



Seasonal adjustment: 2015 update

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This regular article reports on the annual review carried out in 2014 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 2014 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 selected series on a regular basis. 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;
 - outliers;
 - seasonal and trend filters;
 - effects of 2002 Golden Jubilee and 2012 Diamond Jubilee;¹ and
- residual seasonality;
- direct versus indirect adjustment (selected series only).²

¹ 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

Table 1: Phases of the 2014 review

Phase	Type of series covered	Period reviewed
1	Broad money and credit, notes and coin	Data up to January 2014 (implemented for April 2014 data)
2	Balance sheet, industry analysis of deposits and loans, capital issuance, housing equity withdrawal and other series	Data up to May 2014 (implemented for August 2014 data)
3	Lending to individuals	Data up to September 2014 (implemented for December 2014 data)

Results of 2014 review

In total, 111 published series were reviewed in 2014, as detailed in Table 2. This resulted in changes in the seasonal adjustment settings for 40 series, as detailed in Table 3.

33 seasonal series were published for the first time, as follows:

- *Bankstats* Table A5.4 now includes 30 new series, published on a seasonally adjusted basis. These series cover approvals and cancellations by monetary financial institutions and other specialist lenders. All but three were judged to be seasonal. These were first published in the December 2014 data.

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 these. The Bank continues to monitor the adjustment structures of key series to ensure that these remain appropriate.

- following the separate publication of consumer overdrafts and loans excluding overdrafts, three series were reviewed for the first time.³ These were first published in the February 2015 data.

Table 2: Summary of series reviewed

	2013	2014
Number of published series reviewed	142	111
Seasonal series – settings reviewed (this includes reviewing whether the series should still be seasonally adjusted)	99	69
Non-seasonal series reviewed for seasonality	29	14
Indirectly adjusted series reviewed for residual seasonality	14	28
Number of newly published seasonal series	0	33
Total	142	144

Table 3: Summary of series changed

	2013	2014
Number of published series changed	43	40
Changed from seasonal to non-seasonal	0	1 ⁴
Seasonal adjustment settings changed	43	35
Other changes	0	4

Some series were reviewed for specific issues, as follows:

- loans securitised to UK-resident SPVs switched from lending by 'Other Specialist Lenders' to lending by MFIs in January 2010.⁵ This caused a break in affected series and a change in the pattern of seasonal adjustment. The method used to seasonally adjust three of

these series was changed to be adjusted separately before and after January 2010.⁶

- the total public sector contribution to M4 lending (published in *Bankstats* Table A3.2) was changed from seasonally adjusting flows series to deriving flows from seasonally adjusting amounts outstanding series.⁷ This was implemented in the April 2014 data.

Ongoing work

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

- following the switch to X-13ARIMA-SEATS in June 2014, the Bank reviewed an alternative weekday/weekend regressor.^{8, 9} Where series have a trading day effect, this regressor has been chosen for a majority of series, as it produces a preferred seasonal adjustment compared to the conventional six-coefficient trading day regressor.
- changes to the treatment of loan transfers and lending to housing associations from this month may have some small effects on the seasonal adjustment of relevant series.¹⁰ The Bank aims to review these series over the next year, as part of the 2015 annual review process.

³ These series are LPMZ5G6, LPMZ5G7 and LPMZ5GI. For further details, see 'Improvements to the compilation of M4 lending excluding intermediate OFCs series and the publication of additional Monetary Financial Institutions' data', by Rajveer Berar and Ross Meader, Bank of England *Bankstats (Monetary & Financial Statistics)*, March 2015, available at: www.bankofengland.co.uk/statistics/Documents/ms/articles/art1jan15.pdf

⁴ This series is LPMVWXA (Monetary financial institutions' foreign currency loans to non-residents).

⁵ For further details, see 'Statistical Reporting of Securitisations' by Jennifer Owladi, Bank of England, *Bankstats (Monetary & Financial Statistics)*, February 2010, available at: www.bankofengland.co.uk/statistics/Documents/ms/articles/art1feb10.pdf

⁶ These series are LPMB3SE, LPMVWAY and LPMB4TE.

⁷ This series is LPMVQRO.

⁸ For further details, see 'Seasonal adjustment: 2014 update', by Fida Hussain and Ross Meader, Bank of England *Bankstats (Monetary & Financial Statistics)*, June 2014, available at: www.bankofengland.co.uk/statistics/Documents/ms/articles/art3may14.pdf

⁹ The weekday/weekend regressor is referred to as the 'td1coef' regressor in X-13ARIMA-SEATS.

¹⁰ For further details, see 'Changes to the treatment of loan transfers and lending to housing associations' by Zeeshan Akhtar and Alistair Strathern, Bank of England, *Bankstats (Monetary & Financial Statistics)*, May 2015, available at: www.bankofengland.co.uk/statistics/Documents/ms/articles/art1apr15.pdf