally adjusted)	72	78
Non-seasonal series reviewed for seasonality (excluding those resulting in newly published seasonal series)	32	20
Indirectly adjusted series reviewed for residual seasonality	33	27
Number of newly published seasonal series	1	0
Total	**138**	**125**

Table 3: Summary of series changed

	2015[4]	2016
Number of existing published series changed	**35**	**36**
Changed from non-seasonal to seasonal	2[5]	3[6]
Changed from seasonal to non-seasonal	0	1
Seasonal adjustment settings changed	33	32
Other changes	0	0
Number of newly published seasonal series	**1**	**0**

Ongoing work

In addition to the regular review process, the Bank also conducts specific work on issues relating to seasonal adjustment. Two such issues are highlighted here:

The first is that the seasonal adjustment review has revisited the current seasonal treatment of household Cash ISA deposits.[7] In July 2014 new rules were introduced, including an increase in thresholds and allowing transfers from Stocks and Shares ISAs to Cash ISAs.[8] The impact in the data of these new rules was a significantly large inflow into cash ISAs in July 2014. With nearly three years of data we were able review the extent to which seasonality has changed.

The July 2014 increase had initially been attributed to a seasonal effect even though the effect had been in a different month to the usual seasonal effect (the usual seasonal month is April). This has been changed to treat the effect as irregular. This change in treatment has also corrected the seasonally adjusted level by around £10bn. These changes are due to take effect for April 2017 data, which will be published 31 May 2017, alongside this article.

Also, the Bank's review of alternative trading day stock regressors[9] continued. Until now, the bank has made use of user-defined trading day stock regressors but has been investigating whether the in-built trading day stock regressors, available in X-13ARIMA-SEATS, may be more appropriate. The results of this consideration suggested that there is no immediate benefit from altering these, however we expect to revisit this review in the future.

[4] For further details on the 2015 review, see 'Seasonal adjustment: 2016 update', by Timothy Boobier, Bank of England, *Bankstats (Monetary & Financial Statistics)*, June 2016, available at: www.bankofengland.co.uk/statistics/Documents/articles/2016/12may.pdf

[5] These series are RPQTEJS and RPQTEJG (both quarterly series from the industry analysis of MFIs' loans to UK residents).

[6] These series are LPMBZ2M, LPMZ5ES and LPMZ5EU (all monthly series - the first capturing amounts outstanding of net lending to individuals by other lenders and the latter two capturing mortgage cancellations data).

[7] This is the series LPMB4F6.

[8] For further details, see: www.gov.uk/government/publications/the-new-isa-factsheet.

[9] In X-13ARIMASEATS, trading day effects can be modelled for end-month series using either tdstock[31] or tdstock1coef[31] regressor options: tdstock[31] treats each day of the week separately and tdstock1coef[31] makes a distinction between weekdays and Saturday/Sunday.