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Seasonal adjustment: 2016 update

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This regular article reports on the annual review carried out in 2015 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 2015 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 2015 review

Phase	Type of series covered	Period reviewed
1	Broad money and credit, notes and coin	Data up to January 2015 (implemented for April 2015 data)
2	Balance sheet, industry analysis of deposits and loans, capital issuance, housing equity withdrawal and other series	Data up to May 2015 (implemented for August 2015 data)
3	Lending to individuals	Data up to September 2015 (implemented for December 2015 data)

Results of 2015 review

In total, 138 published series were reviewed in 2015, as detailed in Table 2. This resulted in changes to 35 existing published series (Table 3).

One series is being newly published on a seasonally adjusted basis as a result of this review: PNFCs' all currency net equity issuance was found to be seasonal and a seasonally adjusted series for this is being published with the publication of April 2016 data.[3] Other net capital issuance series used as part of the published net finance raised measures for PNFCs (e.g. net bond

[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] This series is CPMZID5. This was not implemented earlier alongside Phase 2 implementation, due to further investigation of conceptual and methodological issues around seasonally adjusting capital issuance series.

issuance) continue to be reviewed regularly for seasonality.

Table 2: Summary of series reviewed

	2014[4]	2015
Seasonal series – settings reviewed (this includes reviewing whether the series should still be seasonally adjusted)	69	72
Non-seasonal series reviewed for seasonality (excluding those resulting in newly published seasonal series)	14	32
Indirectly adjusted series reviewed for residual seasonality	28	33
Number of newly published seasonal series	33	1
Total	**144**	**138**

Table 3: Summary of series changed

	2014[4]	2015
Number of existing published series changed	**40**	**35**
Changed from non-seasonal to seasonal	0	2[5]
Changed from seasonal to non-seasonal	1	0
Seasonal adjustment settings changed	35	33
Other changes	4	0
Number of newly published seasonal series	**33**	**1**

Ongoing work

In addition to the regular review process, the Bank also conducts specific work on issues relating to seasonal adjustment:

- The seasonal adjustment of Cash ISA deposits with the household sector was affected by the introduction of new ISA rules in July 2014. [6] The new rules included increased thresholds and allowed transfers from Stocks and Shares ISAs to Cash ISAs.[7] These changes introduced a seasonal pattern for 2014 that was materially different from the typical seasonal pattern observed in previous years. As a result, the Bank introduced a new regressor for this effect, implemented for the September 2015 data publication.[8]

- Following the switch to X-13ARIMA-SEATS in June 2014, the Bank reviewed alternative regressors for Easter effects on amounts outstanding series, which allowed the testing of different lags, compared to the one-day lag of the Bank's user-defined regressor. [9] Changes to these regressors were implemented for relevant series for the April 2015 data publication, and the Bank opted to incorporate these regressors into its reviews going forward.

- In addition to this, the Bank is reviewing alternative regressors for trading day effects for amounts outstanding series, using the programme's in-built trading day stock regressors.

- The seasonal adjustment of notes and coin series is under review due to changes in patterns of trading day and holiday effects, particularly from 2013 onwards.

[4] For further details on the 2014 review, see 'Seasonal adjustment: 2015 update', by Ross Meader, Bank of England, *Bankstats (Monetary & Financial Statistics)*, June 2015, available at: www.bankofengland.co.uk/statistics/Documents/ms/articles/art3may15.pdf.
[5] These series are RPQTEJS and RPQTEJG (both quarterly series from the industry analysis of MFIs' loans to UK residents).
[6] This is the series LPMB4F6.
[7] For further details, see: www.gov.uk/government/publications/the-new-isa-factsheet.
[8] This consisted of a stock regressor constructed with reference to differences between 2014 data points and historical averages. For months showing a material difference, those cumulative differences were incorporated into a stock regressor.
[9] In X-13ARIMA-SEATS, testing 'easterstock' regressors allows reviewers to choose between easterstock[1], easterstock[8], easterstock[15] and no Easter.